United States
Department of
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Forest
Service

Biological Assessment

Lolo National Forest Plan

Consultation Reinitiation

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List of Abbreviations and Acronyms

Abbreviation	Description
ac	acres
BA	biological assessment
BGBEPA	Bitterroot Grizzly Bear Experimental Population Area
BO	biological opinion
BORZ	bears outside the recovery zone
BMU	bear management unit (within recovery zones)
CFR	Code of Federal Regulations
CYE	Cabinet-Yaak Ecosystem
DCA	demographic connectivity area (for grizzly bears)
DN	Decision Notice
DNRC	Montana Dept. of Natural Resources and Conservation
DPS	distinct population segment
EIS	environmental impact statement
ESA	Endangered Species Act
FR	Federal Register
GBAU	grizzly bear analysis unit (outside recovery zones)
GIS	geographic information system
HCP	habitat conservation plan
IGBC	Interagency Grizzly Bear Committee
GYE	Greater Yellowstone Ecosystem
INFISH	Inland Native Fish Strategy
IRA	Inventoried Roadless Area
ITS	incidental take statement
MA	management area (identified in the Forest Plan)
m	meters
mi, mi^2	mile(s), square mile(s)
MFWP	Montana Fish, Wildlife and Parks
MVUM	Motorized Vehicle Use Map
NCDE	Northern Continental Divide Ecosystem
NEPA	National Environmental Policy Act
NF	National Forest
NFMA	National Forest Management Act
NFS	National Forest System
NRLMD	Northern Rockies Lynx Management Direction
PCA	primary conservation area (for grizzly bears)
PL	public law
ROD	record of decision
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service

Introduction

The Lolo National Forest (NF) administers about 2,230,167 acres in north central Montana. The Forest straddles three grizzly bear recovery zones: 269,822 acres in the Northern Continental Divide Ecosystem (NCDE), 145,782 acres in the Cabinet-Yaak Ecosystem (CYE), and 9,802 acres within the Bitterroot Ecosystem (see appendix 1, figure 1). Over time, the grizzly bear population has gradually expanded its distribution to portions of the Forest that are outside of the recovery zones and bears may be present across the Forest at some point over the remaining life of the Forest Plan (5 to 10 years).

Purpose for reinitiating consultation

The purpose of this consultation is to consider the effects of the Forest Plan on listed species and designated critical habitat. Since the completion of the 1986 Forest Plan, the plan has gone through a series of consultations in response to changes in listed species and designated critical habitat (see below for further details about past consultations). For the grizzly bear, consultation has been iterative as new information has become available and the species has expanded its range.

Legal and regulatory framework

Threatened, endangered, and proposed species and their habitats are managed by the Forest Service in accordance with the National Forest Management Act (NFMA) of 1976 (Public Law (PL) 94-588) and the Endangered Species Act (ESA) of 1973 (PL 93-205, as amended). NFMA requires that forest plans provide for multiple use and sustained yield of products and services in accordance with the Multiple-Use, Sustained-Yield Act of 1960, and specifically that they coordinate outdoor recreation, range, timber, watershed, wildlife and fish, and wilderness uses (section 6(e)(1)). ESA section 7(a)(1) directs all federal agencies to carry out programs for the conservation of endangered species and threatened species. ESA section 7(a)(2) directs federal agencies to ensure that any actions authorized, funded, or carried out by the agency are not likely to jeopardize the continued existence of any threatened, endangered, or proposed species or to adversely modify critical habitat. ESA section 9 prohibits the taking or possession of any endangered species of fish or wildlife.

A forest plan identifies general land use purposes or suitability, desired future conditions, objectives for resource conditions on specific lands, and standards and guidelines for management activities. A forest plan provides the framework for future site-specific decision-making concerning all activities conducted and allowed on National Forest System lands. Therefore, the effects of a forest plan are indirect (occur later in time). As required by the NFMA, all resource plans and permits, contracts, and other instruments for the use and occupancy of National Forest System (NFS) lands must be consistent with the forest plan.

It is Forest Service policy that management direction in a forest plan will contribute to the recovery of federally listed species (Forest Service Manual 2622). If approval of a plan, plan revision, or amendment may affect listed species or critical habitat, the Responsible Official shall consult with National Marine Fisheries Service or the U.S. Fish and Wildlife Service (USFWS) in accordance with ESA section 7(a)(2) (USC 1636(a)(1)) and accompanying regulations that guide interagency cooperation (50 CFR 402). The Agency may also consult on the plan as a “conservation program” in accordance with ESA section 7(a)(1). If the action may result in the incidental take of a listed species, the consultation may include authorization for incidental take in accordance with ESA section 10.

History of Lolo Forest Plan consultations on the grizzly bear

Because the Lolo NF has land in three separate grizzly bear recovery zones and successful recovery efforts have led to the expansion of the bear population into areas outside of the recovery zones, the history of programmatic (framework) consultations for the grizzly bear has been iterative and rather complex. The following is a summary of previous programmatic consultations that considered the effects of the Lolo Forest Plan on grizzly bears.

- During the early 1980s, standards and guidelines were developed and incorporated into the Lolo Forest Plan which were intended to assist managers in coordinating forest management activities in a manner that would facilitate recovery of the grizzly bear. On May 10, 1982, USFWS issued its first biological opinion (BO) on the Lolo Forest Plan. The BO concluded that implementation of the Forest Plan is not likely to jeopardize the continued existence of the grizzly bear, bald eagle, peregrine falcon, and gray wolf. The USFWS reaffirmed in 1985 that the BO was still valid, prior to final approval of the Lolo Forest Plan in 1986. It is noteworthy that the bald eagle, peregrine falcon, and gray wolf have since been delisted. Actions taken under the guidance of the Forest Plan contributed to recovery of these species.

- During the 1990s, the Forest developed a more detailed grizzly bear recovery strategy that included definitions, standards, and guidelines for road densities within Bear Management Analysis Areas, activity scheduling, and displacement areas within grizzly bear recovery areas on Lolo NF lands. On May 24, 1996, USFWS administratively amended the 1982 biological opinion on the Forest Plan to include an incidental take statement regarding the effects of motorized route density on grizzly bears. For the portion of the Lolo NF within the Northern Continental Divide Ecosystem recovery zone, the terms and conditions specified compliance with the NCDE Access Management Task Group recommendations for open motorized access density, total motorized access density, and core area (sometimes referred to as 19-19-68). For the portion of the Lolo NF within the Cabinet-Yaak recovery zone, the terms and conditions specified that the Forest must participate in the Interagency Grizzly Bear Committee (IGBC) Subcommittee's development of recommendations for open motorized access density, total motorized access density, and secure core, and adopt the recommendations within five years of their completion.

- The Selkirk/Cabinet-Yaak Subcommittee approved the Interim Access Management Rule Set in December of 1998 (IGBC 1998). In response to the rule set and a subsequent lawsuit, the Kootenai, Lolo, and Idaho Panhandle NFs prepared a Final Environmental Impact Statement (EIS) released in March 2002 and issued the Record of Decision (ROD) on March 24, 2004. The selected alternative amended grizzly bear objectives, standards, and guidelines in the three Forest Plans and incorporated the terms and conditions identified in the USFWS biological opinion. The decision required analysis of open motorized route density, total motorized route density, and core area within Bear Management Units (BMUs) in the Selkirk and Cabinet-Yaak recovery zones, and the effects of resource management activities on grizzly bears outside the Cabinet-Yaak recovery zone on the Lolo NF. Subsequent litigation resulted in setting aside the 2004 decision, with a remand to the Forest Service ordering preparation of a new environmental analysis. A Supplemental EIS was prepared and the Record of Decision was issued on November 9, 2011 to amend the Kootenai, Lolo, and Idaho Panhandle National Forest Plans for motorized access management within the Selkirk and Cabinet-Yaak grizzly bear recovery zones. The 2011 ROD established individual habitat security standards for each BMU based on biological and non-biological factors (USDA Forest Service 2011). The 2011 ROD also addressed mapped areas

of recurring use by grizzly bears outside of the recovery zones, known as BORZ. Recurring use areas are defined areas as having three or more credible observations of grizzly bears within the past 15 years. In the BORZ, no increase in linear road density is allowed, except for a temporary increase that has been through subsequent project-level analysis and consultation. No areas on the Lolo NF have met the criteria for recurring use by bears in 2011 or subsequently, and therefore no BORZ were or have been delineated on the Forest. The biological opinion issued by USFWS on October 18, 2011, concluded that the selected alternative was not likely to jeopardize the continued existence of grizzly bears.

- On January 9, 2020, USFWS amended the 2011 biological opinion to extend incidental take coverage for the Lolo National Forest portion of the Cabinet-Yaak grizzly bear recovery zone through November 2022, or the date of completion of ongoing actions bringing the Forest into compliance with the access standards, whichever occurs first. The Forest Service issued a final Decision Notice on May 26, 2021, for the BMU 22 Compliance project. This decision changes the travel management designation of specific roads and trails and authorizes decommissioning and storage treatments for specific road segments to bring BMU 22 of the Cabinet-Yaak grizzly bear recovery zone into compliance with Forest Plan wheeled motorized access standards. The routes closed will be included in the monitoring program wherein at least 30 percent of the closure devices (gates and barriers) within the Cabinet-Yaak Recovery Zone are to be monitored annually.

- Due to the increasing frequency of grizzly bear occurrence outside of the NCDE recovery zone, the Lolo NF reinitiated consultation for Lolo NF lands within the Northern Continental Divide recovery zone and the adjoining grizzly bear distribution area outside this recovery zone in the early 2000s. The action area for consultation purposes outside the NCDE recovery zone included approximately 71,000 acres within the Lolo NF boundaries: 62,922 acres on the Seeley Lake RD, about 7,500 acres of upper elevation land on the Ninemile Ranger District along the Forest boundary with the Flathead Indian Reservation between Butler Creek drainage and Marion Creek drainage, and about 600 acres on the Missoula Ranger District. USFWS issued a BO on August 30, 2004, that administratively amended the 1982 opinion and the 1996 incidental take statement on the Forest Plan. The 2004 Biological Assessment and Biological Opinion addressed the effects of the Lolo Forest Plan and supplemental management direction related to motorized access, livestock grazing, and food storage/sanitation on the grizzly bear because the agencies agreed these were the programs most likely to cause adverse effects and incidental take of grizzly bears. USFWS concluded that the BO and incidental take statement from 1982 and 1996 adequately addressed the effects of *access management* on grizzly bears within the recovery zone. Therefore, the 2004 BO focused on the effects of *all three programs* on grizzly bears outside of the NCDE recovery zone within the distribution area on the Lolo NF and on the effects of *food storage and livestock grazing* on grizzly bears occurring within the NCDE recovery zone. USFWS concluded that Forest Plan direction and management strategies conducted under the Plan are not likely to jeopardize the continued existence of the NCDE grizzly bear population. The incidental take statement included a reasonable and prudent measure and a term and condition that would minimize incidental take, along with reporting requirements and instructions for periodic review of the environmental baseline. To quantify incidental take, USFWS established a surrogate measure of 2 miles of road construction over 4 years, based on the history of road construction that occurred in the mapped distribution area outside of the recovery zone during the period 2000-2003. The BO specified that at the end of the 4-year period, USFWS will review the

environmental baseline, including required monitoring reports to be submitted by the Forest, to determine if conditions warrant modification or extension of the take exemption.

- The Forest developed an access management strategy specifically for the Swan bear management unit (BMU) subunit of the NCDE. Consultation was reinitiated on the 1996 BO and incidental take statement, and a final BO was issued for the Swan BMU subunit on Oct. 19, 2011.

- On June 14, 2012, USFWS reviewed the updated environmental baseline, including monitoring reports provided by the Lolo NF, for the NCDE recovery zone and the defined distribution area outside of the recovery zone. The action area included areas where bears "may be present" as displayed in the 2012 NCDE monitoring report. USFWS noted the recent acquisition by the Forest Service of about 4,275 acres of Plum Creek Timber Company lands, but also stated that the roads on these lands had been included as part of the analysis of baseline condition in the 2004 BO. USFWS determined that the 2004 biological opinion and analysis on the effects on grizzly bears related to motorized access outside the recovery zone and livestock grazing and food storage outside and inside the recovery zone remain valid. An amended incidental take statement was issued for grizzly bears occurring in the defined distribution area outside of the recovery zone. The surrogate measure to quantify incidental take established in the 2004 BO was a net increase of 2 miles of new permanent or temporary roads during 2000-2003. During 2004-2010, the Forest did not construct any new roads and decommissioned 5.14 miles in the action area outside the recovery zone. Continuing to apply the surrogate measure of 2 miles and taking into account the 5.14 miles decommissioned, the Forest was authorized to construct up to 7.14 miles of road over the next 10-year period ending in 2022.

- In 2013, an interagency draft Conservation Strategy for the NCDE grizzly bear population was completed and made available for review. The latest, updated version of the Conservation Strategy that was approved by the NCDE Subcommittee, but has not yet been fully signed and executed, is available online (NCDE Subcommittee 2020). The Forest Service completed an EIS to incorporate updated habitat management direction informed by the Conservation Strategy into the Helena, Lewis and Clark, Kootenai, and Lolo National Forest Plans. The EIS used the draft Conservation Strategy available at that time, and the Conservation Strategy's recommendations for USFS lands have not changed in any substantive way since then. The Record of Decision for the NCDE grizzly bear amendments was issued in December 2018. Specific to the Lolo NF, the amendment added forest plan direction covering the portion of the Forest within the NCDE recovery zone/primary conservation area (PCA), zone 1, and the Ninemile demographic connectivity area. On November 21, 2017, USFWS concurred with the determinations that the proposed action "may affect, and is not likely to adversely affect" bull trout, bull trout critical habitat, Canada lynx, and Canada lynx critical habitat; concurred with the determination that the proposed action "may affect, but is not likely to jeopardize" the then-proposed North American wolverine; and transmitted a biological opinion on the effects of the amendments on grizzly bears in the NCDE. The BO included an incidental take statement to minimize the potential for incidental take as a result of implementing the amended forest plan direction within the recovery zone/PCA. The BO noted that several previous programmatic BOs and incidental take statements have been issued to the four Forests and remain in effect, including the biological opinion on the Forest Plan for the Lolo NF, as amended in 2004. It should be noted that the 2004 incidental take statement, amended in 2012 as explained above, does not cover either NCDE zone 1 or the Ninemile demographic connectivity area in their entirety.

- Past Lolo Forest Plan consultations have not analyzed effects on grizzly bears in the Bitterroot recovery zone because no grizzly bears were present there. On December 18, 2000, the Bitterroot Ecosystem population was designated a nonessential experimental population and a Bitterroot Grizzly Bear Experimental Population Area (BGBEPA) was established within which grizzly bears could be reintroduced under certain conditions (50 CFR 17.84(l)). The nonessential, experimental population rule was written to cover grizzly bears that would be released into the BGBEPA. In a letter dated January 21, 2020, USFWS confirmed that no grizzly bears have been released into the BGBEPA, but that a radio-collared bear had travelled on its own from the Cabinet-Yaak recovery zone to the BGBEPA. As of this date, there is not a grizzly bear population, defined as two or more reproductive females or one female reproducing during two separate years, existing in the Bitterroot recovery zone. USFWS now officially considers that grizzly bears "may be present" throughout western Montana, including the BGBEPA. An individual grizzly bear is fully protected under the ESA as a Threatened species wherever it occurs in the lower 48 states, including any bear that moves on its own into the BGBEPA.

Reinitiation of consultation on the Forest Plan

ESA identifies four conditions in which the federal agency must request reinitiation of consultation (50 CFR 402.16). Reinitiation of formal consultation is required where discretionary federal agency involvement or control over the action has been retained (or authorized by law) and if:

- new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to the extent not considered in the opinion;
- the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat in a manner or to extent not considered in this opinion;
- the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the opinion; or
- a new species is listed or critical habitat is designated that may be affected by the action.

As explained in the following section, the Forest is requesting reinitiation of ESA section 7 consultation for the grizzly bear. Reinitiation of consultation on the forest plan is not necessary for any other listed species at this time. The forest-wide analysis provided in this BA updates the analyses of ongoing effects associated with the environmental baseline as well as foreseeable effects of continued implementation of the 1986 Lolo Forest Plan, as amended, on the grizzly bear.

Listed species and designated critical habitat

In accordance with section 7(c) of the ESA, the USFWS determines where the listed entities "may be present" for consultation purposes. The most recent species list for the Lolo NF, dated October 1, 2021, was obtained from the Montana Field Office's web site (USFWS 2021c) and includes the following entities:

- Grizzly bear (Threatened)
- Canada lynx (Threatened) and Canada lynx critical habitat
- Bull trout (Threatened) and bull trout critical habitat
- Spalding's "campion" catchfly (Threatened)
- Yellow-billed cuckoo (Threatened) - western distinct population segment
- Whitebark pine (Proposed for listing)
- Monarch butterfly (Candidate).

Grizzly bear

The grizzly bear was listed as a threatened species in the lower 48 states on July 28, 1975. No critical habitat has been designated. A recovery plan was completed in 1993 (USFWS 1993) with chapters for the Bitterroot Ecosystem added in 1996 (USFWS 1996) and the North Cascades in 1997 (USFWS 1997).

The Lolo NF straddles three grizzly bear recovery zones: Cabinet-Yaak, Northern Continental Divide, and Bitterroot. Previous programmatic consultations have been completed for the CYE and NCDE recovery zones and for lands adjacent to the NCDE that are within the Ninemile demographic connectivity area and Zone 1 (table 1). On the remaining portion of the Lolo NF, there has been no programmatic consultation on the effects of the Forest Plan on the grizzly bear. Grizzly bears are now occurring with greater frequency outside of the Cabinet-Yaak and NCDE recovery zones. USFWS has determined that the grizzly bear "may be present" across the Forest, and therefore reinitiation of programmatic consultation is needed for the portions of the Forest not previously covered.

The 2004 Biological Opinion on the Lolo Forest Plan and the 2011 review and update of the incidental take statement established 2022 as the deadline for the next update of the environmental baseline. By reinitiating consultation on the Forest Plan at this time, a separate update of the environmental baseline in 2022 will not be necessary.

Table 1. Programmatic Biological Opinions (BO) and Incidental Take Statements (ITS) for grizzly bear currently in place on various portions of the Lolo NF. Reporting requirements of the BOs are listed in Appendix 3.

Portion of the Lolo National Forest	Year BO was issued	ITS coverage
Lolo NF land within the Cabinet-Yaak recovery zone	2011, reaffirmed in 2020	Yes, extended to 2022
Lolo NF land in the Swan BMU Subunit	2011	Yes
Lolo NF land within the NCDE recovery zone	2017	Yes
Lolo NF land within the NCDE Zone 1 and Ninemile Demographic Connectivity Area (DCA)	2017	Covered in part by 2004 BO [1]
Lolo NF land within a defined "bear distribution area" adjacent to the NCDE (partially overlaps with NCDE Zone 1 and Ninemile DCA)	2004; baseline reviewed and incidental take statement updated in 2012	Yes, requires review of environmental baseline for 2012-2022 period
Lolo NF land within the Bitterroot recovery zone	N/A	No
Remaining Lolo NF land outside of the areas listed above	N/A [1]	No [1]

[1] In areas lacking Forest Plan consultation, some site-specific consultations for projects have been conducted.

Canada lynx and Canada lynx critical habitat

The Canada lynx was listed as Threatened on March 4, 2000 for the contiguous United States distinct population segment (DPS) (65 FR 16052–16086). The single factor identified as threatening the lynx DPS was the inadequacy of existing regulatory mechanisms, specifically the lack of guidance for conservation of lynx in Forest Service forest plans and BLM land use plans. The final rule designating lynx critical habitat was published on Sept. 12, 2014 (79 FR 54782–54846). A recovery outline was published on Sept. 14, 2005 (USFWS 2005) but a recovery plan has not been completed.

The lynx was not listed under the ESA at the time when the 1986 Lolo Forest Plan was approved. Lynx are known to occur on the Lolo NF (USDA Forest Service 2007) and 54 lynx analysis units have been delineated on the Forest. Based on extensive surveys and research conducted since 1998, lynx are known

to occur in all lynx analysis units on the Lolo NF that lie north of Interstate 90 and east of Montana Highway 93. The western portion of the Lolo NF does not support resident lynx and is a secondary area.

The effects of implementing the forest plan on Canada lynx were previously evaluated and consulted upon as part of the Northern Rockies Lynx Management Direction (NRLMD) (USDA Forest Service 2007). The effects of the NRLMD on designated lynx critical habitat were subsequently evaluated for National Forest System lands where the NRLMD applies, and that are designated as critical habitat within Critical Habitat Units 3 and 5 (USDA Forest Service 2017b). The NCDE grizzly bear amendments (USDA Forest Service 2017a) also evaluated the effects on lynx and lynx critical habitat on the Lolo NF. There are no changes being proposed to the forest plan and there is no new information indicating that the effects of the forest plan on lynx or their critical habitat have changed from those described for the NRLMD and the NCDE amendments. At this time there is no need to reinitiate consultation on the effects of the forest plan on the Canada lynx or its critical habitat.

Bull trout

The bull trout was listed as threatened in the Columbia River basin on June 10, 1998 and across its range in the coterminous United States in 1999 (63 FR 31647–31710, June 10, 1998; 64 FR 58910–58933, Nov. 1, 1999). The listing decision stated that the decline of bull trout is primarily due to habitat degradation and fragmentation, blockage of migratory corridors, poor water quality, past fisheries management practices, and the introduction of nonnative species. USFWS designated critical habitat for bull trout throughout the range in the United States on Oct.18, 2010 (75 FR 63898–64070). The recovery plan for the coterminous United States population of bull trout was finalized in 2015 (USFWS 2015).

The bull trout was not listed under the ESA at the time when the 1986 Lolo Forest Plan was approved. In 1995, prior to the listing of bull trout and bull trout critical habitat, forest plans were amended by the Inland Native Fish Strategy (INFISH). INFISH provides standards and guidelines to limit management actions that may impact aquatic species (USDA Forest Service 1995). A biological opinion on the effects to bull trout of continued implementation of multiple forest plans/resource management plans as amended by INFISH and PACFISH was completed in 1998 (USFWS 1998). The BO concluded that the action is not likely to jeopardize the continued existence of bull trout in the Columbia and Klamath River Distinct Population Segments. An incidental take statement was provided. A subsequent (April 15, 2015) ESA section 7 consultation was completed for road related activities that may affect bull trout and bull trout critical habitat on the national forests in western Montana, including the Lolo National Forest.

The Lolo National Forest is within the Columbia Headwaters recovery unit. The Forest provides stream and lake habitat within six identified bull trout core areas: Upper Clark Fork River, Rock Creek, Blackfoot River, Clearwater River, Bitterroot River, and Middle Fork Clark Fork River. The conservation strategy for bull trout on USFS lands in western Montana (USDA Forest Service 2013) noted that bull trout restoration activities have been ongoing in western Montana for many years to maintain, improve, or expand functional, resilient, and secure watersheds that provide high quality spawning and rearing habitat.

There are no changes being proposed to the Lolo Forest Plan at this time. There is no new information indicating that there are effects that have not previously been considered. At this time there is no need to reinitiate consultation for the effects of the forest plan on the bull trout or on bull trout critical habitat.

Spalding's catchfly

Spalding's catchfly was listed as a Threatened species under the ESA on October 10, 2001 (66 FR 51597-51606). A recovery plan was completed on Oct. 12, 2007 (72 FR 58111-58112).

Spalding's catchfly is a regional endemic plant found predominantly in bunchgrass grasslands and sagebrush-steppe, and occasionally in open pine communities, in eastern Washington, northeastern Oregon, west-central Idaho, western Montana, and the southern edge of British Columbia, Canada. As of 2007, there were 99 known populations of Spalding's catchfly (72 FR 58111). According to a five-year review completed in 2009, ten additional populations had been found, none of which were in Montana, and all were located within the known distribution (USFWS 2009). USFWS initiated a five-year status review for 76 listed species including the Spalding's catchfly on February 12, 2016 (81 FR 7571-7573), which has yet to be completed.

Spalding's catchfly was listed well after completion of the 1986 Forest Plan and was not addressed in the forest plan or its associated section 7 consultation. Surveys to date have not confirmed the presence of this plant on the Lolo NF. The analysis of the effects of the 2018 NCDE grizzly bear amendments determined that there would be no effect on this species or its prairie habitat.

There are no changes being proposed to the Lolo Forest Plan, and no evidence that the species is present on the Forest. Therefore, there is no need to initiate consultation on the Spalding's catchfly at this time.

Yellow-billed cuckoo

The western distinct population segment (DPS) of the yellow-billed cuckoo was listed as Threatened on Oct. 3, 2014 (79 FR 59992–60038), long after completion of the 1986 forest plan. The DPS includes the area west of the Continental Divide in Montana. Critical habitat has not been designated for this species; a proposed rule published on Aug. 15, 2014 for designating critical habitat does not include any areas in Montana (79 FR 48548-48652). The primary threats identified in the 2014 listing rule were the loss and degradation of habitat from altered watercourse hydrology and natural stream processes, livestock overgrazing, encroachment from agriculture, and conversion of native habitat to predominantly nonnative vegetation. Additional threats included the effects of climate change, pesticides, wildfire, and small and widely separated habitat patches. On June 27, 2018, USFWS acknowledged that a petition to delist the western DPS had significant information that such an action may be warranted.

Nesting habitat for the western yellow-billed cuckoo is typically relatively large (50–200 ac) stands of riparian cottonwood–willow forest (Laymon and Halterman 1989), characterized by dense canopy closure and with dense patches of small native trees (Stanek et al. 2021). Isolated or narrow, linear patches of riparian habitats that are not suitable for nesting may provide important migratory stopover habitat (Halterman et al. 2015).

There are fewer than ten confirmed sightings and no breeding records from Western Montana (Montana Natural Heritage Program Field Guide, 02/2021). Because the yellow-billed cuckoo occurs at low density, is secretive, and arrives relatively late to breeding areas, it is not well sampled by traditional breeding bird surveys. In western Montana, suitable habitat is most likely to occur along the Bitterroot, Clark Fork, Flathead, and Kootenai Rivers. The western subspecies has not been documented to occur on the Lolo NF, although suitable habitat (riparian woodlands dominated by cottonwoods with dense understories of willows and other shrubs) may exist on the Forest west of the Continental Divide.

Analysis of the effects of the 2018 NCDE grizzly bear amendments determined that the species is not likely to be present, the management of riparian deciduous habitat would not be altered, and there would be no effect to the western DPS of the yellow-billed cuckoo on the eastern portion of the Forest.

The wildlife specialist's report for the Wildfire Adapted Missoula project stated that a recent playback survey designed to increase detection rates of yellow-billed cuckoos was conducted within the project

area and found no evidence that the species was present (Fontaine 2021). Habitat conditions near the confluence of the Bitterroot and Clark Fork Rivers may be suitable for migratory stopover, but the small, often homogeneous riparian woodlands lack the necessary conditions to support breeding populations.

The yellow-billed cuckoo was not addressed in the forest plan because it was not listed at that time. The forest plan provides direction (including the INFISH amendment) for watershed and stream protection and for management of livestock grazing (see appendix 2), and does not contemplate conversion of national forest land to agricultural use or conversion to nonnative species. Implementation of the forest plan is not expected to cause or exacerbate the threats due to climate change, pesticides, wildfire, or the fragmented habitat distribution of the yellow-billed cuckoo. There are no changes being made to the Lolo Forest Plan at this time.

If any yellow-billed cuckoos were to occur on the Forest, it would most likely be for migratory stopover. Existing forest plan direction protects riparian habitats. Site-specific analyses will be completed for the effects of all projects that may affect this species or its riparian habitat. There is no need to initiate programmatic consultation on the yellow-billed cuckoo western DPS at this time.

Whitebark pine

Whitebark pine was proposed for listing as a Threatened species on December 2, 2020 (85 FR 77408). No critical habitat was proposed. The Species Status Assessment Report for the Whitebark Pine (USFWS 2018) determined that the primary stressor affecting the conservation status of the whitebark pine is the white pine blister rust, a fungal disease caused by the nonnative pathogen *Cronartium ribicola*. Whitebark pine is also impacted by the native mountain pine beetle (*Dendroctonus ponderosae*), altered fire regimes, and the effects of climate change (USFWS 2018). USFWS stated that most federal actions including, for example, recreation, livestock grazing, road construction, campground management, special use permits, and prescribed burns are unlikely to pose a threat to the species, and that the majority of federal actions are unlikely to overlap the restricted, high-elevation distribution of the whitebark pine nor impact the species at a range-wide scale (USFWS Wyoming Ecological Services 2021).

Conferencing on whitebark pine is voluntary at this time. USFWS has indicated its intention to develop a programmatic consultation approach for the whitebark pine, should it be listed under a final rule, to provide an option for action agencies to satisfy their obligations under section 7 of the ESA. Therefore, the Lolo NF is not requesting conferencing as part of this forest plan consultation.

Monarch butterfly

On December 15, 2020, the U.S. Fish and Wildlife Service announced that listing the monarch as endangered or threatened under the Endangered Species Act is warranted, but precluded by higher priority listing actions. Therefore, the monarch butterfly is a candidate species. Candidate species receive no statutory protection under the ESA, but this classification is meant to encourage cooperative conservation efforts for these species until such time as a listing decision can be made.

Adult monarch butterflies are nectar feeders. Monarchs lay their eggs exclusively on milkweed, the sole source of food for monarch caterpillars. There are two long-distance migratory monarch populations in North America. The largest population is east of the continental divide and overwinters in the mountains of central Mexico. Monarchs west of the continental divide overwinter primarily along coastal California. In eastern North America, monarchs travel north in the spring, from Mexico to Canada, over two to three successive generations, breeding along the way. Western monarchs continue to occupy and breed in warmer climates throughout the summer. The final generation in the fall makes the return trip to wintering sites in Mexico and coastal California. Unlike previous generations, which complete their life

cycle in four weeks, these "super generation" monarchs live for six to eight months and may travel thousands of miles to return to wintering grounds. These monarchs then begin the multi-generational migration the following spring. Because monarchs travel long distances, it is critical to maintain reliable sources of nectar plants for them to feed on and ample milkweed on which to lay their eggs.

Census data at the North American overwintering sites indicate long-term declines in the population abundance in both eastern and western populations (USFWS 2020). The primary drivers affecting the health of the two North American migratory populations are: loss and degradation of habitat (from conversion of grasslands to agriculture, widespread use of herbicides, logging/thinning at overwintering sites in Mexico, senescence and incompatible management of overwintering sites in California, urban development, and drought), continued exposure to insecticides, and effects of climate change.

The monarch species status assessment report (USFWS 2020) estimated a high probability of extinction for the western population (60% to 68% chance within 10 years, reaching 99% by year 60) under current conditions and an even higher probability under projected future conditions. For the eastern population, the probability of extinction under current conditions ranges from 48% to 69% in 60 years, and increases under the projected future conditions to a range of 56% to 74%. Additionally, at the current and projected low population numbers, both the eastern and western populations are more vulnerable to catastrophic events (e.g., extreme storms) than in the past, although these risks were not captured in the probability of extinction estimates.

Candidate species are typically added to the Regional Forester's sensitive species list or, for revised forest plans, to the Forest Supervisor's list of species of conservation concern. The monarch butterfly, although it is being considered, at this time has not been added to the Region 1, Regional Forester's sensitive species list. For ESA purposes, the Forest recognizes the monarch butterfly as a candidate species for federal listing and will follow ESA requirements and if the U.S. Fish and Wildlife Service lists the monarch butterfly as threatened or endangered, then the Forest will complete any necessary consultation.

Proposed action for consultation purposes

A forest plan provides an integrated plan for land and resource management. The proposed action is to continue to implement the 1986 Lolo National Forest Plan (USDA Forest Service 1986), as amended to date, until such time as the Plan is revised.

The Lolo NF anticipates beginning revision of the 1986 Forest Plan in 2023. Plan revision is expected to be completed by 2026 at the earliest. Therefore, we assume that this consultation will be in effect for 5 to 10 years before being reviewed and updated as part of the revision process.

Existing management direction (forest-wide, by management area, and specific to the Cabinet-Yaak and NCDE recovery zones) that may affect grizzly bears on the Lolo NF is listed in detail in appendix 2. Outside of the recovery zones and the NCDE zone 1 and Ninemile DCA, there is no forest plan direction that specifically addresses the management of grizzly bears.

Broad Forest-wide goals, objectives and standards in the Lolo Forest Plan that are aimed at conservation of threatened and endangered species include the following:

1. A forest-wide goal to contribute to the recovery of threatened and endangered species to non-threatened status. (Goal #7, p. II-1)
2. A forest-wide objective to regulate human access and use in occupied grizzly bear habitat and to use tools such as prescribed burning to enhance food-producing areas and improve habitat. (Objectives, p. II-2)

3. A forest-wide standard that management practices in habitat of threatened and endangered species must be compatible with the needs of each species, consistent with the goal of recovery to non-threatened status. (Standard #27, p. II-14)

This biological assessment does not analyze site-specific project actions. Rather, it describes the environmental baseline and considers the likely effects of actions that the Lolo NF may authorize in the future that are consistent with the Forest Plan management direction but may result in effects to individual grizzly bears.

Action area for this consultation

The Lolo National Forest encompasses approximately 2,230,167 acres in west central Montana west of the Continental Divide, in portions of Flathead, Granite, Lake, Lewis and Clark, Mineral, Missoula, Powell, Ravalli, and Sanders Counties. The Lolo NF is influenced by both continental and maritime climates, resulting in a wide range of environmental gradients and diverse wildlife habitats. Elevations range from less than 2,400 feet on the Clark Fork River below Thompson Falls to Scapegoat Mountain at 9,202 feet. The Lolo NF contains more than 100 named lakes, nearly 1,000 named streams, and five major rivers. Four wilderness areas are located at least partly on the Lolo NF: Rattlesnake, Welcome Creek, Scapegoat, and Selway-Bitterroot Wilderness Areas.

Figure 1 in Appendix 1 shows the location of the Lolo National Forest in relationship to the grizzly bear recovery zones identified in the grizzly bear recovery plan (U.S. Fish and Wildlife Service 1993), including the Cabinet-Yaak, Northern Continental Divide, and Bitterroot Ecosystem recovery zones.

This consultation is forest-wide, including lands administered by the Missoula, Ninemile, Plains-Thompson Falls, Seeley Lake, and Superior Ranger Districts of the Lolo NF. This scope provides the appropriate context for analysis of potential effects of management direction applicable to recovery zones and other portions of the Lolo NF outside recovery zones.

In total, 20 percent of the Forest lies within a grizzly bear recovery zone and 80 percent is outside of the recovery zones (table 2). A subset of the acreage outside of the recovery zones is located within areas identified as part of the NCDE grizzly bear amendment (USDA Forest Service 2018) as NCDE Zone 1 and the Ninemile demographic connectivity area.

Table 2. Acres of Lolo NF land outside and within grizzly bear recovery zones *(from Forest GIS data, August 2020).*

Acres of Lolo National Forest	Acres	Percent
Lolo NF land within the Cabinet-Yaak recovery zone	145,782	7%
Lolo NF land within the Northern Continental Divide recovery zone	269,822	12%
Lolo NF land in NCDE Zone 1 (adjoining NCDE recovery zone)	173,099	8%
Lolo NF land in Ninemile DCA (adjacent to NCDE recovery zone)	256,229	11%
Lolo NF land within the Bitterroot recovery zone	9,802	<1%
Remaining Lolo NF land outside of the above areas	1,375,433	61%
Total	**2,230,167**	**100%**

Grizzly bear population status and distribution

The historical range of the grizzly bear in the continental United States extended from the central Great Plains, west to California, and south to Texas and Mexico. As European settlement expanded westward,

the grizzly bear was extirpated from most of its historical range (USFWS 1993). Between 1800 and 1975, grizzly bear populations in the lower 48 states are estimated to have declined from over 50,000 to fewer than 1,000 individuals.

The grizzly bear was listed as a threatened species in the lower 48 states in 1975. No critical habitat has been designated. The most recent five-year review, published in March 2021, concluded that "the grizzly bear in the lower-48 States does not meet the definition of an endangered species, but does meet the definition of a threatened species in accordance with Section 3(6) and 3(20) of the Act" (USFWS 2021b).

Recovery zones are defined as areas that are necessary for the recovery of the species and are to be managed with an emphasis on conserving habitat. The grizzly bear recovery zones were intentionally delineated to contain a large proportion of federal lands, including wilderness and National Park lands that are protected from the influence of many types of human uses and activities that occur on lands elsewhere. In Montana, Wyoming, Idaho, and Washington, there are five recovery zones occupied by grizzly bears: Greater Yellowstone, Northern Continental Divide, Cabinet-Yaak, Selkirk, and Northern Cascades Ecosystems (figure 1 in appendix 1). These areas represent less than two percent of the grizzly bear's historical range (USFWS 1993). The grizzly bear recovery plan also identified two areas not occupied by a population of grizzly bears as potential recovery zones: Bitterroot in Montana and Idaho, and San Juan in Colorado (USFWS 1993).

Grizzly bear populations in the lower 48 States have significantly expanded since the time of listing in 1975 and now occupy approximately six percent of their historical range in the lower-48 States (Haroldson et al. 2020, cited in USFWS 2021b).

The location of the Lolo National Forest relative to the occupied and potential grizzly bear recovery zones in Montana, Idaho and Washington is shown in figure 1 (appendix 1). The Lolo National Forest has 145,782 acres within the Cabinet-Yaak recovery zone, 269,822 acres within the NCDE recovery zone, and a small piece (9,802 acres) of the Bitterroot recovery zone. As of 2021, USFWS considers that grizzly bears "may be present" on most, if not all, of the Lolo NF.

Cabinet-Yaak Recovery Zone

The Cabinet-Yaak recovery zone is located in northwestern Montana and northeastern Idaho. The grizzly bear population extends through the Purcell Mountain Range into Canada and the interchange of bears across the border is well documented. The portion of the CYE recovery zone that is on the Lolo NF is in the Mt. Headley BMU, also referred to as BMU 22.

As of 1988, research in the Cabinet Mountains indicated that only a small population of perhaps 10 bears remained. Concerns regarding the ability of the grizzly bear population to persist within the Cabinet Mountains led to a successful program to augment that population with bears from the NCDE. All methods of detection (capture, collared individuals, DNA sampling, photos, and credible observations) indicated that a minimum of 54 individual grizzly bears were alive in the Cabinet-Yaak grizzly bear population at some point during 2018 (25 in the Cabinet Mountains and 29 in the Yaak) (Kasworm et al. 2020). As an indicator of the distribution of grizzly bears across the recovery zone, the authors also reported that 11 of the 22 BMUs had sightings of females with young. Numbers of females with cubs in the Cabinet-Yaak recovery zone averaged 3 per year, varying from two to five during 2014–2019. The probability that the population is stable or increasing was estimated to be about 60 percent.

There are few records of grizzly bears occurring in the Mt. Headley BMU, and at present it is not known to be occupied by any female grizzly bears with young (Kasworm et al. 2020). In 2017-2018, one marked subadult male grizzly bear used a portion of this BMU as part of its life range (Kasworm et al. 2020, p.

96). Two known mortalities of male grizzly bears in or near the Mt. Headley BMU occurred in Fishtrap Creek Watershed in 2008 and in the Little Thompson River Watershed, just outside of BMU 22, in 2014 (Kasworm et al. 2020, table 1).

Northern Continental Divide Recovery Zone

The NCDE recovery zone is located in northwestern and north central Montana, and includes Glacier National Park, portions of the Flathead, Kootenai, Lolo, and Helena-Lewis and Clark National Forests, and part of the Blackfeet Indian Reservation. The portion of the NCDE recovery zone located on the Lolo NF is divided into three BMUs (Rattlesnake, Upper South Fork Flathead, and Monture/Landers Fork) and seven BMU subunits.

The NCDE recovery zone has been occupied by grizzly bears continuously since before the species was listed under the ESA. Mace et al. (2012) estimated grizzly bear population vital rates and trend for the NCDE using radiotelemetry data collected between 2004 and 2009. The authors reported an increasing population trend, estimating a mean annual rate of approximately 3% and an overall population size of more than 1,000 grizzly bears residing in and adjacent to this recovery area. Females with young have been documented consistently in all 23 BMUs of the NCDE as well as throughout the surrounding Zone 1 that is included in population monitoring (Costello and Roberts 2021). The NCDE grizzly bear population has continued to expand geographically, with an estimated 35% of the occupied range of grizzly bears being outside of the combined recovery zone/PCA and Zone 1 by 2018 (Costello and Roberts 2019). Recovery efforts, including actions undertaken by the Forest Service, have led to stable to increasing numbers, an expanding distribution, and increasing genetic diversity of the NCDE grizzly bear population.

Bitterroot Recovery Zone

The Bitterroot recovery zone lies along the boundary between east central Idaho and western Montana. There does not appear to be a resident population of grizzly bears in the Bitterroot recovery zone according to USFWS. Recently, however, there have been a few observations of individual grizzly bears reported in and near the Bitterroot recovery zone. For example, one radio-collared bear is known to have moved from the Cabinet Mountains into the Bitterroot Mountains in 2019. Because there is not a resident population of grizzly bears, no BMUs have been delineated for the Bitterroot recovery zone.

On November 17, 2000, USFWS published a final rule designating the Bitterroot a nonessential, experimental population (65 FR 69624-69643), meaning this is an area where a reintroduction program could be undertaken. The Bitterroot Experimental Population Area is much larger than the Bitterroot recovery area and includes Lolo NF lands west of Missoula and south of the Clark Fork River. On January 21, 2020, the USFWS confirmed that the 10(j) rule for the Bitterroot grizzly bear experimental population area does not apply to grizzly bears that dispersed into the area on their own, and therefore section 7 consultation requirements pertain to these individuals.

Grizzly bears that occur in areas outside of the recovery zones

Grizzly bears are known to occur outside of the recovery zones and may be present anywhere on the Lolo NF. The grizzly bear recovery plan anticipated that grizzly bears can and will exist outside the boundaries of the recovery zones (USFWS 1993), but that only grizzly bears that reside within the recovery zones are necessary to achieve the recovery goals. Inside the recovery zones, it is a priority to manage or conserve grizzly bear habitat, while outside the recovery zones a lower level of emphasis is appropriate.

The distribution of grizzly bears in Montana has gradually expanded outside of the recovery zones, with recent observations on the Lolo NF south of I-90 and west of Montana highway 93. In recognition of this grizzly bear expansion, the NCDE Conservation Strategy (NCDE Subcommittee 2020) identified Management Zone 1 and the demographic connectivity area (DCA) located outside the recovery zone. Zone 1 is a buffer area surrounding the recovery zone that is included for purposes of population monitoring. The NCDE Grizzly Bear Amendments added direction to the Forest Plan to reduce grizzly bear mortality risk in Zone 1 (appendix 2). Demographic connectivity areas also were identified, including the Ninemile demographic connectivity area (DCA) on the Lolo NF. DCAs are intended to support occupancy by female bears in order to bolster connectivity between recovery areas.

It is to be expected that any grizzly bears occurring outside the recovery zones are likely to experience a higher level of adverse impacts and to occur at lower densities than within the recovery zones. That being said, the ESA section 9 prohibition against taking a listed entity of fish or wildlife applies irrespective of where the animal occurs. Additionally, the areas outside of recovery zones play a role in supporting successful movement of both male and female bears between recovery zones.

Overview of grizzly bear ecology

Grizzly bears are large animals that have high metabolic demands during the non-denning season. Adequate nutritional quality and quantity are important factors for successful reproduction. Grizzly bears are omnivorous and use a wide variety of habitats, including meadows, shrublands, and forests, from valley bottoms through alpine habitats, to locate food sources. Available food sources vary annually, seasonally, and even day to day (USFWS 1993). Grizzly bears are dependent upon learned food locations within their home ranges and are able to change their diet according to which foods are available (Servheen 1983, Kendall 1986, Mace and Jonkel 1986, Aune and Kasworm 1989).

Grizzly bears excavate dens for winter hibernation, usually located in areas that will be covered with a blanket of snow (Craighead and Craighead 1972). Grizzly bears generally enter their dens about December and remain until about mid-March or late April. Males typically enter dens later in the fall and emerge earlier in the spring than do females. Both males and females tend to use the same general area for hibernation year after year, but the same den is rarely reused by an individual (Linnell et al. 2000). In the NCDE, most grizzly bear dens were documented at elevations above 6,400 feet in northwestern Montana (Mace and Waller 1997), with the average elevation somewhat higher on the Rocky Mountain Front (Aune 1994). Upon emergence from the den, grizzlies move to lower elevations, drainage bottoms, avalanche chutes, and big game winter ranges to exploit spring food resources.

Adult grizzly bears are normally solitary, except for females with cubs or during short breeding relationships. They will tolerate other grizzly bears at closer distances when food sources are concentrated, and siblings may remain together for several years following weaning from their mother (Egbert and Stokes 1976). Home ranges of subadult females generally overlap with the maternal home range (Blanchard and Knight 1991). Males consistently exhibit greater movement and less fidelity to home ranges than females (Blanchard and Knight 1991).

Home range size varies with availability of food resources, sex, age, reproductive status, and other factors (LeFranc et al. 1987, Blanchard and Knight 1991). Across their geographic range, home ranges for female grizzly bears are approximately 150 mi^2 (96,000 acres) (LeFranc et al. 1987). Females with cubs-of-the-year have the smallest home ranges (Blanchard and Knight 1991, Mace and Roberts 2011). The annual home range of adult male grizzly bears in the lower 48 States is typically 2 to 3 times the size of an adult female's annual home range (LeFranc et al. 1987).

In Montana, home ranges are smaller in the northern part of the state than home ranges farther to the south. For example, in the NCDE, female annual home range size (95% isopleth using the fixed kernel method) averaged about 50 mi^2 for females with cubs of the year and averaged about 93 mi^2 for subadult females (Mace and Roberts 2011). In the GYE, average home range size (using the minimum convex polygon method) was 108 mi^2 (281 km^2) for all adult females and 141 mi^2 (365 km^2) for subadult females (Blanchard and Knight 1991). Annual home range size for adult males in their Greater Yellowstone study area averaged 337 mi^2 (874 km^2).

Historically, grizzly bear populations persisted in landscapes without permanent human presence and where the frequency of contact with humans was low (Mattson and Merrill 2002). Maintaining blocks of secure habitat has been shown to be important to the survival and reproductive success of female grizzly bears (Mace et al. 1999, Schwartz et al. 2010).

Many studies across the range of the grizzly bear have reported that most human-caused mortalities of grizzly bears occur on or within 500 meters of a road open to motorized vehicle use (e.g., Benn and Herrero 2002, Boulanger and Stenhouse 2014, McLellan 2015). However, determining the number of human-caused mortalities can be difficult because many mortalities, from human or natural causes, may go unreported (McLellan et al. 1999, Kasworm et al. 2020).

Human-grizzly bear conflicts may lead to management removal of bears from the population. In the NCDE, human-bear conflicts at sites with frequent or permanent human presence and unsecured attractants, such as garbage, human foods, pet/livestock foods, and orchard fruit, have led to the majority of management removals of grizzly bears (Mace et al. 2012).

Environmental baseline

The environmental baseline is defined under the ESA regulations for interagency cooperation (50 CFR 402.02) as “the condition of the listed species or its designated critical habitat in the action area, without the consequences to the listed species or its designated critical habitat caused by the proposed action.” It 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 that have already undergone formal or early section 7 consultation, and the impact of State or private actions that are contemporaneous with the current consultation.

Projects in progress that are in the environmental baseline

The Forest has a number of projects underway that have completed ESA section 7 consultation, issued decisions, and begun implementation. Typically, Forest databases are not updated until after the action is completed on the ground. For the grizzly bear, the secure habitat layer is updated as project actions are completed. To portray the environmental baseline per the ESA section 7 regulations, Forest GIS data were updated to reflect the environmental baseline. The following vegetation and access management projects have either completed ESA section 7 consultation and the project actions have not started or started but are not complete, or the biological assessment has been submitted to the FWS but the consultation is still in process. However, only those projects that have completed consultation are included in the environmental baseline. Projects within the consultation process but have not completed consultation are presented in the table below for tracking purposes.

Table 3. Projects currently in the consultation process or implementation phase.

Project Name	Ranger District	Consultation Status	Work Completed on the Ground
Soldier Butler Project	Ninemile Ranger District	Consultation in process	No on the ground work has started
Sawmill-Petty Project	Ninemile Ranger District	Consultation in process	No on the ground work has started
Center Horse TAP	Seeley Lake Ranger District	Completed	No on the ground work has started
Rice Ridge Salvage	Seeley Lake Ranger District	Completed	Work has been completed except for pile burning and landing rehabilitation
Liberty Fire Salvage	Seeley Lake Ranger District	Completed	Work has been completed except for landing rehabilitation
Westside Bypass Wildfire Resiliency Project	Seeley Lake Ranger District	Consultation in process	No on the ground work has started
Redd Bull Project	Superior Ranger District	Consultation in process	No on the ground work has started
Cruzane Mountain Project	Superior Ranger District	Completed	No on the ground work has started
D7 Access Requests	Superior Ranger District	Completed	No on the ground work has started
A-BLT	Plains/Thompson Falls Ranger District	Consultation in process	No on the ground work has started
BMU 22 Compliance	Plains/Thompson Falls Ranger District	Completed	Motorized route work in progress

Forest Service programs and activities evaluated in this BA

The species status assessment for the grizzly bear (USFWS 2021a), the NCDE grizzly bear conservation strategy (NCDE Subcommittee 2021), and previous ESA section 7 consultations have identified and evaluated stressors that potentially have positive or negative effects at the individual and population levels. Habitat-related stressors that have the potential to negatively affect grizzly bears due to management of NFS lands include: motorized access management, developed recreation sites, recreation,

livestock grazing, vegetation management, minerals and energy exploration and development, connectivity, and climate change (USFWS 2021a, p. 99).

Conservation efforts can have positive effects by reducing or ameliorating stressors, or improving the condition of habitats or demographics of populations. On Federal lands, such conservation efforts may include: attractant removal and sanitation measures, such as food storage orders; land protections such as Wilderness Areas and Inventoried Roadless Areas (IRAs); conservation easements; information and education programs; and effective law enforcement (USFWS 2021a, p. 100).

The following provides an overview of ongoing conservation efforts by the Lolo NF. Next, the current environmental baseline is described for each of the habitat-related stressors listed above.

Ongoing grizzly bear conservation efforts

Food/attractant storage

Improperly stored food, garbage, livestock/pet feed and carcasses, and other attractants pose a significant risk of enticing grizzly bears into proximity to people, and/or habituating grizzly bears to human presence while seeking these foods (Gunther et al. 2004). Grizzly bears that obtain human foods may become food-conditioned, meaning that they will deliberately seek out and enter unsecured garbage receptacles, sheds, and other buildings in search of a food reward (Herrero and Higgins 2003). Ultimately, unsecured food/attractants often lead to the mortality of bears as a result of people defending their life or property or management removal by wildlife agency personnel. Bears are particularly susceptible to food conditioning during years of poor natural food production, such as a berry crop failure. Measures that make attractants inaccessible through proper storage or disposal have been shown to be very effective in reducing human-grizzly bear conflicts and the potential for injuries or mortalities.

On National Forest System lands, requirements for proper storage of food, garbage, or other attractants are established and enforced through issuance of special orders. The national forests within recovery zones that are occupied by grizzly bears began issuing food/attractant storage orders in the mid to late 1980s, and subsequently have updated and expanded the spatial extents of those orders.

The Lolo National Forest has had a forest-wide food/wildlife attractant storage special order in place since 2011. Food, carcasses, and attractants must be stored in a bear-resistant container or stored in a bear-resistant manner if they are unattended. In the front country (most of the Forest) these same items must be properly stored in camp at night unless they are being consumed or prepared for storage or transport. In some backcountry areas, these items may be attended instead of stored during the night. The special order and map are readily available to the public at Forest Service offices, trailheads, and on the Forest's web site at https://www.fs.usda.gov/detail/lolo/alerts-notices/?cid=stelprdb5287870.

The NCDE Grizzly Bear Amendments added a forest plan standard (NCDE-STD-WL-02) requiring that a food/wildlife attractant storage special order be in place on NFS lands within the NCDE primary conservation area, zone 1 (including the Ninemile demographic connectivity area), and zone 2. The Lolo NF's forest-wide food/attractant storage order covers these areas and complies with the forest plan standard. The food/attractant storage order is an important conservation action that has reduced the potential for human-bear conflicts and mortality risk.

Wilderness and Inventoried Roadless Areas

The Lolo NF has four wilderness areas – Rattlesnake, Welcome Creek, Scapegoat, and Selway-Bitterroot – and numerous inventoried roadless areas within its boundaries. For the Lolo NF as a whole, over 40%

of its land is within Wilderness and Inventoried Roadless Areas. Table 4 shows the distribution of Wilderness and Inventoried Roadless Area acreages in portions of the Forest that are inside or outside of the grizzly bear recovery zones.

Table 4. Acres of wilderness areas and inventoried roadless areas on the Lolo NF *(from Forest GIS data, May 2021)*

Portion of Lolo NF	Total Acres	Wilderness acres	Inventoried Roadless Area (IRA) acres	Wilderness plus IRA acres (percent)
Cabinet-Yaak recovery zone	145,782	0	67,305	67,305 (45%)
Northern Continental Divide recovery zone	269,822	94,433	127,979	222,412 (82%)
Bitterroot recovery zone	9,802	9,784	36	9,820 (100%)
NCDE zone 1 and Ninemile DCA	429,328	15,403	54,390	69,793 (16%)
Lolo NF land that is not in a recovery zone, NCDE zone 1, or Ninemile DCA	1,375,433	28,262	506,227	534,489 (39%)
Totals	**2,230,167**	**147,882**	**755,937**	**903,819 (41%)**

Interagency coordination

The Interagency Grizzly Bear Committee (IGBC) was formed in 1983 to work towards the recovery of the grizzly bear populations in the lower 48 states through interagency coordination of policy, planning, management, research, and communication. Subcommittees were established to implement the recovery plan in each of the identified recovery zones. The Lolo Forest Supervisor serves as a member of the IGBC's NCDE Subcommittee, Selkirk/Cabinet-Yaak Ecosystem, and Bitterroot Ecosystem Subcommittees (see http://igbconline.org/). Interagency coordination on grizzly bear management will be ongoing.

Information and education

A variety of information and education materials (e.g., pamphlets, brochures, signs, videos, etc.) and programs are provided to the public at Forest Service offices. Signs and brochures about bear identification and proper behavior and safety procedures in bear country are placed at campgrounds, trailheads, dispersed recreation sites, picnic areas, etc. Wilderness rangers and other patrols contact recreationists to inform and educate them on these topics. Forest Service employees are provided with information and training about working in bear habitat and the proper use of bear-deterrent pepper spray.

For many years, the Forest Service has coordinated with transportation agencies and railroad companies to seek to reduce the risk of collisions with grizzly bears and other wildlife. In addition, the Forest Service maintains the Wildlife Crossings Toolkit website at https://www.fs.fed.us/wildlifecrossings/index.php which was developed in partnership with the National Park Service, Federal Highway Administration, and the American Association of State Highway and Transportation Officials. This website provides state-of-the-art information for biologists, engineers, and transportation professionals to assist in reducing

human and wildlife injuries and mortalities and maintaining or restoring habitat connectivity across transportation infrastructure on public lands. These and other coordination efforts will be ongoing for the foreseeable future.

Land acquisition and conservation easements

Substantial land adjustments have changed private and corporate ownership to conservation organization ownership in recent years. The Montana Legacy Project purchased more than 310,000 acres of land owned by Plum Creek Timber Company for conservation protection beginning in 2008. These lands are located within the upper Clearwater Valley near Seeley Lake; the Lolo Creek watershed; the Mill Creek area near the city of Missoula; Fish Creek, Petty Creek, and Schwartz Creek watersheds; and in the Garnet Mountains between Potomac and Interstate 90. The Nature Conservancy and The Trust for Public Land completed the purchases and have been gradually transferring ownership to state and federal land management agencies.

The Lolo NF has acquired substantial acreage of the former private timberlands, on which there remains an extensive road system. The Forest has been working to assess the condition and need for these roads, and appropriately manage, close, or decommission them. Road management is considered prior to acquisition of lands. The Forest makes management decisions on these road systems as projects are identified in the area of the acquired lands.

Forest databases have been updated to account for the lands acquired as well as the roads and other infrastructure that may exist on those lands. If the Forest acquires additional lands in the future, the Forest's database will be updated in coordination with the USFWS.

Law enforcement

The Law Enforcement and Investigations organization is an integral part of the overall management of the National Forest System. Law enforcement personnel enforce the federal laws and regulations that protect natural resources and the safety of agency employees and the public. Law enforcement officers work to prevent criminal violations through informing and educating visitors and users of applicable laws and regulations.

Roads that are not on the Motorized Vehicle Use Map (MVUM) for the Lolo NF are closed to all public motorized use (36 CFR 212.51, 36 CFR 261.13) during the non-denning season. These closures are legally enforceable, whether there is an existing barrier/signage in place or not. Closures and restrictions on motorized routes across the Forest are enforced through law enforcement patrols and gate and barrier monitoring. Information on year-round open roads, seasonally open roads, and related road closure orders is available to the public through signage and Motor Vehicle Use Maps that are available at district offices, local stores, and on the World Wide Web.

Habitat-related Stressors

The Grizzly Bear Recovery Plan (USDI Fish and Wildlife Service 1993) identifies adequate effective habitat as the most important element in grizzly bear recovery. Effective habitat is a reflection of an area's ability to support grizzly bears based on the quality of the habitat and the type/amount of human disturbance imposed on it.

Secure core/secure habitat

Generally speaking, "secure habitat" and "security habitat" (used here interchangeably) is an area with low levels of human disturbance where grizzly bears can meet their life history needs without heightened

risk of human-caused mortality or experiencing the negative consequences of human disturbance, such as habitat avoidance, shifting to nighttime activity patterns, or repeated flight response. Secure habitat is an important metric because the scientific research supports its utility in determining female grizzly bear reproductive success and survival. From a practical standpoint, it portrays the impact of the spatial arrangement of motorized routes on the landscape more effectively than a simple road density calculation, particularly when the secure habitat can be spatially viewed in addition to the secure habitat acres.

Terminology and criteria

In this document, the term *secure core* is used when discussing the recovery zones, and the term *secure habitat* is used for the portions of the Forest that are outside of recovery zones. Secure core/secure habitat for grizzly bears is identified by mapping the area that is outside the zone of influence of motorized routes that receive recurring human use. Secure habitat is mapped on NFS lands only. Although functional secure habitat could occur on other ownerships, for this analysis we assume that secure habitat on other ownerships is not available or will not be maintained over time.

Within recovery zones, secure core has been identified as one of the key habitat components important to grizzly bear recovery, in particular the survival and reproductive success of individual female grizzly bears (Mace et al. 1996, Wakkinen and Kasworm 1997, Gibeau et al. 2001, Schwartz et al. 2010, Proctor et al. 2019). The Interagency Grizzly Bear Committee (IGBC) Task Force recognized the importance of "security core areas" to grizzly bears, defined as areas that are at least 0.3 mile from any open road, motorized trail, or high-use non-motorized trail, and that receive no motorized use during the period they are considered secure (IGBC 1998). The IGBC Task Force recommended that such areas be established inside each grizzly bear recovery zone, with the criteria to be based on local research.

In response to Mace and Manley's 1993 research on grizzly bears in the Swan Valley and the subsequent 1994 IGBC direction to develop local, site-specific parameters for motorized access, Wakkinen and Kasworm (1997) summarized their data on grizzly bear habitat use for six reproductively successful females in their South Selkirk (4 adult females) and Yaak (2 females) study areas. All of the studied bears used secure core, defined by the authors as areas greater than 0.3 miles (500 m) from open roads or any roads that do not have permanent closures, greater than expected as compared to availability, and used non-core habitat less than expected. Female home ranges had an average of 55% secure habitat, compared with 23 to 34% available across the landscape.

The criteria used in the NCDE for secure core are based on research in the South Fork Study area. Mace and Manley (1993) and Mace et al. (1996) indicated the importance of unroaded habitat, especially for survival and successful reproduction by female grizzly bearss. Initially, Mace and Manley (1993) reported adult females used habitat further than 0.5 mile from roads or trails more than expected; 21 percent of the composite home range had no trails or roads, and 46 percent was farther than 0.5 mile from a road.

The Lolo National Forest, Forest Plan has no requirement to provide secure habitat outside of the Cabinet-Yaak and NCDE recovery zones. However, its utility in defining adverse conditions for female grizzly bears makes it a good metric in describing effects to individual grizzly

Designated wilderness and inventoried roadless areas by their nature provide secure habitat conditions, and wilderness and inventoried roadless areas are well-distributed across the Forest (see table 4 above). In general, these areas provide a good foundation of secure habitat that can be utilized by grizzly bears that occupy or move through the Forest, both inside and outside of recovery zones, over time. Additionally, under the current Lolo Forest Plan, land is allocated to three other Management Areas that are not suitable for timber production and that generally have limits on road development: Research Natural Areas (MA 6), Winter Range No Timber (MA 19), and National Recreation Area (MA 28). The latter three

Management Areas cover a total of about 107,517 acres, or an additional nearly five percent of the Forest (see appendix 2 for additional details). Although the elk summer habitat MA 26 (19,722 acres), grizzly bear habitat MA 20 (71,716 acres) and MA 20a (26,411ac) don't exclude roads, these MAs limit roads for particular purposes.

Patch size

Of the four occupied recovery zones, only the Northern Continental Divide has a minimum patch size requirement for secure core. The 1994 Flathead National Forest, Forest Plan amendment 19 used a minimum secure core area size of 2,500 acres (3.9 mi^2) which was retained as direction in its revised Forest Plan (USDA Forest Service 2018). This number relied on the observed patch size of unroaded habitat in the composite home range for seven adult females, with 83 percent of locations occurring within 7 polygons that exceeded 2,260 acres in size. Conversely, Wakkinen and Kasworm (1997) reported that more than 97 percent of the use by successfully reproducing females occurred in blocks greater than 1,280 acres (2 mi^2) in size. Smaller polygons, particularly those of less than two square miles, tended to be underutilized by grizzly bears in the study, although use still occurred in blocks as small as 141 acres (0.2 mi^2). No minimum core area size was established due to the limitations of small sample size, although the authors suggested that if a minimum size occurs, it is likely between 2 and 8 square miles.

Larger areas of secure core are thought to be more valuable in providing for the habitat requirements of reproductive female bears. However, in areas with little availability of effective secure core/secure habitat, smaller patches may provide some value to bears although maybe not to the same value as larger patches (CS GYE 2016).

Table 5 summarizes the definitions being used for secure core/secure habitat, including criteria for motorized use and the types of road closure device that qualify for buffering. Whether there is a size requirement for secure core/secure habitat is also shown in table 5 for each portion of the Forest.

Table 5. Criteria for secure core/secure habitat in different portions of the Lolo NF.

Portion of the Lolo NF	Applicable Term	Forest Plan requirement?	Definition	Non-FS lands	Minimum size of polygon
Cabinet-Yaak recovery zone	Secure core within BMU 22	Yes	An area of secure habitat within a BMU that contains no motorized travel routes or high use non-motorized trails during the non-denning season [non-denning season includes the dates 4/1-11/15 (SRZ) or 4/1- 11/30 (CYRZ), inclusive] and is more than 0.3 miles (500 meters) from a drivable road. Core areas do not include any gated roads but may contain roads that are impassable due to vegetation or constructed barriers. Core areas strive to contain the full range of seasonal habitats that are available in the BMU (USDA Forest Service 2011).	Not buffered	None

NCDE recovery zone/PCA	Secure core within BMU Subunits	Yes	Secure core (grizzly bear) an area of the NCDE primary conservation area 500 meters or more from (1) a route open to public wheeled motorized use during the grizzly bear non-denning season, (2) a gated route, or (3) a route closed only with a sign, that is greater than or equal to 2,500 acres in size. Roads restricted with physical barriers (not gates), decommissioned roads, impassable roads, temporary roads, over-the-snow motorized routes/areas, and non-motorized trails are allowed within secure core, unless otherwise restricted (e.g., by other national forest plan direction) (USDA Forest Service 2017a).	Not buffered	2,500 acres
Bitterroot recovery zone	Secure core	No[1]	Not defined	N/A	N/A
Lolo NF outside of recovery zones	Secure habitat within GBAUs	No	Area >500 m from a drivable route and from the boundary with non-NFS land.	Buffered	Calculated both with no minimum size and with a 2,500 acre minimum
NCDE Zone1 & Ninemile DCA	Secure habitat on NFS lands in Zone 1 or DCA	No	Area >500 m from a drivable route and from the boundary with non-NFS land.	Buffered	Calculated both with no minimum size and with a 2,500 acre minimum

Cabinet-Yaak Recovery Zone

Wakkinen and Kasworm's (1997) data on grizzly bear habitat use in their South Selkirk and Yaak study areas provided a research-based benchmark of 55 percent secure core within a BMU. In 2011, the Lolo, Kootenai and Idaho Panhandle NF forest plans were amended with direction for motorized access management within the Selkirk and Cabinet-Yaak grizzly bear recovery zones. Secure core was defined as areas that contain no motorized roads or high use non-motorized trails during the active bear year and are more than 0.3 mile (500 m) from a drivable route (USDA Forest Service 2011).

The forest plan standard for the Mt. Headley BMU (also known as BMU 22) is to provide at least 55 percent secure core (table 2 in the Record of Decision). At that time, 51 percent of BMU 22 was secure core. The 2011 biological opinion for the motorized access management amendments concluded that adverse effects of displacement and disturbance would likely continue to occur in BMU 22 because of inadequate levels of secure core, until such time as the research benchmark of 55 percent is achieved.

[1] The portion of the Bitterroot Ecosystem recovery zone occurs on the Lolo National Forest occurs within wilderness and wilderness designation has several protections and plan standards that provide for maintaining bear secure core/habitat.

The Record of Decision for the forest plan amendments for motorized access management in the Selkirk and Cabinet-Yaak recovery zones estimated that full implementation of the actions needed to reach the prescribed standards of the selected alternative would take eight years from the date of the decision in 2011. On September 6, 2019, the Lolo NF reported that the existing percent of core habitat in the Mt. Headley BMU had been improved to 52.9 percent, and requested a three-year extension of the time frame specified in the incidental take statement to reach 55 percent to allow for completion of the Forest's ongoing BMU 22 Compliance Project. On January 29, 2020, USFWS approved the request and amended their 2011 Biological Opinion to extend the incidental take statement to November 2022. The BMU 22 Compliance Project is progressing, and is included as part of the environmental baseline.

Until such time that the research benchmark of 55 percent secure core is attained, it is likely that the environmental baseline in BMU 22 will continue to cause disturbance and displacement that results in adverse effects to individual grizzly bears that are present there.

NCDE Recovery Zone

In the NCDE, secure core is defined as an area of the NCDE primary conservation area that is 0.3 miles (500 m) or more from: (1) a route open to public wheeled motorized use during the grizzly bear non-denning season, (2) a gated route, or (3) a route closed only with a sign; and that is greater than or equal to 2,500 acres in size. Roads restricted with physical barriers (not gates), decommissioned roads, impassable roads, over-the-snow motorized routes/areas, and non-motorized trails are allowed inside secure core.

Mace et al. (1996) reported that female grizzly bears in the South Fork of the Flathead study area selected for and survived better in home ranges that had 56% secure habitat, compared with 30% available in the Swan Mountains of Montana, using a 0.5 mile buffer width. The IGBC Task Force subsequently recommended using a 0.3 mile buffer distance based on observed avoidance behavior by grizzly bears . Recalculation of the South Fork study data using the 0.3 mile buffer yielded the research benchmark of 68% secure core. The 68 percent benchmark is used in the NCDE to determine when adverse effects to grizzly bears are anticipated (see U.S. Fish and Wildlife Service 2017).

The NCDE Grizzly Bear Amendments established a Forest Plan standard requiring that baseline levels of secure core be maintained by BMU subunit (USDA Forest Service 2018). The baseline is defined as conditions as of December 31, 2011, updated as needed to correct for errors such as incomplete inventory or GIS mapping distortions. Table 6 shows the updated 2011 baseline as it includes those errors or incomplete data. Except for the Mission and Swan subunits, all other BMU subunits meet or exceed the research benchmark for secure core, as shown in table 6. The Mission subunit is unique in that it has less than 75 percent federal ownership and therefore historically had a rule set of "no net loss" of core on federal lands in the subunit. The Swan subunit is long and narrow and does not contain as much wilderness/roadless as other subunits on the Lolo. For these reasons the Forest completed a specific formal consultation on access management within the Swan BMU subunit in 2011.

Table 6. Percent secure core by BMU subunit in the NCDE recovery zone on the Lolo NF *(from NCDE monitoring report 2020)*

Bear Management Unit	BMU Subunit	> 75% NFS Lands	Percent Secure Core (patches at least 2,500 acres in size)
Monture/Landers Fork	Monture	Yes	99%
	Mor-Dun	Yes	77%
	North Scapegoat	Yes	100%
	South Scapegoat	Yes	75%
Rattlesnake	Mission	No	37%
	Rattlesnake	Yes	81%
Upper South Fork Flathead	Swan	Yes	54%

In the Mission and Swan BMU Subunits where the research benchmark of 68 percent secure core is not achieved, it is anticipated that the environmental baseline may cause disturbance and displacement to individual grizzly bears in that area. In the other five BMU Subunits, disturbance and displacement of grizzly bears is not expected to be at levels that result in adverse effects. The environmental baseline in the five BMU Subunits that meet or exceed the research benchmark of 68 percent is anticipated to provide habitat that supports survival and reproduction of female grizzly bears, even if projects allowed under the forest plan standards cause a temporary reduction.

Bitterroot recovery zone

There are no forest plan requirements to provide secure core in the Bitterroot recovery zone. The entire acreage that occurs on the Lolo NF is within the Selway-Bitterroot Wilderness and functions as secure core. The environmental baseline with regard to secure core is expected to provide habitat to support survival and reproduction of female grizzly bears that may occur there.

Motorized access management

A number of studies have shown that motorized access into grizzly bear habitats during the non-denning season can have significant negative consequences at both the individual and population levels (Kasworm and Manley 1990, Mace and Waller 1996, Boulanger and Stenhouse 2014). In general, motorized access has the potential to disturb or displace bears from important habitats, increase energetic requirements due to disturbance by humans, increase bear habituation to humans, increase human-bear conflicts, and lower grizzly bear survival rates. Controlling and directing motorized access is one of the most important tools for managing habitat to achieve grizzly bear recovery.

Indices for quantifying the impacts motorized access has on grizzly bear habitat effectiveness have evolved over time. They include measures reflecting available unroaded areas (acres) and quantification of motorized routes[2] (in total miles or mi/mi2) within the analysis area. In general, the scientific literature

[2] Route is used in this document to include both road and trail prisms which accommodate various forms of motorized vehicles including passenger vehicles/trucks, all-terrain vehicles (ATVs), motorcycles, and/or utility terrain vehicles (UTVs).

found a relationship between increasing road density and the reduction of secure habitat. For example, Boulanger and Stenhouse (2014) found strong spatial gradients in grizzly bear population trend based upon road density. Mace et al. (1999) found bears avoided high densities of high volume roads. Therefore, habitat is considered 'secure' where habitat occurs outside or beyond the influence of high levels of human activity. Secure habitat for grizzly bears is specifically defined by the Interagency Grizzly Bear Committee (IGBC) as areas that are at least 500 meters from any motorized access route (IGBC 1998). Relevant research supporting the use of motorized route metrics is reviewed below.

Motorized routes

Motorized routes have been measured differently within the literature and conservation documents, and each measure provides a different perspective on estimating the effects of motorized routes on grizzly bear home range, survival, and reproduction. There are three common motorized route measures: linear motorized route density, moving windows, and linear miles. Linear motorized route density is a simple calculation of the linear distance of motorized routes (open or total) within a defined area, divided by the total size of the area (mi/mi^2). Moving windows route density uses Geographic Information System (GIS) to calculate road densities in a cell or "window" of a specified size that shifts across a defined area resulting in providing a proportion of the defined area at or below a threshold. Liner miles of motorized routes is not a metric found in the grizzly bear research to define selection of home range or survival of individual grizzly bears, but it is a simple sum of the linear distance of routes within a defined area.

Mace and Manley (1993) along with additional analysis for the Flathead National Forest, Forest Plan amendment 19, provided the basis for using a moving windows approach to estimating road density (open and total motorized routes) to describe conditions under which female grizzly bears have been found to successfully reproduce. Mace and Manley (1993) initial work had a sample size of nine grizzly bears while the supplemental work had a sample size of seven. The results of this study and subsequent work led to the Flathead National Forest standard for open motorized route density, total motorized density, and secure core of 19:19:68 percent.

Wakkinen and Kasworm (1997) examined the relationship between grizzly bear distribution and motorized access routes (roads and motorized trails) in the Selkirk and Cabinet/Yaak ecosystems. Within the home ranges of six radio-collared female grizzly bears, total road density greater than 2 mi/mi^2 and open road density greater than 1 mi/mi^2,[3] were used less than expected (avoided) and unroaded areas in both categories were used more than expected (preferred).

Schwartz et al. (2010) modeled the annual survival of grizzly bears in the Greater Yellowstone Ecosystem to identify source and sink habitats. The amount of secure habitat and the spatially derived density of roads[4] in nonsecure habitat within a grizzly bear's home range on public lands had the greatest effect on grizzly bear survival. The authors suggested that managing spatially derived road density[3] and the amount of secure habitat are needed to reduce hazards to grizzly bears and to support source habitats.

Boulanger and Stenhouse (2014) identified specific road densities based on grizzly bear locations and found that, at particular road densities, the risk of mortality to all age/sex classes except adult male bears increased in Canada. They identified open road densities above which negative population trends occurred and recommended a road density threshold of 0.75 km/ km^2 (1.2 mi/mi^2) in core grizzly bear conservation areas (i.e., the equivalent of recovery zones in the U.S.) to ensure a viable grizzly bear

[3] Derived using a moving windows analysis to account for spatial arrangement of motorized roads within a female grizzly bear's home range.

[4] Derived using a moving windows analysis to account for spatial arrangement of motorized road density (i.e.,30 m pixels) in a 0.km^2 moving window that had a road segment

population. An open road density of 2.4 mi/mi^2 appeared to be a threshold describing the ability of an analysis area to provide for bear presence and movement between recovery zones. A key aspect of this analysis was that road density was only measured within a 300-meter radius (about 70 acres) of each bear observation and the roads, mostly gravel roads, were primarily used for commercial logging. Although this method provided a "real time" picture of simple road density in 70 acre 'bubbles' around individual bear locations it is not directly comparable to measures of spatially derived road density using moving windows analysis over the actual home range of the study animals used in other studies and locations.

As Mace et al. 1996 suggests, grizzly bears may modify their behavior in relation to the level of vehicular traffic. Northrup et al. (2012) found that during the nighttime hours when traffic levels were low, grizzly bears in southwestern Alberta increased their use of areas near roads and moved more frequently across roads. During the day, bears crossed and used the areas near roads that had low use (<20 vehicles per day),but avoided roads with moderate (20-100 vehicles per day) and high (>100 vehicles per day) traffic volumes. Mace et al. (1996) evaluated seasonal use by grizzly bears of areas within a buffer of 0.5 kilometer (0.3 mi) surrounding roads. Most grizzly bears exhibited either neutral or positive selection for buffers surrounding the closed roads and roads receiving <10 vehicles per day but avoided the buffer areas surrounding roads having >10 vehicles per day. Ruby (2014) found that grizzly bear activity near open motorized routes and human developments in the Swan Valley, Montana, peaked during time periods when humans were likely to be less active (e.g., at night).

In Canada, in an area where a high level of resource extraction and road building and use was occurring, McLellan and Shackleton (1989) found that most grizzly bears used habitats within 100 meters of open roads less than expected, and that areas used near roads that bears used at night were avoided during the day. McLellan (2015) subsequently reported that industrial development in his study area, including use by the public of roads originally built for resource extraction, did not have a clear negative effect on population trend. The location of motorized routes relative to bear food sources appeared to be more important than the density of routes. McLellan recommended that managers should attempt to maintain or enhance high-energy foods while reducing human access into specific areas where and when those foods are abundant.

In summary, female grizzly bears tend to prefer areas with limited to no road disturbance. The amount of secure habitat and juxtaposition and density of motorized routes within a grizzly bear's home range strongly influences grizzly bear survival. Proctor et al. (2019) suggested that motorized access management focused on road restrictions in high-quality grizzly bear habitats with energy-rich food resources which would be a useful tool, particularly in conservation areas (similar to U.S. recovery zones), and within and adjacent to identified linkage areas between population units in British Columbia, Canada.

Updates of motorized route database

All known National Forest System Roads (NFSR) and unauthorized roads on the Lolo National Forest are identified in GIS using the Forest Service Infrastructure (INFRA) database and roads atlas. The INFRA database tracks general road information including route location, status, length, jurisdiction, design standard, travel condition, and maintenance level. Route status in INFRA denotes whether a road is a NFSR or an unauthorized road, both are defined below:

National Forest System road. (36 CFR 212.1; 2010). A forest road other than a road which has been authorized by a legally documented right-of-way held by a State, county, or other local public road authority.

Unauthorized road and trail. (36 CFR 212.1; 2010). A road or trail that is not a forest road or trail or a temporary road or trail and that is not included in a forest transportation atlas.

Unauthorized roads are categorized into two types and recorded in the SYSTEM linear event in the INFRA Travel Routes database. The two types are:

- Undetermined (UND). Roads where long-term purpose and need has yet to be determined.
- Not Needed (NOT). Roads not needed for long-term management of national forest resources as determined through an appropriate planning process.

At times, old routes that have been on the landscape for decades are identified by FS staff during routine field work. These routes were likely constructed to support logging and mining activities on the Forest at the turn of the century. When identified, these routes are added to the Forest INFRA database and attributed as "undetermined" until their long-term purpose and need are determined.

In addition to updating the Forest INFRA database, the grizzly bear secure habitat is also updated. This update may or may not affect the Forest's estimates of the existing amount of grizzly bear secure habitat or motorized route metrics which are dependent on the route location or status. However, these identified routes do not represent any actual changes on the ground since these routes have been on the landscape for, likely, decades. Instead, updates the baseline are completed in order to reflect a more complete and accurate dataset that represents existing conditions. These updates to the INFRA database will be shared with the FWS to ensure the updates are considered during consultation. Since updates to the INFRA database typically occur during project planning fieldwork, these updates will be included within the project consultation with the FWS to reflect any changes to secure habitat or road metrics.

Like motorized routes on the Forest, motorized routes occurring on lands acquired by the Forest are included within the INFRA database and used to update grizzly bear secure habitat or route metrics. Road management is considered prior to acquisition of lands. The Forest makes management decisions on these road systems as projects are identified in the area of the acquired lands. Roads occurring on acquired lands are incorporated into the INFRA database. However, the motorized routes on acquired lands are not new routes as these routes likely existed on the acquired lands for years. The motorized routes occurring on the acquired lands, like other updates to the INFRA database, are used to update the grizzly bear secure habitat or motorized route metrics to reflect these changes and these changes are shared with FWS, likely through project level consultation.

Route closure effectiveness

Monitoring efforts to assess closure effectiveness on the Forest are focused in the NCDE and Cabinet-Yaak recovery zones because of their importance for grizzly bear recovery. There are no motorized routes within the Bitterroot recovery zone on the Lolo NF.

For the Cabinet-Yaak recovery zone (BMU 22), the Forest Plan, as amended, states that 30% of the road closure devices (gates and barriers) will be monitored annually (USFWS 2011). For the NCDE, there are no specific requirements in the Forest Plan to monitor road closure effectiveness, but monitoring does occur during the active bear season. Road closure monitoring in the NCDE recovery zone is more opportunistic and usually occurs while conducting other field work. Unauthorized use is determined by damage to or removal of the restriction device, and/or by vegetation and ground disturbance that indicate wheeled motorized vehicle use.

Overall, road closures and gates have been found to be effective at restricting motorized vehicle use, but there are instances where vehicles illegally used closed roads despite the presence of a sign, gate, or barrier. The Cabinet-Yaak and NCDE recovery zones have similar closure effectiveness challenges.

Recent road closure monitoring has discovered incidents where a gate has been compromised, gate lock has been cut off, or evidence of a motorcycle has gone around a gate. These types of road closure issues are repaired or augmented to deter use and are revisited to assess whether barrier repairs or barriers are effective. These repairs have not always resolved issues and continued efforts are sometimes needed to deter use of closed roads.

Illegal motorized use

Roads that are not on the Motorized Vehicle Use Map (MVUM) for the Lolo NF are closed to all public motorized use (36 CFR 212.51, 36 CFR 261.13) during the non-denning season. Illegal motorized use of closed roads could occur anywhere on the Forest, but such illegal use is not considered a Forest action. The term "action" for purposes of ESA section 7 consultation is defined as all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States (50 CFR 402.02). Illegal use of restricted roads and any other illegal activities are not the result of a federal action and therefore are not analyzed under effects of the action.

Illegal use of roads likely has had some influence on the environmental baseline. The amount, location, duration, and timing of effects resulting from such illegal use is not known. However, looking at past warnings and citations issued on the Forest Service law enforcement to drivers operating a motorized vehicle inconsistent with the MVUM, there have been about ten warnings or citations issued each year over the past ten years, although it is unlikely these warnings or citations account for all of the motor vehicle issues nor all motor vehicle violations on the Forest. It is likely that most illegal motorized access is spatially diffuse, sporadic, and of short duration. The probability that illegal motorized use has coincided with the presence of grizzly bears is also unknown, but outside of the recovery zones it is likely to be low. The effects of past illegal use of roads on grizzly bears are part of the baseline conditions under which, during the time of these conditions, grizzly bear populations have been stable to increasing in the CYE and NCDE recovery zones.

For the area outside recovery zones, secure habitat was delineated using a conservative approach by buffering all drivable motorized routes, regardless of route status, to represent the area of high human activity. Given this conservative approach, illegal use of motorized routes would not result in changing the level of secure habitat because drivable motorized routes were already buffered to account for high human activity in the secure habitat delineation.

Lolo NF lands outside of the recovery zones

There are no Forest Plan requirements to provide secure habitat outside of the recovery zones. An analysis of the availability of secure habitat was completed to assess the ability to support grizzly bears that may occupy or move through the areas outside of recovery zones.

The Forest Service worked with USFWS to determine appropriate criteria to use for this analysis. In the portions of the Forest outside of recovery zones, secure habitat was identified by buffering 500 meters from either side of all roads in the Forest's database that may be drivable, irrespective of seasonal or yearlong restrictions, as well as buffering 500 meters from non-Forest Service land ownerships. Non-NFS lands are not included because the Forest Service lacks inventory information as well as jurisdiction over the use of these roads. On NFS lands, roads known to be restricted with physical barriers (not gates), impassable roads, over-the-snow motorized routes/areas, and non-motorized trails can occur within secure habitat polygons and provide secure habitat. It is generally assumed that bermed roads are not in drivable condition, but when there is uncertainty of whether berm construction was completed, roads were

considered drivable and coded as such in the database. Thus, the delineation of secure habitat outside of the recovery zones likely provides an underestimate of the amount actually available to bears.

This methodology is similar to that used in the nearby NCDE, but it acknowledges both that there are no standards limiting administrative use of roads outside of the recovery zones, and that available data are less complete in this portion of the Forest in terms of the types and locations of closure devices and the condition of the road prism beyond the barrier. It is important to note that although this approach may result in a low estimate of the existing amount of secure habitat, it assures that the impacts of road use are not underestimated.

By including all known existing routes (those that are not clearly known to be physically blocked from motorized use), the analysis captures the current minimum amount of secure habitat available in the action area. If any of the existing buffered routes are used for motorized access in the future, effects to grizzly bear secure habitat will have already been considered. If other routes are discovered that are currently not captured in the Forest GIS database, the Forest will correct the baseline. Such newly discovered roads may or may not affect the Forest's estimate of the existing amount of secure habitat, depending on the location of these roads. This type of adjustment to the baseline would be made to reflect better data and mapping rather than representing actual changes on the ground.

As mentioned previously, there are undetermined roads that exist on the Forest. All undetermined roads are closed yearlong to motorized travel per the Forest Plan and MVUM and are treated as such in this analysis.

For purposes of this analysis, grizzly bear analysis units (GBAUs) were delineated on the portion of the Forest that is outside of grizzly bear recovery zones (see appendix 1 figure 2, and appendix 4). GBAUs are used for the purpose of calculating secure habitat over an appropriate spatial scale, and do not represent actual home ranges or imply that occupancy by male or female grizzly bears is expected or required. Since the Forest continues to acquire land, the GBAU boundaries may need to be adjusted in the future to include those acquired lands that occur outside the GBAU boundaries.

GBAUs were delineated following watershed boundaries where possible and adjusted where necessary to minimize non-federal ownerships. The GBAUs encompass a total of 1,816,544 acres of the Lolo NF (all of the lands that are outside of grizzly bear recovery zones). GBAUs are delineated to provide a suite of seasonal habitats including some higher elevation, steeper terrain that could provide denning habitat, as well as more mesic, productive forest types and wet meadows that are likely to provide spring and fall food resources. The average size of the GBAUs is 83,495 acres (130 mi^2). Individual GBAUs range in size from 43,111 (67 mi^2) to 167,586 acres (262 mi^2) across all ownerships (table 7).

After buffering motorized routes and Forest boundaries, the existing amount of secure habitat in each GBAU was estimated and is shown in table 7. In total, 597,672 acres were identified as existing secure habitat, which is about 33 percent of the NFS lands within GBAUs.

Both the total acreage of secure habitat and the acreage of polygons larger than 2,500 acres are shown in table 7. As explained previously, the 2,500-acre patch size is based on 1990s era research data from NCDE. Larger patches of secure habitat are likely to be more valuable, particularly in areas where the amount of secure habitat is low and to provide for the habitat requirements of reproductive female bears. However, even very small patches may have value to individual bears, especially in providing habitat connectivity (GYE Conservation Strategy 2016). Therefore, the percent secure habitat is shown both in total and with a patch size of at least 2,500 acres.

Table 7. Existing acres and percent secure habitat by grizzly bear analysis units on the Lolo NF *(from Forest GIS data August 2021).*

Grizzly Bear Analysis Unit	Acres, all ownerships	Acres of NFS lands	Secure Habitat acres (percent) on NFS lands with no minimum patch size	Secure Habitat acres (percent) on NFS lands in patches >2,500 acres in size
NCDE Zone 1 GBAUs				
Clearwater	67,672	42,936	1,791 (4%)	792 (2%)
Cottonwood	59,150	28,223	3,123 (11%)	2,948 (10%)
Gold	56,700	31,990	4,326 (14%)	3,517 (11%)
Middle Blackfoot	72,003	6,178	140 (2%)	0
North Missoula	60,485	52,617	35,710 (68%)	35,575 (67%)
Placid	49,452	23,207	800 (3%)	0
Ninemile DCA GBAUs				
Keystone	78,844	57,233	18,856 (33%)	15,340 (27%)
Mill North	45,962	39,489	1,674 (4%)	251 (1%)
Ninemile	118,325	99,597	28,653 (29%)	25,786 (26%)
Trout East	96,830	59,911	6,620 (11%)	948 (2%)
GBAUs outside of NCDE grizzly bear management zones				
Dry Cold	54,727	47,742	24,176 (51%)	19,514 (41%)
Dry Eddy	84,017	61,230	25,172 (41%)	21,510 (35%)
Fish Creek	167,586	131,853	100,527 (76%)	98,294 (75%)
Little Thompson	80,196	42,973	4,665 (11%)	2,376 (6%)
Lower Rock	145,614	133,773	75,014 (56%)	72,939 (56%)
Lynch Creek-Clark Fork	120,338	22,848	2,919 (13%)	2,133 (9%)
Middle Thompson	54,977	31,463	8,063 (26%)	5,535 (18%0
Mill South	69,834	28,669	9,837 (34%)	9,299 (32%)
Miller	70,174	56,549	2,255 (4%)	0
North Lolo	98,176	73,558	11,667 (16%)	7,578 (10%)
Pats Knob	63,542	51,641	17,808 (34%)	13,686 (26%)
Petty Creek	75,064	62,850	15,683 (25%)	10,019 (16%)

Prospect	144,377	115,913	29,671 (26%)	10,708 (9%)
St Regis North	107,509	94,354	23,456 (25%)	15,499 (16%)
St Regis South	124,392	118,405	27,282 (23%)	12,065 (10%)
South Lolo	82,455	73,547	18,799 (26%)	15,903 (22%)
Trout West	140,809	123,039	40,291 (33%)	39,259 (32%)
Upper Fishtrap	82,322	18,925	1,178 (6%)	4 (<1%)
Upper Rock	73,711	73,095	55,630 (76%)	55,324 (76%)
Upper Thompson	43,111	12,735	1,886 (15%)	0

Currently, the range of secure habitat by GBAUs varies from a very low proportion (as low as 2%) to a very high proportion (76%). A cluster of three adjacent GBAUs located on the east side of the Lolo NF (Clearwater, Placid, and Middle Blackfoot) have a very small proportion of FS lands and consequently, these GBAUs have very low amounts of secure habitat on NF lands. However, these GBAUs also contain a significant amount of land owned by The Nature Conservancy, which may provide additional secure habitat that is not recognized here.

Most of the GBAUs (25 of 30) provide less secure habitat than the roughly 50-70 percent reported for home ranges of female grizzly bears (Wakkinen and Kasworm 1997, Mace and Manley 1996, review in Proctor et al. 2020). It is likely that the five GBAUs with more than 50 percent secure habitat (North Missoula, Dry Cold, Fish Creek, Lower Rock, and Upper Rock) may be able to support female grizzly bears to successfully live, reproduce, and raise young, while the other GBAUs do not contain enough secure habitat on NFS lands alone to reach the 50-70 percent secure habitat level for grizzly bears. However, other land ownerships within these GBAUs may bolster the amount of secure habitat to the levels needed to establish and maintain regular home ranges.

NCDE Zone 1 and the Ninemile DCA

NCDE management zone 1 and the Ninemile demographic connectivity area were first conceptualized and described in the NCDE grizzly bear conservation strategy (NCDE Subcommittee 2020). Zone 1 is a buffer around the recovery zone (also known as the primary conservation area). The NCDE recovery zone and Zone 1 combined are the area within which NCDE population monitoring data are collected and mortality limits apply. The intent is for Zone 1 to support continual occupancy by grizzly bears, although at a lower density than within the recovery zone. NCDE Zone 1 overlaps with six GBAUs (see table 7 and figure 2): Clearwater, Cottonwood, Gold, Middle Blackfoot, North Missoula, and Placid. As mentioned previously, lands on other ownerships in these GBAUs likely contribute secure habitat as well.

On the southwest corner of Zone 1 is the Ninemile demographic connectivity area. The Ninemile DCA is intended to provide habitat that can be used by female grizzly bears with cubs and allow for bear movement to the Bitterroot recovery zone. The Ninemile demographic connectivity area overlaps with four GBAUs: Keystone, Mill North, Ninemile, and Trout East. Combined, there is about 22% secure habitat in these four GBAUs, substantially less than is likely needed to successfully support a female grizzly bear with cubs. At the same time, the Keystone and Ninemile GBAUs are notable in that most of

the secure habitat is in larger polygons more than 2,500 acres in size. It is likely that the baseline condition contributes some level of connectivity for bears traveling between recovery zones.

Motorized route density

Methods to calculate route density

As discussed in the above section ("motorized routes"), there are different methods used to calculate motorized access density and the results are not directly comparable. Within the Cabinet-Yaak and NCDE recovery zones, a GIS moving window process is used to create density contour maps. The moving window reveals density surfaces for open and total motorized routes and it can then calculate the proportion of area above and below a density threshold, as shown in table 8.

Table 8. Methodology for calculating motorized route densities and Forest Plan standards (if any) applicable to different portions of the Lolo NF.

Portion of Lolo NF	Metric	Applicable Definitions	Forest Plan Standard (see Appendix 2)
Cabinet-Yaak recovery zone	Open motorized route density, using a moving window calculation	Open = All created or evolved routes greater than 500 feet in length having no restriction on motorized vehicle use.	33 percent or less of a BMU subunit with more than 1mi/mi^2
Cabinet-Yaak recovery zone	Total motorized route density, using a moving window calculation	Total = All created or evolved routes greater than 500 feet in length, including open roads, restricted roads, roads not meeting all impassible criteria, and open motorized trails.	35 percent or less of a BMU subunit with more than 2 mi/mi^2
NCDE recovery zone/PCA	Open motorized route density, using a moving window calculation	Open = All Federal, State, and Tribal roads and motorized trails that are open to wheeled motor vehicle use by the public for any part of the non-denning season (motorized routes closed only by sign or order are considered to be open) (*see* NCDE Conservation Strategy appendix 6)	No net increase in open motorized route density on NFS lands during the non-denning season (see definitions of baseline and net change in appendix 2)
NCDE recovery zone/PCA	Total motorized route density, using a moving window calculation	Total = All Federal, State, and Tribal roads and motorized trails that do not meet the definition of impassable [1] (see NCDE Conservation Strategy appendix 6)	No net increase in total motorized route density on NFS lands during the non-denning season. Temporary use of a motorized route for a project is allowed.
NCDE Zone1	Roads open to public motorized use, calculated by dividing the total miles in Zone 1 by the total square miles of NFS lands in Zone 1	All Federal, State and Tribal roads on NFS lands that are open to public motorized use during the non-denning season (Restricted roads may receive administrative use or be opened to the public for a short period of time without being considered open).	No net increase in density of roads open to public motorized use during the non-denning season
Ninemile DCA	Routes open to public motorized use, calculated by dividing total miles in the DCA by the total square miles of NFS lands in the DCA	All Federal, State and Tribal roads and trails on NFS lands open to public motorized use on NFS lands during the non-denning season (Restricted roads may receive administrative use or be opened	No net increase in density of roads and trails open to public motorized use during the non-denning season

		to the public for a short period of time without being considered open).	
Lolo NF outside of recovery zones	No Forest Plan Standard road metric for this portion of the Forest	None	No Standard

[1] Roads may become impassable due to a variety of causes including but not limited to: natural vegetation growth, road entrance obliteration, scarified ground, fallen trees, boulders, landslides, or culvert or bridge removal

Road densities and illegal motorized use

As discussed above, roads not open to motorized vehicles as shown on the Motorized Vehicle Use Map (MVUM) for the Lolo NF are closed to motorized vehicle use. Illegal use of closed roads may mean that there is actually more disturbance than anticipated, such that the effects on bears could be more similar to those of open roads. The amount, location, duration, and timing of effects resulting from such illegal use is not fully known. The probability of illegal motorized use coinciding with the presence of grizzly bears is also unknown, but using bear density alone, illegal road use in the recovery zones may pose a higher level of effects to grizzly bears.

Cabinet-Yaak recovery zone

The forest plan amendments for motorized access management added direction regarding open and total motorized route density for BMUs in the Cabinet-Yaak and Selkirk recovery zones (USDA Forest Service 2011). Research benchmark values of 33 percent for open motorized route density (OMRD) exceeding 1 mi/mi^2 and 26 percent for total motorized route density (TMRD) exceeding 2 mi/mi^2 to assess adverse effects were based on research by Wakkinen and Kasworm (1997). The selected alternative established BMU-specific standards and provided the rationale for varying from the benchmark values.

For the Mt. Headley BMU (also known as BMU 22) located on the Lolo NF, the standard is to maintain no more than 33 percent OMRD and no more than 35 percent TMRD (see table 8 and excerpt from the Record of Decision in appendix 2 of this BA). TMRD was set higher than the research benchmark because the amount and pattern of private ownership precludes attaining 26 percent. The higher TMRD is anticipated to cause adverse effects due to disturbance and displacement of individual grizzly bears that are present in the BMU. The adverse effects may be ameliorated by high quality habitat that is available in a large undisturbed area in the center of the BMU (Cube Iron/Silcox proposed wilderness and roadless areas north to Benson and Lone Tree peaks). This BMU is a major component of the Cabinet-Yaak to Bitterroot Linkage Zone identified by Servheen et al. (2001).

NCDE recovery zone

OMRD and TMRD were calculated in the 2017 biological assessment for the NCDE Grizzly Bear Amendments (USDA Forest Service 2017a). Table 9 shows the current environmental baseline of OMRD and TMRD for each BMU subunit on the Lolo NF. These metrics may have been updated since 2017 to reflect improved information or changes that are allowed under the standards and guidelines.

Table 9. Existing motorized route density by BMU subunit on the Lolo NF *(from NCDE monitoring report 2020)*

BMU Subunit	OMRD (percent of area with >1 mi/mi^2)	TMRD (percent of area with >2 mi/mi^2)
Monture	1%	1%

Mor-Dun	18%	14%
North Scapegoat	0%	0%
South Scapegoat	12%	16%
Mission	24%	49%
Rattlesnake	6%	11%
Swan	32%	19%

Forest plan standard NCDE-STD-AR-01 allows administrative use of roads that are closed to public motorized use within the recovery zone, provided that doing so does not exceed either six trips (three round trips) per week or one 30-day unlimited use period during the non-denning season. Exceptions to this standard are allowed for emergency situations.

In the NCDE, the research benchmarks of 19 percent open motorized route density of more than 1 mi/mi^2, and 19 percent total motorized route density of more than 2 mi/mi^2 are used to determine when conditions are more favorable for bears. The Monture, Mor-Dun, North Scapegoat, South Scapegoat, and Rattlesnake BMU subunits are more favorable for bears because these BMUs are below the OMRD and TMRD research benchmark values. It is unlikely for the OMRD or TMRD baseline for these BMUs to rise to the level of adverse effects on grizzly bears.

Due to land ownership patterns and other specific circumstances, the Mission BMU subunit currently does not meet either research benchmark as the OMRD and TMRD are at higher levels. Similarly, the Swan BMU subunit does not meet the OMRD benchmark value due to its shape and land ownership pattern. Some ongoing adverse effects to individual bears are likely occurring due to disturbance and displacement as a result of the current conditions as represented in the environmental baseline.

Lolo NF lands outside of recovery zones

Outside of the recovery zones, NCDE Zone 1, and the Ninemile DCA, there are no Lolo Forest Plan standards specifically aimed at coordinating management of motorized access with grizzly bears. The Lolo Forest Plan (USDA Forest Service 1986) contains several forest-wide standards that guide the coordination and management of forest roads that indirectly affect grizzly bear habitat. For example, standard 49 (p. II-17) limits roads to the minimum number and design standard to meet resource needs. Standard 52 (pp. II-18 and II-19) directs the management of Forest roads to provide for resource protection, wildlife needs, commodity removal, and a wide range of recreation opportunities. Part (e) specifically addresses grizzly bear habitats, providing for "seasonal road closures if necessary to reduce the risk of human-caused bear mortality, closure of all non-arterial systems April 15 to June 15 within designated essential habitat spring range, and closure of roads that bisect identified critical habitat components July 15 through October 15." The forest plan restricts open road densities to a maximum of 1.1 mi/mi^2 in highly productive big game summer range.

The use of motorized wheeled vehicles off of existing designated roads and trails is not permitted on the Lolo National Forest. The Lolo NF's Motor Vehicle Use Map shows the routes that are designated for motor vehicle use, what type or class of vehicles are allowed on each route, and seasons or times of the year the use is allowed. Users are responsible for ensuring they are on a route designated for the motor

vehicle being used. The MVUM is updated annually and is available to the public in print and on the Forest's web site. https://www.fs.usda.gov/detailfull/lolo/maps-pubs/?cid=stelprdb5097692&width=full.

Roads and trails closed to public motorized use remain available without limitations to Forest Service personnel for administrative purposes including wildfire suppression, search and rescue, medical emergencies, permit administration, data collection, noxious weed treatments, general management, and other activities. The effects of administrative use of roads on grizzly bears is likely similar to open roads in terms of disturbance and displacement, but the risk of mortality is low because agency personnel and contractors are typically not allowed to carry firearms and are trained in bear safety.

The 2011 Record of Decision (USDA Forest Service 2011) for Motorized Access Management in the Selkirk and Cabinet-Yaak recovery zones established direction for mapped areas of recurring use by grizzly bears outside of and adjacent to the recovery zones, known as BORZ. In the BORZ, no increases in linear miles of road unless covered under subsequent project-level analysis and consultation. As discussed previously, there are few records of grizzly bears occurring in the Mt. Headley BMU, and at present it is not known to be occupied by any female grizzly bears with young (Kasworm et al. 2020 p. 24). To date, no BORZ have been delineated on the Lolo NF. For this analysis, 30 grizzly bear analysis units (GBAUs) were delineated outside of the recovery zones and are used to describe effects within appropriately-sized areas (see figure 2 and additional details in Appendix 4).

Ninemile DCA

Within the Ninemile demographic connectivity area, about 607 miles of Forest Service roads and 37 miles of Forest Service trails are open to public motorized use on about 401 square miles of NFS land, for an existing average motorized route density of 1.6 miles/square mile (data from 2019 NCDE monitoring report). This existing motorized route density is expected to be generally compatible with occupancy by and survival of female grizzly bears, including those with dependent young (Boulanger and Stenhouse 2014). Forest Plan standard NCDE-LNF Zone 1-STD-01 requires no net increase in the density of roads and trails open to public motorized use during the non-denning season on National Forest System lands within the Ninemile demographic connectivity area. The environmental baseline with respect to motorized routes open to the public are expected to support habitat connectivity between the NCDE and the other recovery zones, which is the goal of the demographic connectivity area.

NCDE Zone 1

Currently, on the Lolo NF in Zone 1 outside the Ninemile demographic connectivity area, about 262 miles of Forest Service roads are open to public motorized use on about 245 square miles of NFS land, for an existing open road density of just under 1.1 miles/square mile (data from NCDE 2019 monitoring report). Based on data presented by Boulanger and Stenhouse (2014), this existing density of roads open to public motorized use is expected to be compatible with bear occupancy and to support survival of females with dependent young sufficient for a stable to increasing population trend. Forest Plan standard NCDE-LNF Zone 1-STD-01 requires no net increase in the density of roads open to public motorized use during the non-denning season on National Forest System lands within NCDE zone 1 (other than the Ninemile demographic connectivity area).

Developed recreation sites

Developed recreation sites are sites or facilities on federal lands with developments that are intended to accommodate public use and recreation. Examples include campgrounds, rental cabins, summer homes, and visitor centers. Developed recreation sites can impact bears through temporary or permanent habitat loss and displacement, but the primary concern is human-grizzly bear conflicts caused by unsecured bear

attractants, habituation of bears to human presence, and food conditioning of bears, which frequently lead to grizzly bear mortality or removal from the ecosystem (Knight et al. 1988). Developed recreation sites that support overnight public use are thought to have a higher potential to increase both the levels of bear attractants and grizzly bear mortality risk (NCDE Subcommittee 2020).

Existing forest plan direction has discouraged expansion of developed recreation sites on the Forest, instead relying on the private sector and other agencies to meet increased demand. Sites receiving low levels of public use or that are not cost-effective were to be considered for temporary closure. The locations of existing developed recreation sites are shown in figure 3 in appendix 1.

To aid in trash and food storage, the LNF has installed several bear resistant trash containers and bear resistant food storage boxes across the Forest, mostly located in campgrounds. Whether a location has a bear resistant food container or trash container or not, visitors are responsible for ensuring attractants are stored properly according to the forest-wide food/attractant storage order.

Cabinet-Yaak recovery zone

There is no forest plan direction pertaining to developed recreation sites that is specific to the Mt. Headley BMU. Forest GIS data as of June 2021 show that there are five developed day-use only and five developed overnight use sites in this BMU.

Given the small number of existing developed recreation sites, food/attractant orders and policies that are in place, and Forest Plan direction that discourages expansion of developed recreation sites, the existing environmental baseline with regard to developed recreation sites may cause disturbance of individual grizzly bears but is unlikely to cause habitat displacement or food conditioning that would rise to the level of adverse effects.

NCDE recovery zone

The NCDE grizzly bear amendment added desired conditions, standards, and guidelines to the Lolo Forest Plan regarding developed recreation sites. Within the recovery zone, standard NCDE-STD-AR-05 limits any increase in the number and capacity of developed recreation sites that are designed and managed for overnight use by the public during the non-denning season to one increase per decade per bear management unit. Guideline NCDE-GDL-AR-03 states that if the number or capacity of day-use or overnight developed recreation sites is increased, the project should include one or more measures to reduce the risk of grizzly bear-human conflicts in that bear management unit. Such measures could include but are not limited to additional public information and education, providing backcountry food-hanging poles or bear-resistant food or garbage storage devices, project design criteria that would limit capacity increases to those needed for public health and safety, and increasing law enforcement and patrols.

The current number of developed recreation sites by BMU is shown in table 10. Note that the Monture-Landers Fork BMU spans both the Lolo NF and the Helena-Lewis and Clark NFs, and the Upper South Fork Flathead BMU spans both the Lolo NF and the Flathead NF. For Lolo NF lands only, queries of Forest GIS data show a total of three developed sites with overnight use, 17 sites with day-use only, and five administrative sites.

Table 10. Existing developed recreation sites by bear management unit in the NCDE recovery zone *(from NCDE Monitoring Report 2020)*

BMU Name	Recreation Residences	Campgrounds		Other Sites with Overnight Use		Day-Use Trailheads	Other Day-Use Sites	Admin. Sites
		# of Campgrounds	# of Campsites	# of Sites	Type of Capacity			
Monture-Landers Fork	0	5	47	1	1 cabin	41	13	7
Rattlesnake	0	1	3	1	1 cabin	3	-	0
Upper South Fork Flathead	0	0	-	1	1 cabin	5	2	6

There is no history of recurring conflicts at developed recreation sites on the Lolo NF. From 2000 through 2010, four known grizzly bear mortalities occurred inside the Lolo National Forest boundary, and 14 mortalities occurred off the Forest but in the occupied distribution area south of the Forest boundary (Mace and Roberts 2011). Causes of death included collisions with cars, mistaken identity, illegal shooting, and defense of life. None of the mortalities on the Lolo National Forest were known or suspected to be associated with food conditioning or unsecured attractants at developed recreation sites.

Given the small number of existing developed recreation sites that provide overnight use, food/attractant storage orders and policies that are in place, and Forest Plan direction that discourages expansion of developed recreation sites, the existing environmental baseline with regard to developed recreation sites in the NCDE portion of the Lolo NF may cause disturbance of individual bears but is unlikely to rise to the level of adverse effects by causing habitat displacement or food-conditioning of grizzly bears. .

Bitterroot recovery zone

There are no developed recreation sites on the Lolo NF within the Bitterroot recovery zone, and none are anticipated to be developed under continued implementation of the forest plan. No effects on grizzly bears are anticipated with regard to the environment baseline for developed recreation sites in this portion of the Forest.

Lolo NF lands outside of recovery zones

Outside of the NCDE recovery zone, there is no Forest Plan direction specific to coordinating developed recreation sites with grizzly bear conservation. The number of existing developed recreation sites and administrative sites are shown in table 11. Their locations are shown in figure 3 in appendix 1.

As described previously, sites with regular overnight use have a greater potential to cause adverse effects to grizzly bears due to displacement or food conditioning. However, there is no history of recurring grizzly bear-human conflicts at developed recreation sites on the Lolo NF. Although the potential for conflicts remains, the likelihood of adverse effects on bears appears to be low.

Table 11. Developed recreation and administrative sites outside of recovery zones on the Lolo NF *(from Forest GIS data June 2021)*

Portion of the Forest (percent of Lolo NF ac)	Recreation Residences	Overnight use recreation sites[1]	Day-use only recreation sites [2]	Administrative sites
NCDE Zone 1 and Ninemile DCA (19%)	27	14	16	19
Remainder of Lolo NF (61%)	0	34	45	28
Totals	**27**	**56**	**83**	**52**

[1] Overnight use: campgrounds, rental lookout or cabin, ski area with overnight lodging

[2] Day use: picnic area, interpretive site, observation site, fishing site, snow play area, trailhead

Recreation

There is a national trend of increased participation in outdoor recreation (White et al. 2016). The primary concern related to recreation activity is that it may increase the probability of human-grizzly bear encounters, with subsequent increases in injuries or human-caused mortality (Mattson et al. 1996). Dispersed recreation could also disrupt access to important food resources such as insect aggregation sites and huckleberry fields. Individuals recreating in bear country also could disturb hibernating bears or bears at their natal dens.

Dispersed recreation

Dispersed recreation consists of those activities that take place outside of developed recreation areas. Dispersed sites generally do not have fees associated with them and have little or no facilities such as toilets, tables, or garbage collection. Types of dispersed activities that occur on the Forest include, but are not limited to, camping, hiking, fishing, skiing, hunting, gathering huckleberries, horseback riding, river use, and snowmobiling.

Dispersed recreation occurs across much of the Forest, but typically occurs in close proximity to roads. However, there are opportunities for cross country (e.g. hiking or horseback) dispersed recreation, especially for game hunting purposes where people may access areas not commonly visited by people.

Non-motorized trail uses (hiking, horseback riding, mountain biking) inherently have some risk of facilitating grizzly bear-human conflicts (Herrero and Herrero 2000). These conflicts can pose risks to human and bear safety. Based upon his study of bear attacks in Canadian national parks, Herrero (1985) reported that in 68 out of 135 grizzly bear incidents in which the party's activity prior to the bear attack was known, hiking was the most common activity. Sudden encounters are the most likely situation to result in a grizzly bear-inflicted injury (Herrero 1985). Herrero reported that 75 percent of encounters he classified as "sudden" involved bear mothers, with females and cubs of the year being most dangerous. Attacks by bears on humans in North America are disproportionately more frequent in national parks, most being the result of sudden encounters between hikers and grizzly bears that react defensively to protect young or a food source.

Dispersed recreation including the use of non-motorized trails may cause disturbance of grizzly bears to varying degrees. However, grizzly bear mortality related to non-motorized recreation is rare and population-level impacts have not been documented (Jope 1985, Kasworm and Manley 1990, Mace and Waller 1996, White et al. 1999). Interactions with recreationists may disrupt bear's access to important food resources such as insect aggregation sites and huckleberry fields. However, except in the rare cases where a human-bear encounter leads to bear mortality, it is unlikely that the impacts of dispersed recreation would rise to the level of an adverse effect.

Winter recreation

Winter activities such as ski area operations, avalanche blasting, and snowmobiling may occur in potential denning habitat. In a review of the limited information available on black, brown (grizzly), and polar bears, Linnell et al. (2000) reported that bears readily den within 0.6–1.2 mi of human activity (roads, habitations, industrial activity) and appear to be undisturbed by most activity that occurs at distances farther than 0.6 mi. They cautioned that human activity within 0.6 mi might lead to den abandonment, especially early in the denning season. Anecdotally, litter abandonment by grizzly bear mothers due to snowmobiling activity has not been documented in the lower 48 states (Hegg et al. 2010), nor have adverse effects on bears from snowmobiles been substantiated (Mace and Waller 1997).

Mace and Waller (1997) reported no den abandonment despite routinely observing snowmobile activity within two kilometers of denning grizzly bears in the NCDE. There was no apparent avoidance of areas open to winter over-snow use, with den distribution being similar to the availability of denning habitat in the NCDE. Similarly, in the Greater Yellowstone Ecosystem no abandonment of dens was observed as a result of motorized over-snow travel in their vicinity (Hegg et al. 2010). Linnell et al. (2000) reported that bears denned within 0.6-1.2 miles of human activity (roads, habitations, industrial activity), and did not appear to be disturbed by most activities occurring at distances greater than 0.6 miles from dens. They cautioned that human activity within 0.6 mile potentially might lead to den abandonment, especially early in the denning season.

Snowmobiling is the primary form of winter motorized recreation on the Forest. There are about 550 miles of over snow vehicle routes that include trails or roads that function as over snow vehicle trails during the winter months. About half of those miles of over snow vehicle routes occur on the Seeley Lake Ranger District, while the Missoula and Superior Ranger Districts host the majority of the remaining half of the miles of snowmobile routes.

Over snow vehicles are authorized to travel off of designated routes to travel cross country in particular areas on the forest. About 66 percent of the LNF allows cross country travel with over snow vehicles, either all winter or seasonally, although over snow vehicles can be limited where they can travel given natural conditions like topography and snow depth. The remaining about 34 percent of the LNF does not authorize snowmobile use which includes wilderness and other sensitive areas.

For the Bitterroot, Cabinet-Yaak, and NCDE Recovery Zones, about 52 percent of the recovery zones and 16 percent of the NCDE zone 1/Ninemile DCA are closed year-round to all over the snow vehicles. There is a small percentage (<1 percent) within the recovery zone and zone 1/Ninemile DCA with seasonal restrictions for over snow vehicle use. For the portion of the Forest outside the recovery zones and zone 1/Ninemile DCA, about three percent has a seasonal over the snow vehicle closure while about 34 percent has a year-round closure.

Seeley Lake Ranger District is a snowmobile destination area. Groomed snowmobile routes and snowmobile play areas are mainly concentrated outside the recovery zone. Several management areas prohibit snowmobile use across large portions of the district (MAs 10, 11 and 12). The Missoula and Superior Ranger Districts have many miles of trails and roads for snowmobile recreation, in addition to areas where snowmobiles may travel off the roads and trails, such as Lolo Creek, Mineral Peak, Shoofly Meadow, and Twin Creeks. Snowmobile trails and roads that allow snowmobile use are less common on the Ninemile and Plains/Thompson Falls Districts. All over-snow vehicle use on the Forest is limited by the Over Snow Vehicle Use Map that is available to the public at Lolo National Forest - Maps & Publications (usda.gov).

The grizzly bear species status assessment stated that there is no evidence to indicate that current levels of recreation are limiting grizzly bear populations (USFWS 2021). Although sample sizes are small, there is no evidence from research to date that indicates existing winter motorized activities have adverse effects on denning grizzly bears.

Disturbance by aircraft

The use of aircraft on the Forest could occur for several possible reasons and would be primarily related to tree harvest, although aircraft may be used for reconnaissance and for emergency actions such as during wildland fire suppression. The potential effects resulting from aircraft disturbance isn't well studied and our best information is often reliant on anecdotal observations; consequently, available information and guidance are limited. The Conservation Strategy for the Grizzly Bear in the Northern Continental Divide Ecosystem (Northern Continental Divide Ecosystem Subcommittee 2020) identifies and provides management guidance for several factors that influence grizzly bears including potential disturbance and displacement from habitat. The conservation strategy identifies the potential for disturbance by recurring low-elevation (<500m) helicopter flights. Further, the Montana/Northern Idaho Level 1 Terrestrial Biologists Team (2009) assembled a guidance document to provide additional information and improve consistency for estimating effects and possible minimizations to reduce the possibility of disturbance. There is no evidence to date that indicates existing aircraft activities have had or are having adverse effects on grizzly bears.

Disturbance at grizzly bear natal den sites

There appears to be some potential for disturbance by snowmobiling during the den emergence period (Mace and Waller 1997, Haroldson et al. 2002). After leaving the den in the spring, grizzlies have high energetic needs and usually move to lower-elevation habitats such as riparian areas and avalanche chutes to forage (Waller and Mace 1997). However, because cubs have limited mobility, females with cubs remain in the vicinity of the den for several weeks after den emergence (Mace and Waller 1997, Haroldson et al. 2002). Disturbance that caused a female to prematurely leave the den in spring or move from the den area could impair the nutritional status of the cubs. There is also the potential of separating a mother from her cubs, resulting in cub mortality. For these reasons, bear research scientists and managers have speculated that a female with cubs may be particularly vulnerable to disturbance by snowmobiles in the period shortly before or after den emergence in the spring.

Mace and Roberts (2014) reported that 72 females on the west side of the Continental Divide emerged in the spring between the third week of March and the fourth week of May, with most occurring during the second week of April. In three earlier grizzly bear denning studies conducted in the NCDE, the den emergence period was similar, as follows. The median date of exit on the east side of the Continental Divide was April 7 (Aune and Kasworm 1989), Apri1 14 in the Swan Mountains (Mace and Waller 1997), and early April in the Mission and Rattlesnake Mountains (Servheen and Klaver 1983). Among the different age and sex classes, females with cubs entered their dens earlier and emerged later.

On the Lolo National Forest, Seeley Lake Ranger District is a snowmobile destination area. Spring road closures are in place around Colt Creek, Morrell Falls, Richmond Peak, and Clearwater Lake to specifically protect grizzly bears from snowmobile and other motorized disturbance during the non-denning period from April 1 to June 30.

Livestock grazing

When the grizzly bear was listed in 1975, the USFWS identified a concern about livestock use of national forests "unless management measures favoring the species are enacted" (40 FR p. 31734). Impacts to grizzly bears from livestock operations potentially include competition for preferred forage, displacement

of bears due to livestock-related activity, and direct mortality due to control actions as a consequence of livestock depredation or learned use of bear attractants such as livestock carcasses and feed.

Grizzly bears frequently coexist with large livestock such as adult cattle, horses, or mules without preying on them. However, when grizzly bears encounter smaller animals such as domestic sheep, domestic goats, calves, or chickens, they often will attack and kill them (Knight and Judd 1983, Anderson et al. 2002). If repeated depredations occur, managers will respond by relocating bears or removing them from the population. Thus, areas with small domestic livestock have the potential to become population sinks for grizzlies (Knight et al. 1988). Because of the increased risk to grizzly bears posed by domestic sheep and other small livestock, the Interagency Grizzly Bear Guidelines (IGBC 1986) emphasized the desirability of phasing out these types of allotments.

There are no active grazing allotments for domestic sheep or other small livestock on the Lolo National Forest. As a consequence, the risk of depredations and subsequent adverse management actions against grizzly bears is very low on the Lolo NF.

There are 11 active cattle grazing allotments on the Forest, with one each in the Cabinet-Yaak recovery zone, the NCDE recovery zone, NCDE Zone 1, and the Ninemile demographic connectivity area (table 12). There are seven active allotments in the remaining portion of the Forest. The active cattle allotments encompass 80,878 acres, or 3.6 percent of the Lolo NF.

Table 12. Active livestock grazing allotments in various portions of the Lolo NF *(from Forest GIS data)*

	Number of active cattle allotments	Acres of active cattle allotments	Number of domestic sheep allotments
Cabinet-Yaak recovery zone	1	78	0
NCDE recovery zone	1	220	0
NCDE Zone 1	1	1,984	0
Ninemile DCA	1	6,830	0
Bitterroot recovery zone	0	0	0
Remainder of Lolo NF	7	71,766	0
Totals	**11**	**80,878**	**0**

Over the life of the Forest Plan, the number of grazing allotments has substantially decreased. In 1986, the Final EIS for the Lolo Forest Plan disclosed that there were 128 range allotments, 14 of which were for wilderness pack stock with the remainder for non-wilderness grazing. About 60 percent of the allotments were active and about 40 percent were inactive at that time. Forest Plan direction indicates for each Management Area whether or not livestock grazing will be permitted. Additional guidance for Range Practices is provided for MA-12 Wilderness, MA-14 riparian, and MA-20 grizzly bear habitat, which is primarily aimed at avoiding overutilization of forage in areas where cattle naturally tend to congregate. The 2018 NCDE grizzly bear amendments added further direction specific to coordination of livestock grazing with grizzly bear conservation in order to minimize mortality risk (see appendix 2).

The grizzly bear species status assessment (USFWS 2021) reported that in the NCDE, management removals due to grizzly bear conflicts with livestock (on both public and private land) accounted for nearly 38 percent (36 of 196) of all management removals and 14 percent (36 of 255) of all known mortalities which may include mortalities of independent-age bears within the demographic monitoring

area between 2002 and 2019 (MFWP, unpublished data). In addition, management removals related to livestock outside the demographic monitoring area were responsible for nearly 36 percent (13 of 36) of all management removals and 11 percent (13 of 117) of all known and probable mortalities of dependent bears (MFWP, unpublished data). However, none of these mortalities occurred inside the NCDE recovery zone within NFS lands where several measures to reduce livestock conflicts are in place. Nor were any mortalities related to livestock grazing reported for the Cabinet-Yaak recovery zone.

Based on the declining numbers of livestock grazing allotments, and specifically domestic sheep allotments, along with the forest-wide food/attractant storage order, it is not expected that the environmental baseline will cause adverse effects due to competition for preferred forage, displacement resulting from livestock-related activity, or direct mortality of grizzly bears.

Vegetation management

Grizzly bears utilize numerous different habitats for foraging and cover. Vegetation management alters the amount and arrangement of forage and cover available to bears. Waller (1992) reported that grizzly bears avoided lower-elevation more accessible harvested stands as well as stands less than 30 to 40 years old where the vegetation had not recovered enough to provide cover. Timber harvest and wildland fire can locally increase bear foods by stimulating the growth of grasses, forbs, and berry-producing shrubs (Waller 1992, Blanchard and Knight 1996). On the other hand, associated roads and human activity can negatively affect grizzly bears by disturbing or displacing bears during logging activities and by increasing mortality risk (Zager et al. 1983). Grizzly bears tend to use habitats more frequently where some type of hiding cover is available nearby, particularly during daylight hours (Aune and Kasworm 1989, Mace and Waller 1997).

The Lolo Forest Plan established a forest-wide objective to “provide for the maintenance of a diverse mosaic of vegetational development, well distributed across the Forest to ensure ecological integrity” (p. II-2). Under the Lolo Forest Plan, approximately 1,239,000 acres were identified as suitable for timber production (FEIS alternative d). The 1986 Forest Plan, recognizing the need to protect soil and water resources and other multiple uses, projected that the average annual harvest would be 133 MMBF during the 2001-2030 time period (Forest Plan pp. IV-29 to IV-30).

The 2000-2001 Forest Plan Monitoring Report provided a comparison of projected vs. actual annual average acres treated during 1987–2001 by various silvicultural activities, reproduced below. Much less regeneration harvest (clearcut, seed tree and shelterwood) actually occurred than had been projected, and more commercial thinning occurred than had been projected, during that time period.

Table 3-12A. Outputs - Actual vs. Projected Silvicultural Activities, 1987-2001.

Activity	Forest Plan Projected Annual Average (acres)	Actual Annual Average to Date (acres)	Percent of Projected
Silvicultural Exams	62,000	42,000	68%
Clearcut Harvested Seed Tree Harvested CC & ST Harvested	NA NA 3,700	941 930 1,876	NA NA 51%
Shelterwood Harvested	10,320	726	7%
Overstory Removal Harvested	NA	319	NA
Selection Harvested	1,670	215	13%
Sanitation/Salvage Harvested	NA	887	NA
Commercial Thinning	200	434	198%
Timber Stand Improvement (appropriated)	773	861	111%

The 2020 Forest Plan Monitoring Report also summarized timber program accomplishments for the period 2018 to 2020. The average acres of regeneration and intermediate harvests over the three-year period was 5,562 acres, a substantial increase compared to the earlier time period, yet still well below the Forest Plan projection. In addition, the Forest reported that an average of 5,980 acres of mechanical fuels treatments not related to timber harvest were completed from 2018 to 2020.

Wildfire has a strong influence on the age distribution and spatial arrangement of forest vegetation. The Monitoring Report showed a large acreage of natural ignition wildfires, burning 228,168 acres resulting from the 2017 wildfires. The size and severity of wildfires is expected to continue to increase due to climate change.

The existing environmental baseline is characterized by a forested matrix with early successional stages created by vegetation management and wildfires. The current environmental baseline provides a variety of bear foods while maintaining a mosaic of food and cover. Vegetation management activities can cause short-term disturbance and displacement of bears if cover is lacking, until the vegetation has regrown sufficiently to again provide cover. As noted in appendix 2, there is no Forest plan standard for cover, although the 1994 grizzly bear strategy recommended maintaining 75 percent or more cover per bear management analysis area.

Minerals and energy exploration and development

The production of oil and natural gas on federal lands is conducted through a leasing process under the Federal Onshore Oil and Gas Leasing Reform Act of 1987 (PL 100–203). Mineral development refers to surface and underground hardrock mining and coal production, which is regulated by permits on National Forest System lands under the Mining Act of 1872, as amended through PL 103–66. The Mineral Materials Act of 1947, as amended through PL 96–470, provides for the sale or public giveaway of certain minerals such as sand or gravel.

The potential for oil and gas resources on the Forest is considered to be low. There is no gas or oil exploration or development occurring on the Lolo National Forest at this time, thus no ongoing effects are occurring.

There are two active gold mines and one quartz crystal mine located on the Lolo NF. Each of these mines has less than half an acre of surface disturbance (Forest Geologist D. Scott Gerwe, personal communication 2021). Activity at these mines may cause disturbance to any bears that are in the vicinity.

Connectivity between recovery zones

Dispersal between disjunct populations can play an important role in the persistence of a species by increasing genetic diversity in the receiving population, facilitating colonization and recolonization of unoccupied habitats and augmenting the numbers of small populations (Hanski and Gilpin 1997, Mattson and Merrill 2002). In this section, the effect of the Lolo Forest Plan is evaluated in this larger context.

Proctor et al. (2012) used genetic data from 3,134 grizzly bears along with radio telemetry location data from 792 grizzly bears across western Canada and northern United States to assess large-scale movement patterns and genetic connectivity among bear populations. In the northern, more remote portion of their distribution in Canada, grizzly bear populations were found to be well connected, with movement, dispersal, and gene flow influenced by distance and natural topographic features (e.g., icefields), as would be expected. In contrast, in the southeastern part of their distribution, rates of movement and genetic interchange were impaired. Population fragmentation in these areas was associated with human settlements, highways, and human-caused mortality. Maintaining or improving connectivity is critical for isolated populations such as the Greater Yellowstone Ecosystem, small populations such as in the Cabinet-Yaak Ecosystem, and areas without resident bears, such as the Bitterroot Ecosystem.

Young female grizzly bears usually establish home ranges that overlap with their mother's (Blanchard and Knight 1991). McLellan and Hovey (2001) measured the distances between the home range center of a mother and those of her dispersed offspring (30 offspring, 12 females and 18 males) over 20 years. They reported that females dispersed, on average, 5.9 miles from their maternal home range, whereas males dispersed 17.9 miles. Using genetic analysis of 711 grizzlies in southwestern Canada, Proctor et al. (2004) estimated that females, on average, dispersed 8.6 miles from the center of the natal home range; males, on average, dispersed 25 miles from a natal or maternal home range.

Proctor et al. (2012) found that male grizzly bears generally move more frequently and over longer distances than females. The maximum dispersal distances estimated by the authors were about 47 miles for a female and 104 miles for a male. The distance between the known distributions of the NCDE and GYE, and from the NCDE distribution to the Bitterroot Ecosystem (figure 1 in appendix 1), are approaching or within the dispersal range of male bears.

The Nature Conservancy mapped landscape permeability for the Pacific Northwest (McRae et al. 2016) including western Montana, by classifying areas as having high, moderate, or low landscape permeability. Overall, their analysis indicated that the network of federal lands in northwestern Montana provides a moderate to high degree of landscape permeability for wildlife.

Cabinet-Yaak

A goal of the recovery plan for the Cabinet-Yaak Ecosystem is to attain a population of approximately 100 animals (USFWS 1993). Because of the small size of this recovery zone, achieving and maintaining the population goal will require connectivity with other grizzly bear populations to maintain genetic health over time.

Kasworm et al. (2020) summarized data on movements of bears into and out of the Cabinet-Yaak recovery zone. A pilot program tested the feasibility of population augmentation by releasing four subadult female bears with no history of conflicts with humans from southeast British Columbia into the Cabinet Mountains during 1990–94. Success of the augmentation pilot program prompted additional

augmentation, with ten female bears and eight male bears moved from the Flathead River to the Cabinet Mountains during 2005–19. Three of these individuals died during their first year; two were illegally shot and one was struck by a train. Eight of the bears left the target area for augmentation, but three returned. The augmentation effort appears to be the primary reason grizzly bears have persisted and are increasing in numbers in the Cabinet Mountains.

During the period 1983–2019, 36 grizzly bears were identified as immigrants, emigrants, or were the offspring of immigrants to the CYE. Fourteen individuals (11 males and 3 females) are known to have moved into the CYE from adjacent populations; most of these immigrants originated in the North Purcells or South Selkirks, with only three moving from the NCDE. Gene flow has been documented through

reproduction by three immigrants from the North Purcells (two males and one female) producing four offspring in the CYE (Kasworm et al. 2020).

These observations suggest that movement between grizzly bear populations is possible under the conditions of the environmental baseline. The NCDE appears to be capable of serving as a source population for the CYE, based on its large, increasing population size and its expanding distribution (NCDE Subcommittee 2020), although only a few bears have moved from the NCDE to the Cabinet-Yaak to date.

There are some large roadless land areas immediately south of BMU 22 that may help facilitate connectivity between the Cabinet-Yaak and the Bitterroot recovery zones in the future.

Bitterroot Ecosystem

The NCDE, Selkirk, and Cabinet-Yaak populations could serve as a source of grizzly bears for the unoccupied Bitterroot Ecosystem recovery area. It would require movement of both male and female grizzly bears to establish a population in the Bitterroot Ecosystem. Because females disperse less often and for shorter distances than males, occupancy by female bears is likely to take much longer to achieve than the movement by male bears that is needed to establish genetic connectivity with the GYE. The distribution of grizzly bears in northwestern Montana has been expanding and the environmental baseline conditions on the Lolo NF appear to be compatible with supporting movement of grizzly bears from the Cabinet-Yaak or NCDE recovery zones to the Bitterroot recovery zone.

Greater Yellowstone Ecosystem

It is estimated that periodic immigration (one to two male migrants every 10 years) would be sufficient to provide for genetic connectivity of the GYE (Miller and Waits 2003). The NCDE appears to be more than capable of serving as a source population for other grizzly bear populations, including the GYE, based on its large, increasing population size and its expanding distribution (NCDE Subcommittee 2020).

Several potential linkage areas have been identified that could facilitate the natural movement of grizzly bears into the GYE (Servheen et al. 2001, Walker and Craighead 1997). Peck et al. (2017) used GPS telemetry data from 173 male grizzly bears in the NCDE and the GYE and a new analysis method (randomized shortest path algorithm and step selection function models) to identify possible routes for male-mediated gene flow. These models depicted numerous potential paths from the NCDE to the GYE. The more likely pathways to connect the NCDE and GYE grizzly bear populations are through the Tobacco Root/Boulder Ranges, the Flint Creek/Garnet Ranges, or the Bridger/Big Belt Ranges. The Sapphire Mountains were predicted to have at least a low potential for movement under all models. The predicted paths were corroborated by the locations of confirmed observations of 21 grizzly bears located 4.8 miles or more outside the two occupied ranges. The closest proximity is about 66 miles, between the Boulder and Madison Mountain ranges. The authors concluded that the probability of successful natural dispersal from the NCDE into the GYE remains low, due to the distance between the current occupied

ranges and large intervening areas of inter-mountain valleys encompassing human settlements, highways, and agriculture.

Climate change

The rate of change and the impacts from climate change are accelerating across the globe. The USFWS examined the potential effects of ongoing and projected changes in climate on the grizzly bear in its species status assessment (USFWS 2021a). The most likely ways in which climate change may affect grizzly bears are reduction in snowpack levels which may shorten the denning season, shifts in timing of the denning season, shifts in the abundance and distribution of some natural food sources, and changes in fire regimes due to summer drought.

Reduced snowpack or a shorter winter season possibly may improve over-winter survival of bears, assuming that sufficient bear foods are available later in the fall and earlier in the spring. However, a shorter denning period could increase the potential for spring and fall encounters between grizzly bears and hunters and/or recreationists, which in turn would increase the risk of mortality to grizzly bears (Servheen and Cross 2010).

The extent and rate to which individual plant species or plant communities are impacted by climate change is not possible to predict with any level of confidence (Fagre et al. 2003, Walther et al. 2002). However, there is general consensus that grizzly bears are flexible enough in their diet that they are not and will not be impacted directly by plant community changes due to climate change (Servheen and Cross 2010).

Fire frequency and severity are increasing in the western United States as a result of summer droughts exacerbated by climate change (Nitschke and Innes 2008). Large, severe wildfires that convert mature forest to early successional condition alter the availability of grizzly bear foods and cover, potentially changing how bears use the landscape. Decreases in forest cover could benefit grizzly bears by increasing the production of shrubs, berries and root crops in the years following large fires (Blanchard and Knight 1996), provided that appropriate hiding cover remains available.

Grizzly bears are habitat generalists and opportunistic omnivores, which may make them less susceptible to changes in plant communities than some other species of wildlife. The continuing effects of climate change appear to be unlikely to reduce the ability of the Lolo NF to support a population of grizzly bears and the movement of grizzly bears between recovery zones.

Other forest management actions that are part of the baseline

In addition to the programs and activities discussed above, other federally authorized activities occur on the Lolo NF that could potentially disturb or displace grizzlies.

Activities such as road and trail maintenance, noxious weed control, maintenance and use of communication towers and other utilities, and gathering of firewood and other miscellaneous forest products may occur on an annual or infrequent interval. These types of activities are typically of low intensity and short duration. They may cause local disturbance to individual grizzly bears that are in the immediate vicinity.

These various past and present activities are ongoing and are part of the current baseline habitat conditions experienced by grizzly bears. It is important to note that these authorized activities were occurring during the period when research showed that the NCDE and Cabinet-Yaak grizzly bear populations were stable to increasing in numbers and distribution. These activities are evaluated site-specifically during project analysis.

Effects of continuing to implement the Forest Plan

The forest plan establishes a long-range, integrated strategy for land and resource management. A detailed list of existing Lolo Forest Plan components, including goals, objectives, and standards that are relevant to management of grizzly bear habitat is provided in appendix 2.

Forest plan direction is implemented through projects that are subject to their own ESA section 7 consultation requirements. The potential effects of continuing to implement the forest plan over the next 5 to 10 years on any grizzly bears that may be present either within or outside of the recovery zones are evaluated for the following Forest Service actions: food/attractant storage, motorized access, developed recreation sites, recreation, livestock grazing, vegetation management, minerals and energy exploration and development, and habitat connectivity.

Food/attractant storage

A forest-wide food/attractant storage order has been in place since 2011 and will remain in effect for the foreseeable future. To aid recreationists with trash and food storage, the Lolo NF has installed several bear resistant trash containers and bear resistant food storage boxes across the Forest, mostly located in campgrounds. Whether or not a bear resistant food container or trash container is provided, visitors are responsible for ensuring attractants are stored properly according to the forest-wide food/attractant storage order.

The 2011 Motorized Access Amendment acknowledged that the three forests (Idaho Panhandle, Kootenai, and Lolo NFs) are implementing mandatory food storage orders for NFS lands within the Selkirk/Cabinet-Yaak ecosystems.

Within the NCDE primary conservation area, zone 1 (including the Ninemile demographic connectivity area), and zone 2, guideline NCDE-GDL-WL-02 directs that food/wildlife attractant storage special order(s) be in place on those NFS lands. Within the same areas, guideline NCDE-GDL-WL-01 directs the Forest to inform contractors, permittees, lessees, operators, and their employees of food/wildlife attractant storage special order(s) and procedures for safely working and recreating in grizzly bear country, prior to turnout of livestock or beginning work and annually thereafter, in order to reduce the risk of grizzly bear-human conflicts.

Contracts and special-use permits contain provisions requiring protection of the grizzly bear and its habitat, adherence to requirements for proper storage of food and attractants, and procedures to resolve grizzly bear-human conflicts. Timber sale prescriptions and contracts also incorporate provisions to protect grizzly bear habitat.

Livestock grazing permits include special provisions such as requirements for proper storage of food and attractants as well as carcass removal. Annual monitoring of livestock allotments is performed to check on compliance and assess any conflicts. Disposal of animal carcasses will continue to be emphasized to reduce conflicts with grizzly bears.

Continued implementation of the forest plan direction concerning food/attractant storage will have a beneficial effect by reducing human/bear interactions thus reducing or minimizing mortality risk to grizzly bears.

Secure habitat/core

The Lolo Forest Plan requires a minimum amount of secure core be maintained by BMU subunit within the NCDE and Cabinet-Yaak recovery zones, but there is no forest plan standard to provide a minimum amount of secure core for the Bitterroot Recovery Zone since the portion of the Bitterroot Recovery Zone on the Lolo National Forest occurs within the wilderness. Wilderness has standards that would provide for secure core conditions in the Bitterroot Recovery Zone without a specific forest plan standard. Although the Forest Plan has no requirement to provide secure habitat outside of the grizzly bear recovery zones, this document provides a delineation of secure habitat.

Cabinet-Yaak recovery zone

Under the 2011 Motorized Access Amendment, standards for secure core were set individually for each BMU in consideration of unique biological factors such as habitat quality, seasonal habitat needs, sightings of family groups, records of human caused mortality, and adjacency to BMUs having females with young, as well as other non-biological factors such as presence of highways, private land inholdings, access to popular recreation areas. Secure core areas strive to contain the full range of seasonal habitats that are available in the BMU and are fixed in place for a minimum of 10 years.

In BMUs not meeting their specific standard, which is the case in the Mt. Headley BMU (table 13), projects affecting secure core must result in increased core post-project. Once achieved and in place for 10 years, subsequent changes to secure core are allowed, subject to further section 7 consultation for the proposed project.

Table 13. Existing percent core and Lolo Forest Plan standard for percent core in the Mt. Headley BMU, Cabinet-Yaak Recovery Zone.

Mt. Headley BMU (BMU 22)	Percent Core	Expected compliance date
BMU 22 Compliance Project	52.9% pre-project 55% post-project	Consultation complete, project is being implemented
Forest Plan standard	55%	2011 BO specified compliance on or before Nov. 2022

Under continued implementation of the Lolo Forest Plan, it is expected that the threshold of 55 percent secure core will be reached in the near future and then maintained over time in the Mt. Headley BMU. Thus, suitable habitat conditions are likely to exist that support the survival and reproduction of female grizzly bears occurring in the Mt. Headley BMU over the remaining life of the Lolo Forest Plan.

NCDE recovery zone

In the NCDE, Forest Plan desired condition NCDE-DC-AR-01 states that secure core will be provided at levels that contribute to recovery of the NCDE grizzly bear population. Standard NCDE-STD-AR-02 requires no net decrease from the baseline in the amount of secure core in BMU subunits within the recovery zone/primary conservation area. NCDE-STD-AR-03 allows temporary changes during project activities with a limit of 2 percent reduction of secure core calculated over a 10-year running average. NCDE-STD-AR-04 specifies that temporary public motorized use of restricted roads is not authorized within secure core. Guideline NCDE-GDL-AR-02 states that secure core should be restored to pre-project levels within one year of completion of a project.

Over the life of the forest plan, the levels of secure core in all BMUs will be maintained at the same (or better) level. The Monture, Mor-Dun, North Scapegoat, South Scapegoat, and Rattlesnake BMU Subunits all encompass significant amounts of designated Wilderness and will remain above the research benchmark of 68 percent secure core even if the 2 percent temporary reduction under NCDE-STD-AR-03 were to be used for projects. These BMU subunits are likely to continue to support the survival and reproduction of female grizzly bears, with no adverse effects anticipated relative to availability of secure core.

The Mission and Swan BMU subunits provide substantially less secure core than the five BMU subunits listed above. The relatively low amount of secure core in these two BMU subunits is expected to cause some displacement of grizzly bears from seasonally important feeding sites, increase the risk of human-caused mortality of bears, and increase the risk of habituation of grizzly bears to human activities. Temporary reductions allowed for projects under NCDE-STD-AR-03 would increase these adverse effects. However, given the more favorable habitat conditions on the rest of the Lolo National Forest and across the NCDE, and the improved status of the NCDE grizzly bear population, it is unlikely this would result in measurable negative effects to the overall NCDE population.

Bitterroot recovery zone

No criteria or requirements have been established for secure core in the Bitterroot recovery zone. Because the entire acreage that occurs on the Lolo NF is within Congressionally designated Wilderness, it will continue to function as secure core for the foreseeable future. Therefore, with respect to secure core, continued implementation of the forest plan will have no effect on any bears that are present there.

The grizzly bear species status assessment (USFWS 2021a) recommends that consideration be given to motorized access management to facilitate natural recolonization between the Bitterroot and other recovery zones. This is partially addressed by Forest Plan management direction for the Ninemile demographic connectivity area that establishes a desired condition to provide habitat that can be used by female bears and allow for movement of bears between ecosystems (NCDE-LNF Zone 1-DC-01) and a standard that precludes a net increase above the baseline in the density of roads and trails open to public motorized use during the non-denning season on NFS lands in the DCA (NCDE-LNF Zone 1-STD-01). In the area that lies between the NCDE recovery zone and the Ninemile demographic connectivity area, a desired condition encourages consolidation of NFS lands and conservation easements with willing landowners (NCDE-LNF Zone 1-DC-02).

Since the entire portion of the Bitterroot Recovery Zone on the Lolo NF is within the Selway-Bitterroot Wilderness, there are no motorized routes within this portion of the recovery zone nor are there any known motorized routes adjacent to this portion of the recovery zone. There are other land ownership parcels adjacent to this portion of the recovery zone, but these parcels have no record of motorized routes and the closest known motorized route is distant (>2 miles) from the portion of the Bitterroot Recovery Zone on the Lolo NF. To be conservative, the non-Forest Service ownerships were buffered (500 meters) in the secure habitat delineation to account for motorized routes that may occur on those non-Forest Service ownership but are not recorded in widely available databases. Like other land ownerships, adjacent National Forests could build a motorized route adjacent to this portion of the recovery zone, but it is unlikely given the ruggedness of the topography and the associated costs. Therefore, motorized routes are not likely to have any effect on secure habitat given the lack of motorized routes within or near the portion of the recovery zone on the LNF.

Lolo NF land outside of the recovery zones

There is no requirement to provide secure habitat outside of the recovery zones. Under the NCDE grizzly bear amendments (USDA Forest Service 2018), desired condition NCDE-LNF Zone 1-DC-01 envisions that road conditions in zone 1 and the DCA will provide for public and administrative access to NFS lands while contributing to sustaining the grizzly bear population in the NCDE. Desired condition NCDE-LNF Zone 1-DC-02 envisions that, in areas located between the primary conservation area and the Ninemile demographic connectivity area, NFS lands will be consolidated and conservation easements with willing landowners supported in a manner that provides habitat connectivity and facilitates the movement of wildlife.

There is variation between GBAUs in the amount of secure habitat that is currently available (table 14), ranging from 2% (Middle Blackfoot GBAU) to about 76% (Fish Creek and Upper Rock GBAUs). As explained previously, the existing amount of secure habitat is a conservative estimate because the secure habitat analysis buffered all drivable motorized routes and non-Forest Service lands. Further, there are likely circumstances where a drivable motorized route, as identified in the INFRA database, has unplanned barriers (e.g., trees growing in the roadbed, trees fallen across the road, or large rocks) that prevent the road from being drivable in the current condition. Plus, the buffer of non-Forest Service land is conservative because it is unlikely that drivable routes exist along all non-Forest Service land adjacent to Forest Service lands.

The risk of adverse effects to grizzly bear secure habitat resulting from implementing the Forest Plan is likely low overall but could vary among the individual GBAU depending on the GBAU circumstances. The level of effects is likely dependent on the current level of secure habitat and the MAs within the GBAU. For GBAUs with a large proportion of secure habitat and are composed of MAs (e.g., wilderness) that limit or restrict motorized routes (e.g., Upper Rock GBAU), projects would likely result in small percent changes of secure habitat. However, GBAUs with low levels of secure habitat, which are often a result of multiple land ownerships and a network of motorized routes, may continue to have lower levels of secure habitat into the future (e.g., North Lolo GBAU) and land management actions within those GBAUs could result in reducing secure habitat, at least temporarily. Overall, GBAUs have a mix of secure habitat levels, patch sizes, and distribution that could be affected by land management, at least temporarily during land management implementation, and consequently, could result in varying levels of effects to secure habitat.

Given the lack of forest plan direction requiring specific levels of secure habitat, it's possible that projects may permanently reduce or more likely, temporarily reduce, the amount of secure habitat available to bears occurring there. However, reductions will be limited in most GBAUs by forest plan MA allocations that limit or preclude road construction. The majority of existing secure habitat on the Lolo NF (73%) is located in existing Wilderness and Inventoried Roadless Areas (IRA), while the remaining 27% of secure habitat occurs in other Lolo NF management areas (MA) (table 14). Comparing across GBAUs, the percent of secure habitat among GBAUs outside Wilderness and IRAs range from 1% to 41%, with the majority of the GBAUs (22 of the 30 GBAUs) having 10% or less secure habitat outside wilderness and IRA.

Table 14. Percentages of secure habitat within and outside of Wilderness and Inventoried Roadless Areas by GBAU on the Lolo NF *(from Forest GIS data, July 2021)*

Grizzly Bear Analysis Unit	GBAU Acres, NFS land only	Percent secure habitat, NFS land (no minimum patch size)	Percent secure habitat in Wilderness/IRAs	Percent secure habitat outside Wilderness/IRAs
GBAUs in NCDE Zone 1 outside Ninemile Demographic Connectivity Area				
Clearwater	42,936 ac	4%	1%	3%
Cottonwood	28,223 ac	11%	1%	10%
Gold	31,990 ac	14%	4%	10%
Middle Blackfoot	6,178 ac	2%	0	2%
North Missoula	52,617 ac	68%	27%	41%
Placid	23,207 ac	3%	0	3%
GBAUs in Ninemile Demographic Connectivity Area				
Keystone	57,233 ac	33%	26%	7%
Mill North	39,489 ac	4%	0	4%
Ninemile	99,597 ac	29%	16%	13%
Trout East	59,911 ac	11%	4%	7%
GBAUs outside NCDE grizzly bear management zones				
Dry Cold	47,742 ac	51%	49%	1%
Dry Eddy	61,230 ac	41%	34%	7%
Fish Creek	131,853 ac	76%	72%	4%
Little Thompson	42,973 ac	11%	8%	3%
Lower Rock	133,773 ac	56%	52%	4%
Lynch Creek-Clark Fork	22,848 ac	13%	9%	4%
Middle Thompson	31,463 ac	26%	20%	6%
Mill South	28,669 ac	34%	26%	8%
Miller	56,549 ac	4%	0	4%
North Lolo	73,558 ac	16%	5%	11%
Pats Knob	51,641 ac	34%	27%	7%
Petty Creek	62,850 ac	25%	16%	9%
Prospect	115,913 ac	26%	17%	9%

St Regis North	94,354 ac	25%	13%	12%
St Regis South	118,405 ac	23%	10%	13%
South Lolo	73,547 ac	26%	15%	11%
Trout West	123,039 ac	33%	19%	14%
Upper Fishtrap	18,925 ac	6%	0	6%
Upper Rock	73,095 ac	76%	74%	2%
Upper Thompson	12,735 ac	15%	0	15%

In addition to Wilderness and IRA, the Forest Plan identifies other MAs that limit road development. For example, the North Missoula GBAU has a large proportion of secure habitat outside of wilderness and IRAs (41%), but in this case, much of the secure habitat occurs within the National Recreation Area (MA 28) where road building is unlikely. In addition, MA 6 (Research Natural Areas) and MA 19 (winter range, no timber) limit road building (Appendix 2), which reduces the potential for reductions of secure habitat for GBAUs where those MAs occur. Although the elk summer habitat (MA 26; 19,722 ac) and grizzly bear habitat (MA20; 71,716 ac and MA 20a; 26,411 ac) MAs don't preclude road construction, these MAs limit or restrict roads.

A cluster of three adjacent GBAUs located on the east side of the Lolo NF (Clearwater, Middle Blackfoot and Placid located in NCDE Zone 1) have very low amounts of secure habitat on NFS lands but contain a significant amount of land owned by The Nature Conservancy. Lands purchased by The Nature Conservancy from Plum Creek Timber Company are gradually being sold into the public domain, creating continuous areas of publicly owned land. Over time, it is reasonable to expect that these GBAUs will be recognized as providing a greater proportion of secure habitat than they do currently.

The Miller GBAU, located at the north end of the Sapphire Range, provides secure habitat between the North Missoula GBAU (Rattlesnake Wilderness) and Lower Rock GBAU (Welcome Creek Wilderness). However, the Miller GBAU has a very low level of secure habitat (4%) that is composed of several smaller patches under 2,500 acres in size. The relatively small patches of secure habitat scattered throughout the Miller GBAU are not ideal for bear movements and could impede bear movements primarily between Middle Blackfoot and North Missoula, and Lower Rock and Upper Rock Creek GBAUs, potentially affecting the larger scale connectivity among the NCDE, Bitterroot, or Greater Yellowstone recovery zones.

Anticipated change in secure habitat over the next 5-10 years of Forest Plan implementation

To aid in estimating the amount of secure habitat that may be affected in the future, five recently planned projects were evaluated. Table 15 shows the acres and percent of secure habitat affected by the project within the GBAU. Sawmill Petty and A-BLT analyzed and presented the effects to secure habitat by GBAU. The Westside Bypass Wildfire Resiliency and Redd Bull calculated secure habitat by analysis area and were adjusted here to present the data by GBAU. The acres of affected secure habitat reported in the Westside Bypass Wildfire Resiliency and Redd Bull project records (summarized in table15) were used to calculate the percent of secure habitat affected and net change percent of secure habitat by using the total secure habitat within the GBAU where those project actions occurred. The effects to secure

habitat resulting from these recent projects ranged from about 100 acres to a little over 1,000 acres, while the percent of secure habitat affected ranged from about 1% to 5.5% in the short term. Over the longer term, after project completion, the amount of secure habitat affected by these projects will be reduced by project design to restore all, or nearly all, of the secure habitat to pre-project levels.

Table 15. Recent projects on the Lolo NF and the amount of secure habitat affected *(data from project environmental documents)*

Project Name	GBAU	Acres of secure habitat in GBAU (no minimum patch size)	Secure habitat affected during implementation, acres (percent)	Net change of secure habitat post-project, acres (percent)
Sawmill Petty	Petty GBAU	15,683 ac	871 ac (5.5%)	-235 ac (-1.5%)
Sawmill Petty	Mill South GBAU	9,837 ac	156 ac (1.6%)	-27 (-0.3%)
Westside Bypass Wildfire Resiliency	Clearwater GBAU	1,791 ac	92 ac (5%)	0 ac
Redd Bull	St. Regis South and Dry Cold GBAU	27,282 ac (St. Regis South GBAU) 24,176 ac (Dry Cold GBAU)	426 ac (0.8%)	0 ac
A-BLT	Prospect GBAU	29,671 ac	447 ac (1.5%)	0 ac

Based on the examination of the above projects and the amount and distribution of secure habitat within GBAUs, the Forest anticipates the majority of future projects may affect between 0 and 10 percent of secure habitat within a GBAU. Sawmill Petty Project affected a little over 5 percent secure habitat in the Petty GBAU and although there may be future projects with needs resulting in affecting more than the 5.5 percent reported in Sawmill Petty and possibly more than 10% of secure habitat within a GBAU, the majority of projects on the Lolo NF are anticipated to result in similar levels of effects to secure habitat as Sawmill Petty. For the purposes of this consultation, we anticipate the majority of future projects on the Forest would not decrease secure habitat by more than 5% in a GBAU at any given period of time. Like the Sawmill Petty Project, projects may span more than one GBAU and for those projects, a project would not decrease secure habitat by more than 5% in each of the GBAUs.

The amount of secure habitat affected by a project is anticipated to change over the life of the project. The amount of secure habitat affected by projects is dynamic over time where the percent of secure habitat may be decreased by project actions within a GBAU during project implementation but possibly transition those affected acres of secure habitat back towards pre-project levels at some point nearing completion of the project as motorized routes (temporary or permanent) are no longer drivable (e.g., roadbed decommission). The five projects shown in table 15 will decrease the amount of secure habitat during project implementation but will partly, if not entirely, return secure habitat to pre-project levels at

project completion. Although this may not always be the case, these projects represent recent project planning design.

Motorized access management

The mileage, location, and timing of public motorized travel across the Lolo NF has been determined by travel management plans and would not change as a result of this consultation. Open and total motorized route densities and secure core would continue to be calculated according to established methods and follow Forest Plan standards.

Cabinet-Yaak recovery zone

With continued implementation of the Forest Plan, existing conditions in BMU 22 will be maintained for OMRD and TMRD. While OMRD is set equal to the research benchmark of 33 percent for BMU 22, TMRD is set higher than the benchmark value (35 vs. 26 percent). Although this standard for TMRD could have adverse effects, BMU 22 supports few if any grizzly bears and at present it is not known to be occupied by any female grizzly bears with young.

NCDE recovery zone

Baseline levels for OMRD and TMRD were calculated in the 2017 biological assessment for the NCDE Grizzly Bear Amendments (USDA Forest Service 2017a). The baseline for the NCDE was defined as conditions as of December 31, 2011, as modified by changes or corrections that were evaluated and found to be acceptable through the Endangered Species Act Section 7 consultation with USFWS while the grizzly bear was listed as Threatened. Baseline levels are shown in table 16.

Table 16. Baseline levels of motorized route density by BMU subunit on the Lolo NF *(from NCDE monitoring report 2020)*

BMU Subunit	OMRD (percent of area with >1 mi/mi^2)	TMRD (percent of area with >2 mi/mi^2)
Monture	1%	1%
Mor-Dun	18%	14%
North Scapegoat	0%	0%
South Scapegoat	12%	16%
Mission	24%	49%
Rattlesnake	6%	11%
Swan	32%	19%

For each BMU subunit within the NCDE recovery zone, Forest Plan Standard NCDE-STD-AR-02 requires no net decrease in open motorized route density or total motorized route density on NFS lands during the non-denning season. Forest Plan Standard NCDE-STD-AR-03 allows for temporary increases in OMRD and TMRD for projects, not to exceed a 5 percent temporary increase in OMRD and not to exceed a 3 percent temporary increase in TMRD, both calculated over a 10-year running average.

In the NCDE, as mentioned previously the research benchmarks of 19 percent open motorized route density of more than 1 mi/mi^2, and 19 percent total motorized route density of more than 2 mi/mi^2 are

used to determine when adverse effects may occur. The Monture, North Scapegoat, South Scapegoat, and Rattlesnake BMU subunits are better than the research benchmark values and will remain so even with the allowable temporary increases under standard NCDE-STD-AR-03. No adverse effects due to motorized route densities are anticipated with continued implementation of the Lolo Forest Plan in these BMU subunits.

The Mor-Dun BMU subunit currently meets the research benchmark values for OMRD and TMRD, but may exceed them temporarily if the increases allowed under standard NCDE-STD-AR-03 are invoked to allow for project activities. This likely would have a short-term adverse effect due to disturbance and displacement of bears in this BMU subunit.

Due to land ownership patterns and other specific circumstances, the Mission BMU subunit currently does not meet either research benchmark. Similarly, the Swan BMU subunit does not meet the OMRD benchmark value due to its shape and land ownership pattern. Some ongoing adverse effects to individual bears are anticipated to occur in these two BMU subunits due to disturbance/displacement and increased mortality risk. Temporary effects of projects may further exacerbate these effects. However, given the more favorable habitat conditions across the NCDE as a whole, and the improved status of the NCDE population, this would not likely result in measurable effects to the overall NCDE grizzly bear population.

Bitterroot recovery zone

All of the Lolo NF land within the Bitterroot recovery zone is designated as Wilderness. Motorized routes are not allowed, and therefore there will be no effects to grizzly bears due to motorized access in this recovery zone. There are no motorized routes adjacent to this portion of the Bitterroot recovery zone. Given the location of the Bitterroot recovery zone portion on the Forest and the absence of nearby existing motorized routes, it is unlikely motorized routes would be built adjacent to the recovery zone.

Lolo NF lands outside of recovery zones

The 2011 Record of Decision (USDA Forest Service 2011) for Motorized Access Management in the Selkirk and Cabinet-Yaak recovery zones established direction for mapped areas of recurring use by grizzly bears outside of and adjacent to the recovery zones, known as BORZ. In the BORZ, no increase in linear miles of motorized routes is allowed unless covered under subsequent project-level analysis and consultation. As discussed previously, there are few records of grizzly bears occurring in the Mt. Headley BMU, and at present it is not known to be occupied by any female grizzly bears with young (Kasworm et al. 2020). To date, no BORZ have been delineated on the Lolo NF.

Outside of the recovery zones, NCDE Zone 1, and the Ninemile DCA, there are no Lolo Forest Plan standards that are specifically aimed at coordinating management of motorized access with the needs of grizzly bears. The Lolo Forest Plan (USDA Forest Service 1986) contains several forest-wide standards that guide the coordination and management of forest roads. For example, standard 49 (p. II-17) limits roads to the minimum number and design standard to meet resource needs. Standard 52 (pp. II-18 and II-19) directs the management of Forest roads to provide for resource protection, wildlife needs, commodity removal, and a wide range of recreation opportunities. Part (e) specifically addresses grizzly bear habitats by providing for seasonal road closures, if necessary, to reduce the risk of human-caused bear mortality, of non-arterial systems April 15 to June 15 within designated essential habitat spring range, and closure of roads that bisect identified critical habitat components July 15 through October 15. The forest plan restricts open road densities to a maximum of 1.1 mi/mi^2 in highly productive big game summer range.

Administrative use by Forest Service personnel, by fire or law enforcement or other emergency services, and by persons authorized by a written special use permit or contract from the Forest Service is permitted

and may occur on routes not shown as open on the MVUM. The effects of administrative use of roads on grizzly bears is likely similar to open roads in terms of disturbance and displacement, but the risk of mortality is lower because agency personnel and contractors are typically not allowed to carry firearms and are trained in bear safety.

Ninemile DCA

Within the Ninemile demographic connectivity area, the existing average motorized route density is 1.6 miles/square mile (data from 2019 NCDE monitoring report). This existing motorized route density is. Forest Plan standard NCDE-LNF Zone 1-STD-01 requires no net increase in the density of roads and trails open to public motorized use during the non-denning season on National Forest System lands within the Ninemile demographic connectivity area. Therefore, the existing conditions are expected to remain the same over the remaining life of the Forest Plan.

Existing conditions of motorized routes open to the public are expected to support habitat connectivity between the NCDE and the Bitterroot recovery zones, with low to moderate risk of adverse effects due to disturbance or displacement.

NCDE Zone 1

Currently, on the Lolo NF in Zone 1 outside the Ninemile demographic connectivity area, the existing open road density is just under 1.1 miles/square mile (data from NCDE 2019 monitoring report). Forest Plan standard NCDE-LNF Zone 1-STD-01 requires no net increase in the density of roads open to public motorized use during the non-denning season on National Forest System lands within NCDE zone 1 (other than the Ninemile demographic connectivity area). Therefore, the existing conditions are expected to remain the same over the remaining life of the Forest Plan.

Illegal motorized use

As described in the baseline section above, roads that are not on the Motorized Vehicle Use Map (MVUM) for the Lolo NF are closed to all public motorized use (36 CFR 212.51, 36 CFR 261.13). Illegal motorized use of closed roads could occur anywhere on the Forest, but such illegal use is not considered a Forest action. The term “action” for purposes of ESA section 7 consultation is defined as all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States (50 CFR 402.02). Illegal use of restricted roads and any other illegal activities are not the result of a federal action and therefore are not analyzed under effects of the action. Also described above, grizzly bears may be affected by illegal motorized access, the information as to the length, duration, amount of use, type of use, and location, among other conditions, is and will continue to be unknown until such time that illegal use is found. It is likely that most illegal motorized access is spatially diffuse, sporadic, and of short duration. The probability of long-term illegal motorized access and probability of illegal access coinciding with the presence of grizzly bears is anticipated to be low but is unknown. Overall, Forest visitors generally follow travel restrictions and when illegal use is observed, the Forest corrects the issue.

Developed recreation sites

Developed recreation sites can impact bears through temporary or permanent habitat loss and displacement, but the primary concern is human-grizzly bear conflicts caused by unsecured bear attractants, disturbance or habituation of bears to human presence, and food conditioning of bears, which frequently lead to grizzly bear mortality or removal from the ecosystem (Knight et al. 1988). Developed

recreation sites that support overnight public use are thought to have a higher potential to increase both the levels of bear attractants and grizzly bear mortality risk (NCDE Subcommittee 2020).

Under the existing Lolo Forest Plan, a forest-wide standard states that the Forest Service will not significantly expand the capacity of developed recreation sites on the Lolo National Forest. The Forest Service will emphasize increasing the use of existing sites by making them usable by a wide segment of society, including the elderly and handicapped. Those existing sites receiving low levels of public use or that are not cost effective to operate will be considered for temporary or permanent closure.

The NCDE grizzly bear amendment added desired conditions, standards, and guidelines to the Lolo Forest Plan. Within the recovery zone, standard NCDE-STD-AR-05 limits any increase in the number and capacity of developed recreation sites that are designed and managed for overnight use by the public during the non-denning season to one increase per decade per bear management unit. Guideline NCDE-GDL-AR-03 states that if the number or capacity of day-use or overnight developed recreation sites is increased, the project should include one or more measures to reduce the risk of grizzly bear-human conflicts in that bear management unit. Such measures could include but are not limited to additional public information and education, providing backcountry food-hanging poles or bear-resistant food or garbage storage devices, project design criteria that would limit capacity increases to those needed for public health and safety, and increasing law enforcement and patrols.

Campgrounds and cabin rental sites on the Lolo NF without bear resistant trash containers or trash storage within a secured building are pack it in/pack it out. This significantly reduces the potential for attracting grizzly bears and avoids setting the stage for human-grizzly bear conflicts.

The number of developed recreation sites with overnight use or day-use only are summarized in table 17. This number is not likely to change over the remaining life of the forest plan, given its direction that discourages expansion of developed recreation sites.

Table 17. Summary of developed recreation sites with overnight or day-use only within and outside of grizzly bear recovery zones on the Lolo NF *(from Forest GIS data)*

Portion of Lolo NF	Developed recreation sites with overnight use	Developed recreation sites for day-use only
Cabinet-Yaak recovery zone	5	5
NCDE recovery zone	9	15
Bitterroot recovery zone	0	0
NCDE Zone 1 and Ninemile DCA	41	16
Remainder of Forest	34	45

The forest-wide food/attractant storage order is a very important component in efforts to reduce or minimize grizzly bear mortality risk. Continued implementation of the Forest Plan will allow ongoing use of existing developed recreation sites that likely cause regular, repeated disturbance to grizzly bears that are in the vicinity. Although there is no history of recurring conflicts at existing developed recreation sites on the Lolo National Forest, this could change in the future with continued expansion of the bear population.

Recreation

As described for the environmental baseline, the greatest potential for adverse effects from recreation is likely attributable to late season snowmobiling, which has the potential to cause disturbance at dens, and dispersed recreation during the non-denning season, which could disrupt a bear's access to important food resources such as insect aggregation sites or huckleberry fields.

In the NCDE recovery zone within modeled grizzly bear denning habitat, Lolo Forest Plan standard NCDE-STD-AR-08 allows no net increase in the percentage of area or miles of routes designated for motorized over-snow vehicle use on NFS lands during the den emergence time period. Outside of the NCDE, the forest plan does not restrict motorized over-snow vehicle use during the den emergence period outside the areas with year-round closure as shown on the Over Snow Vehicle Use Map, and therefore there could be increasing effects to individual female grizzly bears over time. However, the likelihood that an adult female will den and have cubs outside the recovery zones in the near future is low, although the likelihood may increase into the future as the number of bears increase. Therefore, the impact is expected to be small in the near future for those areas without restrictions and effects may gradually increase over time.

Dispersed recreation is a popular type of recreation on the Forest and is largely composed of dispersed camping along trails and roads. Recreation is often intermittent or temporary where humans are not in any one location for long periods of time. Outside of the CYE and NCDE recovery zones, grizzly bear density and therefore the potential for bear-human encounters is relatively low.

Livestock grazing

No known incidents of grizzly bear mortality or grizzly bear-human conflict have occurred on the Lolo National Forest as the result of livestock grazing-related management control actions subsequent to the listing of the grizzly bear as Threatened in 1975. There is no information to indicate that the continued grazing of cattle on the Lolo NF will increase impacts or the risk of human-caused mortality on grizzly bears. Forage competition or displacement are also unlikely given the small and declining number of cattle grazing allotments.

Permits for grazing by saddle and pack animals are granted primarily in support of outfitter and guide operations or Forest Service administrative use in wilderness areas. There is no evidence of conflicts between grizzly bears and horses/mules due to depredation or forage competition. Horse and mule grazing permits are expected to have no effect on any grizzly bears occurring in the action area.

Honeybees, classified as livestock in Montana (MCA 15–24–921), can attract grizzly bears. There are apiaries on private land but none on the Forest. Forest Plan standard NCDE-STD-SFP-01 requires special-use permits for apiaries (beehives) located on NFS lands to incorporate measures, including electric fencing to reduce the risk of grizzly bear-human conflicts as specified in the food/wildlife attractant storage special order. With continued implementation of this forest plan direction, no adverse effects on grizzly bears are expected to occur.

Overall, because an attractant storage order is in place, and all livestock grazing allotments and other permits on the Lolo NF are for cattle, horses and mules (not smaller animals such as domestic sheep), and current stocking levels are low and not expected to increase, the risk of adverse impacts on grizzly bears due to forage competition, displacement, or livestock-related mortality is expected to remain low for the remaining life of the Lolo Forest Plan.

Vegetation management

The Lolo Forest Plan does not have specific direction to coordinate vegetation management with grizzly bear conservation in the Cabinet-Yaak recovery zone or outside of the recovery zones. The NCDE Grizzly Bear Amendments added desired conditions and guidelines for vegetation management within the NCDE recovery zone. The guidelines address considerations for the timing of activities to reduce the risk of disturbance/displacement, encouraging bear foods and retaining cover, and cessation of activities if needed to resolve a grizzly bear-human conflict situation (see appendix 2). All of the Lolo NF land within the Bitterroot recovery zone is designated as Wilderness, where natural processes generally predominate without human intervention.

Activities associated with vegetation management have the potential to result in adverse effects to individual bears through displacement or disturbance associated with roads used to access and implement projects. The management of roads would be subject to plan components discussed in the Motorized Access section above.

Loss of cover, disturbance and displacement as a result of activities at project sites could have adverse effects on individual bears, depending on the location, timing, and type of activity and other factors, all of which would be analyzed when specific projects are planned. Vegetation management (timber harvest, fuels treatment, and prescribed fire) could, on the other hand, have beneficial effects by enhancing and maintaining some food sources. Beneficial effects would also depend on the specific location and treatment type and would be analyzed when specific projects are planned.

The combination of active vegetation management and wildfires are expected to continue to recruit early forest successional stages that produce a variety of bear foods while maintaining a mosaic of food and cover over time. Depending on the specific size and location of vegetation management actions, there is potential for temporary effects on grizzly bears due to reduction of food and cover resources and disturbance of bears in the vicinity of the activity. It is not likely that this would result in measurable negative effects to the overall grizzly bear population.

Energy and mineral exploration and development

Energy (specifically oil and gas) and mineral development may increase grizzly bear mortality risk from associated motorized use, habituation to human presence, and/or increased human-grizzly bear encounters and conflicts. Energy and mineral development activities may also result in permanent habitat loss, habitat fragmentation, and displacement of bears.

Lolo forest-wide Standard 41 requires: “Before oil and gas lease stipulation recommendations are made, site specific analysis of environmental effects will be made. Stipulations which are displayed in appendix F and based upon the Environmental Analysis for Oil and Gas of Non-wilderness Lands on the Lolo National Forest, 9/20/82, will be recommended in accordance with management area direction in Chapter III. In some instances, the stipulations will include a provision for ‘no surface occupancy.’ The lessee or designated operator has the right to explore for and extract oil/gas from his/her lease in accordance with the stipulations attached to the lease.” Thus, the magnitude of effects from leasable or locatable minerals exploration and development would be limited by provisions of the forest plan. Any such proposals would be subject to additional site-specific analysis. Project development and mitigation plans would be designed to avoid, minimize, or compensate for any adverse effects associated with the mining proposal.

Specific to the NCDE recovery zone, NCDE Zone 1, and the Ninemile demographic connectivity area, there are additional forest plan desired conditions, standards, and guidelines, shown in appendix 2. These

plan components are designed to avoid, minimize, and/or mitigate impacts to grizzly bears or their habitat, subject to valid existing rights. For example, the standards address cessation of activities if needed to resolve a grizzly bear-human conflict, proper handling of food and garbage, possible timing restrictions on seismic and/or ground-disturbing activities, and a requirement for a no surface occupancy stipulation on any new leases.

The potential for oil and gas resources on the Forest is considered to be low. There is no gas or oil exploration or development occurring on the Lolo National Forest at this time. Any future gas or oil developments would undergo a site-specific review and analysis of effects and site-specific consultation if applicable. Most effects would be associated with road development, which was addressed in the Motorized Access section above.

There are two active gold mines and one quartz crystal mine located on the Lolo NF. Each of these mines has less than half an acre of surface disturbance (Forest Geologist D. Scott Gerwe, personal communication 2021). These are likely to continue to operate in accordance with the forest plan and may cause disturbance to bears that are in the vicinity of the mines. Before any new mining operation could begin, the claimant would have to file a notice of intent and a plan of operations with the Forest Service. A plan of operations would trigger the NEPA process to evaluate environmental effects of the proposal.

Over the remaining life of the forest plan, these resource extractions or resource exploration are likely to at minimum, disturb any bears in the area, especially with the use of closed roads during the non-denning period and the culmination of effects could rise to the level of adverse such as displacement, or increased mortality risk on grizzly bears.

Aircraft use

Disturbance including helicopter activity is likely to occur as a result of implementing the forest plan. The use of equipment that produces noise during project implementation may be used over possibly days to weeks in an area. During the use of equipment, people will be present and adding to the level of disturbance. The combination of equipment noise and human presence will likely result in any bears in the area of the disturbance to move away, at least a short distance, while the work is on-going but would likely return soon after the work has been completed.

Low flying aircraft can also disturb bears, especially when the flights are recurring. The use of low flying aircraft would likely be limited to basic reconnaissance, wildland fire suppression, and tree harvest. However, not including flight take off and landing, it would be rare for reconnaissance flights to fly below 500 meters above the ground. The majority of the anticipated recurring flights below 500 meters may include a portion of the flights during wildland fire suppression, but more commonly would be during the use of a helicopter for tree harvest. During these low flying recurring flights, bears may be disturbed at least during the time of these flights and would likely return soon after the flights stopped and on-the-ground work is complete.

Habitat connectivity

Forest-wide goal 7, “For threatened and endangered species occurring on the Forest, including the grizzly bear, gray wolf, peregrine falcon, and bald eagle, manage to contribute to the recovery of each species to non-threatened status” and desired condition NCDE-DC-WL-02, “Within the NCDE primary conservation area and zone 1 (including the Ninemile demographic connectivity area), grizzly bear habitat on NFS lands contributes to sustaining the recovery of the grizzly bear population in the NCDE and contributes to connectivity with neighboring grizzly bear recovery zones” will encourage management

actions that do not impair and may enhance habitat connectivity and genetic exchange between recovery zones. The NCDE grizzly bear population has been increasing in numbers and expanding its range, and the NCDE conservation strategy is aimed at maintaining or increasing the population. We anticipate that under continued implementation of the Lolo Forest Plan, the NCDE population will be capable of serving as a source population for other recovery zones where the bear population is smaller or absent.

Secure habitat provides an important component to habitat connectivity. There are no forest plan standards requiring management of secure habitat outside the recovery zones, but certain forest plan management areas limit or restrict construction of motorized routes, as previously described. Habitat conditions that provide for the movement of grizzly bears are not expected to change substantially in a manner that would impede grizzly bear movements over the remaining life of the forest plan. Implementation of the Forest Plan is likely to continue to maintain or improve habitat connectivity and demographic connectivity on the Forest between the NCDE, Cabinet-Yaak, and Bitterroot recovery zones.

Cumulative effects

The analysis of cumulative effects provides a larger context in which to evaluate existing conditions and the effects of continuing to implement the forest plan. This section describes the effects of management on adjoining federal, state and private lands.

Montana Department of Natural Resources and Conservation

The Montana Department of Natural Resources and Conservation (DNRC) administers 5.2 million acres of school trust lands throughout the state to achieve the mission of producing long-term income for the designated trust beneficiary (such as schools). The DNRC's state forest land management plan emphasizes intensively managing for healthy and biologically diverse forests to provide a reliable and sustained income. The state forest land management plan also directs the transportation system to be planned for the minimum number of road miles. DNRC will only build roads that are needed for current and near-term management objectives, as consistent with the other resource management standards (Montana DNRC 1996).

Clearwater State Forest is located northeast of Missoula, Montana, and is approximately 18,076 acres in size. Montana DNRC also manages scattered small parcels in the vicinity of the Lolo NF. These include scattered parcels in the Plains unit of the Northwestern Land Office and in the Missoula and Clearwater units of the Southwestern Land Office. Montana DNRC developed a habitat conservation plan (HCP) for the scattered parcels that is designed to minimize and mitigate impacts on five terrestrial and aquatic species, including the grizzly bear. The HCP provides guidance to ensure the long-term conservation needs of HCP species during timber harvest, road construction and use, and grazing activities over a 50-year period (Montana DNRC 2010).

The goal of the commitments made for grizzly bears in the 2011 HCP is to support Federal conservation efforts by providing important seasonal habitat and limitations on activities affecting bears within those habitats. The decision applies conservation commitments across a larger geographic area within DNRC's forested trust lands than previously and increases the level of conservation based on the importance of that habitat for bears (e.g., more commitments in recovery zones); minimizes disturbance and displacement of grizzly bears from human activities; provides for seasonal habitat use and security; and designs timber sales and applies silvicultural prescriptions to maintain important habitat features, including den sites, avalanche chutes, lush riparian zones, and locations that produce high volumes of forage (Montana DNRC 2011 p. 3).

State lands also may regularly see activities such as maintenance and use of roads, trails, and utilities; recreational activities such as hunting, hiking, mountain biking, camping, horseback riding, driving, motorcycle and ATV riding; and gathering of firewood and miscellaneous forest products. These activities are expected to have local effects by altering habitat used by grizzly bears and disturbing and/or displacing grizzly bears. Human activities also increase the chance of conflict with bears and thus the chance for grizzly bear mortality. Based on past history and the current levels of visitors to the area, the activities listed above are expected to continue to occur, at minimum, at levels similar to the past but may increase in the future to meet public demand.

As a partner in the Blackfoot Challenge, DNRC placed bear-resistant dumpsters at state land locations where bear-attractant conflicts have been known to occur. The DNRC provides all of its cabin lessees with the brochure "Living with Bears" that explains measures that should be taken to minimize human-bear conflicts. No Montana DNRC employees or contractors have been involved in a human-grizzly bear conflict that resulted in a management action or death of a grizzly bear.

No significant adverse cumulative effects are anticipated due to management actions of DNRC.

Montana Department of Fish, Wildlife and Parks

The Fish Creek and Blackfoot-Clearwater Wildlife Management Areas are adjacent to the action area. The primary management goal of both WMAs is to provide winter range for elk and compatible recreational opportunities for the public. For example, the Blackfoot-Clearwater Management Area offers deer antler shed gathering opportunity in the spring which typically draws many visitors into an area that may not experience much other human presence. Pack in/pack out is required for food and garbage at both WMAs.

MFWP completed a grizzly bear management plan for western Montana in 2006 (Dood et al. 2006) and a grizzly bear management plan for southwestern Montana in 2013 (MFWP 2013). Grizzly bear management plans establish goals and strategies to manage and enhance grizzly bear populations and to minimize the potential for grizzly bear-human conflicts. A long-term goal is to allow the populations in western and southwestern Montana to reconnect through the intervening, currently unoccupied habitats.

MFWP is very active in providing public information and education about conserving grizzly bears and their habitat. Several bear management specialists, including one stationed nearby in Missoula, work with landowners and educate the public in an effort to avoid or resolve human-grizzly bear conflicts and to reduce grizzly bear mortalities. Bear specialists provide information and assistance to landowners on appropriate ways to secure food and bear attractants and respond to reports of conflicts with black bears and grizzly bears. These programs have a proven track record of success in informing the public, reducing the availability of attractants to bears on private and public lands, and reducing human-caused mortalities of grizzly bears.

The State of Montana regulates hunting for black bears and other wildlife species. Hunting of grizzly bears has not been allowed in Montana since 1991. There is a potential for grizzly bear mortality by hunters to occur as a result of mistaken bear identification or self-defense, especially in proximity to the carcasses of harvested animals. MFWP provides a variety of public information and education programs, including a mandatory black bear hunter testing and certification program, to help educate hunters in distinguishing the two species. Black bear hunting seasons have been shortened in recent years, reducing the potential for mistaken identity. These efforts have helped to decrease legal and illegal shooting mortalities.

No adverse cumulative effects are anticipated due to management actions of MFWP.

Private lands

The human population in northwest Montana has grown at a relatively high rate during the past few decades, and growth is expected to continue. The COVID-19 pandemic may have accelerated this trend. Increasing residential development and demand for recreational opportunities can result in habitat loss, habitat fragmentation, and increases in human-grizzly bear conflicts. Private lands continue to account for a disproportionate number of conflicts and grizzly bear mortalities in Montana. These impacts are likely to intensify, although appropriate residential planning, outreach to landowners about how to avoid conflicts, tools such as bear-resistant containers and electric fencing, and assistance in resolving conflicts can help prevent or reduce these impacts.

The increasing pace of development on private lands and the accompanying risk of human-grizzly bear conflicts has potential to have cumulative adverse effects on grizzly bears that move across the boundary of the Lolo NF.

Determination of effects and rationale

As explained above, there is no need at this time to reinitiate section 7 consultation on the effects of the forest plan on bull trout, bull trout critical habitat, Canada lynx, or Canada lynx critical habitat, or to initiate consultation on Spalding's campion or the western distinct population segment of the yellow-billed cuckoo, nor is the Forest requesting conferencing on whitebark pine. If the ESA status of the monarch butterfly changes in the future, the Forest will work with the USFWS to meet its ESA requirements.

For the Lolo NF in its entirety, continued implementation of the Lolo Forest Plan "may affect, is likely to adversely affect" grizzly bears based on the following:

- In the Cabinet-Yaak and NCDE recovery zones, implementation of the Lolo Forest Plan may result in adverse effects from motorized access that is likely to cause disturbance and possibly temporary displacement of grizzly bears, primarily as a result of the existing environmental baseline in BMU 22 and the Mission and Swan BMU Subunits, and temporary reductions in secure core and temporary increases in motorized route densities that are allowed during project activities. Livestock grazing, developed recreation sites, recreation, vegetation management, and minerals and energy development not associated with motorized access may cause disturbance to individual bears but the effects are likely to be insignificant and discountable.

- The Bitterroot recovery area on the Lolo NF is entirely within wilderness, and the lack of nearby motorized routes and the ruggedness of the topography would make route construction adjacent to this portion of the recovery zone unlikely, and therefore continuing to implement the Forest Plan is not likely to result in adverse effects.

- In NCDE zone 1 and the Ninemile demographic connectivity area, continued implementation of the Lolo Forest Plan may have adverse effects on grizzly bears, primarily due to the potential for disturbance and possibly temporary displacement as a result of temporary increases in motorized route densities and temporary reductions in secure habitat associated with site-specific projects. The environmental baseline is providing conditions that support grizzly bear survival and movement through NCDE Zone 1 and also support female occupancy in the Ninemile demographic connectivity area; forest plan direction is expected to maintain these conditions.

- Continued implementation of the Lolo Forest Plan on the remainder of the Lolo NF may have adverse effects, primarily due to the potential for disturbance and possibly displacement as a result of permanent and temporary road construction and associated temporary reductions in secure habitat that may occur in many of the GBAUs. These effects will vary and will depend on the extent of road development and whether bears are likely to be present in a given area when the human activities occur.
- Current conditions on the Lolo NF appear to be compatible with supporting movement of grizzly bears from the Cabinet-Yaak or NCDE recovery zones to the Bitterroot recovery zone.
- No sources of adverse cumulative effects were identified other than the increasing pace of development on private lands and its accompanying risk of human-grizzly bear conflicts.

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Appendix 1: Maps

GIS Disclaimer
The Forest Service uses the most current and complete data available. GIS data and product accuracy may vary. They may be: developed from sources of differing accuracy, accurate only at certain scales, based on modeling or interpretation, incomplete while being created or revised, etc. Using GIS products for purposes other than those for which they were created, may yield inaccurate or misleading results. The Forest Service reserves the right to correct, update, modify, or replace GIS products without notification. For more information, contact the Forest Supervisor's Office.

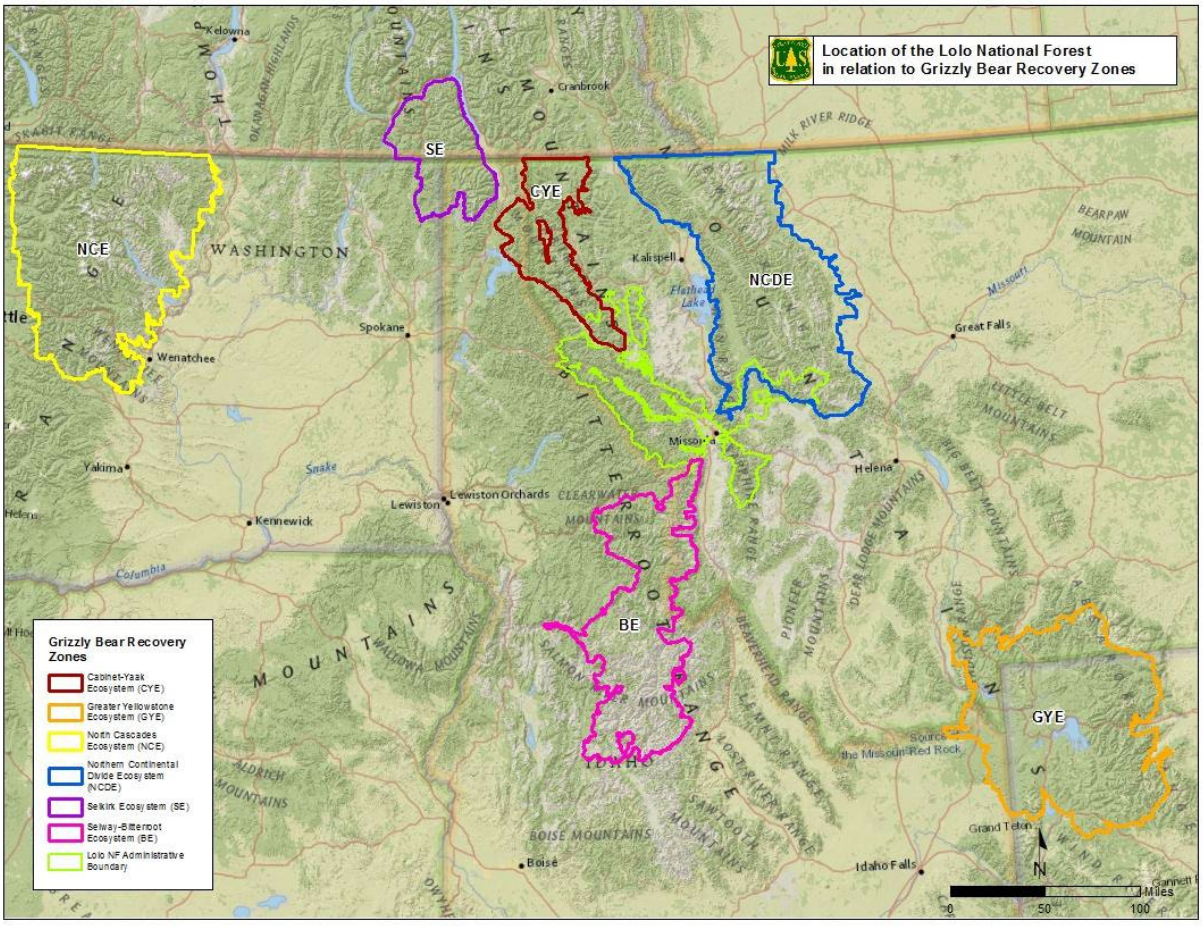

Figure 1. The Lolo NF in relation to grizzly bear recovery zones in northwestern United States.

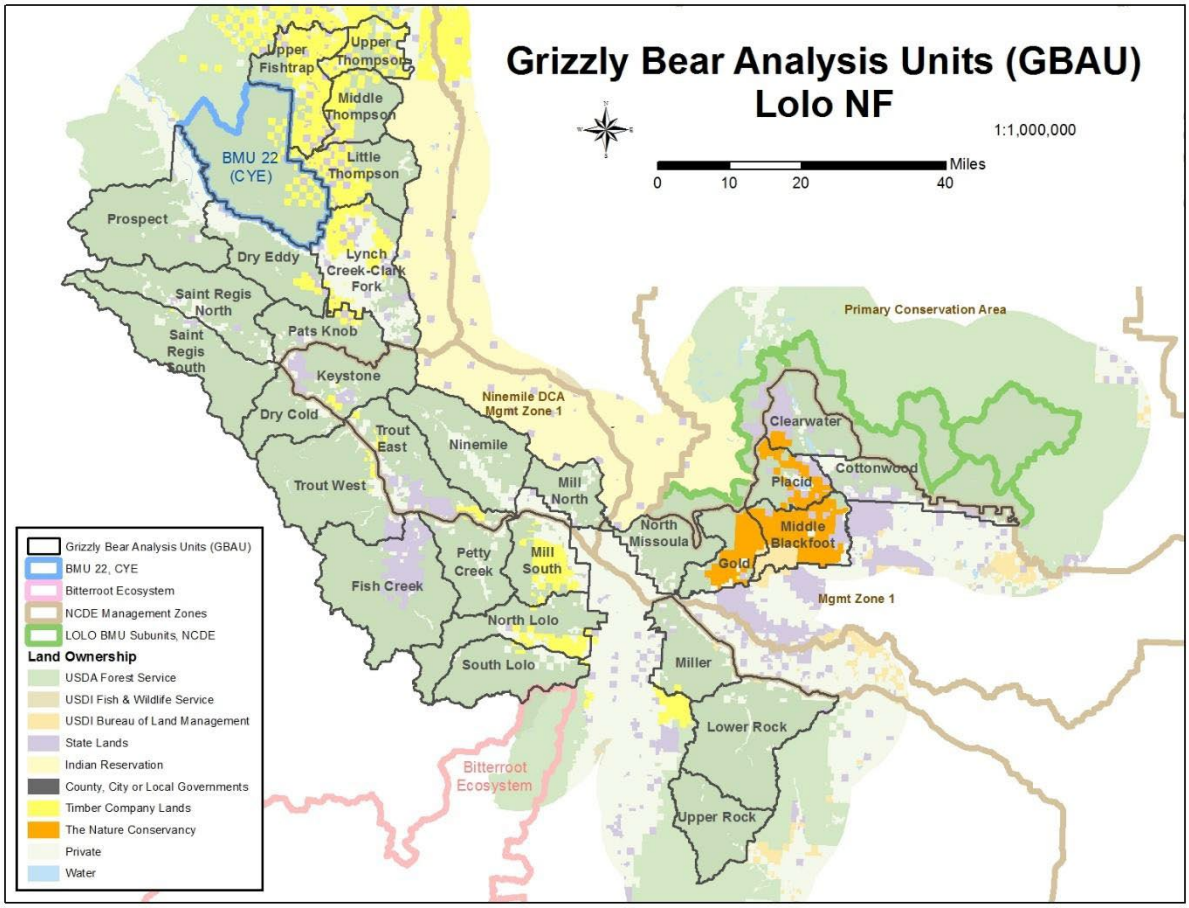

Figure 2. Grizzly bear analysis units used for secure habitat and linear motorized route density analysis on Lolo NF outside of grizzly bear recovery zones.

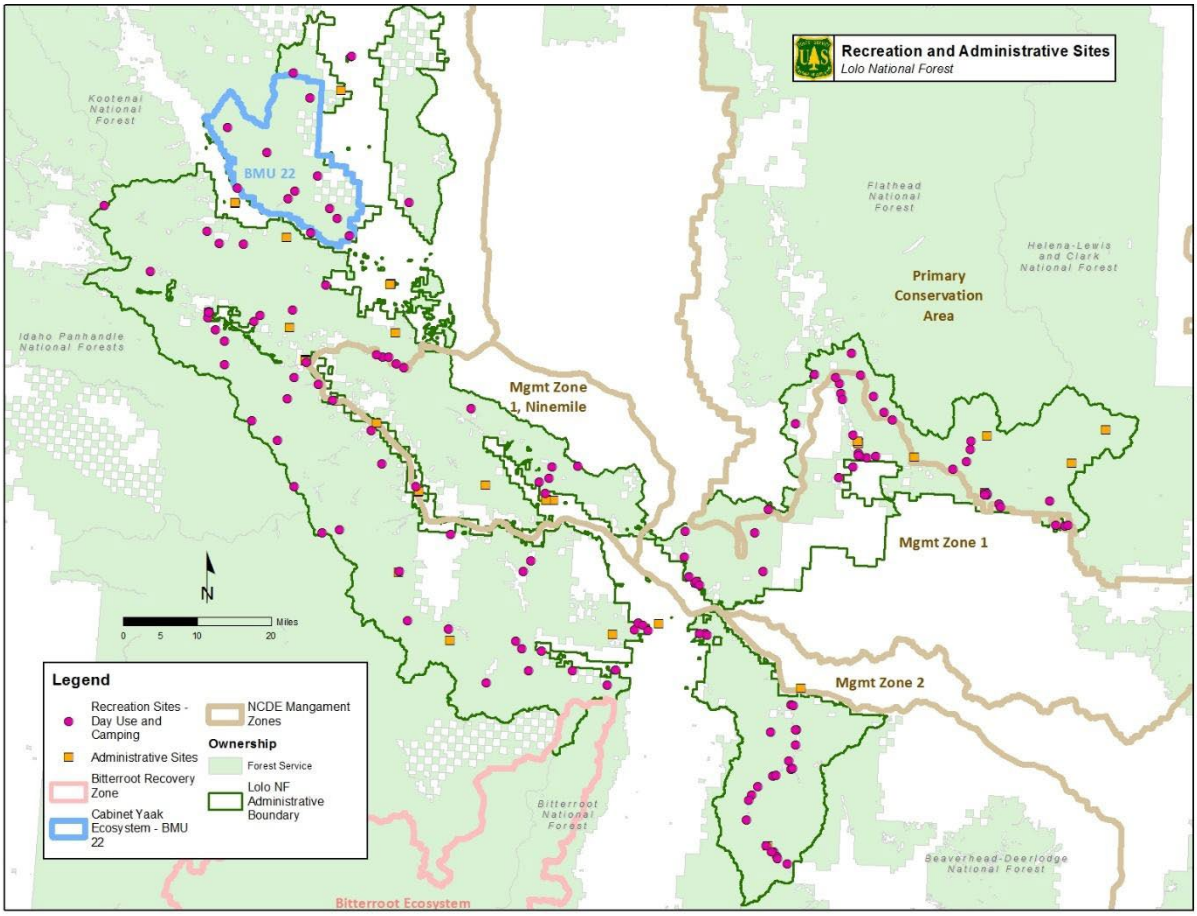

Figure 3. Locations of developed recreation sites and administrative sites on the Lolo NF.

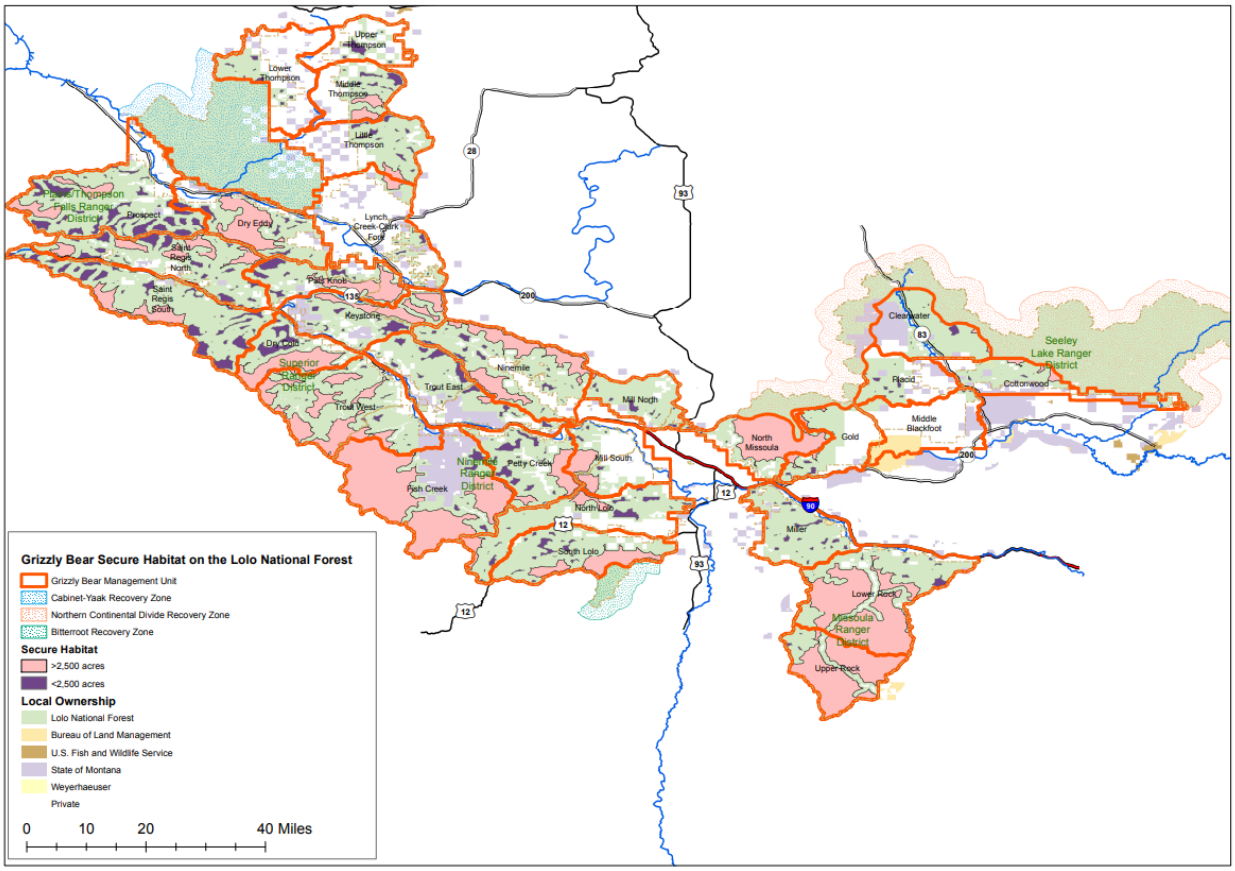

Figure 4. Grizzly bear secure habitat within GBAUs

Appendix 2: Lolo Forest Plan direction relevant to the management of grizzly bears

Forest-wide management direction from the 1987 Plan that is relevant to grizzly bear conservation is presented first, followed by a summary of Management Areas. Management direction established by the 2011 Access Amendment that is applicable to the Cabinet-Yaak recovery zone is listed next. Management direction added by the NCDE grizzly bear amendment is last, in which each desired condition, standard, and guideline identifies the area to which it applies (i.e., forest-wide, primary conservation area (PCA), Zone 1, Ninemile demographic connectivity area).

1986 Lolo Forest Plan

Section	Management Direction of the Lolo Forest Plan (as amended)
II. Forestwide Management Direction, p. II-1	A. Goals 2. Provide habitat for viable populations of all indigenous wildlife species and for increasing populations of big-game animals. 7. For threatened and endangered species occurring on the Forest, including the grizzly bear, gray wolf, peregrine falcon, and bald eagle, manage to contribute to the recovery of each species to nonthreatened status.
II. Forestwide Management Direction, p. II-2	B. Objectives, 1. Resource/Activity Summaries The plan provides for the recovery of threatened species on the Forest. It regulates human access and use in and through occupied grizzly bear habitat. In addition, tools such as prescribed burning will be used to enhance food-producing areas and improve habitat. The plan supports expansions in populations of the endangered peregrine falcon, bald eagle, and gray wolf through Forest goals and standards.
II. Forestwide Management Direction, p. II-7	D. Desired Future Condition of the Forest 1. The Forest in 1995 Habitat to support threatened and endangered species will have been protected consistent with recovery goals. 2. The Forest in 2035 Sufficient habitat will exist for threatened and endangered species to meet the objectives of the recovery plans. Factors limiting recovery will have been eliminated where possible.
II. Forestwide Management Direction, p. II-13 to II-14	E. Standards, Wildlife and Fish 24. All threatened and endangered species occurring on the Lolo, including the grizzly bear, bald eagle, peregrine falcon, and gray wolf, will be managed for recovery to nonthreatened status. Forest Service-designated essential habitat will provide interim management direction for those species until critical habitat is designated by the USFWS. 27. Management practices in essential habitat of threatened and endangered species must be compatible with habitat needs of the species (grizzly bear, gray wolf, bald eagle, and peregrine falcon) consistent with the goal of recovery to nonthreatened status. There are no other known plant or animal species on the Forest that have been identified as threatened or endangered under provisions of the Endangered Species Act of 1973. If and when such habitats are identified, appropriate measures, pursuant to Section 7 of the Endangered Species Act, will be taken to protect the species and its habitat consistent with national goals for species recovery to nonthreatened status. Cooperate with future interagency efforts to recover those species for which recovery goals

	have not yet been defined. For plant and animal species that are not threatened or endangered but whose viability is a concern (i.e., sensitive species), manage to maintain population viability. Habitat for management indicator species, which include the elk, goshawk, and pileated woodpecker, will be monitored. Elk population data, collected by Montana Fish, Wildlife and Parks will be compared against habitat data to test elk/habitat relationships. As monitoring technology becomes available for the goshawk and pileated woodpecker, population trends will be monitored. In the interim, habitat parameters, including old-growth acres and condition and snag densities, will be monitored as an indicator of population trend.
II. Forestwide Management Direction, p. II-9	E. Standards, Range 4. Conflicts between livestock and big game will be resolved so big game are allocated the forage required to meet their needs. Domestic livestock will be allowed to utilize any forage surplus not conflicting with the planned expansion of big-game populations. Reductions in livestock numbers will be avoided if possible, but will be acceptable to meet management goals. 5. Allotments with no AUM's shown for the Proposed Action in Appendix B will be phased out unless the permittee is willing to make necessary investments in livestock management and structural improvement to maintain range condition at an acceptable level.
II. Forestwide Management Direction, p. II-10	E. Standards, Recreation 7. The Forest Service will not significantly expand the capacity of developed recreation sites on the Lolo National Forest during the next 10-year period. Emphasis will be placed on increasing the use of existing sites by making them usable by a wide segment of society, including the elderly and handicapped. Those existing sites receiving low levels of public use or that are not cost effective to operate will be considered for temporary or permanent closure. The private sector and other agencies will be encouraged to provide for increased public needs on National Forest System land and on lands adjacent to the Forest. If and when development proposals are received for expansion of existing or construction of new ski areas, they will be evaluated according to the normal procedures for determining ski area feasibility. The Forest will use the Analysis Procedure for Prioritizing Recreation Projects on the Lolo National Forest (appendix K) to determine funding for recommended recreation projects.
II. Forestwide Management Direction, pp. II-11 to II-12	E. Standards, Timber 10. Regional standards will be followed for tree utilization, management intensity, measurement, growth suitability for timber production, tree openings, and silvicultural systems.
II. Forestwide Management Direction. P. II-12	E. Standards, Water and Soils 15. The application of best management practices will assure that water quality is maintained at a level that is adequate for the protection and use of the National Forest and that meets or exceeds Federal and State standards. 16. Developmental projects in areas with steep slopes, granitic soils, wet glacial tills, and lake sediments will not be scheduled until they have been analyzed for environmental effects and economic feasibility.
II. Forestwide Management Direction, pp. II-15 to II-16	E. Standards, Minerals 33. Areas currently withdrawn from mineral entry will be evaluated in accordance with the provisions of Section 204 of the Federal Land Policy and Management Act of 1976 to determine whether the withdrawal is still necessary. 34. Congressionally designated wilderness areas on the Lolo National Forest are withdrawn from mineral entry and leasing. No new mining claims may be located nor may any mineral leases be issued in these areas. Valid existing rights established prior to the withdrawal date will be recognized, subject to stipulations ensuring compliance with the acts creating these administrative areas.

36. When applicable, claimants/operators must have an approved notice of intent or plan of operation and bonding in accordance with 36 CFR 228 prior to initiating mining activity.
41. Before oil and gas lease stipulation recommendations are made, site-specific analysis of environmental effects will be made. Stipulations that are displayed in appendix F and based upon the 1982 Environmental Analysis for Oil and Gas of Nonwilderness Lands on the Lolo National Forest will be recommended in accordance with management area direction in chapter III. In some instances, the stipulations will include a provision for "no surface occupancy." The lessee or designated operator has the right to explore for and extract oil/gas from his/her lease in accordance with the stipulations attached to the lease. Drilling requests are handled individually and receive an additional site-specific environmental analysis. Drilling permits are issued by the Bureau of Land Management. The Bureau of Land Management will consult with the Forest Service in order to obtain site-specific concerns and stipulations prior to approving the drilling permit.

II. Forestwide Management Direction, p. II-17

E. Standards, Fire

44. A fire management plan complete with prescriptions for unplanned ignition prescribed fires, as appropriate, will be maintained to accomplish management direction and allocation contained in the Forest Plan.

II. Forestwide Management Direction, pp. II-17 to II-20

E. Standards, Roads

48. Motorized vehicles will be limited to system roads and trails which are designated open in the Lolo Forest Travel Plan. Temporary exceptions are authorized for any Federal, State, or local officer, or member of an organized rescue or firefighting force in the performance of an official duty; any vehicle whose use is expressly authorized by the Forest Service under a permit, license, or contract; off-road travel by snowmobiles in areas designated as open in the Travel Plan, and occasional off-road trips for administrative use.
49. Lolo National Forest roads will be the minimum number and meet the minimum design standards possible while still meeting safety, user, and resource needs. This will require that logging system design, timber sale design, and transportation planning be emphasized on all timber sales to comply with this policy. No access roads will be constructed without an approved area transportation analysis and Environmental Assessment, or Environmental Impact Statement if required. Transportation planning will consider the effects of road location, road closures, and road maintenance on affected private landowners.
52. Manage Forest roads to provide for resource protection, wildlife needs, commodity removal, and a wide range of recreation opportunities. In most areas on the Forest, this will involve leaving some roads open, closing some roads seasonally, and closing other roads on a permanent basis. Generally, arterial and major collector roads will be left open, whereas local roads will generally be closed. Decisions for road management will be based upon public involvement through the Travel Plan revision process. Primary benefits to be considered are: optimizing big-game production, providing a variety of hunting recreation experiences, protecting critical grizzly bear habitat, reducing sediment in streams, reducing road maintenance costs, and providing for firewood and commodity removal. The criteria to be used to analyze the need for road use restrictions are from the 1984 edition of the Forest Travel Plan and are detailed as follow:
    a. Roads will be closed when necessary to protect the safety of Forest users. Examples include roads with hazards such as avalanche, landslides, forest fires, flooding, and timber harvest operations.
    b. Roads may be closed when roadway use increases soil movement and adversely affects water quality. On sensitive soil areas, wet season restrictions will be applied unless the road has surfacing or other features to make the road suitable for wet season use.
    c. On highly productive big-game summer range, open road densities of existing roads will be restricted to a maximum of 1.1 miles of road per section and all new roads, except arterials, will be closed year-round

(average values calculated over designated herd-unit analysis areas). New roads will be closed to the public year-round in areas of moderate big-game summer range, but roads now open (1984 Travel Plan) will remain open. Snowmobiles will be permitted after December 1 unless restricted for other reasons.
Roads on low value summer range will remain open unless closed for other reasons.

d. Areas with high potential for walk-in hunting or fishing experiences will be considered for road closures. Open road density during the hunting season will remain the same as that now existing (1984 Travel Plan) to continue to meet State objectives for big-game hunting recreation.
e. Roads within grizzly bear habitat may be closed seasonally if it is determined that an open road may be increasing the risk of human-caused bear mortality. Within designated Essential Habitat spring range, all nonarterial systems will be closed April 15 to June 15. On summer range, roads that bisect identified critical habitat components will be closed July 15 thru October 15. …

II. Forestwide Management Direction, p. II-20

E. Standards, Insects and Disease

56. Implementation of the principles of integrated pest management will be accomplished through sound silvicultural prescriptions. Silvicultural practices will be designed to consider past, current, and potential impacts from insects and diseases.

III. Management Areas, p.i

MANAGEMENT AREA	SHORT GENERAL DESCRIPTION	ROAD BUILDING?	ACRES
1	non-commercial forest	through	35,686
2	admin sites	yes	3,774
3	historic/arch, sites for interp	sites	60
4	mines	yes	265
5	utility R.O.W.'s	yes	1,581
6	Research Natural Areas	no	3,307
7	campgrounds	yes	343
8	ski areas	for access & dev.	664
9	concentrated public use, recreation	for recreation	17,226
10	small roadless parcels	no	7,913
11	large roadless parcels	no	169,982
12	wilderness	no	363,308
13	riparian	minimum	27,193
14	riparian, grazing	for range improv.	28,762
15	grazing (no trees)	for range improv.	282
16	timber	yes	678,214
17	timber, over 60% ss	yes (low density)	50,435
18	winter range, w/ timber	minimum	106,271
19	winter range, no timber	no	82,170
20	grizzly, w/ timber	minimum	71,716
20a	grizzly, non-commercial timber	through	26,411
21	old growth	for old growth mgt	41,303
22	retention - winter range	yes	13,898

23	partial retention - winter range	yes	55,513
24	retention - timber	yes	52,303
25	partial retention - timber	yes	116,420
26	critical elk summer range	yes	19,722
27	non-economic timber	through	83,460
28	National Recreation Area	no	25,010

Management Area Standards pertaining to a response of "no" in column 3 of the table above.

MA 6 Research Natural Areas

C. Standards

7. Road construction is permitted as necessary to meet area objectives. Public use may be restricted.

MA 19 Winter range, no timber

C. Standards

Road Practices:

9. Roads will not be constructed for surface management objectives within this Management Area. Roads may be constructed through segments of this Management Area to provide access to other management areas. Roads will be permitted for special land uses or for mineral activities provided that the necessity for building the road is justified on the basis of mineral showings or data and it is the next logical step in the development of the mineral resource.

10. Maintain roadside vegetation where possible., especially at established game crossings.

MA 28 National Recreation Area

C. Standards

14. Road access may be provided to meet administrative, recreation and education objectives. Private vehicles may be permitted on the Rattlesnake Road to facilitate the participation of the elderly and handicapped for educational/interpretation outings. The Mineral Peak road will be open to all motorized vehicles.

Record of Decision, Forest Plan Amendments for Motorized Access Management within the Selkirk and Cabinet-Yaak Grizzly Bear Recovery Zones

Table 4. Selected alternative determination for BMU specific standards *[excerpt from the ROD]*

BMU	OMRD Standard	TMRD Standard	Core Area Standard	Rationale for Selected Standard(s)
22-Mt.Headley	33	35	55	A higher TMRD was set because of the amount and pattern of private ownership. There is high quality habitat occurring in a large undisturbed area in the center of the BMU (Cube Iron/Silcox proposed wilderness and roadless areas north to Benson and Lone Tree peaks). This BMU is a major portion of the Cabinet-Yaak to Bitterroot Linkage Zone (identified by Servheen 2001). This bear unit is the closest point to the Bitterroot ecosystem and there are some large roadless land areas immediately south of the bear unit. This bear unit is likely occupied, but this was not confirmed and no female observations had been confirmed by 2000. Public access to the Fishtrap Creek and Fishtrap Lake Campgrounds, and the Cougar Mountain Lookout rental recreation sites would be maintained under the selected standards for this BMU.

Table 14. LNF Changes to the Forest Plan [*from the Record of Decision for Forest Plan Amendments for Motorized access Management within the Selkirk and Cabinet-Yaak Grizzly Bear Recovery Zones*]

Lolo Forest Plan 1986	Lolo NF Grizzly Bear Management Strategy 1994	12/1/98 Interim Rule Set	FEIS & ROD Selected Alternative E Updated
Goals and Standards (1) MA20 and 20a (2)	Meets requirements of Forest Plan (pp II-13-14, #24)	Current Implementation Direction-According to Policy Identified in Forest Supervisor Letter (2/28/96) and 5/24/96 BO	Habitat Secure Standards for Individual BMUs
Linear Open Road Density Minimize road density, no permanent roads in key grizzly habitat, maintain roadside cover	≤1 mi/sq. mi by BMAA*, ≤0.75 mi/sq mi. on "high value" BMAAs	≤1 mi/sq. mi. by BMAA plus grizzly bear management strategy	No standard
Percent cover No standard identified in Forest Plan	≥ 75% per BMAA	No change	No change (Lolo Strategy stays in place)
Displacement Area No standard identified in Forest Plan.	Required for each BMAA with an ongoing major activity	Replace displacement area with core. See "core area" in this table.	See "core area" in this table
Opening Size is not a Forest Plan standard.	≤40 acres, can be larger if there are no permanent roads within ½ mile of the unit	No change	Existing implementation continues (see column 2)
Activity Scheduling No standard identified in Forest Plan	Major activity cannot occur more than 3 out of 10 years in a BMAA	No change	See core area below
Core Area No standard identified in Forest Plan.	No standard	No net loss of core on federal ownership in all BMUs. Criteria to replace	Numeric standard specific to each BMU (FSEIS Table 6, p. 31).

		lost existing core: 1) work to achieve 55% in Priority 1 BMUs, 2) consider seasonal needs, 3) flexibility to make major changes.	Consider seasonal needs, core fixed in place for minimum of 10 years. In BMUs not meeting their specific standard, projects affecting core must result in increased post-project core (3).
TMRD No Forest Plan standard identified	No standard	No net increase on Forest lands within recovery area	Numeric standard specific to each BMU (FSEIS Table 6, pg. 31). In BMUs not meeting specific standard, projects affecting TMRD must result in post-project movement toward the standard.
OMRD No Forest Plan standard identified	No standard	No net increase on Forest lands within recovery area	Numeric standard specific to each BMU (FSEIS Table 6, pg. 31). In BMUs not meeting specific standard, projects affecting OMRD must result in post-project movement toward the standard
Administrative Use Seasonal Closures on all roads in spring habitat	<14 days or road is considered open	115 round trips divided by season	60 round trips, divided by season
Grizzly Bear Use Outside Recovery Zones	Not Applicable	Not Applicable	ROD incorporates design elements pertaining to linear open and total miles of road (4).

(1) All Threatened and Endangered Species occurring on the Lolo including the grizzly bear…will be managed for recovery to non-threatened status (Lolo Forest Plan p. II-13).

(2) MA= Management Area
MA 20=Grizzly bear habitat suitable for timber harvest
MA 20a=Grizzly bear habitat unsuitable for timber harvest
*BMAA= Bear Management Analysis Areas
BMU= Bear Management Unit

(3) BMUs must remain at or above the core standard. Therefore, potential losses to existing core must be compensated with in-kind replacement concurrently or prior to incurring the losses. See ROD Appendix B, section I (B) (3).

(4) See ROD Appendix B, sections II (A) and (B) for linear road mile standards applicable to areas outside of the Recovery Zones.

A. Monitoring/Reporting Requirements *(ROD p. 14)*

In addition to all existing forest plan monitoring requirements, each of the three national forests shall:

1) Meet annually with USFWS to discuss progress made towards achieving established standards for each BMU.

2) By April 15 each year, the Forests shall submit annual reports to the Service that detail the progress made toward achieving and maintaining the standards for Percent Core Area, OMRD, and TMRD within the Recovery Zones.

3) The Forests shall coordinate with state and federal agency biologists to collect credible grizzly bear observations that occur outside of the Recovery Zone boundaries (i.e., BORZ) and add this information to the 6th- order HUC database for inclusion into the annual report.

4) The annual report shall provide an ongoing list detailing the locations, dates, duration, and circumstances for invoking the allowance for entering core area for the purposes of road decommissioning or stabilizations.

5) To ensure the effective implementation of the open road density parameter (OMRD), at least 30 percent of closure devices (gates and barriers) will be monitored annually within the respective ecosystems. Monitoring techniques may include visual checks as well as road counters.

Individual ranger districts will maintain records of administrative use on restricted roads within the recovery area, to insure compliance with existing guidelines. Project-level decisions will consider the need for additional monitoring of site-specific activities within BMUs. Application of additional monitoring will be a future decision at the project-level and is beyond the scope of this amendment.

ROD Appendix B, section I(B)(3)

I. The following access management standards would apply to individual BMUs within the Selkirk Recovery Zone on the IPNFs and Cabinet-Yaak Recovery Zone on the KNF, IPNFs and portion of the LNF:

A. The OMRD, TMRD, and percent core standards displayed in Table [4] (above) would be established for the BMUs in the Cabinet-Yaak and Selkirk grizzly bear ecosystems.

B. Parameters for establishing and managing core habitat in all BMUs:

1. In accordance with IGBC (1998) and Selkirk/Cabinet-Yaak Ecosystem Subcommittee (1998) direction, core areas shall be established for the purpose of providing secure habitat for grizzly bears.

   a. Core areas include high quality habitat within a BMU that contains no motorized travel routes or high use trails.

   b. Core areas do not include any gated or restricted roads but may contain roads that are impassable due to re-growth of vegetation, effective barriers other than gates, or placement of logging or forest debris so as to no longer function as a motorized route

   c. When possible, core areas would be delineated by identifying and aggregating the full range of seasonal habitats that are available in the BMU.

   d. The IGBC anticipated that minimum core area size might be determined for each recovery zone. For the Selkirk/Cabinet-Yaak Grizzly Bear Recovery Zones, no scientifically based minimum effective size polygon for core area has been determined (Wakkinen and Kasworm 1997), though minimum block sizes of 2-8 mi^2 were suggested. Therefore, discounting small

or narrow blocks of core area is not prudent at this time. Individual project analyses would disclose the percent and size of core areas in each BMU.

e. Once route closures to create core areas are established and effective, these core areas should remain in place for at least 10 years. Therefore, except for emergencies or other unforeseen circumstances requiring independent section 7 consultation, newly created core area shall not be entered for at least 10 years after creation. were suggested. Therefore, discounting small or narrow blocks of core area is not prudent at this time. Individual project analyses would disclose the percent and size of core areas in each BMU.

f. Roads that are closed, decommissioned, or barriered in the future to create core area would be put in a condition such that a need for motorized access for maintenance is not anticipated for at least 10 years. Until such closed roads are placed in the above-described condition, they would not be considered as contributing to core area.

2. Entering core area blocks for road decommissioning or stabilization activities:

a. Without further section 7 consultation on grizzly bears, the Forest Service may affect underlying core area (i.e., any core habitat that is affected by the subject road and its buffer) within a BMU once per 10-year time frame, and not to exceed one bear year for the sole purpose of completing road decommissioning/stabilization activities on existing closed or barriered roads in core area habitat.

b. Subsequent needs to re-enter individual core areas within a BMU more frequently than once per decade for the purposes of road decommissioning shall be handled on a case-by-case basis through standard section 7 consultation procedures. The effects of additional entries would be analyzed pursuant to such project level consultation. Pending the outcome of each analysis, additional measures to minimize potential effects to grizzly bears may be required.

3. Routine forest management may be proposed in a core area block after 10-years of core area benefit. However, BMUs must remain at or above the core standard. Therefore, potential losses to existing core must be compensated with in-kind replacement concurrently or prior to incurring the losses. Such in-kind replacement of core would be established within the affected BMU in accordance with the direction in Part I.B.1., above. For exceptions, see specialized circumstances outlined in Part I.D. concerning BMUs that exceed standards. Following management, core areas must subsequently be managed undisturbed for 10 years.

C. Parameters for BMUs currently not meeting core area, OMRD, and/or TMRD standards:

1. These BMUs are anticipated to be brought up to standards in the following manner: 33 percent of those BMUs currently not meeting one or more standard within each ecosystem are estimated to meet all standards within three years of the amendment decision date; 66 percent of those BMUs currently not meeting one or more standard within each ecosystem are estimated to meet all standards within 5 years of the amendment decision date, and 100 percent of those BMUs currently not meeting one or more standard within each ecosystem are estimated to meet all standards within eight years of the amendment decision date.

D. For those BMUs currently meeting or exceeding (being better than) the standards for core area:

1. Except as provided above for road stabilization projects, no reductions in core habitat without in-kind replacements would be proposed until all BMUs administered by the IPNF, KNF and LNF in the respective ecosystems are up to standard [Table 2 (page 11); which does not include the LeClerc BMU or the Idaho State Lands BMU in the Selkirk recovery zone].

2. Once all BMUs meet all standards then subsequent projects that propose to permanently reduce core area by roads shall undergo independent section 7 formal consultation.

3. Reductions of core area within individual BMUs shall not reduce the percent core area below the minimum standards for the affected BMU without compensating with in-kind replacement concurrently or prior to incurring the losses (see Part I.B.3.).

E. Road use associated with completing administrative activities:

1. In the Selkirk ecosystem (aka Selkirk recovery zone):

   a. Administrative use shall not exceed 57 vehicle round trips per active bear year per road, apportioned as follows: ≤19 round trips in spring (April 1 through June15); ≤23 round trips in summer (June 16 through September 15); and ≤15 round trips in fall (September 16 through November 15).

2. In the Cabinet-Yaak ecosystem (aka Cabinet-Yaak recovery zone):

   a. Administrative use shall not exceed 60 vehicle round trips per active bear year per road, apportioned as follows: ≤18 round trips in spring (April 1 through June15); ≤23 round trips in summer (June 16 through September 15); and ≤19 round trips in fall (September 16 through November 30).

   b. If the number of trips exceeds 60 trips per active bear year in the Cabinet-Yaak ecosystem, then that road would be considered "open" for analysis and reporting purposes. Likewise, if the number of trips exceeds the allowable ecosystem-specific seasonal (spring, summer, and fall) vehicle round trips per road, then that road would be considered "open" for analysis and reporting purposes.

ROD Appendix B, Sections II(A) and (B): *applicable to BORZ on the Kootenai and Idaho Panhandle NFs (not applicable to the Lolo NF)*.

NCDE Grizzly Bear Amendment, Lolo NF

Wildlife (WL)

Desired conditions

NCDE-DC-WL-01. Within the NCDE primary conservation area, zone 1 (including the Ninemile demographic connectivity area), and zone 2, bear attractants on NFS lands are stored in a manner that reduces the risk of grizzly bear-human conflicts in the NCDE.

NCDE-DC-WL-02. Within the NCDE primary conservation area and zone 1 (including the Ninemile demographic connectivity area), grizzly bear habitat on NFS lands contributes to sustaining the recovery of the grizzly bear population in the NCDE and contributes to connectivity with neighboring grizzly bear recovery zones.

NCDE-DC-WL-03. The risk of grizzly bear-human conflicts is reduced by information, education, and design features or criteria for management activities.

Standards

NCDE-STD-WL-01. Grizzly bear habitat on NFS lands in the NCDE shall be delineated and managed as primary conservation area, zone 1 (including the Ninemile demographic connectivity area), or zone 2 (see figure 1-5 or subsequent USFWS updates if applicable).

NCDE-STD-WL-02. Within the NCDE primary conservation area, zone 1 (including the Ninemile demographic connectivity area), and zone 2, food/wildlife attractant storage special order(s) shall apply to NFS lands.

NCDE-STD-WL-03. In each bear management subunit within the NCDE primary conservation area, temporary changes in the open motorized route density, total motorized route density, and secure core shall be calculated for roads used for projects (as defined by “project (in grizzly bear habitat in the NCDE)”) during the non-denning season (see glossary). Calculations will include estimated changes for each year of the anticipated duration of the project and will be incorporated into the 10-year running average required by standard NCDE-STD-AR-03.

Guidelines

NCDE-GDL-WL-01. Within the NCDE primary conservation area, zone 1 (including the Ninemile demographic connectivity area), and zone 2, contractors, permittees, lessees, operators, and their employees should be informed of food/wildlife attractant storage special order(s) and procedures for safely working and recreating in grizzly bear country, prior to turnout of livestock or beginning work and annually thereafter, in order to reduce the risk of grizzly bear-human conflicts.

NCDE-GDL-WL-02. Within the NCDE primary conservation area, zone 1 (including the Ninemile demographic connectivity area), and zone 2, if a contractor, permittee, lessee, operator or their employees elect to camp on NFS lands other than in a developed recreation site, the site should be evaluated and written authorization (i.e., a campsite agreement that includes the food/wildlife attractant storage special order) should be provided before the campsite is established. The purpose is to reduce the risk of grizzly bear-human conflicts.

NCDE-GDL-WL-03. Within the NCDE primary conservation area and zone 1 (including the Ninemile demographic connectivity area), clover should not be used in seed mixes on NFS lands. Native seed mixes or those that are less palatable to grizzly bears should be used so that seeded areas do not become an attractant.

Access and Recreation (AR)

Desired conditions

NCDE-DC-AR-01. Within the NCDE primary conservation area, motorized access provides for multiple uses (such as harvesting of timber and non-timber forest products; hunting, fishing, and recreation opportunities) on NFS lands while providing open motorized route density, total motorized route density, and secure core levels that contribute to sustaining the recovery of the grizzly bear population in the NCDE.

NCDE-DC-AR-02. Within the NCDE primary conservation area, the number, capacity, and improvements of developed recreation sites provide for user comfort and safety while minimizing the risk of grizzly bear-human conflicts on NFS lands.

NCDE-DC-AR-03. Within each bear management unit in the primary conservation area, increases in the number and capacity of developed recreation sites on NFS lands that are designed and managed for overnight use during the non-denning season are at levels that contribute to sustaining the recovery of the grizzly bear population in the NCDE.

Standards

NCDE-STD-AR-01. Within the NCDE primary conservation area, motorized use of roads with public restrictions shall be permitted for administrative use (see glossary) as long as doing so does not exceed either six trips (three round trips) per week or one 30-day unlimited use period during the non-denning season (see glossary). The exception to this standard is:

- emergency situations as defined by 36 Code of Federal Regulations (CFR) 218.21.

Note: Administrative use is not included in baseline calculations and is not included in calculations of net increases or decreases. If the level of administrative use exceeds this standard, the use is counted as a project (see “project (in grizzly bear habitat in the NCDE)” in the glossary).

NCDE-STD-AR-02. In each bear management subunit within the NCDE primary conservation area, there shall be no net decrease to the baseline (see glossary) for secure core and no net increase to the baseline for open motorized route density or total motorized route density on NFS lands during the non-denning season (see glossary). The following conditions are not considered a net increase/decrease from the baseline:

- administrative use (see glossary);
- temporary use of a motorized route for a project (see “project (in grizzly bear habitat in the NCDE)” in the glossary) that meets the conditions stipulated in NCDE-STD-AR-03;
- mining activities (as authorized under the Mining Law of 1872) and oil and gas activities (as authorized under the Federal Onshore Oil and Gas Leasing Reform Act of 1987) conducted in accordance with valid existing rights and applicable standards and guidelines listed under NCDE-MIN;
- updated or improved data on a motorized route without an actual change on the ground;
- changes in technology or projections that result in changed open motorized route density, total motorized route density, or secure core values without actual change on the ground (e.g., a switch from the North American Datum of 1927 to the North American Datum of 1983 geodetic reference system);

- a road closure location is moved a short distance to a better location (e.g., to the nearest intersection or turnout) to allow a turn-around providing for public safety, to reduce vandalism, or to improve enforcement of the road closure;
- the agency exchanges, acquires, buys, or sells lands with motorized routes;
- a change in a motorized route necessary to comply with Federal laws;
- a change in a motorized route necessary to address grizzly bear-human conflicts, human safety concerns, or resource damage/concerns (e.g., a road paralleling a stream may be decommissioned and replaced by a new upslope road to reduce water quality impacts);
- a change made by an adjacent landowner that decreases the percentage of secure core or increases open motorized route density or total motorized route density values on an adjacent national forest;
- use of a motorized route for emergency situations as defined by 36 CFR 218.21; and
- temporary roads (see glossary).

NCDE-STD-AR-03. In each bear management subunit within the NCDE primary conservation area, temporary changes in open motorized route density, total motorized route density, and secure core shall be allowed for projects (as defined by “project (in grizzly bear habitat in the NCDE)” in the glossary). The 10-year running average for open motorized route density, total motorized route density, and secure core shall not exceed the following limits during the non-denning season (see glossary):

- 5 percent temporary increase in open motorized route density in each bear management subunit (i.e., open motorized route density baseline plus 5 percent);
- 3 percent temporary increase in total motorized route density in each bear management subunit (i.e., total motorized route density baseline plus 3 percent); and
- 2 percent temporary decrease in secure core in each bear management subunit (i.e., secure core baseline minus 2 percent).

Exceptions to this standard include:

- temporary changes for emergency situations as defined by 36 CFR 218.21 and
- temporary changes for actions where valid existing rights preclude or constrain agency discretion (e.g., certain contracts, permits, leases).

Refer to page 1-51 for examples of how to calculate and apply the 10-year running average and temporary increase/decrease.

NCDE-STD-AR-04. Within the NCDE primary conservation area, a restricted road may be temporarily opened for public motorized use to allow authorized uses (such as firewood gathering), provided the period of use does not exceed 30 consecutive days during one non-denning season and occurs outside of spring and fall bear hunting seasons. However, temporary public use of a restricted road shall not be authorized in secure core (see glossary).

NCDE-STD-AR-05. Within the NCDE primary conservation area, the number and capacity of developed recreation sites on NFS lands that are designed and managed for overnight use by the public during the non-denning season (e.g., campgrounds, cabin rentals, huts, guest lodges, recreation residences) shall be limited to one increase above the baseline (see glossary) in the number or capacity per decade per bear management unit. The following conditions are not considered an increase from the baseline:

- the agency obtains better information or updated information in its database(s);

- the agency acquires land that contains developed recreation sites;
- the agency increases the number or capacity of a developed recreation site in order to comply with Federal laws;
- the agency maintains or modifies an existing overnight developed or dispersed recreation site in such a way that does not increase the number or capacity of the site (e.g., installing a pit toilet to avoid damage to water resources or installing a bear-resistant food storage structure to reduce grizzly bear-human conflicts);
- the agency modifies an existing developed recreation site to enhance human safety (e.g., enlarging a road pullout to allow trailers to safely turn around);
- the agency operates a developed recreation site to allow overnight use only during the denning season (see glossary); and
- the agency makes a corresponding reduction in the number or capacity of overnight developed recreation sites in the same bear management unit through any of the following means: (1) equal reduction in capacity at another site; (2) closure of a developed site(s); or (3) consolidation and/or elimination of dispersed camping, when and where it can be enforced effectively and it is reasonably assured that new dispersed sites will not develop nearby. If these measures are used to offset an increase in number or capacity, they must be in place before the initiation of the increase.

If the agency reduces the number or capacity of developed sites below baseline levels, these reductions may be used at a future date to mitigate equivalent impacts of an increase, expansion, or change of use in developed sites within that bear management unit.

Note: This standard does not apply to dispersed recreation sites or to developed recreation sites managed for day use only (e.g., outfitter camps, roadside trail crossings, or interpretive pullouts; trailheads, picnic areas, or boat launches that are closed at night; ski areas that do not have overnight lodging).

NCDE-STD-AR-06. Within the NCDE primary conservation area, new or reauthorized recreation permits shall include a clause providing for modification, cancellation, suspension, or temporary cessation of activities if needed to resolve a grizzly bear-human conflict situation.

NCDE-STD-AR-07. Within the NCDE primary conservation area, new or reauthorized permits for ski areas on NFS lands that operate during the non-denning season shall include requirements to limit the risk of grizzly bear-human conflicts (e.g., to store garbage in a bear-resistant manner).

NCDE-STD-AR-08. Within modeled grizzly bear denning habitat in the NCDE primary conservation area, there shall be no net increase in the percentage of area or miles of routes designated for motorized over-snow vehicle use on NFS lands during the den emergence time period (see glossary).

Guidelines

NCDE-GDL-AR-01. In each bear management subunit within the NCDE primary conservation area, each project (as defined by “project (in grizzly bear habitat in the NCDE)” in the glossary) should be designed so that on-the-ground implementation does not exceed 5 years to reduce the potential duration of grizzly bear disturbance or displacement due to project-related activities. Exceptions may be made where necessary, for example to accommodate:

- actions where existing rights preclude or constrain agency discretion (e.g., certain contracts, permits, leases);

- prescribed burning (including slash disposal), best management practices to protect water quality, or required reforestation activities; or
- emergency situations as defined by 36 CFR 218.21.

If an extension to the five-year time limitation is required (e.g., to meet contractual obligations or to complete on-the-ground treatments), the reasons should be documented in writing prior to authorization of the extension.

NCDE-GDL-AR-02. Within the NCDE primary conservation area, secure core, open motorized route density, and total motorized route density should be restored to pre-project levels (as defined by "project (in grizzly bear habitat in the NCDE)" in the glossary) within 1 year after completion of the project to reduce the potential duration of grizzly bear disturbance due to project-related activities. Exceptions may be made where necessary, for example to accommodate:

- actions where existing rights preclude or constrain agency discretion (e.g., certain contracts, permits, leases);
- prescribed burning (including slash disposal), best management practices to protect water quality, or required reforestation activities; or
- emergency situations as defined by 36 CFR 218.21.

If an extension to the 1-year time limitation is made (e.g., to meet contractual obligations or to complete on-the-ground treatments), the reasons should be documented in writing prior to authorization of the extension.

NCDE-GDL-AR-03. Within the NCDE primary conservation area, if the number or capacity of day-use or overnight developed recreation sites is increased, the project should include one or more measures to reduce the risk of grizzly-bear human conflicts in that bear management unit. The measure(s) should be in place prior to completion of the project or be included as one of the design criteria. Measures can include but are not limited to additional public information and education; providing backcountry food-hanging poles or bear-resistant food or garbage storage devices; project design criteria that would limit capacity increases to those needed for public health and safety; and increasing law enforcement and patrols.

Terrestrial Ecosystems Vegetation (VEG)

Desired conditions

NCDE-DC-VEG-01. Within the NCDE primary conservation area, the amount, type, and distribution of vegetation provide for the ecological, social, and economic sustainability of NFS lands while providing habitat components that contribute to sustaining the recovery of the grizzly bear population in the NCDE.

NCDE-DC-VEG-02. Within the NCDE primary conservation area, there is a mosaic of successional stages to provide for grizzly bear habitat needs over the long term.

Guidelines

NCDE-GDL-VEG-01. Within the NCDE primary conservation area, measures to reduce the risk of disturbance to the grizzly bear population should be incorporated into vegetation and fuels project design criteria, which vary on a site-specific basis (e.g., some activities should be restricted in spring habitat during the spring; areas with low levels of human activity should be provided adjacent to areas with high levels of disturbance). Note: Management activities such as pre-commercial thinning, burning, weed spraying, and implementation of road best management practices may need to be completed during the spring in order to meet resource objectives (especially if needed to prevent resource damage), in which

case other measures should be used to reduce the risk of disturbance (e.g., limiting the duration of the activity or limiting the use of closed roads).

NCDE-GDL-VEG-02. Within the NCDE primary conservation area, vegetation management activities should be designed to avoid detrimental effects on the grizzly bear population and to include one or more measures to protect, maintain, increase, and/or improve grizzly habitat quantity or quality (e.g., promoting growth of berry-producing shrubs, forbs, or grasses known to be bear foods) in areas where it would not increase the risk of grizzly bear-human conflicts.

NCDE-GDL-VEG-03. Within the NCDE primary conservation area, measures to retain cover (where present) along a portion of grass/forb/shrub openings, riparian wildlife habitat, or wetlands should be incorporated in project design criteria (this varies on a site-specific basis).

NCDE-GDL-VEG-04. Within the NCDE primary conservation area, vegetation management projects (including timber sales and other non-commercial vegetation management contracts) should include a provision for modification, cancellation, suspension, or temporary cessation of activities, if needed, to resolve a grizzly bear-human conflict situation.

NCDE-GDL-VEG-05. To reduce the risk of grizzly-bear human conflicts within the NCDE primary conservation area, vegetation management activities designed to enhance grizzly habitat (e.g., to increase huckleberry production) should not occur in or next to campgrounds, administrative facilities, or other developed recreation sites that operate during the non-denning season.

Grazing (GRZ)

Desired condition

NCDE-DC-GRZ-01. Within the NCDE primary conservation area, the number, capacity of, and improvements on cattle and sheep grazing allotments support ecologically sustainable grazing, and temporary grazing permits are used effectively for management of noxious weeds while minimizing the risk of grizzly bear-human conflicts on NFS lands.

Standards

NCDE-STD-GRZ-01. Within the NCDE primary conservation area and zone 1 (including the Ninemile demographic connectivity area), new or reauthorized livestock grazing permits and annual operating plans shall incorporate requirements to reduce the risk of grizzly bear-human conflicts (e.g., a food/wildlife attractant storage special order). New or reauthorized permits shall include a clause providing for modification, cancellation, suspension, or temporary cessation of activities, if needed, to resolve a grizzly bear-human conflict situation.

NCDE-STD-GRZ-02. Within the NCDE primary conservation area, a sheep grazing permit in non-use status shall not be allowed to increase allowable animal unit months beyond what was previously permitted prior to being in non-use when it is returned to use. Note: The Lolo National Forest does not have any sheep allotments.

NCDE-STD-GRZ-03. Within the NCDE primary conservation area and zone 1 (including the Ninemile demographic connectivity area), permits for livestock grazing shall include a provision that requires the reporting of livestock carcasses within 24 hours of discovery, which shall be followed by proper disposal of the carcass. Boneyards shall not be established on NFS lands.

NCDE-STD-GRZ-04. Within the NCDE primary conservation area and zone 1 (including the Ninemile demographic connectivity area), there shall be no net increase in the number of active sheep allotments or in permitted sheep animal unit months above the baseline (see glossary) on NFS lands. Allowable animal unit months shall not be increased for inactive allotments. Note: Existing allotments may be

combined or divided as long as doing so does not result in grazing allotments in currently un-allotted lands or an increase in animal unit months.

NCDE-STD-GRZ-05. Within the NCDE primary conservation area, there shall be no net increase in the number of active cattle grazing allotments above the baseline (see glossary) on NFS lands. Note: Existing allotments may be combined or divided as long as doing so does not result in grazing allotments in currently un-allotted lands.

NCDE-STD-GRZ-06. Within the NCDE primary conservation area and zone 1 (including the Ninemile demographic connectivity area), temporary permits for grazing by small livestock for purposes such as controlling invasive exotic weeds, reducing fire risk, or trailing of small livestock across NFS lands shall not result in an increase in bear-small livestock conflicts.

Guidelines

NCDE-GDL-GRZ-01. On NFS lands within the NCDE primary conservation area, the number of open or active sheep grazing allotments should be reduced if an opportunity exists with a willing permittee, to reduce the risk of conflicts with grizzly bears.

NCDE-GDL-GRZ-02. Within the NCDE primary conservation area, an allotment management plan and plan of operation should specify any needed measures to protect key grizzly bear food production areas (e.g., wet meadows, stream bottoms, aspen groves, and other riparian wildlife habitats) from conflicting and competing use by livestock (this varies on a site-specific basis).

Special Forest Products (SFP)

Desired condition

NCDE-DC-SFP-01. National Forest System lands provide a variety of public services and special forest products (such as mushrooms, huckleberries, firewood) while minimizing the risk of grizzly bear-human conflicts on NFS lands in the NCDE.

Standard

NCDE-STD-SFP-01. Special-use permits for apiaries (beehives) located on NFS lands shall incorporate measures including electric fencing to reduce the risk of grizzly bear-human conflicts, as specified in the food/wildlife attractant storage special order.

Renewable/Non-Renewable Energy and Mineral Resources (MIN)

Desired condition

NCDE-DC-MIN-01. Mineral materials are available based upon public interest, in-service needs, material availability, and valid existing rights, where consistent with desired conditions for other resources.

Standards

NCDE-STD-MIN-01. Within the NCDE primary conservation area and zone 1 (including the Ninemile demographic connectivity area), mining activities (as authorized under the Mining Law of 1872) and oil and gas activities (as authorized under the Federal Onshore Oil and Gas Leasing Reform Act of 1987) occurring on NFS lands, where feasible shall avoid, minimize, and/or mitigate environmental impacts to grizzly bears or their habitat, subject to valid existing rights. Stipulations or mitigation measures already included in existing leases, permits, or plans of operation on NFS lands shall not be changed, nor will additional stipulations or mitigation measures be added, without the lease, permit, or plan of operation holder’s agreement.

NCDE-STD-MIN-02. Within the NCDE primary conservation area and zone 1 (including the Ninemile demographic connectivity area), new or reauthorized permits, leases, and/or plans of operation shall include a provision for modification or temporary cessation of activities if needed to resolve a grizzly bear-human conflict situation.

NCDE-STD-MIN-03. Within the NCDE primary conservation area and zone 1 (including the Ninemile demographic connectivity area), new plans of operation, permits, and/or leases for mineral activities shall include measures to reasonably mitigate potential impacts of mineral development for the following:

- land surface and vegetation disturbance;
- water table alterations that affect bear foods on the surface; and
- construction, operation, and reclamation of mine-related facilities such as impoundments, rights of way, motorized routes, pipelines, canals, transmission lines, or other structures.

NCDE-STD-MIN-04. Within the NCDE primary conservation area and zone 1 (including the Ninemile demographic connectivity area), in addition to measures included in the food/wildlife attractant special order(s), new plans of operation, permits, and/or leases for mineral activities shall include the following measures regarding grizzly bear attractants:

- bear-resistant food storage and garbage containers shall be used at development sites and at any campgrounds or dispersed sites where exploration or production-related human occupancy is anticipated;
- garbage shall be removed in a timely manner;
- road kills shall be removed daily during active operating periods to a designated location determined in close coordination with Montana Fish, Wildlife and Parks;
- feeding of wildlife shall not be allowed; and
- locations of work camps shall be approved in advance of operations. Food storage requirements shall be strictly adhered to in any work camps.

NCDE-STD-MIN-05. Within the NCDE primary conservation area and zone 1 (including the Ninemile demographic connectivity area), if minerals activities have the potential to adversely affect grizzly bears or their habitat as determined by a site-specific analysis, new plans of operation, permits, and/or leases for mineral activities shall include the following mitigation measures, stipulations, or surface use criteria regarding grizzly bear habitat:

- ground-disturbing activities in identified grizzly bear spring habitat (as identified in a site-specific biological evaluation or other environmental document) shall be avoided between April 1 and June 30. If timing restrictions are not practicable, other measures shall be taken to reasonably mitigate negative impacts of mineral activity to grizzly bears;
- seismic activity in identified grizzly bear denning habitat (as identified in a site-specific biological evaluation or other environmental document) shall be avoided during the denning season (see glossary). If timing restrictions are not practicable, other measures shall be taken to reasonably mitigate negative impacts to the grizzly bear;
- cumulative impacts of multiple concurrent seismic and/or drilling operations shall be limited by timing restrictions. If timing restrictions are not practicable, reasonable and appropriate measures shall be taken to mitigate negative impacts to the grizzly bear;
- reasonable and appropriate measures regarding the maintenance, rehabilitation, restoration, or mitigation of functioning aquatic systems and riparian habitat conservation areas shall identify how

reclamation will occur, plant species to be used in reclamation, a timeframe of when reclamation will be completed, and monitoring criteria; and

- reclamation and revegetation of motorized routes, drilling pads, and other areas disturbed by mineral activities shall be completed as soon as practicable by the operator.

NCDE-STD-MIN-06. Within the NCDE primary conservation area and zone 1 (including the Ninemile demographic connectivity area), if mineral activities have the potential to adversely affect grizzly bears or their habitat as determined by a site-specific analysis, new plans of operation, permits, and/or leases shall include the following mitigation measures regarding motorized access:

- public motorized use that is not associated with minerals activities shall be prohibited on motorized routes constructed for exploration and/or development;
- a traffic management plan shall be developed as part of the proposed activity to identify when and how motorized routes will be used, maintained, and monitored (if required) and how motorized route standards and guidelines will be implemented after activities have ended;
- helicopter use associated with seismic activity, exploration, drilling, or development must follow an approved plan or permit; and
- speed limits shall be adopted on motorized routes if needed to prevent or reduce collisions with grizzly bears.

NCDE-STD-MIN-07. Within the NCDE primary conservation area and zone 1 (including the Ninemile demographic connectivity area), minerals contractors and lessees shall require employees to attend training related to safely living near and working in grizzly bear habitat prior to starting work and on an annual basis thereafter.

NCDE-STD-MIN-08. Within the NCDE primary conservation area, new leases for leasable minerals shall include a no surface occupancy stipulation (see glossary).

Guidelines

NCDE-GDL-MIN-01. Within the NCDE primary conservation area and zone 1 (including the Ninemile demographic connectivity area), in addition to forestwide guidelines, the following guidelines apply to new leasable minerals activities, including leases, surface use plans for proposed wells or operations, and permits to conduct seismic exploration or drilling. To reduce potential grizzly bear disturbance or displacement, helicopter use plans should:

- avoid establishing recurring helicopter use (see glossary), especially in spring habitats or other known important grizzly bear habitats or use areas; and
- avoid establishing landing zones, especially in spring habitats or other known important grizzly bear habitats or use areas. If a landing zone is deemed necessary for safe implementation of the seismic or surface use plan or permit to drill, the landing zone should be constructed only in an area that has had site-specific analysis and approval.

NCDE-GDL-MIN-02. Within the NCDE primary conservation area and zone 1 (including the Ninemile demographic connectivity area), leasable energy activities should use the best available noise-reduction technology on equipment and motorized vehicles to reduce potential disturbance or displacement of grizzly bears, whenever possible.

NCDE-GDL-MIN-03. Within the NCDE primary conservation area and zone 1 (including the Ninemile demographic connectivity area), along motorized routes, seismic corridors, and pipelines constructed for

leasable energy activities, wildlife cover should be maintained at regular intervals where present (this varies on a site-specific basis) in order to provide habitat connectivity for grizzly bears.

NCDE-GDL-MIN-04. Within the NCDE primary conservation area and zone 1 (including the Ninemile demographic connectivity area), for locatable and non-energy leasable minerals activities with the potential to adversely affect the grizzly bear or its habitat (this varies on a site-specific basis), the following tiered measures should be considered to mitigate impacts to grizzly bear habitat. Beginning at step 1, any subsequent steps would be implemented only if the prior steps are not possible or achievable.

- Step 1: The operator should reclaim the affected area back to suitable bear habitat that has similar or improved characteristics and qualities compared to the original habitat (such as the same native vegetation).
- Step 2: If step 1 is not attainable, operators should either acquire a perpetual conservation easement (or easements) or purchase comparable or better replacement grizzly bear habitat within the primary conservation area. Acquisition of habitat within connectivity corridors could also be considered for mitigation, when appropriate. Habitat acquired for mitigation may require a purchase rate of > 1:1 on an acreage basis, depending on the quality of habitat degraded and habitat available for acquisition.
- Step 3: If steps 1 and 2 are not achievable, the next option is to offset negative effects to bears and grizzly bear habitat with other appropriate types of actions.

NCDE-GDL-MIN-05. Within the NCDE primary conservation area and zone 1 (including the Ninemile demographic connectivity area), carrying bear deterrent spray should be recommended to mineral permittees, lessees and operators to reduce the risk of grizzly bear-human conflicts.

NCDE-GDL-MIN-06. Within the NCDE primary conservation area and zone 1 (including the Ninemile demographic connectivity area), available resources at existing gravel pits should be used before constructing new pits to reduce the risk of grizzly bear disturbance or displacement associated with blasting of rock or crushing of gravel.

Lolo National Forest - Zone 1

Desired conditions

NCDE-LNF Zone 1-DC-01. Within the Lolo National Forest portion of NCDE zone 1 (including the Ninemile demographic connectivity area), roads provide for public and administrative access to NFS lands while contributing to sustaining the grizzly bear population in the NCDE. The Ninemile demographic connectivity area provides habitat that can be used by female grizzly bears and allows for bear movement between grizzly bear ecosystems.

NCDE-LNF Zone 1-DC-02. In areas between the primary conservation area and the Ninemile demographic connectivity area, NFS lands are consolidated and conservation easements with willing landowners are supported in a manner that provides habitat connectivity and facilitates movement of wildlife.

Standards

NCDE-LNF Zone 1-STD-01. Within zone 1 (outside the Ninemile demographic connectivity area) on the Lolo National Forest, there shall be no net increase above the baseline (see glossary) in the density of roads open to public motorized use during the non-denning season on National Forest System lands. Inside the Ninemile demographic connectivity area, there shall be no net increase above the baseline (see glossary) in the density of roads and trails open to public motorized use during the non-denning season on National Forest System lands. Density is calculated by dividing the total miles open to public

motorized use on NFS lands during the non-denning season, by the total square miles of NFS lands in that same area. This standard does not apply to the following:

- motorized use by agency personnel or others authorized by the appropriate agency personnel;
- temporarily opening a road for a short period of time to allow for public firewood gathering and other authorized use;
- updated/improved data on a motorized route without an actual change on the ground;
- changes in technology or projections that result in changed calculations without actual change on the ground (e.g., a switch from the North American Datum of 1927 to the North American Datum of 1983 geodetic reference system);
- a road closure location is moved a short distance (e.g., to the nearest intersection or turnout) to a better location to allow turn-arounds providing for public safety, to reduce vandalism, or to improve enforcement of the road closure;
- the agency exchanges, acquires, buys, or sells lands with motorized routes;
- a change in an open road necessary to comply with Federal laws;
- motorized use for mining activities (as authorized under the Mining Law of 1872) and oil and gas activities (as authorized under the Federal Onshore Oil and Gas Leasing Reform Act of 1987) conducted in accordance with valid existing rights and applicable standards and guidelines;
- a change in a motorized route is necessary to address grizzly bear-human conflicts, human safety concerns, or resource damage/concerns (e.g., a road paralleling a stream may be decommissioned and replaced by a new upslope road to reduce water quality impacts);
- motorized use for emergency situations as defined by 36 CFR 218.21; or • temporary roads (see glossary).

Forest Plan Monitoring

NCDE-MON-01. Within the NCDE primary conservation area, the levels of secure core, open motorized route density (> 1 mi/mi2) and total motorized route density (> 2 mi/mi2) within each bear management unit (BMU) subunit during the non-denning season, will be monitored and compared to the baseline.

NCDE-MON-02. Within the NCDE primary conservation area, the number and overnight capacity of developed recreation sites designed and managed for overnight use on National Forest System lands within each BMU will be monitored and compared to the baseline. The number of day use recreation sites and trailheads in each BMU in the NCDE primary conservation area and administrative sites (see glossary) will also be monitored.

NCDE-MON-03. Within the NCDE primary conservation area, the numbers of commercial livestock grazing allotments and the numbers of sheep animal unit months on National Forest system lands will be monitored and compared to the baseline. In the NCDE primary conservation area and zone, the number of grizzly bear-livestock conflicts occurring annually on National Forest System lands will be monitored.

NCDE-MON-04. Within the NCDE primary conservation area and zone 1 (including the Salish and the Ninemile demographic connectivity areas), where it is determined there is potential for adverse effects to the grizzly bear population or its habitat resulting from leasable or locatable mineral activities, a monitoring plan will be developed for the life of the mineral activity. The monitoring plan will outline how changes in habitat and/or disturbance to bears will be monitored and mitigations (e.g., monitoring of mining reclamation measures) will be identified and funded.

NCDE-MON-05. Within the NCDE primary conservation area, the 10-year running average of open motorized route density, total motorized route density and secure core will be monitored by forest staff and documented for each project (see NCDE STD-AR-03 and the definition of "project (in grizzly bear habitat in the NCDE)" in the glossary).

NCDE-MON-06. Within the NCDE primary conservation area, the duration of projects will be monitored by forest staff (see NCDE-GDL-AR-01 and the definition of "project (in grizzly bear habitat in the NCDE)" in the glossary).

NCDE-MON-09. In NCDE zone 1 outside of the Ninemile demographic connectivity area on the Lolo National Forest, the density of roads open for public motorized use during the non-denning season on National Forest System lands will be monitored and compared with the baseline. Inside the Ninemile demographic connectivity area, the density of roads and trails open to public motorized use on National Forest System lands will be monitored and compared with the baseline.

NCDE-MON-10. In the NCDE primary conservation area, the percentage of modeled grizzly bear denning habitat (as updated by MFWP) where public motorized over-snow use is allowed during the den emergence time period will be monitored and compared to the baseline.

Selected Glossary Terms

administrative use - Specifically, in the portion of the Northern Continental Divide Ecosystem for grizzly bears mapped as the primary conservation area, motorized use of roads closed to the public is permitted for Federal agency personnel or other personnel authorized to perform duties by appropriate agency officials, as long as doing so does not exceed either six trips (three round trips) per week or one 30-day unlimited use period during the non-denning season.

baseline - The baseline for the Northern Continental Divide Ecosystem is defined as conditions as of December 31, 2011, as modified by changes in numbers that were evaluated and found to be acceptable through the Endangered Species Act section 7 consultation with USFWS while the grizzly bear was listed as threatened. The baseline will be updated to reflect changes allowed under the standards and guidelines.

net change - The difference in a measurement (such as road density) after on-the-ground changes are accounted for pre- and post-project; allows for temporary changes during a project.

non-denning season - The time period when grizzly bears typically are not hibernating. West side of the Continental Divide: from 1 April through 30 November. East side of the Continental Divide: from 16 April through 30 November.

project (in grizzly bear habitat in the NCDE) - For purposes of the motorized access standards and guidelines in the primary conservation area of the Northern Continental Divide Ecosystem, refers to any temporary activity requiring construction of new roads, temporary roads, reconstruction or opening of restricted roads during the non-denning season, if such use exceeds administrative use levels (see administrative use). Activities involving recurring helicopter use (see recurring helicopter use) are also considered to be a project.

Appendix 3: Reporting requirements in Incidental Take Statements currently in effect for the Lolo Forest Plan

Several incidental take statements (ITS) are currently in effect for different portions of the Lolo NF. These include reporting requirements that set various due dates, shown below in red bold font. The Forest is interested in simplifying and consolidating these requirements as part of this framework consultation. The current reporting items and due dates required of the Lolo NF are as follows.

Selkirk and Cabinet-Yaak recovery zone, 2011 ITS

By **April 15** each year, the Forests shall submit annual reports to the Service that detail the progress made toward achieving and maintaining the standards for Percent Core Area, OMRD, and TMRD within the Recovery Zones.

NCDE recovery zone and distribution area, 2012 amendment to 2004/1996 ITS

1) Continue to maintain an up-to-date record of location and length of new permanent and temporary roads constructed and roads decommissioned on the Forest, both within and outside of the NCDE recovery zone. The status of these roads (i.e., open or restricted) and presence of signage, barrier or closure device, if applicable, will also be reported. The Forest shall complete a report with this information and submit it to the Service's Montana Field Office **by February 1 of each year** for the preceding calendar year.

2). Maintain up-to-date record of the grizzly bear conflicts and management actions that occur within the boundary of the Forest's grizzly bear distribution area, both in and outside of the recovery zone. "Conflict" is defined by the IGBC (1986) as "a confrontation between man and/or his property and bear(s) in which the safety of man and/or bear(s) is jeopardized and/or property loss occurs." This information shall be submitted to the Service's Montana Field Office in written form **annually by February 1** for the preceding calendar year and can be combined with reporting requirement number 1 above.

3). Notify the Service if a change in status of sheep grazing on the Forest is being considered.

4). Notify the Service's Montana Field Office, within 72 hours, of any livestock depredation by grizzly bears, grizzly bear-human conflict resulting from improper storage of food or attractants, or the management removal or human-caused death of a grizzly bear.

NCDE, 2010 Swan BMU Subunit

1) Continue to maintain an up-to-date record of OMAD, TMAD, and Security core as well as location and length of new permanent and temporary roads constructed and roads decommissioned within the Swan subunit. The Forest shall complete a report with this information and submit it to the Montana Field Office **by March 1 of each year** for the preceding calendar year.

2) Notify the USFWS Montana Field Office if a change in access management for the Swan subunit if being considered.

3) Notify the USFWS Montana Field Office within 72 hours of any grizzly bear-human conflict.

NCDE recovery zone, 2017 amendment to 1996/2004 ITS

1) To remain in compliance with the terms and conditions, and to demonstrate that the USFS is adequately reducing the potential for and minimizing the effect of any incidental take of grizzly bears, the USFS shall adhere to the reporting requirements stipulated in the "Monitoring" components of the proposed amendments. Specifically, these components are presented as NCDE-MON-01 through NCDE-MON-10 in Appendix 2 (page 2-14) of this document. The stipulated **biennial monitoring reports** shall be provided to the Service's Ecological Services Office in Helena, Montana.

2) If a human-caused grizzly bear mortality is discovered on NFS lands, the Service's Grizzly Bear Recovery Office in Missoula, Montana shall be notified within 24-hours. Reporting human-caused grizzly bear mortalities on NFS lands may be done by MTFWP, but the USFS remains responsible for ensuring that the Service has received all appropriate information.

Appendix 4: Delineation of grizzly bear analysis units on the Lolo National Forest

Grizzly bear analysis units (GBAUs) were delineated in portions of the Lolo National Forest that are outside of the recovery zones identified in the grizzly bear recovery plan (USFWS 1993). GBAUs are discrete, stable units that can be used to analyze and monitor project effects to individual bears that occur in the area. GBAUs are not meant to constrain management nor is the intent to manage for conditions that support grizzly bear survival and reproductive success in the same way as inside the Recovery Zones. The Lolo NF recently completed delineation of GBAUs using the following process that is consistent with current guidance from the Regional Office with input from USFWS staff.

Guidance for Delineation of Grizzly Bear Analysis Units outside Recovery Zones

1. Units should be biologically meaningful, similar to units used for analysis of Canada lynx, elk, and grizzly bears within Recovery Zones. This means they:
   a. Are based on what is known about female home range sizes found in the nearby ecosystem(s). This includes consideration that home range sizes vary and tend to be larger in habitats which are drier and less productive.
   b. May be larger than the average or largest female home ranges if needed in order to incorporate an adequate range of habitats, and recognize that:
      i. home ranges may be larger in relatively unoccupied habitats, and
      ii. areas where USFWS considers that grizzly bears “may be present” represent areas where bears may occur.
   c. Incorporate a range of elevations, to include potential habitat for denning, summer use, and spring (low elevation riparian/mesic habitats).
   d. Incorporate a range of broad Potential Vegetation Types (PVTs) and allow for appropriate size and configuration to incorporate that range, including potential spring habitat.
   e. Consider shape. Blocky shapes are preferable to shapes that are strongly linear when used to calculate metrics such as motorized route density.

2. GBAUs should not extend beyond the NF administrative boundary. Where private lands occur within the boundary (i.e., inholdings, checkerboard ownership, etc.), units should not be drawn to exclude those lands, but created so an area approximating female home range size or larger is available on NFS-only lands within that unit.

3. Use Hydrologic Unit Code (HUC) 10 (commonly referred to as 5th Code HUCs) as a starting point for delineating GBAUs to facilitate incorporation of the full elevational gradient. GBAUs may incorporate portions of HUCs or use other features for delineation as needed, based on the considerations outlined in the items listed above (size, habitat, private lands).

4. Small, isolated parcels that are not physically contiguous with other NFS lands will not be included in GBAUs. These include small administrative sites, sections where land exchanges or purchases occurred in the past and no NFS lands remain within the drawn boundary, and other parcels that are

generally under 1,000 acres in size. Where these occur and have been excluded, they will be noted in the GBAU documentation.

5. Units will be created without considering the amount or pattern of motorized routes.

6. Detailed GIS metadata and process notes will be documented for each GBAU, to include:
   a. Grizzly Bear Analysis Unit name. Name should use HUC10 name or other geographic feature within the unit to facilitate location reference.
   b. GIS layers used and their source.
   c. GIS layers created and their locations.
   d. Decision documentation for boundary lines (e.g., "adjusted to include upper end of [named] HUCs to include adequate mixed forest habitat and because only small portions of those HUCs are on NFS lands").
   e. Acreage of private lands and NFS lands within each GBAU.
   f. Other metadata information per standard GIS metadata protocols.

Size of Grizzly Bear Analysis Units

Table 1 summarizes the average and range of sizes of subunits or BMUs used in the grizzly bear recovery zones that are on or near the Lolo NF. The general intent is for GBAUs to approximate the same range of sizes. The Northern Continental Divide Recovery Zone has BMUs that are divided into smaller subunits as these subunits represent a female home range size. However, the Cabinet-Yaak and Selkirk Recovery Zones approached it differently and sized the BMUs to represent a female home range size. Table 1 presents the NCDE BMU subunit acres and the CYE and SE BMU acres as representative female home ranges as to compare across ecosystems (as explained in Allen et al. 2011[5]).

Table 1. Size of BMU Subunits by grizzly bear recovery zone, based on female home range size in that area.

Grizzly Bear Recovery Zone	Bear Management Unit or Subunit Size		
	Minimum acres	Maximum acres	Mean acres
Cabinet-Yaak	51,500	163,000	75,101
Selkirk	18,000	87,000	64,300
Northern Continental Divide	15,000	142,000	45,000

Documentation of the Process for Delineating GBAUs on the Lolo NF

Since BMU22 (from the Cabinet-Yaak Ecosystem) and the NCDE BMU Subunits (in the Primary Conservation Area) were already delineated, these lands were not included in any GBAU. The boundaries of GBAUs that border these polygons used the already established BMU 22 and NCDE Subunit boundaries. This situation resulted in some minor deviation from the suggested R1 process for GBAU delineation. As an example, the Cottonwood Unit on the Seeley Lake Ranger District is long and thin due to its juxtaposition between the PCA and private lands to the south.

Four small parcels of Lolo NF NFS lands are not within any GBAU. Three are within the Missoula valley area (AFD, Fort Missoula, and 14th & Caitlin). One is an old ranger station, north of I-90 in Zone 2, near

[5] Allen, L.R., B.R. Lyndaker, and G.D. Harris. 2011. A review of the Wakkinen and Kasworm (1997) report as best available science for the Selkirk and Cabinet-Yaak grizzly bear recovery zones. US Forest Service, Region 1, pp. 32.

Clinton. It would be difficult to manage the road density, etc. for these parcels. These parcels are highly unlikely to provide value to grizzly bears and given the proximity of these parcels to surrounding human development, these parcels would not be conducive for bear use. Excluding these parcels meets R1 recommendations for GBAU delineation.

As per recommendation from the Regional Office, LNF GBAU boundaries primarily follow hydrologic lines (5th CODE HUC), major roads, rivers, Public Land Survey System section & quarter section lines, or the ALP Forest Administrative Boundary.

To avoid having small parcels of NFS land grouped together but spatially separated as a GBAU, some GBAU polygons incorporated parcels of non-NFS land. There are 3 basic scenarios for when this occurred.

1) the 5th code HUC contained some lands under ownership of the Nature Conservancy which are being, or may be, transferred to NFS ownership,
2) the HUC contained other private timber lands intermingled with FS lands and these lands may come under FS ownership in the future or
3) the HUC contained a combination of private timberlands and other private ownership intermingled with FS lands.

Documentation of considerations and adjustments for individual GBAUs on the Lolo NF:

- Lower Thompson, Upper Thompson, and Middle Thompson were expanded to have a joint boundary following the Thompson River Road.
- Little Thompson was expanded across the valley floor to share the common boundary with BMU22
- Lynch Creek-Clark Fork was made to be on polygon incorporating several individual NFS land parcels.
- Prospect and Dry Creek-Clark Fork were both expanded northward, across the river, to share the common boundary with BMU22. And avoid several separate NFS land parcels.
- Dry Cold, Keystone, Trout East, Trout West, Pats Knob, Petty Creek, Ninemile, and Mill South following the existing NCDE Ninemile DCA boundary along I-90.
- Pats Knob and Keystone shared boundary follows the NCDE Ninemile DCA boundary.
- Mill South boundary was expanded north to I-90 (following the NCDE Ninemile DCA boundary) and a bit eastward along PLSS lines to avoid some convoluted administrative boundaries.
- South Lolo does not include Lolo NF lands within the Bitterroot Ecosystem.
- Miller and Lower Rock were expanded across the river to I-90 (follows the NCDE Management Zone boundary. Again avoiding some convoluted administrative boundary lines.
- Mill North and North Missoula now share a boundary along Hwy 93 through the Evaro hill area.
- North Missoula on the edge along the Missoula valley was expanded a bit, avoiding some convoluted administrative boundary lines.
- Gold and Middle Blackfoot have been expanded as there will be some land acquired by both BLM and USFS in this area. How much land will be acquired is unknown, but having all the potential land exchange area incorporated eliminates any future GBAU boundary adjustments. It also will set-up the GBAUs for the BLM if they have to similar analyses.
- Placid, and Cottonwood were expanded towards each other and follows the NHD flow lines for the river. Otherwise there will be a donut hole.

- Cottonwood was expanded a bit southward to avoid some convoluted administrative boundaries. And subsequently expanded eastward to include all NFS lands south of the NCDE Primary Conservation Area (former Recovery Zone).

Table 2 shows the final list of 30 GBAUs and the total acres and acres of NF land in each. Overall, the average and maximum sizes of the GBAUs are consistent with the ranges shown in table 1. The unusually small acreage of NFS lands in the Middle Blackfoot GBAU is due to anticipated future changes to land ownership in this area. The Nature Conservancy currently manages and is actively acquiring lands within the Middle Blackfoot GBAU and those lands are anticipated to be transferred into public ownership in the future. Therefore, the Forest anticipates the percentage of FS lands within the Middle Blackfoot GBAU to increase in the future.

Table 2. Names and acreages of grizzly bear analysis units (GBAUs) on the Lolo NF.

Grizzly Bear Analysis Unit	Acres, all ownerships	Acres of NFS lands	Secure Habitat acres (percent) on NFS lands with no minimum patch size
NCDE Zone 1 GBAUs			
Clearwater	67,672	42,936	1,791 (4%)
Cottonwood	59,150	28,223	3,123 (11%)
Gold	56,700	31,990	4,326 (14%)
Middle Blackfoot	72,003	6,178	140 (2%)
North Missoula	60,485	52,617	35,710 (68%)
Placid	49,452	23,207	800 (3%)
Ninemile DCA GBAUs			
Keystone	78,844	57,233	18,856 (33%)

Mill North	45,962	39,489	1,674 (4%)
Ninemile	118,325	99,597	28,653 (29%)
Trout East	96,830	59,911	6,620 (11%)
GBAUs outside of NCDE grizzly bear management zones			
Dry Cold	54,727	47,742	24,176 (51%)
Dry Eddy	84,017	61,230	25,172 (41%)
Fish Creek	167,586	131,853	100,527 (76%)
Little Thompson	80,196	42,973	4,665 (11%)
Lower Rock	145,614	133,773	75,014 (56%)
Lynch Creek-Clark Fork	120,338	22,848	2,919 (13%)
Middle Thompson	54,977	31,463	8,063 (26%)
Mill South	69,834	28,669	9,837 (34%)
Miller	70,174	56,549	2,255 (4%)
North Lolo	98,176	73,558	11,667 (16%)

Pats Knob	63,542	51,641	17,808 (34%)
Petty Creek	75,064	62,850	15,683 (25%)
Prospect	144,377	115,913	29,671 (26%)
St Regis North	107,509	94,354	23,456 (25%)
St Regis South	124,392	118,405	27,282 (23%)
South Lolo	82,455	73,547	18,799 (26%)
Trout West	140,809	123,039	40,291 (33%)
Upper Fishtrap	82,322	18,925	1,178 (6%)
Upper Rock	73,711	73,095	55,630 (76%)
Upper Thompson	43,111	12,735	1,886 (15%)