Revised Biological Assessment for Grizzly Bears

2021 Forest Plan for the Helena-Lewis and Clark National Forest

Prepared by:

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	Updated 04/02/2025[1]

[1] *Updates are in red*

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List of Terms and Abbreviations

Terms used in this document

Term	Full name/additional information
the Forest	Helena-Lewis and Clark National Forest
forest plan	Helena-Lewis and Clark National Forest Revised Land Management Plan
the Rule	the 2012 Planning Rule as described in 36 CFR Part 219, Subpart A

Abbreviations used in this document

Abbreviation	Full term/description
BA	biological assessment
BMU	Bear management unit
BO	biological opinion
CDNST	Continental Divide National Scenic Trail
CFR	Code of Federal Regulations
CMA	Conservation management area
dbh	diameter at breast height
DC	desired condition (reference to forest plan component)
EIS	environmental impact statement (DEIS = draft EIS; FEIS = final EIS)
ESA	Endangered Species Act
FS	Forest Service
FW	Forestwide (reference to forest plan component)
GA	Geographic Area
GDL	guideline (reference to forest plan component)
GO	goal (reference to forest plan component)
GYE	greater Yellowstone ecosystem
HLC NF	Helena-Lewis and Clark National Forest
HNF	Helena National Forest
IGBC	interagency grizzly bear committee
LCNF	Lewis and Clark National Forest
mmbf	million board feet
mmcf	million cubic feet
MFWP	Montana Fish, Wildlife and Parks
NCDE	Northern Continental Divide Ecosystem
NEPA	National Environmental Policy Act
NF	National Forest
NFS	National Forest System
NRLMD	Northern Rockies Lynx Management Direction
NRV	natural range of variation

Abbreviation	Full term/description
OBJ	objective (reference to forest plan component)
OMRD	open motorized route density
PCA	primary conservation area
RMZ	riparian management zone
ROD	record of decision
ROS	recreation opportunity spectrum
RZ	recovery zone
SCC	species of conservation concern
STD	standard (reference to forest plan component)
SUIT	suitability (reference to forest plan component)
TMRD	total motorized road density
USDA	United States Department of Agriculture
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
WSA	wilderness study area
WUI	wildland urban interface

Introduction and Background

Previous Biological Assessments and Biological Opinions

Management of National Forests under the National Forest Management Act (1976), (16 U.S.C. 1604 et seq.) must comply with the Endangered Species Act (16 U.S.C. 1536 (c), as amended) where threatened, endangered, or proposed species are or may be present. Under provisions of the Endangered Species Act (ESA), federal agencies shall use their authorities to carry out programs for the conservation of listed species, and shall ensure that any action authorized, funded, or implemented by a federal agency is not likely to (1) adversely affect listed species or designated critical habitat, (2) jeopardize the continued existence of a proposed species, or (3) adversely modify proposed critical habitat (16 U.S.C 1536).

In March 2020, the Forest Service (FS) prepared and submitted a Biological Assessment (BA) [hereafter referred to as the 2020 BA] to the U.S. Fish and Wildlife Service (USFWS) analyzing the potential impacts of implementing a framework programmatic action, the proposed Land and Resource Management Plan (hereafter referred to as the "2021 Forest Plan")[2] for the Helena-Lewis and Clark National Forest (HLC NF), in sufficient detail to determine the extent to which implementation of the 2021 Forest Plan may affect any of the threatened, endangered, proposed, or candidate species listed or their designated or proposed critical habitats. The USFWS completed a Biological Opinion (BO) on February 10, 2021. The BO concluded that implementation of the proposed 2021 Forest Plan is not likely to jeopardize continued existence of the grizzly bear or Canada lynx and is not expected to result in destruction or adverse modification of Canada lynx designated critical habitat. The BO provided incidental take for those species and identified reasonable and prudent measures and terms and conditions necessary to support those measures and to comply with section 9 of the ESA.

In December 2021 the FS submitted to the USFWS a supplement (hereafter referred to as the 2021 BA Supplement) to the March 2020 BA, updating some data that had changed in response to the objection process and as a result of some project-level analyses, and incorporating corrections to minor errors that had been identified. The information in the supplement added to but did not replace the analysis, conclusions, and determinations in the original March 2020 BA. In January 2022 the USFWS completed a Revised BO that replaced the original, February 2021 BO. The Revised BO reached the same conclusions found in the original BO and identified reasonable and prudent measures and terms and conditions necessary to support those measures and to comply with section 9 of the ESA.

2024 Revised Biological Assessment Updated 2025

On August 3, 2023, the District Court of Montana remanded to the USFWS the 2022 Revised Biological Opinion as it relates to grizzly bears (Case 9:21-cv-00005-DLC). The Forest Service is reinitiating consultation to address issues identified by the court and to provide updated analysis of the potential effects of the 2021 Forest Plan on the threatened grizzly bear.

This BA is prepared in accordance with legal requirements set forth under Section 7 of the Endangered Species Act (ESA), (16 U.S.C. 1536 (c)) and follows ESA guidance. The 2021 Forest Plan is a framework programmatic action that does not approve nor authorize specific actions or activities, but instead guides development of future actions that will be authorized, funded, and carried out at a later time. As such, direct effects to listed species are expected to occur only at such time as future actions are authorized, funded, or carried out subject to future section 7 consultation.

The 2024 Revised Biological Assessment has been updated to reflect methodology changes in secure

[2] The plan was referred to as the "2020 Forest Plan" in the 2020 BA and updated in the 2021 Supplement to the BA as the "2021 Forest Plan"; the latter is correct and will be used throughout this document.

habitat calculations. Previously, secure habitat was defined as areas outside of the NCDE primary conservation area that contain no motorized travel routes during the non-denning season and are more than 0.31 miles (500 meters) from a drivable motorized route. Heretofore, secure habitat is defined as above AND 0.31 miles (500 meters) from private land. Tables 11 and 12 reflect these changes. There have also been some minor updates to ownership acres reflected in Tables 10, 11, and 12. There are no other changes in this BA.

Federally Listed Species and Designated Critical Habitat

In accordance with section 7(c) of the ESA, the USFWS has determined that the following federally designated species may be present on the HLC NF as of 26 July 2024, per the list retrieved from the Montana Ecological Services Field Office generated through IPaC (Information for Planning and Consultation), Project Code: 2024-0122001 (on file) (Table 1)[3].

Table 1. Federally listed species on the HLC NF

Common Name	Scientific Name	Status[1]	Distribution in Planning Area
Bull trout	*Salvelinus confluentus*	Threatened; critical habitat	West of the Continental Divide (Upper Blackfoot and portion of Divide geographic areas only) in cold water streams, rivers, and lakes.
Canada lynx	*Lynx Canadensis*	Threatened; critical habitat	Resident in core lynx habitat (montane spruce/fir forests of western Montana, including the Rocky Mountain Range, Upper Blackfoot, and north portion of Divide GAs. Transient in secondary/peripheral lynx habitat, (south portion of Divide Geographic Area and other geographic areas not listed above). Critical habitat area corresponds with area where lynx are identified as resident (core habitat).
Grizzly bear	*Ursus arctos*	Threatened	Resident or transient in all parts of HLC NF except the Crazies, and Castles GAs and the portion of the Big Belts GA south of U.S. Highway 12[2]. Alpine/subalpine coniferous forests of primarily western Montana, increasingly also lower elevation riparian and prairie east of the Continental Divide.
Wolverine	*Gulo luscus*	Threatened	Throughout the HLC NF. High elevation alpine and boreal forests that are cold and receive enough winter precipitation to reliably maintain deep persistent snow late into the warm season.
Whitebark pine	*Pinus albicaulis*	Threatened	Throughout the HLC NF. Forested areas in western and central Montana, in high-elevation, upper montane habitat near tree line.

[1]Status refers to listing designation under the Endangered Species Act

[2]Grizzly bear 'may be present' area described according to USFWS map dated May 2024 (see 20240523_GB species list area_website (fws.gov))

Consultation History

In accordance with the Endangered Species Act and its implementing regulations, and with Forest Service Manual direction, the record of consultation for this Forest Plan revision is found in Appendix B. Any prior consultations with relevance to the current consultation are discussed as needed in the grizzly bear section.

[3] The 26 July 2024 species list generated through IPaC identified the threatened red knot and yellow-billed cuckoo birds as potentially present on the HLC. However, neither species has been observed on the Forest nor is habitat present. See the Montana Natural Heritage Program website at Montana Field Guide (mt.gov) for more information.

Description of the 2021 Forest Plan

In December 2021 the HLC NF issued a Record of Decision for the 2021 Land Management Plan, Helena Lewis and Clark National Forest (hereafter referred to as the 2021 Forest Plan). The 2021 Forest Plan was described in the 2021 Final Environmental Impact Statement in Alternative F (preferred alternative) and referred to in the 2020 BA and the 2021 BA Supplement as the proposed action. Since the 2021 Forest Plan has been in place since late 2021, there will be no further reference to proposed action or preferred alternative.

The2021 Forest Plan is described in detail below under the heading "Description of the Plan Components". Specific plan components included in the 2021 Forest Plan are discussed where relevant in the analysis found under the heading "Environmental Consequences". The 2021 Forest Plan is expected to guide management and decision- making on the HLC NF for approximately 15 years after it is completed. The 2021 Forest Plan is a framework programmatic action and does not make commitments nor decisions approving or prohibiting specific actions or activities. Instead, it provides the framework that guides subsequent site-specific planning and decision-making.

Need for and Purpose of the 2021 Forest Plan

Need

In 2015, the formerly separate Helena National Forest and Lewis and Clark National Forest were combined administratively to form the HLC NF. Each forest had its own forest plan that has continued to direct management on the formerly separate portions of the combined HLC NF. As a result of combining the two forests to be managed as one unit, there was a need to develop a single forest plan for the entire administrative area.

The HNF and LCNF Forest Plans were both completed in 1986, over 30 years ago. Since that time, some conditions of the land and resources have changed, some social, economic, or ecological needs and conditions have changed, and new scientific and other information has become available. There was a need to revise the Forest Plans to consider or incorporate those changes.

In May of 2012 the United States Forest Service (USFS) began using new planning regulations (hereafter referred to as the "2012 Planning Rule" or simply as "the planning rule") to guide collaborative and science-based revision of Forest Plans. Specific requirements of the 2012 Planning Rule are described below; there was a need to develop and implement a revised Forest Plan for the HLC NF that complies with the direction provided in the 2012 planning regulations.

Purpose

The purpose of the 2021 Forest Plan was to revise and combine the former HNF and LCNF Forest Plans into a single plan for the entire administrative unit, and to incorporate new information, consider changed conditions, and provide integrated direction for social, economic, and ecological sustainability and multiple uses of the HLC NF land and resources in compliance with the 2012 Planning Rule.

The purpose of the 2021 Forest Plan is to set direction for management of NFS lands administered by the HLC NF, based on an integrated evaluation of social, economic, and ecological considerations. This direction is used to guide programs, practices, and uses of HLC NF lands. A Forest Plan is a framework programmatic document that provides broad direction similar to zoning in a community. As such, it does not authorize site-specific prohibitions, actions or activities, all of which will continue to require site-specific analysis and decision-making.

Action Area

The action area, also referred to in this document as the "planning area", is the HLC NF which is in central

Montana and includes approximately 2,800,000 acres of public National Forest System (NFS) lands. The plan area also includes slightly more than 30,000 acres of NFS land on the Beaverhead-Deerlodge National Forest administered by the HLC NF, and slightly more than 2,000 acres of NFS lands in isolated parcels outside the administrative boundaries. Inholdings of other ownerships occur within the HLC NF administrative boundaries; those are not included in the total acreages above and are not subject to management by the Forest Service. The HLC NF includes portions of 17 counties and is managed as eight ranger districts: Rocky Mountain, Lincoln, Helena, Townsend, White Sulphur Springs, Belt Creek, Judith, and Musselshell.

The HLC NF straddles the Continental Divide and includes several island mountain ranges. Because of its diversity and extent, and because the island mountain ranges each include unique ecological and social context, the plan area is divided into ten geographic areas (GAs). GAs provide a means for describing conditions and trends at a more local scale than Forestwide, where appropriate. Some plan components in the 2021 Forest Plan are unique to individual GAs, reflecting the specific ecological and/or social context of NFS land management there. Table 2 displays the acres of the HLC NF by GA, and Figure 1 displays the GAs in geographic context. Minor changes in the acreages in Table 2 may have occurred since the 2020 BA, as a result of small boundary adjustments or corrected data layers. Those changes are insignificant at the framework programmatic level of this analysis. Changing them in this document would result in inconsistencies with information in the 2021 Forest Plan, 2021 ROD, and 2021 FEIS, and could thereby create unnecessary confusion. Project-level analyses will use the most updated data layers available at the time those analyses are carried out.

Table 2. Acres within the ten GAs on the HLC NF[1]

Geographic Area	Total Acres (all ownerships)	NFS Acres within GA	Percent of GA in NFS lands
Big Belts	452,292	312,983	69
Castles	79,862	69,610	87
Crazies	70,036	57,618	82
Divide	232,890	202,577	87
Elkhorns	175,259	160,599	92
Highwoods	44,495	42,315	95
Little Belts	900,961	802,711	89
Rocky Mountain Range	782,986	777,963	99
Snowies	121,897	117,989	98
Upper Blackfoot	348,185	333,215	96

[1] Source: "Biological Assessment for Threatened, Endangered, and Proposed Terrestrial Wildlife Species for the 2020 Forest Plan Helena-Lewis and Clark National Forest"

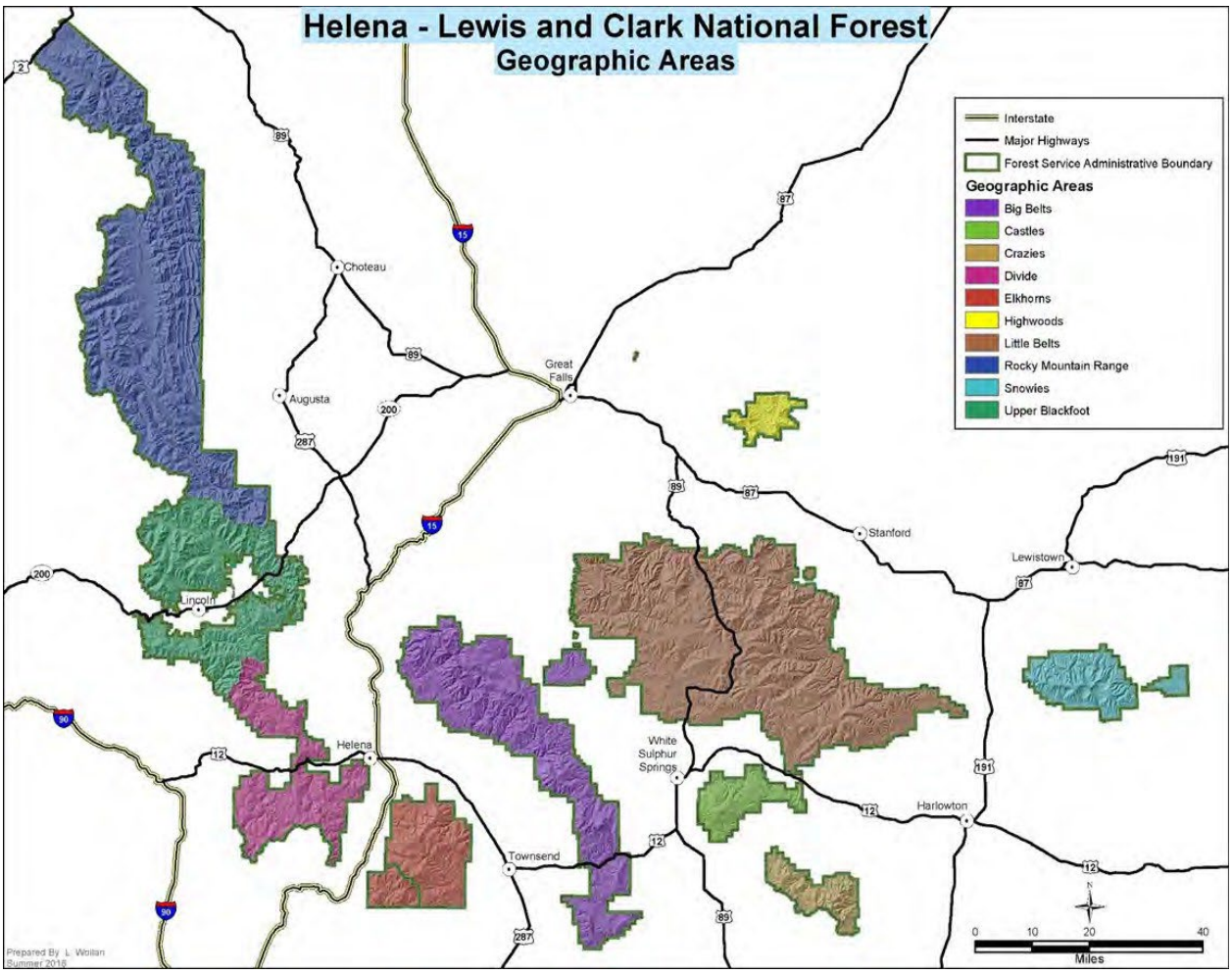

Figure 1. GAs of the HLC NF

Forest Planning Framework

The 2021 Forest Plan is a framework programmatic action that approves a framework for the development of future actions that will be authorized, funded, or carried out at a later time (50 CFR Part 402 Amended. Federal Register, Vol. 80. No. 90, Monday May 11, 2015. 26832-26845).

The 2012 Planning Rule

The United States Forest Service (USFS) carries out land and resource management planning under regulations referred to as the 2012 Planning Rule, that call for collaborative and science-based revision of Forest Plans. The 2012 Planning Rule requires Forest Plans to include certain types of components (refer to "Plan Components" section below) that must meet requirements within the rule for sustainability (36 CFR 219.8), plant and animal diversity (36 CFR 219.9), multiple use (36 CFR 219.10), and timber (36 CFR 219.11).

The rule calls for a complementary ecosystem and species-specific approach to forest management to meet the requirements for plant and animal diversity. Plan components must provide for ecosystem integrity and diversity by maintaining or restoring the structure, function, composition, and connectivity of ecosystems, and by maintaining key ecological characteristics (36 CFR 219.9(a)(1) and (2)). If those "coarse filter" components are not sufficient to provide conditions that will contribute to the recovery of federally listed

threatened and endangered species, conserve proposed and candidate species and maintain a viable population of each species of conservation concern (SCC) within the planning area, then additional, species-specific plan components must be included (36 CFR 219.9(b)).

In addition to the above requirements, the 2012 Planning Rule contains several other requirements that shape the Forest Plan and therefore may influence Forest resources, including wildlife and habitats. The rule requires that Forest Plans identify:

- Lands suitable for inclusion in the National Wilderness Preservation System (36 CFR 219.7(c)(2)(v)), and/or rivers eligible for inclusion in the National Wild and Scenic Rivers System (36 CFR 219.7(c)(2)(vi))
- Existing designated areas and any additional areas recommended for designation (36 CFR 219.7(c)(2)(vii)
- Suitability of areas for appropriate integration of resource management and uses, including identifying lands not suitable for timber production (36 CFR 219.7(c)(2)(viii)
- The maximum quantity of timber that may be removed from the plan area (36 CFR 219.7(c)(2)(ix)
- Questions and indicators for monitoring (36 CFR 219.7(c)(2)(x) and the monitoring program itself (36 CFR 219.7(c)(3)(iii)
- Management areas and/or geographic areas (36 CFR 219.7(e))
- Watersheds that are a priority for maintenance or restoration (36 CFR 219.7(f)(i))
- Distinctive roles and contributions of the plan area to the broader landscape (36 CFR 219.7(f)(iii))
- Proposed and possible actions that may occur on the plan area during the life of the plan, including the planned timber sale program, timber harvesting levels, and the proportion of probable methods of vegetation management to be used (36 CFR 219.7(f)(iv))

Plan Components

Plan components are specific statements that guide future projects and activities and the monitoring program in the plan area. Plan components may apply to the entire plan area (i.e., the entire HLC NF), or to identified geographic or management areas (36 CFR 219.7(e)). The 2012 Planning Rule requires that Forest Plans include all the following types of components except goals, which are optional.

- **Desired Condition** (DC) - a description of specific social, economic, and/or ecological characteristics of the plan area, toward which management of the land and resources should be directed. Desired conditions must be described in terms that are specific enough to allow progress toward their achievement to be determined, but not include completion dates (36 CFR 219.7 (e)(1)(i)).
- **Goal** (GO) –a broad statement of intent, other than desired conditions, usually related to process or interaction with the public or other agencies. Goals are expressed in broad, general terms, and do not usually include completion dates (36 CFR 219.7 (e)(2)). Goals may be dependent on conditions beyond the plan area or outside USFS authority.
- **Objective** (OBJ) - a concise, measurable, and time-specific statement of a desired rate of progress toward one or more desired conditions. Objectives should be based on reasonably foreseeable budgets (36 CFR 219.7(e)(1)(ii)) and will occur over the life of the Forest Plan.
- **Standard** (STD) - a mandatory constraint on project and activity decision-making, established to help achieve or maintain one or more desired conditions, to avoid or mitigate undesirable effects, or to meet applicable legal requirements (36 CFR 219.7(e)(1)(iii)).
- **Guideline** (GDL) - a constraint on project and activity decision-making that allows for

departure from its terms, so long as the purpose of the guideline is met. Guidelines are established to help achieve or maintain one or more desired conditions, to avoid or mitigate undesirable effects, or to meet applicable legal requirements (36 CFR 219.7(e)(1)(iii)).

- **Suitability of Lands** (SUIT) - specific lands within the Forest are to be identified as suitable or not suitable for various multiple uses or activities, based on the desired conditions applicable to those lands. The suitability of lands need not be identified for every use or activity (36 CFR 219.7(e)(1)(v)). Identifying suitability does not make a specific commitment to authorize the use(s) identified but is instead simply an indication that a type of use may be appropriate. Site, project, or activity-specific decision-making procedures must occur before a specific use is authorized in an area.

Monitoring Program

The 2012 Planning Rule requires development of a monitoring program to provide feedback for the planning cycle by testing relevant assumptions, tracking relevant conditions over time, and measuring management effectiveness (36 CFR 219.12). The monitoring program includes plan-level and broader-scale monitoring, and biennial monitoring evaluation reports document whether changes to the plan or to the monitoring program is warranted (36 CFR 219.5). The monitoring program can be found as Appendix B of the "2021 Forest Plan for the Helena-Lewis and Clark National Forest" and is not included with this document.

Planning Directives

Procedural guidance for implementing the 2012 Planning Rule in revising Forest Plans is found in the Final Land Management Planning Directives (USDA Forest Service 2015a) issued in January 2015. Chapter 20, Section 23 provides considerations and guidance for developing plan components that will provide for ecological sustainability and diversity of plant and animal communities. The planning directives are revised and updated periodically.

Description of the Plan Components

The 2012 Planning Rule anchors Forest Plans in desired conditions that are to be achieved through application of other plan components during forest management activities. The 2021 Forest Plan identifies the types of uses and management activities to be allowed on the HLC NF, by identifying areas such as recommended wilderness areas, special emphasis areas, and other designations where certain uses can be authorized. The 2021 Forest Plan also identifies lands suitable or not suitable for specific management activities such as timber production, saleable mineral activities, and others. Table 3 displays the total HLC NF acres on which specific uses can be authorized. Table 3 is consistent with changes made in the 2021 BA Supplement. Minor changes of a few acres may have occurred since the 2021 BA Supplement, because of small boundary adjustments or corrected data layers. Those changes are insignificant at the framework programmatic level of this analysis. Changing them in this document would result in inconsistencies with information in the 2021 Forest Plan, 2021 ROD, and 2021 FEIS, and could thereby create unnecessary confusion. Project-level analyses will use the most updated data layers available at the time those analyses are carried out.

In the framework programmatic context of a Forest Plan, acres where activities or uses can be authorized reflect a general designation where that activity or use could potentially be planned and implemented. The location, type, and extent of actual uses or activities is determined by site specific planning and analysis and therefore would occur on a much smaller acreage than that shown in Table 3. Additional details regarding the acreage or number of activities and uses that can be authorized under the chosen alternative are provided as needed in the grizzly bear section.

Table 3. Summary of activities and uses allowed under the 2021 Forest Plan*

Type of Activity/Use	Acres	Percent of forest
Land suitable for timber production[1]	368,563	13 percent
Land unsuitable for timber production but where harvest[2] may occur	1,674,482	58 percent
Personal use of forest products	2,874,356	100 percent
Commercial use of forest products	2,037,261	71 percent
Recommended Wilderness	152,948	5 percent
Eligible Wild and Scenic Rivers	361 miles	NA
Research Natural Areas	18,447	1 percent
Green Timber Botanical Area	1,167	0 percent
Badger Two Medicine Special Area	129,740	4 percent
Experimental and demonstration forests	8,871	<1 percent
Recreation Emphasis Areas	89,439	3 percent
Grazing allotments	1,355,143	47 percent
Riparian Management Zones	496,212	17 percent
Wheeled motorized vehicle use (spring-summer- fall)	1,098,892	38 percent
Over-snow motorized use (winter)	1,008,035	35 percent
Summer non-motorized only[3]	1,784,322	62 percent
Winter non-motorized only[3]	1,875,187	65 percent

[1] Timber production is the purposeful growing, tending, harvesting, and regeneration of regulated crops of trees to be cut into logs, bolts, or other round sections for industrial or consumer use (36 CFR 219.9).

[2] Timber harvest is the removal of trees for wood fiber use and other multiple-use purposes (36 CFR 219.9)

[3] Non-motorized uses are allowed in areas where motorized uses are also allowed; numbers in this table show the acreage where only non-motorized uses are allowed

* Source: "Supplement to the Biological Assessment for Threatened, Endangered, and Proposed Terrestrial Wildlife Species 2021 Forest Plan for the Helena-Lewis and Clark National Forest" (USDA Forest Service 2021b)

The 2021 Forest Plan includes components that guide management of a variety of resources and activities on the HLC NF toward achieving DCs. The 2021 HLC NF plan describes management direction at both the Forestwide scale and, where needed, specifically within one or more of ten GAs. The following summary provides an overview of plan direction for several broad resource areas, focusing largely on direction that could impact terrestrial and aquatic wildlife and habitats. For a complete list of goals, desired conditions, objectives, guidelines, and standards in the proposed action, see the 2021 Forest Plan. The direction from the 2021 Forest Plan that is cited in this BA can be found in appendix A. The descriptions of plan components in the following paragraphs are the same as those found in the 2020 BA and 2021 BA Supplement.

Aquatic Ecosystems

Desired conditions for aquatic ecosystems in the 2021 HLC NF plan emphasize maintaining or restoring the distribution, diversity, and resilience of and connectivity among aquatic systems and riparian habitats on the HLC NF. Desired conditions also emphasize maintenance or restoration of natural ranges of flows, flooding, and sediment load. Objectives set specific goals for restoration of watersheds and groundwater-dependent ecosystems and connectivity among them, improvement of soil and hydrologic function, improvement of aquatic habitat. Plan components guide or constrain management activities and uses in riparian and aquatic habitats to achieve DCs and to limit or prevent introduction of pollutants, minimize disturbance to in-stream structure and flows, and minimize alterations to riparian habitats.

Fire and Fuels Management

The 2021 HLC NF plan includes desired conditions to allow wildland fire to play its natural ecological role as nearly as possible and to manage wildland fire where possible to meet resource objectives (FW-FIRE-DC-01). FW-FIRE-DC-02 states that fuel conditions in the wildland-urban interface (WUI) will provide for low-severity surface fire that minimizes threats to values. The DCs will be met in part by achieving a specified amount of hazardous fuels treatments in the wildland-urban interface (FW- FIRE-OBJ-01). Plan components encourage the use of vegetation treatments to create conditions that allow for naturally ignited fires to occur in a "self-regulating" fashion (FW-FIRE-GDL-01 and 02).

Vegetation

The 2021 Forest Plan establishes desired conditions for vegetation on the HLC NF largely based on broad potential vegetation type. Desired conditions are based on the estimated natural range of variation (NRV) for various cover types, species groups, and forest structural components, and provide for diversity in vegetation composition and structure, resilience after disturbances, and restoration of ecosystem integrity (FW-VEGT-DC-01 and 02 and accompanying Tables 4 and 5 in the 2021 Forest Plan, and FW-VEGF- DC-01 through 08 and accompanying Tables 6 through 13 in the 2021 Forest Plan). Desired conditions also address maintenance or restoration of wildlife habitats (FW-VEGT-DC-03) and emphasize connectivity (FW-VEGT-DC-04) among habitats at varying scales. The plan includes specific objectives (FW-VEGT-OBJ-01) to move vegetation toward desired conditions.

Plan components are included that will minimize the impacts of management actions that could move vegetation away from desired conditions, including limits on removal of native vegetation for certain activities (FW-VEGT-GDL-01), grazing guidance (FW-VEGT-GDL-02), and planting or re-establishing native vegetation (FW-VEGT-GDL-03 and 04). Other plan components address management of specific key habitat elements such as openings (FW-VEGF-DC-08), very large trees (FW-VEGF-GDL-01), snags (FW-VEGF-GDL-02), old growth (FW-VEGF-GDL-04), downed woody debris (FW-VEGF-GDL-05), and non-forested vegetation types (FW-VEGNF-DC 01-03) in order to maintain or move toward desired conditions for each. Most GAs include several vegetation-related desired conditions that are specific to the habitat and vegetation types that occur within that GA. Plan components are included that address conservation and recovery of at-risk plant species, such as whitebark pine (FW-PLANT-DC-01 and 02, FW-PLANT-GO-01, and FW-PLANT-OBJ-01).

Wildlife

The 2021 Forest Plan includes DCs to maintain the vegetation composition, structure, and distribution needed by wildlife for their life history requirements (FW-WL-DC-01 and 02) and for connectivity among habitats and seasonal ranges (FW-WL-DC-03). Desired conditions also direct management to maintain large, unroaded areas to provide for species that require seclusion (FW-WL-DC-04), and to minimize disturbance in key seasonal habitats (FW-WL-DC-06). The 2021 Forest Plan directs managers to work closely with other state and federal wildlife and land management agencies to manage habitats across jurisdictions (FW-WL-GO-01 through 04) and to collaborate on conservation and recovery of federally listed species (FW-WL-GO-05). Plan components in some GAs emphasize specific habitat needs based on species' ranges and call for maintenance or restoration of connectivity for wide-ranging wildlife species.

Plan components specifically addressing management of habitat to conserve and recover Canada lynx and grizzly bear are included through incorporation of the Northern Rockies Lynx Management Direction (USDA Forest Service 2007) and the Amendments to Incorporate Management Direction in the NCDE Grizzly Bear Conservation Strategy Into Forest Plans (USDA Forest Service 2018).

Recreation

Direction in the 2021 Forest Plan for managing recreation on the HLC NF is divided into several topics. In addition to those described below, the plan includes guidance for maintaining scenic character (FW-

SCENERY-DC-01 through 03 and FW-SCENERY-GDL-01).

Recreation Settings

The 2021 Forest Plan identifies desired Recreation Opportunity Settings (ROS) and includes plan components for each that direct or constrain uses such as motorized access, scenery, and vegetation management to be consistent with each ROS (FW-ROS-DC-01 and associated Table 15 in the 2021 Forest Plan). The amount of each ROS identified in the 2021 Forest Plan is shown in Table 4, below. Descriptions of each ROS, along with plan components supporting each, can be found in the 2021 Forest Plan (Glossary). Table 4 has been updated to be consistent with changes made in the 2021 BA Supplement. Minor changes of a few acres may have occurred since the 2022 BA Supplement, as a result of small boundary adjustments or corrected data layers. Those changes are insignificant at the framework programmatic level of this analysis. Changing them in this document would result in inconsistencies with information in the 2021 Forest Plan, 2021 ROD, and 2021 FEIS, and could thereby create unnecessary confusion. Project-level analyses will use the most updated data layers available at the time those analyses are carried out.

Table 4. Forestwide ROS classes in the 2021 Forest Plan[1]

ROS Classification	Acres - Summer	Percent of Total NFS Lands - Summer	Acres- Winter	Percent of Total NFS Lands - Winter
Primitive	1,034,715	36 percent	1,017,244	35 percent
Semi-primitive non-motorized	758,488	26 percent	856,799	30 percent
Semi-primitive motorized	368,338	13 percent	726,772	25 percent
Roaded natural	692,704	24 percent	253,980	9 percent
Rural	28,982	1 percent	28,432	1 percent
Urban	0	NA	0	NA

[1] Source: "Supplement to the Biological Assessment for Threatened, Endangered, and Proposed Terrestrial Wildlife Species 2021 Forest Plan for the Helena-Lewis and Clark National Forest"

Recreation Opportunities, Special Uses, and Access

The 2021 Forest Plan identifies scales of development associated with recreation sites (Table 16 in the 2021 Forest Plan) and includes DCs to provide a variety of types of recreation opportunities while protecting other resources. The plan includes objectives for removing and rehabilitating recreations sites where resource damage or conflict has occurred (FW-REC-OBJ-01 through 04), and guidelines to manage recreation sites to be responsive to wildlife habitat needs or potential for conflict (FW-REC- GDL-01, FW-REC-GDL-07) and to prevent specific types of resource damage or conflict, with emphasis on riparian and aquatic ecosystems (FW-REC-GDL-03 through 06). The plan also includes statements about management activities that are suitable or not in various recreation sites.

The 2021 Forest Plan allows for various permitted uses, with guidance to reduce or mitigate conflicts with other uses and resources, including specific guidance to reduce the potential for human-wildlife conflict (FW-RSUP-GDL-01). Desired conditions in the plan include providing for public access to NFS lands via roads, trails, and airstrips (FW-ACCESS-DC-01 through 03). Goals and guidelines are included to address protection of other resources and provide for public safety. Plan components included in the 2021 Forest Plan constrain increases in developed overnight recreation sites in the grizzly bear PCA and the amount of motorized use allowed in the grizzly bear PCA and Zone 1 (PCA-NCDE-STD-01 through 06); these components are discussed in more detail in the grizzly bear species assessment.

Designated Areas

Designated areas are areas or features identified and managed to maintain their unique special character or purpose. They fall into two major categories, with several different types in each.

Administratively Designated Areas

These areas are designated in the 2021 Forest Plan or by other administrative action for a variety of purposes. Those purposes include maintaining natural ecological processes and/or systems [inventoried roadless areas (IRAs)], research or monitoring of natural and managed systems (research natural areas, experimental forests), wildlife management (Elkhorns Wildlife Management Unit), recreation and/or scenic values (national recreation trails, recreation areas, scenic byways, and the Smith and Missouri River corridors), and culturally significant landscapes (Badger-Two Medicine area). Desired conditions and other plan components are focused on maintaining the characteristics and supporting the purposes for the area designations. Plan components for some areas support large, undeveloped landscapes in a relatively primitive state, with little or no motorized access (IRAs, Badger-Two Medicine area). Others, such as national recreation trails or recreation areas have plan components specific to the individual area that may include motorized or other developed recreation opportunities.

In addition to these types of designations, the Planning Rule requires that plans evaluate and, if appropriate, recommend areas to be considered and potentially designated by Congress as wilderness (recommended wilderness areas) and as wild and scenic rivers. Although the final designation of these areas as Wilderness or as Wild and Scenic Rivers is made by Congress, the recommendations are made in Forest Plans, along with management direction related to those recommendations. Plan components for recommended wilderness areas focus on maintaining the characteristics that make each area suitable for wilderness recommendation (e.g. maintaining natural processes, large undeveloped areas, no motorized or mechanized travel, and others). Plan components for eligible wild and scenic rivers are based on maintaining the "outstanding remarkable values" for which they were identified. Depending on the values associated with each river or segment, certain management or recreational activities may be restricted or constrained for that river or segment. Plan components for inventoried roadless areas must comply with the 2001 Roadless Area Conservation Rule (USDA Forest Service 2001), (36 CFR 294 Subpart B, published at 66 Fed Reg. 3244- 3273), which prohibits activities that have the greatest likelihood of altering and fragmenting landscapes or the loss of roadless area values and characteristics.

The acreage and miles of areas designated or recommended in the 2021 Forest Plan are shown in Table 3 above.

Congressionally Designated Areas

Congressionally designated areas include wilderness, wilderness study areas, the Rocky Mountain Front Conservation Management Area (CMA), national historic trails, and the Continental Divide National Scenic Trail (CDNST). Management of these areas is directed by regulations under which plan components are developed to maintain the characteristics and support the purposes for the area designations (refer to appropriate sections in the 2021 Forest Plan for components that support these designations). Plan components for wilderness, wilderness study areas, and the Rocky Mountain Front CMA all emphasize natural ecological processes, limited evidence of humans, limited or no motorized or mechanized uses, and large expanses of undeveloped landscape. Historic and scenic trail plan components support historic, cultural, and scenic values through limited evidence of motorized uses, timber harvest, and other specified activities. The acreage or miles of area or trail under these designations is not established in the Forest Plan and therefore would not change under the 2021 Forest Plan. Amount of area or miles in these designated area types is discussed in the context of specific habitats in the grizzly bear section below.

Benefits to People: Multiple Uses and Ecosystem Services

The plan addresses management of uses and resources that contribute to the social and economic sustainability of local communities and the public under this heading. These uses include things such as timber harvest, mineral extraction, and livestock grazing as well as clean air, clean water, carbon sequestration, and others. The full set of plan components for these benefits is in the 2021 Forest Plan (see Appendix A for components cited in the BA). Management of activities and uses that fall under this category and that may have impacts to grizzly bears are summarized here.

Livestock Grazing

The 2021 Forest Plan does not change the amount of land in grazing allotments. The amount and type of grazing allowed on those lands is established through planning and analysis specific to grazing allotments and grazing permits. The 2021 Forest Plan includes components that could influence decisions about the amount and type of grazing allowed when permits or annual operating plans are issued or renewed. The plan establishes desired conditions for sustainable grazing opportunities (FW-GRAZ-DC-01) and includes desired conditions for grazing allotments to have stable and healthy soils, native forage, and hydrologic integrity and provide for wildlife habitat and forage needs (FW-GRAZ-DC-02 and 03 and FW-GRAZ-GO-01).

Standards and guidelines in the 2021 Forest Plan guide managers to conserve and maintain vegetation and habitats particularly in riparian and aquatic systems (FW-GRAZ-STD-02, FW-GRAZ-GDL-01 through 07). Plan components in the 2021 Forest Plan constrain increases and some types of livestock grazing in the grizzly bear PCA (PCA-NCDE-STD-10 and 11, and PCA-NCDE-GDL-09); these components are discussed in more detail in the grizzly bear species assessment.

Timber

The removal of timber from NFS lands is addressed in Forest Plans in two distinct categories: timber *production* (see Table 3 above), which is "the purposeful growing, tending, harvesting, and regeneration of regulated crops of trees to be but into logs, bolts, or other round sections for industrial or consumer use" (refer to the 2021 Forest Plan "Timber" section), and timber *harvest,* which is the removal of trees for wood fiber use or other multiple-use purposes. The planning rule requires Forest Plans to identify lands that are suitable and those that are not suitable for timber *production*. The acreage identified as suitable for timber production in the 2021 Forest Plan, as well as lands that are unsuitable but where harvest may occur for other multiple use purposes, is shown in Table 3 above.

Desired conditions in the 2021 Forest Plan include regularly scheduled harvest that contributes to economic sustainability from lands identified as suitable for timber production (FW-TIM-DC-01, 03 and 04, and FW-TIM-GO-01), and that such lands are actively managed to minimize disturbance-related loss of the timber resource (FW-TIM-DC-02). The plan sets objectives for projected timber sale quantity (FW- TIM-OBJ-01 and 02) in terms of average annual million cubic and board feet of timber volume. Several standards and guidelines constrain timber production and harvest practices to protect soils and watersheds (FW-TIM-STD-01) and to assure re-stocking of trees (FW-TIM-STD-02). Other standards and guidelines constrain the type or nature of harvest that can or should be used, in order to limit negative impacts to other resources, including wildlife habitat (FW-TIM-STD-04 through 10, and FW-TIM-GDL- 03). Additional components guide managers to include considerations other than greatest dollar return or timber output when planning vegetation treatments (FW-TIM-STD-03, and FW-TIM-GDL-01 and 02).

Plan components in the NRLMD, which is incorporated in its entirety into the 2021 Forest Plan, limit certain types and quantities of harvest in occupied lynx habitat.

Fish and Wildlife

The 2021 Forest Plan includes components that address the opportunity for humans to enjoy fish and wildlife populations through uses such as fishing, hunting, and viewing. Desired conditions focus on maintaining availability of fish and wildlife species for those uses. The 2021 Forest Plan includes a goal (FW-FWL-GO-01) and guideline (FW-FWL-GDL-01) to work with MFWP to identify and implement habitat management actions to influence the distribution of big game species during hunting seasons.

Minerals and Energy

The 2021 Forest Plan includes desired conditions to supply mineral and energy resources while assuring sustainability and resiliency of other resources and consistency with other desired conditions (FW-EMIN-DC-05 and 06). Guidelines in the 2021 Forest Plan will minimize potential adverse effects to riparian and aquatic resources (FW-EMIN-GDL-01 and 02). Plan components in the 2021 Forest Plan constrain

minerals and energy development in the grizzly bear PCA and Zone 1 (PCAZ1-NCDE-STD-05 through 11, and PCAZ1-NCDE-GDL-03 through 07) by limiting surface occupancy and requiring specific actions or practices that will minimize a variety of potential impacts to grizzly bears. These components are discussed in more detail in the grizzly bear species assessment.

Other Resources

In addition to plan direction for the resource areas described above, the 2021 Forest Plan includes programmatic direction addressing soil, air quality, cultural, historic and tribal resources, land status and ownership, infrastructure, forest products, non-recreation special uses, public information and education, and carbon storage and sequestration. Plan components for management of these activities and uses do not have direct relevance to the species considered in this assessment unless noted specifically in the assessment section.

Summary of Plan Components Specific to Grizzly Bear

In December 2018 the Forest Plan Amendments to Incorporate Relevant Direction from the Northern Continental Divide Ecosystem Draft Grizzly Bear Conservation Strategy (USDA Forest Service 2018a) were signed and became part of the 1986 Helena National Forest and Lewis and Clark National Forest Plans. The purpose of the amendments was to "provide consistent direction that will support the continued recovery of the NCDE grizzly population" and provide a regulatory mechanism for management that will sustain a recovered population (USDA Forest Service 2018). Plan components in the amendments are incorporated in the 2021 Forest Plan (refer to Appendix A).

Additional management related to conservation of grizzly bear habitat is incorporated throughout the plan as components that are specific to minimizing impacts of activities or uses on wildlife and their habitats. Specific plan components are discussed in detail in the "Grizzly Bear Species Assessment" section.

Grizzly Bear Species Assessment

Consultation History

The history of ESA section 7 consultation on the 2021 Forest Plan is summarized in Appendix B.

In December 2018 the Forest Service (FS) completed analysis and signed the decision amending four Forest Plans, including the 1986 HLC NFs plans, to incorporate programmatic management direction for the NCDE grizzly bear population (USDA Forest Service 2018). The amendments provided a framework for decision-making, and did not identify nor authorize specific actions on the ground. The amendments were incorporated into the Helena NF and Lewis and Clark NF plans and are also included in their entirety as part of the 2021 Forest Plan considered in this assessment. Therefore, the consultation that occurred for those amendments is relevant to the 2021 Forest Plan.

The BA for the amendments determined that implementing the amendments "may affect and is likely to adversely affect" grizzly bears. The determination was based on the fact that motorized use continues in the recovery zone (Primary Conservation Area (PCA)) with some BMU subunits remaining slightly above target motorized route densities recommended under previous management direction, the presence of motorized routes in other management zones outside the PCA, presence of human activities at developed recreation sites, and potential short-term adverse effects to individual bears from vegetation management activities, livestock grazing, and minerals and energy development.

The USFWS issued a BO in November 2017 (USDI Fish and Wildlife Service 2017c) stating that implementation of the amendments will not likely jeopardize the continued existence of the grizzly bear. They indicated that implementation "may result in adverse effects to individual grizzly bears over the life of the plans", and assumed those adverse effects were most likely to occur as a result of access management and in subunits that did not meet recommended route densities or percentages of secure habitat. These

adverse effects were not expected to reduce the likelihood of survival and recovery of the NCDE grizzly bear population. The USFWS issued an Incidental Take Statement with the BO, with the benchmark ("baseline" in the amendments) level of motorized route density and secure core habitat as surrogate measures of take within the PCA. The BO also required terms and conditions that included mandatory adherence to certain specified standards and guidelines in the amendments, capping the allowed temporary increases in route density to occur on no more than three adjacent BMU subunits on each NF, and implementation of food/attractant storage orders in the PCA, Zone 1, and Zone 2.

The programmatic management direction in the amendments has been incorporated in its entirety in the 2021 Forest Plan, and the effects of implementing that direction is expected to be the same as that discussed in the amendment BA and BO.

In March 2020, the Forest Service (FS) prepared and submitted a Biological Assessment (BA) to the U.S. Fish and Wildlife Service (USFWS) analyzing the potential impacts of implementing the2021 Forest Plan. The USFWS completed a Biological Opinion (BO) on February 10, 2021. The BO concluded that implementation of the proposed 2021 Forest Plan is not likely to jeopardize continued existence of the grizzly bear. The 2021 BO provided incidental take and identified reasonable and prudent measures and terms and conditions necessary comply with section 9 of the ESA.

In December 2021 the FS submitted to the USFWS a supplement to the March 2020 BA, updating some data that had changed in response to the objection process and as a result of some project-level analyses, and incorporating corrections to minor edits that had been identified. In January 2022 the USFWS completed a Revised BO that replaced the original, February 2021 BO. The Revised BO reached the same conclusions found in the original BO and identified reasonable and prudent measures and terms and conditions necessary to support those measures and to comply with section 9 of the ESA.

On August 3, 2023, the District Court of Montana remanded the USFWS December 2021 BO as it relates to grizzly bear. As a result of that decision, this BA has been prepared updating some information and addressing issues identified in the January 2024 court order.

Species Status and Ecological Information

Status

The grizzly bear is currently listed as a threatened species under the ESA. There are six grizzly bear recovery zones identified in the Grizzly Bear Recovery Plan (USDI Fish and Wildlife Service 1993), five of which are currently considered occupied (Costello et al. 2016). A portion of the action area, including the entire Rocky Mountain Range GA and the north half of the Upper Blackfoot GA, is within the NCDE recovery zone (USDI Fish and Wildlife Service 1993).

No critical habitat has been designated for grizzly bears at this time.

Habitat Requirements and Life History

The biology and ecology of grizzly bears has been described extensively in numerous other documents (USDI Fish and Wildlife Service 2013a, USDA Forest Service 2015b, 2017b), as has information on habitat use and availability specific to the NCDE and the HLC NF. We will briefly summarize key information from those sources, focusing on basic elements of grizzly bear life history and those that are relevant to the analysis in this assessment.

Grizzly bears are generalists that use a wide variety of habitats ranging from alpine meadows to montane conifer forests to low elevation foothills and prairie grasslands. Use of habitats by grizzly bears is influenced by food availability and by various human activities and human-created features on the landscape. Bear use of specific habitats is strongly influenced by the availability of foods at different times of the year. In spring, bears seek greening, nutrient-rich vegetation at low elevations and in meadows and riparian zones. Some bears may seek areas where winter-killed carrion is available, including in ungulate

winter ranges and in livestock boneyards on private land. Summer habitat includes meadows, seeps, avalanche chutes and alpine areas that provide nutrient-rich vegetation, ground-dwelling

rodents, and insect larvae, including areas with downed wood where ant larvae may be abundant, and high elevation talus fields where moth larvae can be found. Bears also seek out glacier lily, biscuitroot, and other nutritious roots, as well as habitats providing berries, whitebark pine seeds, and a wide variety of other foods. In fall, some bears capitalize on remains of animals harvested by hunters. Habitat use is highly variable between areas, seasons, local populations, and individuals.

To date, most research has indicated that grizzly bears den at high elevations, but recently there is anecdotal evidence that some bears may be denning in low-elevation historic habitat in the foothills and prairies east of the Rocky Mountains in Montana (Northern Continental Divide Ecosystem Subcommittee 2019, 2021). After emerging from dens, bears move to areas with early greening vegetation, generally at low elevations and including riparian corridors in the foothills and prairie. Although most bears in the NCDE recovery zone and surrounding areas appear to move to widely distributed mid and high elevation habitats during summer, some bears have been observed in low-elevation foothills and prairie areas, including agricultural fields east of the Rocky Mountains, throughout the summer and fall. Some female bears with litters that use low elevation areas east of the Rocky Mountains during summer may use "day dens", possibly for security and/or thermal relief (Northern Continental Divide Ecosystem Subcommittee 2019, 2021).

Females in the NCDE first reproduce between ages 3 and 8, with an average age of first reproduction of 5.7 (Costello et al. 2016). Reproductive success is correlated with female body condition in fall (Robbins et al. 2012, Belant et al. 2006) and with the availability of high-energy summer foods (McLellan 2015, Schwartz et al. 2006).

In general, population trend is the outcome of the relative influences of reproduction and mortality. In species such as grizzly bears that are long-lived and have low reproductive rates, adult female survival may be a key factor influencing population trend. McLellan (McLellan 2015) and Proctor and others (Proctor, Kasworm, et al. 2018) discussed the relative influences of high-energy foods, grizzly bear population density, and human access that both directly and indirectly contribute to grizzly bear mortality. They observed that the relative contributions of these factors to individual bear reproduction and survival as well as to population trend overall varied widely across years and study areas. Factors that affect grizzly bears are addressed in more detail below in the "Environmental Baseline" section and include discussion of those factors in the context of current management in the plan area.

Population Status and Distribution

Grizzly bears occur throughout northwestern North America, from Alaska and northern Canada south into the Northern Rocky Mountains and North Cascades. In the United States, six grizzly bear recovery ecosystems are identified.

The North Cascades ecosystem in north central Washington is considered extirpated (USDI Fish and Wildlife Service 2022).

The Selkirk Ecosystem occurs in northwest Idaho, northeast Washington, and southeast British Columbia, Canada. The population was estimated at 83 bears in 2012 and is believed to be increasing; a new population estimate is anticipated in 2024 (USDI Fish and Wildlife Service 2022).

The Cabinet Yaak Ecosystem in northern Idaho and northwest Montana is estimated to have 60-65 bears. (ibid). The Cabinet Yaak population has been augmented with bears captured in the NCDE and relocated to the Cabinet Yaak area in an effort to promote recovery of that population. Migration of individuals into the population from British Columbia, Canada, has also been documented (USDI Fish and Wildlife Service 2022).

The Bitterroot ecosystem lies along the boundary between east central Idaho and western Montana. Grizzly bears are not known to occupy this ecosystem (USDI Fish and Wildlife Service 2022). For the purposes of ESA Section 7 consultation, the grizzly bear "may be present" on a small portion of the Bitterroot

Ecosystem, as well as on an adjoining portion of the Bitterroot National Forest east of Highway 93.

The Greater Yellowstone Ecosystem (GYE) is centered around Yellowstone National Park in northwestern Wyoming and southwestern Montana. This ecosystem has been continuously occupied since before grizzly bears were listed under the ESA. There are an estimated 965 bears in the Demographic Monitoring Area (DMA) of the GYE, with thirty percent of current estimated distribution occurring outside the DMA (USDI Fish and Wildlife Service 2022). The GYE has met the recovery goals outlined in the Grizzly Bear Recovery Plan (USDI Fish and Wildlife Service 1993). Grizzly bears occur in the GYE outside the recovery zone, and the population has recently been de-listed twice, although court rulings have placed bears back on the list of threatened species each time. Recent focus has shifted to the potential for connectivity between the GYE population and recovery of the NCDE population. Genetic surveillance has not yet detected evidence of immigration of GYE bears into the NCDE, nor of NCDE bears emigrating to the GYE (USDI Fish and Wildlife Service 2022, Costello and Roberts 2022).

The NCDE is 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. This ecosystem includes the Bob Marshall Wilderness Complex, and the recently designated Rocky Mountain Front Conservation Management Area. The NCDE has been occupied by grizzly bears continuously since they were listed under the ESA. The population in 2015 was estimated at over 900 bears (Costello et al. 2016), in 2017 was estimated to be over 1,000 (MFWP unpublished data cited in the 2019 Conservation Strategy for the Grizzly Bear in the Northern Continental Divide Ecosystem(Northern Continental Divide Ecosystem Subcommittee 2019)), and in 2023 it was estimated at 1,163 bears (Costello et al. 2023).

The NCDE grizzly bear population has been expanding geographically as well (USDI Fish and Wildlife Service 2022, Northern Continental Divide Ecosystem Subcommittee 2019, 2021). Occupied range increased by about 3 percent per year between 2004 and 2022, with an estimated 11 percent increase between 2020 and 2022 (Costello et al. 2023) and bears increasingly observed in prairie and agricultural landscapes more than 50 miles east of the recovery zone. Costello and others estimated that as of 2022, 100 percent of the NCDE Primary Conservation Area (PCA) was occupied, 84 percent of Zone 1, 15 percent of Zone 2, and 21 percent of Zone 3; they also noted that nearly 3,000 km^2 of occupied range occurred outside the NCDE Conservation Strategy Zones between the NCDE, the Cabinet Yaak Ecosystem, and the Bitterroot Ecosystem.

Environmental Baseline

Information regarding the status of grizzly bears in the action area, along with information regarding the existing status and management of key factors that could impact grizzly bears, is provided in this section to help establish the baseline conditions within the action area.

Population Status and Distribution in the Plan Area

As discussed in the above paragraph, the grizzly bear population in the NCDE appears to be above 1,000 bears and has been increasing, (Costello et al. 2023). It is not possible to determine the number of bears inhabiting specific portions of the NCDE.

The Rocky Mountain Range GA and the north half of the Upper Blackfoot GA are within the NCDE recovery zone/PCA, where grizzly bears have been known to occur since before they were listed under the ESA. The USFWS included the entire Upper Blackfoot GA and a portion of the Divide GA in its map of distribution for the NCDE population as of 2023 (USFWS map dated July 2023; on file). Based on recent observations of grizzly bears in the Big Belt Mountains and on private land between the Little Belt and Highwoods mountain ranges, the USFWS has indicated that grizzly bears ‘may be present’ throughout the most of the HLC NF, except for the Crazies and Castles GAs and the portion of the Big Belts GA that lies south of U.S. Highway 12.

Between 2009 and 2018 there were several verified observations of grizzly bears between the NCDE and the GYE populations (Costello and Roberts 2020, 2019) including in or near the Elkhorn, Big Belt, and Little Belt mountain ranges on the HLC NF.

A large portion of the HLC NF lies between the NCDE and GYE recovery zones and may have potential to provide genetic and/or demographic connectivity between those ecosystems. The issue of connectivity is discussed in the section below under the subheading "Connectivity".

Factors Affecting Grizzly Bears

In 1975 the USFWS identified habitat destruction and modification as major contributing factors leading to the listing of the grizzly bear as a threatened species under the ESA (USDI Fish and Wildlife Service 1975b, a). The listing identified decreases in historical range, the isolated nature of remaining populations, building of roads and trails in formerly secure grizzly bear habitat, and livestock grazing practices as factors contributing to the need for the listing. Since that time, habitat protection measures have focused primarily on providing secure habitat (USDI Fish and Wildlife Service 2011) and on reducing both direct and indirect sources of mortality (USDI Fish and Wildlife Service 2011, 2013a, 1993). Grizzly bear population recovery in portions of the US and Canada has been at least in part an outcome of legal protection and cessation of excessive killing in the form of unregulated hunting and government-established bounty systems (McLellan 2015).

The Conservation Strategy for the Grizzly Bear in the Northern Continental Divide Ecosystem (Northern Continental Divide Ecosystem Subcommittee 2021) identifies and provides management guidance for several factors that influence grizzly bears through direct and indirect mortality risk, as well as potential disturbance and displacement from habitat. This BA addresses those factors that are affected by management on NFS lands, as guided by the programmatic direction in Forest Plans: food/attractant management, habitat security/motorized access (both summer and winter), developed recreation, other recreational activity including hunting, connectivity, livestock grazing, vegetation management (including fuels management), and minerals and energy uses. This section provides brief discussion of the specific risk factors, followed by a summary of current management direction and status of each risk factor on HLC NF lands.

Food and Attractant Management

Current Status of Food and Attractant Management within the Action Area

A special order (food storage order) requiring that food, garbage, and other attractants are stored to make them unavailable to bears has been in place on the Rocky Mountain Range GA since at least 1987 and on the recovery zone portion of the Upper Blackfoot GA since at least 1993. These orders have been updated several times. In 2018 the HLC NF began implementing Forestwide food storage orders that apply in all GAs that were not already included in an existing food storage order, in part to comply with the GB Amendment requirement to implement food storage orders in the PCA, Zone 1, and Zone 2 (PCAZ1Z2-NCDE-STD-01). As of 2022, The HLC NF has two food storage orders; Order R1-2023-02 covers the entire forest except the Crazy Mountains. Order 01-15-07-21-38 covers the Crazy Mountains.

Enforcement of the orders has been ongoing in the Rocky Mountain Range and Upper Blackfoot GAs for many years. Implementation of the orders elsewhere on the HLC NF included a major information/education effort during the first year and will focus increasingly on enforcement thereafter. Information regarding food storage requirements is readily available at all FS offices and at trailheads and parking areas, as well as on the HLC NF website. Signs informing visitors of the existence of food storage requirements are posted at all NF public entry points on the Rocky Mountain Range GA and are being added elsewhere on the HLC NF as funding allows. All permits issued for activities occurring on lands administered by the HLC NF require adherence to food storage orders.

Comprehensive information on all violations of food storage orders is not available, only where law enforcement becomes involved, or human-bear conflicts ensue. Most violations do not result in bear-related

incidents and are instead known because of consistent enforcement efforts e.g., see (Clark, 2014). As noted above, in the NCDE most management removals related to bears obtaining attractants occur on non-NFS lands. On the HLC NF portion of the NCDE, since implementation of the first food storage order on a portion of the Forest in the late 1980s, there has been only one known incidence of a management removal or death of a grizzly bear because of the bear obtaining improperly stored attractants.

General Effects of Food and Attractant Management on Grizzly Bears

In the NCDE as a whole, the leading cause of grizzly bear mortality since at least 2004 has been agency removal (Costello et al. 2016) roughly half of which has occurred outside the PCA (Costello et al. 2016) , usually associated with livestock or other attractants on private and other non- NFS lands where food storage orders are not in use (Northern Continental Divide Ecosystem Subcommittee 2021, USDI Fish and Wildlife Service 2013a). Bears may be drawn to unsecured attractants, resulting in conflict and subsequent removal of those bears. Food storage orders on public lands can ensure that food and other attractants are stored so that grizzly bears cannot obtain access to them, preventing potential food- conditioning of bears and reducing the risk of conflict. Food storage orders are "the single most effective way to prevent bears from becoming food conditioned" (USDI Fish and Wildlife Service 2013b) on public lands.

Habitat Security and Motorized Access

Synopsis of Definitions Used in the Habitat Security and Motorized Access Analysis

Terminology related to habitat security and motorized access has evolved over time based on definitions in Forest Plans, research methodologies, and IGBC guidance (Interagency Grizzly Bear Committee (IGBC) 1998) and can be confusing. The following terms – and their source - are used in this analysis to describe the motorized access environmental baseline and the effects of the 2021 Forest Plan on grizzly bears.

Closed Motorized Route: A route closed to motorized vehicles. This is often used interchangeably with 'restricted motorized route'. There is no formal definition other than in the Access Travel Management (ATM) dictionary which describes a closed ***road*** as a Maintenance Level 1 road closed to motor vehicles. Motorized vehicle use on these roads is prohibited, unless designated and managed as an OHV trail.

Non-Denning Season: The non-denning season west of the continental divide is approximately April 1 to November 30; east of the continental divide it is April 16 to November 30 (USDA Forest Service 2021a).

Impassable Motorized Route: A road that has been treated or naturally revegetated in such a manner that the road is blocked and no longer accessible to wheeled motorized vehicles during the non-denning season (Northern Continental Divide Ecosystem Subcommittee 2021). A road that has been treated in such a manner that the road is blocked and there is little resource risk if road maintenance is not performed on a regular basis (self-maintaining) (U.S. Department of Agriculture 2021). For this analysis, an impassable motorized route is inaccessible to wheeled motorized vehicles.

Open Motorized Route: A road or trail without restrictions on motorized vehicle use. It can either be open seasonally during the non-denning season or open yearlong (Interagency Grizzly Bear Committee (IGBC) 1998). Federal and State roads and motorized trails that are open to wheeled motor vehicle use by the public for any part of the non-denning season are considered open motorized routes (U.S. Department of Agriculture 2021). For this analysis, an open motorized route is ***any*** road or motorized trail open seasonally or yearlong.

Restricted Motorized Route: A road or trail on which motorized vehicle use is legally restricted seasonally or yearlong by a physical obstruction (e.g. gate, berm, removable barricade) (Interagency Grizzly Bear Committee (IGBC) 1998).

Secure Core: An area of the NCDE primary conservation area greater than or equal to 2,500 acres in size and 500 meters or more from (1) an open motorized route (open during the grizzly bear non-denning season), (2) a gated route, or (3) a route closed only with a sign (USDA Forest Service 2021a). Roads restricted with physical barriers (not gates), decommissioned roads, impassable roads, temporary roads,

over-snow motorized routes/areas, and nonmotorized trails are allowed within secure core.

Secure Habitat: Secure habitat is defined as areas outside of the NCDE primary conservation area that contain no motorized travel routes during the non-denning season and are more than 0.31 miles (500 meters) from a drivable motorized route ("Documentation for Development of Secure Habitat Analysis for Grizzly Bears Outside of the NCDE Recovery Zone/Primary Conservation Area on the Helena-Lewis and Clark National Forest" for detailed information.) and 0.31 miles (500 meters) from private land. This is not a Forest Plan definition but rather a metric used to measure effects of the 2021 Forest Plan components.

General Effects of Habitat Security and Motorized Access on Grizzly Bears

Summer Motorized use

Field studies in the northern Rockies—Montana, British Columbia, Alberta—have shown that grizzly bear persistence in any given area is determined by (1) habitat quality, (2) the number of humans within that habitat, and (3) the behavior of those humans (Apps et al. 2004). Areas within historic grizzly range across the region have thus been identified in terms of the availability of large tracts of relatively undisturbed land that provide some level of security from competitive use by humans (USDI Fish and Wildlife Service 1993), (pp. 1-14). To that end, 'effective' habitat is described in terms of blocks of suitable habitat free of motorized access during the non-denning period (Interagency Grizzly Bear Committee (IGBC) 1998); this is, in essence, secure habitat.

The NCDE Conservation Strategy (Northern Continental Divide Ecosystem Subcommittee 2019) and the 5-year review of grizzly bear status (USDI Fish and Wildlife Service 2011) identified habitat security as one of the key issues in grizzly bear population recovery (USDI Fish and Wildlife Service 1993). Secure habitat is important to the survival and reproductive success of grizzly bears (Northern Continental Divide Ecosystem Subcommittee 2019, USDI Fish and Wildlife Service 1993, 2011), with motorized access commonly identified as a stressor that may have a negative impact on the availability of secure habitat for bears (Boulanger and Stenhouse 2014, Mace et al. 1996). In general, motorized access has the potential to affect bears by increasing human interaction which increases the potential for habituation or conflict, displacing bears from important habitats, and increasing energetic requirements related to disturbance by humans (USDI Fish and Wildlife Service 2011).

Several research projects in the NCDE and other portions of the northern Rocky Mountains have reported varied information about the effects of the presence of motorized routes and their use on grizzly bears. These studies have each asked slightly different questions and have measured access and impacts to bears differently. Cumulatively, however, they describe the potential for the existence and use of motorized routes to impact bears. The following is a brief synopsis of some of the key research regarding this issue over the past three decades.

Mace and others (Mace et al. 1996) found in their western Montana study area that female grizzly bears occupied home ranges with lower total road densities more frequently than areas with higher road densities. They found that a total road density \of < 6 km/km^2 [9.65 mi/mi^2] differentiated the areas used by female bears from areas not used (Mace et al. 1996), with road density calculated using a moving-windows type methodology. This research found that the females in the study spent over half their annual use in unroaded areas, with variation in use based on season, habitat, and individuals. In other words, the mere presence of a road influenced female grizzly bear use of an area. When bears did use habitats near roads their use was influenced by traffic volume and road type as well as by individual, sex, and season, and was also likely related to the spatial and seasonal availability of certain bear foods. Some limitations of the study include relatively small sample sizes that precluded certain analyses and inferences, and that bear locations were obtained only twice a week and usually during morning hours when flight conditions were best, potentially influencing results by excluding other times of day when bear habitat use could have differed.

Other research has added to the understanding of potential impacts of roads and motorized use on grizzly bears. Research in Canada immediately north of the NCDE has been carried out over a span of three decades. In 1988 McLellan and Shackleton (McLellan and Shackelford 1988) published results of the

initial years of research in an area where a high level of resource extraction work and concomitant road building and use were occurring. They found that most bears in their study used habitats within 100m of roads with motorized use less than expected, and they documented temporal patterns of avoidance, with areas near roads used at night but avoided during the day. Contrary to the later findings of Mace and others (Mace et al. 1996), McLellan and Shackleton (McLellan and Shackleton 1988) found that yearlings and females with cubs used areas near roads with motorized use more than other bears, possibly as a strategy to avoid encounters with adult male bears.

In 2015 McLellan published results (McLellan 2015) of the multi-decade research effort that included analysis of data used in their 1988 publication along with data gathered in subsequent years. In his updated work, McLellan found that industrial activities in his study area, including public use 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 in McLellan's study 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. He noted that the location of those high-value food areas may change over time in response to fire, vegetation management, and other influences, which may in turn require changes in management of road access. This approach is similar to suggestions made by the NCDE technical committee in 1998 to revise management recommendations for motorized access by creating seasonally secure areas based on habitats used by bears at key times of year (Proctor, McLellan, et al. 2018). This work put less emphasis on measures of route density, and more on maintaining secure habitat where food sources are available. McLellan's study (McLellan 2015) was carried out in an area where grizzly bear hunting is legal, and where both public recreational use and industrial activities may have differed from those occurring in the Mace and others (Mace et al. 1996) research.

Boulanger and Stenhouse (Boulanger and Stenhouse 2014) carried out research on the impact of roads on grizzly bears in Alberta, Canada, east of McLellan's study area and north of the NCDE. They reported on specific route densities based on permanent unrestricted road networks at or below which most bear locations were documented, and above which the risk of mortality to all but adult male bears appears to increase. They identified road densities above which negative population trend could occur, and they recommend a threshold of 0.75 km/ km road density (1.2 mi/mi^2) in core grizzly bear conservation areas within their study area to ensure a viable grizzly bear population. A key aspect of the Boulanger and Stenhouse study was that road density was not measured in fixed units, but rather within a 300m radius of each bear observation. Although this method provided a "real time" picture of road density in an area actually being used by a bear at the time it is observed, it is not directly comparable to measures of road density in other areas that are made in fixed units and calculated by different methods. As in McLellan's study area and unlike in the NCDE, bear hunting was allowed in Boulanger and Stenhouse's study area. The authors also noted that they lacked information about traffic volumes and about habitat quality and quantity, which they suggested are likely to influence the mortality risk, reproductive rate, and disturbance/displacement from roads that occurs and therefore that they observed. This research focused specifically on road density and did not address any potential role or influence of secure habitat areas.

In a comprehensive review of research into the relationships between motorized access and grizzly bears, Proctor and others (Proctor, McLellan, et al. 2018) cited research findings (e.g., (Proctor et al. 2017, Nielsen et al. 2004) indicating that distance to roads and location of roads in relation to certain habitats may be as or more important than road density in predicting impacts to bears. Proctor et al. also noted that the spatial arrangement of motorized routes and security areas may be critically important in terms of the degree to which bears may be affected by motorized access. They stated, "…evenly spaced roads, even at an otherwise acceptable road density, can provide very little security in patches within the range of average daily movements" (Proctor, McLellan, et al. 2018). In other words, the key to limiting impacts of roads on bears is tied to availability, location, and distribution of secure habitat that is not simply a function of numeric density of motorized routes, but of the spatial arrangement in which they occur. In its updated Motorized Access Taskforce Report (Interagency Grizzly Bear Committee (IGBC) 1998), the IGBC

stressed that evaluation of open motorized route density alone does not provide a complete measure of the effects of motorized access on use of habitats by grizzly bears, but that measures of the presence of "core areas" free of high levels of human use are also important. Most studies on the effects of motorized access on bears have reported on the importance to bears of having a minimum percentage of their home range in blocks secure from the influence of motorized use (Mace et al. 1996, Proctor et al. 2017, Schwartz et al. 2010, Wakkinen and Kasworm 1997). Measures and recommendations of the appropriate size of secure habitat patches have varied based on study area, research questions, research methods, the stated purpose of providing security (e.g., to limit direct mortality risk versus to limit displacement from foraging habitat) and other factors.

In summary, research ranging from the NCDE to Canada shows that grizzly bears are negatively impacted by motorized routes and their use, and that areas relatively free of motorized access during the non-denning period are key to grizzly bear productivity and survival ((see internal document "Guide to Effects Analysis: Motorized Access in Grizzly Bear Habitat Outside of Recovery Zone" 2023). Given the impact motorized access has on the quality of grizzly bear habitat and the ability of bears to use it effectively, the availability of large tracts of generally undisturbed land providing a level of security from human activities is key to sustaining healthy grizzly bear populations and contributing to connectivity among them.

The availability of habitat that is secure from the influence of roads (including all roads and roads with motorized use) has been found to limit or offset the potential negative impacts of motorized use on grizzly bears. Secure habitat has been measured several ways, including by estimating motorized route density and by estimating the amount of habitat beyond the influence zone of motorized routes (i.e. secure habitat, also referred to as 'core' or secure core'). The amount of secure habitat needed in an area depends on management objectives, habitat type, food availability, and other factors.

Plan components have been developed to guide motorized ***use*** in future projects. Therefore, this analysis focuses on the ***use*** of motorized routes as a key stressor for grizzly bears. The effects of motorized use on grizzly bears are measured through a variety of metrics - i.e. OMRD, TMRD, and secure core in the PCA; linear motorized route density in Zone 1, and secure habitat in Zones 1, 2, and 3 - to gauge the effects of implementing the 2021 Forest Plan. These parameters are described in more detail in the relevant sections below.

Winter Motorized Over-Snow Travel

The impacts of winter activities on denning bears are not well studied (Teisberg et al. 2015). Teisberg and others (Teisberg et al. 2015) assessed the distribution of grizzly bear dens in the NCDE with respect to areas open or closed to motorized over-snow use. They found no apparent avoidance by grizzly bears of areas open to winter over-snow use, and den distribution was similar to the availability of habitat. Linnell and others (Linnell et al. 2000) reported that bears will den within 0.6-1.2 miles of areas of human activity and appear to be undisturbed by most activities occurring at distances greater than 0.6 miles of dens. Additional anecdotal evidence (Hegg et al. 2010) and monitoring data (USDA Forest Service 2006) did not document abandonment of dens as a result of motorized over-snow travel in the vicinity of dens in the GYE. Litter abandonment due to snowmobiling activity has not been documented in the lower 48 states (Hegg et al. 2010), nor have adverse effects to bears from snowmobiling been substantiated (Mace and Waller 1997b). Despite this information, however, bear research scientists and managers have suggested that in the period shortly before or after den emergence in the spring, females with cubs could be vulnerable to disturbance by snowmobiles because of limited mobility of cubs and high energetic needs of lactating females (Mace and Waller 1997b, c, Haroldson et al. 2002).

Management and Status of Habitat Security and Motorized Access within the Action Area

Guidance for Motorized Access Management in the NCDE

Based on preliminary reports (Mace and Manley 1993) from the Mace and others (Mace et al. 1996) research discussed above, the Interagency Grizzly Bear Committee (IGBC) Taskforce on Motorized Access recommended that thresholds be established for motorized route density and for "core" (i.e. secure)

habitat in grizzly bear recovery zones (Interagency Grizzly Bear Committee 1994, Interagency Grizzly Bear Committee (IGBC) 1998). In response to a lawsuit and in order to complete consultation on their Forest Plan, the Flathead NF developed Forest Plan Amendment 19 (USDA Forest Service 1995) establishing motorized route density and core area standards that were based on an unpublished review of those preliminary results (Mace 2004). Similar recommendations were incorporated into interim guidelines for motorized access management for the NCDE (Northern Continental Divide Ecosystem (NCDE) Access Task Group 1995). In 1998 the IGBC taskforce updated its guidance on motorized access management (Interagency Grizzly Bear Committee (IGBC) 1998) after considering additional research, analysis, and several years of implementation of the 1994 guidelines. The NCDE taskforce group recommended adjustments to NCDE motorized access direction in 1998 and 2002 (IGBC Motorized Access Taskforce unpublished reports).

The 1998 IGBC taskforce recommended the use of the moving windows method for analyzing motorized recovery zones (Interagency Grizzly Bear Committee (IGBC) 1998). They also recommended that rather than reporting linear route densities, managers should report the percent of an analysis unit (BMU Subunit) within a specified route density category and the percent meeting criteria of secure habitat. This method provides a more accurate indication of the spatial mix of motorized routes and secure habitat than do other methods and was therefore incorporated as a required protocol into the Flathead NF Amendment 19 (USDA Forest Service 1995), the NCDE Grizzly Bear Conservation Strategy (Northern Continental Divide Ecosystem Subcommittee 2019), and the Amendments to Incorporate the NCDE Grizzly Bear Conservation Strategy into Forest Plans (see PCA-NCDE-STD-01) (USDA Forest Service 2018).

The grizzly bear population in the NCDE was increasing prior to implementation of several Forest Service travel management decisions that reduced the overall mileage and density of motorized routes and subsequently motorized use. Cross-country motor vehicle use was prohibited in 2001 with the Off-Highway Vehicle Travel on NFS lands in Montana, North Dakota, and parts of South Dakota. Additional subsequent travel plan decisions on the HLC NF have reduced motorized use overall, particularly in the NCDE RZ and adjacent areas.

Unauthorized Motorized Use

Unauthorized motorized use is not a recent phenomenon and has been part of the ongoing baseline condition for grizzly bears in the NCDE and throughout their range. The effects of any unauthorized motorized access on the grizzly bear populations are likely low as evidenced by the NCDE grizzly bear population status, including an increasing number of grizzly bears, an expansion of the distribution of grizzly bears, and an estimated positive population trend (U.S. Department of the Interior 2021). When compared with the trends in grizzly bear demographics, some level of unknown ongoing unauthorized motorized use has occurred during the same time that the grizzly bear population has been showing improvements in population size and survival rates. Thus, the ongoing level of unauthorized motorized use has not prevented attainment of recovery goals.

Unauthorized motorized use of the Forest Service's motorized routes is an unauthorized activity that is not considered an "action" subject to section 7 consultation under the ESA. The term "action" for Section 7 consultation is defined in the Consultation Handbook (USDI Fish and Wildlife Service and Service 1998) as: all activities or programs of any kind authorized, funded, and/or carried out, in whole or in part, by Federal agencies in the United States or upon the high seas. Unauthorized motorized use is not the result of a federal action and therefore not analyzed under effects of the action, but this use may have effects that are considered as part of the environmental baseline. Because of this, we have considered, both qualitatively and through the metrics used to quantify grizzly bear habitat security as described in the following sections, the effects of such unauthorized motorized use on grizzly bears to the best of our ability.

Unauthorized motorized use occurs on National Forest System roads and trails that are restricted seasonally or yearlong, on unauthorized routes, and cross country. Unauthorized routes are defined in 36 C.F.R. 212.1 as "a road or trail that is not a Forest road or trail nor a temporary road or trail and that is not included in a

forest transportation atlas"[4] (i.e. Motor Vehicle Use (MVUM) map). The MVUM displays National Forest System routes (roads and trails) or areas designated as open to motorized travel. Routes not shown on the MVUM are not open to public motor vehicle travel[5]. The MVUM is a legally enforceable map that serves as the basis of enforcement of agency regulations concerning motorized use. According to 36 C.F.R. 261.13 "[a]fter National Forest System roads, National Forest System trails, and areas on National Forest System lands have been designated pursuant to 36 CFR 212.51 on an administrative unit or a Ranger District of the National Forest System, and these designations have been identified on a motor vehicle use map, it is prohibited to possess or operate a motor vehicle on National Forest System lands in that administrative unit or Ranger District other than in accordance with those designations…"

The Forest Service responds to the discovery of unauthorized motorized use when resources allow through actions that may include issuing citations and patrolling certain areas for repeat violations. The Forest addresses unauthorized use through corrective actions such as signing the area with a clear notice that motorized use is prohibited, replacing broken locks, adding physical closure devices, or other actions.

Despite ongoing unauthorized use, the NCDE grizzly bear population has more than tripled in size from an estimated 300 bears in 1986 to 1,163 in 2023 since the 1975 listing of grizzly bears as threatened (USDI Fish and Wildlife Service 2022), (Costello and Roberts 2023). Their occupied range[6] increased from 9,600 mi^2 in 1975 to 21,487 mi^2 in 2022 with an 11 percent increase alone between 2020 and 2022 (USDI Fish and Wildlife Service 2022), (Costello and Roberts 2023).

Unauthorized Use and Methods for Calculating Route Density and Secure Core/Secure Habitat

Methods used to measure route densities and secure core within the PCA/RZ account for the possibility of unauthorized motorized use by including all roads and motorized trails capable of use in measures of motorized route density. The only routes excluded from road density calculations are those that are physically impassable. Similarly, all routes on which motorized use could physically occur outside the PCA/RZ are considered to have potential impacts and are therefore excluded from estimates of secure habitat.

Unauthorized cross-country motorized use - i.e. that which is not associated with a road at all - can be more difficult to detect and therefore is not currently accounted for in calculations of secure core or secure habitat.

Law Enforcement Data on Unauthorized Use

By its very nature, unauthorized motorized use is difficult to detect and even more difficult to measure or monitor. Law enforcement data is one source of information on instances of unauthorized motorized use, but those data have several significant limitations. Law enforcement data do not provide an overall picture of unauthorized use in an area over a given period, and the data are of little use in assessing the effects of unauthorized use on grizzly bears. Some of the limitations of law enforcement data are:

- Location data are lacking; the database used by law enforcement personnel records the location where a citation or report was written rather than where the violation occurred.
- The data do not include information about the duration, frequency, or extent of the unauthorized use or the probability of that use coinciding with the presence of a grizzly bear. The likelihood of a grizzly bear being in an area during the period when unauthorized use occurs would be very low due to their large home range size.
- The data are limited to information about single incidents and do not document patterns of use.
- Law enforcement patrols are not designed to serve as a consistent or unbiased source of data on unauthorized use. The purpose of patrols is specifically to enforce a variety of regulations,

[4] See eCFR :: 36 CFR Part 212 -- Travel Management

[5] See Motor Vehicle Use Map (MVUM) Information and Frequently Asked Questions | US Forest Service (usda.gov)

[6] Occupied range is an estimate of the roughly contiguous area within which bears have established residency or have demonstrated habitat use (Costello and Roberts 2023).

including motorized use restrictions. Patrols therefore target areas where visitor safety is a concern, areas of known or suspected unauthorized activity, and other areas of special interest (e.g., high-use recreation areas or corridors, areas near urban centers, along major transportation corridors, etc.). Consequently, information is heavily biased toward certain areas that are patrolled.

- There is approximately one Forest Service Law Enforcement Officer for one million acres of National Forest System land. For this reason and because of the nature and purpose of patrols as described in the previous bullet, large areas of National Forest lands may be infrequently patrolled.

Although it often does not identify specific routes where violations have occurred, law enforcement data may indicate areas where some instances of unauthorized use have occurred, and it might help identify areas with repeated unauthorized use. Law enforcement data do not provide a full picture of unauthorized motorized use, however, and cannot be used to develop trend estimates, indices, or a reliable depiction of unauthorized motorized use at a spatial or temporal scale that can be analyzed.

Because of these limitations, law enforcement data are not helpful for assessing whether unauthorized motorized use is affecting grizzly bears, nor can the data help assess the type and degree of any impacts to individual grizzly bears. The data cannot be used to develop a reliable depiction of unauthorized motorized use at a spatial or temporal scale useful for analysis. In some cases, individual citations and incident reports may be able inform analyses, particularly at a project-specific level. Those analyses may, however, already effectively account for unauthorized use in the methods by which route densities and secure core/secure habitat are calculated (refer to the respective "Requirements and Methods" sections below).

Although law enforcement data on unauthorized use have significant limitations as described here, information about unauthorized use obtained from law enforcement data is summarized, considered, and discussed briefly for the NCDE PCA/RZ, and for zones 1, 2, and 3, in the appropriate sections below.

Other Sources of Information about Unauthorized Use

The terms and conditions in the 2022 Revised BO require that the Forest Service update the motorized access data within GBAUs outside the recovery zone as new information is obtained and/or as site-specific projects are developed. As project areas and motorized routes are surveyed to comply with this requirement, evidence of unauthorized use is occasionally detected. This information is documented and provided to law enforcement and to other Forest and District staff who can take corrective actions (e.g. constructing additional barriers) to deter future unauthorized use. As with the law enforcement data described above, this information is limited in its utility for estimating impacts of unauthorized use on grizzly bears. The information does not indicate the extent, duration, or frequency of the unauthorized use; it is gathered incidental to project-related fieldwork, and because it is gathered at a single point in time it cannot be used to infer frequency of unauthorized use (i.e., whether chronic unauthorized use is occurring on a given route). Although this information has limited use, it is summarized, considered, and discussed briefly in the appropriate sections below where project level data are available.

Motorized Access Management and Status of Secure Habitat – Recovery Zone/PCA

Requirements and Methods

The 2021 Forest Plan requires use of 'moving windows' methodology for calculating motorized route density and secure core. The main benefit of this method is that it allows display of where route density is high or low within the analysis unit rather than simply averaging density over the entire area (Northern Continental Divide Ecosystem Subcommittee 2019). Values of route density and secure core are reported as the percent of an analysis unit that may serve as secure habitat or, conversely, that may be affected by motorized use. The 2021 Forest Plan established that in the PCA (which is the same area as the recovery zone) the portion of each subunit above a certain level of open motorized route density (OMRD) and total motorized route density (TMRD) may not increase above the 2011 baseline. Similarly, levels of "secure core" reported as a percent of each subunit, may not decrease below the 2011 baseline (PCA-NCDE-STD-

03), except under certain conditions detailed in the 2021 Forest Plan (PCA-NCDE-STD-02, PCA-NCDE-STD-03, PCA-NCDE-STD-04, PCA-NCDE-STD-05).

The rule set used to calculate OMRD, TMRD, and secure core is based on the NCDE Conservation Strategy (Northern Continental Divide Ecosystem Subcommittee 2019); it does not use information about the type or amount of use on a route, including whether use is occurring legally or otherwise. Instead, it assumes that any motorized route that is not physically impassable to motorized vehicles may have an impact on bears,

A route is considered physically impassable to motorized vehicles when it is obliterated (e.g., re-contoured), revegetated, has certain types of physical barriers (e.g., berms, large rocks, concrete "jersey barriers"), or characteristics (e.g., bridge or large culvert removed, obstacles such as large boulders block road entrance, etc.) that make the road impassable, such that no standard vehicle or two-wheeled motorcycle can pass (Northern Continental Divide Ecosystem Subcommittee 2019).

It is essential to understand how motorized routes are addressed in calculating OMRD, TMRD, and secure core to understand how they may be used to assess potential impacts to bears.

- For OMRD, routes are considered open if they are not closed with a physical closure device (generally gated); routes closed only by sign or order are evaluated as if they are open to public travel in this calculation. Therefore, OMRD values account for all potential motorized use, including any unauthorized or unauthorized travel, on any routes that are not closed with a physical barrier.
- For TMRD, all routes are included in the route density calculation unless they have become (e.g., ***inaccessible*** to all types of wheeled motorized vehicles during the denning season through obliteration, revegetation, removal of bridges, etc.). Therefore, TMRD values account for all potential motorized use, including unauthorized use, on any routes on which motorized use could physically occur. If there is evidence of use, corrective actions are taken to render the route physically impassable, or the route will be included in the TMRD.
- Secure core is measured as the total area outside the identified influence zone (500m) of any open motorized route, any road closed only by a sign or gate, any revegetated road that has no gate, or any closed (gated) road that receives more than a specified level of administrative use. Therefore, secure core accounts for all potential motorized use, including any unauthorized use, on routes closed with signs, gates, revegated but drivable routes, and routes with administrative use above a certain level.

Table 5 shows the motorized route categories used to inform OMRD, TMRD and secure core. All motorized routes that are accessible to motorized vehicle use are assumed to impact grizzly bears and are included in OMRD, TMRD, or secure core. This accounts for any unauthorized use on those routes. The impassable and decommissioned routes are not accessible to motorized use. See "Unauthorized Motorized Use – PCA/Recovery Zone" section below for a description of unauthorized use in the PCA/Recovery Zone.

Table 5. Motorized routes used to calculate OMRD, TMRD, and secure core in the PCA/Recovery Zone*

Motorized Route Category	OMRD	TMRD	Secure Core
Open yearlong roads, no restriction	X	X	X
Open seasonally roads, has seasonal restriction	X	X	X
Closed yearlong by sign closure	X	X	X
Closed yearlong by gate closure, but with high administrative use	X	X	X
Closed yearlong by gate closure		X	X
Closed yearlong by physical barrier[1]		X	

Motorized Route Category	OMRD	TMRD	Secure Core
Closed yearlong and naturally revegetated, but should be closed by gate[2]		X	X
Closed yearlong and is either naturally revegetated, entrance has been obliterated, or bridge/large <4ft culvert removed. Essentially, the road is completely impassable[3]			
Decommissioned or historical roads[4]			

[1] Refers to berms, rocks, jersey barriers, etc. Does not include roads closed by a bridge or large (<4ft) culvert being removed, obliterated road entrances, and live vegetation. Any of these last three types make the road impassable (no standard vehicle or two-wheel motorized vehicle can pass).
[2] Refers to motorized routes currently closed by live vegetation, but planning or project documents indicate that the road is closed by gate.
[3] Motorized route has been treated in such a manner that the road is inaccessible to all wheeled motorized vehicles (passenger car, truck, 4WD vehicle, ATV, motorcycle, etc.) during the non-denning season.
[4] Motorized route longer function as a road, and the road is no longer considered part of the agency's road system.
* From the "Conservation Strategy for the Grizzly Bear in the Northern Continental Divide Ecosystem 2019" (Northern Continental Divide Ecosystem Subcommittee 2019))

Temporary routes (those used only for emergency operations or by contract, permit, lease, or other written authorization; usually associated with a project of limited duration; NCDE 2019) are not included in route density or secure core calculations because they do not result in permanent changes in route density or secure core. Impacts of temporary routes are analyzed during analysis and consultation for projects where and when those routes are to be used.

Existing Levels of Motorized Access – Recovery Zone/PCA (as of June 2024)

Motorized route densities and amount of secure core in the BMU Subunits within the HLC NF portion of the NCDE recovery zone are shown in Table 6 and Table 7**.**. Table 6 has been updated to include only the subunits in the Rocky Mountain Range GA; the remainder of subunits on the HLC NF have been moved to Table 7 as in the 2021 BA Supplement. Table 6 includes the most recent data from the 2021 NCDE Motorized Access Monitoring Report (see table footnote for reference). Information in Table 6 and in Table 7, includes all lands within the Subunits, per the reporting methodology and requirements established in the NCDE CS (Northern Continental Divide Ecosystem Subcommittee 2019) and the 2021 Forest Plan. Sources for the data shown are provided in table footnotes.

Table 6. Existing open motorized route density (OMRD), total motorized route density (TMRD), and secure core for the Rocky Mountain Range GA portion of the NCDE recovery zone[1]

BMU	Subunit	≥75 Percent NFS Lands	TMRD Percent > 2 mi/mi²	OMRD Percent >1 mi/mi²	Secure Core Percent of Area
Badger Two Medicine	Badger	no	0	0	72
	Heart Butte	no	0	1	59
	Two Medicine	no	1	2	76
Birch Teton	Birch	no	0	1	92
	Teton	no	5	11	72
Dearborn Elk	Falls Creek	no	0	1	84
	Scapegoat	no	1	5	78
North Fork Sun River	Lick Rock	yes	0	0	100
	Roule Biggs	yes	0	0	100

BMU	Subunit	≥75 Percent NFS Lands	TMRD Percent > 2 mi/mi²	OMRD Percent >1 mi/mi²	Secure Core Percent of Area
South Fork Sun Beaver Willow	South Fork Willow	yes	4	14	81
	West Fork Beaver	yes	5	17	78
Teton Sun River	Deep Creek	no	3	10	67
	Pine Butte	no	2	8	64

[1]Source: "2021 Biennial Report of Motorized Access Baseline within the Primary Conservation area (PCA), Northern Continental Divide Ecosystem (NCDE)", Report completed by K. Ake, Flathead NF and NCDE. Change in secure core in Badger subunit due to ownership changes on the Blackfeet Indian Reservation (BIR), correction of data layer to include two private roads on the BIR incorrectly omitted from previous data. Note that the 2023 biennial report has not yet been released.

Information in Table 6 above includes minor changes from values displayed in the 2020 BA. The changes represent updates to the baseline as described in the 2021 Forest Plan. Changes in values shown for all but the Falls Creek Subunit resulted from changes in land ownership on the Blackfeet Indian Reservation and/or corrections and updates to the road data layer. There were no changes to road management in any of those subunits. Changes to values in the Falls Creek subunit reflect two land exchanges, one of which brought land into federal ownership and changed road designations on that land from private to public. No changes occurred in road management in the affected subunit. The subunits in the Rocky Mountain Range GA are not subject to any existing or anticipated decisions that will change motorized access route density or secure core as represented here.

Table 7 is excerpted with updates from the 2021 BA Supplement, displaying the subunits in the Upper Blackfoot GA, with recent information added from the "2021 Biennial Report of Motorized Access Baseline within the Primary Conservation area (PCA), Northern Continental Divide Ecosystem (NCDE)". Table 7 is intended to accurately display the changes in current condition over time and allow comparison with complete implementation of the Blackfoot Non-Winter Travel Plan as adjusted.

Table 7. Existing and anticipated open motorized route density (OMRD), total motorized route density (TMRD), and secure core for the Upper Blackfoot GA portion of the NCDE recovery zone as updated

Subunit-Metric	2017 Amendment BO[1]	2017 NCDE Monitoring Report[2]	2019 NCDE Monitoring Report[3]	2021 NCDE Monitoring Report[4]	Anticipated Full Implementation of Travel Plan[5]
Alice Creek - OMRD	10	10	11	11	11
Alice Creek - TMRD	18	18	15	13	11
Alice Creek – Secure Core	71	71	72	73	74
Arrastra Mountain - OMRD	16	16	15	15	15
Arrastra Mountain - TMRD	17	19	18	17	15
Arrastra Mountain – Secure Core	75	74	75	76	76
Red Mountain - OMRD	21	24	18	18	18
Red Mountain - TMRD	21	21	19	18	17

Subunit-Metric	2017 Amendment BO[1]	2017 NCDE Monitoring Report[2]	2019 NCDE Monitoring Report[3]	2021 NCDE Monitoring Report[4]	Anticipated Full Implementation of Travel Plan[5]
Red mountain - Core	63	61	69	70	70

[1]From USDI Fish and Wildlife Service 2017, the Biological Opinion for the GB Amendments, baseline upon implementation of the Blackfoot Travel Plan
[2]From the baseline as reported in the "2017 Biennial Report of Motorized Access Baseline within the Primary Conservation area (PCA), Northern Continental Divide Ecosystem (NCDE)", Report completed by K. Ake, Flathead NF and NCDE
[3]From the existing condition in the "2019 Biennial Report of Motorized Access Baseline within the Primary Conservation area (PCA), Northern Continental Divide Ecosystem (NCDE)", Report completed by K. Ake, Flathead NF and NCDE
[4]From the existing condition in the "2021 Biennial Report of Motorized Access Baseline within the Primary Conservation area (PCA), Northern Continental Divide Ecosystem (NCDE)", Report completed by K. Ake, Flathead NF and NCDE
[5] Full implementation is based on full implementation of the Blackfoot Non-Winter Travel Plan, as updated in the Supplement to the Updated Terrestrial Biological Assessment for the Blackfoot Non-Winter Travel Plan (1 June 2016) and the HLC Rework (20210608_HLC_MotorizedAccessReworkSubUnitResults2021)

The change in values between the 2017, 2019, and 2021 monitoring reports are due to ongoing implementation of the Blackfoot Non-Winter Travel Plan, and updates and corrections to the database (Northern Continental Divide Ecosystem Subcommittee 2021, 2019). Values displayed from the 2021 BA Supplement are from calculations made in early 2021, specifically for the supplement and several months before the 2021 Monitoring Report was completed. Values in the 2021 Monitoring Report include all update data layers, information on any land exchanges or boundary adjustments and other factors that may not have been included in the calculations made earlier in the years specifically for the BA Supplement. The NCDE Monitoring Reports represent the official documentation of OMRD, TMRD, and secure core within the NCDE. There are no existing or anticipated decisions, other than ongoing implementation of the Blackfoot Non-Winter Travel Plan, that would change motorized access route density or secure core as reported above.

Unauthorized Motorized Use – PCA/Recovery Zone

Table 8 shows unauthorized motorized use the PCA/RZ portion of the HLC NF between 2014 and mid 2024 based on law enforcement data. Most of these violations are associated with unauthorized use of closed roads. Except for 2015, these violations were not chronic or repeated in the areas where they occurred. In 2015, all violations occurred between January and March which overlaps with the grizzly bear denning season. Overall, more than half of the total violations occurred during the denning season. Research summarized in the "Winter Motorized Over-Snow Travel" section shows that grizzly bears are generally not disturbed by winter activities including snowmobile use; however, females with cubs could be vulnerable to disturbance by snowmobiles because of limited mobility of cubs and high energetic needs of lactating females (Haroldson et al. 2002, Mace and Waller 1997b, a).

The Forest addresses unauthorized use through corrective actions such as signing the area with a clear notice that motorized use is prohibited, replacing broken locks, or adding physical closure devices; otherwise, the route will be included in the TMRD.

Table 8. Total number of unauthorized motorized use violations and denning season violations in the PCA/Recovery Zone based on law enforcement data between 2014 and 2024

Year	Total Unauthorized Motorized Use Violations (cross country motorized violations)	Denning Season Violations (subset of total)
2014	9 (0)	5

Year	Total Unauthorized Motorized Use Violations (cross country motorized violations)	Denning Season Violations (subset of total)
2015	5 (0)	5
2016	0	0
2017	1 (0)	1
2018	6 (0)	5
2019	0	0
2020	0	0
2021	0	0
2022	5 (3)	0
2023	2 (1)	0
2024	0	0
Total	***28 (4)***	***16***

It is important to note that citations for unauthorized access and cross-country travel are not an accurate measure of the total amount of unauthorized motorized use or of effects to grizzly bears because unauthorized motorized access may happen more or less often than the citations suggest, the number of citations may not correlate with the repeated unauthorized use in the same area, and the extent (duration and intensity) of the unauthorized access is unknown. Grizzly bears may or may not be present during instances of unauthorized motorized access, so effects based on the number of citations is not possible to quantify. However, the fact that citations were issued is indicative that some unauthorized motorized use occurs within the action area. As previously noted, the NCDE grizzly bear population has more than tripled in size and their occupied range has expanded since grizzly bears were listed as threatened in 1975 (USDI Fish and Wildlife Service 2022), (Costello and Roberts 2023) despite some level of ongoing unauthorized motorized use over the years.

Cross country unauthorized motorized use is associated with temporary and intermittent off-road driving in areas that do not have roads, such as meadows. There is no type of barrier that could prevent this activity other than communication with the public with a sign and/or a ticket, as the areas are open grasslands or shrublands. Installing a sign to inform the public driving into an opening or a meadow is often an effective form of enforcement, in addition to writing citations, as most people are not knowingly violating travel restrictions. However, it is not possible to identify areas where one-time cross-country travel occurred and there is no visible evidence of unauthorized motorized use.

Unauthorized motorized use has always been part of the environmental baseline and is a fluctuating stressor. It was an ongoing condition when research occurred on the effects of motorized use on grizzly bears. When bear movements were studied in relation to open, restricted, and closed roads, some level of unknown unauthorized or unauthorized motorized use was likely occurring at that time within the home ranges of the female grizzly bears. Thus, the data relied upon to establish motorized access metrics to manage for grizzly bears inherently includes some extent of unknown unauthorized motorized use that was occurring during the scientific research.

The section below, “Other Indicators of Habitat Security”, notes that seven BMU Subunits on the HLC NF in the PCA are entirely within designated wilderness, inventoried roadless area, conservation management area, or combinations of those. Of the five BMUs partially outside these unroaded designated areas, the three subunits in the Upper Blackfoot GA (Arrastra, Red Mountain, and Alice Creek) have more than half their area in one or more of the above categories. The two subunits on the Rocky Mountain Range GA (Badger and Two Medicine) also have more than half of NFS lands within one of those categories. See that section for more information. Unauthorized use is unlikely to occur in these areas given their roadless designations and overall lack of accessibility into these areas.

Motorized Route Density Outside the PCA/Recovery Zone in Zone 1

Requirements and Methods

The 2021 Forest Plan requires that in Zone 1, which is outside the recovery zone and therefore does not have BMU subunits established, linear motorized route density must be maintained at or below the 2011 baseline over the entirety of Zone 1 (Z1- NCDE-DC-01). The 2021 Forest Plan allows the 2011 baseline to be adjusted for activities or projects occurring after that time that have received consultation. Linear motorized route density is not calculated using moving windows methodology and therefore lacks the spatial component in the way densities are reported within the RZ. Linear motorized route density is calculated as a single number applied over the entire analysis unit, although some portions of the unit may in fact have lower or higher route densities. All motorized routes are included in calculations of linear motorized route density in Zone 1. As in the RZ, temporary routes (those used only for emergency operations or by contract, permit, lease, or other written authorization; usually associated with a project of limited duration; (Northern Continental Divide Ecosystem Subcommittee 2019)) are not included in route density calculations because they do not result in permanent changes to route density. Impacts of temporary routes are analyzed during analysis and consultation for projects where and when those routes are to be used.

Existing Levels of Motorized Route Density

Table 9 was included in the 2021 BA Supplement to show linear motorized route density in Zone 1 since the original 2011 baseline was identified in the NCDE Conservation Strategy (Northern Continental Divide Ecosystem Subcommittee 2019) and during ongoing implementation of the Blackfoot Non-Winter Travel Plan. Table 9 shows the original reference baseline density from the NCDE Conservation Strategy, along with updated densities calculated for the NCDE Biennial Motorized Monitoring Reports (data citations are provided as footnotes to the table).

Table 9. Baseline linear motorized route density since 2011 in the HLC NF portion of grizzly bear management Zone 1.

Data Source	Linear Density of All Motorized Routes (mi/mi^2)	Linear density of National Forest System Routes Only (mi/mi^2)
2011 NCDE Grizzly Bear Conservation Strategy – Original Reference Baseline[1]	NA	1.6
2015 and 2017 NCDE Motorized Access Monitoring Report[1]	NA	1.2
2017 Grizzly Bear Amendments BO[2]	1.5	1.3
2019 NCDE Motorized Access Monitoring Report[1]	NA	1.0
2021 NCDE Motorized Access Monitoring Report[3]	NA	1.0

[1] From the 2019 Zone 1 Linear Road Trail Density Tracking spreadsheet which includes 2011, 2015, 2017, and 2019 (see "20170130_Zone1LinearRoadTrailDensityTracking")
[2] From the 2017 Grizzly Bear Amendment Biological Opinion (USDI Fish and Wildlife Service 2017c)
[3] From the 2021 Zone 1 Linear Road Trail Density Tracking spreadsheet; 2023 data are still in preparation.

Linear motorized route densities shown in Table 9 vary among data sources for several reasons. First, they reflect some change on the ground as implementation of the Blackfoot Non-Winter Travel Plan progresses (i.e. motorized route decommissioning). Second, the motorized route information database (INFRA) is incomplete, as noted in the 2020 BA and the 2021 BA Supplement. Biologists and analysts rely on the best data available at the time of analysis to determine whether individual routes that lack information in the database are open, closed, impassable, etc. Methods for making those determinations include field validation, use of remote imagery, staff knowledge, etc., and may vary among different analyses depending on the timing of those analyses relative to availability of updated information. When possible, route status determinations made during project-level analyses are entered into the INFRA database. Not all project-

based determinations are appropriate for entry into INFRA, however, as some may require further validation. Project level databases are updated accordingly to reflect the best information available.

Motorized Access Management and Status of Secure Habitat– Outside the PCA/Recovery Zone (Zones 1, 2 and 3)

Requirements and Methods

The 2021 Forest Plan does not impose limits on road density in Zones 2 and 3. As discussed above, managers and researchers have recognized the importance of secure areas to grizzly bears (USDI Fish and Wildlife Service 1993, 2011, Northern Continental Divide Ecosystem (NCDE) Access Task Group 1995, Interagency Grizzly Bear Committee (IGBC) 1998, Mace et al. 1996, McLellan 2015, McLellan and Shackleton 1988, Proctor, McLellan, et al. 2018). While secure habitat is directly tied to and based on open and restricted motorized routes, it more adequately represents the potential effects to grizzly bears related to motorized use as it provides a more accurate indication of the spatial mix of motorized routes and secure habitat. Therefore, measures of secure habitat in the areas outside the NCDE RZ (Zones 1, 2 and 3) where grizzly bears may be present are used in this analysis as a more meaningful metric to determine potential impacts of human activities on bears that may use those areas.

Grizzly Bear Analysis Units (GBAUs) were delineated in Zones 1, 2 and 3 on the HLC NF for the purposes of analyzing potential impacts to bears of the 2021 Forest Plan. GBAUs used hydrologic boundaries that were adjusted (generally combined all or in part) based on average female home range size, topography, range of habitat types, range of elevations, and presence of private lands[7]. All GBAUs are entirely within the NF boundary, although some include private land inholdings within the external NF boundary. Based on changes in grizzly bear distribution since the 2020 BA and 2021 BA Supplement were prepared, a new GBAU has been added to encompass the Big Snowies and Little Snowies mountain ranges in the Snowies GA. The Snowies GBAU is currently not within an identified grizzly bear management zone but is included in this analysis because of the possibility that grizzly bears may be present there. Figure 2 shows the GBAUs as well as the grizzly bear management zones within which they occur. Table 10 provides information about each GBAU, including the grizzly bear management zone it falls within, the GA it is associated with, the total acreage, and the acreage and percent of the GBAU that is on National Forest System lands.

[7] See the "Documentation for Development of Grizzly Bear Analysis Units on the Helena-Lewis and Clark National Forest" on file.

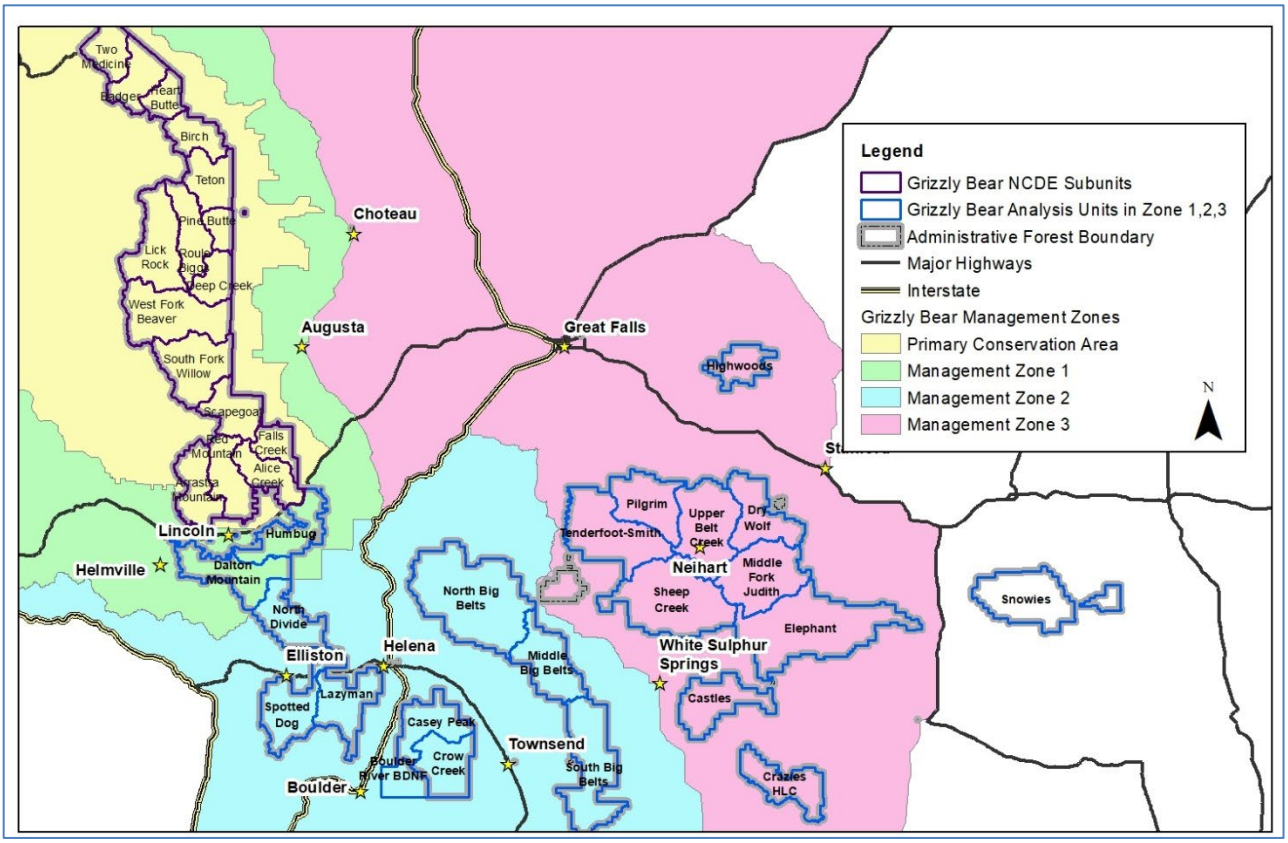

Figure 2. Grizzly bear management zones and analysis units

Table 10. Acreage of grizzly bear analysis units by ownership (all data are from the 2 April 2025 spreadsheet "20250402_GrizzlySecureHab_OwnerGBAU_GreaterThanEqualToOneAc" unless otherwise noted)

Grizzly bear management zone	Geographic Area	Grizzly Bear Analysis Unit (GBAU)	Total Acres	National Forest Lands Acres	Percent of GBAU that is National Forest Lands
Zone 1	Upper Blackfoot[1]	Dalton Mountain[1]	85,574	82,214	96
		Humbug	72,797	66,919	92
Zone 2	Elkhorns	Boulder River BDNF[2]	33,523	31,565	94
		Casey Peak	68,180	60,450	89
		Crow Creek	73,514	70,637	96
	Divide	Lazyman	77,205	64,497	84
		North Divide[3]	81,728**	72,256	88
		Spotted Dog[4]	74,672	66,733	89
	Big Belts	Middle Big Belts	83,704	70,743	85
		North Big Belts	215,830	171,800	80
		South Big Belts	126,333	67,125	53
Zone 3	Little Belts	Dry Wolf	79,470	74,285	93
		Elephant	205,008	199,719	97
		Pilgrim	83,785	73,215	87

Grizzly bear management zone	Geographic Area	Grizzly Bear Analysis Unit (GBAU)	Total Acres	National Forest Lands Acres	Percent of GBAU that is National Forest Lands
		Middle Fork Judith	112,816	110,600	98
		Sheep Creek	169,900	127,728	75
		Tenderfoot-Smith	130,059	114,525	88
		Upper Belt Creek	117,740	103,755	88
	Highwoods	Highwoods	44,466	42,288	95
	Castles	Castles	79,916	69,711	87
	Crazies	Crazies HLC[4]	70,092	57,665	82
NA[5]	Snowies	Snowies	122,132	118,151	97

[1]Approximately 325 acres of the Divide GA are within grizzly bear management Zone 1, in the Dalton Mountain GBAU. The acreage shown is the total GBAU acreage.
[2]The Boulder River BDNF unit is entirely within the boundary of the Beaverhead-Deerlodge National Forest; management of this area is included in the 2021 HLC plan
[3]Approximately 1,017 acres of the Upper Blackfoot GA are within grizzly bear management Zone 2, in the North Divide GBAU. The acreage shown is the total GBAU acreage.
[4]From the "20250402_SpottedDogGrizzlySecureHab_Owner_GreaterThanEqualToOneAc" spreadsheet
[5]The northern portion of the Crazy Mountains is administered by the HLC, while the southern portion is administered by the Custer-Gallatin National Forest. Only the HLC portion is included in the Crazies HLC GBAU
[5]The Snowies GBAU is outside grizzly bear management zone boundaries as of June 2024, but the USFWS has indicated that grizzly bears may be present in the area.
**We reported 163,457 acres in the 2021 BA Supplement; correct acres are 81,728.

Consistent with analysis used in the NCDE PCA/RZ, secure habitat was calculated for this analysis to include areas that are ≥ 500m from any motorized route and that are ≥2,500 acres in size. Since the 2020 BA and the 2021 BA Supplement were completed, there has been additional discussion regarding the minimum size of secure habitat patches[8]. While the NCDE has used 2,500 acres as a minimum patch size, the GYE has used a minimum of 10 acres, and the CYE and SE have not established a minimum (see internal document "Guide to Effects Analysis: Motorized Access in Grizzly Bear Habitat Outside of Recovery Zone" 2023). Each of these methods is supported by different sources of information, and there is agreement among current research biologists that there is "no single scientifically supported secure habitat benchmark that demarks adverse impacts to individual grizzly bears in all situations outside recovery zones (Ibid). Depending on the juxtaposition with other patches of secure habitat and other resources, even small patches of habitat that are more than 500 meters from motorized routes may provide valuable space for grizzly bears to avoid human disturbance, move among different areas of food resources, and use for long-distance connectivity (from the "Biological Opinion on the Effects of the Lolo National Forest Plan on Grizzly Bears" 2023). Therefore, we also calculated secure habitat without establishing a minimum patch size, as an additional measure of potential security for grizzly bears outside the recovery zone.

The motorized route information database (INFRA) is incomplete. The database lacks information indicating the method by which routes are closed to the public (e.g., gate, berm, revegetation, etc.), as well as whether or not routes are currently passable by vehicle (e.g., some routes in the database have naturally

[8] See "Documentation for Development of Secure Habitat Analysis for Grizzly Bears Outside of the NCDE Recovery Zone/Primary Conservation Area on the Helena-Lewis and Clark National Forest" for detailed information.

re-vegetated to the point at which motorized use is not physically possible, but information about which routes are in that state is not always available). Therefore, we treated all routes existing in the HLC route database, unless they are known to have been decommissioned or fully revegetated, as potentially experiencing motorized use, regardless of their legal status as open or closed in the Motor Vehicle Use Map or in the database. Therefore, this analysis accounts for all potential motorized use, legal or unauthorized, by excluding any areas where motorized use could occur from secure habitat calculations.

Existing Levels of Secure Habitat Outside the PCA/Recovery Zone (Zones 1, 2, and 3)

Table 11 and Table 12 display the amount of secure habitat as calculated in the 2020 BA and updated in the 2021 BA Supplement for each GBAU on the HLC NF. Table 11 displays the amount of secure habitat when calculated using the 2,500-acre minimum patch size, and Table 12 displays the amount of secure habitat when calculated using no minimum patch size. Although larger, less fragmented patches likely support feeding and sheltering needs for bears, even very small patches of secure habitat may be valuable to grizzly bears outside recovery zones, particularly for providing connectivity across roaded landscapes or for providing patches of seasonally important habitats that may be limited due to proximity to human settlement (see Regional Terrestrial Consultation Team meeting notes with grizzly bear researchers February 13, 2023). Including both methods also allows comparison with other areas outside the NCDE. Information in these tables incorporates updates to data resulting from project-level analyses that have occurred since the 2021 BA Supplement, per the terms and conditions included in the 2022 Revised BO.

Table 11 and Table 12 include information for Zone 1; although the 2021 Forest Plan requires no net change to the baseline linear density of motorized routes in Zone 1 as described elsewhere in this document, the spatial location of routes within the Zone 1 area could change, which could in turn change the amount and quantity of secure habitat within those GBAUs. Therefore, we report in Table 11 and Table 12 the amount of potentially secure habitat available in the two GBAUs in Zone 1 in in order to facilitate future analysis.

Table 11. Potentially secure habitat (>2,500 acre patch size) by GBAU (all data are from the 2 April 2025 spreadsheet "20250402_GrizzlySecureHab_OwnerGBAU_GreaterThanEqualTo2500Ac" unless otherwise noted)

Grizzly Bear Management Zone	Geographic Area	Grizzly Bear Analysis Unit (GBAU)	National Forest Lands Acres	Existing Acres of Potentially Secure Habitat NFS Only	Percent of GBAU NFS Only
Zone 1	Upper Blackfoot	Dalton Mountain[1]	82,214	25,108	31
		Humbug	66,919	18,247	27
Zone 2	Elkhorns	Boulder River BDNF[2]	31,565	9,427	30
		Casey Peak	60,450	31,904	53
		Crow Creek	70,637	25,429	36
	Divide	Lazyman	64,497	6,771	10
		North Divide[3]	72,256	15,071	21
		Spotted Dog	66,733	19,689	30
	Big Belts	Middle Big Belts	70,743	22,695	32
		North Big Belts	171,800	70,218	41
		South Big Belts	67,125	18,208	27
Zone 3	Little Belts	Dry Wolf	74,285	17,601	23
		Elephant	199,719	46,116	23
		Pilgrim	73,215	33,253	45

Grizzly Bear Management Zone	Geographic Area	Grizzly Bear Analysis Unit (GBAU)	National Forest Lands Acres	Existing Acres of Potentially Secure Habitat NFS Only	Percent of GBAU NFS Only
		Middle Fork Judith	110,600	65,482	59
		Sheep Creek	127,728	4,450	3
		Tenderfoot- Smith	114,525	50,923	44
		Upper Belt Creek	103,755	26,150	25
	Highwoods	Highwoods	42,288	14,003	33
	Castles	Castles	69,711	6,278	9
	Crazies	Crazies HLC[5]	57,665	17,192	30
NA[6]	Snowies	Snowies	118,151	73,677	62

[1]Approximately 325 acres of the Divide GA are within grizzly bear management Zone 1, in the Dalton Mountain GBAU. The acreage shown is the total GBAU acreage.
[2]The Boulder River BDNF unit is entirely within the boundary of the Beaverhead-Deerlodge National Forest; management of this area is included in the 2021 HLC plan
[3]Approximately 1,017 acres of the Upper Blackfoot GA are within grizzly bear management Zone 2, in the North Divide GBAU. The acreage shown is the total GBAU acreage.
[4]From the "20250402_GrizzlySecureHab_OwnerGBAU_GreaterThanEqualTo2500Ac" spreadsheet
[5]The northern portion of the Crazy Mountains is administered by the HLC, while the southern portion is administered by the Custer-Gallatin National Forest. Only the HLC portion is included in the Crazies HLC GBAU
[6]The Snowies GBAU is outside grizzly bear management zone boundaries as of June 2024, but the USFWS has indicated that grizzly bears may be present in the area.

Table 12. Potentially secure habitat (patch size greater than or equal to one acre) by GBAU (all data are from the 2 April 2025 spreadsheet "20250402_GrizzlySecureHab_OwnerGBAU_GreaterThanEqualToOneAc" unless otherwise noted)

Grizzly Bear Management Zone	Geographic Area	Grizzly Bear Analysis Unit (GBAU)	Existing Acres of Potentially Secure Habitat NFS Only	Percent of GBAU NFS Only
Zone 1	Upper Blackfoot	Dalton Mountain[1]	31,707	39
		Humbug	21,704	32
Zone 2	Elkhorns	Boulder River BDNF[2]	10,641	34
		Casey Peak	33,398	55
		Crow Creek	33,527	47
	Divide	Lazyman	16,120	25
		North Divide[3]	18,831	26
		Spotted Dog[4]	24,192	36
	Big Belts	Middle Big Belts	28,112	40
		North Big Belts	83,631	49
		South Big Belts	23,960	36
Zone 3	Little Belts	Dry Wolf	28,216	38
		Elephant	62,933	32
		Pilgrim	36,204	49
		Middle Fork Judith	67,519	61
		Sheep Creek[4]	18,895	15

Grizzly Bear Management Zone	Geographic Area	Grizzly Bear Analysis Unit (GBAU)	Existing Acres of Potentially Secure Habitat NFS Only	Percent of GBAU NFS Only
		Tenderfoot- Smith	57,158	50
		Upper Belt Creek	35,083	34
	Highwoods	Highwoods	17,368	41
	Castles	Castles	16,790	24
	Crazies	Crazies HLC[5]	24,003	42
NA[6]	Snowies	Snowies	74,942	63

[1]Approximately 325 acres of the Divide GA are within grizzly bear management Zone 1, in the Dalton Mountain GBAU. The acreage shown is the total GBAU acreage.
[2]The Boulder River BDNF unit is entirely within the boundary of the Beaverhead-Deerlodge National Forest; management of this area is included in the 2021 HLC plan
[3]Approximately 1,017 acres of the Upper Blackfoot GA are within grizzly bear management Zone 2, in the North Divide GBAU. The acreage shown is the total GBAU acreage.
[4]From the "20250402_SpottedDogGrizzlySecureHab_Owner_GreaterThanEqualToOneAc" spreadsheet
[5]The northern portion of the Crazy Mountains is administered by the HLC, while the southern portion is administered by the Custer-Gallatin National Forest. Only the HLC portion is included in the Crazies HLC GBAU
[6]The Snowies GBAU is outside grizzly bear management zone boundaries as of June 2024, but the USFWS has indicated that grizzly bears may be present in the area.

The estimates of secure habitat in Table 11 and Table 12 above are in most cases underestimates of actual secure habitat, because the estimates exclude some areas with routes that are physically impassable to motor vehicles ed from secure habitat polygons.

The secure habitat amounts that we report above are useful mainly as a broad index of what may be available to bears that use these areas; actual bear use of any areas within Zones 2 and 3, and the degree to which they might be affected by motorized use or other human uses or activities is dependent on many factors as described throughout this assessment.

Unauthorized Motorized Use – Zones 1, 2, and 3

Table 13 shows unauthorized motorized use across a ten-year period in Zones 1, 2, and 3 and the Snowies (which are outside Zones 1, 2, or 3).

Table 13. Total number of unauthorized motorized use violations and denning season violations in Zones 1, 2, and 3 and the Snowies based on law enforcement data between 2014 and 2024

Year	Zone 1		Zone 2		Zone 3		Snowies	
	Total Violations (cross country)	Denning Season Violations (subset of total)	Total Violations (cross country)	Denning Season Violations (subset of total)	Total Violations (cross country)	Denning Season Violations (subset of total)	Total Violations (cross country)	Denning Season Violations (subset of total)
2014	0	0	17 (4)	5	8 (7)	2	0	
2015	0	0	50 (18)	29	16 (14)	5	0	
2016	0	0	28 (9)	13	12 (11)	7	0	
2017	0	0	50 (16)	17	14 (11)	5	0	
2018	0	0	59 (25)	16	19 (13)	5	0	
2019	0	0	13 (7)	4	1 (1)	1	0	
2020	0	0	53 (14)	28	35 (24)	10	7 (4)	3
2021	0	0	17 (11)	6	29 (13)	9	6 (2)	1
2022	1 (1)	0	30 (17)	9	12(11)	4	2 (2)	0

Year	Zone 1		Zone 2		Zone 3		Snowies	
	Total Violations (cross country)	Denning Season Violations (subset of total)	Total Violations (cross country)	Denning Season Violations (subset of total)	Total Violations (cross country)	Denning Season Violations (subset of total)	Total Violations (cross country)	Denning Season Violations (subset of total)
2023	5 (1)	0	22 (14)	3	44 (37)	8	3 (2)	2
2024	0	0	8 (3)	5	18 (1)	2	2 (0)	0
Total	***8 (2)***	***0***	***347 (138)***	***135***	***208 (143)***	***58***	***20 (10)***	***6***

Zones 2 and 3 comprise the majority of the motorized violations; several are recurring within and/or across years. IGBC approved barriers, fences, or other barricades to control motorized use can be inadequate due to the existing topography (flat and open) and lack of vegetation. However, the Forest buffers all motorized routes, including unauthorized routes (user-created) when mapping secure habitat, so this use is already considered in the baseline.

Cross country unauthorized motorized use represents a large percentage of the unauthorized motorized use, particularly in Zones 2, 3 and the Snowies (39 percent, 69 percent, and 50 percent respectively). There is no type of barrier that could prevent this activity other than communication with the public with a sign and/or a ticket, as the areas are open grasslands or shrublands.

Despite the appearance of high numbers of unauthorized use, that use is spread out over ten years and across large geographic areas; and several violations have occurred during the grizzly bear denning season. As previously noted, grizzly bears are generally not disturbed by winter activities although in the period shortly before or after den emergence in the spring females with cubs could be vulnerable to disturbance by snowmobiles because of limited mobility of cubs and high energetic needs of lactating females (Haroldson et al. 2002, Mace and Waller 1997b, c). There is no known denning in Zones 2 and 3 or in the Snowies. Corrective actions continue to be taken especially in areas of recurring violations. These actions include constructing fences on either side of an existing barrier or at the location of a cross-country trespass, and decommissioning routes.

Project-level motorized route surveys in the Wood Duck Project (Zone 2) and in the Coyote Divide Project (Zone 3) were completed as part of the 2022 Revised Biological Opinion requirements to "update the motorized access data within the GBAUs outside of the recovery zones, including secure habitat, as they obtain new information and/or develop site-specific projects". Motorized route data were updated to reflect on-the ground conditions including locations of unauthorized routes when present. These data were used to update secure habitat for the GBAUs associated with each project.

Project-level surveys also included evidence of unauthorized use: 10 occurrences of unauthorized use in the Wood Duck project (out of 156 routes surveyed) and 26 occurrences of unauthorized use in the Coyote Divide project (out of about 550 routes surveyed). Several occurrences of unauthorized use in the Coyote Divide project area were corrected through route decommissioning or by constructing barriers to block access adjacent to breached gates.

Winter Motorized Use

More than half (approximately 56 percent) of the HLC NF portion of the PCA is within designated wilderness, where over-snow motorized use is prohibited. On the Rocky Mountain Range GA portion of the PCA, winter over-snow motorized use is allowed only on main access roads, none of which are within modelled denning habitat, and on approximately 30,000 acres (of which about 8,000 acres overlap with modelled denning habitat). This snowmobile use in denning habitat is limited to relatively small portions of four (out of 12) grizzly bear subunits: Teton, Pine Butte, West Fork Beaver, and South Fork Willow. Snowmobile travel in that area is prohibited after March 31 (USDA Forest Service 2007b, 2009). On the Upper Blackfoot GA, snowmobiling is allowed on about 53,000 acres (of which approximately 6,400 acres

are modelled denning habitat) of the PCA, where it is prohibited after March 31 except in the Copper Bowls play area where snowmobile use is allowed until May 31 (USDA Forest Service 2013). This snowmobile use overlaps with all three grizzly bear subunits in the Upper Blackfoot GA: Alice Creek, Arrastra, and Red Mountain.

In the remainder of the Upper Blackfoot GA, areas north of Highway 200 but outside the PCA (specifically within the Dalton Mountain GBAU) are open to snowmobiling through March 31 on approximately 1,800 acres. This use overlaps with 4 acres of modelled denning habitat. Elsewhere in the Upper Blackfoot GA, areas south of Highway 200 are open to snowmobiling through April 15 on 70,000 acres; roughly 7,600 of those acres overlap modelled denning habitat. This use occurs within two GBAUs.

In the GBAUs across the rest of the HLC NF, dates during which over-snow motorized use is allowed vary from yearlong to ending on May 15 (USDA Forest Service 1999, 2002, 2005, U.S. Department of Agriculture 2007, USDA Forest Service 2013, 2016, U.S. Department of the Interior and USDA Forest Service 1995). Snowmobile use that extends beyond March 31 overlaps with 112,535 acres of modelled denning habitat. Many areas on the HLC NF are relatively dry, and snow can be intermittently present, so not all areas legally open to over-snow motorized use are actually available during the entire time they are open.

The effects to grizzly bears of winter motorized over-snow travel on the HLC NF are likely to be minimal. As discussed in the "Winter Motorized Over-Snow Travel" section above, there is little evidence that over-snow motorized use affects choice of denning location or causes negative impacts to bears during the den emergence timeframe. Nevertheless, there is some potential for grizzly bears to experience adverse effects from late- season over-snow motorized vehicle use in some areas, particularly where such use is allowed after March 31. Bears using those areas could experience disturbance at a time when their body condition is poor, and food resources are limited.

Over-snow-motorized use is allowed after March 31 across the Forest with the exception of most of the PCA within which over-snow-motorized use is not allowed after March 31. Snowmobile use past March 31 in the PCA is allowed in the Copper Bowls area in the Upper Blackfoot through May 31. See the "Winter Motorized Over-Snow Travel" section above for more details.

Other Indicators of Habitat Security

Another indication of existing habitat security for bears is the extent and acreage of areas with limitations and restrictions on human activities, including motorized use. Congressionally designated wilderness areas, wilderness study act areas, inventoried roadless areas, conservation management area, and recommended wilderness areas may all provide a measure of habitat security for bears by prohibiting or restricting motorized and mechanized travel, and by limiting other activities such as timber harvest, development of recreation sites, and others.

Of the 12 BMU Subunits on the HLC NF in the PCA, seven are entirely within designated wilderness, inventoried roadless area, conservation management area, or combinations of those. Of the five BMUs partially outside these unroaded designated areas, the three subunits in the Upper Blackfoot GA (Arrastra, Red Mountain, and Alice Creek) have more than half their area (between 62 percent and 77 percent) in one or more of the above categories. The two subunits on the Rocky Mountain Range GA (Badger and Two Medicine) also have more than half (50 percent to approximately 90 percent respectively) of NFS lands within one of those categories. All of the above subunits are within the PCA and are therefore protected by standards in the 2021 Forest Plan from any loss in the baseline amount of "secure core".

Table 14 shows the acreage and percent of each GBAU in designated wilderness, wilderness study act areas, and/or inventoried roadless areas, all of which are established by law and are not affected by Forest Plans or their implementation, for Zones 1-3.

Table 14. Acreage of habitat by grizzly bear analysis unit (GBAU), and percent of total NFS lands in GBAUs that are in designated wilderness, wilderness study area, or inventoried roadless area (all data are from the 25 August 2024 spreadsheet "20240825_GBAU_and_GBSH_NFSLandsOnly" unless otherwise noted)

Grizzly Bear Management Zone	Geographic Area	Grizzly Bear Analysis Unit (GBAU)	Total NF Acres in GBAU	Acres (percent) of GBAU in Designated Wilderness	Acres (percent) of GBAU in Wilderness Study Area	Acres (percent) of GBAU in Inventoried Roadless Area
Zone 1	Upper Blackfoot	Dalton Mountain[1]	82,277	0	0	46,096 (56 percent)
		Humbug	66,966	0	0	40,164 (60 percent)
Zone 2	Elkhorns	Boulder River BDNF[2]	30,964	0	0	0
		Casey Peak	60,453	0	0	37,596 (62 percent)
		Crow Creek	69,820	0	0	37,154 (53 percent)
	Divide	Lazyman	64,423	0	0	18,207 (28 percent)
		North Divide[3]	72,196	0	0	16,217 (22 percent)
		Spotted Dog	66,723	0	0	29,697 (45 percent)
	Big Belts	Middle Big Belts	70,744	0	0	40,267 (57 percent)
		North Big Belts	171,431	28,440 (17 percent)	0	83,355 (49 percent)
		South Big Belts	67,119	0	0	23,335 (35 percent)
Zone 3	Little Belts	Dry Wolf	74,308	0	0	52,872 (71 percent)
		Elephant	199,743	0	647 (0.3percent)	91,196 (46 percent)
		Pilgrim[4]	73,259	0	0	55,693 (76 percent)
		Middle Fork Judith	110,602	0	79,104 (72 percent)	65,669 (86 percent)
		Sheep Creek	127,730	0	0	19,284 (15 percent)
		Tenderfoot- Smith	113,449	0	0	78,123 (69 percent)
		Upper Belt Creek	103,763	0	0	46,933 (45 percent)
	Highwoods	Highwoods	42,291	0	0	39,634 (94 percent)
	Castles	Castles	69,708	0	0	29,382 (42 percent)
	Crazies HLC	Crazies HLC[5]	57,668	0	0	37,551 (65 percent)

Grizzly Bear Management Zone	Geographic Area	Grizzly Bear Analysis Unit (GBAU)	Total NF Acres in GBAU	Acres (percent) of GBAU in Designated Wilderness	Acres (percent) of GBAU in Wilderness Study Area	Acres (percent) of GBAU in Inventoried Roadless Area
NA[6]	Snowies	Snowies	118,172	0	88,516 (75 percent)	97,320 (82 percent)

[1]Approximately 325 acres of the Divide GA are within grizzly bear management Zone 1, in the Dalton Mountain GBAU. The acreage shown is the total GBAU acreage.
[2]The Boulder River BDNF unit is entirely within the boundary of the Beaverhead-Deerlodge National Forest; management of this area is included in the 2021 HLC plan
[3]Approximately 1,017 acres of the Upper Blackfoot GA are within grizzly bear management Zone 2, in the North Divide GBAU. The acreage shown is the total GBAU acreage.
[4]From the 20 May 2024 Coyote Divide Biological Assessment, Table 2
[5]The northern portion of the Crazy Mountains is administered by the HLC, while the southern portion is administered by the Custer-Gallatin National Forest. Only the HLC portion is included in the Crazies HLC GBAU
[6]The Snowies GBAU is outside grizzly bear management zone boundaries as of June 2024, but the USFWS has indicated that grizzly bears may be present in the area.

All motorized and mechanized uses are prohibited designated wilderness areas. Motorized use is allowed only on existing routes in wilderness study areas where that use occurred when the areas were designated. The federal regulations governing inventoried roadless areas prohibits activities that are likely to alter and fragment landscapes and that would cause loss or roadless characteristics, and it prohibits permanent road construction and reconstruction.

Developed sites

General Effects of Developed Sites on Grizzly Bears

Developed sites are sites or facilities that accommodate human use; on NFS lands, the term is used to denote sites with features that are intended to accommodate use by the public and includes campgrounds, trailheads, rental or permit cabins, lodges, ski areas, and others (USDI Fish and Wildlife Service 2013a). Developed sites on public lands are associated with frequent and/or prolonged human use that may include continuous or frequent presence of food and attractants. Although developed sites on NFS lands have been associated with very few management removals in the NCDE, they represent an ongoing potential for conflict and possible grizzly bear mortality. The potential impact of developed sites on grizzly bears is tied to the effective implementation of food storage orders (see section above on food storage).

Current Status and Management of Developed Sites within the Action Area

Users of developed sites are required to adhere to existing food storage orders. Holders of permits for developed recreation sites (e.g., recreation residences, permit lodges, etc.) can face both legal violations and permit consequences, including suspension or revocation of their permit, for failure to comply with food storage orders. Food storage orders are enforced at other developed sites through signs and information at kiosks and registration points, and through contacts with FS recreation and enforcement personnel. Information regarding food and attractant storage requirements is also posted on the HLC NF website, shared on social media, and is available at all offices.

The 2021 Forest Plan includes limits in the PCA on developed sites that are available to the public for overnight use. Overnight sites are generally associated with food and other attractants, and thus pose a greater risk of bear-related conflict than day use sites. Standard PCA-NCDE-STD-06 places limits on the number and capacity of developed overnight recreation sites allowed in the PCA, in order to limit the potential for grizzly bear-human conflicts. In the HLC NF portion of the PCA there are currently a total of 27 developed recreation sites that allow overnight use (e.g., rental cabins, campgrounds, permitted lodges) and 98 permitted recreation residence cabins (USDA Forest Service 2019). As noted above, all users of any developed recreation sites in the PCA are required to adhere to food storage orders, minimizing the risk of

bear-human conflicts related to the presence and use of those sites. Developed sites in the PCA that are used under permit (e.g., recreation residences, permit lodges) may have their permits suspended or revoked for failure to adhere to food storage orders or other permit requirements.

Recreational Activities, Including Big Game Hunting

General Effects of Recreational Activities on Grizzly Bears

Recreation can have an impact on grizzly bears by increasing the potential for encounters with humans that may therefore increase the potential for conflict situations. Recreation may also create disturbance and displacement of bears from some habitats in response to the presence of humans. Recreation activities that involve overnight stays (e.g. at developed sites, as described in the section above, as well as dispersed camping and other activities) may increase the risk of bears encountering human food or other attractants and becoming food conditioned. The likelihood of bears encountering humans or being affected by human recreation activities depends on many factors, including the amount, pattern, and type of recreation, whether it occurs in or near areas used by bears, the availability of secure habitat, etc.

Hunting for big game (e.g., elk, deer, black bears, mountain lions, and other species) occurs on NFS lands. Hunting of grizzly bears is unauthorized in Montana but hunting for other species may result in mortality of grizzly bears through unauthorized kills, mistaken identity, and defense of life. Hunting-related grizzly bear mortalities accounted for 16 percent of human-caused grizzly bear mortalities in the NCDE between 1998 and 2017 (Northern Continental Divide Ecosystem Subcommittee 2019, 2021). The numbers and timing of hunters in grizzly bear habitat is influenced by the type and number of animals that can be harvested and the timing and duration of hunting seasons, all of which are regulated by Montana Fish, Wildlife and Parks (MFWP). The FS influence on hunting is primarily through managing access by managing the timing (including seasonal) and location of motorized use allowed on NFS system roads and trails. The FS also issues permits for outfitting and guiding activities, much of which occurs specifically to provide backcountry hunting opportunities.

Current Status and Management of Recreational Activity Management within the Action Area

ROS categories provide some indication of the overall amount of area in which general types of recreation are allowed. They can be useful in describing the general settings created by implementation of those plans, in turn providing some idea of the potential for encounters with humans, amount and type of developments, and types of human activity, as follows:

- Primitive - large, remote, often predominantly unmodified landscapes, no motorized use, few or no structures, generally very low density of human presence. Where it occurs, vegetation management focuses on maintaining/restoring natural vegetation and ecosystem processes.
- Semi-primitive non-motorized - no motorized use except for occasional temporary roads; some closed roads may exist, the few structures present are rustic in nature, humans are generally dispersed at relatively low density. Mechanized travel allowed. Any vegetation management emphasizes maintaining/restoring natural, resilient vegetation.
- Semi-primitive motorized - backcountry settings where motorized use is allowed on existing designated routes, no construction of permanent roads allowed. Humans are generally dispersed at relatively low density except at some parking/portal areas. Any vegetation management emphasizes maintaining/restoring natural, resilient vegetation.
- Roaded natural - natural appearing with nodes and corridors of development that support higher concentrations of human use. Some developed sites with amenities. Motorized use on well- defined road system as well as on other motorized routes.
- Rural - generally accessed from paved roads and often close to communities. Developed recreation sites designated for large groups.

Table 15 displays the current acreage of each ROS by GA. Only NFS lands are included here because any

intervening private or other non-NFS lands may have different characteristics than the adjacent or surrounding NFS lands.

Table 15. Acreage of recreation opportunity setting by GA[1]

GA	Total GA Acres (NFS lands only)	Primitive Acres (percent of GA)	Semi Primitive Nonmotorized Acres (percent of GA)	Semi Primitive Motorized Acres (percent of GA)	Roaded Natural Acres (percent of GA)	Rural Acres (percent of GA)
Big Belts	315,199	48,389 (15 percent)	107,470 (34 percent)	37,029 (12 percent)	112,754 (36 percent)	9,556 (3 percent)
Castles	69,709	0	16,876 (24 percent)	16,343 (23 percent)	36,490 (52 percent)	0
Crazies	57,667	0	33,899 (59 percent)	15,126 (26 percent)	8,642 (15 percent)	0
Divide	202,642	16,653 (8 percent)	84,469 (42 percent)	22,500 (11 percent)	70,212 (35 percent)	8,808 (4 percent)
Elkhorns	161,251	0	94,394 (59 percent)	6,450 (4 percent)	57,541 (36 percent)	2,853 (2 percent)
Highwoods	42,291	0	29,906 (71 percent)	8,219 (19 percent)	4,165 (10 percent)	0
Little Belts	804,657	64,792 (8 percent)	225,659 (28 percent)	222,239 (28 percent)	288,729 (36 percent)	3,239 (<1 percent)
Rocky Mountain Range	778,022	453,091 (58 percent)	269,357 (35 percent)	24,553 (3 percent)	27,796 (4 percent)	3,226 (<1 percent)
Snowies	118,172	88,845 (75 percent)	3,977 (3 percent)	6,904 (6 percent)	17,770 (15 percent)	676 (1 percent)
Upper Blackfoot	333,617	86,733 (26 percent)	159,694 (48 percent)	7,090 (2 percent)	79,619 (24 percent)	481 (<1 percent)

[1] Source: "Biological Assessment for Threatened, Endangered, and Proposed Terrestrial Wildlife Species for the 2020 Forest Plan Helena-Lewis and Clark National Forest"

The different GAs on the HLC NF differ in the proportion of lands in various ROS categories. GAs that are within the NCDE Recovery Zone (Rocky Mountain Range and portion of Upper Blackfoot GA) are predominantly in non-motorized settings where human density is anticipated to be low. These GAs include the PCA, approximately 91 percent of which is in non-motorized settings with low human density and little or no human development. Although Zone 1 (south portion of the Upper Blackfoot GA) includes almost no primitive ROS, the majority (>61 percent) of that zone on the HLC NF is non-motorized with low human density and little development. In Zone 2 (Divide, Big Belts, and Elkhorns GAs), which may be important for genetic connectivity with the GYE, more than half (roughly 52 percent) of NFS lands are in primitive or semi-primitive non-motorized settings, with no motorized use and relatively low density of human presence and activity. In Zone 3 slightly less than 40 percent of NFS lands meet that description.

Outfitting and guiding activities are managed through issuance of permits and through operating plans that designate the location of camps, number of user-days, and other aspects of that activity. All permitted activities occurring on NFS lands administered by the HLC NF must adhere to food storage orders.

Livestock Grazing

General Effects of Livestock Grazing on Grizzly Bears

The presence of livestock operations can benefit the long-term conservation of grizzly bears by maintaining large blocks of rangeland and habitats that support a variety of wildlife species (Dood et al. 2006).

However, "… livestock use of surrounding national forests" was identified by the USFWS as detrimental to bears at the time they were listed as threatened under the ESA (USDI Fish and Wildlife Service 1975b). Approximately 13 percent of known human-caused grizzly bear mortalities in the NCDE between 1998 and 2017 were due to management removals associated with livestock operations, although none of those occurred on NFS lands, but rather on private lands along the Rocky Mountain Front (Northern Continental Divide Ecosystem Subcommittee 2019). Domestic sheep and goat grazing may be a threat to individual grizzly bears due to the relative ease with which bears may prey on these livestock. Some potential for human-bear conflict could occur at livestock carcass sites or during activities associated with livestock management. The presence of livestock may displace grizzly bears from some preferred habitats.

Current Status and Management of Livestock Grazing within the Action Area

Livestock grazing is an important use on the HLC NF, with its open landscapes and island mountain ranges that are largely surrounded by private agricultural lands. There are currently 240 active grazing allotments on the HLC NF. Table 16 shows the acres included in livestock grazing allotments by GA; most but not all allotted acres are currently active.

Table 16. Acreage of livestock grazing allotments by geographic area*

Geographic Area	GA Acres (Total)[1]	Grazing Allotment Acres	Percent of the GA in Grazing Allotment	Active Allotments (2019)	Permitted Head Months[2] (2019)
Big Belts	449,719	233,854	52	32	14,036 cattle 3,315 sheep 1,901 PLP
Castles	79,317	56,315	71	12	6,468 cattle 377 PLP
Crazies	70,046	59,539	85	11	4,095 cattle 525 PLP
Divide	231,767	134,425	58	23	7,326 cattle 1,175 PLP
Elkhorns	174,050	90,506	52	11	7,514 cattle 389 PLP
Highwoods	44,217	40,680	92	9	5,750 cattle
Little Belts	897,977	502,867	56	79	18,233 cattle 2,179 PLP
Rocky Mountain Range	797,941	175,547	22	26	6,755 cattle 18 PLP
Snowies	121,760	57,227	47	22	4,057 cattle 919 PLP
Upper Blackfoot	354,505	77,991	22	15	3,980 cattle 2,739 sheep

[1]Acreage includes all lands within GA boundary because some allotments and/or permitted head months include both private inholdings and adjacent NFS lands

[2]A head month is defined as one month's occupancy by one animal (weaned or adult cow with or without calf, or a bull, steer, heifer, horse, burro, or mule, or five sheep or goats); PLP refers to "private land permit", which authorizes grazing of generally unfenced private inholdings within a larger NF allotment.

* Source: "Biological Assessment for Threatened, Endangered, and Proposed Terrestrial Wildlife Species for the 2020 Forest Plan Helena-Lewis and Clark National Forest"

Specific numbers of animals grazing on any given allotment, along with timing and duration of use, are established annually in Annual Operating Plans, and vary from year to year. Annual Operating Plans must comply with regulations and with Forest Plan direction, and are based on a permittee needs, range

condition, and other resource considerations.

Although the presence of cattle grazing has not resulted in mortalities on NFS lands in the NCDE, the NCDE Conservation Strategy (Northern Continental Divide Ecosystem Subcommittee 2019) and the GB Amendments (USDA Forest Service 2018) recognized the potential for some impacts to bears due to this use of NFS lands. Plan components for the PCA and Zone 1 in the 2021 Forest Plan focus on reducing the potential for impacts to bears through permit requirements to reduce the risk of bear-human conflicts (PCAZ1-NCDE-STD-01), requiring prompt reporting and disposal of livestock carcasses (PCAZ1-NCDE-STD-02), and capping the number of active cattle allotments (PCA-NCDE-STD-11).

The 2021 Forest Plan also incorporates measures in the PCA to protect key grizzly bear food production areas from conflicting/competing use by livestock (PCA-NCDE-GDL-10).

Recognizing that grazing by small livestock, such as sheep, goats, and llamas present a greater potential for conflict with bears than do cattle (Northern Continental Divide Ecosystem Subcommittee, 2019), the 2021 Forest Plan includes standards to cap animal-unit months on sheep grazing permits returning to use from non-use status in the PCA (PCA-NCDE-STD-10), capping the number of active sheep grazing allotments and sheep animal unit-months in the PCA and Zone 1 (PCAZ1-NCDE-STD-03), and limiting the use of temporary small livestock grazing permits in the PCA and Zone 1 for purposes such as weed control (PCAZ1-NCDE-STD-04). The 2021 Forest Plan also guides managers to reduce the number of active sheep grazing allotments in the PCS if the opportunity arises with willing permittees (PCA-NCDE-GDL-09).

There are currently 5 active sheep grazing allotments on the HLC NF. Two are in the Big Belts GA (Zone 2), totaling 2400 ewe/lab pairs, and three are in the Upper Blackfoot GA (PCA/Zone 1), totaling 2600 ewe/lamb pairs.

Vegetation Management

General Effects of Vegetation Management on Grizzly Bears

Vegetation management on NFS lands has the potential to affect grizzly bears through road building and use, which is discussed in the "Habitat Security and Motorized Access" section above. Vegetation management can also result in negative effects to bears through removal of cover, alteration of forage, disturbance or displacement caused by management activities (such as cutting, stacking, thinning, piling, burning, etc.), and increased risk of conflict with humans carrying out activities related to vegetation management (Northern Continental Divide Ecosystem Subcommittee 2019). Vegetation management, including both prescribed and naturally ignited fire, can also have positive effects by maintaining or enhancing bear foods in certain habitat types (Kerns et al. 2004, Northern Continental Divide Ecosystem Subcommittee 2019, Zager et al. 1983).

Current Status of Vegetation Management within the Action Area

The 2021 Forest Plan includes guidance to reduce the risk of disturbance to bears during or as a result of vegetation management activities (PCA-NCDE-GDL-04, PCA-NCDE-GDL-07, and PCA-NCDE-GDL-08) and to maintain or increase habitat (PCA-NCDE-GDL-05) and cover (PCA-NCDE-GDL-06) where possible. Vegetation management projects must adhere to other grizzly bear related guidance, including standards regarding motorized route density where applicable, and adherence by contractors and other personnel to food storage orders.

Minerals and Energy Development

General Effects of Minerals and Energy Development on Grizzly Bears

Mineral development refers to surface and underground hardrock mining and coal production, which on NFS lands are regulated by permits. Oil and gas production are conducted through a leasing process. All these types of development have the potential to impact grizzly bears through construction and use of motorized access routes (discussed in the "Habitat Security and Motorized Access" section above), potential displacement from habitat and/or permanent habitat loss, potential for human-bear encounters and

conflicts, and potential for food conditioning from exposure to food or attractants associated with minerals or energy operations (Northern Continental Divide Ecosystem Subcommittee 2019).

Current Status of Minerals and Energy Development within the Action Area

Lands on the HLC NF are generally available for both locatable and leasable minerals exploration and development, with the exception of designated Wilderness areas, and areas that are either administratively or congressionally withdrawn from those uses. Administratively withdrawn areas include such things as campgrounds, administrative sites, or other identified developed sites. The Elkhorns Wildlife Management Unit in the Elkhorns GA (Zone 2) is also administratively withdrawn from oil and gas leasing but could be available for other types of leasable minerals' exploration and development. The entire Rocky Mountain Range GA, which is entirely within the PCA, is withdrawn by act of Congress from future locatable or leasable minerals exploration or development.

Locatable mineral uses are managed through Plans of Operation and Notices of Intent that are developed at the time that specific plans for minerals exploration or development are submitted. The HLC NF averages roughly 30 active Plans of Operation or Notices of Intent in a given year, each of which generally disturbs less than one acre. The actual number active in any given year is changeable and generally dependent on the market price for the minerals of interest. The only commercial hardrock mining rights within the PCA on the HLC NF are for the Cotter Mine, on the Upper Blackfoot GA. There is currently no mining activity at that site.

There are eight lease parcels in the Big Belts GA (Zone 2) that are on hold (not yet leased) pending further review and decision. The parcels are on hold because they are within an IRA. In the Rocky Mountain Range GA all previously existing oil and gas leases have been cancelled and the GA is unavailable for future oil and gas exploration and development because of Congressional actions.

The 2021 Forest Plan includes standards and guidelines to further reduce the potential for impacts to bears of mining, and oil and gas exploration and development. These include measures to reduce or mitigate potential impacts to bears (PCAZ1- NCDE-STD-05 through 10, PCAZ1-NCDE-GDL-02 and 03, PCAZ1-NCDE-GDL-05), require bear safety training for personnel involved in minerals and energy development activities (PCAZ1-NCDE- STD-11), and require no surface occupancy for new leases within the PCA (PCA-NCDE-STD-12).

These requirements and guidelines are focused on the PCA and Zone 1, where management goals include recovering and sustaining recovery of the grizzly bear population. Plans for exploration for or development of minerals or oil and gas elsewhere on the HLC NF (e.g. in zones 2 and 3), should they occur, would currently be guided by site-specific analysis that would include consideration of wildlife, including grizzly bear habitat needs to the extent allowed by legal mineral rights.

Connectivity

General Effects of Connectivity on Grizzly Bears

Human activities such as roads and developments are the primary causes of grizzly bear habitat fragmentation (Servheen et al. 2001), which can limit grizzly bear movement within and among habitats and has the potential to limit the degree to which grizzly bear populations in Montana and the U.S. are both genetically and demographically connected. Servheen and others (Servheen et al. 2003) found that fragmentation of grizzly bear habitat in Montana is largely associated with human development occurring on private lands in valley bottoms. They indicated that most public lands had "minimal" or "low" potential for impact to grizzly bear habitat connectivity, although where public lands were not continuously distributed across the landscape, as in the checkerboard pattern of National Forest/private lands in some areas, the potential impact rose to "moderate". Although their model did not consider habitat quality as an important factor governing bear movements, Mace and others (Mace et al. 1999) documented strong associations between telemetry locations of radio-collared bears and certain broad categories of vegetation

type. Effective 'linkage zones' between populations are areas that will support low density populations at certain times of year (Servheen et al. 2001); therefore, they must contain habitat elements necessary for the survival of those animals during that time period.

Kendall and others (Kendall et al. 2009) concluded that there are few geographical barriers to the movement of grizzly bears within the ecosystem, and that the NCDE grizzly bear population does not suffer from a lack of genetic diversity. Occupancy by grizzly bears of lands outside the NCDE is not identified as a recovery or management goal, but isolation of existing populations (USDI Fish and Wildlife Service 1993) and the potential for ongoing fragmentation have been identified as concerns with respect to the health and recovery of grizzly bear populations in some ecosystems (USDI Fish and Wildlife Service 2011). The NCDE Conservation Strategy notes that although connectivity to the west and south is not required for a healthy NCDE population, it would benefit other grizzly bear populations in the lower 48 states (Northern Continental Divide Ecosystem Subcommittee 2019).

Current Status and Management of Connectivity within the Action Area

The most recent species status report states that the NCDE grizzly bear population is genetically diverse, large enough to ensure genetic health, and is well connected both genetically and demographically to Canadian populations (USDI Fish and Wildlife Service 2022).

The NCDE Conservation Strategy (Northern Continental Divide Ecosystem Subcommittee 2019) identifies Zone 2, which is entirely on the HLC NF and borders the south end of the NCDE, as having potential value for genetic connectivity between the NCDE and the GYE. Peck and others (Peck et al. 2017) support that conclusion, noting that the area including the Upper Blackfoot and Divide GAs (i.e. portions of Zones 1 and 2) and adjoining areas to the west may be more important to grizzly bears moving south from the NCDE to the GYE than the reverse. Genetic analyses carried out in 2022 did not detect evidence of immigration from the NCDE to the GYE or the reverse (Costello et al. 2023), although based on 2020 distributions the distance between the two populations has decreased to roughly 57 kilometers (34 miles). Genetic analysis has not detected immigration from the NCDE to the CYE although the reverse appears to have occurred at least once (Costello et al. 2023). Movement data of two marked grizzly bears indicates potential dispersal from the NCDE to the BE, as well (ibid).

Largely because of existing blocks of HLC NF lands with few or no roads, such as inventoried roadless areas, the only management specific to Zone 2 called for in the NCDE Conservation Strategy and the 2021 Forest Plan is to reduce potential for grizzly bear- human conflict by implementing food storage orders (PCAZ1Z2-NCDE-STD-01). Food storage orders were implemented throughout this area beginning in 2018.

The portion of the NCDE Recovery Zone encompassing the action area includes large areas of designated wilderness areas and inventoried roadless areas, and as such is relatively unlikely to experience fragmentation due to human activities. As discussed in the sections above on habitat security and on recreation, over half (57 percent) of Zone 1, nearly half (47 percent) of Zone 2 and well over half (64 percent) of Zone 3 is in designated wilderness, wilderness study area, or IRA. Table 11 in the "Habitat Security and Motorized Access" section above displays the amount of each GBAU that is in potentially secure habitat (blocks ≥2,500 acres that are ≥500m from any existing road). To sum that information in a way that reflects on the existing potential for connectivity within each area:

- Zone 1: 39 percent of each GBAU is in potentially secure habitat, with about 39 percent of the total NFS acreage in the zone in potentially secure habitat.
- Zone 2: between 18 and 59 percent of each GBAU in Zone 2 is potentially secure habitat with about 37 percent of the total NFS acreage in the zone in potentially secure habitat. Existing blocks of secure habitat are contiguous with secure habitat in Zone 1 and with public lands to the southwest and are well distributed throughout the GAs that comprise Zone 2.
- Zone 3: between 5 and 63 percent of each GBAU in Zone 3 is potentially secure habitat, with roughly 21 percent of the total NFS acreage in the zone in potentially secure habitat. Existing

blocks of secure habitat are distributed throughout most of Zone 3, with some contiguous with lands administered by the Custer-Gallatin National Forest in the Crazy Mountains.

Table 12, also in the "Habitat Security and Motorized Access" section, displays the amount of secure habitat within GBAUs with no patch size limitation. Those data show the following:

- Zone 1: between 42 and 44 percent of each GBAU is in potentially secure habitat, with about 43 percent of the total NFS acreage in the zone in potentially secure habitat.
- Zone 2: between 32 and 64 percent of each GBAU in Zone 2 is potentially secure habitat with about 48 percent of the total NFS acreage in the zone in potentially secure habitat.
- Zone 3: between 19 and 66 percent of each GBAU in Zone 3 is potentially secure habitat, with roughly 26 percent of the total NFS acreage in the zone in potentially secure habitat.

Although effective genetic or demographic connectivity between and among areas is more complex than simply absence of roads or motorized use, those measures provide the best index we have available to describe the potential for those areas to allow for movement of bears across the action area and between the NCDE and the GYE.

Ongoing Consultation Requirements

The HLC has several ongoing projects for which the respective U.S. Fish and Wildlife Service (USFWS) biological opinion terms and conditions and reporting requirements remain applicable (i.e. the projects have not yet been fully implemented). Some of these projects are programmatic in nature such as travel planning. Other projects are site-specific with the respective consultation tiered to one or more programmatic BOs. Although not all of these ongoing projects are specific to the Forest Plan revision efforts, they (and associated biological opinion requirements) are part of the environmental baseline. These are included here to consolidate where applicable the terms and conditions/reporting requirements of those respective BOs into the BO for the 2021 Forest Plan. Following is a brief synopsis of each 'ongoing' biological opinion and the project status. See the respective Biological Opinion for more information.

USFWS Biological Opinion on the Effects of the Blackfoot-North Divide Winter Travel Plan (Blackfoot Winter Travel Plan) on Grizzly Bears, 2010

The USFWS delivered their biological opinion on the effects of winter travel planning on grizzly bears on July 22, 2010 (USDI Fish and Wildlife Service 2010). Specifically, the USFWS concluded that the incidental take associated with permitted snowmobile use will not result in jeopardy to grizzly bears. The USFWS provided several terms and conditions to be followed in order to comply with the reasonable and prudent measures to: (1) ensure snowmobile use is quantified and monitored in a consistent and predictable way to reassess, if necessary, the assumptions in this biological opinion; and (2) ensure adequate protection to known and potential grizzly bear den sites and post- emergent females with cubs (USDI Fish and Wildlife Service 2010).

Implementation of Blackfoot Winter Travel Plan will continue as planned under the 2021 Forest Plan; in other words, the 2021 Forest Plan will not supersede the Blackfoot Winter Travel Plan Decision. However, that plan will be evaluated for consistency with the 2021 plan and updated if needed.

USFWS Biological Opinion on the Effects of the Divide Travel Plan on Grizzly Bears, 2016[9]

The USFWS concluded in its biological opinion on the effects of the Divide Travel Plan on grizzly bears (USDI Fish and Wildlife Service 2016b) that implementation of the Divide Travel Plan was not likely to jeopardize the continued existence of the grizzly bear. The USFWS provided several non- discretionary terms and conditions with which the Forest must comply in order to "[r]educe the potential for displacement of grizzly bears within the action area" (USDI Fish and Wildlife Service 2016b). Implementation of Divide Travel Plan will continue as planned under the 2021 Forest Plan; in other words, the 2021 Forest Plan will

[9] The Forest will be reinitiating consultation on the Divide Travel Plan to address effects of unauthorized use on grizzly bears pending submission of this biological assessment.

not supersede the Divide Travel Plan Decision.

USFWS Biological Opinion on the Effects of the Blackfoot Non-Winter Travel Plan on Grizzly Bears, 2016[10]

The USFWS delivered their "Biological Opinion on the Effects of the Blackfoot Non-Winter Travel Plan" on grizzly bears on August 3, 2016 (USDI Fish and Wildlife Service 2016a). The USFWS provided several terms and conditions to be followed in order to comply with the reasonable and prudent measure to "[r]educe the potential for displacement of grizzly bears" (USDI Fish and Wildlife Service 2016a).

Implementation of Blackfoot Non-Winter Travel Plan will continue as planned under the 2021 Forest Plan; in other words, the 2021 Forest Plan will not supersede the Blackfoot Non-Winter Travel Plan Decision.

USFWS Second-Tier Consultation for the Stonewall Vegetation Project (Stonewall Project), 2016

The USFWS tiered their August 24, 2016, consultation for the Stonewall Project (USDI Fish and Wildlife Service 2016c) to the 2016 "Biological Opinion on the Effects of the Blackfoot Non-Winter Travel Plan on Grizzly Bears" (USDI Fish and Wildlife Service 2016a). They determined that other than effects associated with access (temporary road construction) project activities will not adversely affect grizzly bears. They also concluded that project effects associated with temporary road construction were consistent with the 2016 biological opinion for the Blackfoot Non-Winter Travel Plan. The USFWS determined that the Stonewall Project was not likely to jeopardize the continued existence of grizzly bears (USDI Fish and Wildlife Service 2016c).

Implementation of Stonewall Project will continue as planned under the 2021 Forest Plan; in other words, the 2021 Forest Plan will not supersede the Stonewall Project.

USFWS Second-Tier Consultation for the Telegraph Vegetation Project (Telegraph Project), 2017

The USFWS tiered their January 4, 2017, consultation for the Telegraph Project (USDI Fish and Wildlife Service 2017b) to the 2014 "Biological Opinion on the Effects of the Helena National Forest Plan on Grizzly Bears" (USDI Fish and Wildlife Service 2014) and the 2016 "Biological Opinion on the Effects of the Divide Travel Plan on Grizzly Bears" (USDI Fish and Wildlife Service 2016b). They concluded that other than effects associated with access (ongoing access conditions and temporary road construction associated with the project) none of the project activities were likely to adversely affect grizzly bears. The USFWS further concluded that project effects related to ongoing access conditions and temporary road construction were adequately analyzed in the 2014 and 2016 biological opinions. They determined that the Telegraph Vegetation Project was not likely to jeopardize the continued existence of grizzly bears (USDI Fish and Wildlife Service 2017b).

Implementation of Telegraph Project will continue as planned under the 2021 Forest Plan; in other words, the 2021 Forest Plan will not supersede the Telegraph Project.

USFWS Biological Opinion on the Effects of the Grizzly Bear Amendment on Grizzly Bears, 2017

In its biological opinion on the effects of the Grizzly Bear Amendment on grizzly bears (USDI Fish and Wildlife Service 2017a), the USFWS concluded that the Grizzly Bear Amendment was not likely to jeopardize the continued existence of the grizzly bear. The USFWS included a number of non-discretionary terms and conditions in order to "[m]inimize or reduce the potential for project-related mortality and displacement of grizzly bears" (USDI Fish and Wildlife Service 2017a). The 2021 Forest Plan supersedes the Grizzly Bear Amendment for which this Biological Opinion was rendered. The 2021 Forest Plan has incorporated in its entirety the Grizzly Bear Amendment. This is explained in detail further in this BA in the 'Environmental Consequences' section.

[10] The Forest will be reinitiating consultation on the Blackfoot Non-Winter Travel Plan to address effects of unauthorized use on grizzly bears pending submission of this biological assessment.

USFWS Second-Tier Consultation for the Tenmile South Helena Vegetation Project (Tenmile Project), 2018

The USFWS tiered their December 19, 2018, consultation for the Tenmile project (USDI Fish and Wildlife Service 2018) to the 2014 "Biological Opinion on the Effects of the Helena National Forest Plan on Grizzly Bears" and the 2016 "Biological Opinion on the Effects of the Divide Travel Plan on Grizzly Bears" (USDI Fish and Wildlife Service 2016b). While the USFWS determined that the effects associated with baseline access conditions as well as temporary road construction were adequately analyzed in the 2014 and 2016 biological opinions, they concluded that the use of closed roads for project activities in addition to the temporary road construction will impart additional adverse effects not covered in those programmatic biological opinion. As a result, the USFWS provided several terms and conditions to be followed in order to comply with the reasonable and prudent measure to "[r]educe the potential for harm caused by displacement of grizzly bears" (USDI Fish and Wildlife Service 2018). The USFWS concluded that the Tenmile South Helena project was not likely to jeopardize the continued existence of grizzly bears (USDI Fish and Wildlife Service 2018).

Implementation of Tenmile Project will continue as authorized per the 1986 Forest Plan; in other words, compliance with the 2021 Forest Plan is not required.

USFWS Second-Tier Consultation for the Willow Vegetation Project (Willow Project), 2019

The USFWS tiered their April 8, 2019, consultation for the Willow Project (USDI Fish and Wildlife Service 2019b) to the 2016 "Biological Opinion on the Effects of the Blackfoot Non-Winter Travel Plan on Grizzly Bears" (USDI Fish and Wildlife Service 2016a). They determined that other than effects associated with access (temporary road construction) project activities will not adversely affect grizzly bears. They also concluded that project effects associated with temporary road construction were consistent with the 2016 biological opinion for the Blackfoot Non-Winter Travel Plan. The USFWS determined that the Willow Project was not likely to jeopardize the continued existence of grizzly bears (USDI Fish and Wildlife Service 2019b).

Implementation of Willow Project will continue as authorized per the 1986 Forest Plan; in other words, compliance with the 2021 Forest Plan is not required.

USFWS Second-Tier Consultation for the Wassen Vegetation Project (Wassen Project), 2019

As with the Willow Project, the USFWS tiered their November 27, 2019, consultation for the Wassen Project (USDI Fish and Wildlife Service 2019a) to the 2016 "Biological Opinion on the Effects of the Blackfoot Non-Winter Travel Plan on Grizzly Bears" (USDI Fish and Wildlife Service 2016a) (U.S. Department of the Interior, Fish and Wildlife Service, 2016a). They determined that other than effects associated with access (use of existing road system) project activities were not likely to adversely affect grizzly bears. They concluded that the existing access conditions and road use for project activities was consistent with their analysis of effects to grizzly bears in the 2016 biological opinion. There were no changes to road management associated with the Wassen project. The USFWS determined that the Wassen Project was not likely to jeopardize the continued existence of grizzly bears (USDI Fish and Wildlife Service 2019a).

Implementation of Wassen Project will continue as authorized per the 1986 Forest Plan; in other words, the compliance with the 2021 Forest Plan is not required.

Environmental consequences

Analysis Approach

The 2021 Forest Plan is a framework programmatic decision that does not directly authorize any action. Rather, it establishes the sideboards for allowable activities throughout the life of the plan. In other words, the Forest Plan represents the set of rules by which future actions are subsequently planned. As such, there will be no direct nor site-specific environmental consequences associated with the 2021 Forest Plan.

Analysis of the effects of this programmatic action therefore is based on the potential effects of implementing an overarching management program as a whole and is necessarily broad in its approach. Direct effects to grizzly bears, to their habitat, or to other resources, can only be predicted when specific project proposals are developed. Analysis and consultation for site specific actions will occur when those projects are planned and proposed.

This BA addresses those factors that are affected by management on NFS lands, as guided by the programmatic direction in Forest Plans: food/attractant management, habitat security/motorized access, developed recreation, other recreational activity including hunting, connectivity, livestock grazing, vegetation management, and minerals and energy uses. A brief discussion of the specific risk factors and summary of current management direction and status of each risk factor was provided in the "Environmental Baseline" section above. Effects to grizzly bears and their habitat resulting from implementation of the2021 Forest Plan are described here following the same organization based on those identified risk factors.

Summary of Plan Content

The 2021 Forest Plan identifies allowable uses by establishing desired conditions for certain uses. This is done by identifying suitability of certain areas for certain uses, and by designating certain areas where specific uses are to be emphasized or restricted. Table 17 shows uses allowed in the 2021 Forest Plan, for the combined HLC NF. As noted in the section titled "Description of the Plan Components" at the beginning of this document, Table 17 shows the maximum area in which those uses could be allowed, but actual acreage where uses occur is much smaller and is determined through project planning and site-specific analysis.

Table 17. Allowable uses under the 2021 Forest Plan*

Allowable Uses under the 2021 Forest Plan	Total Acres
Land suitable for timber production[1]	368,814
Land unsuitable for timber production but where harvest[2] may occur	1,673,853
Personal use of forest products	2,874,356
Commercial use of forest products	2,037,261
Recommended Wilderness	153,136
Eligible Wild and Scenic Rivers	361 miles
Research Natural Areas	18,447
Green Timber Botanical Area	1,167
Badger Two Medicine Special Area	129,740
Experimental and demonstration forests	8,871
Recreation Emphasis Areas	89,439
Grazing allotments	1,355,143
Riparian Management Zones	496,212
Wheeled motorized vehicle use (spring-summer-fall)	1,098,892
Over-snow motorized use (winter)	1,875,187
Summer non-motorized	1,784,322
Winter non-motorized	1,875,187

[1]Timber production is the purposeful growing, tending, harvesting, and regeneration of regulated crops of trees to be cut into

[2]Timber harvest is the removal of trees for wood fiber use and other multiple-use purposes (36 CFR 219.9)

* Source: "Biological Assessment for Threatened, Endangered, and Proposed Terrestrial Wildlife Species for the 2020 Forest Plan Helena-Lewis and Clark National Forest" (USDA Forest Service 2020).

The 2021 Forest Plan includes desired conditions for various uses and resources and establishes constraints on uses and activities to help achieve or move toward desired conditions. The 2021 Forest Plan also includes some plan components that are specific to GAs (refer to Figure 1), which are defined landscapes with identifiable characteristics. Forestwide plan components are applied on all GAs and are only superseded by GA-specific components if the GA components specifically state that is the case. Refer to the section titled "Description of the Plan Components" at the beginning of this document for more detail regarding the 2021 Forest Plan and refer to Appendix A of this document for the full content of the 2021 Forest Plan.

The 2021 Forest Plan incorporates in its entirety the "Amendments to incorporate habitat management direction for the NCDE grizzly bear population into the Helena, Lewis and Clark, Kootenai, and Lolo National Forest Plans", referred to here as the GB Amendments (USDA Forest Service 2018). The desired conditions, objectives, goals, standards, and guidelines are incorporated directly into the 2021 Forest Plan, retaining an 'NCDE' identifier. The BA (USDA Forest Service 2017a) for the amendments provided detailed analysis of the potential impacts of implementing the management direction in the amendments, and determined that implementing the amendments may affect, and is likely to adversely affect the grizzly bear. In its Biological Opinion (USDI Fish and Wildlife Service 2017c), the USFWS concluded that implementation of the amendments was not likely to jeopardize the continued existence of the grizzly bear.

The 2021 Forest Plan includes guidance both directly and indirectly related to management of grizzly bears and their habitat. Plan components provide for management of grizzly bear habitat based on management zone (PCA and zones 1, 2, and 3). Other plan components apply either Forestwide or in specific GAs and will be discussed as such.

Effects of the 2021 Forest Plan on Factors Affecting Grizzly Bears in the Action Area

Food and Attractant Management

Several plan components require or support requirements for managing food and attractants to minimize risk of bears becoming food conditioned:

- FW-NCDE-STD-02: 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.
- PCAZ1Z2-NCDE-STD-01: Within the NCDE primary conservation area, Zone 1, and Zone 2, food/wildlife attractant storage special order(s) shall apply to NFS lands.
- PCAZ1Z2-NCDE-ST-02: Within the NCDE primary conservation area, Zone 1, and Zone 2, if a contractor, permittee, lessee, or 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.
- PCAZ1-NCDE-STD-01: Within the NCDE primary conservation area and Zone 1, 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.
- PCAZ1-NCDE-STD-02: Within the NCDE primary conservation area and Zone 1, 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.

- PCAZ1-NCDE-STD-08: Within the NCDE primary conservation area and Zone 1, 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 [additional] measures regarding grizzly bear attractants [see plan text for additional details].
- PCAZ1-NCDE-GDL-01: Within the NCDE primary conservation area and Zone 1, 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.

The plan components listed above include not only implementation of food and attractant storage requirements, but also additional measures to ensure that permittees using NFS lands adhere to those orders and in some circumstances take additional steps to minimize the risk of bear-human conflicts. Proper storage and management of food and attractants has been demonstrated to be an effective tool to reduce grizzly bear mortality risk (Northern Continental Divide Ecosystem Subcommittee 2019). The effect to grizzly bears of the above plan components will be to continue or decrease the existing relatively low risk of bears becoming food-conditioned or of conflicts developing as a result of human foods or attractants on NFS lands managed under the HLC NF 2021 Forest Plan.

Habitat Security and Motorized Access Management

Summer Motorized Access Management

The mileage, location, and timing of public motorized use across the HLC NF is currently authorized through site-specific travel plan decisions, which are in place across the HLC NF. Subsequent NEPA that evaluates consistency with the 2021 Forest Plan could result in changes to public motorized use. Table 6, Table 7, and Table 9 in the "Environmental Baseline" section above display the status of motorized route densities in the PCA and Zone 1, where reporting of open and total motorized route densities is carried out according to requirements and methodologies described in the 2021 Forest Plan:

- PCA-NCDE-STD-03: In each bear management subunit within the NCDE primary conservation area, there shall be no net decrease to the baseline … 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 Appendix A for remaining explanatory text).
- Z1-NCDE-STD-01: Within Zone 1 on the Helena-Lewis and Clark National Forest …, there shall be no net increase above the baseline in density of motorized routes (roads and trails) open to public motorized use during the non-denning season on NFS lands. Open motorized route density is calculated by dividing the total miles of open motorized routes on NFS lands in Zone 1 by the total square miles of NFS land area in that same area… (see Appendix A for remaining explanatory text).

Open and total motorized route densities and secure core will continue to be calculated according to established methods, and changes allowed to the baseline only for specific reasons that include improved data or measurement technology, minor to address resource issues or safety or enforcement, use for emergency situations, or changes in land ownership (see Appendix A for details).

The plan establishes objectives for vegetation management (timber harvest, fuels treatments, etc.) that could require temporary use of existing motorized routes that are currently closed, or construction of new temporary motorized routes in order to allow implementation of those vegetation management activities. Within the PCA, the following plan components will apply to the use of temporary routes for project implementation:

- PCA-NCDE-STD-01: 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 shall be incorporated into the 10-year running average required by standard NCDE-STD-AR-03.

- PCA-NCDE-STD-02: 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).

In Zone 1, standard Z1-NCDE-STD-01 requires no net increase in the baseline density of motorized routes, as described above, but it does not apply to several situations (refer to Appendix A and to the 2021 Forest Plan for details), including temporary roads.

The last 8 years of vegetation management projects in Zones 1-3 involved 98 miles of temporary roads, with all but 4 miles occurring outside mapped secure habitat areas. Based on analysis of those projects, we estimate that secure habitat as currently measured could be temporarily affected by an average of 2.5 percent, and no more than 7 percent, in any individual GBAU over the anticipated life of the plan (assumed to be 15 years), as a result of temporary motorized routes used to implement vegetation management projects. Temporary reduction in effectiveness of secure habitat occurring during implementation of these projects would likely occur in no more than 6 GBAUs in total during that time, and likely in no more than 2 GBAUs concurrently. The minor reductions in the effectiveness of secure habitat would be localized and likely in widely separate areas but could result in minor disturbance or displacement of bears using those areas during project implementation time periods.

It is possible that temporary routes used for vegetation management could affect secure habitat. As discussed in the "Environmental Baseline" section above, the method we are currently using to estimate potentially secure habitat likely underestimates the amount of secure habitat that is actually present on the HLC NF. Therefore, it is possible that there may be more secure habitat than we estimated.

Our analyses showed that most temporary roads tend to occur in proximity to existing motorized routes and not within 500 meters of mapped secure habitat patches. The effects of those temporary routes would likely not be separate or distinguishable from the effects of existing motorized routes already on the landscape, as discussed in the "Environmental Baseline".

We anticipate that up to 15 miles of permanent roads could be constructed across the Forest over the life of the plan (assuming 15 years). This estimate assumes that the Forest could construct up to 1 mile of permanent road per year. This is based on the fact that the Forest has built very few permanent roads over the last several years. Permanent road construction within grizzly bear subunits in the PCA and Zone 1 is limited by the aforementioned standards such that changes to secure core in the PCA are precluded and changes to secure habitat in GBAUs in Zone 1 are unlikely. In GBAUs elsewhere across the Forest new permanent roads are likely to replace old roads that would subsequently be obliterated; in other words, it's likely in most situations that new permanent road construction would not result in a net increase in permanent road miles. Meanwhile, existing roads that are no longer needed would continue to be removed from the landscape so it's likely that we would see a decrease in miles of permanent roads over the life of the plan.

As discussed in the "Environmental Baseline" section above, the method we are currently using to estimate potentially secure habitat likely underestimates the amount of secure habitat that is actually present on the HLC NF. That means that some areas where temporary routes might be used over the life of the plan or

where permanent roads might be constructed could currently be functioning as secure habitat although we did not identify them as such.

Other plan components in the 2021 Forest Plan related specifically to the transportation system are:

- FW-RT-DC 02, FW-RT-OBJ 01 and FW-RT-GDL-12 state that roads that are not needed to serve administrative and public needs are not present, and guide managers to decommission at least 50 miles of roads over the life of the plan, to address resource damage and to benefit fish and wildlife habitat, enhance the desired recreation opportunity spectrum settings and opportunities, and/or create a more cost-efficient transportation system.
- FW-RT-GDL-13 guides managers to avoid building roads in key seasonal wildlife habitats, which includes grizzly bear spring habitat. Therefore, the risk of disturbance or displacement of grizzly bears from spring habitats because of new permanent or temporary road construction and use would be less than in summer and fall habitats.
- FW-RT-DC 04 Sets a desired condition for the transportation system to have minimal impacts on resources including all wildlife, heritage and cultural sites, water quality, and aquatic species.
- FW-ACCESS-GDL-01 adds to the plan components discussed above by guiding managers to rehabilitate unauthorized recreation routes and restore landscapes to natural conditions.

Secure habitat could increase on the HLC NF based on the above plan components that set objectives for and otherwise guide managers to decommission roads that are not used. The specific roads to be decommissioned are not identified in the 2021 Forest Plan, so we cannot quantitatively predict the potential effects of decommissioning on secure habitat or on specific secure habitat areas until future proposals are developed. The 2021 Forest Plan does, however, provide a variety of components (i.e. recreation opportunity spectrum or ROS, and other designated areas such as recommended wilderness) that will guide future motorized use across the HLC NF. This is described in more detail in the "Other Indicators of Habitat Security" and "Recreation Activities" sections below.

The effects of motorized route access and of secure habitat in areas where grizzly bears may be present but have not been documented on a recurring basis are difficult to predict and are subject to change as future projects are aligned with 2021 Forest Plan components that limit motorized use. For some period of years during the life of the 2021 Forest Plan, bears using portions of zones 2 and 3 are likely to have traversed large expanses of human-dominated areas in order to reach NFS lands in those areas. In doing so those individuals may have learned either avoidance or tolerance of human activities. Individual bears moving into areas new to them are likely to initially be naïve to the availability and distribution of food sources, hazards, and secure habitat. Grizzly bears establishing home ranges in areas with few or no other established bears presumably have different choices available to them regarding use or avoidance of areas with motorized routes or other human uses than do bears using areas where other bears are already established. We anticipate that, in general, motorized routes have the potential to disturb or displace individual bears, or to increase risk of conflicts or mortality, and the availability of secure habitat has the potential to reduce those adverse effects. We cannot, however, assume that thresholds or values for motorized route density and secure habitat derived from and used to analyze effects to bears in areas that have established populations would apply in areas that do not.

The methods for identifying and quantifying secure habitat for GBAUs in zones 1-3 are somewhat different from those used to identify and quantify secure core reported for Subunits in the PCA. The methods and databases used are different between the PCA and elsewhere. The reference quantity for secure core in the PCA is based on research in the recovery zone, and on what may be required within a female home range for the purpose of recovering the population, rather than as a threshold of secure habitat for determining individual adverse effect in an area outside the recovery zone/PCA. Nevertheless, the effect of secure habitat as identified in zones 1-3 and of secure core in the PCA is assumed to be largely similar, providing areas where grizzly bears are be less likely to be disturbed or displaced or otherwise affected by human

activities, particularly by motorized use and the access it provides into habitats used by bears.

The effects to bears in the PCA and Zone 1 of the plan components include some adverse effects to individual bears in areas of relatively high motorized route densities or where temporary roads are constructed or used.

There are no plan components in Zones 2 and 3 applicable to motorized use. The presence of the existing motorized use system may have adverse impacts to individual bears, particularly in areas of higher route density or in GBAUs with relatively low proportions of secure habitat (e.g. Boulder River, South Big Belts, Sheep Creek, and Castles, all of which have less than 50 percent of their area currently estimated as secure habitat). The consequences of relatively low amounts of secure habitat in some GBAUs depend on habitat type, topography, presence of other grizzly bears, and the type and amount of various human uses in and adjacent to those areas.

Winter Motorized Over-Snow Travel

The mileage, acreage, location, and timing of winter motorized over-snow travel across the HLC NF is currently authorized by site-specific travel plan decisions, which are in place across the HLC NF and will not change as a result of the programmatic direction in the 2021 Forest Plan. The amount and timing of motorized over-snow travel described in the "Environmental Baseline" could change through subsequent NEPA that evaluates consistency with the 2021 Forest Plan. The plan component for the PCA displayed in the "Environmental Baseline" above will be included unchanged in the 2021 Forest Plan as PCA-NCDE-STD-09.

Other Indicators of Habitat Security

Area designations made by law will not change under the 2021 Forest Plan. Therefore, the amount of designated wilderness, wilderness study area, and inventoried roadless area will remain the same as displayed in Table 17 in the "Environmental Baseline". Plan components for those designations in the 2021 Forest Plan related to motorized use and security are summarized below, with full text and details available in Appendix A:

- FW-WILD-DC 03 establishes the desired condition that large remote areas within designated wilderness areas contribute habitats for species with large home ranges such as wide-ranging carnivores (e.g., grizzly bear), and that habitat in wilderness contributes to wildlife movement within and across the Forest. FW-WILD-SUIT 02 states that these areas are not suitable for motorized uses or mechanized means of transport.
- FW-WSA-SUIT-04 and 08 state that wilderness study areas are suitable for motorized and mechanized uses, subject to travel plans or other designations, but FW-WSA-SUIT-05 states that new road construction or reconstruction is not suitable in wilderness study areas.
- FW-IRA-DC 01 establishes the desired condition that roadless areas provide large, undisturbed, and unfragmented areas of land and provide for secure habitats for a variety of fish and wildlife species that are dependent upon those conditions. Motorized routes that are managed as part of the existing forest transportation system are suitable in inventoried roadless areas (FW-IRA-SUIT 02).

Forest Plans establish recommended wilderness areas, which are to be managed to retain characteristics that will allow them to become designated wilderness in the future, should Congress decide to do so.

Table 18 displays the amount of recommended wilderness in the 2021 Forest Plan.

Table 18. Acreage of habitat by grizzly bear analysis unit (GBAU), and percent of total NFS lands in GBAUs that are in recommended wilderness area in the 2021 Forest Plan

Grizzly Bear Management Zone	Geographic Area	Grizzly Bear Analysis Unit (GBAU)	Total NF Acres in GBAU	Acres (percent) of GBAU in Recommended Wilderness Area
Zone 1	Upper Blackfoot	Dalton Mountain	82,277	16,854 (20 percent)
Zone 2	Divide	North Divide	72,196	14,717 (20 percent)
		Spotted Dog	66,723	18,239 (27 percent)
	Big Belts	North Big Belts	171,431	7,032 (4 percent)
		South Big Belts	67,119	8,141 (12 percent)
NA	Snowies	Snowies	118,172	66,894 (57 percent)
Totals	NA	NA	577,918	131,877 (22 percent)

The 2021 Forest Plan identifies 131,877 acres of recommended wilderness within the area where grizzly bears currently may be present. Motorized use will not be allowed in recommended wilderness areas (see FW-RECWILD-SUIT 01 below). These areas largely overlap with existing inventoried roadless areas, and in the Snowies GA largely overlaps with the Congressionally designated wilderness study area.

Plan components related to secure habitat in recommended wilderness areas in the 2021 Forest Plan include:

- FW-RECWILD-SUIT 01 prohibits motorized and mechanized means of transport except for authorized permitted uses, specified valid existing uses (e.g. access to private inholdings), or in emergencies.
- FW-RECWILD-SUIT 04 and 05 state that recommended wilderness areas are not suitable for timber production or timber harvest or for road construction or reconstruction.

These plan components mean that in secure habitat patches that overlap with recommended wilderness areas, there will be no vegetation management projects using temporary motorized access.

The combined effect of designated wilderness, wilderness study areas, inventoried roadless areas, and recommended wilderness areas will be to maintain those acreages as largely secure habitat and increase potential long-term security in areas designated as recommended wilderness areas. These areas may limit or reduce the potential for bears to experience disturbance or displacement or be involved in bear-human conflicts as a result of certain types of human uses.

The 2021 Forest Plan includes other plan components that could influence motorized use and habitat security in the action area. These are summarized below for ease of discussion; the full text of plan components is found in Appendix A.

The 2021 Forest Plan includes plan components relating to providing and managing motorized use for a variety of uses:

- FW-ACCESS-DC 01, 03 and 04 establish desired conditions to provide motorized access to recreation opportunities, and motorized use as a form of recreation in appropriate settings.
- FW-LAND USE-DC 02, FW-LAND USE-GDL 01 provide desired conditions and guidance for lands special uses requiring roads or other infrastructure, including access to private inholdings.
- FW-RT-DC 01 and FW-RT-DC 03 establishing desired conditions for a safe and effective transportation system that provides access opportunities for people to use NFS lands.
- FW-RT-OBJ-02 calls for completing at least 100 miles of reconstruction or road improvement

projects, with priorities on those that may be impacting aquatic and riparian systems.

Desired conditions that feature motorized use to and on NFS lands can create the possibility of adverse effects to individual bears as a result of motorized use. Those effects are described in the "Environmental Baseline" section, and include the potential for disturbance, displacement, and direct and indirect mortality.

The 2021 Forest Plan also includes components relating to management of the transportation system and motorized use in order to limit impacts to a variety of resources, including grizzly bears:

- FW-WL-DC-04 is a desired condition for large, unroaded areas to be distributed and connected Forestwide, providing for species with large home ranges that also require seclusion or low levels of disturbance by humans.
- FW-RT-DC-04 states the desired condition that the transportation system has minimal impact on various resources, including wildlife, and FW-RT-GO-03 supports coordination to implement wildlife highway crossings.
- In the Elkhorns GA (Zone 2, including the Casey Peak, Crow Creek, and Boulder River BDNF GBAUs) EH-ACCESS-GDL-01 guides managers to use location and timing restrictions to minimize impacts to wildlife from access to inholdings, EH-RT-STD-01 limits new permanent road-building in the Elkhorns GA to only that needed for alleviating resource concerns, and EH- RT-STD-02 prohibits construction of a road bisecting the mountain range.
- In the Rocky Mountain Range GA (PCA), RM-CMA-DC-03, RM-CMA-STD-01, and RM-CMA-STD-02 identify nonmotorized use as appropriate in the Rocky Mountain Front Conservation Management Area, and limit motorized use to existing motorized routes, with prohibitions on building new permanent roads and limits on construction and use of temporary roads.

The effects of these plan components will be to promote the establishment or retention of large expanses of unroaded area, which will continue to provide potentially secure habitat. The focus of a number of plan components on minimizing impacts of the transportation system and its use on other resources, on limiting new road construction, and on decommissioning unneeded and unauthorized routes will all have the effect of limiting or reducing the potential adverse effects to grizzly bears of motorized use. Limits on new road construction and objectives to decommission roads will maintain or increase secure habitat.

Developed Sites

The plan includes desired conditions to have developed recreation sites and facilities as follows (refer to the 2021 Forest Plan components in Appendix A for complete wording):

- FW-REC-DC-03 Sustainable levels of developed recreation sites … exist … to accommodate concentrations of recreation use.
- FW-REC-DC-04 Recreation facilities and their use have minimal impacts on resources including at-risk species
- FW-REC-GDL 01 Management of developed recreation facilities should be responsive to environmental changes such as … wildlife habitats
- FW-REC-GDL-07 guides managers to avoid using seed mixes or other vegetation plantings that could attract bears to roads and developed sites.
- PCA-NCDE-STD-06 limits the number and capacity of developed recreation sites on NFS lands that are designated and managed for overnight use by the public during the non-denning season to one increase above the baseline per decade per BMU in the PCA.

The 2021 Forest Plan also includes Forestwide components to rehabilitate or relocate developed recreation sites or facilities that are having negative impacts on other resources (e.g., FW-REC-OBJ-01 and 02), but also includes guidance to refurbish developed sites to meet current and future demands (FW-REC-OBJ-04).

The 2021 Forest Plan affirms the desire to accommodate recreational activities on the HLC NF that depend on developed sites and facilities and provides direction for management of those sites. The presence of developed sites, particularly those that experience frequent, prolonged, or overnight use may increase the risk of human-bear interaction or conflict largely through the presence of human foods and other attractants. Although food storage orders are in place across the HLC NF, the presence of attractants could bring bears into proximity with humans and increase the risk of interaction and potential conflict.

Bears may avoid areas with concentrations of human activity, such as developed recreation sites, which could result in displacement from some habitats. Developed recreation sites are also often associated with other recreational activities (see "Recreational Activities" below), that could have impacts to bears or their habitat. The standards listed above that guide managers to minimize impacts to wildlife and that limit increases in overnight developed site number and capacity in the PCA will reduce the potential for conflicts Forestwide and will limit the overall potential for impacts, including displacement, in the PCA. Nevertheless, the presence of over 200 developed recreation sites on the HLC NF creates potential for adverse impacts to individual bears through potential conflict or displacement.

Recreational Activities

Table 19 displays the acreage of each ROS by GA under the 2021 Forest Plan. Only NFS lands are included here because any intervening private or other non-NFS lands may have different characteristics than the adjacent or surrounding NFS lands.

Table 19. Acreage of recreation opportunity setting by GA, 2021 Forest Plan[1]

GA	TOTAL GA Acres (NFS lands only)	Primitive Acres (percent of GA)	Semi Primitive Nonmotorized Acres (percent of GA)	Semi Primitive Motorized Acres (percent of GA)	Roaded Natural Acres (percent of GA)	Rural Acres (percent of GA)
Big Belts	315,199	46,031 (15 percent)	107,915 (34 percent)	39,021 (12 percent)	112,531 (36 percent)	9,700 (3 percent)
Castles	69,709	0	16,876 (24 percent)	16,343 (23 percent)	36,490 (52 percent)	0
Crazies	57,667	0	33,899 (59 percent)	15,126 (26 percent)	8,642 (15 percent)	0
Divide	202,642	32,877 (16 percent)	69,213 (34 percent)	22,446 (11 percent)	69,298 (34 percent)	8,808 (4 percent)
Elkhorns	161,251	45,894 (28 percent)	48,708 (30 percent)	6,450 (4 percent)	57,346 (36 percent)	2,853 (2 percent)
Highwoods	42,291	0	29,906 (71 percent)	8,219 (19 percent)	4,165 (10 percent)	0
Little Belts	804,657	101,801 (13 percent)	189,693 (24 percent)	222,541 (28 percent)	287,385 (36 percent)	3,239 (<1 percent)
Rocky Mountains	778,023	578,357 (74 percent)	144,091 (19 percent)	24,553 (3 percent)	27,796 (4 percent)	3,226 (<1 percent)
Snowies	118,172	95,628 (81 percent)	0	6,541 (6 percent)	15,328 (13 percent)	676 (1 percent)
Upper Blackfoot	333,617	134,429 (40 percent)	118,187 (36 percent)	7,099 (2 percent)	73,723 (22 percent)	481 (<1 percent)

[1] Source: "Supplement to the Biological Assessment for Threatened, Endangered, and Proposed Terrestrial Wildlife Species 2021 Forest Plan for the Helena-Lewis and Clark National Forest"

The amount of NFS land in each ROS category in each GA will be very similar to the current situation, with small changes as follows:

- The Rocky Mountain Range GA (PCA), Upper Blackfoot GA (PCA and Zone 1), Divide and Elkhorns GAs (Zone 2) and the Little Belts GA (Zone 3) will all have a slightly smaller proportion of each GA than currently in semi-primitive nonmotorized and a slightly greater proportion in primitive
- The Snowies GA will eliminate semi-primitive nonmotorized that currently exists and increase the proportion of the GA in primitive

These changes will not result in differences on the ground in terms of areas potentially available for motorized use, as both semi-primitive nonmotorized and primitive ROS categories do not allow for motorized use. The slight changes in ROS designation also reflect existing conditions in those areas of those GAs, and align with management requirements of other area designations, such as inventoried roadless area, Wilderness Study Area, recommended wilderness, and others.

The GAs comprising the PCA and Zone 1 are predominantly in non-motorized settings where ROS categories established in the 2021 Forest Plan indicate that human density will be relatively low and natural processes generally drive vegetation and other landscape characteristics. The remaining GAs vary widely in the proportion of acreage within each ROS setting.

The 2021 Forest Plan includes components related to management of various types of recreation. Components specific to developed recreation activities, sites, and facilities were discussed in the previous section. Plan components related to other types of recreation include:

- FW-REC-DC-07 states that the HLC NF will provide opportunities for dispersed camping.
- FW-RSUP-DC-01 through 03 establish the desired condition of providing recreation opportunities that address demands for certain activities, enhance visitor experience, and contribute to local economies
- FW-RSUP-GDL-01 guides managers to ensure that recreation special use operations should mitigate conflicts with other uses and resource, including use of education to reduce human-wildlife conflicts.

Plan components address access to and within NFS lands for recreation purposes and constrain some access to prevent or minimize negative impacts to wildlife or other resources. These plan components, because they address travel, are discussed above in the section on Habitat Security.

The 2021 Forest Plan designates two Recreation Areas: the South Hills Recreation Area in the Divide GA (Zone 2) and the Grandview Recreation Area in the Snowies GA (not in a grizzly bear management zone). Both areas include desired conditions to offer dispersed non-motorized recreation opportunities. In the South Hills Recreation Area mechanized means of transport (such as mountain bikes) will be suitable only on established roads and trails only (DI- SHRA-SUIT-02).

The 2021 Forest Plan includes components that recognize the desire to provide hunting opportunities and access on NFS lands, balanced against the need to maintain wildlife habitat and security (FW-FWL-DC 03 and 04).

Human presence in bear habitat can have a wide variety of potential impacts to bears, from little or no effect, to adverse effects resulting from encounters, food conditioning, direct mortality, and disturbance or displacement. Effects depend on location, timing, activity, individual bear response, and other factors. By establishing a desired condition to provide a variety of recreational opportunities that include motorized use, hunting, and other activities, the 2021 Forest Plan supports activities that could potentially have adverse effects to individual bears. Plan components that establish areas of relatively low human presence (i.e. primitive and semi-primitive ROS categories) will help to limit the potential for encounters or adverse effects of recreation on bears in those areas. Potentially adverse effects to individual bears may be more likely in areas where motorized use or greater human presence is anticipated (i.e. areas identified as roaded natural or rural ROS categories). Some activities, such as hunting, that are allowed on NFS lands and guided by the 2021 Forest Plan, could have beneficial impacts to bears by providing additional sources of

late-season food via gut piles or wounded animals, but could also have adverse impacts through potential food-conditioning, bear-human conflicts, and mortality caused by mistaken identity or defense of life. Plan components that guide managers to balance hunting access and opportunity against the need for wildlife security could mitigate some of the risk of mortality associated with hunting.

Livestock Grazing

The 2021 Forest Plan will not change number and location of livestock allotments, nor the number and type of animals allowed to graze on those allotments. The latter are determined during permit evaluation and development of annual operating plans. The location, size, or management of grazing allotments will not be affected by the 2021 Forest Plan, and any changes to those will be addressed through site or area-specific range analyses.

The 2021 Forest Plan provides management direction that will be used when annual operating plans are developed, when grazing permits are issued or re-issued, and when allotment management plans are revised or developed. Plan components for management of livestock grazing include:

- PCAZ1-NCDE-STD-01 and 02 to incorporate requirements into new or reauthorized grazing permits to reduce the risk of grizzly bear-human conflict and to require reporting of livestock carcasses within 24 hours of discovery.
- PCAZ1-NCDE-STD-03 to prohibit increases in the number of sheep allotments or permitted animal unit months above the baseline, PCA-NCDE-STD-10 states that sheep permits in non-use may not increase animal unit months when returning into use, and PCA-NCDE-GDL-09 would reduce the number of open or active sheep allotments when opportunities arise.
- PCAZ1-NCDE-STD-04 to limit potential conflict associated with use of small livestock for weed control or other uses.
- PCA-NCDE-STD-11 prohibits increases in the number of active cattle grazing allotments.

In addition to these plan components, which apply within the PCA and Zone 1, the 2021 Forest Plan includes the following plan components that may have an influence on grizzly bears or their habitat:

- FW-GRAZ-DC-02 states vegetation in grazing allotments supports healthy and resilient plant communities that "provide for wildlife habitat and forage needs in addition to providing forage for domestic livestock".
- FW-GRAZ-GO-01 calls for coordination with MFWP biologists during allotment planning and permitting processes to ensure that wildlife habitat and forage needs will be met.
- Several guidelines provide management direction to minimize impacts to riparian and other vegetation resources (refer to 2021 Forest plan components found in Appendix A).

Livestock grazing in bear habitat can have adverse effects on individual grizzly bears through potential for conflicts related to depredation, encounters during livestock management activities, displacement of bears from areas used by livestock, and potentially competition for or impacts of livestock on some types of forage. The potential for effects depends on the extent, timing, and location of livestock use relative to bear use of a given area.

Vegetation Management

The 2012 Planning Rule adopts a complementary ecosystem and species-specific approach, known as "coarse-filter/fine-filter", to provide the natural diversity of plant and animal communities and ensure long-term persistence of native species in the plan area. Coarse-filter plan components are designed to maintain or restore ecological conditions for ecosystem integrity and diversity within agency authority and the inherent capability of the land. Plan components that address composition, structure, and function of vegetation communities represent the coarse filter. Terrestrial vegetation desired conditions are designed to maintain and enhance ecological integrity, diversity, function, and resiliency while contributing to social and economic sustainability as required by the 2012 Planning Rule. Desired conditions are based on an

analysis of the natural range of variation for key ecosystem characteristics.

Plan components for management of terrestrial vegetation that could have some effects on grizzly bears are as follows:

- FW-VEGT-DC-01 establishes the desired condition to have vegetation maintain or move toward the NRV for ecosystem composition, structure, and function, and to maintain resilience in the face of disturbance.
- FW-VEGT-DC-03 and FW-VEGT-DC-04 establish the desired conditions for vegetation to provide the "habitat requirements to support … threatened or endangered species… based on the inherent capability of lands" and "provide connectivity and allow genetic interchange to occur"
- Specific objectives, standards, and guidelines for vegetation, including forested and non-forested vegetation types, are designed to maintain or move toward desired conditions within the NRV for cover types, species or community presence, and vegetation structure (see 2021`Forest Plan for details).
- FW-PLANT-DC-01, FW-PLANT-GDL-01, and FW-PLANT-OBJ-01 direct managers to recover and sustain plant species at risk, including whitebark pine

Desired conditions incorporated in the 2021 Forest Plan also guide vegetation management with respect to grizzly bears and their habitat:

- PCA-NCDE-DC-04 and 05 establishes the desired condition to support vegetation conditions that would sustain grizzly bear recovery and provide for grizzly bear habitat needs over the long term
- PCA-NCDE-GDL-01 would limit the duration of activities related to vegetation management in order to reduce potential disturbance or displacement.
- PCA-NCDE-GDL-04 through 08 would reduce risk of disturbance and would maintain or improve grizzly bear habitat when designing vegetation treatment in the PCA.

The 2021 Forest Plan establishes active vegetation management as an appropriate tool with which to achieve desired vegetation and habitat conditions in the action area. Activities associated with implementing 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; management of roads will be subject to plan components the effects of which are discussed in the Habitat Security section above. Disturbance and displacement or loss of cover 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 will be analyzed and consulted on when specific projects are planned. Vegetation management could, however, have beneficial effects by enhancing and maintaining some food sources. Beneficial effects will also depend on the specific location and treatment type and will be analyzed when specific projects are planned. The plan components above will sustain healthy, resilient plant communities on which grizzly bears depend for food and cover and will minimize the potential for adverse effects resulting from activities associated with project implementation, and from changes in vegetation. Some components discussed above could result in beneficial effects when used to plan vegetation projects that will maintain or enhance grizzly bear food species.

Oil and Gas Exploration and Development

The 2021 Forest Plan will not alter the acreage available for minerals and energy exploration or development as described in the "Environmental Baseline", but rather provides direction for managing any minerals and energy exploration and development that might occur. Components in the 2021 Forest Plan relating to the management of energy and minerals are as follows (refer to the 2021 Forest Plan for details:

- FW-EMIN-DC-05 expresses the desired condition of "supplying mineral and energy resources

while assuring that the sustainability and resiliency of other resources are not compromised or degraded".

- FW-RECWILD-SUIT-01 establishes that new leases for leasable minerals within Recommended Wilderness Areas designated by the 2021 Forest Plan will include a no surface occupancy stipulation.
- FW-EMIN-GDL 01 and 02 guide managers to minimize adverse effects to aquatic and riparian resources, including wildlife habitat within those systems.

Plan components for energy and minerals development are incorporated as follows (see Appendix A for details):

- PCA-NCDE-STD-12: requires no surface occupancy for any new leases for new leasable minerals within the PCA.
- PCAZ1-NCDE-STD-06, 07, 08, 09, 10 and 11: In the PCA and Zone 1, retain measures in existing and add measures in new or reauthorized permits, leases, and operating plans to reduce or mitigate potential impacts to bears.
- PCAZ1-NCDE-GDL-02, 03, and 05: In the PCA and Zone 1, use specified methods to reduce disturbance or displacement and mitigate impacts to habitat
- PCAZ1-NCDE-GDL-04: In the PCA and Zone 1, maintain cover along roads and other infrastructure
- PCAZ1-NCDE-STD-12: In the PCA and Zone 1, require bear safety training for all contractors, lessees, and their employees.
- PCAZ1-NCDE-GDL-06: In the PCA and Zone 1, recommend that permittees, lessees, operators, and their employees carry bear spray.

The 2021 Forest Plan recognizes energy and minerals exploration and development as appropriate uses of NFS lands within the action area. Activities associated with these uses have the potential to impact individual grizzly bears through construction and use of motorized access routes (discussed in the Habitat Security section above), potential displacement from habitat and/or permanent habitat loss, potential for human-bear encounters and conflicts, and potential for food conditioning from exposure to food or attractants associated with minerals or energy operations.

The plan components listed above will help to minimize potential impacts to bears. Although the Rocky Mountain Range GA, which makes up the majority of the PCA within the action area, is legally unavailable for new minerals leasing, the requirement for no surface occupancy provides an additional measure of certainty that impacts to bears from this use will not occur in the PCA. The same is true for the Elkhorns GA, within Zone 2. Any potential new leases for leasable minerals will occur in portions of zones 1, 2 and 3, which likely have a lower density and number of bears and therefore less chance that any individual bear might be impacted by activity associated with this use. Prohibitions on surface occupancy for new leases in recommended wilderness will help those areas retain habitat security.

Other plan components direct managers to minimize or mitigate the impacts of activity associated with existing leases or other types of energy and minerals development, by maintaining important habitat components (including cover), minimizing the risk of conflicts associated with attractants, and minimizing the risk of direct mortality of bears if conflicts occur. The plan does not allow changes to existing leases, permits, or plans of operation without agreement by the leaseholder, so the potential for impacts from those remains as it is currently. Impacts of specific energy and minerals operations will depend on the location, type of operation and type of activities associated with it, timing of installment and operation, and other site and project specific factors, and will be analyzed and consulted on when those operations and plans are proposed.

Connectivity

As discussed in the "Environmental Baseline" section, a large portion of the NCDE recovery zone encompassing the action area includes large areas of designated wilderness areas and inventoried roadless areas, and as such is relatively unlikely to experience fragmentation due to human activities. These areas will not change under the 2021 Forest Plan. The 2021 Forest Plan also will not change the amount of potentially secure habitat described in the "Habitat Security and Motorized Access" and the "Connectivity" sections in the "Environmental Baseline" above. Plan components that will maintain habitat security as described above will contribute to maintaining the potential for connectivity between and among areas on the HLC NF.

The 2021 Forest Plan will include a 48 percent increase in the total acreage of recommended wilderness areas in GAs that are currently identified as where grizzly bears may be present. Although recommended wilderness areas largely overlap with inventoried roadless areas, they include additional restrictions on certain activities (described in the "Habitat Security and Motorized Access" in the "Environmental Consequences section above) and will be managed in a way that will minimize risk of habitat fragmentation and therefore maintain potential connectivity within each recommended wilderness area.

Areas such as the Highway 200 corridor through the Upper Blackfoot GA (PCA and Zone 1), and the Highway 12 corridor through the Divide GA (Zone 2), in addition to private lands in those areas may provide some impediments to grizzly bear movements through those landscapes and could limit connectivity between the Northern Continental Divide Ecosystem and the Greater Yellowstone Ecosystem. Although the majority of fragmentation and impacts to connectivity in those areas occur on non-NFS lands that are not affected by FS management actions, the 2021 Forest Plan includes components that will limit fragmentation or enhance connectivity in those areas:

- DI-WL-GDL-01 provides guidance to manage lands in the Divide GA (within Zone 2) to maintain or improve security and connectivity and do so through ensuring that vegetation management provides hiding cover, motorized use is not increased, and the location of new trails will not impact wildlife habitats.
- DI-WL-GO-01 establishes a goal to work cooperatively to acquire ownership and easement to intermingled lands within the Divide GA (within Zone 2) for the purposes of connectivity and security.
- UB-WL-GDL-01 provides guidance to manage lands in the west-central and east-central portions of the Upper Blackfoot GA (within the PCA and Zone 1) to maintain or enhance wildlife habitat, movement areas, and connectivity; and do so through ensuring that vegetation management provides cover, motorized use is not increased, and the location of new trails only where minimal impacts occur to wildlife.

The 2021 Forest Plan also includes plan components for other GAs that emphasize maintaining connectivity for wide-ranging species such as grizzly bears:

- BB-WL-DC-03, CR-WL-DC-01, EH-WL-DC-02, and RM-WL-DC-01, states that the Big Belts, Crazies, Elkhorns, and Rocky Mountain Range GAs provide habitat connectivity for wide- ranging species … between public lands in northern Montana and those in south and southwestern Montana….

The 2021 Forest Plan includes plan components that will maintain, enhance, or restore connectivity while managing other resources such as watersheds, vegetation, and wildlife:

- FW-WTR-DC-02 states that spatial connectivity exists within or between watersheds.
- FW-VEGT-DC-04 states that vegetation patterns provide connectivity.
- FW-VEGF-DC-08 states that forest patches of different …conditions form a landscape pattern that contributes to …habitat connectivity.

- FW-WL-DC-03 states that vegetation composition, structure, and distribution allow wildlife to move within and between NFS parcels in response to life history needs and habitat changes.
- FW-WL-DC-04 states that large, unroaded areas are distributed and connected Forestwide, providing for species with large home ranges.

In sum, the 2021 Forest Plan includes components that will maintain or enhance the potential for connectivity at varying scales. Connectivity is specifically emphasized in several components at the patch, watershed, GA, and Forest scales. Although effective genetic or demographic connectivity between and among areas may be more complex than simply absence of roads or motorized use, the measures of habitat security described above provide the best means we have available to describe the potential for those areas to allow for movement of bears across the action area and between the NCDE and the GYE. The effects of these area designations and plan components on the ability of individual grizzly bears to move between and among habitats is very difficult to assess, particularly at the scale of this framework programmatic action. We estimate that, added to existing designations for wilderness, wilderness study areas, and inventoried roadless areas that will not change under the 2021 Forest Plan, the increase in total acreage of recommended wilderness will be an added factor in maintaining potential connectivity where those areas occur. We also estimate that plan components identifying areas where risk of fragmentation is relatively higher (e.g. in the Divide and Upper Blackfoot GAs) and that direct managers to maintain habitat characteristics and minimize activities that could further fragment those areas will result in maintaining or increasing the ability of individual grizzly bears to move through those landscapes. Other plan components that emphasize connectivity will add to that effect.

Cumulative Effects

Cumulative effects include state, tribal, local, or private actions that are reasonably certain to occur in the action area. Federal lands other than those administered by the Forest are not included because those areas are subject to their own section 7 consultation requirements.

Roughly 14 percent of land within the external boundary of the HLC NF is non-NFS land, largely in the form of private inholdings. Grizzly bears are a wide-ranging, highly mobile species known to travel long distances in search of food and other life history requirements. Individual bears are known to use landscapes with multiple ownerships, and grizzly bear distribution is increasingly including private and other non-federal lands outside of the NCDE recovery zone (Northern Continental Divide Ecosystem Subcommittee 2019).

It is reasonably certain that development will continue to occur on private lands adjacent to and to some extent within the HLC NF boundary. Development of private lands often increases the risk of grizzly bear-human conflict because bears may be attracted to food, garbage, pet feed, apiaries, small livestock, or other attractants on private lands. Of 439 grizzly bear mortalities documented in the NCDE between 1998 and 2017, 88 percent were human caused, largely as a result of attractants on private lands (Northern Continental Divide Ecosystem Subcommittee 2019). This source of conflict and mortality will likely continue to affect bears that use both NFS and private lands and may add to mortality sources occurring on NFS lands.

Development of private lands also has the potential to increase habitat fragmentation, by creating population “sinks” where conflict and mortality occur at relatively higher rates than in less developed areas, by displacing bears from areas of human activity, and by increasing the number of humans present in bear habitat which then increases the probability of encounters that could become conflicts. The increase in motorized access and travel often associated with increasing human development may add to those impacts.

Both vegetation management and management of wildland fire are likely to occur on private lands in the action area throughout the life of the plan. Although vegetation management and wildland fire can benefit bears by maintaining or enhancing food species, the potential for disturbance, displacement, and negative habitat alteration (i.e. loss of cover) caused by vegetation change and by management activities associated

with fire or vegetation management on private lands could add to the effects of similar actions on NFS lands if they occur in close spatial and temporal proximity.

Climate change could have the potential to alter the amount and distribution of habitat in the action area in ways that are difficult to predict. Climate models generally predict a warmer and possibly drier climate (U.S. Department of Agriculture 2015), which could affect low elevation, mesic habitats on adjoining private lands used by bears particularly in spring. Climate change may affect fire intensity and frequency as well, which could have impacts to bear habitat throughout the action area and adjoining lands.

Nature-based recreation (i.e. recreation occurring in or associated with natural settings) has been increasing and is likely to continue to do so (USDA Forest Service 2015b). Recreation occurring on private or other lands adjacent to NFS lands may spill over onto NFS lands as the overall number of recreationists increases and could result in pressure to increase recreation developments or facilities on NFS lands in order to accommodate the additional use. Increasing numbers of humans in bear habitat increases the potential for disturbance, displacement, and conflict that could result in grizzly bear mortality.

Hunting continues to be a key recreational activity in the action area, on both public and adjoining private lands. Hunting may provide food sources (i.e. gut piles or unattended carcasses), but those come at a cost of increased risk of encounters and conflicts with humans. Hunting-related grizzly bear mortalities accounted for 16 percent of the human-caused grizzly bear mortalities in the NCDE between 1998 and 2017, due to self-defense kills and to hunters mis-identifying grizzly bears as black bears (Northern Continental Divide Ecosystem Subcommittee 2019, 2021). Although the State of Montana requires black bear hunters to pass a bear identification test before receiving a black bear hunting license, includes grizzly bear encounter management as a core subject in basic hunter education courses, and encourages hunters to carry bear spray and use it rather than firearms in encounters, hunting-related grizzly bear mortalities are likely to continue to occur on both public and private lands within and adjacent to the action area.

Determination of Effects

Continued implementation of the 2021 Forest Plan ***may affect and is likely to adversely affect*** the federally listed threatened grizzly bear in the action area, which is the entire HLC NF.

Rationale for Determination

This biological assessment analyzes the potential impacts to grizzly bears of implementing the framework programmatic Helena-Lewis and Clark National Forest 2021 Forest Plan.

Impacts to grizzly bears and their habitat have been considered in the context of factors that may influence grizzly bear survival and habitat use.

The 2021 Forest Plan does not approve nor authorize specific actions or activities, but instead guides development of future actions that will be authorized, funded, and carried out at a later time. The 2021 Forest Plan identifies a number of uses that will be allowed or that will continue to occur in the action area. Those uses include activities that have the potential to affect bears, such as motorized use (for public recreation and for land and resource management), developed and dispersed recreation (including hunting), livestock grazing, vegetation management, and minerals and energy development. The 2021 Forest Plan does not determine the amount, location, type, or scope of those future actions, but rather it establishes the desired conditions to be achieved and establishes constraints on future actions when they are planned and implemented. Therefore, the 2021 Forest Plan will not result in direct effects to grizzly bears or their habitat. The location, type, and scope of future actions will be determined at the time of project planning, allowing determination of the actual presence and amount of potential effect at that time. Analysis and consultation will occur as specific projects and actions are planned.

The 2021 Forest Plan does not regulate public uses and doesn’t change current motor vehicle use authorizations. Future motor vehicle use designations are unlikely to substantially change in the areas found suitable for motor vehicle use, thus continued use of the existing system of motorized routes could have

adverse effects to individual bears as described in this assessment. However, plan components guide future travel management decision making to limit changes in secure habitat and route densities in the PCA and Zone 1 to minimize those effects. Activities associated with vegetation management objectives stated in the 2021 Forest Plan could result in a temporary reduction in effectiveness of up to 7 percent of potentially secure habitat in individual Grizzly Bear Analysis Units (GBAUs) over the life of the plan. Temporary reductions would occur in up to 6 total GBAUS, but likely no more than 2 concurrently. Recreation, livestock grazing, vegetation and fire management, and minerals and energy development all have the potential to disturb or displace individual grizzly bears or to result in grizzly-bear human conflict.

Plan components supporting maintenance of terrestrial and aquatic ecosystems on the HLC NF benefit grizzly bears by providing for habitat diversity and ecological conditions that will continue to sustain the NCDE grizzly bear population. At the project level, activities will be subject to plan components designed to avoid or minimize adverse effects to individual grizzly bears and the habitats they use on NFS lands managed by the HLC NF. Because we cannot predict the exact locations of future projects or activities, we cannot discount the potential for localized, short-term adverse effects to individual bears, particularly within the NCDE in the PCA and Zone 1 where grizzly bears are known to occur. Effects in areas where bears may be present but that are outside of the PCA/recovery zone are expected to be insignificant and discountable.

Literature Cited

National Forest Management Act of 1976, 1976 U.S.C. § 1600. 16.

. 2007. Northern Rockies lynx management direction record of decision, national forests in Montana, and parts of Idaho, Wyoming, and Utah. Edited by USDA Forest Service, Northern Region. Missoula, MT. 71 p.

Apps, C.D., McLellan, B.N., Woods, J.G., and Proctor, M.F. 2004. Estimating grizzly bear distribution and abundance relative to habitat and human influence. Journal of Wildlife Management 68(1): 138-152. 10.2193/0022-541x(2004)068[0138:egbdaa]2.0.co;2

Belant, J.L., Kielland, K., Follmann, E.H., and Adams, L.G. 2006. Interspecific resource partitioning in sympatric ursids. Ecological Applications 16(6): 2333-2343. https://doi.org/10.1890/1051-0761(2006)016[2333:Irpisu]2.0.Co;2

Boulanger, J. and Stenhouse, G.B. 2014. The impact of roads on the demography of grizzly bears in Alberta. PLoS One 9(12): 22. https://doi.org/10.1371/journal.pone.0115535

Costello, C.M., Mace, R.D., and Roberts, L. 2016. Grizzly bear demographics in the northern Continental Divide ecosystem, Montana: Research results (2004–2014) and suggested techniques for management of mortality. Edited by Montana Department of Fish, Wildlife and Parks. Helena, MT. 122 p.

Costello, C.M. and Roberts, L.L. 2019. Northern Continental Divide Ecosystem, Grizzly Bear Population Monitoring Team, annual report, 2018. Kalispell, MT: Montana Fish, Wildlife and Parks. http://fwp.mt.gov/fishAndWildlife/management/grizzlyBear/monitoring.html

Costello, C.M. and Roberts, L.L. 2020. Northern Continental Divide Ecosystem, Grizzly Bear Population Monitoring Team, annual report, 2019. Kalispell, MT: Montana Fish, Wildlife and Parks. 22 p.

Costello, C.M. and Roberts, L.L. 2022. Northern Continental Divide Ecosystem, Grizzly Bear population monitoring team, Annual Report, 2021. Montana Fish, W.P., ed. Kalispell, MT: Montana Fish, Wildlife & Parks. 32 p.

Costello, C.M., Roberts, L.L., and Vinks, M.A. 2023. Northern Continental Divide Ecosystem, Grizzly Bear population monitoring team, Annual Report, 2022. Montana Fish, W.P., ed. Kalispell, MT: Montana Fish, Wildlife & Parks. 40 p.

Dood, A.R., Atkinson, S.J., and Boccadori, V.J. 2006. Grizzly bear management plan for western Montana: Final programmatic environmental impact statement 2006-2016. (Impact Statement). Edited by Montana Department of Fish, Wildlife and Parks. Date: December. Helena, MT. 163 p. http://fwp.mt.gov/fishAndWildlife/management/grizzlyBear/managementPlan.html

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

Hegg, S.J., Murphy, K., and Bjornlie, D. 2010. Grizzly bears and snowmobile use: A summary of monitoring a grizzly den on Togwotee Pass. Yellowstone Science 18(2): 23-28. http://www.nps.gov/yell/learn/yellowstone-science-issues.htm

Interagency Grizzly Bear Committee. 1994. Interagency grizzly bear committee taskforce report: Grizzly bear/motorized access management. Edited by Interagency Grizzly Bear Committee.

Interagency Grizzly Bear Committee (IGBC). 1998. Interagency grizzly bear committee taskforce report: Grizzly bear/motorized access management. Date: 29 July 1998. Interagency Grizzly

Bear Committee Taskforce. Bozeman, MT. 7 p.

Kendall, K.C., Jeffrey, B.S., Boulanger, J., Macleod, A.C., Paetkau, D., and White, G.C. 2009. Demography and genetic structure of a recovering grizzly bear population. Journal of Wildlife Management 73(1): 3-17. https://doi.org/10.2193/2008-330

Kerns, B.K., Alexander, S.J., and Bailey, J.D. 2004. Huckleberry abundance, stand conditions, and use in western Oregon: Evaluating the role of forest management. Economic Botany 58: 668-678. 10.1663/0013-0001(2004)058[0668:HASCAU]2.0.CO;2

Linnell, J.D.C., Swenson, J.E., Anderson, R., and Barnes, B. 2000. How vulnerable are denning bears to disturbance? Wildlife Society Bulletin 28(2): 400-413. http://www.jstor.org/stable/3783698

Mace, R.D. 2004. Integrating science and road access management: Lessons from the Northern Continental Divide Ecosystem. Ursus 15(1): 129-136. https://doi.org/10.2192/1537-6176(2004)015<0129:ISARAM>2.0.CO;2

Mace, R.D. and Manley, T.L. 1993. South Fork Flathead River grizzly bear project: Progress report for 1992. Edited by Montana Department of Fish, Wildlife and Parks. Helena. 1-34 pp.

Mace, R.D. and Waller, J.S. 1997a. Chapter 4: Denning ecology of grizzly bears in the Swan Mountains, Montana. Final Report: Grizzly Bear Ecology in the Swan Mountains, Montana. Edited by Montana Department of Fish, Wildlife, and Parks. Helene, MT. 36-41 pp.

Mace, R.D. and Waller, J.S. Montana Fish, W.P. 1997b. Final report: Grizzly bear ecology in the Swan Mountains Montana. Unpublished data. Edited by Montana Department of Fish, Wildlife and Parks. Helena MT. 1-191 pp.

Mace, R.D. and Waller, J.S. 1997c. Spatial and temporal interaction of male and female grizzly bears in northwestern Montana. Journal of Wildlife Management 61(1): 39-52.

Mace, R.D., Waller, J.S., Manley, T.L., Ake, K., and Wittinger, W.T. 1999. Landscape evaluation of grizzly bear habitat in western Montana. Conservation Biology 13(2): 367-377. https://doi.org/10.1046/j.1523-1739.1999.013002367.x

Mace, R.D., Waller, J.S., Manley, T.L., Lyon, L.J., and Zuuring, H. 1996. Relationships among grizzly bears, roads and habitat in the Swan Mountains, Montana. Journal of Applied Ecology 33(6): 1395-1404. https://doi.org/10.2307/2404779

McLellan, B.N. 2015. Some mechanisms underlying variation in vital rates of grizzly bears on a multiple use landscape. Journal of Wildlife Management 79(5): 749-765. https://doi.org/10.1002/jwmg.896

McLellan, B.N. and Shackelford, D.M. 1988. A comparison of grizzly bear harvest data from Montana and southeastern British Columbia. Wildlife Society Bulletin 16(4): 371-375.

McLellan, B.N. and Shackleton, D.M. 1988. Grizzly bears and resource-extraction industries: Effects of roads on behavior, habitat use and demography. Journal of Applied Ecology 25(2): 451-460. https://doi.org/10.2307/2403836

Nielsen, S.E., Herrero, S., Boyce, M.S., Mace, R.D., Benn, B., Gibeau, M.L., and Jevons, S. 2004. Modelling the spatial distribution of human-caused grizzly bear mortalities in the Central Rockies ecosystem of Canada. Biological Conservation 120(1): 101-113.

Northern Continental Divide Ecosystem (NCDE) Access Task Group. 1995. Interm motorized access management direction Northern Continental Divide recovery zone. Series Editor: Puchlerz, T. and Servheen, C., eds. Date: 08 March. 7 p.

Northern Continental Divide Ecosystem Subcommittee. 2019. Conservation strategy for the grizzly bear in the Northern Continental Divide Ecosystem.

Northern Continental Divide Ecosystem Subcommittee. 2021. Conservation strategy for the grizzly bear in the Northern Continental Divide Ecosystem. 169+ appendices p.

Peck, C.P., Van Manen, F.T., Costello, C.M., Haroldson, M.A., Landenburger, L.A., Roberts, L.L., Bjornlie, D.D., and Mace, R.D. 2017. Potential paths for male-mediated gene flow to and from an isolated grizzly bear population. Ecosphere 8(10): 1-19.

Proctor, M.F., Kasworm, W.F., Annis, K.M., MacHutchon, A.G., Teisberg, J.E., Radandt, T.G., and Servheen, C. 2018. Conservation of threatened Canada-USA trans-border grizzly bears linked to comprehensive conflict reduction. Human-Wildlife Interactions 12(3): 348-372.

Proctor, M.F., Lamb, C.T., and Machutchon, A.G. 2017. The grizzly dance of berries and bullets: The relationship between bottom up food resources, huckleberries, and top down mortality risk on grizzly bear population processes in southeast British Columbia. Edited by Trans-border Grizzly Bear Project. Kaslo, BC, Canada. 104 p. http://transbordergrizzlybearproject.ca/research/publications.html

Proctor, M.F., McLellan, B.N., Stenhouse, G.B., Mowat, G., Lamb, C.T., and Boyce, M. 2018. Resource Roads and Grizzly Bears in British Columbia, and Alberta. Series Editor: Project, T.-b.G.B. and Management, R.R., eds. Canadian Grizzly Bear Management Series,. Kaslo, BC Canada. 38 p. http://transbordergrizzlybearproject.ca/research/publications.html.

Robbins, C.T., Lopez-Alfaro, C., Rode, K.D., Tøien, Ø., and Nelson, O.L. 2012. Hibernation and seasonal fasting in bears: The energetic costs and consequences for polar bears. Journal of Mammalogy 93(6): 1493-1503. https://doi.org/10.1644/11-mamm-a-406.1

Schwartz, C.C., Haroldson, M.A., and White, G.C. 2010. Hazards affecting grizzly bear survival in the Greater Yellowstone ecosystem. Journal of Wildlife Management 74(4): 654-667. https://doi.org/10.2193/2009-206

Schwartz, C.C., Haroldson, M.A., White, G.C., Harris, R.B., Cherry, S., Keating, K.A., Moody, D., and Servheen, C. 2006. Temporal, spatial, and environmental influences on the demographics of grizzly bears in the Greater Yellowstone Ecosystem. Wildlife Monographs 161(1): 1-8. https://doi.org/10.2193/0084-0173(2006)161[1:TSAEIO]2.0.CO;2

Servheen, C., Waller, J.S., and Sandstrom, P. 2001. Identification and management of linkage zones for grizzly bears between the large blocks of public land in the northern Rocky Mountains. *In* Irwin, C.L., Garrett, P. and McDermott, K.P., eds., Proceedings of the 2001 International Conference on Ecology and Transportation. 2001 Raleigh: North Carolina State University, Center for Transportation and the Environment. 161-179 pp. http://igbconline.org/wp-content/uploads/2016/03/Serhveen-et-al.-2001_ID_GB_Linkage_Zones-1.pdf

Servheen, C., Waller, J.S., and Sandstrom, P. 2003. Identification and management of linkage zones for wildlife between the large blocks of public land in the northern Rocky Mountains. Edited by U.S. Department of the Interior, Fish and Wildlife Service and University of Montana, College of Forestry and Conservation. Missoula, MT. 3,4,9-11,15-24 pp.

Teisberg, J.E., Madel, M.J., Mace, R.D., Servheen, C.W., and Robbins, C.T. 2015. Diet composition and body condition of Northern Continental Divide grizzly bears, Final Report. Date: March. 23 p.

U.S. Department of Agriculture, Forest Service. 2007. Little Belt, Castle, and North Half Crazy Mountains Travel Management Plan, Record of Decision. Great Falls, MT: U.S. Department of Agriculture,, Forest Service,.

U.S. Department of Agriculture, Forest Service. 2015. Helena Lewis and Clark National Forests Forest Plan Assessment, Key Findings. Helena, MT: U.S. Department of Agriculture, Forest Service, Helena Lewis & Clark National Forest. 922 p.

U.S. Department of Agriculture, Forest Service. 2021. Land Management Plan and Appendices, Helena-Lewis and Clark National Forest. Helena, MT: U.S. Department of Agriculture, Forest Service, Helena-Lewis and Clark National Forest. 658 p.

U.S. Department of the Interior, Bureau of Land Management, and USDA Forest Service. 1995. Decision Notice and Findings of No Significant Impact Elkhorn Mountains Travel Management Plan. Butte, MT: U.S. Department of the Interior, Bureau of Land Management,U.S. Department of Agriculture, Forest Service.

U.S. Department of the Interior, Fish and Wildlife Service. 2021. Species Status Assessment for the grizzly bear (Ursus arctos horribilis) in the Lower-48 States: A Biological Report. Missoula, Montana: U.S. Department of the Interior, Fish and Wildlife Service, Grizzly Bear Recovery Office. 368 p.

USDA Forest Service. 1999. Decision notice and finding of no significant impact: South Belts winter travel plan, Broadwater and Meagher Counties, Montana. January. Agriculture, U.S.D.o., ed. Helena, MT: 29 p.

36 CFR Part 294 - Special areas, roadless area conservation; Final Rule, 2001 Code of Federal Regulations Washington, DC U.S. Department of Agriculture, Forest Service, Washington Office. https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5050459.pdf

USDA Forest Service. 2002. Big Snowy Mountains Access & Travel Management Decision Notice and Finding Of No Significant Impact. USDA, Forest Service, Lewis and Clark National Forest, ed. Great Falls, MT: USDA,,Forest Service, Lewis and Clark National Forest, Judith and Mussellshell Ranger Districts.

USDA Forest Service. 2005. Record of Decision North Belts Travel Plan. U.S. Department of Agriculture, F.S., ed. Lewis and Clark, Broadwater, and Meagher Counties, MT: U.S. Department of Agriculture, Forest Service.

USDA Forest Service. 2006. Gallatin National Forest travel management plan, final environmental impact statement, and record of decision. Edited by USDA Forest Service, Gallatin National Forest. Date: December 2006. Bozeman, MT.
https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5133419.pdf
https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5133660.pdf

USDA Forest Service. 2007a. Northern Rockies lynx management direction record of decision, national forests in Montana, and parts of Idaho, Wyoming, and Utah. Edited by USDA Forest Service, Northern Region. Missoula, MT. 71 p.

USDA Forest Service. 2007b. Record of Decision for Birch Creek South. U.S. Department of Agriculture, Forest Service, ed. Great Falls, MT: U.S. Department of Agriculture.

USDA Forest Service. 2009. Record of Decision for Badger-Two Medicine. U.S. Department of Agriculture, Forest Service, ed. Great Falls, MT: U.S. Department of Agriculture,, Forest Service.

USDA Forest Service. 2013. Decision Notice and Finding of No Significant Impact Blackfoot-North Divide Winter Travel Plan. Agriculture, U.S.D.o., ed. Lewis and Clark and Powell Counties, Montana: U.S. Department of Agriculture,, Forest Service, Helena National Forest.

USDA Forest Service. 2015a. FSH 1909.12 – Land management planning handbook: Chapter - Zero code. Washington, DC: U.S. Department of Agriculture, Forest Service. https://www.fs.fed.us/im/directives/

USDA Forest Service. 2015b. Helena Lewis and Clark National Forests Forest Plan Assessment, Key Findings. Helena, MT: U.S. Department of Agriculture, Forest Service, Helena Lewis & Clark

National Forest. 922 p.

USDA Forest Service. 2016. Record of Decision Divide Travel Plan. Agriculture, U.S.D.o., ed. Lewis & Clark and Powell Counties, Montana: USDA,, Forest Service, Helena Ranger District, Helena-Lewis and Clark National Forest.

USDA Forest Service. 2017a. Biological assessment for threatened, endangered, and proposed species forest plan amendments—Incorporating habitat management direction for the NCDE grizzly bear population into the Helena, Lewis and Clark, Kootenai, and Lolo National Forest Plans. Agriculture, U.S.D.o., ed. U.S. Department of Agriculture. 173 p.

USDA Forest Service. 2017b. Volume 3—Final environmental impact statement for the forest plan amendments: Incorporating habitat management direction for the [Draft]Northern Continental Divide Ecosystem grizzly bear population Helena-Lewis and Clark, Kootenai, and Lolo National Forests. Helena, MT: U.S. Department of Agriculture, Forest Service, Northern Region. 367 p.

USDA Forest Service. 2018. Record of decision for the forest plan amendments to incorporate habitat management direction for the Northern Continental Divide Ecosystem grizzly bear population Helena-Lewis and Clark National Forest, Kootenai National Forest, Lolo National Forest. Helena, MT: U.S. Department of Agriculture, Forest Service, Northern Region. 148 p.

USDA Forest Service. 2019. 2018 Biennial Report of Developed Recreation Baseline within the Primary Conservation Area (PCA) Northern Continental Divide Ecosystem (NCDE). U. S. Department of Agriculture, F.S., ed. U.S. Department of Agriculture.

USDA Forest Service. 2020. Biological Assessment for Threatened, Endangered, and Proposed Terrestrial Wildlife Species for the 2021 Forest Plan for the Helena-Lewis and Clark National Forest. Edited by U. S. Department of Agriculture, F.S., Helena-Lewis and Clark National Forest. Helena, MT. 268 p.

USDA Forest Service. 2021a. Land Management Plan and Appendices, Helena-Lewis and Clark National Forest. Helena, MT: U.S. Department of Agriculture, Forest Service, Helena-Lewis and Clark National Forest. 658 p.

USDA Forest Service. 2021b. Supplement to the Biological Assessment for Threatened, Endangered, and Proposed Terrestrial Wildlife Species for the 2021 Forest Plan for the Helena-Lewis and Clark National Forest. Edited by U. S. Department of Agriculture, F.S., Helena-Lewis and Clark National Forest. Date: 2 December 2021. Helena, MT. 15 p.

USDA Forest Service, F.N.F. 1995. Amendment 19 to the Flathead National Forest Plan environmental impact statement: Allowable sale quantity and objectives and standards for grizzly bear habitat management. Amended Environmental Assessment. March. Kalispell, MT: 221 p.

USDI Fish and Wildlife Service. 1975a. Endangered and threatened wildlife; Ammendment listing the grizzly bear of the 48 conterminous states as a threatened species. Federal Register 40(145): 31734-31736.

USDI Fish and Wildlife Service. 1975b. Grizzly bear proposed "Threatened" status in the conterminous 48 states. Federal Register 40(1)

USDI Fish and Wildlife Service. 1993. Grizzly bear recovery plan. Edited by U.S. Department of Interior, Fish and Wildlife Service. Missoula, MT. 181 p. https://www.fws.gov/mountain-prairie/es/species/mammals/grizzly/Grizzly_bear_recovery_plan.pdf

USDI Fish and Wildlife Service SERVICES, E. 2010. Biological opinion on the effects to grizzly bears from the blackfoot-north divide winter travel project. Series Editor: USDI Fish and

Wildlife Service, E.S., ed. Date: July 22. Helena, Montana: USDI, Fish and Wildlife Service. 54 p.

USDI Fish and Wildlife Service. 2011. Grizzly bear (*Ursus arctos horribilis*) 5-year review: Summary and evaluation. Edited by U.S. Fish and Wildlife Service, Grizzly Bear Recovery Office. Date: August 2011. Missoula, MT. 129 plus appendices A and B (205 total) p. https://ecos.fws.gov/docs/five_year_review/doc3847.pdf

USDI Fish and Wildlife Service. 2013a. Endangered and threatened wildlife and plants; Draft conservation strategy for the northern continental divide ecosystem grizzly bear. Federal Register 78(86): 26064.

USDI Fish and Wildlife Service. 2013b. Grizzly bear recovery plan, draft revised supplement: Revised demographic recovery criteria for the Yellowstone Ecosystem (approved February 19, 2013). Series Editor: Servheen, C., ed. Edited by U.S. Fish and Wildlife Service. Date: February 19. Missoula, MT. 181 p. https://www.fws.gov/mountain-prairie/es/species/mammals/grizzly/archive/gye/Grizzly_Bear_Recovery_Plan_March2013.pdf

USDI Fish and Wildlife Service. 2014. Biological opinion on the effects of the Helena National Forest plan on grizzly bears. Edited by U.S. Fish and Wildlife Service, Montana Field Office. Date: February 19. Helena, MT. 80 p.

USDI Fish and Wildlife Service Services, E. 2016a. Biological opinion on the effects of the Blackfoot Non-Winter Travel Plan on Grizzly Bears. Edited by U.S. Fish & Wildlife Service, Ecological Services. Date: 3 August. Helena, MT. 142 p.

USDI Fish and Wildlife Service. 2016b. Biological opinion on the effects of the Divide Travel Plan on Grizzly Bears. Series Editor: United Stated Department of the Interior, F.a.W.S., Ecological Services, ed. Helena, Montana: Fish and Wildlife Service, Ecological Services. 120 p.

USDI Fish and Wildlife Service. 2016c. Biological Opinon on the Effects of the Stonewall Vegetation Project on Designated Critical Habitat for Canada Lynx. Series Editor: United Stated Department of the Interior, F.a.W.S., Ecological Services, ed. Helena, Montana: United States Department of the Interior, Fish and Wildlife Service, Ecological Services. 96 p.

USDI Fish and Wildlife Service. 2017a. Amendment of the programmatic biological opinion on nine forest programs on nine national forests in the Sierra Nevada of California for the endangered Sierra Nevada yellow-legged frog, endangered northern distinct population segment of the mountain yellow-legged frog, and threatened Yosemite toad. Date: June 15, 2017. File: FF08ESMF00-2014-F-0557-1. Sacramento, CA: U.S. Department of the Interior, Fish and Wildlife Service, Sacramento Fish and Wildlife Office. 194 p.

USDI Fish and Wildlife Service Services, E. 2017b. Biological Opinion for Effects to Bull Trout Telegraph Vegetation Project Helena-Lewis and Clark National Forest 2016. Series Editor: United Stated Department of the Interior, F.a.W.S., Ecological Services, Montana Field Office, ed. Date: January 4. Helena, Montana: United States Department of the Interior, Fish and Wildlife Service. 76 p.

USDI Fish and Wildlife Service. 2017c. Biological opinion on the effects of incorporating habitat management direction for the NCDE grizzly bear population into the Helena, Lewis and Clark, Kootenai, and Lolo National Forest plans on grizzly bears. Helena, MT: United States Department of the Interior, Fish and Wildlife Service, Montana Ecological Services Office. 188 p.

USDI Fish and Wildlife Service. 2018. Biological Opinion on the Effects of the Tenmile South Helena Vegetation Project on Grizzly bears. Series Editor: United Stated Department of the Interior, F.a.W.S., Ecological Services, ed. Date: December 17. Helena, Montana: United States

Department of the Interior, Fish and Wildlife Service, Ecological Services. 56 p.

USDI Fish and Wildlife Service. 2019a. Biological Opinion Wasson Creek Commercial Thinning. Series Editor: United States Department of the Interior, F.a.W.S., Montana Ecological Services, ed. Helena, Montana: United States Department of the Interior, Fish and Wildlife Service, Montana Ecological Services.

USDI Fish and Wildlife Service. 2019b. Biological Opinion Willow Creek Vegetation Project. Series Editor: United States Department of the Interior, F.a.W.S., Montana Ecological Services Office, ed. Helena, Montana: United States Department of the Interior, Fish and Wildlife Service, Montana Ecological Services Office.

USDI Fish and Wildlife Service. 2022. Species status assessment for the grizzly bear (Ursus arctos horribilis) in the lower-48 states. Missoula, MT: U.S. Department of the Interior, Fish and Wildlife Service, Grizzly Bear Recovery Office. 369 p.

USDI Fish and Wildlife Service and Service, N.M.F. 1998. Endangered species consultation handbook: Procedures for conducting consultation and conference activities under Section 7 of the Endangered Species Act. Washington, DC: U.S. Department of the Interior, Fish and Wildlife Service and National Marine Fisheries Service. 315 p.

Wakkinen, W.L. and Kasworm, W.F. 1997. Grizzly bear and road density relationships in the Selkirk and Cabinet-Yaak recovery zones. Bonners Ferry, ID: Idaho Department of Fish and Game. 28 p.

Zager, P., Jonkel, C., and Habeck, J. 1983. Logging and wildfire influence on grizzly bear habitat in northwestern Montana. Bears: Their Biology and Management 5: 124-132. https://doi.org/10.2307/3872529

Appendix A. 2021 Forest Plan Components

Plan Components Referenced, By Species

Table 20 crosswalks the plan components that are referenced in this BA as well as those components that indirectly benefit grizzly bears. The full text of the plan components listed in Table 20 is provided in the following section.

Acronyms used to identify types of Plan components include: Desired Condition (DC); Goals (GO); Standards (STD); Guidelines (GDL); and Suitability (SUIT).

Table 20. Plan components referenced in species assessment

Plan component	General	Grizzly bear
Watershed (WTR)		
FW-WTR-DC-02		X
Fire and Fuels (FIRE)		
FW-FIRE-DC-01	X	
FW-FIRE-DC-02	X	
FW-FIRE-DC-03		
FW-FIRE-GO-02		
FW-FIRE-GO-03		
FW-FIRE-OBJ-01	X	
FW-FIRE-GDL-01	X	
FW-FIRE-GDL-02	X	
FW-FIRE-GDL-03		
Terrestrial Vegetation (VEGT)		
FW-VEGT-DC-01	X	X
FW-VEGT-DC-02	X	
FW-VEGT-DC-03	X	X
FW-VEGT-DC-04	X	X
FW-VEGT-OBJ-01	X	
FW-VEGT-GDL-01	X	
FW-VEGT-GDL-02	X	
FW-VEGT-GDL-03	X	
FW-VEGT-GDL-04	X	
Forested Vegetation (VEGF)		
FW-VEGF-DC-01	X	
FW-VEGF-DC-02	X	
FW-VEGF-DC-03	X	
FW-VEGF-DC-04	X	
FW-VEGF-DC-05	X	
FW-VEGF-DC-06	X	
FW-VEGF-DC-07	X	
FW-VEGF-DC-08	X	X
FW-VEGF-DC-09		

Plan component	General	Grizzly bear
FW-VEGF-GDL-01	X	
FW-VEGF-GDL-02	X	
FW-VEGF-GDL-04	X	
FW-VEGF-GDL-05	X	
Nonforested Vegetation (VEGNF)		
FW-VEGNF-DC-01	X	
FW-VEGNF-DC-02	X	
FW-VEGNF-DC-03	X	
TEPC & SCC Plants (PLANT)		
FW-PLANT-DC-01	X	X
FW-PLANT-DC-01	X	
FW-PLANT-GO-01	X	
FW-PLANT-OBJ-01	X	X
FW-PLANT-GDL-01		X
Wildlife (WL)		
FW-WL-DC-01	X	
FW-WL-DC-02	X	
FW-WL-DC-03	X	X
FW-WL-DC-04	X	X
FW-WL-DC-05	X	X
FW-WL-DC-06	X	
FW-WL-DC-09	X	
FW-WL-GO-01	X	
FW-WL-GO-02	X	
FW-WL-GO-03	X	
FW-WL-GO-04	X	
FW-WL-GO-05	X	
FW-WL-GO-06		
NCDE Grizzly Bear Amendment		
All		X
Recreation Settings (ROS)		
FW-ROS-DC-01	X	
FW-ROS-DC-02		
FW-ROS-DC-03		
FW-ROS-DC-04		
FW-ROS-DC-05		
Recreation Opportunities (REC)		
FW-REC-DC-01	X	
FW-REC-DC-02	X	
FW-REC-DC-03	X	X
FW-REC-DC-04	X	X
FW-REC-DC-05	X	

Plan component	General	Grizzly bear
FW-REC-DC-06	X	
FW-REC-DC-07	X	X
FW-REC-OBJ-01	X	X
FW-REC-OBJ-02	X	X
FW-REC-OBJ-03	X	
FW-REC-OBJ-04	X	X
FW-REC-GDL-01	X	
FW-REC-GDL-03	X	
FW-REC-GDL-04	X	
FW-REC-GDL-05	X	
FW-REC-GDL-06	X	
FW-REC-GDL-07	X	X
Recreation special uses (RSUP)		
FW-RSUP-DC-01		X
FW-RSUP-DC-02		X
FW-RSUP-DC-03		X
FW-RSUP-GDL-01	X	
Recreation Access (ACCESS)		
FW-ACCESS-DC-01	X	
FW-ACCESS-DC-02	X	
FW-ACCESS-DC-03	X	
FW-ACCESS-GO-01	X	
FW-ACCESS-GDL-01	X	X
FW-ACCESS-GDL-02	X	
Scenery (SCENERY)		
FW-SCENERY-DC-01	X	
FW-SCENERY-DC-02	X	
FW-SCENERY-DC-03	X	
FW-SCENERY-GDL-01	X	
Wilderness (WILD)		
All	X	
FW-WILD-DC-02		X
FW-WILD-DC-03		X
FW-WILD-SUIT-02		
Recommended Wilderness (RECWILD)		
All	X	
FW-RECWILD-DC-01		
FW-RECWILD-DC-02		X
FW-RECWILD-DC-03		
FW-RECWILD-STD-01		X
FW-RECWILD-SUIT-01		X
FW-RECWILD-SUIT-02		X

Plan component	General	Grizzly bear
FW-RECWILD-SUIT-03		X
FW-RECWILD-SUIT-04		X
FW-RECWILD-SUIT-05		X
FW-RECWILD-SUIT-06		X
FW-RECWILD-SUIT-07		X
FW-RECWILD-SUIT-08		X
Wilderness Study Areas (WSA)		
All	X	
FW-WSA-DC-01		X
FW-WSA-SUIT-02		X
FW-WSA-SUIT-04		X
FW-WSA-SUIT-08		X
FW-WSA-SUIT-05		X
FW-WSA-SUIT-06		X
Inventoried Roadless Areas (IRA)		
All	X	
FW-IRA-DC-01		X
FW-IRA-DC-02		X
Eligible Wild & Scenic Rivers (WSR)		
All	X	
FW-WSR-GDL-01		
Infrastructure: Roads (RT)		
FW-RT-DC-01		
FW-RT-DC-02		X
FW-RT-DC-04		X
FW-RT-GO-03		X
FW-RT-OBJ-01		X
FW-RT-OBJ-02		X
FW-RT-GDL-12		X
FW-RT-GDL-13		X
Livestock Grazing (GRAZ)		
FW-GRAZ-DC-01	X	
FW-GRAZ-DC-02	X	X
FW-GRAZ-DC-03	X	
FW-GRAZ-GO-01	X	X
FW-GRAZ-STD-02	X	
FW-GRAZ-GDL-01	X	
FW-GRAZ-GDL-02	X	
FW-GRAZ-GDL-03	X	
FW-GRAZ-GDL-04	X	
FW-GRAZ-GDL-05	X	
FW-GRAZ-GDL-06	X	

Plan component	General	Grizzly bear
FW-GRAZ-GDL-07	X	
Timber (TIM)		
FW-TIM-DC-01	X	
FW-TIM-DC-02	X	
FW-TIM-DC-03	X	
FW-TIM-DC-04	X	
FW-TIM-GO-01	X	
FW-TIM-OBJ-01	X	
FW-TIM-OBJ-02	X	
FW-TIM-STD-01	X	
FW-TIM-STD-02	X	
FW-TIM-STD-03	X	
FW-TIM-STD-04	X	
FW-TIM-STD-05	X	
FW-TIM-STD-06	X	
FW-TIM-STD-07	X	
FW-TIM-STD-08	X	
FW-TIM-STD-09	X	
FW-TIM-STD-10	X	
FW-TIM-GDL-01	X	
FW-TIM-GDL-02	X	
FW-TIM-GDL-03	X	
Fish and Wildlife (FWL)		
FW-FWL-DC-02		
FW-FWL-DC-04		
FW-FWL-GO-01	X	
FW-FWL-GDL-01	X	
Minerals and Energy (EMIN)		
FW-EMIN-DC-05	X	X
FW-EMIN-DC-06	X	
FW-EMIN-GDL-01	X	X
FW-EMIN-GDL-02	X	X
Big Belts GA (BB)		
BB-WL-DC-03		X
Crazies GA (CR)		
CR-WL-DC-01		X
Divide GA (DI)		
DI-VEGF-DC-04		
DI-WL-DC-01		
DI-WL-GO-01		X
DI-WL-GDL-01		X
DI-SHRA-DC-01		X

Plan component	General	Grizzly bear
DI-SHRA-GDL-01		
DI-SHRA-SUIT-01		
DI-SHRA-SUIT-02		X
Elkhorns GA/WMU (EH)		
EH-ACCESS-GDL-01		X
EH-RT-STD-01		X
EH-RT-STD-02		X
EH-WL-DC-02		X
Little Belts GA (LB)		
LB-SHOWSKI-DC-01		
LB-SHOWSKI-DC-02		
Rocky Mountain Range GA (RM)		
RM-VEGF-DC-04		
RM-WL-DC-01		X
RM-WL-STD-01		X
RM-TETONSKI-DC-01		
RM-TETONSKI-DC-02		
RM-CMA-DC-01		X
RM-CMA-DC-03		X
RM-CMA-STD-01		X
RM-CMA-STD-02		X
Snowies GA (SN)		
SN-GVRA-DC-03		X
SN-GVRA-SUIT-01		
SN-GVRA-SUIT-02		
Upper Blackfoot GA (UB)		
UB-VEGF-DC-04		
UB-WL-DC-01		
UB-WL-GDL-01		X
NRMLD (appx F of the Plan)		
All		

Full Text of Referenced Plan Components

Watershed (WTR)

Desired Conditions

FW-WTR-DC-02: Spatial connectivity exists within or between watersheds. Lateral, longitudinal, and drainage network connections include floodplains, groundwater, wetlands, upslope areas, headwater tributaries, and intact habitat refugia. These network connections provide chemically and physically unobstructed routes to areas critical for fulfilling the requirements of aquatic and riparian-associated plants and animals.

Fire and Fuels Management (FIRE)

Desired Conditions

FW-FIRE-DC-01: Wildfire maintains and enhances resources and, as nearly as possible, is allowed to function in its natural ecological role across the landscape, including wilderness. Under favorable conditions, wildfires and prescribed fires are managed to ensure highest probability of success, minimum exposure to responders, and to meet resource objectives.

FW-FIRE-DC-02: Within the wildland-urban interface and around high value resources, surface fuel loading and crown spacing provide conditions for low severity surface fire that minimizes threats to values.

FW-FIRE-DC-03: Treated fuel management areas (management actions or wildfire) allow opportunities over time for natural fire occurrence and provide fuel conditions that benefit fire management operations.

Goals

FW-FIRE-GO-02: The HLC NF works with adjacent communities, landowners, permittees and state, local, and other federal agencies to promote a collective understanding about wildfire risk and that wildland fire is an ecological process.

FW-FIRE-GO-03: The HLC NF works with the state and other partners as needed when designing fuels reduction projects to identify areas and resources of value for fuel treatments.

Objectives

FW-FIRE-OBJ-01: Hazardous fuels treatments occur on a minimum of 15,000 acres per decade within the wildland urban interface. Use any available wildland fire management opportunity to reduce fire intensity and severity. Treatment includes initial entry and maintenance to ensure desired fuel conditions are achieved. Achieving this would also contribute to FW-VEGT-OBJ-01.

Guidelines

FW-FIRE-GDL-01: To create (and/or minimize threats to) resilient, healthy ecosystems, vegetation treatment projects should allow opportunities for naturally ignited wildfire to occur and provide fuel conditions that benefit fire management operations.

FW-FIRE-GDL-02: To create (and/or minimize threats to) resilient, healthy ecosystems, wildland fire management strategies should promote desired vegetation conditions where wildfires result in fire severities that are "self-regulating" and reduce future risk.

FW-FIRE-GDL-03: To ensure shared stewardship when wildfires affect identified areas of tribal importance, the FS should communicate and collaborate with tribal leadership during fire incident management to identify and, to the extent practical, protect tribal values and minimize impacts to resources or areas of tribal importance.

All Terrestrial Vegetation (VEGT)

Desired Conditions

FW-VEGT-DC-01: Vegetation occurs across the landscape in a diverse pattern of compositions and structures within the natural range of variation that are resilient to future climates and disturbances such as fire, insects, disease, invasive species, floods, and droughts. Conditions are such that effective recovery of vegetation is possible following disturbances. These conditions are described in [Table 21]**[11]** and further quantified under desired conditions in the VEGF and VEGNF sections.

[11] Forest Plan components in this section are copied verbatim from the 2021 Forest Plan except for the table numbering. Here, the tables are numbered chronologically for formatting purposes and don't align with the actual table number in the Forest Plan; hence the brackets. For example, [Table 21] referenced here is actually Table 4 in the 2021 Forest Plan.

Table 21. Forestwide terrestrial vegetation desired conditions by broad potential vegetation types

Broad Potential Vegetation Type	Terrestrial Vegetation Desired Conditions
Warm Dry	Forest resilience is achieved by emphasizing fire adapted species and structures. An increase in the extent and dominance of ponderosa pine, limber pine, and aspen occurs relative to the existing condition, while Douglas-fir decreases (but remains common). Rocky mountain juniper occurs but its abundance is limited on historically nonforested areas. Other species such as Engelmann spruce and lodgepole pine may thrive where moisture is less limiting. The quantity and extent of large and very large trees increases relative to the existing condition. Savannas occur on the driest sites, and some sites may be maintained in a nonforested condition by frequent disturbance or restoration. Seedling/sapling and small forest size classes occur but are limited, because large tree remnants are retained as is characteristic of a high frequency, low intensity disturbance regime. Stands in the large and very large tree size classes are often open or clumpy, with the large tree component comprised of long-lived fire-resistant species (ponderosa pine and Douglas-fir). Complex landscape patterns of size class and density occur, with open, uneven-aged forests and high within-stand variability common. Forests with low to medium density increase relative to the existing condition, while forests with high density decrease. Stands with higher densities occur on more mesic sites and are interspersed with open forests and meadows. Early successional forest patches are relatively small. Plant understories include rough fescue, Idaho fescue, bluebunch wheatgrass, sagebrush, common juniper, and bitterbrush on the driest sites and Oregon grape, snowberry, pinegrass, kinnickinnick, white spiraea, heartleaf arnica, elk sedge, and ninebark on more mesic sites. Snags are scattered as individuals or small groups. Coarse woody debris is fairly low.
Cool Moist	Forest resilience is achieved through diversity of species and age/size class. The extent and dominance of aspen, Engelmann spruce, and whitebark pine increase relative to the existing condition, with lodgepole pine and Douglas-fir remaining abundant and subalpine fir also common. Minor amounts of ponderosa pine may also occur, on the warmest/driest sites. The spruce/fir cover type includes dense, multistoried stands that provide high quality multistory lynx habitat. Small size classes are common due to preponderance of lodgepole pine; but a decrease in the small size class with increases in large and very large classes still occurs relative to the existing condition. There is wide variability in size class because of the high severity, low frequency disturbance regime. Most especially, high diversity in size class occurs in lodgepole pine to ensure insect and fire disturbances occur at a scope and scale within their natural range of variation. The amount of low/medium and medium/high density classes increase while the high-density class decreases relative to the existing condition primarily in lodgepole pine and Douglas-fir forests. Large and very large trees, primarily Douglas-fir, are clumpy but scattered across the landscape to provide seed. Single-storied and single-aged conditions are common in lodgepole pine. Early successional forest patches tend to be fairly large. Understory plant species present may include twinflower, beargrass, huckleberry, grouse whortleberry, pinegrass, heartleaf arnica, elk sedge, and western meadowrue. Other species such as menziesia and alder may be found on the wettest sites. Snags occur in pulses and in clumpy distribution. Coarse woody debris levels vary widely.

Broad Potential Vegetation Type	Terrestrial Vegetation Desired Conditions
Cold	Forest resilience is achieved by emphasizing the presence of whitebark pine where possible. Increases in whitebark pine occur relative to the existing condition, focusing on open ridges and harsher aspects. On these sites, there is a decrease in subalpine fir and Engelmann spruce relative to the existing condition. Subalpine fir and Engelmann spruce remain common and dominate northerly and easterly aspects, swales, moist basins, and riparian areas. Lodgepole pine is present as well, on warmer sites. The abundance of the small forest size class is decreased relative to the existing condition, with an increase in the large size class. Whitebark pine is maintained across its natural range to the degree possible within the context of climate changes and increasing disturbance, with large trees present that are tolerant of moderate or low severity fires. Large subalpine fir and Engelmann spruce are also promoted on productive sites. The proportion of forests in the low/medium density class is increased with decreases in the high cover class relative to the existing condition, focusing on restoration of resilient, open multi-aged whitebark pine forests where dense multistoried spruce/fir or single-storied lodgepole pine dominate. Natural patch sizes reflect a mixed fire regime. Understory plant species present, such as grouse whortleberry and beargrass, may be sparse at the highest elevations where alpine vegetation is interspersed with bare ground and rock. Snags occur in pulses. Coarse woody debris levels vary widely.
Xeric Grassland	Xeric grassland plant communities are dominated by native species, and have high diversity of tall and medium height, cool and warm season grasses (for example, bluebunch wheatgrass, western needlegrass, needle-and-thread, blue grama), and short grasses (for example, Sandberg bluegrass, pine junegrass). Sub-shrubs and shrubs are present at less than 10 percent canopy cover. There is a variety of native forbs in varying amounts. The diversity of native plant species present allows for drought tolerance. Individual species can vary greatly in the amount of production depending on growing conditions. Vegetation typically has strong and robust root systems that allow production to increase considerably with favorable growing conditions. This plant community provides for soil stability and a properly functioning hydrologic cycle. Plant litter is a common component and is available for soil building and moisture retention. Plant litter is properly distributed with very little movement off-site, with natural plant mortality typically being low. Bare ground is present because of the warm dry nature of these sites but at low amounts. Encroachment by conifers and juniper is limited, since these grasslands are either maintained by a natural high frequency low severity fire regime, or are maintained by site conditions (i.e., they do not require fire to maintain the grassland vegetation). These vegetation types are generally tolerant of fire when fire frequency is in the range of 5 -15 years, although recovery is dependent on fire intensity and species. Maintenance of grasslands is dependent, in part, on periodic fires to remove residual litter and encroaching shrubs and trees, which may increase the burn intensity and possibly damage the dominant grassland species. Microphytic crust is maintained as a key feature.
Mesic Grassland	Mesic grassland communities are dominated by native species, and have greater amounts of mesic forbs, denser cover, and more species richness than xeric grasslands. The functional plant groups are characterized by long lived, moderately deep-rooted cool grass species (for example, rough fescue, Idaho fescue, timber oatgrass, upland sedges, tufted hairgrass, etc.) with a wide variety of mesic forbs present in varying amounts. Shrubs may be present with minor cover. Introduced species are rare. Bare ground is typically low (less than 3 percent) across most sites with litter being a common component and available for soil building and moisture retention. Plant litter movement is expected to be limited with plant litter being properly distributed and rarely moving off-site. These vegetation types are generally tolerant of moderate intensity wildfire. Common dominant grasses, such as rough fescue and Idaho fescue, may be topkilled, but the root crowns and associated growing points are protected and they respond favorably with vigorous regrowth. Within just a few years these species usually recover to pre-fire levels. Frequent burning maintains diversity in these vegetation types. Microphytic crust is maintained as a key feature.

Broad Potential Vegetation Type	Terrestrial Vegetation Desired Conditions
Xeric Shrubland /Woodland	Xeric shrubland plant communities support shrub species such as Wyoming big sagebrush, basin big sagebrush, rabbitbrush, horsebrush, broom snakeweed, low sagebrush and black sagebrush. Overstory species vary by location and site type. For example, low sagebrush tends to occupy the lower, drier and hotter sites with shallow soils whereas basin big sagebrush typically dominates sites with deeper soils and more plant available moisture. The understory is typically dominated by graminoid species such as needle-and-thread, Sandberg bluegrass and bluebunch wheatgrass. Canopy cover varies depending on the site and growing conditions but is typically low to moderate. Bare ground is present in higher amounts relative to mesic shrubland sites. Xeric woodlands are typically hot and dry or are steep, with shallow, skeletal soil. The dominant overstory species varies but includes Rocky Mountain juniper and mountain mahogany. Mountain mahogany is restricted to steep rocky soils and rock outcrops. Encroachment by conifers is limited, as it is maintained by a natural high frequency low severity fire regime. While sagebrush and mountain mahogany are often killed by fire, nonlethal or mixed severity fires that burn in a mosaic pattern leave live individuals and promote age class diversity while promoting the sprouting of other shrub (e.g. rabbitbrush, horsebrush) and grass species. The natural fire regime of this vegetation type maintains a patchy distribution of shrubs, so the general aspect of the vegetation is shrub-steppe grassland. Periodic low intensity burns can reduce sagebrush cover and increase herbaceous abundance of herbaceous species, creating a mosaic of burned and unburned patches. Microphytic crust is maintained.
Mesic Shrubland	Mesic shrubland plant communities are generally more moist and productive than xeric sites. Shrub species such as mountain big sagebrush and mesic deciduous shrubs (for example, bitterbrush, snowberry, ninebark, serviceberry) are the dominant over story species with grass species (such as rough fescue, Idaho fescue, mountain brome) and various mesic forbs (for example, cinquefoil, prairie smoke) typically dominating the understory. Canopy cover varies depending on the site and growing conditions (for example, temperature, timing and amount of precipitation), but is typically moderate to high, and may result in lower cover of understory species. Encroachment by conifers is limited. Most shrub species respond well to light and mixed severity fire. With the exception of mountain big sagebrush, most of the mesic shrub species are vigorous root crown sprouters and respond favorably to fire, typically sprouting immediately following fire. However, extremely hot and intense fires that occur during summer months can cause damage to these shrublands and seed banks. Periodic burns can maintain this system. Microphytic crust is maintained as a key feature.
Riparian/ Wetland	Riparian systems are comprised of a mosaic of communities dominated by species which tolerate and are adapted to periodic flooding and an associated seasonally high water table. Deciduous trees, particularly cottonwood, may be present along with riparian shrubs and herbaceous species. In wide valley bottoms, the vegetation typically is a mosaic of all lifeforms with patterns reflecting the meander patterns of the stream/river. Black cottonwood is the dominant tree species although other tree species may include aspen, narrowleaf cottonwood, Engelmann spruce and subalpine fir; on drier sites, Douglas fir and Rocky Mountain juniper may be present with low cover and scattered distribution. Dominant shrubs may include mountain alder, various species of willows, river birch, dogwood, hawthorn, chokecherry, rose, silver buffaloberry, Rocky Mountain maple and/or snowberry, among others. A wide variety of herbaceous species, including, grasses, sedges, rushes, spikerushes, bulrushes and forbs, are present in the understory in varying amounts. Wetlands are characterized by dominant vegetation adapted to saturated (anaerobic) soil conditions. The vegetation complex is usually represented by a mosaic of herbaceous and woody plant communities that armor streambanks and create floodplain roughness, slowing flows and facilitating bank and floodplain development. Low willow species (e.g., wolf willow), bog birch and bog blueberry are typically present in subalpine wetlands. Herbaceous species may be dominated by sedges, rushes, spikerushes cattails, and/or bulrushes. Bryophytes, including sphagnum, are often well represented in fens. Also see Forestwide components for RMZs. Rare species, such as sundew, may also be present in peatlands. Typically, with the exception of conifers, species in riparian/wetland systems respond favorably to fire. The growing points of the vegetation are usually protected in the moist to saturated soil. Regrowth typically occurs within the same growing season. Microphytic crust is maintained.

Broad Potential Vegetation Type	Terrestrial Vegetation Desired Conditions
Alpine	Alpine ecosystems occupy harsh high elevation sites, resulting in short stature and relatively slow growth for both shrubs and herbaceous species. Wetland communities are present in snowloaded depressions, and support various willow species (e.g., planeleaf willow), along with wetland herbaceous species (e.g., tufted hairgrass, marsh marigold). Alpine ecosystems are mostly treeless, although some conifers (e.g., subalpine fir, whitebark pine) may be present with minor cover as krummholz patches. Vegetation cover is typically low to moderate, depending on site characteristics. The plant communities are dominated by a number of shrubs, forbs and graminoids including: arctic willow (turf community), mountain avens, (cushion plant community), mountain heather and moss-heather (snow bed communities). Many of these areas experience only patchy fire due to the low amounts and patchiness of fuels. The fire return interval is typically very long (500 years or greater) in alpine ecosystems. Historically, stand-replacing fires occur infrequently in adjacent associated subalpine woodlands. Fire severity and spread is usually variable due to the short duration without snow cover. In addition, limited fuel loading and rock scree fields preclude fires from spreading if lightning strikes do occur. Microphytic crust is maintained as a key feature.

FW-VEGT-DC-02: The plan area supports a distribution of cover types shown in [Table 22]. Nonforested cover types can occur on forested broad potential vegetation types and be perpetuated by natural disturbances or restoration activities.

Table 22. Forestwide existing and desired conditions for cover types (percent of area)

Cover Type[1]	Forestwide		Warm Dry, Region 1 Broad Potential Vegetation Type		Cool Moist, Region 1 Broad Potential Vegetation Type		Cold, Region 1 Broad Potential Vegetation Type	
	Existing[3]	Desired	Existing[3]	Desired	Existing[3]	Desired	Existing[3]	Desired
Nonforested[2]	14 (11-16)	15-25	13 (10-17)	5-20	10 (6-14)	5-10	11 (7-16)	1-10
Aspen/hardwood	1 (0.4-2)	2-5	1 (0.3-2)	2-5	2 (0.2-3)	2-5	Trace	Trace
Ponderosa pine	8 (6-10)	15-25	16 (12-20)	40-60	2 (0.6-4)	1-5	Trace	Trace
Douglas-fir	29 (25-35)	15-25	52 (42-61)	30-40	23 (17-28)	5-15	5 (2-8)	2-5
Lodgepole pine	27 (24-30)	15-25	16 (12-21)	2-7	35 (29-42)	25-35	37 (29-44)	40-50
Spruce/Fir	12 (10-15)	10-20	Trace	Trace	19 (14-24)	35-45	27 (21-34)	40-45
Whitebark pine	4 (2-5)	2-5	Trace	Trace	2 (0.6-4)	2-5	12 (7-16)	10-20

[1] Cover types are broad groups of vegetation based on the dominant species. A cover type often contains multiple species (see appendix D for a more detailed description).
[2] Nonforested areas include grass and shrub cover types, which may support widely scattered trees in some cases.
[3] Existing condition shown is the mean percent of the area with the 90 percent confidence interval in parenthesis. Source is R1 Summary Database, FIA data. Existing condition represents 2018 conditions. Estimates are rounded to the nearest whole number unless the value is less than 1 percent, in which case it is rounded to the nearest 10th. The totals do not necessarily equal 100 percent due to non-vegetated areas (water or rock).

FW-VEGT-DC-03: Vegetation conditions provide habitat requirements to support populations of species of

conservation concern, threatened or endangered species, and other native and desired non-native species based upon the inherent capability of lands.

FW-VEGT-DC-04: Vegetation patterns provide connectivity and allow for potential genetic interchange to occur to support ecosystem functions, including potential species range shifts that may occur in response to climate change.

Objectives

FW-VEGT-OBJ-01: Vegetation management occurs on at least 130,000 acres per decade to maintain, restore, or move vegetation towards desired conditions. Control of invasive species and livestock grazing also may contribute to the achievement of desired conditions; these activities are addressed in the Invasive Plants and Livestock Grazing sections. Also see FW-FIRE-OBJ-01. Treatments to achieve this objective may occur on forested or nonforested vegetation communities and include, but are not limited to, the following activities:

- Planned or unplanned fire ignitions
- Fuel reduction treatments such as thinning, piling, chipping, and mastication
- Removal of encroaching trees in nonforested ecosystems
- Timber harvest
- Tree planting and revegetation of native plants
- Noncommercial thinning of forests

Guidelines

FW-VEGT-GDL-01: Removal of native vegetation during nonvegetation management activities (for example, road maintenance) should be limited to the extent needed to achieve the project purpose and need.

FW-VEGT-GDL-02: Livestock grazing practices should be modified as necessary to ensure that revegetation and/or reforestation is successful after management activities or natural disturbances, as defined in site-specific prescriptions.

FW-VEGT-GDL-03: To maintain the diversity of native tree species, when artificial reforestation is prescribed locally, adapted tree stock should be used unless nonlocal stock is deemed appropriate based on an assisted migration strategy.

FW-VEGT-GDL-04: To ensure the re-establishment of desirable vegetation and limit the spread of invasive plants following management activities which disturb or expose soil, reseeding with native plants should occur promptly. Seeding should occur during optimal seeding windows for germination and survival and should utilize blue-tag certified seed and weed-free native seed. Seed mixes should be approved by a botanist. Genetically appropriate native plant materials should be given primary consideration during revegetation. Techniques which promote establishment of native species should be incorporated into revegetation planning. Nonnative plant species may only be used when consistent with national policy and direction.

Forested Vegetation (VEGF)

Desired Conditions

FW-VEGF-DC-01: The plan area supports a distribution of individual tree species as described in [Table 23]. This distribution supports the natural species diversity across the landscape and allows for recruitment following disturbances.

Table 23. Forestwide existing and desired conditions for tree species presence (percent of area[1])

Tree Species	Forestwide[3]		Warm Dry, Region 1 Broad Potential Vegetation Type		Cool Moist, Region 1 Broad Potential Vegetation Type		Cold, Region 1 Broad Potential Vegetation Type	
	Existing[2]	Desired	Existing[2]	Desired	Existing[2]	Desired	Existing[2]	Desired
Limber Pine	11 (9-13)	10-15	16 (12-20)	15-25	9 (6-13)	5-15	5 (2-9)	5-15
Rocky Mountain Juniper	5 (4-7)	2-5	12 (9-15)	5-15	1 (1-2)	0-5	0.2 (0.2-1)	0-5
Ponderosa Pine	7 (5-9)	15-25	17 (13-21)	55-65	0.4 (0.4-1)	1-10	Trace	Trace
Douglas-Fir	46 (43-50)	35-45	70 (65-75)	65-75	43 (37-49)	25-35	15 (9-20)	10-20
Aspen And Cottonwood	2 (1-3)	2-5	2 (1-4)	5-10	3 (1-5)	2-10	Trace	Trace
Engelmann Spruce	23 (20-26)	15-25	5 (3-7)	1-5	42 (36-49)	30-40	32 (25-39)	30-40
Lodgepole Pine	38 (35-42)	20-30	24 (19-29)	5-15	52 (46-58)	30-40	51 (43-59)	45-55
Subalpine Fir	27 (24-31)	15-25	Trace	Trace	46 (39-52)	45-55	54 (47-61)	40-50
Whitebark Pine	11 (9-14)	10-20	Trace	Trace	10 (6-14)	5-15	31 (24-38)	35-45

[1] Percent of area where at least one tree of the species is present.
[2]Total may be greater 100 percent because more than 1 species can be present on a site. Existing condition shown is the mean percent of the area with the 90 percent confidence interval (see glossary) shown in parenthesis. Source is R1 Summary Database, FIA data.
[3] Forestwide distributions include trees that occur on nonforested potential vegetation type.

FW-VEGF-DC-02: The plan area supports a natural diversity of forest size classes as shown in [Table 24], which represents the diversity of successional stages across the landscape. The location and precise abundance of size classes fluctuate over time as forests develop, are influenced by disturbances, and may be limited by site productivity and species composition.

Table 24. Forestwide existing and desired conditions of size class (percent of area[2])

Forest Size Class[1]	Forestwide		Warm Dry, Region 1 Broad Potential Vegetation Type		Cool Moist, Region 1 Broad Potential Vegetation Type		Cold, Region 1 Broad Potential Vegetation Type	
	Existing[3]	Desired	Existing[3]	Desired	Existing[3]	Desired	Existing[3]	Desired
Seedling/ Sapling (0-4.9")	13 (10-17)	1-15	11 (7-15)	1-10	12 (7-18)	1-20	22 (14-30)	1-35
Small (5-9.9")	39 (36-42)	5-20	36 (31-41)	1-10	42 (36-48)	5-30	44 (37-51)	5-40

Forest Size Class[1]	Forestwide		Warm Dry, Region 1 Broad Potential Vegetation Type		Cool Moist, Region 1 Broad Potential Vegetation Type		Cold, Region 1 Broad Potential Vegetation Type	
	Existing[3]	Desired	Existing[3]	Desired	Existing[3]	Desired	Existing[3]	Desired
Medium (10-14.9")	21 (19-24)	5-20	25 (21-29)	1-10	24 (20-29)	5-35	14 (9-18)	5-45
Large (15.0-19.9")	5 (4-7)	20-30	9 (6-12)	20-40	4 (2-7)	20-30	1 (0.1-3)	25-40
Very Large (20"+)	2 (0.8-3)	5-25	4 (2-6)	15-40	0.2 (0.2-0.7)	10-25	0.2 (0.2-1)	1-5

[1] Size class = the average diameter class of live trees based on basal area weighted diameter, shown as ranges of diameter at breast height, or 4.5' above ground level. A stand within a size class may contain trees smaller and/or larger than the class range.
[2] Total may less than 100 percent because nonforested areas (grass, shrub, savanna) are excluded.
[3] Existing condition shown is the mean percent of the area with the 90 percent confidence interval (see glossary) shown in parenthesis. Source is R1 Summary Database, FIA data.

FW-VEGF-DC-03: The plan area supports a natural diversity of forest density classes as shown in [Table 25]. A wide range of densities and associated vertical structures (canopy layers) occur, contributing to resiliency, wildlife habitat, and timber productivity.

Table 25. Forestwide existing and desired conditions of density class (percent of area)

Forest density class[1]	Forestwide		Warm dry, Region 1 broad potential vegetation type		Cool Moist, Region 1 broad potential vegetation type		Cold, Region 1 broad potential vegetation type	
	Existing[2]	Desired	Existing[2]	Desired	Existing[2]	Desired	Existing[2]	Desired
Low/med (< 39.9)	26	25-50	26	25-55	22	20-40	14	20-50
Med/high (40-59.9)	27	30-50	29	20-45	20	30-50	21	45-65
High (60+)	48	10-35	45	10-50	58	15-40	65	5-25

[1] Density class = the average canopy cover of live trees, shown as ranges of canopy cover percent.
[2] Existing condition is from the SIMPPLLE input landbase, based on VMap imagery.

FW-VEGF-DC-04: Forest conditions support an increasing trend in the distribution of large-tree structure as shown in [Table 26] to provide ecosystem functions such as structural diversity, seed sources for post-disturbance resilience, and wildlife habitat.

Table 26. Forestwide existing and desired conditions of large-tree structure (percent of area)

Large-Tree Structure[1]	Forestwide		Warm Dry, Region 1 Broad Potential Vegetation Type		Cool Moist, Region 1 Broad Potential Vegetation Type		Cold, Region 1 Broad Potential Vegetation Type	
	Existing[2]	Desired	Existing[2]	Desired	Existing[2]	Desired	Existing[2]	Desired
Large (>15" D.B.H.)	14 (12-16)	35-50	16 (13-19)	35-65	16 (12-20)	35-45	9 (6-13)	40-70
Very Large (>20" + D.B.H.)	7 (6-9)	10-35	13 (9-16)	20-60	5 (3-7)	15-35	2 (0.5-3)	2-10

[1] Large-tree structure depicts where minimum numbers of large trees are found and can occur in any size class. The minimum tree criteria for large tree structure are described in the glossary and appendix D.
[2] Existing condition shown is the mean percent of the area with the 90 percent confidence interval (see glossary) shown in parenthesis. Source is R1 Summary Database, FIA data.

FW-VEGF-DC-05: Forest conditions support an abundance and distribution of old growth that is dynamic over time. All vegetation desired conditions help ensure that an appropriate array of conditions are present to provide old growth. The amount of old growth is similar to or greater than that of the 2018 condition. The desired condition of old growth is further described in Table 27].

Table 27. Forestwide existing and desired conditions of old growth[1]

Region 1 Broad Potential Vegetation Types[2]	Existing Condition[3]	Desired Condition
Forestwide	11 percent (9-13)	Old growth is distributed widely across the forest and in every GA, and levels vary depending on available compositions and structures, disturbance levels, and management objectives. Old growth may be subject to wider pulses of availability than in the past due to the likelihood of increased extent and/or severity of wildfire disturbances. Old growth distribution that complements habitat connectivity is desired. Old growth contains components that contribute to high quality habitat, including large and/or very large live trees with rot or broken tops, snags, downed woody material, and a diversity of tree size classes and canopy layers. A variety of old growth types are present, representing the natural species diversity of the HLC NF.
Warm dry	8 percent (6-11)	Old growth is dominated by ponderosa pine, Douglas-fir, and/or limber pine, often in large patches with an uneven-aged and irregular tree distribution. Ponderosa pine- dominated old growth is particularly desirable, because it is currently rare. Stands are resilient to low severity disturbance. Other old growth types such as spruce/fir occur in riparian areas. Species such as juniper and aspen are valuable habitat components.
Cool moist	14 percent (10-19)	Old growth is subject to wider pulses of availability relative to the other potential vegetation types, due to the higher severity disturbance regimes in this type. Old growth includes spruce/fir or Douglas-fir dominated stands, often with dense canopy layers, as well as lodgepole pine. Landscape-level resiliency is provided by a mosaic of younger forests that grow to replace old growth when it is killed by stand- replacing events.
Cold	15 percent (11-20)	Old growth generally consists of whitebark pine, Engelmann spruce, and/or subalpine fir. Stand-level resiliency and open structures is desired in whitebark pine types versus spruce/fir types which may be more dense and layered.

[1] See glossary and appendix D for definitions of old growth.
[2] Region 1 broad forested potential vegetation type. Also see appendix D.
[3] Existing condition is the mean percent of old growth with the 90 percent confidence interval (see glossary) shown in parenthesis. Source is R1 Summary Database, FIA data.

FW-VEGF-DC-06: Forest conditions support natural quantities and distributions of snags. Snags are unevenly distributed and dynamic over time, with a range of decay classes represented. The highest densities of snags occur in burned areas and in areas infested by insects; the lowest densities occur along roads, in areas where the concern for human safety is elevated, and in stands where active management is occurring. Individual stands may have no snags, or many, depending upon site-specific conditions. [Table 28] displays the desired minimum number of snags per acre by size class and snag analysis group.

Table 28. Forestwide existing condition and desired minimum snags per acre

Snag Analysis Group[1]	Medium (>10" D.B.H[4])		Large (>15" D.B.H.[4])		Very Large (>20" D.B.H.[4])	
	Existing Condition[2]	Desired Minimum[3]	Existing Condition[2]	Desired Minimum[3]	Existing Condition[2]	Desired Minimum[3]
Lodgepole Pine	12 (9-15)	12.9	1 (1-2)	2.0	0.1 (0-0.3)	0.2
Warm Dry	7 (5-9)	4.3	2 (1-3)	1.1	1 (0.4-1)	0.2
Cool Moist	15 (11-19)	12.3	3 (2-5)	2.4	1 (0.3-2)	0.4
Cold	17 (12-24)	13.4	4 (2-6)	2.3	1 (0.2-2)	0.9

[1] Snag analysis groups are from Bollenbacher (2008). See appendix D.
[2] Existing condition is the mean snags per acre, with the 90 percent confidence intervals shown in parenthesis. Source is R1 Summary Database, FIA data, Hybrid 2011.
[3] Desired is derived from Bollenbacher (2008) supplemental data tables (2017), where the natural range is represented by the mean of snags found in wilderness and roadless areas on the HLC NF measured on periodic forest inventory and analysis plots.
[4] Diameter at breast height (4.5' above the ground). The classes are not mutually exclusive; e.g. the numbers for the 10"+ medium class include the large/very large classes and the 15"+ large class includes the very large class.

[Table 29] displays the desired minimum distribution of snags, in terms of the percent area of the snag analysis group that contains at least 1 snag of the indicated size class.

Table 29. Forestwide existing condition and desired minimum snag distribution (percent of area)

Snag Analysis Group[1]	Medium (>10" d.b.h[4])		Large (>15" d.b.h.[4])		Very large (>20" d.b.h.[4])	
	Existing Condition[2]	Desired Condition[3]	Existing Condition[2]	Desired Condition[3]	Existing Condition[2]	Desired Condition[3]
Lodgepole Pine	22 (18-27)	15	4 (2-7)	5	0 (0.4-1)	2
Warm Dry	17 (13-21)	8	7 (5-10)	4	4 (2-5)	2
Cool Moist	31 (24-38)	20	9 (5-14)	10	3 (1-5)	3
Cold	30 (22-38)	20	11 (6-17)	10	3 (1-7)	5

1, 2, 3, 4 Refer to the foot notes for Table 28.

FW-VEGF-DC-07: Coarse woody debris (downed wood greater than or equal to 3 inches diameter) is present across forested vegetation communities in quantities consistent with the natural range of variation as shown in [Table 30] to provide wildlife habitat, long-term nutrient cycling, and other ecosystem functions.

Table 30. Forestwide desired and existing tons/acre of coarse woody debris

Region 1 Broad Potential Vegetation Type	Existing[1]	Average Desired[2]	Appropriate Distribution
Warm Dry	3.38 (2.66-4.19)	3-20	Coarse woody debris is variable in amount, size, species and stages of decay across space and time, emphasizing pieces 10" in diameter and 10' in length or greater, which are higher value for wildlife. Individual stands may have little or no coarse woody debris, or a higher amount. Very minimal or no coarse woody
Cool Moist	7.22 (5.81-8.76)	10-30	

Region 1 Broad Potential Vegetation Type	Existing[1]	Average Desired[2]	Appropriate Distribution
Cold	7.04 (5.33-8.91)	10-30	debris occurs in nonforested potential vegetation types. It may be appropriate for 30 to 50 percent of a forested potential vegetation type area to have little to no coarse woody debris at a given time. Amounts below the desired average are found on hot dry sites, in developed recreation areas, and where the concern for fire impacts to values at risk is elevated. Higher amounts may be found on moist sites and riparian areas, areas with low direct human influence, areas that have burned, and those with insect/disease infestations. Pulses of coarse woody debris occur following disturbances. Downed wood in pine-dominated forests may be expected to increase during the first decade of the Plan due to a mountain pine beetle outbreak.

[1] Existing condition shown is the mean tons per acre with the 90 percent confidence interval (see glossary) shown in parenthesis. Source is R1 Summary Database, FIA data.
[2] Desired tons/acre is derived from Brown et al 2003 and the tons/acre found in wilderness and roadless areas on the HLC NF, R1 Summary Database, FIA data.

FW-VEGF-DC-08: Forest patches of different compositional and structural conditions form a landscape pattern that contributes to resilience and habitat connectivity. Early successional forest patches provide edge habitat and functional openings that contrast sharply with adjacent forests. Patches of different size classes vary in extent, and are generally bounded by ridges, streams, and other topographic or biophysical features. Landscape and within-patch patterns reflect natural fire regimes to the extent possible given changing climate conditions.

- In the warm dry broad potential vegetation type, forest patches are indicative of low severity underburns as well as mixed severity and occasional stand replacing events. Early successional forest patches tend to be smaller than the other potential vegetation types, due to the more frequent disturbance regimes which tend to cause a complex mosaic of within-stand structures and small gap openings with mature tree remnants as opposed to patches dominated by seedlings.
- In the cool moist and cold potential vegetation types, patches reflect more mixed severity and stand replacing disturbance regimes. Early successional forest patches in these potential vegetation types tend to be larger than in the warm dry potential vegetation type, due to high severity disturbances.

FW-VEGF-DC-09: Forest composition, structure, and pattern allow for native forest insect and diseases to occur across their native extent and affect vegetation at a scope and scale consistent with their natural endemic role. Forests impacted by insects and disease provide structural features including snags, downed wood, and decaying live trees.

Guidelines

FW-VEGF-GDL-01: Vegetation management projects should be designed to retain at least the minimum number of large live trees listed below to provide future seed, structural diversity, wildlife habitat, future snags and downed wood. This guideline applies as an average across all treatment units in a project. Large live trees need not be present on every acre or in every treatment unit.

- Lodgepole pine snag analysis group: 1 tree >15” dbh per 10 acres
- Warm dry snag analysis group: 2 trees >15” dbh per 10 acres
- Cool moist snag analysis group: 9 trees >15” dbh per 10 acres
- Cold snag analysis group: 3 trees >15 per 10 acres

If the minimum number of large trees are not present, leave all that are available. Trees preferred for retention are the longest lived, healthiest, windfirm, most fire adapted species. Exceptions may occur when there are fewer than the minimum desirable trees available due to insects, disease, lack of wind firmness, or unavoidable operational limitations. Large trees may also function as replacement snags, and/or be mixed in clumps with snags, to meet FW-VEGF-GDL-02. Exceptions may occur where there are issues of human safety, especially in designated campgrounds and developed recreation sites, permitted ski areas, and utility lines. See FW-RSUP-DC-05, LB-SHOWSKI-DC-02, and RM- TETONSKI-DC-02.

FW-VEGF-GDL-02: When conducting timber harvest or other activities that involve mechanically cutting trees over 10" diameter, projects should retain the following minimum snags per acre[1] ≥ 10" diameter averaged across the snag analysis groups[2] in the project area to provide snag habitat at the project level.

- Across the warm dry snag analysis group, retain an average of at least 2 snags/acre[3].
- Across all other snag analysis groups, retain an average of at least 8 snags/acre[3].

Snags retained on the landscape should include a variety of size classes and species available. Preference should be given to the largest snags available, with snags >20" diameter being highest priority. Snag species preference from highest to lowest is ponderosa pine, western larch, whitebark pine, limber pine, Douglas-fir, hardwoods (aspen or cottonwood), Engelmann spruce, subalpine fir, lodgepole pine. Snags should be 300' or farther from a road that is open to firewood cutters when possible. Snags should be distributed in a clumpy manner; they need not be present on every acre. If fewer than the minimum required snags are present outside of treatment units, or the number of snags outside of treatment units is unknown, retain snags if available where it is safe and operationally feasible to do so within treatment units to achieve the project area averages; or to achieve the average across treatment units, whichever is less. Snags that are created by activities such as prescribed burning may be counted toward the desired averages. If fewer than the minimum snags are present across the project area and in treatment units, retain those that are available as well as live snag replacements to achieve the desired numbers, averaged across treatment units. When selecting snag replacement trees, retain the largest and most decadent trees; those with rot or wildlife use are preferred. Replacement snags may be used to meet FW-VEGF-GDL-01. In the event that snags intended for retention are cut or toppled by fire, they should be left onsite as woody debris.

Snag retention does not apply where there are issues of human safety in designated campgrounds and developed recreation sites, permitted ski areas, utility lines, prescribed burn control lines, and immediately adjacent to open roadways or private infrastructures. See FW-RSUP-DC-05, LB- SHOWSKI-DC-02, and RM-TETONSKI-DC-02.

[1] Snags per acre is the average of snags per acre across the entire snag analysis group within the project area.
[2] See appendix D.
[3] The minimum numbers to leave are based on the lower bound of the 90 percent confidence interval of the mean desired snags per acre displayed in FW-VEGF-DC-08.

FW-VEGF-GDL-04: To promote the retention of old growth (see glossary) and contribute to biodiversity, vegetation management activities in old growth stands should only occur for one or both of the following purposes. Management activities conducted for these purposes should retain all minimum quantitative old growth characteristics as well as qualitative attributes to the extent possible.

- Maintain or restore old growth habitat characteristics and ecosystem processes.
- Increase resistance and resilience to disturbances or stressors that may have negative impacts on old growth characteristics or abundance (such as drought, wildfire, and bark beetles).

Exceptions to this guideline are allowed for the following purposes:

- Where needed to mitigate imminent hazards to: (1) public safety in campgrounds, other designated recreation sites, administrative sites, and permitted special use areas; or (2) infrastructure that is essential to community welfare (e.g., utilities, communications, and where fire modeling shows a risk to evacuation routes).

- Where project analysis has identified a need to remove a proportion of lodgepole pine old growth to achieve a diversity of age classes.

FW-VEGF-GDL-05: Vegetation management projects should retain at least the minimum amount of coarse woody debris (greater than or equal to 3" in diameter) displayed below, averaged for each treatment unit on forested sites, to provide for well-distributed coarse woody debris that contributes to nutrient cycling, structural diversity, and habitat. The requirement should be met immediately following completion of all project activities. Also see FW-SOIL-GDL-04.

- Warm dry R1 broad potential vegetation type: 5 tons/acre
- Cool moist and cold R1 broad potential vegetation types: 10 tons/acre

The guideline applies to any vegetation treatment in forested communities, including timber harvest and prescribed fire. This guideline does not apply in nonforested vegetation communities or in open forest savannas that may occur in the warm dry potential vegetation type. The guideline applies as an average across each vegetation treatment unit; the downed wood may be irregularly distributed. Downed wood should consist of intact pieces of a variety of species, sizes and stages of decay, depending on site conditions. Prescriptions should emphasize retaining larger debris (pieces 10" diameter and 10' in length or greater) where possible, which are higher value to wildlife.

Exceptions to the guideline may occur where there is elevated concern with fire risk (recreation sites, areas adjacent to infrastructure or private ownerships, wildland urban interface areas, utility lines, etc.), as supported by site-specific analysis.

Nonforested Vegetation (VEGNF)

Desired Conditions

FW-VEGNF-DC-01: Native plant communities support diverse age classes of shrubs and a vigorous, diverse, self-sustaining understory of grasses and forbs relative to site potential (based on ecological classification) and consistent with the natural range of variation.

FW-VEGNF-DC-02: Native plant species dominate and invasive plant species are at low abundance or non-existent. Naturalized non-native species (such as Kentucky bluegrass and timothy) may be present but do not increase in extent.

FW-VEGNF-DC-03: Nonforested vegetation dominates sites on dry forested potential vegetation types that were historically maintained without trees by frequent fire. This includes fire-maintained grass and shrublands where tree comprise 0-5 percent canopy cover as well as savannas characterized by a dominance of grass or shrub understories with widely spaced fire-resilient trees at 5-10 percent canopy cover. In such areas, encroachment of conifer species is minimal.

Threatened, endangered, proposed and candidate plant species; and plant species of conservation concern (PLANT)

Desired Conditions

FW-PLANT-DC-01: Habitat conditions support the recovery and persistence of plant species that are recognized as threatened, endangered, proposed, or candidate under the Endangered Species Act, and those that are identified as species of conservation concern. Ecological conditions and processes that sustain the habitats currently or potentially occupied by these plant species are maintained or restored.

FW-PLANT-DC-02: Key whitebark pine areas such as cone collection sites, resistant seed-bearing trees, and seed orchards persist on the landscape.

Goals

FW-PLANT-GO-01: Recovery and long-term persistence of plants that are threatened, endangered, proposed, or candidate under the Endangered Species Act or species of conservation concern is supported by cooperation with other agencies and landowners to expand inventories, identify potential habitat for these species, and promote protection and/or restoration of associated habitats.

Objectives

FW-PLANT-OBJ-01: Treat at least 4,500 acres over the life of the plan for the purpose of sustaining or restoring whitebark pine and contribute to achieving desired conditions as described in the forested vegetation section. Achieving this would also contribute to FW-VEGT-DC-01. Refer to appendix C for information on possible restoration strategies and activities.

Guidelines

FW-PLANT-GDL-01: Activities affecting vegetation in known occurrences or suspected habitat of plants listed as threatened, endangered, proposed, or candidate under the Endangered Species Act, and those that are identified as species of conservation concern should be designed to provide for their long- term persistence.

Wildlife (WL)

Desired Conditions

FW-WL-DC-01: Habitats for native wildlife species are available throughout those species' potential natural ranges on NFS lands. Habitats for desired nonnative wildlife species are available on NFS lands where they can be supported by healthy, functioning ecosystems, as described in the vegetation section.

FW-WL-DC-02: Vegetation composition, structure, and distribution, including live vegetation and such things as fire or insect-killed trees, provide the life/natural history requirements of native and desired nonnative wildlife species, for the portion of those species' life cycles that occur on NFS lands. Also see Vegetation section.

FW-WL-DC-03: Vegetation composition, structure, and distribution allow wildlife to move within and between NFS parcels in response to seasonal habitat needs, dispersal needs, disturbances (such as, fire, insect infestations), and long-term changes (such as climate change). Also see Vegetation section.

FW-WL-DC-04: Large, unroaded areas are distributed and connected Forestwide, providing for species with large home ranges that also require seclusion or low level of disturbance by humans.

FW-WL-DC-05: Conflicts between humans and wildlife are rare.

FW-WL-DC-06: Key seasonal habitat where wildlife are sensitive to human disturbance, such as ungulate winter range, nest and den sites, and other birthing and rearing sites are relatively free of human disturbance during the period in which those species are active in these areas.

FW-WL-DC-09: In lynx habitat (see glossary), boreal forest and associated matrix habitat provide the mosaic of structural stages necessary (as defined by the best available scientific information) to support the denning, foraging, resting, and travel habitat needs of Canada lynx.

Goals

FW-WL-GO-01: Coordination with Montana Fish, Wildlife, and Parks and other agencies occurs during project planning, in order to allow consideration of the goals and objectives of these agencies regarding wildlife and wildlife habitats.

FW-WL-GO-02: Cooperative meetings among Forest Service and Montana Fish, Wildlife, and Parks biologists occur annually, in order to evaluate management direction for wildlife and habitats on NFS and adjoining lands, and to recommend potential adjustments to management for the purposes of maintaining or improving habitats.

FW-WL-GO-03: The FS works with community leaders, youth and schools, homeowners, businesses, private organizations, and other agencies to develop and disseminate information about how to live, work, and recreate where wildlife species are present. Also see Public Information, Interpretation and Education section (CONNECT).

FW-WL-GO-04: Linkage areas identified through interagency coordination facilitate the movement of wildlife between NFS parcels separated by other ownerships.

FW-WL-GO-05: Forest biologists and managers cooperate with other agencies and collaborate on conservation strategies, recovery plans and management of habitat, to achieve recovery of federally listed wildlife species occurring on NFS lands.

FW-WL-GO-06: Through cooperation with other agencies, collaboration on conservation strategies and other management plans, and management of habitat, the need for listing of additional wildlife species under the Endangered Species Act is prevented.

Northern Continental Divide Ecosystem Grizzly Bear Habitat Management Direction (NCDE)

NCDE Forestwide Plan Components

Desired Conditions

FW-NCDE-DC-01: The risk of grizzly bear-human conflict is reduced by information, education, and design features or criteria for management activities.

FW-NCDE-DC-02: 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.

FW-NCDE-DC-03: 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

FW-NCDE-STD-01: Grizzly bear habitat on NFS lands in the NCDE shall be delineated and managed as primary conservation area, Zone 1, Zone 2, or Zone 3 (see figure 1-2 or subsequent USFWS updates if applicable).

FW-NCDE-STD-02: 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.

NCDE PCAZ1Z2 Plan Components

Desired Conditions

PCAZ1Z2-NCDE-DC-01: Within the NCDE primary conservation area, Zone 1, 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.

Standards

PCAZ1Z2-NCDE-STD-01: Within the NCDE primary conservation area, Zone 1, and Zone 2, food/wildlife attractant storage special order(s) shall apply to NFS lands.

Guidelines

PCAZ1Z2-NCDE-GDL-01: Within the NCDE primary conservation area, Zone 1, 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.

PCAZ1Z2-NCDE-GDL-02: Within the NCDE primary conservation area, Zone 1, and Zone 2, if a contractor, permittee, lessee, or 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 PCAZ1 Plan Components

Desired Conditions

PCAZ1-NCDE-DC-01: Within the NCDE primary conservation area and Zone 1, 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.

Standards

PCAZ1-NCDE-STD-01: Within the NCDE primary conservation area and Zone 1, 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.

PCAZ1-NCDE-STD-02: Within the NCDE primary conservation area and Zone 1, 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.

PCAZ1-NCDE-STD-03: Within the NCDE primary conservation area and Zone 1, there shall be no 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 unallotted lands or an increase in animal unit months.

PCAZ1-NCDE-STD-04: Within the NCDE primary conservation area and Zone 1, temporary permits for grazing by small livestock for purposes such as controlling invasive plants, reducing fire risk, or trailing of small livestock across NFS lands shall not result in an increase in bear-small livestock conflicts.

PCAZ1-NCDE-STD-05: Within the NCDE primary conservation area and Zone 1, 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.

PCAZ1-NCDE-STD-06: Within the NCDE primary conservation area and Zone 1, 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.

PCAZ1-NCDE-STD-07: Within the NCDE primary conservation area and Zone 1, 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.

PCAZ1-NCDE-STD-08: Within the NCDE primary conservation area and Zone 1, 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.

PCAZ1-NCDE-STD-09: Within the NCDE primary conservation area and Zone 1, 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.

PCAZ1-NCDE-STD-10: Within the NCDE primary conservation area and Zone 1, 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.

PCAZ1-NCDE-STD-11: Within the NCDE primary conservation area and Zone 1, 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.

Guidelines

PCAZ1-NCDE-GDL-01: Within the NCDE primary conservation area and Zone 1, 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.

PCAZ1-NCDE-GDL-02: Within the NCDE primary conservation area and Zone 1, 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.

PCAZ1-NCDE-GDL-03: Within the NCDE primary conservation area and Zone 1, 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.

PCAZ1-NCDE-GDL-04: Within the NCDE primary conservation area and Zone 1, 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.

PCAZ1-NCDE-GDL-05: Within the NCDE primary conservation area and Zone 1, 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.

PCAZ1-NCDE-GDL-06: Within the NCDE primary conservation area and Zone 1, carrying bear deterrent spray should be recommended to mineral permittees, lessees and operators to reduce the risk of grizzly bear-human conflicts.

PCAZ1-NCDE-GDL-07: Within the NCDE primary conservation area and Zone 1, 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.

NCDE Z1 Plan Components

Desired Conditions

Z1-NCDE-DC-01: Within Zone 1 on the Helena-Lewis and Clark National Forest (see figure 1- 2), roads

and trails provide for public and administrative access to NFS lands. Grizzly bear habitat in Zone 1 contributes to sustaining the recovery of the grizzly bear population in the NCDE and providing the opportunity for movement of male bears to provide genetic connectivity with the Greater Yellowstone Ecosystem.

Z1-NCDE-DC-02: On the Helena-Lewis and Clark National Forest, within Zone 1 and the portion of Zone 2 west of Interstate 15, NFS lands adjacent to highways are consolidated and other efforts to reduce barriers to genetic connectivity of grizzly bear populations are supported.

Standards

Z1-NCDE-STD-01: Within Zone 1 on the Helena-Lewis and Clark National Forest (see figure 1-2), there shall be no net increase above the baseline in density of motorized routes (roads and trails) open to public motorized use during the non-denning season on NFS lands. Open motorized route density is calculated by dividing the total miles of open motorized routes on NFS lands in Zone 1 by the total square miles of NFS land area in that same area (see figure 1-2). 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 or improved road data 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 in geodetic systems from the north American datum of 1927 to the north American datum of 1983);
- 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 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 necessary to address grizzly bear-human conflicts, resource damage, or human safety concerns;
- Use of motorized routes in emergency situations as defined by 36 cfr 218.21; and
- Temporary roads (see glossary).

NCDE PCA Plan Components

Desired Conditions

PCA-NCDE-DC-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.

PCA-NCDE-DC-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.

PCA-NCDE-DC-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.

PCA-NCDE-DC-04: 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.

PCA-NCDE-DC-05: Within the NCDE primary conservation area, there is a mosaic of successional stages to provide for grizzly bear habitat needs over the long term.

PCA-NCDE-DC-06: 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

PCA-NCDE-STD-01: 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 shall be incorporated into the 10-year running average required by standard NCDE-STD-AR-03.

PCA-NCDE-STD-02: 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).

PCA-NCDE-STD-03: 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 in this section and elsewhere in the Plan;
- 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 or 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;
- Temporary roads (see glossary).

PCA-NCDE-STD-04: 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):

- Percent temporary increase in open motorized route density in each bear management subunit (i.e., open motorized route density baseline plus 5 percent);
- 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
- Temporary changes for actions where valid existing rights preclude or constrain agency discretion (e.g., certain contracts, permits, leases).

PCA-NCDE-STD-05: 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).

PCA-NCDE-STD-06: 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).

PCA-NCDE-STD-07: 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.

PCA-NCDE-STD-08: 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).

PCA-NCDE-STD-09: 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).

PCA-NCDE-STD-10: 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.

PCA-NCDE-STD-11: 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 unallotted lands.

PCA-NCDE-STD-12: Within the NCDE primary conservation area, new leases for leasable minerals shall include a no surface occupancy stipulation (see glossary).

Guidelines

PCA-NCDE-GDL-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 for grizzly bear disturbance or displacement. 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.

PCA-NCDE-GDL-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.

PCA-NCDE-GDL-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.

PCA-NCDE-GDL-04: 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).

PCA-NCDE-GDL-05: 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.

PCA-NCDE-GDL-06: 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).

PCA-NCDE-GDL-07: 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.

PCA-NCDE-GDL-08: 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.

PCA-NCDE-GDL-09: 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.

PCA-NCDE-GDL-10: 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).

Recreation Settings (ROS)

Desired Conditions

FW-ROS-DC-01: Outdoor recreation opportunities and experiences are available year-round in a range of settings as described by the desired recreation opportunity spectrum. These settings reflect the integration of other resource values with the desired recreation opportunities, access, facilities, and infrastructure provided within those settings.

The desired distribution of Forestwide recreation opportunity settings are described in [Table 31]. Specific locations and distribution of desired recreation opportunity spectrum settings are mapped for each GA and are in appendix A.

Table 31. Desired recreation opportunity spectrum settings

Desired Recreation Opportunity Spectrum Settings	ROS		Winter ROS	
	Acres	Percent Of Total Forest[1]	Acres	Percent Of Total Forest[1]
Primitive	1,034,673	36	1,018,346	35
Semi-Primitive Nonmotorized	749,649	26	856,841	30
Semi-Primitive Motorized	375,866	13	725,625	25
Roaded Natural	694,044	24	253,979	9
Rural	28,982	1	28,432	1
Urban	0	0	0	0

[1] Percentage of the total NFS lands, rounded to the nearest whole number

FW-ROS-DC-02: Primitive ROS settings encompass large, wild, remote, and predominately unmodified landscapes. These settings often coincide with designated wilderness. Additional primitive ROS settings are scattered across the forest, often surrounded by SPNM settings. Primitive ROS settings contain no motorized recreation and little probability of seeing other people. They provide quiet solitude away from roads and people, are generally free of human development, and facilitate self-reliance and discovery.

Historic structures such as log ranger stations and fire lookouts are occasionally present. Signing and other infrastructure is minimal and constructed of rustic, native materials.

FW-ROS-DC-03: Primitive ROS settings (winter) are large, remote, wild, and predominately unmodified. Winter primitive ROS settings provide quiet solitude away from roads, and people. There is no motorized activity and little probability of seeing other people. Constructed trails that are evident in the summer months are covered by snow, making these settings appear even more natural and untouched by human management.

FW-ROS-DC-04: Semi-Primitive Non-Motorized settings provide opportunities for exploration, challenge, and self-reliance. Rustic structures such as signs and foot bridges are occasionally present to direct use and/or protect the setting's natural and cultural resources. These rustic constructed features are built from native materials or those that mimic native materials. Historic structures such as log ranger stations and fire lookouts are occasionally present. Closed roads may be present but do not dominate the landscape or detract from the SPNM experience of visitors.

These settings are free of motorized recreation travel but mechanized travel may be present.

FW-ROS-DC-05: Semi-Primitive Non-Motorized settings (winter) provide backcountry skiing, snowboarding, and snowshoeing opportunities. Trails are ungroomed and often not marked. Rustic facilities, such as historic cabins and yurts may exist but are rare.

Recreation Opportunities (REC)

Desired Conditions

FW-REC-DC-01: Recreation opportunities enable visitors to connect with the unique natural environments and historic and cultural occurrences that have taken place throughout the area and instill a culture of stewardship and appreciation.

FW-REC-DC-02: Activities associated with recreational opportunities contribute to jobs and income in the local economy, community stability or growth, and the quality of lifestyles.

FW-REC-DC-03: Sustainable levels of developed recreation sites and facilities exist at key locations to accommodate concentrations of recreation use and enhance visitor experiences.

FW-REC-DC-04: Recreation facilities, including trails and dispersed sites, and their uses have minimal impacts on resources including at risk species, heritage and cultural sites, water quality, and aquatic species.

FW-REC-DC-05: Recreation rental cabins and rental lookouts provide unique and/or historic overnight facilities.

FW-REC-DC-06: Vegetation within developed recreation sites is healthy and resilient and provides for the health and safety of the public. Also see FW-VEGT-DC-04.

FW-REC-DC-07: Dispersed recreation camping sites (development scale 1-2) provide undeveloped camping opportunities while considering cultural and natural resource concerns, activity and recreation user conflicts, and over-use.

Objectives

FW-REC-OBJ-01: Rehabilitate at least five dispersed recreation sites (development scale 1-2) which have erosion or sanitation issues.

FW-REC-OBJ-02: Rehabilitate or relocate at least five existing recreation facilities, including dispersed sites, if they are degrading surface or riparian resources.

FW-REC-OBJ-03: Improve accessibility of facilities or programs at least five developed recreation sites (development scale 3-5), such as campgrounds, trailheads, cabin rentals, or the Lewis and Clark National Historic Trail Interpretive Center.

FW-REC-OBJ-04: Rehabilitate or refurbish at least five developed recreation sites (development scale 3-5) to meet current and future projected demands.

Guidelines

FW-REC-GDL-01: Management of developed recreation facilities should be responsive to environmental changes such as but not limited to changes in water flows, snow levels, snow elevation, fish and wildlife habitats, vegetative conditions, and seasonal recreation use.

FW-REC-GDL-03: To maintain quality and quantity of water flows to, within, or between groundwater dependent ecosystems, groundwater use facilities at recreation and administrative sites should not: a) be developed in RMZs (unless no alternatives exist); b) measurably lower river flows, lake levels, or flows to wetlands or springs (for example change springs from perennial to intermittent, or eliminate springs altogether); and/or c) discharge pollutants directly to groundwater.

FW-REC-GDL-04: To reduce potential impact to fishery resources, avoid placing new facilities or infrastructure within expected long-term channel migration zone. Where new activities inherently must occur in RMZs (for example road stream crossings, boat ramps, docks, and interpretive trails), locate them to minimize impacts on riparian associated resource conditions.

FW-REC-GDL-05: Where existing recreation facilities are located within RMZs and degrading aquatic or riparian resources, consider removing or relocating such facilities outside of RMZs or use other means practicable to reduce effects. In RMZs, areas where developed recreation facilities have been removed

should be rehabilitated to a natural state.

FW-REC-GDL-06: To protect resources, new and reconstructed solid and sanitary waste facilities should not be located within inner RMZs.

FW-REC-GDL-07: To reduce the potential for bear/human conflicts, plantings and seed mixes near roads and developed recreation facilities should not contain plant species that may attract bears. Also see FW-NCDE-DC-01, PCAZ1-NCDE-GDL-01, PCA-NCDE-GDL-08, and NCDE-GDL-VEG-05.

Recreation Special Uses (RSUP)

Desired Conditions

FW-RSUP-DC-01: Recreation special uses provide unique opportunities, services, and experiences for the recreating public and/or attend to a demonstrated demand for a specific recreation opportunity.

FW-RSUP-DC-02: Services provided by recreation special uses enhance the recreation experiences of forest visitors, while ensuring public health and safety and protecting natural and cultural resources. Also see FW-CR-DC-03.

FW-RSUP-DC-03: Recreation special uses contribute to jobs and income in the local economy, community stability or growth, and the quality of lifestyles throughout the forest while remaining compatible with ecological and social capacity thresholds.

Guidelines

FW-RSUP-GDL-01: To mitigate conflicts with other users, recreation operations, under (or being considered for) special use authorizations, should include permit measures that address potential conflicts such as, but not limited to: location of the event, timing of the event, party size, and education on the reduction of human-wildlife conflict.

Recreation Access (ACCESS)

Desired Conditions

FW-ACCESS-DC-01: Forest system roads and trails provide a variety of motorized, nonmotorized, and mechanized recreation transport access to the Forest, during summer and winter seasons. Routes provide access to key destinations on the forest. Unauthorized recreation routes are not present on the landscape.

FW-ACCESS-DC-02: Airstrips provide opportunities for motorized recreation aviation access.

FW-ACCESS-DC-03: Forest visitors use the designated system of roads, trails, and airstrips to access recreation activities appropriate within identified recreation opportunity setting locations.

Goals

FW-ACCESS-GO-01: The Forest Service works in cooperation with landowners, other agencies, and partners to provide legal access to public lands.

Guidelines

FW-ACCESS-GDL-01: To protect natural and cultural resources, projects and other management activities should be designed to prevent the creation and/or use of unauthorized recreation routes, and to rehabilitate existing ones to the extent practicable.

FW-ACCESS-GDL-02: New trailheads, for both motorized and nonmotorized recreation uses, and airstrips should be strategically located to provide safe and convenient staging for recreation opportunities.

Scenery (SCENERY)

Desired Conditions

FW-SCENERY-DC-01: The natural and cultural attributes of the Forest's scenery are described in the scenic character descriptions, see appendix G.

FW-SCENERY-DC-02: Scenery integrity objectives contribute to and establish the sense of place of local

communities.

FW-SCENERY-DC-03: Scenic integrity objectives are in harmony with and contribute to desired recreation settings and experiences. See FW-ROS-Table 15.

Guidelines

FW-SCENERY-GDL-01: To achieve or maintain the identified scenic integrity objectives on the forest:

- Vegetative management activities should reflect natural disturbance regimes and processes.
- Desired scenic integrity objectives should be met during management activities to ensure scenery continues to contribute to the sense of place of the Forests' landscapes.
- The construction or reconstruction of FS facilities should harmonize with or complement the character of the landscape settings. Also see FW-ROS-DC-01.

Designated Wilderness (WILD)

Desired Conditions

FW-WILD-DC-01: Designated wilderness areas provide for wilderness character as defined by the Wilderness Act and the wilderness areas' enabling legislation.

FW-WILD-DC-02: Natural ecological processes (e.g., plant succession) and disturbances (e.g., wildfire, insects, and disease) are the primary forces affecting the composition, structure, and pattern of vegetation. Fire plays a role as a natural disturbance agent within designated wilderness areas.

FW-WILD-DC-03: The large remote areas within designated wilderness areas contribute habitats for species with large home ranges such as wide-ranging carnivores (e.g., grizzly bear) and species found primarily in these habitats, such as mountain goats. Habitat conditions in designated wilderness contribute to wildlife movement within and across the Forest.

FW-WILD-DC-04: Water bodies and riparian areas provide undisturbed quality habitat for fish, amphibians, and other aquatic-associated species.

FW-WILD-DC-05: Facilities within designated wilderness provide for the management, protection, and use of the wilderness. Facilities and structures with significant historic values contribute to the wilderness character. Facilities, trails, and signage within wilderness areas are minimal and constructed of rustic, native, or natural-appearing materials.

FW-WILD-DC-06: Outfitter and guide opportunities provide services that respond to relevant public need.

FW-WILD-DC-07: The Bob Marshall, Scapegoat, and Gates of the Mountains Wilderness Areas are maintained as Class I Air Quality areas. See also FW-AQ-DC-01.

Goals

FW-WILD-GO-01: The HLC NF works in collaboration with adjacent national forests to manage the Bob Marshall Wilderness Complex, which includes the Great Bear, Bob Marshall, and Scapegoat Wilderness Areas.

Guidelines

FW-WILD-GDL-01: To protect water quality and aquatic habitats, grazing of recreational livestock should not be permitted within 100 feet of water sources.

FW-WILD-GDL-02: To protect cave resources, known caves and new cave discoveries should not be signed, disclosed on maps, mentioned in brochures, or have permanent reference marking except when necessary for resource protection.

Suitability

FW-WILD-SUIT-01: Designated wilderness areas are suitable for existing livestock grazing allotments, but they are not suitable for new or expanded livestock grazing allotments.

FW-WILD-SUIT-02: Designated wilderness areas are not suitable for motorized uses or mechanized means of transport (including bicycles) except as allowed by enabling legislation.

FW-WILD-SUIT-03: Designated wilderness areas are not suitable for timber production or timber harvest.

FW-WILD-SUIT-04: Designated wilderness areas are not suitable for commercial use of non-timber forest products (e.g., firewood, mushrooms, huckleberries), but are suitable for personal and agency use.

FW-WILD-SUIT-05: Designated wilderness areas are not suitable for permanent structures unless they are necessary to meet minimum requirement for the administration of the area.

Recommended Wilderness Areas (RECWILD)

Desired Conditions

FW-RECWILD-DC-01: Recommended wilderness areas preserve opportunities for inclusion in the National Wilderness Preservation System. The ecological and social characteristics that provided the basis for each area's suitability for wilderness recommendation are protected and maintained.

FW-RECWILD-DC-02: Recommended wilderness areas are characterized by a natural environment where ecological processes such as natural succession, wildfire, avalanches, insects and disease function as the primary forces affecting the environment.

FW-RECWILD-DC-03: Recommended wilderness areas provide outstanding opportunities for solitude or primitive and unconfined recreation.

Standards

FW-RECWILD-STD-01: Within recommended wilderness areas new leases for leasable minerals shall include a no surface occupancy stipulation.

Suitability

FW-RECWILD-SUIT-01: Motorized and mechanized means of transport are not suitable in recommended wilderness areas. Exceptions may be made for authorized permitted uses, valid existing uses, or in emergencies involving public health and safety that are determined on a case by case basis.

FW-RECWILD-SUIT-02: Recommended wilderness areas are suitable for restoration activities (such as management ignited fires, active weed management) to protect and/or enhance the wilderness characteristics of these areas.

FW-RECWILD-SUIT-03: Motorized and mechanized equipment (such as chain saws to clear trails) are suitable for accomplishing restoration activities and/or administrative work.

FW-RECWILD-SUIT-04: Recommended wilderness areas are not suitable for timber production or timber harvest.

FW-RECWILD-SUIT-05: Recommended wilderness areas are not suitable for new commercial communication sites and new utility corridors.

FW-RECWILD-SUIT-06: Recommended wilderness areas are not suitable for road construction or reconstruction.

FW-RECWILD-SUIT-07: Recommended wilderness areas are not suitable for new developed recreation sites and/or facilities.

FW-RECWILD-SUIT-08: Recommended wilderness areas are suitable for existing livestock grazing allotments, but they are not suitable for new or expanded livestock grazing allotments.

Wilderness Study Areas (WSA)

Desired Conditions

FW-WSA-DC-01: Wilderness study areas are characterized by a natural environment where ecological processes such as natural succession, wildfire, avalanches, insects and disease function as the primary

forces affecting the environment.

FW-WSA-DC-02: Wilderness study areas primarily offer opportunities for primitive recreation, although uses established and allowed prior to the enabling legislation are retained if they maintain the wilderness character and the potential for inclusion in the National Wilderness Preservation System that existed in 1977.

Standards

FW-WSA-STD-01: Within the wilderness study areas new leases for leasable minerals shall include a no surface occupancy stipulation.

Suitability

FW-WSA-SUIT-01: Wilderness study areas are not suitable for timber production or timber harvest.

FW-WSA-SUIT-02: Wilderness study areas are not suitable for new commercial communication sites or new utility corridors.

FW-WSA-SUIT-03: Wilderness study areas are suitable for restoration activities (such as management ignited fires, active weed management) to protect and/or enhance the wilderness characteristics of these areas.

FW-WSA-SUIT-04: Motorized and mechanized equipment (such as chain saws to clear trails) is suitable for accomplishing restoration activities and/or administrative work.

FW-WSA-SUIT-05: New road construction or reconstruction is not suitable in wilderness study areas. However, reconstruction or rerouting existing roads to eliminate impacts to natural or cultural resources is suitable provided abandoned routes are fully rehabilitated.

FW-WSA-SUIT-06: Wilderness study areas are not suitable for new developed recreation facilities.

FW-WSA-SUIT-07: Wilderness study areas are suitable for existing livestock grazing allotments, but they are not suitable for new or expanded livestock grazing allotments.

FW-WSA-SUIT-08: Wilderness study areas are suitable for motorized uses and mechanized means of transport if allocated by forest travel plans, not precluded by other designations or policy, and retained the wilderness character and the potential for inclusion in the National Wilderness Preservation System that existed in 1977.

Inventoried Roadless Areas (IRA)

Desired Conditions

FW-IRA-DC-01: Inventoried roadless areas provide large, undisturbed, and unfragmented areas of land. These large land areas sustain high quality or undisturbed soil, water, and air and a diversity of plant and animal communities. They also provide for secure habitats for a variety of fish and wildlife species that are dependent upon large, undisturbed, unfragmented areas of land.

FW-IRA-DC-02: Within inventoried roadless areas, natural, ecological processes and disturbances (such as wildfire, insects, and disease) are the primary forces affecting the composition, structure, and pattern of vegetation. Inventoried roadless areas contribute to reference landscapes for future study and understanding of natural ecological processes.

FW-IRA-DC-03: Landscapes in inventoried roadless areas are naturally appearing with high scenic quality.

FW-IRA-DC-04: Inventoried roadless areas provide remote primitive and semiprimitive recreation opportunities in natural settings.

FW-IRA-DC-05: Inventoried roadless areas protect sources of public drinking water, traditional cultural properties and sacred sites, and locally identified unique characteristics, where they exist.

Suitability

FW-IRA-SUIT-01: Inventoried roadless areas are unsuitable for timber production. However, timber harvest is suitable within inventoried roadless areas outside of wilderness study areas and recommended wilderness areas to provide for other multiple use values when consistent with the 2001 Roadless Area Conservation Rule.

FW-IRA-SUIT-02: Forest system roads (that are managed as part of the forest transportation system) in inventoried roadless areas are suitable for motorized and mechanized means of transport.

FW-IRA-SUIT-03: Inventoried roadless areas are suitable for restoration activities (such as management ignited fires, active weed management) to protect and/or enhance the roadless area values and characteristics of these areas.

Eligible Wild and Scenic Rivers (WSR)

Guidelines

FW-WSR-GDL-01: To protect the eligibility of river segments, interim protection measures should be implemented within ¼ mile of either side of identified eligible river segment. These interim protective measures apply to the future use and management along the eligible river until they are changed through an act of Congress or unless a river is determined not suitable for designation through a suitability study.

[Table 32] describes the interim protection measures applied to the management of eligible wild, scenic, or recreational river segments. For additional information on river segments please see Appendix F.

Table 32. Interim protection measures for eligible river segments

Project/Activity	Interim Protection Measures		
	Wild	Scenic	Recreational
Water Resource Projects: Dams Diversions Flood Control Activities That Affect Free-Flow	Wild, Scenic, and Recreational: Water resource projects on eligible rivers should be analyzed as to their effects on a rivers free-flow, water quality, and identified outstanding remarkable values, with adverse effects to be prevented to the extent of the existing agency authority (such as special use authority).		
Hydroelectric Power Facilities	Wild, Scenic, and Recreational: FS-identified eligible rivers should be protected pending a suitability determination.		
Minerals: Locatable	Wild, Scenic, and Recreational: Subject to valid existing rights, existing or new mining activity on an identified eligible river are subject to regulations in 36 Code of Federal Regulations Part 228, subpart A and should be conducted in a manner that minimizes surface disturbance, sedimentation, pollution, and visual impairment.		
Minerals: Leasable	Leases, licenses, and permits under mineral leasing laws should include conditions necessary to protect the values of the river corridor that make it eligible for inclusion in the national system.		
Minerals: Saleable	Disposal of saleable mineral material is prohibited.	Disposal of saleable mineral material is allowed if the values of the river corridor that make it eligible for inclusion in the national system are protected.	
Transportation System	Roads and railroads are generally not compatible.	Roads and railroads may parallel the river for short segments or bridge the river if such construction	Roads and railroads are permitted to parallel the river if such construction fully protects river outstanding remarkable

Project/Activity	Interim Protection Measures		
	Wild	**Scenic**	**Recreational**
	Prevent actions related to the road system that would preclude protection of the river as wild. Do not plan roads outside of the corridor that would adversely affect the wild classification. New trail construction should generally be designed for nonmotorized users. New airfields may not be developed.	protects the river values, including the free-flowing character. Bridge crossings and access points are allowed. New trail construction and airfield development should be compatible and fully protect river outstanding remarkable values.	values, including the free-flowing character. Bridge crossings and access points are allowed. New trail construction and airfield development should be compatible and fully protect river outstanding remarkable values.
Utility Proposals	Wild, Scenic, and Recreational: New transmission lines such as gas lines, water lines, and similar linear features are not compatible with eligible wild and scenic rivers and are discouraged. Any portion of a utility proposal that has the potential to affect the river's free-flowing character must be evaluated as a water resources project.		
Recreation Developments	Major public use areas such as large campgrounds, interpretive centers, or administrative headquarters must be located outside of the river corridor. Minimum facilities such as toiles and refuse containers may be provided to protect and enhance water quality and other river values. Facilities must be located and designed to harmonize with the primitive character, must protect river values, and must be screened from view to the extent possible.	Public facilities, such as moderate sized campgrounds, simple sanitation and convenience facilities, public information centers, administration sites, and river access developments are allowed. Facilities must be located and designed to harmonize with the natural and cultural settings, must protect river values, including water quality, and must be screened from view to the extent possible.	Recreation, administration, and river access facilities may be in close proximity to the river. However, recreational classification does not require recreation development. Facilities must be located and designed to harmonize with the natural and cultural settings, must protect river values, including water quality, and must be screened from view to the extent possible.
Motorized Use	Motorized use on land or water may be permitted but is generally not compatible. Where motorized use is deemed necessary, uses should be carefully defined and impacts mitigated.	Motorized use on land or water may be permitted, prohibited, or restricted to protect river outstanding remarkable values.	

Project/Activity	Interim Protection Measures		
	Wild	Scenic	Recreational
Wildlife And Fish Projects	Construction of minor structures and vegetation management to protect and enhance wildlife and fish habitat should harmonize with the area's primitive character and protect river outstanding remarkable values. Proposed wildlife or fisheries restoration or enhancement projects that have potential to affect the rivers free-flowing character must be evaluated as a water resources project.	Construction of structures and vegetation management designed to protect and enhance wildlife and fish habitat should harmonize with the area's largely undeveloped character and protect river outstanding remarkable values. Any portion of a wildlife or fisheries restoration or enhancement projects that have potential to affect the rivers free-flowing character must be evaluated as a water resources project.	Construction of structures and vegetation management designed to protect and enhance wildlife and fish habitat should fully protect river outstanding remarkable values. Any portion of a wildlife or fisheries restoration or enhancement projects that have potential to affect the rivers free-flowing character must be evaluated as a water resources project.
Vegetation Management	Cutting of trees and other vegetation is not permitted except when needed in association with a primitive recreation experience, to protect users, or to protect identified outstanding remarkable values.	A range of vegetation management and timber harvest practices are allowed, if these practices are designed to protect users, or protect, restore, or enhance the river environment, including the long-term scenic character.	
Domestic Livestock Grazing	Domestic livestock grazing should be managed to protect outstanding remarkable values. Existing structures may be maintained. New facilities may be developed so long as they maintain the outstanding remarkable values and the area's primitive character.	Domestic livestock grazing should be managed to protect outstanding remarkable values. Existing structures may be maintained. New facilities may be developed so long as they maintain the outstanding remarkable values and the area's largely undeveloped character.	Domestic livestock grazing should be managed to protect outstanding remarkable values. Existing structures may be maintained. New facilities may be developed so long as they maintain the outstanding remarkable values for which the river was found eligible.

Infrastructure – Roads (RT)

Desired Conditions

FW-RT-DC-01: A safe and cost-effective transportation system provides public and administrative access to FS lands while protecting natural and cultural resources.

FW-RT-DC-02: Roads that are not needed to serve administrative and public needs are not present.

FW-RT-DC-04: The transportation system has minimal impacts on resources including all wildlife, heritage and cultural sites, water quality, and aquatic species.

Goals

FW-RT-GO-03: The HLC NF cooperates with highway managers and other landowners to implement

wildlife crossings that contribute to wildlife and public safety where needed.

Objectives

FW-RT-OBJ-01: Decommission or place into storage (maintenance level 1) at least 50 miles of roads. Priorities shall include roads causing resource damage in priority watersheds and/or where roads chronically fail.

FW-RT-OBJ-02: Complete at least 100 miles of reconstruction or road improvement projects. Priorities shall include reducing effects on: desired aquatic and riparian conditions from chronic sediment delivery or potential future road prism failures, and conservation watershed networks that have westslope cutthroat or bull trout habitats.

Guidelines

FW-RT-GDL-12: Roads not needed in the long term should be decommissioned to benefit fish and wildlife habitat (prioritizing native fish habitat), enhance the desired recreation opportunity spectrum settings and opportunities, and/or create a more cost-efficient transportation system.

FW-RT-GDL-13: To avoid impacts to wildlife, newly constructed or reconstructed roads, temporary roads, skid trails, and trails should avoid key seasonal habitats.

Benefits to People - Livestock Grazing (GRAZ)

Desired Conditions

FW-GRAZ-DC-01: Sustainable grazing opportunities are available for domestic livestock from lands suitable for forage production.

FW-GRAZ-DC-02: Within grazing allotments, rangelands are comprised of stable soils supporting a diverse species composition of grasses, forbs, and shrubs that create a healthy and resilient native plant community. Native plant communities provide for wildlife habitat and forage needs in addition to providing forage for domestic livestock.

FW-GRAZ-DC-03: Within grazing allotments, soil stability, and hydrologic and biotic integrity function in a manner that provides for resilience relative to site potential as described in ecological classifications.

Goals

FW-GRAZ-GO-01: Coordination with Montana Fish, Wildlife, and Parks wildlife biologists occurs during the allotment planning/permit process to ensure that wildlife habitat/forage needs are being addressed in conjunction with domestic livestock grazing.

Standards

FW-GRAZ-STD-02: Annual livestock use indicators within inner RMZs shall be set during the allotment management planning process at levels that move towards or maintain desired rangeland vegetation, riparian function, and wildlife habitat specific to the ecological site (or equivalent classification).

Indicator values shall be adapted over time based on long-term monitoring and evaluation of conditions and trends.

Guidelines

FW-GRAZ-GDL-01: To maintain or improve riparian and aquatic conditions and achieve riparian desired conditions over time through adaptive management, new grazing authorizations and reauthorizations that contain low gradient, alluvial channels should require that end-of-season stubble height be 10 to 15 cm (4 to 6 inches) along the greenline. However, application of the stubble height numeric value range should only be applied where it is appropriate to reflect existing and natural conditions for the specific geo-climactic, hydrologic, and vegetative conditions where it is being applied. Alternative use and disturbance indicators and values, including those in current ESA consultation documents, may be used if they are based on current science and monitoring data and meet the purpose of this guideline. Long-term monitoring and evaluation should be used to adapt this numeric range and/or the use of other indicators.

FW-GRAZ-GDL-02: To ensure grazing is sustainable and contributes to other resource desired conditions, forage use by livestock should maintain or enhance the desired structure and diversity of plant communities on grasslands, shrub lands, and forests and should maintain or restore healthy riparian conditions as defined in the allotment management plan.

FW-GRAZ-GDL-03: New or revised allotment management plans should design grazing practices (such as stocking rate, duration, timing), and/or physical structures to reduce negative effects to riparian areas or riparian dependent at risk species.

FW-GRAZ-GDL-04: Allotment management plans should incorporate adaptive management to move towards desired conditions for vegetation and riparian resources, considering both the needs and impacts of domestic livestock and wildlife.

FW-GRAZ-GDL-05: When updating or managing existing facilities that are located within RMZs, facilities should be minimized or relocated to other areas. Livestock management activities (trailing, bedding, watering, salting, loading, and other handling or management efforts) should be avoided in RMZs to reduce effects to riparian resources and aquatic biota. Also see FW-RMZ section for additional information.

FW-GRAZ-GDL-06: Livestock watering facilities should be constructed or maintained to provide for forage use that will maintain or enhance structure and diversity of plant communities on suitable rangelands, but avoid impacts to soil and water resources.

FW-GRAZ-GDL-07: To attract livestock out of riparian areas, salt and/or supplements should be placed at least one-quarter (1/4) mile away.

Benefits to People - Timber (TIM)

Desired Conditions

FW-TIM-DC-01: Lands identified as suitable for timber production support a regularly scheduled timber harvest program that provides sustainable levels of wood fiber products.

FW-TIM-DC-02: Although natural disturbances occur on lands suitable for timber production, actively managed lands are resilient and/or resistant to disturbance and economic loss of the timber resource is minimized.

FW-TIM-DC-03: Production of timber and timber harvest contribute to economic sustainability, providing jobs and income to local economies.

FW-TIM-DC-04: A variety of harvest and contract methods are offered in response to market demand and local needs.

Goals

FW-TIM-GO-01: Timber harvest from the HLC NF, along with timber harvested from other lands, contributes to maintaining regional timber harvesting and milling infrastructure, including support to small businesses. When possible, efficiencies are gained across boundaries by utilizing available authorities for partnerships and agreements with entities, such as the state of Montana.

Objectives

FW-TIM-OBJ-01: Offer timber meeting product utilization standards for sale at an annual projected timber sale quantity of 4-7 MMCF (20-35 MMBF)[1], averaged on a 10-year basis. See appendix C for definition of timber utilization standards.

[1] A projected timber sale quantity level of approximately 7.9 MMCF (approximately 40 MMBF) would be possible within the constraints of the desired conditions and other plan components if budget was not considered as a limiting factor.

FW-TIM-OBJ-02: Offer an annual projected wood sale quantity consisting of both timber that meets utilization standards (FW-TIM-OBJ-01) plus other wood products (fuelwood, biomass, and other volumes

that do not meet timber product utilization standards) for sale of 5.9-9.4 MMCF[1], averaged on a 10 year basis.

[1]A projected wood sale quantity level of approximately 10.5 MMCF would be possible within the constraints of the desired conditions and other plan components if budget was not considered as a limiting factor.

Standards

FW-TIM-STD-01: On lands both suitable and unsuitable for timber production, timber harvest will not occur where soil, slope, or other watershed conditions may be irreversibly damaged, as identified in project specific findings. Also see Aquatic Ecosystems and Soil sections.

FW-TIM-STD-02: On forested lands (both suitable and unsuitable for timber production), timber harvest shall only be used when there is reasonable assurance of restocking within 5 years after final regeneration harvest per legal mandate. Restocking levels are prescribed in a site-specific silvicultural prescription for a treatment unit and are determined to be adequate depending on the objectives and desired conditions for the plan area. In some instances, such as when stands are treated to reduce fuel loadings, to create openings for scenic vistas, or to prevent encroaching trees to meet desired vegetation or wildlife habitat conditions, it is acceptable not to restock or restock at low tree densities. Restocking considerations do not apply in nonforested plant communities.

FW-TIM-STD-03: On lands both suitable and unsuitable for timber production, silvicultural treatments shall not be selected based solely on their ability to provide the greatest dollar return or output of timber; other considerations such as the purpose and need shall inform the selection of silvicultural treatments.

FW-TIM-STD-04: On lands both suitable and unsuitable for timber production, clearcutting shall be used as a harvest method only where it has been determined to be the method most appropriate to meet the purpose and need of the project. Other types of even-aged harvest shall be used only where determined to be appropriate. Determinations shall be based on an interdisciplinary review of site conditions and the desired conditions for vegetation, wildlife habitat, scenery, and other resources.

FW-TIM-STD-05: On lands both suitable and unsuitable for timber production, harvest units shall be shaped and blended to the extent practicable with the natural terrain. Also see the guidelines for Scenery.

FW-TIM-STD-06: Even-aged stands shall reach a minimum of 95 percent of culmination of mean annual increment, as measured by cubic volume, prior to regeneration harvest, unless at least one of the following conditions have been identified during project development:

- When such harvesting would modify fire behavior to protect identified resource, social or economic values;
- When harvesting of stands will trend landscapes toward vegetation desired conditions;
- When harvest uses uneven-aged silvicultural systems, thinning, or other intermediate stand treatments that do not regenerate even-aged or two-aged stands;
- When harvest is for sanitation or salvage of timber stands that have been substantially damaged by fire, windthrow, or other catastrophe or which are in imminent danger from insect or disease attack;
- When harvest is on lands not suited for timber production and the type and frequency of harvest is due to the need to protect or restore multiple use values other than timber production.

FW-TIM-STD-07: The quantity of timber that may be sold per decade from lands both suitable and not suitable for timber production shall not exceed the sustained yield limit of 5.75 mmcf (31.21 mmbf) per year on the proclaimed Helena National Forest; and 4.95 mmcf (26.36 mmbf) per year on the proclaimed Lewis and Clark National Forest. The sustained yield limits for both proclaimed forests total 10.7 mmcf (57.57 mmbf) across the administratively combined HLC NF, except for salvage or sanitation cutting of trees damaged by fire, windthrow, or other disturbance or to manage insect infestation or disease spread. Such trees may be harvested above the sustained yield limit, where it is not feasible to substitute such

timber for timber that would otherwise be sold under the plan and where such harvest is consistent with desired conditions for terrestrial and aquatic ecosystems.

FW-TIM-STD-08: The maximum opening size created by clearcutting, seedtree cutting, shelterwood seed cutting, or other cuts designed to regenerate an even-aged stand of timber in a single harvest operation shall normally be 40 acres. This standard applies to new harvest proposals on NFS lands only and need not consider existing openings on NFS lands, adjacent private or other agency lands. An exception applies to achieve desired ecological conditions for the plan area, including those associated with forest patterns, patch sizes and resilience in the short and long term (FW-VEGT-DC-01, 04 and FW- VEGF-DC-08, 09). The maximum opening size exception for the HLC NF is 75 acres. This is consistent with the estimated natural range of variation for average patch size of early successional forest openings.

FW-TIM-STD-09: Harvest openings, created as a result of a single harvest operation, that exceed the maximum opening sizes established in FW-TIM-STD-08 shall require 60-day public review and Regional Forester approval.

FW-TIM-STD-10: FW-TIM-STD-08 and FW-TIM-STD-09 shall not apply to the size of harvest openings created as a result of catastrophic (stand replacing) disturbances, such as fire or insect and disease infestations.

Guidelines

FW-TIM-GDL-01: To contribute to ecological sustainability and ecosystem health, when timber harvest and maintenance activities (such as precommercial thinning) are conducted, they should be designed to move the Forest toward achievement of vegetation desired conditions (such as species composition, size class, forest density, and landscape pattern) as well as other resource desired conditions.

FW-TIM-GDL-02: To help achieve desired conditions on lands unsuitable for timber production, but where timber harvest could occur, the use of timber harvest should be limited to the following purposes:

- Salvage dead or dying trees.
- Improve production of forage for livestock and wildlife.
- Reduce hazardous fuels and/or fire risk.
- Manage powerline right-of-ways.
- Mitigate forest insect or diseases.
- Move conditions toward desired stand or landscape vegetation composition, structure, and patterns, including restoration of ecosystem functions and improving resiliency.
- Maintain or enhance wildlife habitat.
- Perform research or administrative studies.
- Address issues of public safety and health.
- Improve recreation, infrastructure and/or scenic resource conditions, including creation of scenic vistas.

FW-TIM-GDL-03: To provide habitat for wildlife species associated with burned habitats, clusters of burned trees of a variety of sizes should be retained where it is safe to do so when salvaging timber in areas burned by high-severity wildfire.

Benefits to People - Fish and Wildlife (FWL)

Desired Conditions

FW-FWL-DC-02: Furbearers are present and potentially available to trappers on NFS lands, and habitat on NFS lands provides trapping opportunities that support Montana Fish, Wildlife and Parks population and harvest objectives.

FW-FWL-DC-04: Levels and types of public motorized access during the archery and rifle hunting

seasons are balanced with desired conditions for wildlife populations and habitat security, as well as with other resource desired conditions. Also see Wildlife, Other.

Goals

FW-FWL-GO-01: Forest Service and Montana Fish, Wildlife, and Parks biologists cooperate to identify potential needs for and means to achieve desired distribution and hunting opportunity of elk and other big game species.

Guidelines

FW-FWL-GDL-01: Prior to management actions that would increase or change the location, timing, mileage, or density of wheeled motorized routes open during the archery and rifle hunting seasons, FS biologists should coordinate with Montana Fish, Wildlife, and Parks biologists to identify possible management actions that may reduce the potential for displacement of big game species from NFS lands during the archery and rifle hunting seasons. Possible management actions may vary on a project-specific or local basis, and should be based on the best available scientific information (such as that described in the U.S. Forest Service and Montana Department of Fish, Wildlife and Parks Collaborative Overview and Recommendations for Elk Habitat Management on the Custer, Gallatin, Helena, and Lewis and Clark National Forests, 2013, or subsequent versions). Also see appendix C section titled "Elk and Other Big Game Species.

Benefits to People – Energy and Minerals (EMIN)

Desired Conditions

FW-EMIN-DC-05: The Forest continues to contribute to the economic strength and demands of the nation by supplying mineral and energy resources while assuring that the sustainability and resiliency of other resources are not compromised or degraded.

FW-EMIN-DC-06: Mineral materials are available based upon public interest, material availability, in-service needs, and protection of other resource values, including consistency with desired conditions for other resources.

Guidelines

FW-EMIN-GDL-01: To minimize adverse effects to aquatic and riparian resources, new authorizations and reauthorizations for mineral development and operations should avoid RMZs to the extent practicable. If the RMZ cannot be avoided, then ensure operators take all practicable measures to maintain, protect, and rehabilitate fish and wildlife habitat that may be affected by the operations. Required bonding should consider (in the estimation of bond amount) the cost of stabilizing, rehabilitating, and reclaiming the area of operations.

FW-EMIN-GDL-02: To minimize adverse effects to aquatic and riparian resources, new authorizations and reauthorizations for mineral development and operations should avoid adverse effects to aquatic and riparian resources. This should include requirements that operators take all practicable measures to maintain, protect, and rehabilitate water quality, and habitat for fish and wildlife and other riparian associated resources which may be affected by the operations.

Big Belts Geographic Area (BB)

Wildlife

Desired Conditions

BB-WL-DC-03: The Big Belts GA provides habitat connectivity for wide ranging species (e.g., grizzly bear and others) between public lands in northern Montana and those in south and southwestern Montana, including lands in the Greater Yellowstone Ecosystem.

Crazies Geographic Area (CR)

Wildlife

Desired Conditions

CR-WL-DC-01: The Crazies GA provides habitat connectivity for wide ranging species (e.g., grizzly bear and others) between public lands in northern Montana and those in south and southwestern Montana, including lands in the Greater Yellowstone Ecosystem.

Divide Geographic Area (DI)

Forested Vegetation

Desired Conditions

DI-VEGF-DC-04: Lynx habitat (see glossary) provides the amount, distribution, and structural conditions (based on the best available scientific information), at the scale of a reproductive female lynx home range, necessary to support the recovery and persistence of Canada lynx in the plan area.

Wildlife

Desired Conditions

DI-WL-DC-01: The Divide landscape provides habitat connectivity for wide-ranging species (grizzly bear, Canada lynx, wolverine, and others) between public lands in northern Montana and those in south and southwestern Montana, including lands in the Greater Yellowstone Ecosystem.

Goals

DI-WL-GO-01: Acquire ownership of or easements on non-NFS lands that are intermingled with or immediately adjacent to NFS lands, for the purpose of ensuring connectivity and security for wildlife species.

Guidelines

DI-WL-GDL-01: In order to maintain or improve wildlife security and connectivity, resource management activities in the central portion of the GA, adjacent to Highway 12, and where private ownerships are intermingled with NFS lands, should maintain or enhance high quality wildlife habitat, wildlife movement areas, and connectivity. In order to improve wildlife security and connectivity in these areas:

- Vegetation management activities should provide for wildlife hiding cover needs.
- Motorized access should not be increased.
- New trails should be constructed only where minimal impacts will occur to wildlife habitats and movement corridors.

South Hills Recreation Area

Desired Conditions

DI-SHRA-DC-01: The area offers dispersed nonmotorized recreation opportunities with high scenic quality within proximity to the city of Helena, Montana. Also see Forestwide Recreation Opportunities, Dispersed Recreation.

Guidelines

DI-SHRA-GDL-01: When conducting vegetation management in the South Hills Recreation Area, projects should be designed to meet desired conditions for vegetation and other resources while emphasizing values such as visitor safety, desirable recreation experiences, improving forest resilience, reducing the risk of high severity wildfire, and reducing hazardous fuels.

Suitability

DI-SHRA-SUIT-01: The South Hills Recreation Area is unsuitable for timber production, although harvest may be conducted to provide for other multiple use values compatible with the recreation values of the area, such as those described in DI-SHRA-GDL-01.

DI-SHRA-SUIT-02: Within the South Hill Recreation Area, mechanized means of transport (such as

mountain bikes) are suitable on FS established roads and trails only. No cross-country mountain bike activities would be allowed.

Elkhorns Geographic Area and Wildlife Management Unit (EH)

Wildlife

Desired Conditions

EH-WL-DC-02: The Elkhorns GA provides habitat connectivity for wide ranging species (e.g., grizzly bear and others) between public lands in northern Montana and those in south and southwestern Montana, including lands in the Greater Yellowstone Ecosystem.

Access

Guidelines

EH-ACCESS-GDL-01: Access to authorized routes to private inholdings or valid mining claims should protect wildlife habitat through restrictions on both locations and timing of use.

Roads and Trails

Standards

EH-RT-STD-01: New permanent roads shall be constructed only for alleviating resource concerns (e.g., removing a road from a riparian area and replacing it with a road in another location) or to allow reasonable access to private lands that cannot be accessed except by crossing NFS lands. Permanent roads constructed for these purposes shall include conditions (for example, timing of use restrictions, location restrictions) in order to meet wildlife habitat objectives.

EH-RT-STD-02: A trans-mountain road (bisecting the Elkhorns Mountain Range) shall not be constructed.

Little Belts Geographic Area (LB)

Showdown Ski Area

Desired Conditions

LB-SHOWSKI-DC-01: The Showdown Ski Area provides public access to developed recreation activities such as, but not limited to, downhill skiing, snowboarding, and snowshoeing.

LB-SHOWSKI-DC-02: The vegetation and forest conditions at Showdown Ski Area provide for public health and safety, recreational settings and user experiences, enhanced scenic values, and protection of facilities and infrastructure. Also see FW-VEGT-GDL-01 and FW-VEGF-GDL-02 exceptions.

Rocky Mountain Range Geographic Area (RM)

Forested Vegetation

Desired Conditions

RM-VEGF-DC-04*:* Lynx habitat (see glossary) provides the amount, distribution, and structural conditions (based on the best available scientific information), at the scale of a reproductive female lynx home range, necessary to support the recovery and persistence of Canada lynx in the plan area.

Wildlife

Desired Conditions

RM-WL-DC-01: The Rocky Mountain Range GA provides habitat connectivity for wide-ranging species (grizzly bear, Canada lynx, wolverine, and others) between public lands in northern Montana and those in central and southern Montana, including lands in the Greater Yellowstone Ecosystem.

Standards

RM-WL-STD-01: To avoid potential conflicts with grizzly bears and to avoid risk of disease transmission to wild bighorn sheep, domestic sheep or goat grazing on NFS lands with the Rocky Mountain Range GA will not be permitted.

Teton Pass Ski Area

Desired Conditions

RM-TETONSKI-DC-01: The Teton Pass Ski Area provides public access to developed recreation activities such as, but not limited to, downhill skiing, snowboarding, snowshoeing, and backcountry skiing.

RM-TETONSKI-DC-02: The vegetation and forest conditions at Teton Pass Ski Area provide for public health and safety, recreational settings and user experiences, enhancing scenic values, protection of facilities and infrastructure. Also see FW-VEGF-STD-01.

Rocky Mountain Front Conservation Management Area (CMA)

Desired Conditions

RM-CMA-DC-01: The conservation management area on the Rocky Mountain Front conserves, protects, and enhances the recreational, scenic, historic, cultural, fish, wildlife, roadless, and ecological values of the area for the benefit and enjoyment of present and future generations.

RM-CMA-DC-03: Nonmotorized recreation trail opportunities enable access to the primitive and semi primitive recreation opportunity spectrum settings within the conservation management area.

Standards

RM-CMA-STD-01: No new or temporary roads shall be constructed within the Rocky Mountain Front Conservation Management Area, except:

- To reroute or close an existing route to protect resources.
- To allow motorized access for timber management activities not more than ¼ mile from Teton Road, South Fork Teton Road, Sun River Road, Beaver Willow Road, or Benchmark Road.
- To allow for administrative access, permitted access, and access to valid existing rights.
- For emergency purposes.

RM-CMA-STD-02: Temporary roads that are constructed for vegetation management projects shall be restored within 3 years of project completion, including site preparation and planning activities.

Snowies Geographic Area (SN)

Grandview Recreation Area

Desired Conditions

SN-GVRA-DC-03: Trails within the Grandview Recreation Area offer dispersed, nonmotorized recreation opportunities. These opportunities range in complexity from those that are easy and readily accessible to those that are more difficult and require greater skills. Also see Forestwide Recreation Opportunities, Dispersed Recreation.

Suitability

SN-GVRA-SUIT-01: The entire Grandview Recreation Area is unsuitable for timber production. The Crystal Lake complex outside of the Big Snowies Wilderness Study Area is suitable for timber harvest to provide for other multiple use values.

SN-GVRA-SUIT-02: Within the Grandview Recreation Area, mechanized means of transportation (such as mountain bikes) are suitable on FS established roads and trails as long as they maintain the wilderness character of the WSA. No cross-country mountain bike activities are allowed.

Upper Blackfoot Geographic Area (UB)

Forested Vegetation

Desired Conditions

UB-VEGF-DC-04: Lynx habitat (see glossary) provides the amount, distribution, and structural conditions (based on the best available scientific information), at the scale of a reproductive female lynx home range, necessary to support the recovery and persistence of Canada lynx in the plan area.

Wildlife

Desired Conditions

UB-WL-DC-01: The Upper Blackfoot GA provides habitat connectivity for wide-ranging species (grizzly bear, Canada lynx, wolverine, and others) between public lands in northern Montana and those in central and southern Montana, including lands in the Greater Yellowstone Ecosystem.

Guidelines

UB-WL-GDL-01: Resource management activities in the west-central and east-central portions of the GA, where NFS lands narrow and approach the area of private lands surrounding Highway 200, should maintain or enhance high quality wildlife habitat, wildlife movement areas, and connectivity. In order to improve wildlife security and connectivity in these areas:

- Vegetation management activities should provide for wildlife hiding cover needs
- Motorized access should not be increased
- New trails should be constructed only where minimal impacts will occur to wildlife habitats and movement corridors

Northern Rockies Lynx Management Direction (NRMLD) Record of Decision

This document and associated guidance is incorporated in its entirety in the 2021 Forest Plan as Appendix F. For reference, it is provided as Appendix B of this BA, below.

Appendix B. Record of Consultation with the U.S. Fish and Wildlife Service

Table 33. Record of consultation with the U.S. Fish and Wildlife Service

Date	Consultation
8 June 2018	Notice of Availability for the HLC NF Draft Revised Forest Plan and Draft Environmental Impact Statement published in the Federal Register
Fall 2018	Informal meeting with USFWS in Helena to discuss upcoming consultation, process, personnel, etc.
October 2018	Letter sent to MT Field Office Supervisor from FS requesting a meeting to discuss personnel, procedures, and other consultation-related items
December 2018 – February 2019	Emails and phone calls to schedule meeting to establish consultation process, personnel and timeline (interrupted by federal government shutdown)
26 February 2019	Meeting (Helena FS office, with some FS personnel on phone) to discuss agenda items outlined in October letter and delays caused by federal government shutdown
26 March 2019	Phone call with K Dixon (USFWS), W Clark, D Kemp, and J Dumont (all FS). Discussion of BA format and content for grizzly bear, lynx, and whitebark pine.
2 August 2019	Rough draft of grizzly bear portion of BA sent to Katrina Dixon by Wendy Clark
16 August 2019	W Clark emailed updated DRAFT of BA info/intro and grizzly bear section to K Dixon for review
04 September 2019	Telephone conversation between W Clark and K Dixon regarding draft sent 16 August. Discussion about information for baseline and potential consequences of different analysis approaches.
05 September 2019	Email from K Dixon to W Clark with written comments on draft BA grizzly bear section as discussed on 4 September
19 September 2019	Email sent to K Dixon by W Clark, suggesting small group discussion of approaches to grizzly bear baseline in Zones 2 and 3.
25 September 2019	Meeting in Helena with W Clark, D Entwistle, C Keckler (all FS), and K Dixon, J Bush (USFWS) in person and B Conard (USFWS, L Allen and C Savage (FS) on phone. Discussion of approaches to grizzly bear baseline, particularly in Zones 2 and 3.
October 2019	Meeting in Helena with B Avey (FS) and J Bush (USFWS) regarding approach to grizzly bear baseline in Zone 2 and 3
22 October 2019	Draft Canada lynx and lynx critical habitat assessment sent to K Dixon by W Clark via email
13 December 2019	Second draft Canada lynx and lynx critical habitat assessment sent to K Dixon by D Kemp via email
6 December 2019	Forest/Pod Level 1 consultation meeting. Additional details regarding grizzly bear analysis discussed among W Clark, D Pengeroth (both FS), K Dixon and T Olenicki (both USFWS).
20 December 2019	Draft of revised grizzly bear secure habitat analysis section of assessment emailed by W Clark to K Dixon requesting review
13 January 2020	Final list of federally listed species for HLC NF accessed by W Clark from USFWS site: https://www.fws.gov/montanafieldoffice/Endangered_Species/Listed_Species/Forests/Helena-L&C_sp_list.pdf
29 January 2020	Email from K Dixon to W Clark with comments on draft grizzly bear secure habitat analysis section
10 February 2020	Meeting between D. Pengeroth (FS) and K. Dixon (USFWS) at USFWS office to discuss additional information needed on grizzly bear questions.
9 March 2020	Forest Service submits to the Fish and Wildlife Service the Biological Assessment for Threatened, Endangered and Proposed Species: Revised Land and Resource Management Plan for the Helena – Lewis and Clark National Forest

Date	Consultation
29 June 2020	USFWS sends draft BiOp to Forest Service for additional information
31 July 2020	Forest Service submits feedback to draft BiOp
23 September 2020	Forest Service submits to the USFWS a summary of information and updates regarding the potential impacts of permanent routes on grizzly bear secure habitat
10 February 2021	USFWS delivers BiOp for the effects of the Helena-Lewis and Clark National Forest 2021 Forest Plan on Grizzly Bears, Canada Lynx, and Designated Lynx Critical Habitat
3 December 2021	Forest Service submits Supplement to the Biological Assessment for Threatened, Endangered, and Proposed Terrestrial Wildlife Species for the 2021 Forest Plan for the Helena-Lewis and Clark National Forest to summarize in one place corrections and errata that were provided to the U.S. Fish and Wildlife Service previously via emails, along with updates and clarifications to the data and analysis in the 13 March 2020 Biological Assessment
11 January 2022	USFWS delivers revised BiOp to Forest Service BiOp for the effects of the Helena-Lewis and Clark National Forest 2021 Forest Plan on Grizzly Bears, Canada Lynx, and Designated Lynx Critical Habitat
11 April 2024	Informal discussions with Forest Service, USFWS and OGC on Forest Plan consultation reinitiation to identify next steps to address court remand on BiOp.
18 June 2024	Additional discussions with Forest Service, USFWS, and OGC
23 October 2024	Submit revised BA….