

Biological Assessment for Grizzly Bear (*Ursus arctos horribilis*)

Effects of the 2009 Beaverhead-Deerlodge Land and Resource Management Plan

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**for:
Beaverhead-Deerlodge National Forest
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Introduction

This Biological Assessment (BA) analyzes the potential effects from implementing the 2009 Beaverhead-Deerlodge National Forest Land and Resource Management Plan (forest plan or plan) on the threatened grizzly bear (*Ursus arctos horribilis*) and its habitat within the administrative boundary of the Beaverhead-Deerlodge National Forest (BDNF or “Forest”). This document conforms to legal requirements set forth under section 7 of the Endangered Species Act (ESA) (19 U.S.C. 1536 (c), 50 CFR 402.12 (f) and 402.14). Section 7(a)(1) of the ESA requires federal agencies to use their authorities to further the conservation of listed species. Section 7(a)(2) requires that federal agencies ensure any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of federally listed species, or destroy or adversely modify designated critical habitat.

This Biological Assessment is programmatic in scope. It provides the framework for future site-specific actions that are subject to section 7 consultation but does not authorize, fund, or carry out future site-specific actions. Future project-level activities must be consistent with the direction in the forest plan and must undergo its own National Environmental Policy Act (NEPA) planning and decision-making procedures, including the appropriate ESA section 7 consultation. The most current data and scientific information available at the time of this writing serves as the basis for this analysis. A revised Biological Assessment may be prepared for this species if new information reveals effects in a manner or to an extent not considered in this assessment.

This document supersedes all other previous consultations but incorporates effects from the 2020 Amended Biological Assessment for Livestock Grazing (Appendix B). The 2020 Biological Assessment for Livestock Grazing considers the effects of a single program within the Greater Yellowstone Area, whereas this document considers effects for the entirety of the grazing program across the Forest as a whole. Effects disclosed within the 2020 BA are incorporated into this document by reference.

Need for Re-assessment Based on Changed Conditions

The grizzly bear is a threatened species with habitat occurring on the Beaverhead-Deerlodge National Forest. There is no designated critical habitat within the administrative boundaries.

This Biological Assessment is re-initiating consultation on the Revised Beaverhead-Deerlodge National forest plan for grizzly bears because: 1) the Beaverhead-Deerlodge National Forest consulted on the maximum motorized access take specified in the 2013 biological opinion; 2) there is new methodology used throughout the Forest Service Region 1 for assessing the effects of motorized access on grizzly bears for purposes of project level analysis (Gatlin et al. 2022) (Appendix A) so a new baseline should be established; and 3) it is anticipated the continued expansion of grizzly bears and subsequent home range establishment on the BDNF may result in some effects not previously considered.

Recent projects caused the Forest to exceed consultation on 70 miles of temporary road construction as part of a measure of surrogate take in the 2013 biological opinion (Table 1, USDI FWS, 2013). The number of planned miles exceeds the surrogate take measure whereas the miles of implemented temporary roads do not. The Forest has only implemented 37.6 miles of the planned temporary roads (Table 1), which equates to 54 percent of the miles permitted under the surrogate measure of take (as of March 2024).

Table 1. Projects contributing to miles of temporary road construction on the Beaverhead-Deerlodge National Forest since 2009.

| Project Name | Temporary Roads Planned (miles) | Temporary Roads Implemented (miles) |
|---|---------------------------------|-------------------------------------|
| Rat Creek Timber Sale | 4.8 | 4.8 |
| Anaconda Job Corps Stewards | 0.1 | 0.1 |
| Collins Mineral Exploration | 0.2 | 0.2 |
| East Deer Lodge Valley | 11.2 | 8 |
| Flint Foothills | 7.2 | 8.4 |
| Categorical Exclusion Projects ^a | 5 | 4.1 |
| Cornish Gulch | 0.9 | 0.9 |
| Hawk Plan of Operations | 0.2 | 0.2 |
| Aspen Project | 1 | 0 |
| Fleecer | 5.9 | 0 |
| Red Rocks Vegetation Management Project | 7.8 | 7.1 |
| Pintler Face | 11.5 | 3.8 |
| Rancho Deluxe | 5 | 0 |
| Trail Creek Fire Salvage | 0.5 | 0 |
| Basin Creek – Butte Watershed | 1.9 | 0 |
| Greenhorn Vegetation Project | 4.7 | 0 |
| Celerity-Boulder Plan of Operations | 2.8 | 0 |
| Goldschmidt Mining | 0.5 | 0 |
| Selway-Saginaw Vegetation Management Project ^b | 10.9 | 0 |
| Totals | 78.5 | 37.6 |

^aCategorical exclusion projects refer to projects that contributed to temporary road miles but were not reported with a project name. A categorical exclusion was used to complete the NEPA process.

^bSelway-Saginaw is a stand-alone consultation that does not tier to the 2013 biological opinion for temporary roads as this project exceeds the allotted 70 acres.

In 2022, the BDNF finalized Grizzly Bear Analysis Units (GBAUs) and a secure habitat model (Appendix A). GBAU delineations are for the purpose of maintaining consistent analysis boundaries so the effects to secure habitat from projects are more easily compared over time and across the landscape. Analyzing secure habitat within GBAUs is considered a “new baseline” for grizzly bears on the Beaverhead-Deerlodge National Forest. In 2003, as part of the travel management planning effort, the BDNF improved the baseline information for on-the-ground road conditions by describing the location and use of all currently known roads and routes, including those created by public users. This information was incorporated into the baseline secure habitat information for this analysis (as identified in Table 4).

Lastly, grizzly bears continue to expand across the Forest (Appendix D) and some mountain ranges on the BDNF were identified as potential routes to connect bear populations between the Greater Yellowstone Ecosystem, the Northern Continental Divide Ecosystem, and the Bitterroot Ecosystem (Sells et al. 2023). Although bear expansion was recognized in previous consultations, the Forest anticipates additional potential effects to bears that were not previously disclosed, such as: effects to females with sows from permitted actions, additional livestock conflicts outside of the Greater Yellowstone Ecosystem, and effects from new technologies, including drones and electronic bicycles.

Consultation History

2010 Forest Plan Consultation

In 2010, the BDNF submitted a biological assessment (BA) on effects of its forest plan on grizzly bears to the USFWS (USDA FS 2010). This BA and corresponding biological opinion (BO) only applied to a portion of the BDNF known as the Yellowstone distinct population segment (DPS) which encompasses the Madison, Gravelly and Tobacco Root landscapes in their entirety and a small portion of the Jefferson River and Upper Clark Fork landscapes (Figure 1). The small portion of the Jefferson River and Upper Clark Fork landscapes in the Yellowstone DPS includes National Forest System (NFS) lands in the Highland Mountains south of and bounded by interstate highways 15 and 90.

The BA analyzed effects of the 2009 BDNF Revised forest plan, which incorporated the 2006 forest plan Amendment for Grizzly Bear Habitat Conservation for the Greater Yellowstone Area National Forests as plan Appendix G (U.S. Department of Agriculture 2006). This assessment concluded that individual resource effects are expected to be minimal, although implementation of the forest plan across resource areas is likely to adversely affect the threatened grizzly bear.

On October 4, 2010 the USFWS completed a biological opinion analyzing the effects of the revised forest plan on grizzly bears within the area that had been designated for the Yellowstone grizzly bear distinct population segment, where at the time, they considered the species present (USDI FWS 2010). Because specific measures of take are difficult to quantify or detect in many situations, the Service issued the following measures of surrogate take for the life of the revised forest plan:

- Access management: increases of permanent linear road density occur above the described miles per square mile within landscapes and 2006 hunting units (refer to Table 11 in USDI FWS 2013);
- Winter motorized use occurs beyond the May 15 closure date;
- The total acres open to snowmobiling during and after the third week of March exceeds 75,086 acres;
- No more than one grizzly bear removal from the action area for management purposes as a result of sanitation and food storage issues; and
- No more than two grizzly bears killed or removed as a management action related to livestock grazing.

2012 Forest Plan Supplemental Consultation

On July 2, 2012 the BDNF submitted a supplemental biological assessment for the grizzly bear on the 2009 Revised Beaverhead-Deerlodge forest plan (USDA FS 2012) because new information indicated verified observations of grizzly bears on the BDNF outside of the initial Yellowstone analysis area (Mace and Roberts 2012). This biological assessment identified Action Area A, or the area of the BDNF that is outside of the Yellowstone DPS and includes eight of the landscapes on the northern and western portions of the BDNF (Figure 1). The total area of Action Area A was approximately 2,460,300 acres, or about 73 percent of the BDNF. The remainder of the BDNF was included in the Yellowstone grizzly bear distinct population segment (DPS), as recognized under the Endangered Species Act. This biological assessment made the following determinations for grizzly bear:

- Vegetation management: may affect but is not likely to adversely affect;
- Access management and secure habitat: may affect and is likely to adversely affect;
- Attractant management and developed sites: may affect and is likely to adversely affect;
- Livestock management: may affect but is not likely to adversely affect; and
- Oil and gas leasing: may affect but is not likely to adversely affect;

The USFWS submitted a biological opinion to the Forest on May 28, 2013 to analyze the potential effects of the revised forest plan on grizzly bears that may occur throughout the Forest (USDI FWS 2013). This biological opinion determined that the effects of the 2009 revision of the Beaverhead-Deerlodge National Forest Land and Resource Management Plan were not likely to jeopardize the continued existence of the grizzly bear. No critical habitat had been designated for the grizzly bear therefore none was affected. The USFWS determined effects of management activities for two portions of the BDNF; the Yellowstone analysis area and the west and north analysis area (WNAA; or Action Area A as referred to in the biological assessment). The WNAA included areas of the Forest west and north of the Yellowstone analysis area with the exception of the Elkhorn Landscape. This landscape was not included in the 2013 consultation because the majority of the area occurs on the Helena National Forest and was addressed by consultation from the Helena. Because the Service was unable to precisely quantify the number of grizzly bears that will be incidentally taken, six surrogate measures of take were used as the incidental take statement over the life of the 2009 forest plan:

- Access management on the Forest within the Yellowstone analysis area was not likely to result in any incidental take to grizzly bears. Outside the Yellowstone analysis area, existing and desired linear densities of permanent open motorized roads and trails could not exceed levels described in the 2009 revised forest plan;
- No more than 70 miles of temporary road construction across the Forest;
- Winter access management for snowmobiling occurs beyond the May 15 closure date;
- The total acres of denning habitat open to snowmobiling during and after the third week in March exceeds 55,026 acres in the Yellowstone area or 228,356 acres in the WNAA;
- No more than one grizzly bear removal from either analysis area of the Forest for management purposes as a result of food and attractant storage; and
- No more than two grizzly bears would be removed from or killed within the Yellowstone analysis area and no more than one in the WNAA area during the life of the revised forest plan related to permitted livestock grazing or associated authorized activities.

2020 Amended Biological Assessment for Livestock Grazing

This amended biological assessment (submitted October 13, 2020; USDA FS 2020a; Appendix B) documented the evaluation of effects of permitted livestock grazing and associated activities on the grizzly bear within livestock grazing allotments in the Yellowstone analysis area of the Beaverhead-Deerlodge National Forest (Figure 1). The need for an amended biological assessment and reinitiation of formal consultation was the result of the BDNF exceeding its incidental take for livestock-related management removal of grizzly bears in the Yellowstone analysis area during the season of 2019 (exceeding the sixth surrogate measure of incidental take as part of the 2012 biological assessment and

resulting biological opinion). This biological assessment determined that the action of continued livestock grazing in this analysis area may affect and is likely to adversely affect the grizzly bear.

The resulting biological opinion from the second amendment (received on July 8, 2021; USDI FWS 2021) determined that the effects of continued livestock grazing under the 2009 forest plan within the Yellowstone analysis area would not jeopardize the continued existence of grizzly bear. However, this action could occasionally result in adverse effects as a consequence of natural feeding behavior associated with livestock grazing where livestock conflicts and/or depredation by grizzly bears may occur. This may result in the management removal of grizzly bears or direct mortality from self-defense situations associated with livestock management. Due to increasing numbers of grizzly bear-livestock conflicts and management actions in the Yellowstone analysis area, it is expected the number of conflicts, removals, and mortalities associated with grazing will continue to increase over the next ten years. A sliding scale is used to measure the amount of incidental take associated with livestock grazing in the analysis area because the number of mortalities will be higher in some years and lower in others. Therefore, the Beaverhead-Deerlodge National Forest should not exceed more than 11 grizzly bear mortalities associated with livestock grazing in the Yellowstone analysis area over any given 4-year period.

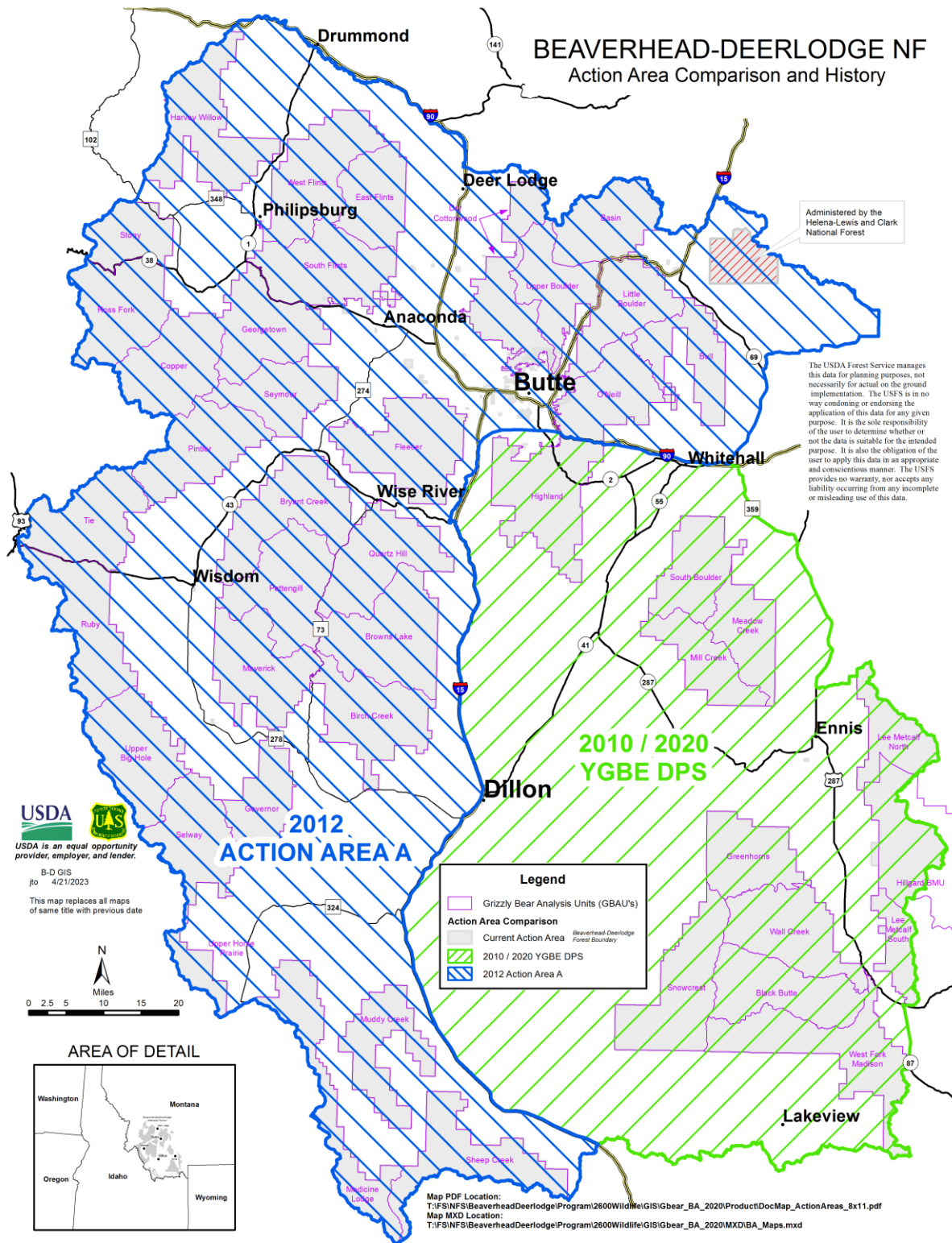


Figure 1. Action area comparisons for previous and the current consultation (2010, 2012, and 2020). This consultation includes the entirety of the Beaverhead-Deerlodge Forest with the exception of the Elkhorns.

Consultations for Ongoing Projects

Several ongoing projects completed consultation on the BDNF and may contribute to effects to grizzly bears during implementation. Effects disclosed within individual analyses are within the scope of effects described in this document. In general, ongoing projects may contribute to localized and temporary disturbance effects to grizzly bears during implementation actions but would not permanently alter existing secure habitat (Table 2). Temporary effects to secure habitat may occur due to temporary road construction for four projects, which are specifically identified in Table 3.

Table 2. Ongoing projects with completed consultation where temporary disturbance effects to grizzly bears are possible.

| Project Name | Location (Ranger District) | Project Type | Implementation Status |
|---------------------------------------|----------------------------|-----------------------|---|
| Darkhorse Road Crossing | Wisdom | Aquatic restoration | Not yet implemented. |
| Celerity – Boulder Plan of Operations | Butte | Minerals | Not yet implemented; original BA stated secure habitat would be affected by temporary road building, but new on-the-ground information reveals temporary roads will be constructed in non-secure areas. |
| Elkhorn Mining Plan of Operations | Dillon | Minerals | Reclamation ongoing. |
| Yellowstone Adventure Series Race | Madison | Special Uses | Occurs annually; permit expires in 2027. |
| Headwaters Relay | Madison | Special Uses | Occurs annually; permit expires in 2027. |
| Echo Lake Ski Trail Warming Hut | Pintler | Special Use | Warming hut installed and open for public use between Dec 1- April 1; permit expires 2027. |
| Thompson Park Snowmobile Grooming | Butte | Trail Maintenance | Occurs annually under a volunteer agreement; winter activity only. |
| Aspen | Forest-wide | Vegetation Management | Specialist assessments required for implementation to ensure the programmatic sideboards are met. |
| Noxious Weed Control | Forest-wide | Vegetation Management | Ongoing annually, location varies. |
| Red Rocks | Butte | Vegetation Management | Vegetation treatments and prescribed fire ongoing. |
| Basin Creek Butte Watershed | Butte | Vegetation Management | Temporary secure habitat effects, see Table 3. |
| Selway-Saginaw | Dillon | Vegetation Management | Temporary secure habitat effects, see Table 3. |
| Greenhorns | Madison | Vegetation Management | Temporary secure habitat effects, see Table 3. |
| Flint Foothills Vegetation Management | Pintler | Vegetation Management | Vegetation treatments completed; prescribed fire remaining. |
| Rancho Deluxe | Pintler | Vegetation Management | Vegetation treatments completed; prescribed fire remaining. |
| Spaeth's Corner | Pintler | Pintler | Temporary roads completed (not in secure habitat), only vegetation treatments remaining. |

| Project Name | Location (Ranger District) | Project Type | Implementation Status |
|--|----------------------------|-----------------------|---|
| Fleecer Vegetation Management | Wisdom | Vegetation Management | Vegetation treatments ongoing; prescribed fire remaining. |
| Trail Creek Grasslands Conifer Removal | Wisdom | Vegetation Management | Vegetation treatments completed; prescribed fire remaining. |
| Pintler Face | Wisdom | Vegetation Management | Temporary secure habitat effects, see Table 3. |

Reporting Requirements from Biological Opinions

Reporting requirements from previous biological opinions are submitted to the U.S. Fish and Wildlife Service annually for the calendar year by April 1 (Dixon pers. comm. 2022). The reporting requirement metrics for grizzly bear include:

- Road construction and decommission: the length of new permanent and temporary roads constructed and decommissioned during the reporting year;
- Current open motorized road and trail density by landscape and 2006 hunting unit (as identified in the forest plan);
- Changes in acres of grizzly bear denning habitat open to winter motorized use by landscape the timeframes of use; and
- Grizzly bear human conflict or management removal of bears over the last calendar year (2012 forest plan consultation) and over the last 4 years per the rolling window within the GYA (2020 Amended BA for livestock grazing). This includes grizzly bear-human conflicts, grizzly bear management removals., and grizzly bear mortalities related to defense of life associated with livestock grazing activities.
- In the Greater Yellowstone Ecosystem, the Conservation Strategy (Interagency Conservation Strategy Team 2007, Yellowstone Ecosystem Subcommittee 2016a) requires that habitat levels inside grizzly bear recovery zones be maintained at or improved upon with respect to 1998 levels, which include changes to motorized access routes, livestock grazing allotments, developed sites, and temporary federal projects. Habitat updates are requested as part of the annual requirement to report the status and adherence of grizzly bear habitat with respect to the 1998 baseline. On even years, motorized changes outside the grizzly bear recovery zones are also required for monitoring purposes. Reported changes in motorized access route are summarized by the GIS Database Coordinator to update the GYE Grizzly Bear Motorized Access database and to calculate secure habitat and road density statistics for each Bear Management Subunit in the recovery zone. The BDNF submits any changes using Grizzly Bear Management Unit subunits to the GYE on an annual basis.

Determination of Effects

Implementation of the proposed action may affect, is likely to adversely affect the grizzly bear.

Proposed Action

The Beaverhead-Deerlodge National Forest proposes to continue to apply the management direction in the 2009 Beaverhead-Deerlodge Forest Plan (forest plan or plan) (USDA FS, 2009a) to lands managed by the Forest and requests a change in surrogate measures of incidental take to secure habitat and an increase in the number of removals from livestock grazing conflicts.

The forest plan established direction for all resource management activities on the Beaverhead-Deerlodge National Forest and identifies forest-wide desired future conditions, goals, objectives, and standards for a variety of social values and environmental factors. These values and factors include air quality, American Indian rights and interests, aquatic resources, economics and social values, fire management, heritage resources, infrastructure, lands, livestock grazing, minerals (including oil and gas), recreation and travel management, scenic resources, soils, special designations (e.g., wilderness, national scenic trails, historic sites, scenic byways, and research natural areas), timber management, vegetation, and wildlife habitat. Not all of these factors would impact grizzly bears or their habitat.

In general, the forest plan contains the following direction:

- Goals, which are general descriptions of desired results to be achieved sometime in the future with no specific date and are used to develop objectives;
- Objectives form the basis for site-specific project planning by providing concise and measurable statements to achieve goals; and
- Standards, which are mandatory constraints applied to projects to meet or maintain the desired condition or conditions, avoid or mitigate undesirable effects, or meet legal requirements.

Eight key areas in the revised plan considered in this analysis include aquatic management, vegetation management (including timber), fire management (including fuels), lands, range management (including grazing), recreation and travel management, minerals (including oil and gas), and wildlife management. A complete list of forest plan goals, objectives, and standards that are relevant to grizzly bear management are available in Appendix C.

The BDNF is requesting a change in surrogate take metrics from temporary road miles, as established in the 2013 biological opinion (USDI FWS 2013), to acres of secure habitat affected by an action. The Forest requests no more than 1 percent permanent secure habitat reduction (over the life of this document up to the year 2036) and up to 5 percent temporarily effected (at any given time over the life of this document up to year 2036) within each GBAU and across the Forest as a whole (Table 4). Since the BDNF identified GBAUs and modeled secure habitat per regional guidance (USDA FS and USDI FWS 2023c), the proposed secure habitat effects per GBAU is reasonable given the typical extent of implementation on the BDNF. For example, the Pintler Face project is less than 1 percent temporary change in the Pintler GBAU from temporary roads, but other actions such as range allotment infrastructure repair could also occur elsewhere and concurrently on the GBAU while the temporary road is still in use. Project-level analysis would disclose the duration and intensity of temporary affects to secure habitat, which may range from extremely brief (e.g., a single low-level aircraft flight) to longer-lasting (e.g., a temporary road that may be used for three years). Temporary effects may fluctuate within GBAUs depending on implementation schedules.

The maximum acres of secure habitat affected are calculated from an updated baseline which includes ongoing projects (where consultations previously occurred and implementation is occurring, e.g. Pintler Face road re-routes), projects with a signed decision where implementation has not yet started (e.g. Greenhorns), and data updates derived from the Travel Management process (refer to the Travel Management section for additional details). Ongoing projects and those with a signed decision that result in a temporary change to secure habitat are identified in Table 3Table 2. The final on-the-ground results to secure habitat from these projects were incorporated into the “existing secure area baseline” as identified in Table 4.

Table 3. Projects that influence existing baseline or temporary secure habitat within Grizzly Bear Analysis Units.

| Project | District | Year Consultation Completed | Influence on existing baseline and temporary secure habitat (acres) within GBAUs |
|-----------------------------|----------|---------------------------------------|---|
| Pintler Face | Wisdom | 2021, additional consultation in 2024 | Implementation in progress. Road closures resulted in a baseline increase of secure habitat. Temporary effects to 311 acres in Pintler GBAU from temporary roads. |
| Basin Creek-Butte Watershed | Butte | 2023 | Implementation in progress. No changes to existing baseline; no re-routes, closures, or opening of closed roads. Temporary effects to 2.3 acres in the Highland GBAU from temporary roads. |
| Greenhorns | Madison | 2022, amended 2023 | Implementation in progress. No changes to existing baseline; no re-routes, closures, or opening of closed roads. Temporary effects to 132 acres in Greenhorn GBAU from temporary roads. |
| Selway-Saginaw | Dillon | 2023, wolverine in 2024 | Implementation not started but will begin in 2025. Changes to baseline; new and existing road segments identified as decommissioned, closed, or obliterated resulted in a net increase of 494 acres in Selway GBAU and a net decrease of 10 acres in the Upper Big Hole GBAU. Temporary effects to 803 acres in Selway GBAU and 81 acres in Upper Big Hole GBAU from temporary roads. |

The BDNF recognizes that secure habitat changes can also occur from improved data based on-the-ground conditions. Although this change is not driven by Forest management actions through projects, it is possible the BDNF may learn of routes on the landscape (such as user-created roads or trails) that could change existing secure habitat on-the-ground. This means the maximum and minimum acres identified in Table 4 may change due to new information within the GBAU. For example, if user-created roads or trails are discovered within a project area during field reconnaissance where motorized access is possible, the 500-meter buffer is applied (refer to Appendix A for secure habitat guidelines). This may change the secure habitat baseline in the GBAU and would be addressed during project-specific consultations. Regardless, the BDNF intends to stay within the effected percentage parameters as outlined in Table 4 where no more than 1 percent could be affected permanently, or 5 percent could be affected temporarily within each GBAU for project activities.

In addition, the Forest is requesting to apply the surrogate measure of take from livestock conflicts to the entirety of the BDNF. Currently, removals due to livestock conflicts are calculated separately in the area outside of the Yellowstone analysis area (WNAA; established by the 2013 BO) and the Yellowstone analysis area (established by the 2010 and 2021 Biological Opinions). The most current surrogate measure of take in the Yellowstone analysis area was established by the 2021 BO (USDI FWS 2021; the Beaverhead-Deerlodge National Forest should not exceed more than 11 grizzly bear mortalities associated with livestock grazing in the Yellowstone analysis area over any given 4-year period). However, no more than one grizzly can be removed from the remainder of the Forest for livestock conflict reasons during the life of the forest plan, as established in the 2013 BO (USDI FWS 2013). Due to the increased number of grizzly bears and new conflicts occurring in never-before-documented areas (refer to the Range Management: Livestock Grazing section and Appendix B), the Forest proposes to measure take as one entire unit (as displayed in Figure 2 compared to previous analyses identified in Figure 1).

Table 4. Grizzly Bear Analysis Unit existing baseline (as established in 2023) and the secure area change maximum for both permanent and temporary actions until 2036.

| Reporting Landscape (per the Forest Plan) ^a | GBAU Name | Total GBAU Area (acres) ^b | BDNF managed area within GBAU (acres) | Existing Secure Area Baseline ^c | | | | Secure Area Effected Maximum (acres) | |
|--|-------------------|--------------------------------------|---------------------------------------|--|--|-------------------------------------|--|--------------------------------------|-----------------------|
| | | | | BDNF Managed and Secure (acres) | BDNF Managed and Secure (percent of entire GBAU) | BDNF Managed and Not Secure (acres) | Private Inholding and Not Secure (acres) | Permanent (1%) effect ^d | Temporary (5%) effect |
| Big Hole | Fleecer | 102,597 | 99,024 | 23,090 | 23 | 75,934 | 3,573 | 231 | 1,155 |
| | Pintler | 86,885 | 84,969 | 65,394 | 75 | 19,575 | 1,916 | 654 | 3,270 |
| | Ruby | 92,669 | 90,549 | 52,943 | 57 | 37,605 | 2,120 | 529 | 2,647 |
| | Seymour | 66,764 | 66,188 | 46,334 | 69 | 19,853 | 576 | 463 | 2,317 |
| | Tie | 89,163 | 88,713 | 33,126 | 37 | 55,587 | 450 | 331 | 1,656 |
| | Upper Big Hole | 93,269 | 90,045 | 40,348 | 43 | 49,967 | 3,224 | 403 | 2,017 |
| Boulder River | Basin | 74,723 | 66,916 | 13,722 | 18 | 53,193 | 7,808 | 137 | 686 |
| | Little Boulder | 72,508 | 69,050 | 25,314 | 35 | 43,736 | 3,458 | 253 | 1,266 |
| | Upper Boulder | 69,366 | 63,064 | 14,399 | 21 | 48,665 | 6,302 | 144 | 720 |
| Clark Fork Flints | Dry Cottonwood | 83,334 | 66,939 | 10,547 | 13 | 56,392 | 16,395 | 105 | 527 |
| | East Flints | 64,827 | 60,517 | 32,112 | 50 | 28,406 | 4,310 | 321 | 1,606 |
| | Georgetown | 86,081 | 70,857 | 33,621 | 39 | 37,236 | 15,225 | 336 | 1,681 |
| | Harvey Willow | 108,448 | 100,013 | 30,145 | 28 | 69,868 | 8,436 | 301 | 1,507 |
| | South Flints | 96,516 | 74,881 | 19,407 | 20 | 55,474 | 21,635 | 194 | 970 |
| | West Flints | 98,411 | 83,735 | 15,968 | 16 | 67,767 | 14,676 | 160 | 798 |
| Gravelly | Black Butte | 91,232 | 91,023 | 56,881 | 62 | 34,143 | 209 | 569 | 2,844 |
| | Greenhorns | 70,887 | 70,305 | 37,226 | 53 | 33,080 | 582 | 372 | 1,861 |
| | Snowcrest | 105,007 | 103,851 | 73,836 | 70 | 30,015 | 1,156 | 738 | 3,692 |
| | Wall Creek | 93,181 | 91,846 | 53,404 | 57 | 38,442 | 1,335 | 534 | 2,670 |
| | West Fork Madison | 114,246 | 112,400 | 52,912 | 46 | 53,912 | 59,488 | 529 | 3,646 |
| Jefferson River | Bull | 64,482 | 50,309 | 10,609 | 17 | 10,609 | 39,700 | 106 | 530 |
| | Highland | 109,013 | 101,476 | 26,460 | 24 | 26,460 | 75,105 | 265 | 1,323 |

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| Reporting Landscape (per the Forest Plan) ^a | GBAU Name | Total GBAU Area (acres) ^b | BDNF managed area within GBAU (acres) | Existing Secure Area Baseline ^c | | | | Secure Area Effected Maximum (acres) | |
|--|---------------------------|--------------------------------------|---------------------------------------|--|--|-------------------------------------|--|--------------------------------------|-----------------------|
| | | | | BDNF Managed and Secure (acres) | BDNF Managed and Secure (percent of entire GBAU) | BDNF Managed and Not Secure (acres) | Private Inholding and Not Secure (acres) | Permanent (1%) effect ^d | Temporary (5%) effect |
| | O'Neill | 75,819 | 72,586 | 25,884 | 34 | 46,703 | 3,233 | 259 | 1,294 |
| Lima Tendoy | Governor | 55,995 | 55,875 | 28,376 | 51 | 27,499 | 120 | 284 | 1,419 |
| | Medicine Lodge | 88,695 | 87,381 | 36,797 | 42 | 50,584 | 1,314 | 368 | 1,840 |
| | Muddy Creek | 71,125 | 70,804 | 16,060 | 23 | 54,744 | 321 | 161 | 803 |
| | Selway | 84,283 | 81,599 | 31,818 | 38 | 49,781 | 2,683 | 318 | 1,591 |
| | Sheep Creek | 89,976 | 88,690 | 39,861 | 44 | 48,829 | 1,286 | 399 | 1,993 |
| | Upper Horse Prairie | 23,211 | 23,211 | 7,487 | 32 | 15,724 | 0 | 75 | 374 |
| Madison | Hillgard BMU ^e | 70,436 | 68,419 | 61,790 | 88 | 6,628 | 2,017 | N/A | N/A |
| | Lee Metcalf North | 51,663 | 22,274 | 14,634 | 28 | 7,640 | 29,389 | 146 | 732 |
| | Lee Metcalf South | 32,949 | 32,316 | 26,878 | 82 | 5,438 | 632 | 269 | 1,344 |
| Pioneer | Birch Creek | 92,307 | 90,189 | 32,018 | 35 | 58,170 | 2,118 | 320 | 1,601 |
| | Browns Lake | 110,463 | 109,359 | 61,390 | 56 | 47,969 | 1,105 | 614 | 3,070 |
| | Bryant Creek | 98,450 | 98,009 | 40,369 | 41 | 57,640 | 440 | 404 | 2,018 |
| | Maverick | 92,398 | 90,764 | 57,477 | 62 | 33,287 | 1,634 | 575 | 2,874 |
| | Pettengill | 99,509 | 98,987 | 59,907 | 60 | 39,080 | 522 | 599 | 2,995 |
| | Quartz Hill | 90,623 | 86,608 | 35,013 | 39 | 51,595 | 4,015 | 350 | 1,751 |
| Tobacco Root | Meadow Creek | 60,083 | 58,161 | 20,298 | 34 | 37,863 | 1,922 | 203 | 1,015 |
| | Mill Creek | 59,160 | 56,354 | 20,201 | 34 | 36,153 | 2,806 | 202 | 1,010 |
| | South Boulder | 68,244 | 59,476 | 22,876 | 34 | 36,599 | 8,769 | 229 | 1,144 |
| Upper Rock Creek | Copper | 88,946 | 84,875 | 45,512 | 51 | 39,363 | 4,071 | 455 | 2,276 |
| | Ross Fork | 89,850 | 85,606 | 53,631 | 60 | 31,975 | 4,245 | 536 | 2,682 |
| | Stony | 50,184 | 45,370 | 19,941 | 40 | 25,429 | 4,814 | 199 | 997 |
| | Total | 3,577,979 | 3,363,580 | 1,526,018 | 43 | 1,837,562 | 214,399 | 14,640 | 74,212 |

^aReporting landscape: this refers to the landscapes as outlined in the forest plan. There is not an exact overlap between reporting landscapes and GBAUs; therefore, GBAUs were assigned to the landscape by the greatest area of overlap (Figure 3).

Beaverhead-Deerlodge Forest Plan Biological Assessment for Grizzly Bear

^bThe total acres of GBAU includes all lands regardless of ownership within the forest boundary, including private inholdings.

^cSecure habitat includes only forest lands, as there is a buffer around other ownerships.

^dPermanent effects reflect secure habitat loss, not secure habitat improvements from road decommissioning. Improvements would not result in a permanent loss of secure habitat.

^eThe Hillgard bear management unit is part of the Greater Yellow Ecosystem Recovery Zone. Only those acres on the Beaverhead-Deerlodge National Forest are reported in this table. However, the entire BMU is used for reporting requirements in the GYE. In addition, this entire area on the BDNF is designated Wilderness, so no changes in secure habitat are anticipated. A 500 meter buffer around private inholdings within the Wilderness caused the 88% secure habitat within the BMU.

Effects Analysis Boundaries

The geographic boundary for this analysis includes the entirety of the Beaverhead-Deerlodge National Forest except for the Elkhorn Landscape (Figure 2). Unlike the previous analyses, this document does not separate the Yellowstone DPS and the remainder of the Forest but considers effects as a whole. The BDNF covers 3.39 million acres across 8 counties (Table 5) in southwestern Montana. Its mountain ranges include developed recreation areas, Wilderness, and roadless areas. Elevations range from cold desert at 5,000 to 6,500 feet to true alpine habitat types at more than 10,000 feet. The Forest features a variety of habitat types, including forest, meadows, sagebrush, and grasslands, all which provide a range of wildlife habitats.

Table 5. Area of counties within the Beaverhead-Deerlodge National Forest.

| County | Beaverhead-Deerlodge Area (acres) | Percentage of Forest |
|------------|-----------------------------------|----------------------|
| Beaverhead | 1,375,607 | 40 |
| Deer Lodge | 210,335 | 6 |
| Gallatin | 40 | <1 |
| Granite | 474,713 | 14 |
| Jefferson | 360,434 | 11 |
| Madison | 695,861 | 21 |
| Powell | 85,547 | 2 |
| Silver Bow | 189,594 | 6 |

The Helena-Lewis and Clark National Forest jointly manages activities on the Elkhorns Landscape with the Beaverhead-Deerlodge National Forest. This biological assessment does not include effects from management actions on the Elkhorn Landscape because the revised forest plan for the Helena-Lewis and Clark National Forest covers this administrative area. Effects to grizzly bears are documented in the Biological Assessment for Threatened, Endangered, and Proposed Terrestrial Wildlife Species for the 2020 forest plan for the Helena-Lewis and Clark National Forest (Clark and Kemp, 2020).

More specifically, this analysis focuses on effects from all forest actions in the forest plan within the administrative boundary. Livestock grazing was analyzed for the Yellowstone Analysis Area (Figure 1) as part of the 2020 amended biological assessment (USDA FS, 2020; Appendix B). Effects from the grazing program are as a whole are disclosed but also incorporated by reference for those areas covered by the 2020 biological assessment.

The boundary for cumulative effects includes the Beaverhead-Deerlodge Forest Boundary, which encompasses some lands not under federal management. Only 6 percent of the BDNF boundary is managed by State or private entities (Table 25).

The life of the forest plan serves as the temporal bounds for this analysis. Because timeframes for amendment or revision of the Plan is uncertain, this analysis uses twelve years from the date of consultation (2036) to disclose anticipated effects to grizzly bear and its habitat. 2036 is also the year the biological assessment for Canada lynx expires on the BDNF. Amendments or revisions of the Plan before this date may trigger additional consultation for this species.

VICINITY MAP

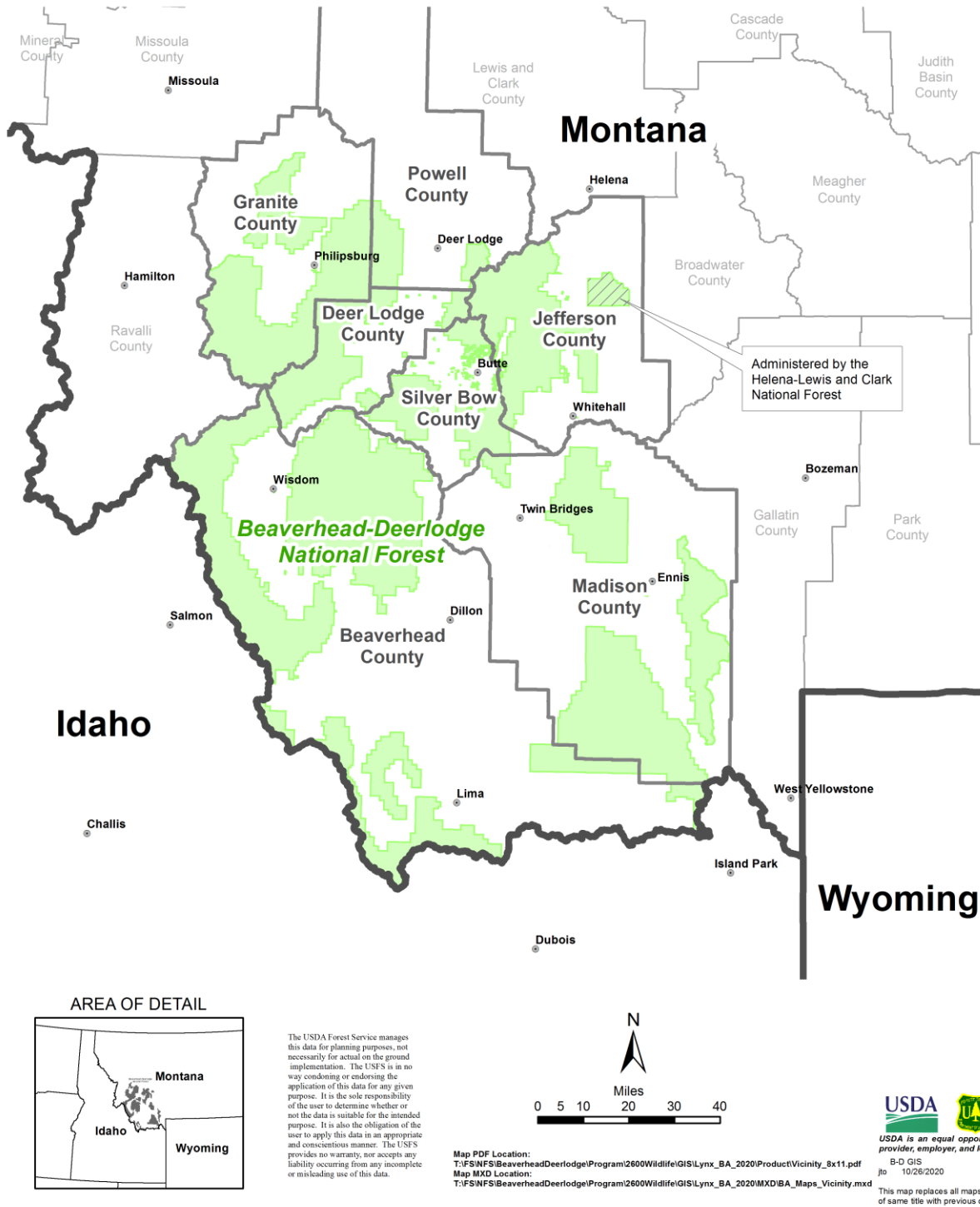


Figure 2. Vicinity map of the Beaverhead-Deerlodge National Forest.

Assumptions

1. Geospatial data presents a unique set of issues when comparing coarse and fine data to obtain acres, miles, or other units of measure. In tables of summarized data in this analysis, the displayed values are independently rounded. These values may not sum to the displayed total for this reason. The displayed total is the actual total of the individual, unrounded values. Summarized totals of the same area may differ due to the varying resolution (scale) of input data sets. These differences are insignificant and typically result in less than 0.01 percent of the total area.
2. Effects described in this document are based upon actions described in the forest plan. It is not possible to quantify the magnitude of effects to individual grizzly bears due to the nature of this analysis and the unknown location of resident or dispersing bears for future site-specific projects.
3. Male and female grizzly bears (including cubs) are utilizing the entirety of the Beaverhead-Deerlodge National Forest. This species is still expanding within this area and it is reasonable to assume grizzlies will continue to expand, establish residency, and reproduce within the Forest boundary over the life of this document.
4. As grizzly bears continue to expand, the U.S. Fish and Wildlife Service alters the “may be present” line based on verified sightings (photographs, DNA, etc.; available at <https://www.fws.gov/media/grizzly-bear-species-list-area-map>). Verified sightings are considered for project-level analyses to disclose information about known bears; however, the BDNF assumes grizzly bears may be present anywhere on the Beaverhead-Deerlodge National Forest.
5. This analysis is based on projections of changes in future activities and the potential for current activities to affect grizzly bear or its habitat. Affected acres described in this document represent estimated ranges or the maximum number of potentially affected habitat based on the best available information. Projected acres utilize the 2022 secure habitat model to disclose potential effects and set the current existing conditions. The numbers in this document do not represent the level of precision needed for project level planning or analysis, so additional project-level consultation is expected to occur in the future.
6. Future projects (without a current consultation or signed decision at the time of this writing) will utilize the 2022 GBAU and secure habitat model and the most current secure habitat baseline.
7. Acres of habitats presented in this analysis represents the best available information. It is possible this may change in the future as information about habitat may be updated as new science is published. However, programmatic effects to grizzly bears from actions described in the forest plan should remain the same.
8. Permanent changes to secure habitat may occur from project activities, including but not limited to: project implementation of new permanent roads or other infrastructure (e.g., parking lots, gravel pits, etc.) or improved data based on field verification of on-the-ground road access conditions. The Forest will track both planned and implemented permanent changes to secure habitat to ensure the maximum outlined in this document is not exceeded.
9. Temporary changes to secure habitat may occur from project activities, including but not limited to: temporary road construction or low-level flying for weed spraying. The Forest intends to track on-the-ground changes to secure area which will fluctuate depending on implementation timing and location. The Forest will track both planned and implemented temporary changes to secure habitat to ensure the maximum outlined in this document is not exceeded.

10. Although not required as part of the forest plan, a food storage order was signed for the BDNF in 2022 with an expiration date in 2026 (02-00-22-02). A separate order covering the Elkhorns area was signed in 2023 and expires in 2028 (R1-2023-2). It is reasonable to assume food storage orders will continue for the duration of this biological assessment.
11. The BDNF works closely with other resource groups and partners to fund and establish a variety of bear education signs for visitors, including food storage requirements, proper game hanging techniques, and “bear in area” warnings, among others. The Forest will continue investing resources for this effort.
12. The BDNF supports a bear technician position currently stationed in Butte. This position provides bear safety messaging to the public and communities, conducts agency bear spray and safety training, works with partners to address problem bears, hangs informational signs, among other duties. Reducing bear-human conflicts is a primary goal of this position.

Metrics Used in this Analysis

Road Density and Secure Habitat

Road density metrics (miles per square mile by landscape as identified in the forest plan) are associated with goals, objectives, and standards as described primarily in the Wildlife Habitat section, although managing for motorized use is also analyzed in Recreation and Travel Management. The BDNF used desired conditions for road density by landscape in the previous 2010 and 2012 consultations to describe effects to grizzly bears. Road density measurements may be useful to track environmental baseline conditions on Forest Service lands outside of recovery zones, although it is limited as a meaningful and scientifically supportable metric for addressing effects of motorized access to individual grizzly bears (USDA FS and USDI FWS 2023a).

Linear miles of motorized routes (without a density) is a way to track motorized access changes in a given area over time, although it is not a metric found in grizzly bear research to define selection of home ranges or survival of individual bears (USDA FS and USDI FWS 2023c). It is described in this document because the metric contributes to the calculation of road density as identified in the forest plan. Project-level analysis should include linear miles to daylight changes in miles of new, temporary, or decommissioned motorized routes in specific areas (USDA FS and USDI FWS 2023c).

This analysis primarily utilizes secure habitat as an indicator to describe effects to grizzly bears. Secure habitat has been identified as one of the key issues related to effects of motorized access on grizzly bears and is important to their survival and reproductive success. In a comprehensive review of research into the relationships between motorized access and grizzly bears, Proctor et al. (2019) cited research findings (e.g. Nielsen et al. 2004b) 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. (2019) also noted that the spatial arrangement of motorized routes and secure areas may be critically important in terms of the degree to which bears may be affected by motorized access. The key to limiting impacts of roads on bears is related to availability, location, and distribution of secure habitat that is a function the spatial arrangement of motorized roads and not simply numeric density. Secure habitat more adequately represents the potential effects to grizzly bears because it provides a more accurate indication of the spatial mix of motorized routes and secure habitat. For example,

measurements of route density in situations of uniformly spaced roads, even at an otherwise acceptable route density, can provide very limited patches of secure habitat that are functionally useful for grizzly bears (Proctor et al. 2019). Similarly, large patches of important habitat may be available in areas with high road densities if roads are concentrated. The road density calculation may be the same in both examples, but grizzly bears may utilize or disperse across the habitat very differently because of road locations. The secure habitat would describe the juxtaposition of available habitat patches that grizzly bears may use in this case whereas road density only identifies the amount of roads within a specific area on the landscape.

The difference between road density and secure habitat for grizzly bears is important to discern when disclosing effects to this species. In general, routes refer to both roads and trails whereas roads and trails describe a more specific use type. On the BDNF, effects from motorized route densities and secure habitat are both disclosed although each metric is calculated differently (Table 6; Appendix E). The main difference involves which routes contribute to calculations for each metric.

Currently page 53 of the Forest Plan serves as the interim baseline from which road and trail densities and associated metrics are calculated until the BDNF completes site-specific travel management (with the exception of the Madison Ranger District which completed this analysis in 2011; refer to Travel Management). Page 53 in the forest plan includes all known inventoried routes when the plan was written, including:

- System routes (roads and trails with a use designation where activities and maintenance can occur on the BDNF; referred to as National Forest System roads and trails);
- Other system routes (roads and trails under other management, including county, state, interstate, or other agencies, roads and trails on private lands); and
- Undetermined routes (non-system roads and trails, including user-created routes).

More specifically, mode of travel (motorized or non-motorized) and season of use (open year-long or seasonal closure) for routes identified on page 53 are determined by the most current travel map, travel map addendums, forest plan motorized or non-motorized allocation types, permits, orders, or other authorities identifying access and use types. If a route is discovered on the landscape but it is not identified on page 53, it is considered “undetermined” and is legally closed by direction in the forest plan. However, motorized access may still be possible if the route is accessible to vehicles or other mechanized means. If motorized access is possible, grizzly bear secure habitat is updated based on the known information.

For open motorized road and trail density (OMTRD) and associated numbers (linear miles of open motorized roads and trails), routes used for metric calculations are *legally* open for motorized access. This includes system and non-system roads and trails open to public motorized use, roads and trails for permitted or administrative purposes but are closed to the public, any routes where motorized access is allowed under a special use permit or other authority, and roads and trails on private lands. This calculation does not include any routes closed to motorized use by signs, gates, area designations, permanent barriers, or undetermined routes that are not on page 53. The following protocol is used to calculate OMTRD and associated metrics for the general and fall seasons:

- Spatial scale is either the landscape (general season) or 2006 hunting unit (fall season).

- Temporal scale is open at any time of the year (general season) or between October 15 – December 1 (fall season).
- Open routes are defined by:
 - Roads and trails open to public motorized use;
 - Roads and trails used for permitted or administrative purposes but closed to the public: these routes are identified in the INFRA database as routes that are operational maintenance level 2 or above, but don't have an allowed season of use (i.e. are closed year-round to motorized use);
 - Any route permitted under a special use permit, including private road use or others.
- All non-Forest Service roads and trails on private inholdings are considered motorized.
- Temporary roads necessary for project implementation but are closed or obliterated at project completion are not included.
- Numeric calculations of density are rounded to the nearest tenth of a mile.
- All route densities are calculated based on the route status at completion of project implementation.

For secure habitat, buffers are placed around any road or trail where motorized access is *possible* to calculate areas without a motorized access influence, including routes legally closed but accessible to motorized access. This calculation considers routes in three categories:

- Open non-system and system: any known routes where motorized access is permitted (not secure);
- Restricted: any known routes where motorized access is *possible* (not secure); and
- Closed: any known route where motorized access is impossible (secure).

More specifically, areas considered not secure include system and non-system routes where motorized access is permitted during all or part of the year, gated routes, undetermined routes not identified on page 53, routes that are discovered during project planning, and any other known route where motorized travel is possible. Many of these routes that are newly discovered may be used in a frequent or chronic manner or the Forest may not have addressed a closure to prevent access as use was unknown. As the BDNF learns about on-the-ground conditions, (e.g., a route is discovered on-the-ground that is not on page 53) the route inventory is updated and secure habitat is recalculated. This calculation does not include roads and trails where ground-truthing reveals conditions impassible to motorized vehicles (e.g. permanent barriers without breaches, decommissioned roads and trails without motorized access, and other situations). It also does not include infrequent cross-country travel (single-instance or non-repeated) because this unauthorized activity is expected to be short term, temporary, and spatially disparate across the landscape with no clear start and end point (refer to Roads and Travel: Unauthorized Motorized Access). Additional clarification is provided in Appendix A for this metric.

Table 6. Differences between metrics for analyzing effects to grizzly bears on the Beaverhead-Deerlodge National Forest.

| Metric | Guidance for Calculation | Unit of Measure | Season | Undetermined Route Guidelines | Considerations for Grizzly Bears |
|--|---|--|--|--|---|
| Open motorized road and trails (OMRT) | <p>Part of the calculation for wildlife security as defined in the forest plan. Considers routes legally open to motorized use, including:</p> <ul style="list-style-type: none"> Any road or trail open to public motorized use; Any road or trail closed to the public, but open for permitted or administrative purposes; Any route permitted under special use permits (private road or other); Any route with unknown status occurring on Non-Forest Service inholdings (e.g. private routes are always considered motorized). | Linear miles of legally open route within landscapes, as defined by the forest plan | Both general and fall | Does not include undetermined routes unless they are included on page 53 of the forest plan. Routes not identified on page 53 are considered legally closed which also applies to new routes that are discovered during project planning where motorized access is possible. | <p>Changes in linear miles of open motorized road and trails occur when:</p> <ul style="list-style-type: none"> Road legal status changes to closed or open as part of a project; or Planning information reveals an open road is impassable because of vegetation or other reasons, so the status is changed as part of a project. <p>Linear miles may change without changing density metrics depending on where the closures occur and how many miles are affected. Does not consider spatial juxtaposition of road locations.</p> |
| Open motorized road and trail density (OMTRD) – general season | <p>Calculates wildlife security as defined in the forest plan. Considers routes legally open to motorized use, including:</p> <ul style="list-style-type: none"> Any road or trail open to public motorized use; Any road or trail closed to the public, but open for permitted or administrative purposes; Any route permitted under special use permits (private road or other); Any route with unknown status occurring on non-Forest Service inholdings (e.g. private routes | Miles per square mile of legally open motorized route by landscape; landscape areas as defined in the forest plan. | Includes routes legally open to motorized use at any time during the year. | Does not include undetermined routes unless they are included on page 53 of the forest plan. Routes not identified on page 53 are considered legally closed which also applies to new routes that are discovered during project planning where motorized access is possible. OMTRD baseline metrics do not change when new routes are discovered because they are considered legally closed. | Changes in OMTRD may require substantial changes to OMRT. Does not incorporate newly discovered routes as they are considered legally closed unless identified on page 53 of the forest plan. Does not consider spatial juxtaposition of road locations that may influence how grizzly bears move across the landscape. |

| Metric | Guidance for Calculation | Unit of Measure | Season | Undetermined Route Guidelines | Considerations for Grizzly Bears |
|--|--|---|--|--|---|
| | are always considered motorized) | | | | |
| Open Motorized Road and Trail Density (OMTRD) – fall season by hunt unit | <p>Calculates wildlife security as defined in the forest plan for the fall season. Considers routes legally open to motorized use during big game rifle season, including:</p> <ul style="list-style-type: none"> Any road or trail open to public motorized use; Any road or trail closed to the public, but open for permitted or administrative purposes; Any route permitted under special use permits (private road or other); Any route with unknown status occurring on Non-Forest Service inholdings (e.g. private routes are always considered motorized) | Miles per square mile of open motorized routes by hunt units; 2006 hunt unit boundaries | Includes routes legally open to motorized use during big game rifle season (10/15-12/1) | Does not include undetermined routes unless they are included on page 53 of the forest plan. Routes not identified on page 53 are considered legally closed which also applies to new routes that are discovered during project planning where motorized access is possible. OMTRD baseline metrics do not change when new routes are discovered because they are considered legally closed. | Changes in OMTRD may require substantial changes to OMRT. Does not incorporate newly discovered routes as they are considered legally closed unless identified on page 53 of the forest plan. Does not consider spatial juxtaposition of road locations that may influence how grizzly bears move across the landscape. |
| Total motorized roads and trails (TMRT) | Part of the calculation for secure habitat; all roads and trails where motorized use could potentially occur are included. Includes roads with gates or seasonal restrictions, known user-created routes, routes on private lands, etc. | Linear miles of any road or route that are potentially accessible via motorized means. | Includes all routes where motorized access occurs or could occur at any time of the year, including seasonally restricted roads. | All routes that are potentially accessible via motorized means, regardless of legal status are included, including newly discovered undetermined routes. | Includes all known routes where motorized access is possible so provides a clearer assessment of on-the-ground conditions for grizzly bears. May overestimate effects if road or route use is extremely infrequent (e.g. there is more secure habitat available than disclosed). |
| Secure habitat (acres) | <p>Buffer all roads and routes by 500 meters where motorized access is possible at any time, regardless of legal status, including:</p> <ul style="list-style-type: none"> All routes having motorized use or the potential for motorized use; and | Acres within Grizzly Bear Analysis Units | Includes all known roads and routes where motorized access occurs or could occur | All routes, regardless of legal status are buffered by 500 meters and are not considered secure. This includes routes discovered during project planning. | Includes all known routes where motorized access is possible so provides a clearer assessment of on-the-ground conditions for grizzly bears. Identifies the juxtaposition of habitats free from motorized use for |

| Metric | Guidance for Calculation | Unit of Measure | Season | Undetermined Route Guidelines | Considerations for Grizzly Bears |
|--|--|---|--|--|--|
| | <ul style="list-style-type: none"> • Restricted roads that are not permanently blockaded located on or within 500 meters of federally owned lands. • Also buffers the BDNF boundary adjacent to non-federal ownership by 500 meters. <p>Areas that are secure include:</p> <ul style="list-style-type: none"> • Greater than 500 meters away from any other ownership; • Greater than 500 meters away from any route where motorized access is possible; and • Greater than 10 acres in size | | at any time of the year, including seasonally restricted roads. | | grizzly bears. Can also incorporate new information if learned during project planning. |
| Total Motorized Access Route Density (TMARD) | <p>Part of the metrics for reporting changes to motorized access and secure habitat in the Greater Yellowstone Ecosystem for the Interagency Grizzly Bear Study Team (refer to Wildlife Habitat Section – Appendix G in the Forest Plan).</p> <p>Considers routes open to the public or administrative personnel for motorized use on one or more days during the active season (March 1-November 30), at the bear management unit (BMU; Figure 9) level, including:</p> <ul style="list-style-type: none"> • Any road or trail open to public motorized use; • Any road or trail closed to the public, but open for permitted or administrative purposes; • Any route permitted under special use permits (private road or other); | Miles per square mile of open motorized routes by Bear Management Units where densities are greater than 1 mi/mi ² . | Routes open for motorized use during the active bear season (March 1-November 30), | Only considers roads legally open to the public or closed to the public but allows administrative use. | Disclosed at the Bear Management Unit level, which are substantially larger than grizzly bear analysis units on the BDNF. BMUs are too large to analyze potential effects to grizzly bears for projects on the BDNF. |

| Metric | Guidance for Calculation | Unit of Measure | Season | Undetermined Route Guidelines | Considerations for Grizzly Bears |
|---|--|---|---|--|--|
| Open Motorized Access Route Density (OMARD) | <p>Part of the metrics for reporting changes to motorized access and secure habitat in the Greater Yellowstone Ecosystem for the Interagency Grizzly Bear Study Team (refer to Wildlife Habitat Section – Appendix G in the Forest Plan).</p> <p>Considers routes open to the public for motorized use on one or more days during the active season (March 1- November 30), at the bear management unit (BMU; Figure 9) level, including:</p> <ul style="list-style-type: none"> Any road open to public motorized use. | Miles per square mile of open motorized routes by Bear Management Units where densities are greater than 2 mi/mi ² . | Routes open for motorized use during the active bear season (March 1- November 30), | Only considers roads legally open to the public or closed to the public but allows administrative use. | Disclosed at the Bear Management Unit level, which are substantially larger than grizzly bear analysis units on the BDNF. BMUs are too large to analyze potential effects to grizzly bears for projects on the BDNF. |

Denning

Due to its location between the GYE and the NCDE, the Beaverhead-Deerlodge National Forest utilizes two methods to model denning habitat: Judd et al. (1986) (GYE) and Mace and Waller (1997b) (NCDE, or more northern areas on the BDNF). Across the Forest, there are approximately 483,016 acres of denning habitat, which equates to 13 percent of the BDNF. Denning habitat within GBAUs ranges from approximately 1-32 percent (Table 7). It is possible updated models may be utilized to refine grizzly bear denning habitat from new research during the life of this document. Since the BDNF is committed to utilizing the best available science, revisions to denning habitat models are discussed and reviewed extensively by the Northern Region in partnership with the US Fish and Wildlife Service to ensure accuracy before applying these changes to established models (e.g. Bader and Sieracki 2022 and USDA FS and USDI FWS 2023c).

Table 7. Amount and percent of denning habitat and methodology utilized within Grizzly Bear Analysis Areas.

| Reporting Landscape (per the forest plan) | GBAU Name | Denning habitat (acres) | Denning habitat (percent) | Methodology |
|---|-------------------|-------------------------|---------------------------|-----------------------|
| Big Hole | Fleecer | 4,753 | 5 | Mace and Waller 1997a |
| | Pintler | 1,256 | 1 | Mace and Waller 1997a |
| | Ruby | 24,016 | 26 | Judd et al. 1986 |
| | Seymour | 892 | 1 | Mace and Waller 1997a |
| | Tie | 1,574 | 2 | Mace and Waller 1997a |
| | Upper Big Hole | 12,692 | 14 | Judd et al. 1986 |
| Boulder River | Basin | 4,535 | 6 | Mace and Waller 1997a |
| | Little Boulder | 3,654 | 5 | Mace and Waller 1997a |
| | Upper Boulder | 3,953 | 6 | Mace and Waller 1997a |
| Clark Fork Flints | Dry Cottonwood | 5,969 | 7 | Mace and Waller 1997a |
| | East Flints | 2,347 | 4 | Mace and Waller 1997a |
| | Georgetown | 1,234 | 1 | Mace and Waller 1997a |
| | Harvey Willow | 10,273 | 9 | Mace and Waller 1997a |
| | South Flints | 3,570 | 4 | Mace and Waller 1997a |
| | West Flints | 5,638 | 6 | Mace and Waller 1997a |
| Gravelly | Black Butte | 9,372 | 10 | Judd et al. 1986 |
| | Greenhorns | 17,352 | 24 | Judd et al. 1986 |
| | Snowcrest | 21,350 | 20 | Judd et al. 1986 |
| | Wall Creek | 16,138 | 17 | Judd et al. 1986 |
| | West Fork Madison | 11,091 | 10 | Judd et al. 1986 |
| Jefferson River | Bull | 6,174 | 10 | Mace and Waller 1997a |
| | Highland | 6,860 | 6 | Mace and Waller 1997a |
| | O'Neill | 4,343 | 6 | Mace and Waller 1997a |
| Lima Tendoy | Governor | 16,201 | 29 | Judd et al. 1986 |
| | Medicine Lodge | 18,583 | 21 | Judd et al. 1986 |
| | Muddy Creek | 12,167 | 17 | Judd et al. 1986 |
| | Selway | 14,300 | 17 | Judd et al. 1986 |

| Reporting Landscape (per the forest plan) | GBAU Name | Denning habitat (acres) | Denning habitat (percent) | Methodology |
|---|---------------------------|-------------------------|---------------------------|-----------------------|
| | Sheep Creek | 11,368 | 13 | Judd et al. 1986 |
| | Upper Horse Prairie | 7,527 | 32 | Judd et al. 1986 |
| Madison | Hillgard BMU ^a | 16,742 | 24 | Judd et al. 1986 |
| | Lee Metcalf North | 5,898 | 11 | Judd et al. 1986 |
| | Lee Metcalf South | 5,949 | 18 | Judd et al. 1986 |
| Pioneer | Birch Creek | 24,641 | 27 | Judd et al. 1986 |
| | Browns Lake | 31,263 | 28 | Judd et al. 1986 |
| | Bryant Creek | 28,471 | 29 | Judd et al. 1986 |
| | Maverick | 17,242 | 19 | Judd et al. 1986 |
| | Pettengill | 24,828 | 25 | Judd et al. 1986 |
| | Quartz Hill | 22,972 | 25 | Judd et al. 1986 |
| Tobacco Root | Meadow Creek | 14,259 | 24 | Judd et al. 1986 |
| | Mill Creek | 18,724 | 32 | Judd et al. 1986 |
| | South Boulder | 20,892 | 31 | Judd et al. 1986 |
| Upper Rock Creek | Copper | 2,318 | 3 | Mace and Waller 1997a |
| | Ross Fork | 1,996 | 2 | Mace and Waller 1997a |
| | Stony | 4,381 | 9 | Mace and Waller 1997a |
| | Total | 483,016 | 13 | N/A |

^aThe Hillgard BMU denning habitat only includes lands on the BDNF.

Grizzly Bear (*Ursus arctos horribilis*) – Threatened

The grizzly bear was listed as threatened in 1975 in the lower 48 states. Since listing, grizzly populations have expanded and now occupy approximately six percent of their historical range in the lower-48 states (U.S. Department of the Interior 2022b).

Species Description and Life History

Grizzly bear habitat and life history traits are reviewed in a variety of literature and other publications (e.g., (Interagency Grizzly Bear Committee 1987, U.S. Department of the Interior 1993, Apps et al. 2004, Montana Fish Wildlife and Parks 2013, Phoebus et al. 2017, U.S. Department of the Interior 2022b) and are not extensively described in this document.

Overall habitat productivity (e.g., food distribution and quality), availability of components to meet life history needs (e.g., dens and cover), social dynamics and population density, learned preferences of individuals, and random variation contribute to grizzly bear habitat selection (U.S. Department of the Interior 2022b). They tend to utilize areas of mid- and high elevations in fall and lower elevations in spring, where winter snow melts (Servheen 1983, U.S. Department of the Interior 1993, Mace et al. 1999). Grizzly bears selected for increased amounts of deciduous, green vegetation during all seasons (“greenness”), which may include avalanche chutes, shrub lands, cutting units, and riparian zones (Mace et al. 1999, Ciarniello et al. 2007, Phoebus et al. 2017). They may also utilize sites with cover for day bed use, shade, forage, and concealment (Blanchard 1983, McLellan and Shackleton 1989b, Ordiz et al. 2011). At broad scales, grizzly bears select areas of higher forest productivity that provide thermal and

security cover, but within forests, daily movements are influenced by open forest canopy that provide herbaceous forage opportunities and predation on vulnerable ungulates (Mace et al. 1999, Apps et al. 2004).

As omnivores, grizzly bears use a wide variety of habitats including meadows, shrublands, forests from low elevations to alpine habitats to find food sources. Food sources may vary annually or daily (U.S. Department of the Interior 1993) and bears may alter their diets based on food availability within a home range (Servheen 1983, Kendall 1986, Mace and Jonkel 1986, Mattson et al. 1991, Mowat and Heard 2006, van Manen et al. 2013, Gunther et al. 2014). They are opportunistic and will prey or scavenge on almost any available food, including living or dead mammals and fish, berries, roots, tubers, seeds, fungus, insects, worms, human-related food, garbage, and livestock. In the GYE and NCDE, cattle depredation is generally higher where livestock is more abundant (U.S. Department of the Interior 2022b).

In general, the BDNF considers high-quality spring foraging grizzly bear habitat characterized by snow-free forested and open habitats that afford fresh green-up of grasses, roots, and bulbs as well as foraging opportunities for small rodents. This may include riparian areas, meadows and open grassy parklands, and avalanche chutes. Aspect (east, west and south facing) and lower elevations help differentiate spring habitat from summer and fall seasonal habitats and should be taken into consideration when evaluating how quality spring habitat evolves over the length of the season (i.e., from den emergence to later in the season). Big-game winter ranges and spring calving and fawning areas are often located at lower elevations and warmer aspects which provides additional opportunities for scavenging winter-kill carcasses and elk calf or deer fawn depredation during the spring season. Whitebark pine is also considered foraging habitat.

Grizzly bear home ranges depend on food resource availability, sex, age, reproduction status, and bear density (Interagency Grizzly Bear Committee 1987, Blanchard and Knight 1991, U.S. Department of the Interior 1993, Bjornlie et al. 2014, U.S. Department of the Interior 2022b). In general, male grizzlies disperse further than females with male home ranges two to four times larger than those of adult females (U.S. Department of the Interior 1993, Mace and Waller 1997c, McLellan and Hovey 2001b, Proctor et al. 2004). Females with cubs-of-the-year or yearlings have the smallest home range sizes (Aune and Kasworm 1989, Blanchard and Knight 1991). Young, female grizzlies may establish home ranges within or overlapping the mother's range, which may slow female dispersal (McLellan and Hovey 2001b, Proctor et al. 2004). In Montana, home ranges are smaller in the northern part of the state compared to those further south. In the NCDE, the average annual home range size is 527 square miles for adult males and 138 square miles for adult females. In the GYE, home ranges vary from 183 square miles for adult males and 50 square miles for adult females (U.S. Department of the Interior 2022b).

Grizzly bears excavate dens for winter hibernation which occurs for four to six months beginning in late September and emerging in late February through April. Males enter dens later in fall and emerge earlier than females in the spring (Mace and Waller 1997b, Haroldson et al. 2002, U.S. Department of the Interior 2022b). Females give birth to cubs in the den in early January or February and females with cubs may emerge later compared to females without cubs (mid-April to late May compared to mid-March to mid-May) (Mace and Waller 1997b, Haroldson et al. 2002, Kasworm et al. 2022). Dens generally occur on relatively steep slopes, at higher elevations, away from close human proximity and activity, and away from water (Mace and Waller 1997b, Linnell et al. 2000, Haroldson et al. 2002, Pigeon et al. 2014, Bader and Sieracki 2022). Denning habitat is not considered limited in the GYE or NCDE recovery zones (U.S.

Department of the Interior 2022b) and bears typically do not reuse dens although will den in the same general areas in successive years (Linnell et al. 2000). The active “bear year” for each ecosystem is defined by emergence and entry into dens. On the BDNF, this is considered March 1 – November 1 and April 15- November 15, for the GYE and the east-side NCDE, respectively. The BDNF typically uses the more conservative March 1 – November 1 as the active bear year.

The primary factors affecting grizzly bears are human-caused mortality and human activity that reduces the quality and quantity of habitats (U.S. Department of the Interior 2022b). Bear avoidance of human presence and areas of human influence (such as roads) is well-documented (McLellan and Shackleton 1989b, Kasworm and Manley 1990, Mace and Waller 1996, Mace et al. 1996, Wielgus et al. 2002, Apps et al. 2004, Mueller et al. 2004, Schwartz et al. 2010, Northrup et al. 2012, Apps et al. 2013, Boulanger and Stenhouse 2014, Proctor et al. 2019). Grizzly bear recovery relies on an adequate amount of habitat that is diverse, provides for a variety of food needs, and is isolated from development and human activities to reduce human-bear interactions that may cause mortality; thus regulating human-caused mortality through habitat management is an effective approach (U.S. Department of the Interior 2022b). For the BDNF, this equates to managing land to provide secure habitat (e.g., land protections such as Wilderness or roadless areas, non-motorized areas, or decommissioning roads), developing design features for projects and administrative actions (e.g., enforcing food storage, implementing projects outside of spring bear season), educating forest users to improve or maintain secure habitat and reduce human-bear conflicts, among others.

Recovery Zones

Recovery zones were developed to manage grizzly bear habitat and monitor populations to facilitate recovery of the species (U.S. Department of the Interior 1993). There are four recovery zones occupied by grizzly bears in Montana, Wyoming, and Idaho: Greater Yellowstone, Northern Continental Divide, Cabinet-Yaak, and Selkirk Ecosystems. There are two other recovery zones that are not currently occupied by bears: Bitterroot in Montana and Idaho and North Cascades in Washington (U.S. Department of the Interior 2022b). Two recovery zones intersect with the BDNF: the Northern Continental Divide Ecosystem (NCDE; Zone 2) and the Greater Yellowstone Ecosystem (GYE) (Figure 3). The remainder of the BDNF is outside of the recovery zones but serves as an important linkage and distribution area for both populations (Costello and Roberts 2022). The Bitterroot Recovery Zone

Conservation strategies were developed for both the NCDE and the GYE which identifies areas or zones with specific protections or monitoring requirements. Both the NCDE and the GYE contain Primary Conservation Areas (PCAs), which are considered secure areas for grizzly bears where habitat and population conditions are protected and maintained to ensure population recovery and expansion beyond the identified area (Yellowstone Ecosystem Subcommittee 2016a, Northern Continental Divide Ecosystem Subcommittee 2021). The NCDE and the GYE also contain Demographic Monitoring Areas (DMAs), which contains suitable habitat to support a population of grizzly bears over the long term and the bear population is surveyed and estimated annually with limits on mortality (Yellowstone Ecosystem Subcommittee 2016a, Northern Continental Divide Ecosystem Subcommittee 2021).

Northern Continental Divide Ecosystem

The NCDE is located in northwestern and north central Montana and extends into Canada. The PCA is known as the “NCDE recovery zone” which represents core habitat for grizzly bears and is expected to have the highest population (Northern Continental Divide Ecosystem Subcommittee 2021). The DMA for

this ecosystem consists of the PCA and management Zone 1 which surrounds the PCA and includes Glacier National Park, portions of the Flathead, Kootenai, Lolo, and Helena-Lewis and Clark National Forests, part of the Blackfeet Indian Reservation, Bureau of Land Management lands, and private lands. The bear population within the NCDE DMA has increased over time, with the projected number of bears increasing from approximately 1,068 in 2019 to 1,163 in 2023 from population modeling (Costello and Roberts 2022).

The NCDE has three management zones outside of the PCA where future occupancy is either occurring or anticipated. Each zone has with varying levels of habitat protections depending on the importance to grizzly bear populations. The BDNF intersects with Management Zone 2 (Figure 3), which is managed to provide the opportunity for grizzly bears to move between the NCDE and adjacent ecosystems by managing resources and recreation and allow agencies to respond to demonstrated conflicts. Management direction emphasizes conflict prevention and response, including attractant storage rules (Northern Continental Divide Ecosystem Subcommittee 2021). Zone 2 may also provide genetic connectivity between the NCDE and the GYE, although genetic combinations between these two areas have not been discovered yet (Costello and Roberts 2022).

Greater Yellowstone Ecosystem

The GYE is located in southwest Montana, northwest Wyoming, and northeast Idaho and includes National Park lands (Yellowstone, Grand Teton, and John D. Rockefeller Jr Memorial Parkway), National Forest System lands (Beaverhead-Deerlodge, Bridger-Teton, Caribou-Targhee, Custer Gallatin, and Shoshone), Bureau of Land Management lands, tribal lands, and state and private properties. Like the NCDE, the PCA within the GYE is considered the “Yellowstone Recovery Zone” where secure habitat and grizzly bear populations are maintained to limit access-related disturbance and reduce human-caused mortality (Yellowstone Ecosystem Subcommittee 2016a).

The GYE also outlines a DMA outside of the PCA where monitoring occurs for mortalities, reports of unique females with cubs-of-the-year, and population size. The objective of land management inside the DMA is to maintain existing resource and recreational uses and allow agencies to respond to demonstrated conflicts. Bears can expand into this area and meet life history needs alongside other land management uses (Yellowstone Ecosystem Subcommittee 2016a).

The BDNF overlaps with the PCA and the DMA as part of the Greater Yellowstone Ecosystem. The Madison Ranger District is the only area of the Forest that overlaps with this recovery area (Hillgard BMU; Figure 3). Since 2006, the GYE grizzly bear population has exceeded 500 total bears and females with cubs-of-the-year occupy all of the bear management units within the PCA, some (but not all) areas within the DMA, and some lands outside of the DMA (Yellowstone Ecosystem Subcommittee 2016a). Grizzly bears are frequently documented on the Madison Ranger District outside of the DMA.

Bitterroot Ecosystem

The Bitterroot Ecosystem (BE) is in central Idaho and western Montana and is located directly west of the Beaverhead-Deerlodge National Forest. Although the BDNF boundary is not adjacent to the Bitterroot Ecosystem, this area may potentially foster habitat connectivity between the BDNF and other western lands for grizzly bears. Although confirmed sightings have occurred around the Bitterroot Recovery zone, this area is currently considered unoccupied because neither females nor a population of bears have been documented (U.S. Department of the Interior 2022b). The BDNF recognizes the importance of this

ecosystem for grizzly bears, but this zone is only incorporated in this analysis as part of Habitat Connectivity.

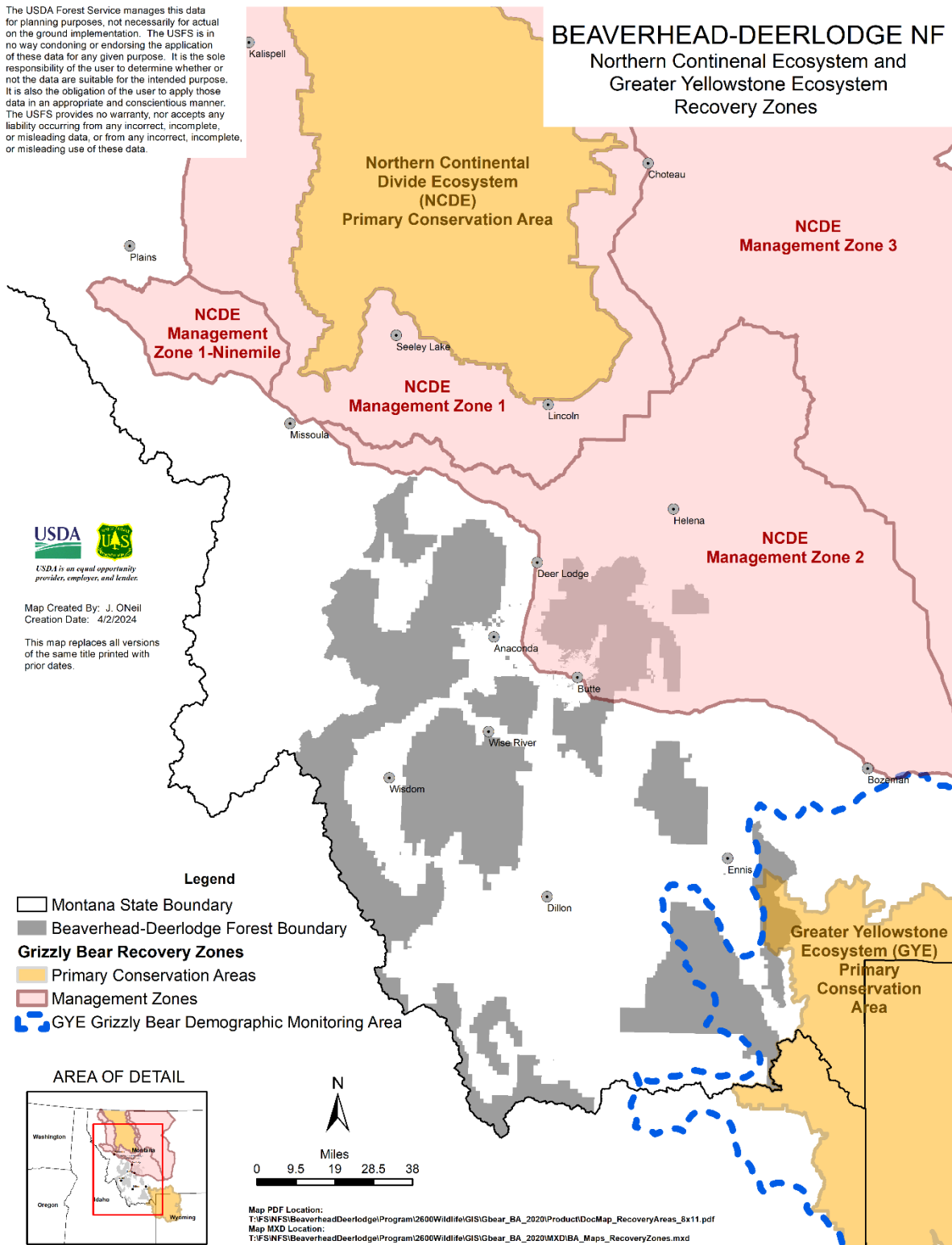


Figure 3. Overlap between the Beaverhead-Deerlodge National Forest and Grizzly Bear Recovery Zones.

Affected Environment

Forest management practices allowed under the forest plan that may cause an effect to grizzly bears and habitat are analyzed within this document. Due to the BDNF location between ecosystems, the GYE and the NCDE research and management recommendations developed by the respective subcommittees are challenging to apply to the BDNF landscape because of differences in guidance (Table 8). Generally, the BDNF utilizes guidance from the GYE as the habitat on the Forest is more similar to the GYE than the NCDE. For example, grizzly bears in the GYE consume a much larger percentage of meat compared to bears in other ecosystems; thus spring habitat is driven by big game herds and winter-kill availability (USDA FS 2020b and references therein). Since the BDNF generally lacks the large huckleberry patches and other berry food sources bears utilize in more northern areas, it is assumed bears utilizing the BDNF may forage more on meat due to its availability in both spring and fall, thus dates for those “seasons” follow the GYE recommendations.

Table 8. Differences between Greater Yellowstone Ecosystem and Northern Continental Divide Ecosystem guidance and the reconciliation justification on the Beaverhead-Deerlodge National Forest.

| Greater Yellowstone Ecosystem Conservation Guidance | Northern Continental Divide Ecosystem Guidance | Beaverhead-Deerlodge National Forest Justification |
|---|--|---|
| Minimum secure habitat patch size is 10 acres (Yellowstone Ecosystem Subcommittee 2016a). | Minimum secure habitat patch size is 2,500 acres (Northern Continental Divide Ecosystem Subcommittee 2021). | Utilize 10 acres as habitat on the BDNF as a more conservative measure. |
| Spring bear season dates: March 1 – July 15 (USDA FS 2020b and references therein). | Spring bear season dates: April 15 – June 30 (USDA FS 2020b and references therein). | Spring dates vary depending on location on the Forest. In general, the Dillon, Wisdom, and Madison Ranger Districts use March 1 – July 15 due to the proximity to the GYE. The Butte and Pinter Ranger Districts use April 15 – June 30 due to the proximity to the NCDE. Location and local knowledge of the spring conditions factor into the date range at the project level. |
| Fall bear season dates: September 1 – November 30 (USDA FS 2020b and references therein). | Fall bear season dates: October 1 – November 30 (USDA FS 2020b and references therein). | Fall dates vary depending on location on the Forest. In general, the Dillon, Wisdom, and Madison Ranger Districts use September 1 – November 30 due to the proximity to the GYE. The Butte and Pinter Ranger Districts use October 1 – November 30 due to the proximity to the NCDE. Location and local knowledge of the fall conditions factor into the date range at the project level. |
| Adult home range size average: Male: 183 mi ² Female: 50 mi ² (U.S. Department of the Interior 2022b) | Adult home range size average: Male: 527 mi ² Female: 138 mi ² (U.S. Department of the Interior 2022b) | The BDNF used 100 square miles as the minimum GBAU size per recommendations (USDA FS and USDI FWS 2023c) as habitat on the BDNF is similar to the GYE in some places. Although the female home range size in the GYE is smaller than 100 square miles, the BDNF used a larger estimation to incorporate an adequate range of habitats to meet life history traits. |

As described in Appendix A, the BDNF identified Grizzly Bear Analysis Units and secure habitat in 2022. This metric is also utilized in project-level analyses in conjunction with other information (e.g., miles and location of temporary roads, verified grizzly bear locations, etc.) to disclose effects from project actions on individual grizzly bears and their habitat. Table 4 identifies the current existing secure habitat within each GBAU and Figure 4 shows the spatial distribution of secure habitat on the BDNF.

The 2022 GBAU and secure habitat development effort on the BDNF resulted in the creation of 43 GBAUs (excluding the Hillgard Bear Management Unit that was already part of the PCA in the GYE). Of these, seven GBAUs did not meet the 100 square mile area guidance for size because of the shape of the administrative boundary (Governor, Upper Horse Prairie, Lee Metcalf North, Lee Metcalf South, Meadow Creek, Mill Creek, and Stony). In these instances, project-specific analyses should consider utilizing more than one GBAU to disclose effects to grizzly bears.

Secure habitat calculations on the BDNF excludes the Elkhorns (managed by the Helena, Lewis and Clark National Forest (HLC); 33,527 acres) and non-contiguous, isolated parcels of the BDNF (a total of 5,474 acres). Secure habitat is not calculated for the Elkhorns as this area is managed by the HLC. The isolated parcels of BDNF lands are typically small sections (quarter acre or less) surrounded by private lands, which are not considered secure due to their size and existing private lands around them. Examples of these scattered, isolated parcels include sections in Butte Valley or the three-acre parcel located in Wisdom that houses the district office (some visible on Figure 4).

Including the projects identified in the proposed action (Table 3), there are 1,464,227 acres of secure habitat across the BDNF (40.5 percent). The amount of secure habitat within GBAUs varies from 13 percent (Dry Cottonwood) to 82 percent (Lee Metcalf South) (Table 4). Despite low amounts of secure habitat within some GBAUs, grizzly bears are still expanding across the BDNF. For example, the Basin GBAU is 18 percent secure and now completely intersects with the NCDE distribution area and the West Flints GBAU was partially intersected by the distribution line in 2017 and contains only 16 percent secure habitat (Appendix D: Table D- 1, Figure D- 3). Despite the location of the distribution line and the changes in the “may be present” map, the BDNF assumes grizzly bear presence is possible anywhere on the Forest.

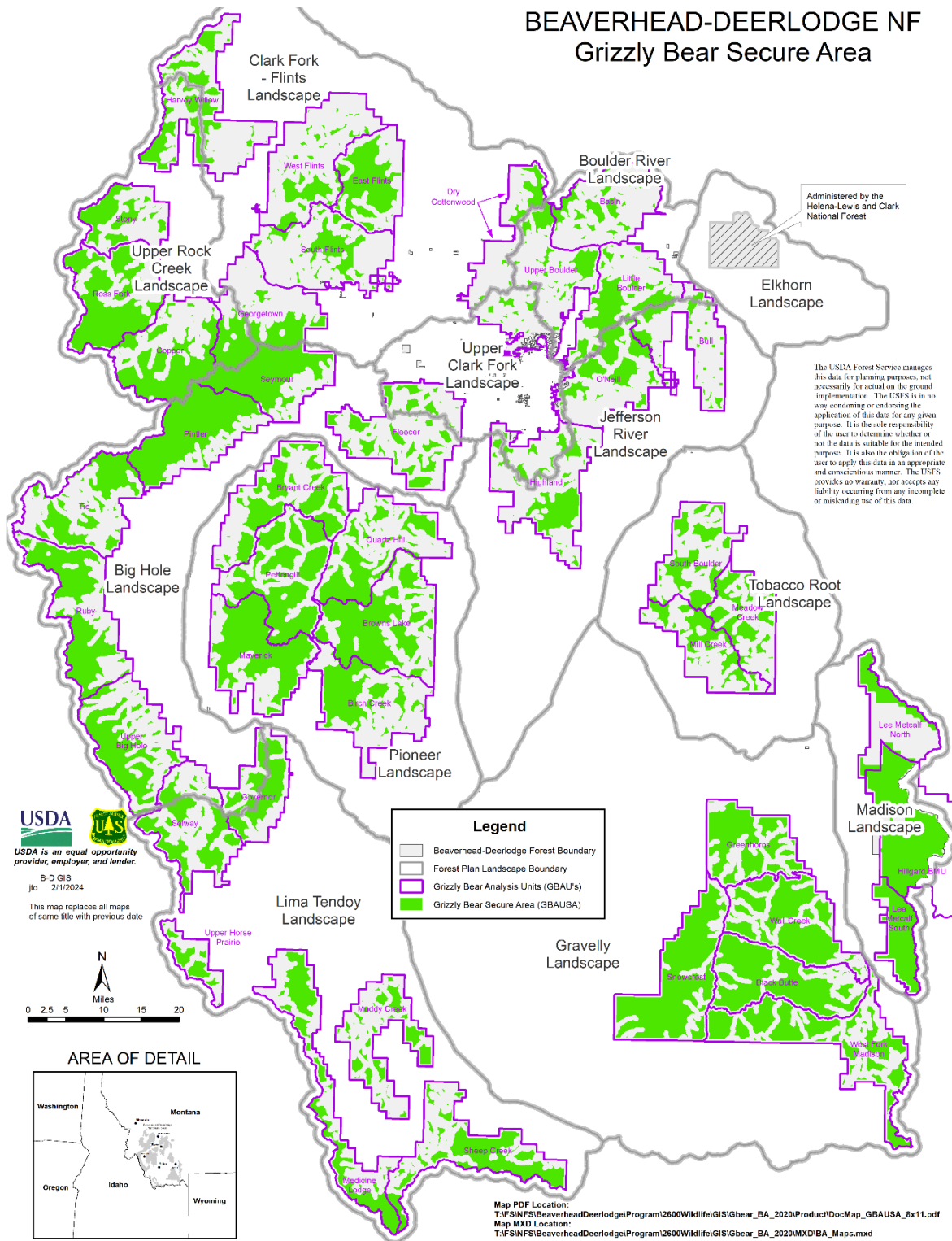


Figure 4. Secure habitat distribution on the Beaverhead-Deerlodge National Forest.

Known Distribution on the Beaverhead-Deerlodge National Forest

The Beaverhead-Deerlodge National Forest is uniquely situated between the NCDE and the GYE recovery zones with grizzly distribution gradually expanding towards one another (Figure 3; Appendix D, Figures D1-D3). To date, no interbreeding of bears between the NCDE and the GYE have been observed (Costello and Roberts 2022). However, recent models suggest bears may utilize mountain ranges on the BDNF to connect populations between the GYE and NCDE (Sells et al. 2023).

Grizzly bears continue to disperse further into the BDNF, as evidenced by the changing “may be present” map (the most current may be present map is available at: <https://www.fws.gov/media/grizzly-bear-species-list-area-map>), changes to the known distribution area (Appendix D), and verified observations in new areas. The “may be present” area differs from known distribution areas (as described in Appendix D). The “may be present” map is derived from current distributions and verified location data outside of known distribution areas and not all “may be present” areas meet the criteria to be included in current distributions (USDI FWS, 2023). Over time, the grizzly bear “may be present” map has changed to include more lands on the BDNF. In addition, the known distribution area changed completely or partially covers increasing numbers of GBAUs on the BDNF (Appendix D). New verified sightings continue to occur, especially in areas along the Big Hole (areas south, west, and north of Wisdom, Montana). Since 2000, grizzly bear distribution has changed on 24 GBAUs on the BDNF from none to fully containing the distribution area, partially containing to fully containing the distribution, or no overlap with the distribution but verified sightings within the GBAU (Appendix D, Table D- 1; Fortin-Noreus pers. comm. 2022). One GBAU (Hillgard) always overlapped with the may be present area. Since 2018, at least three verified sightings outside of the distribution area occurred annually on the BDNF (Appendix D, Figure D- 3) and this number will likely increase as grizzly bears continue to disperse. For purposes of this analysis, grizzly bears are considered present anywhere within the Beaverhead-Deerlodge National Forest.

In addition to tracking verified sightings, the U.S. Fish and Wildlife Service Grizzly Bear Recovery program in partnership with other agencies conducts genetic sampling efforts and collared bear studies. The Beaverhead Mountains, Pioneer Mountains, Pintler Range, Anaconda Range, Flint Creek Range, and Sapphire Mountains on the BDNF are a focus for formalized sampling efforts (among other areas on adjacent Forests) for the Southwest Montana Grizzly Bear DNA study, which determines where bears are dispersing from. In 2020, a grizzly bear was detected via a remote camera in the Big Hole Valley. DNA analysis verified that this male bear was from the NCDE (Costello and Roberts 2022). In 2020 and 2021, DNA analysis and collared bear data documented that three NCDE males moved outside of the management zones and were present on the BDNF at one time or another (Costello and Roberts 2022). Although the U.S. Fish and Wildlife Service did not collect any grizzly bear genetic samples on the BDNF in 2021 or 2022 as part of the Southwest Montana study, two male grizzly bears were detected for the first time within historic range on the Bitterroot National Forest (adjacent to the BDNF) in 2022. The BDNF will continue to support ongoing research efforts to obtain genetic and distribution information for this species.

Human-Bear Conflict and Management Removals on the Beaverhead-Deerlodge

A majority of grizzly mortality in both the GYE and the NCDE are due to human causes, such as accidental death (automobile collision, poisoning), defense of life, illegal removals (poaching, malicious, and

defense of property), management removals (livestock depredation, human safety, injured bear), and mistaken identity (U.S. Department of the Interior 2022b).

The BDNF reports conflicts to USFWS as required monitoring from the 2013 Biological Opinion on an annual basis. On the Beaverhead-Deerlodge National Forest, a majority of human-bear conflicts are the result of livestock depredations and hunter or hiker encounters (Table 10; as summarized from monitoring reports). A number of conflicts in Table 10 identify separate encounter or conflict events although multiple people (hunters) or livestock could be involved. Most conflicts between bears and livestock result in a single-animal livestock loss, however, a few incidents recorded multiple depredations associated with a single conflict, which results in a higher number of recorded livestock losses compared to the number of conflicts. Conflicts between sheep and bears generally result in multiple livestock losses in comparison to cattle, which usually occur with a single animal. Outcomes of bears injured during self-defense conflicts are not always stated within the monitoring reports as investigations may be ongoing at the time of writing. In general, Montana Fish, Wildlife, and Parks (MTFWP) and USDA Wildlife Services take the lead to investigate bear conflict issues, including trapping for removal.

Most of the human-bear conflicts on the BDNF occur on the Madison Ranger District, which is within the GYE. However, grizzly bears also depredated cattle on the Wisdom Ranger District in 2018 and 2022 and the Butte Ranger District in 2021. This is not surprising given the expansion of grizzly bears on the BDNF (as documented in Appendix D). The remainder of the Forest will likely encounter additional livestock depredations from grizzly bears within the life of the document. There is only one documented conflict from attractants which occurred when a bear broke into a jeep to obtain dog food in 2021.

Per the 2013 BO, the Forest may not remove more than one grizzly bear from either analysis area due to conflicts from food or attractant storage. The BDNF has never removed a bear for this reason although a food conflict was reported (Table 10).

Per the 2021 BO, the BDNF should not exceed more than 11 grizzly bear mortalities associated with livestock grazing in the Yellowstone analysis area over any given 4-year period (USDI FWS 2021). The remainder of the Forest outside of the area should not exceed more than 1 management removal associated with livestock grazing (USDI FWS 2013). This includes grizzly bear-human conflicts, grizzly bear management removals, and grizzly bear mortalities related to defense of life associated with livestock grazing activities. Currently, the BDNF is within the perimeters (Table 9) although it is expected livestock conflicts will likely increase as bears continue to expand across the BDNF.

Table 9. Current grizzly bear management removal status on the Beaverhead-Deerlodge National Forest.

| Analysis Area | Permitted Bear Removal (number) | Current Removal Status (number and situation) |
|------------------------------|---|--|
| Yellowstone Analysis Area | 11 within any 4 year period, starting in 2021 ^a for livestock conflicts (USDI FWS 2021). | 6 total for the last 4 years (2020 is reported but not counted) 2020: 2, self-defense 2021: 2 management removals 2022: no removals 2023: 2 management removals 2024: 2 management removals |
| West and North Analysis Area | 1 within any time during the life of the document (USDI FWS 2013) for livestock conflict. | 0 |

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| Analysis Area | Permitted Bear Removal (number) | Current Removal Status (number and situation) |
|----------------------|--|--|
| Entire Forest | 1 within any time during the life of the document (USDI FWS 2013) for food or attractant conflict. | 0 |

^aThe BDNF exceeded this measure of incidental take in 2019 which was part of the 2010 biological opinion (USDI FWS 2010).

Table 10. Reported human-bear conflicts and management removals since 2009 on the Beaverhead-Deerlodge National Forest. Self-defense mortality and management removals are counted as separate incidents and are not additive.

| Year | Reported encounters ^a (number and situation) | Food attractant or property conflict (number and situation) | Livestock Conflict (number and situation) | Self-defense mortality ^b (bears killed and situation) | Management Removal ^c (bears removed) | General Notes |
|------|--|---|---|---|--|--|
| 2009 | 0 | 0 | 0 | 0 | 0 | Not applicable; no conflicts |
| 2010 | 3 – hunters | 0 | 0 | 1 | 0 | Madison Ranger District |
| 2011 | 3 - hunters | 0 | 1 – cattle | 1 | 0 | Madison Ranger District |
| 2012 | 1 - hunter | 0 | 0 | 0 | 0 | Madison Ranger District |
| 2013 | 1 – sheep allotment 1 - hunters | 0 | 1 – sheep | 1 – sheep allotment | 0 | Madison Ranger District; both encounters reported shooting bears but no outcome for the bears was mentioned |
| 2014 | 3 – hunters | 0 | 0 | 0 | 0 | Madison Ranger District |
| 2015 | 0 | 0 | 4 – cattle | 0 | 1 | Madison Ranger District; 1 mistaken identity (grizzly shot instead of black bear by hunter) occurred on BLM/FS boundary, not included in this table. |
| 2016 | 2 - hikers | 0 | 4 – cattle | 0 | 0 | Madison Ranger District |
| 2017 | 4 – hunters 1 – cattle allotment | 0 | 19 - cattle | 1 – cattle allotment | 1 | Madison Ranger District |
| 2018 | 1 – hunter 1 – cattle allotment | 0 | 28 – cattle | 1 (probable) ^d – cattle allotment | 1 (probable) | Madison Ranger District except 1 cattle conflict on the Wisdom Ranger District |
| 2019 | 10 – hikers/hunters | 1 – property damage | 20 – cattle 1 – sheep/dogs | 2 (probable) - hunters | 2 total (includes 1 attempted and never confirmed) | Madison Ranger District |
| 2020 | 3 – hikers/hunters | 0 | 13 – cattle 1 - sheep | 1 – sheep allotment 1 – cattle allotment | 0 | Madison Ranger District; 1 mistaken identity (not included in this table as a removal) |
| 2021 | 1 – hunter | 1 – food attractant | 41 – cattle 2 - sheep | 1 - (probable) hunter | 2 | Madison Ranger District except 2 cattle conflicts on the Butte Ranger District |
| 2022 | 1 - hunter | 0 | 18 - cattle | 0 | 0 | Madison Ranger District except 2 cattle conflicts on the Wisdom Ranger District |
| 2023 | 1 – cattle allotment | 0 | 24 – cattle | 1 - hunter | 2 | Madison Ranger District |

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| | | | | | | |
|-------------------|-----|-----|-----|-----|--|-------------------------|
| 2024 ^e | N/A | N/A | N/A | N/A | 2 (1 female adult; cub of the year unharmed but considered probable mortality) | Madison Ranger District |
|-------------------|-----|-----|-----|-----|--|-------------------------|

^aReported encounters only reflect those where MT FWP or the Interagency Grizzly Bear Study Team are notified. This number may underestimate the number of encounters that occur on the landscape if they go unreported.

^bSelf-defense mortalities of grizzly bears count toward incidental take on the Beaverhead-Deerlodge National Forest if they are related to livestock, such as riders or herders.

^cManagement removal of grizzly bears contributes to take on the BDNF.

^d Probable refers to an undetermined resolution for the bear from the removal attempt or self-defense situation (e.g., bear was not recovered, but there is supportive evidence to indicate mortality). Probable self-defense (if associated with livestock) or management removals on the Forest count towards incidental take.

^eAt the time of this writing, only two removals were known and reported (November, 2024). These two were sent to USFWS in August of 2024. The forest typically obtains final conflict and removal information for the previous year in March or April.

Conservation Measures

Conservation measures are designed to avoid or reduce adverse effects to this species. Conservation measures from the previous biological assessments that are still appropriate and effective were brought forward in this analysis. These measures are included as part of effects analysis for appropriate sections and include:

General

1. Participate in ongoing interagency efforts to identify, map, and manage linkage habitat essential to grizzly bear movement between ecosystems.
2. Motorized access management is only one of several factors influencing grizzly bear habitat and grizzly bear security. The presence of attractants is a major factor leading to the food conditioning and habituation, and eventual direct mortality or management removal of grizzly bears. The Service supports the Forest's continued efforts to manage food storage. Management of garbage, food and livestock feed storage, to prevent access to bears, benefits grizzly bears as well as black bears and other carnivores. Human-carnivore interactions would also be reduced, leading to a public safety benefit.
3. Grizzly bears concentrate in certain areas during specific time periods to take advantage of concentrate food sources or because the area provides high seasonal food value due to diversity in vegetation and plant phenology (e.g., important spring for fall range). Where grizzly bear use is known or likely to occur and where practicable, delay disturbing activities during the spring in spring habitats to minimize displacement of grizzly bears.

Recreation and Travel Management

1. Continue to manage access on the Forest to achieve lower road densities. By managing motorized access, several grizzly bear management objectives could be met including: 1) minimize human interaction and potential grizzly bear mortality; 2) minimize displacement from important habitats; 3) minimize habituation to humans; and 4) provide relatively secure habitat where energetic requirements can be met. Additionally, lower road densities would also benefit other wildlife and public resources. Lower road densities may result in lower maintenance costs that free up funding for other resource needs.

Range Management

Range management conservation measures are generally part of annual operating instructions. At the time of this writing, not all instructions on the BDNF contain this specific language (see Range Management).

1. All livestock depredation is reported to USDA Wildlife Services and the Forest Service.
2. Forest-wide Food Storage Order is required for all operations.
3. All dead livestock deemed to be a human health or safety hazard following distances in the Forest-wide Food Storage Order will be moved when the area is deemed safe for entry. When it is not reasonable or necessary to move dead livestock, permittees will promptly report carcass locations to

the Forest Service and the Forest Service will work with the permittee to jointly determine the appropriate action.

4. Herders and riders will continue to watch livestock closely for sick, injured or stray animals.
5. The Forest Service will continue to provide information to livestock grazing permittees and their employees about conservation of grizzly bears, the potential occurrence of grizzly bears on grazing allotments, the risks of working in bear country, the need for heightened awareness of bears, appropriate personal safety measures, and proper behavior in bear country.
6. Permittees and the Forest Service will continue to work in cooperation with Montana Fish Wildlife and Parks, USDA Wildlife Services and the Interagency Grizzly Bear Study Team to identify and collect information related to the habitat use, survival, reproduction, and depredation tendencies of grizzly bears inhabiting livestock grazing allotments in the action area.
7. Permittees and the Forest Service will continue to identify and implement opportunities that reduce the potential for grizzly bear conflicts. Permittees may be provided opportunity to change/move pastures to avoid conflict with large carnivores.
8. It is recommended that all permittees and their representatives (herders, riders, or other employees) carry bear spray while working within allotments. Spray canisters should be holstered or otherwise carried so that they are available for use in the event of encounters with bears. Storing spray canisters in back packs, saddle bags, and vehicles are acceptable methods of storage during non-working time periods.
9. During the annual operating instruction meetings with permittees - discussion with permittees will include the possible risks of running livestock and working in grizzly bear country, regulations concerning the taking of grizzly bears, and employee training on grizzly bear awareness and procedures. BDNF staff can provide training information as requested by the permittee. Employee training will include:
 - a. the status of the grizzly bear,
 - b. grizzly bear behavior,
 - c. human behavior in bear country to minimize conflicts,
 - d. Food Storage order requirements - including carcass handling and disposal,
 - e. Encounter procedures and use of bear spray,
 - f. Bear activity reporting, including encounters, livestock deaths and actions taken relative to disposal/removal, suspected depredation by grizzly bears and existing or potential bear conflict situations,
 - g. Management of cow/sheep camps, facilities and corral areas.

Montana Fish, Wildlife and Parks (MTFWP) has a statewide legal memorandum of understanding (MOU) with USDA/APHIS – Wildlife Services (WS) that makes WS the lead investigators on wildlife-caused livestock depredations and predator control. For livestock producers incurring depredation losses due to grizzly bears, WS field specialists must verify the loss as a confirmed or probable depredation for the producer to be reimbursed for the livestock loss by the state Livestock Loss Board. In consultation with MTFWP and the U.S. Fish and Wildlife Service, WS may attempt capture or removal of an offending

bear(s). If WS captures a grizzly bear, MTFWP and USFWS determine the fate of the bear and MTFWP conducts those management actions.

Forest Plan Components

Aquatic Management

Watershed, fisheries, and riparian habitat management as described in the forest plan may affect grizzly bear and grizzly bear habitat. Although the direction is not specific to grizzly bears, the forest plan contains several aquatic goals and objectives that could impact bears and bear habitat which include:

- Watershed goal: Watersheds are maintained to ensure water quality, timing of runoff, and water yields necessary for functioning riparian, aquatic ecosystems, wetlands, and to support native aquatic species reproduction and survival. Watershed restoration projects promote long-term ecological integrity of ecosystems, conserve genetic integrity of native species, and contribute to attainment of desired stream function and support beneficial uses (IN 1).
- Restoration Key Watershed goal: fish habitat, riparian habitat, and water quality are recovered to desired conditions developed through watershed assessments.
- Watershed Restoration Projects goal: Projects are designed and implemented to promote long-term ecological integrity of ecosystems, conserve the genetic integrity of native species, and contribute to attainment of desired stream function (WR-1).
- Riparian Area goal: Riparian habitat, species composition, and structural diversity of native and desired non-native riparian plant communities are maintained or restored to (IN 5-6):
 - Provide an amount and distribution of woody debris characteristic of functioning aquatic and riparian ecosystems;
 - Provide adequate summer and winter thermal regulation for streams to support beneficial uses;
 - Provide bank stability to maintain rates of surface erosion, bank erosion, and channel migration which are characteristic of functioning aquatic and riparian ecosystems;
 - Effectively trap and store sediment, build stream banks and floodplains, and promote recovery after watershed disturbance.
- Roads Objective: Close and stabilize or obliterate and stabilize roads not needed for future management activities (RF 3c).

Currently, the watersheds (as assessed as the 6th code hydrologic unit code) on the BDNF are either functioning properly (54 percent) or functioning at risk (46 percent) with none experiencing impaired function (USDA FS 2021). Those with an at-risk classification are more likely to have non-native species that negatively affect native aquatic species and life histories, more road miles closer to water, and more stream miles that are water quality limited (USDA FS 2021).

Permitted activities that may occur as part of aquatic management include (but is not limited to) stock watering, summer home wells, snow making at ski areas, irrigation, municipal water supplies with permitted diversions, transmission, and storage. Projects that improve aquatic habitat or support native populations such as fish barriers, aquatic or riparian habitat modifications (such as culvert replacements

or removal to improve aquatic organism passage, beaver-dam analog construction, riparian vegetation removal or planting, or road re-routing, closure, or stabilization), in-stream habitat improvements (such as large wood placement, cross-vein creation, etc.), and rotenone treatments also occur on the Beaverhead-Deerlodge National Forest.

In 2021 the US Forest Service and the Bureau of Land Management (BLM) submitted a programmatic biological assessment that analyzed 13 aquatic activity categories intended to maintain, enhance, rehabilitate, or restore watershed processes that directly or indirectly affects aquatic species, water quality, streams, stream corridors, and overall watershed conditions (USDA FS and USDI BLM 2021). Some of these categories include fish passage restoration, side and off-channel habitat restoration, road and trail erosion control, realignment, relocation, storage, and decommissioning, and beaver habitat restoration, among others. This assessment only applies to the Pintler Ranger District. Grizzly bears were analyzed as part of this assessment and concluded effects to grizzly bears are expected to be short term and associated with project implementation which may affect but is not likely to adversely affect grizzly bears. In addition, there were 16 conservation measures outlined for grizzly bears as part of the analysis. The resulting biological opinion (USDI FWS 2022) agreed with these findings for this species. It is possible the BDNF could utilize this programmatic consultation (or updated or amended versions) to streamline projects within the aquatic activity categories during the life of this document.

Fire Management

Historically, fire suppression policies resulted in fire exclusion from most ecosystems on the BDNF which resulted in overstocked and similar-aged forested stands. The forest plan addresses this condition by emphasizing hazardous fuels treatments in wildland-urban interface (WUI) areas and locations where existing tree stocking conditions exceed historical conditions. Specifically, there are two fire management goals and one standard that may impact grizzly bears and grizzly bear habitat although there is no fire management direction specific to grizzly bear management:

- **Fuels Management Goal:** A full range of fuels management activities is available to achieve ecosystem sustainability, including economic and social components.
- **Wildfire Hazard Reduction Goal:** Effects of unplanned and unwanted wildlife are reduced by moving areas of condition class 2 and 3 to a condition class 1 for all fire regimes and by maintaining areas in condition class 1.
- **Standard 2:** Wildland fire use is an available tool for all unplanned ignitions.

Fire management activities associated with forest plan actions that may affect bears and bear habitat on the Forest include fuels treatments (vegetation management in specific areas and planned ignitions, including prescribed fire) and wildland fire (unplanned ignitions; Fire Management Standard 2). Recent vegetative treatments focus on hazardous fuels reduction, timber harvest and subsequent burning, prescribed fires for wildlife habitat improvements (such as in aspen), and mechanical fuel removal (analyzed in Timber and Vegetation Management) (U.S. Department of Agriculture 2009b). Prescribed fire plans are developed on the BDNF to best utilize fire management as a vegetation management tool. Managing wildfires for multiple objectives remains an available option and meet forest plan vegetation objectives.

The BDNF Plan allows for modified containment strategies (e.g., monitor, confine, and point or zone protection) to manage unplanned ignitions for multiple objectives. Some considerations used for

deciding to use a modified containment strategy include: fire fighter safety, values at risk (includes wildlife habitat and silvicultural concerns), functional and objective concerns, cost, seasonal severity or timing, current and projected fire weather forecasts, natural and artificial barriers to fire spread, fire history information, and the overall projected fire size, growth intervals, and spread potential. Fire regimes are variable on the BDNF. Both frequent stand-replacing or mixed severity fires (0-100 plus years) and infrequent stand replacement (over 200 years) fires occur. From 1980-2022, wildfires burned a total of 424,131 acres on the BDNF. This includes all fire severity classifications as well as overlapping places where more than one fire burned the same acres in separate years.

Due to likely increases in regional fuels targets, the BDNF estimates increasing annual fuels treatments (i.e. tree thinning, prescribed fire, commercial timber harvest) to 8,000 through 10,000 acres. This equates to a range of 120,000 to 150,000 acres of vegetation treatments through 2036, with approximately 60 percent occurring within WUI areas (Reneau pers. comm. 2023). In general, fuel reduction projects are focused in areas with community wildfire protection plans within the WUI (USDA FS 2021).

Actions associated with fire management activities for both planned and unplanned ignitions include administrative road use, temporary road building, low-elevation flights (aircraft or unmanned aerial systems) for aerial ignition or wildland fire, establishing command posts and other activities that increase human presence (e.g., spike camps), mechanical equipment use (e.g. heavy equipment such as bulldozers), and others.

Lands

Lands Special Uses

This forest plan category includes access and maintenance activities associated with utility infrastructure on the BDNF as well as commercial and non-commercial lands uses authorized under special use permits. Lands special uses provide for delivery of reliable power, water, and communication services to communities, support other federal, state, and local agency operations, secure access for private inholdings, support research endeavors, provide flood control, and help sustain local economies. These activities reoccur annually on the BDNF and feature permanent improvements such as telecommunication lines, gas pipelines, water lines and impoundments, hydroelectric power generation and related infrastructure, fiber optics, driveways, and communication sites.

Appendix E, Table E- 1 includes currently authorized lands uses on the BDNF and associated operation and maintenance activities. The majority of authorized uses require ongoing year-round motorized access, which is authorized through special use permits, rights of way, and easements. In some cases, this access occurs off designated forest system routes (e.g., within or adjacent to existing rights-of-way).

It is not possible to quantify the maximum or range of grizzly bear secure habitat affected by motorized access to existing lands uses such as utility lines, easements, or right-of-way as sufficient data does not exist for the extent of the Forest. However, it is reasonable to assume that activities to maintain and access areas under lands special use permits will continue, especially as the state of Montana continues to grow in population and demand for these services increases.

Land Conveyance, Acquisition, Boundary Adjustments, Survey, and Exchange

There are numerous tracts of private inholdings within the BDNF boundaries. As a variety of activities (including motorized use) may occur on private lands, the BDNF buffers 500 meters from the inholding boundary as the most conservative method to determine secure habitat surrounding private inholdings (Appendix A). A variety of activities may occur within these inholdings including development, recreation, hunting, mining, or others.

Although infrequent, land sales, purchases, donations, and exchanges occur between the Beaverhead-Deerlodge National Forest and private individuals or organizations as opportunities arise (Land Adjustments Goal). Since 2009, an average of one or two conveyances, acquisitions, or exchanges occurred per year, although five occurred in 2017 and 2021. The BDNF acquired approximately 3,331 acres and disposed of approximately 17 acres since 2009 (as of August 8, 2023).

Range Management

Livestock Grazing

The Forage Use goal may impact grizzly bears. This goal states:

- Use of forage by domestic livestock will maintain or enhance the desired structure and diversity of plant communities on grasslands, shrublands, and forests. Use will be managed to maintain or restore riparian function as defined in the allotment management plan.

Twenty-eight percent of the BDNF is capable of supporting livestock grazing. The Forest currently manages approximately 220 allotments, including some that are not currently active (vacant) (Table 11; data current as of August 7, 2023). Livestock grazing generally occurs from the middle of June through early October. Habitat within allotments vary and may support grizzly bears at any given time depending on location. Within a given year, vacant¹ allotments may be permitted and become active² and active allotments may become vacant. Although cattle and horse livestock grazing is spread throughout the BDNF, the Madison Ranger District also permits sheep and bison (Figure 5). Livestock trailing occurs across the entirety of the BDNF.

Table 11. Grazing allotment types and active acreages on the Beaverhead-Deerlodge National Forest as of August 2023.

| Allotment Type | Number Active on Forest | Total Active Area (acres) | Number Vacant on Forest | Distribution Comments |
|--------------------|-------------------------|---------------------------|-------------------------|---|
| Bison Only | 1 | 3,733 | 0 | Madison Ranger District |
| Cattle Only | 178 | 1,878,348 | 3 | Forest-wide |
| Horse Only | 2 | 2,986 | 0 | Wisdom Ranger District |
| Cattle/Horse | 24 | 449,144 | 0 | Forest-wide |
| Horse/Sheep | 7 | 53,689 | 0 | Madison Ranger District |
| Cattle/Horse/Sheep | 1 | 55,949 | 0 | Upper Ruby on the Madison Ranger District |
| Total | 213 | 2,443,849 | 3 | N/A |

¹ A vacant allotment is available for livestock grazing but does not have an issued term grazing permit.

² An active allotment permits livestock grazing as a use by a specific business entity under terms and conditions identified in a term (generally 10 years) grazing permit.

It is possible some range permittees may switch to virtual fencing and remove fences during the life of this document. Virtual fencing relies on setting an electronic boundary to contain livestock within specific areas. Although it is not currently practiced on the BDNF, ranchers may utilize this technology or a combination of virtual and actual fences to manage livestock on public lands.

Livestock depredations from grizzly bear is a source of human-bear conflict on the BDNF (Table 10). As discussed in the Human-Bear Conflict and Management Removals on the Beaverhead-Deerlodge section, a majority of these depredations occur on the Madison Ranger District, although five have occurred on two other districts since 2018. There are several range management conservation measures that are part of some annual operating instructions for livestock permittees on the BDNF (refer to Conservation Measures: Range Management) that provide guidelines to reduce conflict between bears, ranchers and employees, and livestock.

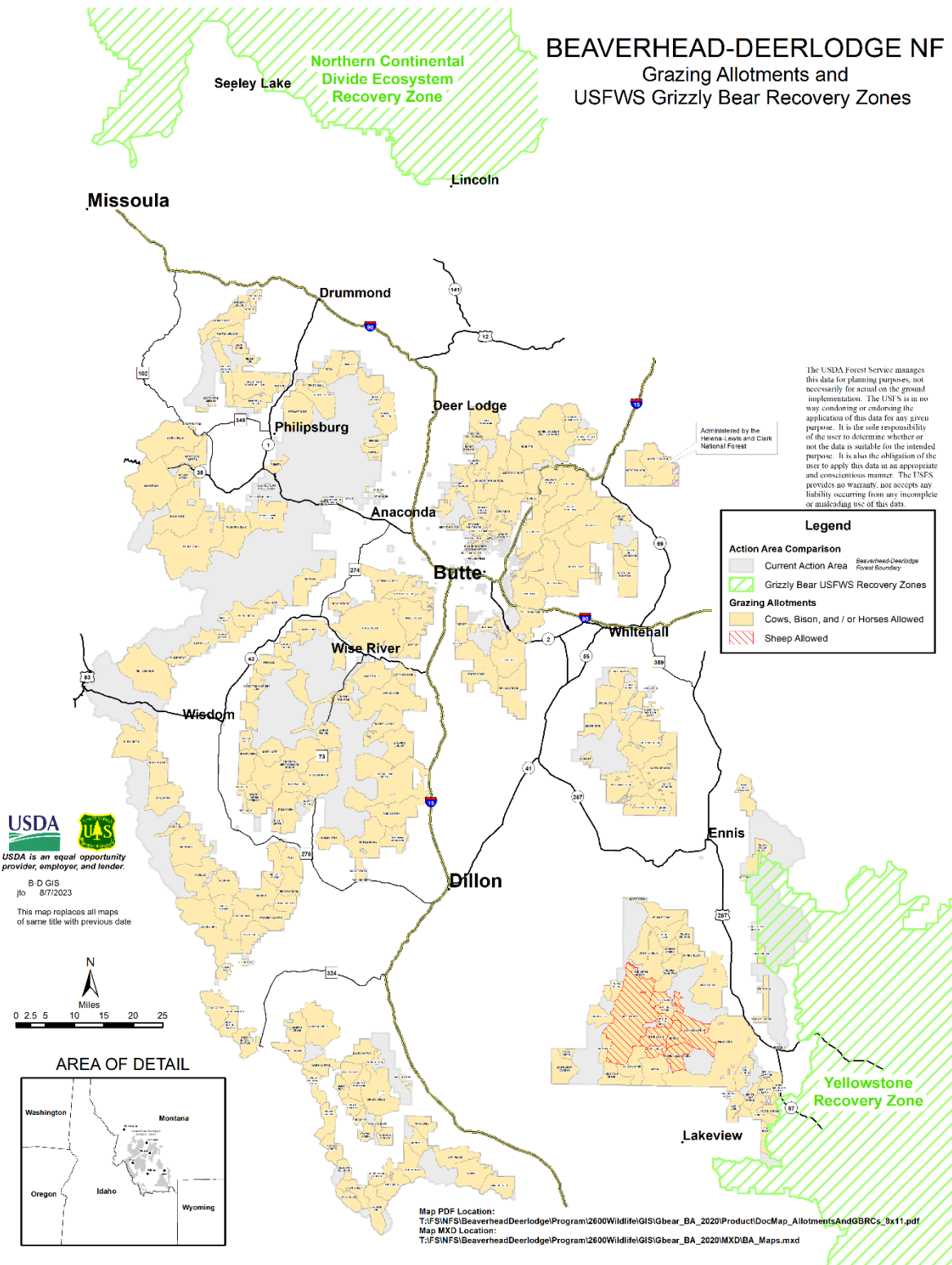


Figure 5. Livestock grazing allotment by animal use type on the Beaverhead-Deerlodge National Forest as of August 7, 2023.

Range Infrastructure Maintenance

As part of livestock management, range permittees maintain existing structures to properly manage permitted cattle, sheep, horses, and domestic bison. Examples of structures include water developments (e.g., spring developments, troughs, and buried pipelines), fences, shipping corrals, buildings for designated cow camps, and ponds. Activities may include off road travel with motorized equipment, tree removal (via chainsaw) for fallen trees on structures or pose substantial threats to a structure, sediment excavation from water sources, repair of broken pipe, placement of salt and minerals, and trough leveling. Existing range structures are generally replaced every 30 to 40 years due to deterioration from age (Bowey pers. comm. 2023a). The number of utilized and functioning structures changes annually due to livestock location and number, accessibility, and environmental or human-caused degradation of infrastructure. Effects from installation of new infrastructure are analyzed at the project-level and are not considered in this analysis.

Noxious Weed Control

The forest plan recognizes the need for noxious weed control and associated activities, such as off-road motorized travel to treat infestations (Vegetation Noxious Weed Objective and Recreation Standard 3). In 2002, the Forest signed the decision for the Beaverhead-Deerlodge National Forest Noxious Weed Control Program that contained actions related to noxious weed control, including aerial and ground application of chemical herbicides, mechanical treatments (hand pulling), biological control methods, surveys for new infestations, and post-treatment monitoring. Annual direct control methods are permitted on 15,000-16,000 acres (including up to 9,000 acres with aerial application and up to 7,000 acres in ground treatments) (USDA FS 2002). Generally, between 1,000-2,000 acres of annual treatments are considered beneficial for wildlife as improvements to forage, biodiversity, or habitat restoration.

Between 2010 and 2021, an average of approximately 1,213 acres of weed infestation were treated annual via aerial spraying, which consists of low-level flights below 500 meters above ground level (Bowey pers. comm. 2023b). The number of acres treated annually using this method ranged from approximately 250 to 2,166. It is expected this trend of aerial spraying for noxious weed control will continue and may overlap with grizzly bear secure habitat. Refer to the Low-Elevation Flights section for additional information about aerial activities on the BDNF.

Biological control of invasive species utilizing targeted grazing (e.g., goats and sheep) is allowable under the Noxious Weed Control Program decision (USDA FS 2002). Although the BDNF has not utilized this method to date under the 2009 forest plan, it is within the approved methodologies for weed control on the Forest.

Recreation and Travel Management

The forest plan recognizes the need to provide a variety of recreation settings and opportunities across the BDNF to meet demands for public use. The Plan establishes recreation allocations to convey the types of settings and experiences available across the Forest. The allocations delineate the overall management theme and are typically associated with a motorized or non-motorized emphasis, described within goals and standards. In general, the Plan established areas that are open for summer motorized use, summer non-motorized use, winter motorized use, and winter non-motorized use.

In addition to providing a diversity of recreation settings, the BDNF offers a wide variety of developed and dispersed recreation experiences including road and trail-based, motorized and non-motorized,

facilitated (outfitting and guiding), and facility-based (e.g. campgrounds, resorts, ski areas, etc.) activities. Primitive experiences are described as an unmodified natural environment with low (0-20) interactions between users with little evidence of other areas users and are free from motorized influences (U.S. Department of Agriculture 2009b). Similarly, semi-primitive areas may be motorized or non-motorized, but are predominately natural or natural-appearing with low interaction between users but contain evidence of other users.

Summer Allocations

General goals and standards for recreation that may affect grizzly bears or habitat within summer allocations include:

- Summer Non-motorized Allocations Goal: Provide semi-primitive non-motorized recreation settings, and offer opportunities for mountain biking, horse and stock travel, hiking, dispersed camping, and other activities.
- Summer Motorized Backcountry Allocations Goal: Provide semi-primitive motorized recreation settings and offer opportunities for varied types of travel and recreational activities.
- Summer Roaded Allocation Goal: Provide roaded natural and rural recreation settings and offer a wide variety of opportunities for dispersed and developed recreational activities.
- Standard 7: Manage summer non-motorized allocations for either a primitive or semi-primitive non-motorized setting from May 16 thru December 1, (page 54).
- Standard 9: Manage summer backcountry allocations for a semi-primitive motorized setting from May 16 thru December 1, (page 54).

Because roaded areas and motorized travel may affect secure habitat and grizzly bear behavior, it is important to identify the number of acres within each recreation setting. The percentage of non-motorized allocations within GBAUs ranges from 0 to 98 percent (Table 12). Forty percent of the Forest consists of summer non-motorized allocations (Table 12). The summer non-motorized and motorized allocations are well-distributed across the Forest; however, road-based recreational access is greatest within the Pintler and Butte Ranger Districts (Figure 6).

Table 12. Summer Non-Motorized and Motorized acres and percentages by Grizzly Bear Analysis Unit on the Beaverhead-Deerlodge National Forest.

| Reporting Landscape (per the forest plan) | GBAU Name | Total Area (acres) | Summer Non-Motorized (acres/percent) ^a | Summer Motorized (acres/percent) |
|---|----------------|--------------------|---|----------------------------------|
| Big Hole | Fleecer | 102,597 | 0/0 | 102,597/100 |
| | Pintler | 86,885 | 65,466/75 | 21,419/25 |
| | Ruby | 92,669 | 52,120/56 | 40,549/44 |
| | Seymour | 66,764 | 44,297/66 | 22,467/34 |
| | Tie | 89,163 | 19,398/22 | 69,765/78 |
| | Upper Big Hole | 93,269 | 45,346/49 | 47,923/51 |
| Boulder River | Basin | 74,723 | 8,629/12 | 66,094/88 |
| | Little Boulder | 72,508 | 24,261/33 | 48,247/67 |
| | Upper Boulder | 69,366 | 12,907/19 | 56,459/81 |
| Clark Fork Flints | Dry Cottonwood | 83,334 | 9,774/12 | 73,560/88 |

Beaverhead-Deerlodge Forest Plan Biological Assessment for Grizzly Bear

| Reporting Landscape (per the forest plan) | GBAU Name | Total Area (acres) | Summer Non-Motorized (acres/percent) ^a | Summer Motorized (acres/percent) |
|---|---------------------------|--------------------|---|----------------------------------|
| | East Flints | 64,827 | 33,531/52 | 31,296/48 |
| | Georgetown | 86,081 | 43,460/50 | 42,621/50 |
| | Harvey Willow | 108,448 | 21,072/19 | 87,376/81 |
| | South Flints | 96,516 | 23,307/24 | 23,307/24 |
| | West Flints | 98,411 | 17,546/18 | 80,865/82 |
| Gravelly | Black Butte | 91,232 | 48,506/53 | 42,726/47 |
| | Greenhorns | 70,887 | 35,354/50 | 35,533/50 |
| | Snowcrest | 105,007 | 90,811/86 | 14,196/14 |
| | Wall Creek | 93,181 | 52,636/56 | 40,545/44 |
| | West Fork Madison | 114,246 | 45,398/40 | 68,848/60 |
| Jefferson River | Bull | 64,482 | 24,344/38 | 40,138/62 |
| | Highland | 109,013 | 41,697/38 | 67,316/62 |
| | O'Neill | 75,819 | 33,562/44 | 42,257/56 |
| Lima Tendoy | Governor | 55,995 | 26,333/47 | 29,662/53 |
| | Medicine Lodge | 88,695 | 41,653/47 | 47,042/53 |
| | Muddy Creek | 71,125 | 20,123/28 | 51,002/72 |
| | Selway | 84,283 | 24,288/29 | 59,995/71 |
| | Sheep Creek | 89,976 | 55,072/61 | 34,904/39 |
| | Upper Horse Prairie | 23,211 | 13,337/57 | 9,874/43 |
| Madison | Hillgard BMU ^b | 70,436 | 2,161/3 | 0/0 |
| | Lee Metcalf North | 51,663 | 22,272/43 | 29,391/57 |
| | Lee Metcalf South | 32,949 | 32,316/98 | 633/2 |
| Pioneer | Birch Creek | 92,307 | 29,529/32 | 62,788/68 |
| | Browns Lake | 110,463 | 40,484/37 | 69,979/63 |
| | Bryant Creek | 98,450 | 27,603/28 | 70,847/72 |
| | Maverick | 92,398 | 56,287/61 | 36,111/39 |
| | Pettengill | 99,509 | 56,065/56 | 43,444/44 |
| | Quartz Hill | 90,623 | 27,196/30 | 63,427/70 |
| Tobacco Root | Meadow Creek | 60,083 | 11,524/19 | 48,562/81 |
| | Mill Creek | 59,160 | 19,705/33 | 39,455/67 |
| | South Boulder | 68,244 | 15,587/23 | 52,657/77 |
| Upper Rock Creek | Copper | 88,946 | 46,411/52 | 42,535/48 |
| | Ross Fork | 89,850 | 60,434/67 | 29,416/33 |
| | Stony | 50,184 | 23,807/47 | 26,377/53 |
| | Total | 3,577,979 | 1,443,445/40 | 2,134,534/60 |

^aSummer non-motorized also includes non-motorized areas within Wilderness and Recommended Wilderness.

^bHillgard use is for the BDNF portion of the subunit.

BEAVERHEAD-DEERLODGE NF Grizzly Bear Analysis Units with Forest Plan Summer Recreation Allocations

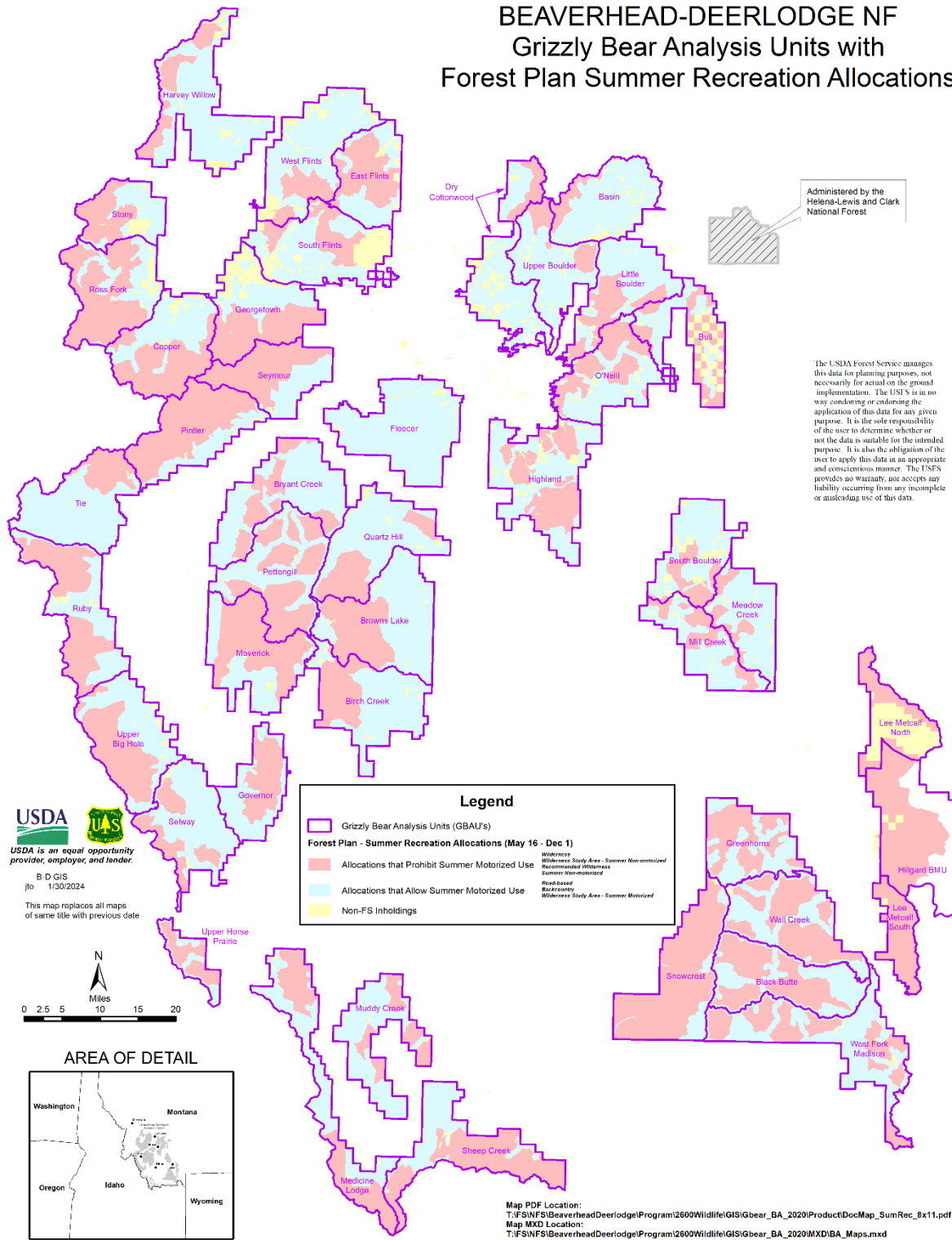


Figure 6. Motorized and non-motorized summer allocations on the Beaverhead-Deerlodge National Forest.

Winter Allocations

The forest plan contains goals and standards specific to winter use:

- Winter Non-Motorized Allocations Goal: Provide primitive and semi-primitive non-motorized recreation settings in these areas, and offer opportunities for ski touring, snowshoeing, and hiking, and other non-motorized activities.
- Winter Motorized Allocations: Provide roaded and semi-primitive motorized recreation settings in these areas and offer opportunities for a variety of motorized and non-motorized travel and activities. The majority of these allocations provide opportunities for travel by snowmobile.
- Standard 8: Manage winter non-motorized allocations for a primitive or semi-primitive non-motorized setting from December 2 thru May 15 (page 55).

Because grizzly bears are in dens during the winter, assessing the overlap between bear denning habitat and winter motorized recreation allocations may refine effects to this species. Winter motorized travel is allocated on 8 percent (280,159 acres) of grizzly bear denning habitat (Table 13) across the BDNF. A variety of motorized activities can occur within winter recreation allocations, including snowmobiles, ATV and motorcycle riding, four-wheeling, and scenic driving, among others, although these activities may be limited to specific areas (e.g., outside of designated and recommended wilderness) and restricted by season of use.

Similarly, winter non-motorized activities can occur within 6 percent (202,857 acres) of grizzly bear denning habitat on the BDNF (Table 13). This use includes cross country skiing, ski touring, winter hiking, dog sledding, fat-tire biking, trapping, hunting, and fishing, among others. In general, non-motorized activities are permissible in all winter recreation allocations on the Forest.

In addition to recreation over-snow use, motorized over-snow travel is permitted as part of lands and recreation special uses for infrastructure and administrative maintenance (Appendix E; refer to Other Management Activities and Issues).

In general, winter motorized use is well-distributed across the BDNF, although the greatest intersection between denning habitat and motorized use occurs on the Dillon Ranger District, specifically the Pettengill and Bryant Creek adjacent GBAUs and the Selway and Upper Horse Prairie adjacent GBAUs (Table 13; Figure 7).

Table 13. Denning habitat overlap with winter non-motorized and motorized allocations within Grizzly Bear Analysis Units.

| Reporting Landscape (per the forest plan) | GBAU Name | Total Area (acres) | Denning Habitat Overlap with Winter Nonmotorized (acres/percent) | Denning Habitat Overlap with Winter Motorized (acres/percent) | Outside Denning Habitat Winter Non-Motorized (acres/percent) | Outside Denning Habitat Winter Motorized (acres/percent) |
|---|-------------------|--------------------|--|---|--|--|
| Big Hole | Fleecer | 102,597 | 734/1 | 4,019/4 | 10,249/10 | 87,595/85 |
| | Pintler | 86,885 | 570/1 | 686/1 | 49,244/57 | 36,385/42 |
| | Ruby | 92,669 | 17,197/19 | 6,819/7 | 29,921/32 | 38,732/42 |
| | Seymour | 66,764 | 538/1 | 354/1 | 29,629/44 | 36,243/54 |
| | Tie | 89,163 | 264/<1 | 1,310/1 | 17,243/19 | 57,637/62 |
| | Upper Big Hole | 93,269 | 3,600/4 | 9,092/10 | 22,940/25 | 57,637/62 |
| Boulder River | Basin | 74,723 | 1,626/2 | 2,909/4 | 17,642/24 | 52,546/70 |
| | Little Boulder | 72,508 | 1,129/2 | 2,525/3 | 28,841/40 | 40,013/55 |
| | Upper Boulder | 69,366 | 2,319/3 | 1,634/2 | 17,397/25 | 48,016/69 |
| Clark Fork Flints | Dry Cottonwood | 83,334 | 73/<1 | 5,896/7 | 3,846/5 | 73,519/88 |
| | East Flints | 64,827 | 608/1 | 1,739/3 | 13,430/21 | 49,050/76 |
| | Georgetown | 86,081 | 420/<1 | 814/1 | 28,104/33 | 56,743/66 |
| | Harvey Willow | 108,448 | 505/<1 | 9,768/9 | 10,326/10 | 87,849/81 |
| | South Flints | 96,516 | 1,331/1 | 2,239/2 | 25,481/26 | 67,465/70 |
| | West Flints | 98,411 | 111/<1 | 5,527/6 | 5,455/6 | 87,318/89 |
| Gravelly | Black Butte | 91,232 | 2,556/3 | 6,816/7 | 8,409/9 | 73,451/81 |
| | Greenhorns | 70,887 | 13,059/18 | 4,293/6 | 23,033/32 | 30,502/43 |
| | Snowcrest | 105,007 | 21,285/20 | 65/<0 | 79,055/75 | 4,602/4 |
| | Wall Creek | 93,181 | 11,836/13 | 4,302/5 | 46,810/50 | 30,233/32 |
| | West Fork Madison | 114,246 | 2,407/2 | 8,684/8 | 21,660/19 | 81,495/71 |
| Jefferson River | Bull | 64,482 | 3,844/6 | 2,330/4 | 29,807/46 | 28,501/44 |
| | Highland | 109,013 | 4,885/4 | 1,975/2 | 57,384/53 | 44,769/41 |
| | O'Neill | 75,819 | 2,204/3 | 2,139/3 | 27,283/36 | 44,193/58 |
| Lima Tendoy | Governor | 55,995 | 4,744/8 | 11,457/20 | 12,380/22 | 27,414/49 |
| | Medicine Lodge | 88,695 | 3,852/4 | 14,731/17 | 28,143/32 | 41,969/47 |

Beaverhead-Deerlodge Forest Plan Biological Assessment for Grizzly Bear

| Reporting Landscape (per the forest plan) | GBAU Name | Total Area (acres) | Denning Habitat Overlap with Winter Nonmotorized (acres/percent) | Denning Habitat Overlap with Winter Motorized (acres/percent) | Outside Denning Habitat Winter Non-Motorized (acres/percent) | Outside Denning Habitat Winter Motorized (acres/percent) |
|---|---------------------------|--------------------|--|---|--|--|
| | Muddy Creek | 71,125 | 8,710/12 | 3,457/5 | 44,447/62 | 14,511/20 |
| | Selway | 84,283 | 226/<1 | 14,074/17 | 1,371/2 | 68,612/81 |
| | Sheep Creek | 89,976 | 8,413/9 | 2,955/3 | 52,887/59 | 25,721/29 |
| | Upper Horse Prairie | 23,211 | 0/0 | 7,527/32 | 0/0 | 15,684/68 |
| Madison | Hillgard BMU ^a | 70,436 | 15,615/22 | 341/<1 | 50,709/72 | 1,755/2 |
| | Lee Metcalf North | 51,663 | 5,935/10 | 503/1 | 16,210/31 | 29,555/57 |
| | Lee Metcalf South | 32,949 | 5,684/17 | 265/1 | 26,632/81 | 368/1 |
| Pioneer | Birch Creek | 92,307 | 10,890/12 | 13,751/15 | 20,358/22 | 47,308/51 |
| | Browns Lake | 110,463 | 17,214/16 | 14,049/13 | 37,210/34 | 41,990/38 |
| | Bryant Creek | 98,450 | 958/3 | 27,513/28 | 8,756/9 | 61,223/62 |
| | Maverick | 92,398 | 2,943/3 | 14,299/15 | 11,613/13 | 63,543/69 |
| | Pettengill | 99,509 | 284/<1 | 24,544/25 | 1,674/2 | 73,007/73 |
| | Quartz Hill | 90,623 | 10,355/11 | 12,617/14 | 26,666/29 | 40,985/45 |
| Tobacco Root | Meadow Creek | 60,083 | 6,780/11 | 7,479/25 | 20,754/35 | 25,070/42 |
| | Mill Creek | 59,160 | 3,093/5 | 15,631/26 | 8,282/14 | 31,154/54 |
| | South Boulder | 68,244 | 15,752/23 | 5,140/8 | 35,484/52 | 11,868/17 |
| Upper Rock Creek | Copper | 88,946 | 731/1 | 1,587/2 | 47,072/53 | 39,556/44 |
| | Ross Fork | 89,850 | 871/1 | 1,125/1 | 35,103/39 | 52,751/59 |
| | Stony | 50,184 | 2,861/6 | 1,520/3 | 27,433/55 | 18,370/37 |
| | Total | 3,577,979 | 202,857/6 | 280,159/8 | 1,065,664/30 | 2,029,299/57 |

^aHillgard BMU only includes the portion managed by the BDNF. Some winter use may occur on a very small portion because of private land inholdings.

BEAVERHEAD-DEERLODGE NF Grizzly Bear Analysis Units with Forest Plan Winter Recreation Allocations and Modeled Denning Habitat

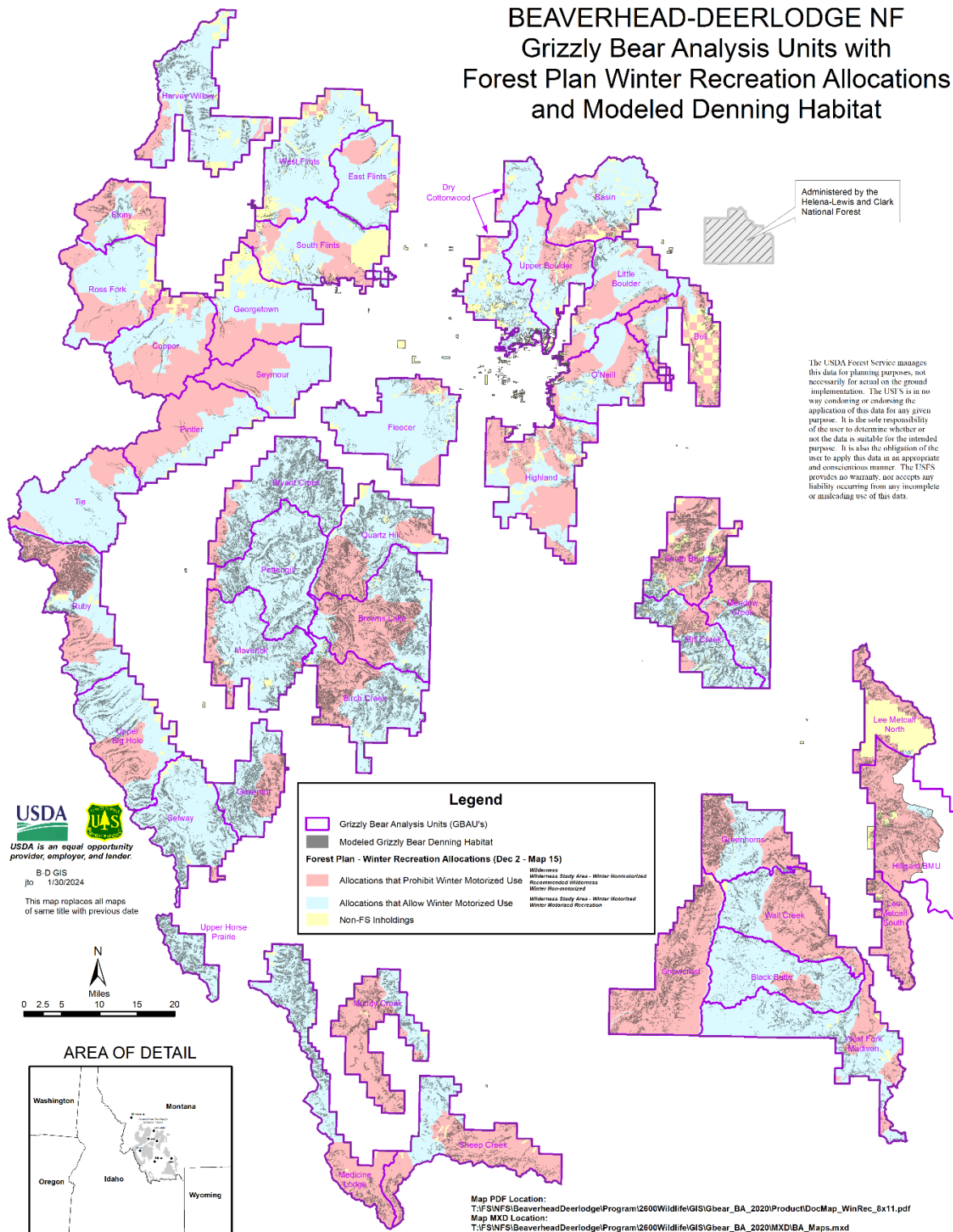


Figure 7. Motorized and non-motorized winter allocations and overlap with modeled grizzly bear denning habitat on the Beaverhead-Deerlodge National Forest.

Wilderness and Recommended Wilderness

The BDNF manages two Congressionally designated Wilderness areas. The Lee Metcalf Wilderness is divided into four separate units in the Madison Range on the east side of the BDNF. The Anaconda Pintler Wilderness is in the Pintler Range on the northwest side of the BDNF. There are several areas of Recommended Wilderness dispersed throughout the Forest that range in size from approximately 1,900 to 89,000 acres. The BDNF also contains two Wilderness Study Areas, which are required for the study of wilderness suitability under the Montana Wilderness Study Act of 1977. This act requires the study of certain lands to determine their suitability for designation of Wilderness by Congress. Figure 8 displays the distribution of Wilderness, Recommended Wilderness, and Wilderness Study Areas on the BDNF. It is important to note that all Wilderness and Recommended Wilderness are non-motorized and are incorporated into the allocations in the previous section. Wilderness Study Areas may or may not allow motorized use in either season based on the Montana Wilderness Study Act. Corresponding forest plan guidance for Wilderness, Recommended Wilderness, and Wilderness Study Areas that could impact the grizzly bear includes:

- Designated Wilderness Goal: Provide primitive and semi-primitive non-motorized settings, and offer opportunities for foot, stock, ski, snowshoe travel, dispersed camping, and other activities allowed in Wilderness.
- Recommended Wilderness Goal: Provide semi-primitive non-motorized settings, and offer opportunities for foot, stock, ski, snowshoe travel, dispersed camping, and other activities allowed in Wilderness.
- Recommended Wilderness Goal: Areas allocated as recommended Wilderness are managed to protect or improve their Wilderness character and to protect the area's potential for inclusion in the NWPS as described in Section 2(c) of the Wilderness Act.
- Wilderness Study Areas Goal: Wilderness Study Areas (WSA) are managed to protect Wilderness character according to the Montana Wilderness Study Act of 1977.
 - WSA Summer: Provide semi-primitive non-motorized and semi-primitive motorized settings, and offer opportunities for wheeled motorized travel on routes as shown on the travel plan.
 - WSA Winter: Provide semi-primitive motorized settings and offer opportunities for snowmobiling December 2 through May 15.
 - WSA Winter Non-Motorized: Provide primitive non-motorized settings December 2 through May 15.
- Standard 10: Manage Recommended Wilderness for primitive or semi-primitive non-motorized settings and protect Wilderness character.
- Standard 11: Commercial timber harvest is prohibited in Recommended Wilderness.
- Standard 12: Road construction is not permitted in Recommended Wilderness.
- Standard 13: Wheeled or motorized vehicles designed for the primary purpose of transporting people, except for wheel chairs, are prohibited in recommended Wilderness except for permitted or administrative uses.

Various settings are provided in Wilderness or recommended Wilderness, depending on the classification. In Wilderness (as designated by Congress), primitive and semi-primitive nonmotorized settings are provided, which offers foot, stock, ski, snowshoe travel, dispersed camping, hunting, fishing, and other activities approved in this area (U.S. Department of Agriculture 2009b). Similarly, in Recommended Wilderness areas, semi-primitive non-motorized settings are provided and offer opportunities for foot, stock, ski, snowshoe, dispersed camping, and others (U.S. Department of Agriculture 2009b). The BDNF has both motorized and non-motorized Wilderness Study Areas, which support semi-primitive nonmotorized or motorized settings and offers opportunities for wheeled motorized travel on designated routes, where permitted. In winter motorized Wilderness Study Areas, snowmobiling may occur from December 1 through May 15.

For purposes of this analysis, acres of Wilderness and Recommended Wilderness by GBAU are documented in Table 14 as these are designated as non-motorized areas that may provide habitat and connectivity for grizzly bears. Because Wilderness Study Areas may be motorized in summer, winter, or both, these acres were not considered holistically with designated Wilderness and Recommended Wilderness. Thirteen percent of the BDNF consists of Wilderness or Recommended Wilderness (Table 14). The Anaconda-Pintler Wilderness Area overlaps with five adjacent GBAUs (Copper, Georgetown, Seymour, Pintler, and Tie on the Pintler and Wisdom Ranger Districts) and the Lee Metcalf Wilderness Area overlaps with two adjacent GBAUs (Lee Metcalf North and South) on the Madison Ranger District (Figure 8).

Table 14. Acres and percent of designated Wilderness and Recommended Wilderness by Grizzly Bear Analysis Unit.

| Reporting Landscape (per the forest plan) | GBAU Name | Total Area (acres) | Wilderness (acres/percent) | Recommended Wilderness (acres/percent) | Total (acres/percent) |
|---|----------------|--------------------|----------------------------|--|-----------------------|
| Big Hole | Fleecer | 102,597 | 0/0 | 0/0 | 0/0 |
| | Pintler | 86,885 | 41,365/48 | 8,450/10 | 49,815/58 |
| | Ruby | 92,669 | 0/0 | 0/0 | 0/0 |
| | Seymour | 66,764 | 30,165/45 | 3/<1 | 30,168/45 |
| | Tie | 89,163 | 2,023/2 | 10,738/12 | 12,761/14 |
| | Upper Big Hole | 93,269 | 0/0 | 0/0 | 0/0 |
| Boulder River | Basin | 74,723 | 0/0 | 4,323/6 | 4,323/6 |
| | Little Boulder | 72,508 | 0/0 | 0/0 | 0/0 |
| | Upper Boulder | 69,366 | 0/0 | 559/1 | 559/1 |
| Clark Fork Flints | Dry Cottonwood | 83,334 | 0/0 | 2/<1 | 2/<1 |
| | East Flints | 64,827 | 0/0 | 0/0 | 0/0 |
| | Georgetown | 86,081 | 19,642/23 | 8,483/10 | 28,125/33 |
| | Harvey Willow | 108,448 | 0/0 | 8,398/8 | 8,398/8 |
| | South Flints | 96,516 | 0/0 | 0/0 | 0/0 |
| | West Flints | 98,411 | 0/0 | 0/0 | 0/0 |
| Gravelly | Black Butte | 91,232 | 0/0 | 0/0 | 0/0 |
| | Greenhorns | 70,887 | 0/0 | 0/0 | 0/0 |
| | Snowcrest | 105,007 | 0/0 | 89,003/85 | 89,003/85 |
| | Wall Creek | 93,181 | 0/0 | 0/0 | 0/0 |

Beaverhead-Deerlodge Forest Plan Biological Assessment for Grizzly Bear

| Reporting Landscape (per the forest plan) | GBAU Name | Total Area (acres) | Wilderness (acres/percent) | Recommended Wilderness (acres/percent) | Total (acres/percent) |
|---|---------------------------|--------------------|----------------------------|--|-----------------------|
| | West Fork Madison | 114,246 | 0/0 | 1,978/2 | 1,978/2 |
| Jefferson River | Bull | 64,482 | 0/0 | 0/0 | 0/0 |
| | Highland | 109,013 | 0/0 | 18,219/17 | 18,219/17 |
| | O'Neill | 75,819 | 0/0 | 0/0 | 0/0 |
| Lima Tendoy | Governor | 55,995 | 0/0 | 0/0 | 0/0 |
| | Medicine Lodge | 88,695 | 0/0 | 20,112/23 | 20,112/23 |
| | Muddy Creek | 71,125 | 0/0 | 0/0 | 0/0 |
| | Selway | 84,283 | 0/0 | 0/0 | 0/0 |
| | Sheep Creek | 89,976 | 0/0 | 40,040/45 | 40,040/45 |
| | Upper Horse Prairie | 23,211 | 0/0 | 0/0 | 0/0 |
| Madison | Hillgard BMU ^a | 70,436 | 66,216/94 | 30/<1 | 66,246/94 |
| | Lee Metcalf North | 51,663 | 7,773/15 | 12,512/24 | 20,285/39 |
| | Lee Metcalf South | 32,949 | 27,839/84 | 3,166/10 | 31,005/94 |
| Pioneer | Birch Creek | 92,307 | 0/0 | 21,433/23 | 21,433/23 |
| | Browns Lake | 110,463 | 0/0 | 38,968/35 | 38,968/35 |
| | Bryant Creek | 98,450 | 0/0 | 0/0 | 0/0 |
| | Maverick | 92,398 | 0/0 | 0/0 | 0/0 |
| | Pettengill | 99,509 | 0/0 | 0/0 | 0/0 |
| | Quartz Hill | 90,623 | 0/0 | 12,110/13 | 12,110/13 |
| Tobacco Root | Meadow Creek | 60,083 | 0/0 | 0/0 | 0/0 |
| | Mill Creek | 59,160 | 0/0 | 0/0 | 0/0 |
| | South Boulder | 68,244 | 0/0 | 0/0 | 0/0 |
| Upper Rock Creek | Copper | 88,946 | 24,363/27 | 3,992/4 | 28,355/32 |
| | Ross Fork | 89,850 | 0/0 | 0/0 | 0/0 |
| | Stony | 50,184 | 0/0 | 14,647/29 | 14,647/29 |
| | Total | 3,577,979 | 153,170/4 | 317,136/9 | 470,306/13 |

^aHillgard BMU only includes the portion managed by the BDNF.

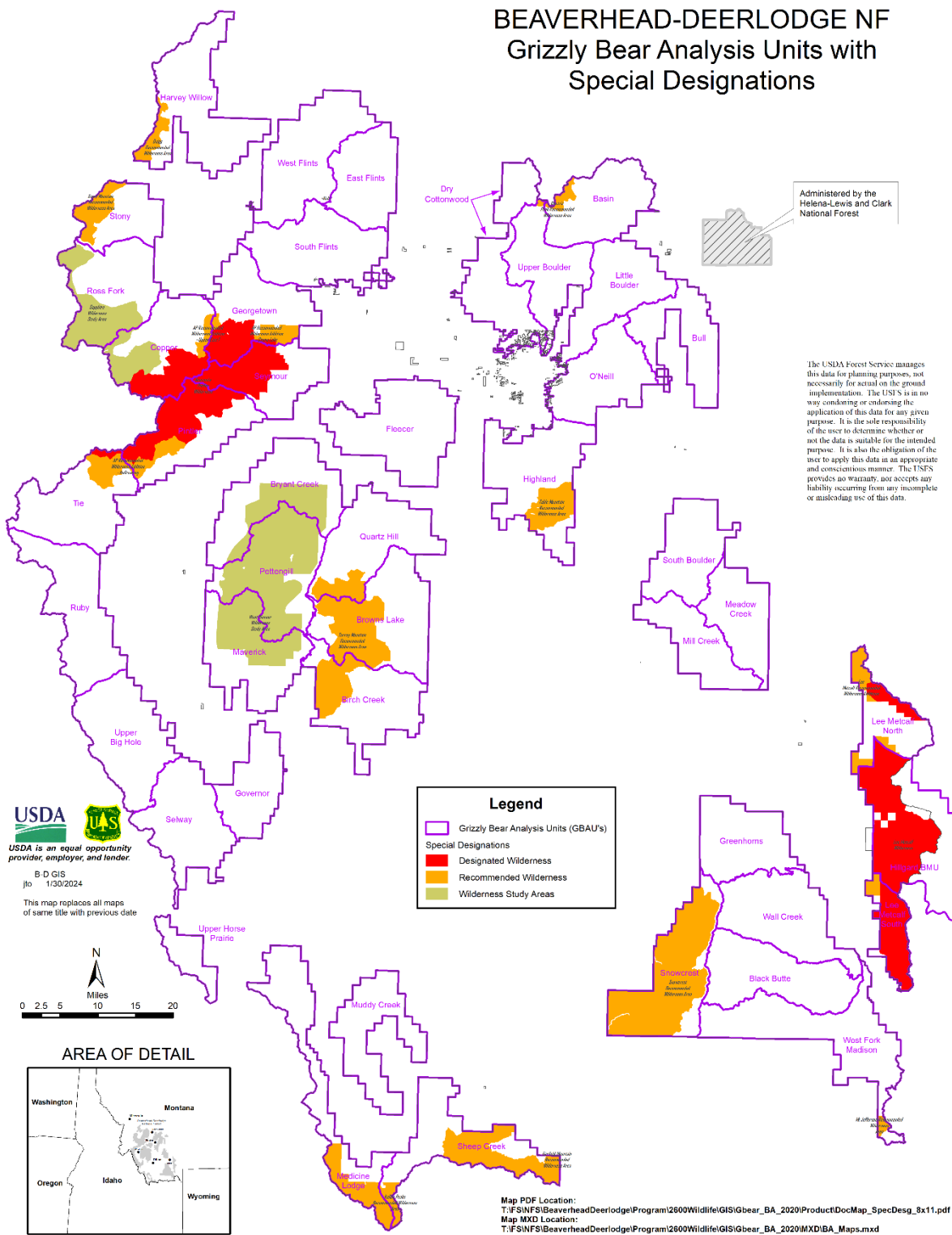


Figure 8. Designated Wilderness, Recommended Wilderness, and Wilderness Study Areas on the Beaverhead-Deerlodge National Forest.

Developed Recreation

The forest plan contains some specific guidance for developed recreation sites:

- **Developed Sites Goal:** High quality developed recreation facilities are strategically located to concentrate use, provide access to backcountry settings, and protect natural resources. Sites are clean, well maintained, and designed for universal accessibility.
- **Facilities goal:** Administrative and/or recreation facilities are constructed, managed, and maintained to meet land and resource objectives and address recreation demand.
- **Standard 6:** New recreation resorts or residence tracts will not be permitted, nor will permits be issued for unoccupied tracts or lots.

Developed recreation includes facilities and improvements managed by the Forest Service and special use permit holders. This includes campgrounds, day use areas, marinas, resorts, organization camps, rental cabins, roads and trails, and trailheads. Developed sites are used by the public during year-round, although the bulk of Forest Service recreation infrastructure sees its heaviest use during the summer season. Appendix E (Table E- 2) contains a list of developed recreation sites by type and the activities associated with their use, maintenance, and operation.

There are approximately 236 developed recreation sites on the BDNF, including two downhill (alpine) ski areas (refer to Recreation Special Uses) (Table 15). The developed site data used for this analysis is a combination of more recent GPS location data and legacy location data, which pre-dates GPS technology. The developed sites mapped with a legacy system do not have the precision to determine the overlap between site location and grizzly bear secure or denning habitat. Thus, we assume that some developed sites may be within secure habitat and are accessible by motorized means, such as rental cabins. Some developed recreation sites may be within denning habitat and may be accessible via snowmobile. There is an average of 6 sites per GBAU with O’Neill containing the maximum of 36 sites (Table 15).

Table 15. Number of developed recreation sites by Grizzly Bear Analysis Unit.

| Reporting Landscape (per the forest plan) | GBAU Name | Developed Recreation Sites (number) |
|---|----------------|-------------------------------------|
| Big Hole | Fleecer | 3 |
| | Pintler | 6 |
| | Ruby | 5 |
| | Seymour | 3 |
| | Tie | 5 |
| | Upper Big Hole | 5 |
| Boulder River | Basin | 1 |
| | Little Boulder | 3 |
| | Upper Boulder | 6 |
| Clark Fork Flints | Dry Cottonwood | 3 |
| | East Flints | 1 |
| | Georgetown | 23 |
| | Harvey Willow | 0 |
| | South Flints | 12 |
| | West Flints | 2 |

| Reporting Landscape (per the forest plan) | GBAU Name | Developed Recreation Sites (number) |
|---|---------------------|-------------------------------------|
| Gravelly | Black Butte | 4 |
| | Greenhorns | 0 |
| | Snowcrest | 3 |
| | Wall Creek | 5 |
| | West Fork Madison | 13 |
| Jefferson River | Bull | 0 |
| | Highland | 10 |
| | O'Neill | 36 |
| Lima Tendoy | Governor | 1 |
| | Medicine Lodge | 1 |
| | Muddy Creek | 0 |
| | Selway | 5 |
| | Sheep Creek | 3 |
| | Upper Horse Prairie | 0 |
| Madison | Hillgard BMU | 0 |
| | Lee Metcalf North | 0 |
| | Lee Metcalf South | 1 |
| Pioneer | Birch Creek | 9 |
| | Browns Lake | 7 |
| | Bryant Creek | 4 |
| | Maverick | 6 |
| | Pettengill | 15 |
| | Quartz Hill | 13 |
| Tobacco Root | Meadow Creek | 4 |
| | Mill Creek | 3 |
| | South Boulder | 1 |
| Upper Rock Creek | Copper | 5 |
| | Ross Fork | 5 |
| | Stony | 2 |
| | Total | 236 |

In 2009, the Forest signed a decision memo authorizing the removal of hazardous trees within 2.5 horizontal tree lengths (generally no more than 200 feet) from high-risk areas within developed recreation sites. High risk areas include places where people regularly congregate and where constructed features occur within the administrative boundary of the site. Individual or groups of trees are selected for removal when threats to human health and safety or infrastructure are evaluated and present. Skid trails or landing areas may be necessary to facilitate removal of felled hazardous tree material.

There are multiple winter facilities on the BDNF. Other than those that operate under a special use permit (refer to Recreation Special Uses), the Forest, in cooperation with partners and volunteers, manages several Nordic ski areas with groomed and marked trails systems including Chief Joseph, Echo

Lake, Sawmill, Elkhorn, Moulton, Birch Creek, and Thompson Park. One additional ski area, Homestake, is permitted under special uses (although included in the Developed Recreation analysis due to similar effects). These areas consist of designated (marked but not groomed) and groomed system trails, warming huts, vault toilets, and parking areas. Thompson Park's system of winter trails also includes opportunities for fat tire bike users on some of its groomed routes. Although use in Nordic areas is considered non-motorized, grooming is accomplished via motorized means (snowcats, groomers pulled by snowmobiles, etc.). Approximately 350 miles of trails on the BDNF are groomed, authorized for grooming, or designated for Nordic, fat tire bike, or multi-use (e.g. snowmobiles, snowshoes, skiing, etc.). It is expected that each of these seven Nordic ski areas could expand groomed or designated routes over the life of the plan. Groomed snowmobile trails are not expected to expand over the life of the plan. Downhill ski areas may request new runs, changes to existing ski runs, and additional infrastructure within the life of this analysis, including snowmaking, vegetation management, and installation of facilities such as minor buildings or lifts.

Dispersed Recreation

Non-developed or dispersed recreation captures a variety of other activities that occur outside of developed sites, such as dispersed camping, boating (both motorized and non-motorized), horseback riding and pack stock use, hiking and backpacking, climbing, rock hounding, crystal mining, prospecting, geocaching, winter touring (snowshoeing, cross-country skiing, backcountry skiing, or dog sledding), hunting and fishing, drone use, photography, paragliding, hang-gliding, year-round off-highway vehicle use, driving for pleasure, and similar activities. Sometimes a combination of developed recreation (camping at a developed site) is paired with non-developed recreation activities (pack stock use) and vice versa (camping at a dispersed site but using system trails for a day hike).

While no infrastructure is associated with dispersed recreation, dispersed campsite inventories initiated in 2012 on the BDNF catalogued over 1,500 campsites, with the largest number on the Madison Ranger District and the smallest number on the Dillon Ranger District. This inventory has likely increased over time. Because these are not considered developed sites, and, given the unregulated nature of dispersed campsites, the Forest does not regularly update inventory or data. Information on capacity, frequency of use, and user groups associated with each site is not available. Many dispersed sites are within 300 feet of the existing motorized road prism. Beyond dispersed camping, it is not possible to quantify dispersed recreation, although it is reasonable to assume forest use will likely increase for these activities over the next 13 years.

Recreation Special Uses

The forest plan contains one standard related to recreation special uses:

- Standard 5: New outfitter and guide permits or increases in existing permits, will be based on need, administrative capability, and a suitable mix of guided and non-guided public capacity determined by a forestwide capacity study. This mix may vary by type of activity and/or season of use. Capacity validation will be made on an area-specific basis when the general forestwide capacity determination does not adequately address the management situation. Heli-skiing operations will not be permitted.

Special uses include both commercial and non-commercial recreation opportunities such as outfitting and guiding (e.g., guided hunts, guided fishing, guided climbing, livery services, educational tours, wilderness skill courses), non-commercial group use (e.g., family reunions, off-highway vehicle club

gatherings), competitive events (one-time and reoccurring), weddings, organization camps, recreation residences, resorts, archery ranges, and downhill and Nordic ski areas, among others.

The BDNF currently authorizes 14 different types of recreation special uses. A variety of permit types authorizes diverse activities in Appendix E (Table E- 3) and range in term from a few days up to 40 years. Some authorizations provide for reissuance upon expiration (e.g., organization camps, recreation residences, outfitting and guiding, and winter resorts (Appendix E; Table E- 4) while others are considered short-term or temporary in nature and require a new application from the proponent upon expiration (e.g., recreation events, temporary outfitting and guiding, non-commercial group use). The majority of recreation special uses occurs on existing roads, trails, and at developed recreation sites.

Permits issued for winter resorts (i.e., downhill ski areas) provide for reissuance upon expiration and are authorized for up to 40-year terms. Two downhill ski areas, Maverick Mountain and Discovery Ski Area, established in the 1960s and 1970s respectively, operate on the BDNF. The Discovery Ski Area boundary is approximately 2,200 acres with over 80 percent on National Forest System lands near the town of Philipsburg, Montana. Its operating season runs from late November to early April, depending on snow conditions. Discovery contains 8 lifts, 20 miles of cross-country trails, and supports a capacity of 2,150 daily visitors. During the 2018-2019 season (used as a proxy for current data as 2020 was a shortened season due to COVID-19 restrictions), an average of 616 people visited Discovery with a peak day of 1,975 skiers. Maverick Mountain, located on the south end of the Pioneer Mountains, operates on 525 acres on National Forest System lands. Maverick manages one ski lift, supports a daily capacity of 333 visitors, and shares a similar operating season with Discovery Ski Area. During the 2018-2019 season (used as a proxy for current data as 2020 was a shortened season), an average of 151 people visited Maverick with a peak day of 329 skiers. During and post-COVID pandemic, both ski areas experienced a significant increase in overall visitation, which has not subsided.

Until recently, these ski areas focused their efforts and infrastructure on winter recreation opportunities. With the passage of the Ski Area Recreational Opportunity Enhancement Act of 2011, the Secretary of Agriculture may now permit other seasonal or year-round recreational activities in addition to skiing and other snow sports under ski area permits. The Act specifically identified what those non-snow sport activities could include, such as: zip lines, mountain bike terrain parks and trails, frisbee golf courses, and ropes courses. Discovery Ski Area currently has some summer operations, but those activities are not conducted on National Forest System lands. Both ski areas expressed interest in future summer operations on NFS lands.

The opportunity to expand operations to include summer uses will likely result in updates to existing ski area master development plans (MDPs). The Forest Service considers MDPs as long-range planning documents and project-level environmental analysis would be completed prior to implementation. It is likely these two ski areas could see an eventual increase in infrastructure and development as well as change in scope of activities within their permit areas as MDPs are updated. Adding to these summer-use driven changes in operation, the increasing effects of climate change on snowpack will likely result in downhill ski areas seeking to increase their snowmaking capabilities.

In addition to these downhill ski areas, Homestake Lodge is the only permitted Nordic ski area on the BDNF. The Lodge is located on a private inholding but operates a system of groomed Nordic ski trails on adjacent NFS lands. Its permit authorizes night skiing, snow making, and recreation events and operates

November through April, depending on snow conditions. Analysis of effects from Homestake are included as part of Developed and Dispersed Recreation.

Like developed recreation sites, a majority of the areas associated with recreation special uses that involve infrastructure (concession campgrounds, marinas, resorts, recreation residences, ski areas, etc.) are not within grizzly bear secure habitat. However, some isolated cabins may occur within secure habitat if access is limited to hiking or skiing. Special uses that involve recreation events, such as one-time or multiple-day bicycle races, trail races, or other similar actions, may or may not occur within grizzly bear secure habitat, depending on the location of the activity.

Travel Management

The Plan also has some goals and standards directly related to travel management and road construction:

- Road and Trail Use Goal: A system of routes and areas designated for non-motorized and motorized use are identified and available for public use. A Roaded or Backcountry recreation allocation does not determine the motorized status of any route, including the CDNST, within those allocations. A non-motorized recreation allocation (Summer Non-Motorized, Recommended Wilderness, or designated Wilderness) does close all routes within the area to motorized use. Resources are protected and user conflicts are minimized by allowing motorized wheeled travel only on designated routes and areas. Established routes to dispersed campsites are recognized as part of the Forest transportation system. A system of trails designated for non-motorized uses are also identified and available for public use.
- Standard 1: Permanent road construction is not allowed in summer non- motorized allocations or in areas evaluated for wilderness potential.
- Standard 2: Motorized vehicles are not allowed in summer or winter non- motorized allocations except for permitted or administrative use.
- Standard 3: Restrict year-round, wheeled motorized travel to designated routes or areas.
 - Where routes have not been designated through site specific travel planning, restrict motorized vehicles to open motorized routes identified on the forest plan Interim Roads and Trails Inventory GIS Layer displayed on page 53. Motorized wheeled travel on routes leading to identified dispersed campsites is allowed. Exceptions may be authorized for:
 - Motorized wheeled cross-country travel for any military, fire, search and rescue, or law enforcement vehicle used for emergency purposes.
 - Authorized motorized wheeled cross-country travel is limited to official administrative duties or emergency services such as, fire suppression, prescribed fire, noxious weed control, vegetation restoration, surveying, and law enforcement.
 - Motorized wheeled cross-country travel for other government entities on official administrative business as authorized through the normal permit processes or a memorandum of understanding.
 - Motorized wheeled cross-country travel for lessees and permittees limited to terms described in the federal lease or permit.

- Standard 4: Extreme sport courses such as motocross trails, technical mountain bike courses, and motor vehicle challenge routes will not be constructed.

The 2009 forest plan interim roads and trails inventory (page 53 of the forest plan), eliminated the ambiguity of on-the-ground visual interpretation of routes and documented actual existing travel routes. The Record of Decision signed on January 14, 2009 by the Regional Forester set forth direction in the form of management allocations and standards, including the prohibition of motorized vehicles in summer and winter non-motorized allocations (except for permitted and administrative use), and restricted motorized vehicles to the open routes identified on the interim inventory. This map was later amended by a second decision made by the Forest Supervisor on February 12, 2010, which enacted forest plan travel management direction by closing all the motorized routes in areas with non-motorized allocations, including National Forest System roads and trails and non-system motorized routes. Until site-specific management decisions occur, the interim inventory in the forest plan, as amended, serves as the interim route (road and trail) inventory for the Forest.

Since forest plan revision in 2011, only the Madison Ranger District updated site-specific travel management for wheeled motorized vehicles. In 2022, the BDNF committed to conducting a travel management analysis and establishing a forest-wide Motor Vehicle Use Map (MVUM). Currently, the Forest is developing a proposed action associated with travel management planning. The BDNF intends to have a decision with corresponding motorized vehicle use maps by the end of this process. In 2023, the BDNF improved the baseline information for on-the-ground road conditions by describing the location and use of all currently known roads and routes, including those created by public users. This information was incorporated into the baseline secure habitat information for this analysis.

The current transportation system is a mix of National Forest System roads, other system roads (county, state, interstate, or other agency roads), and undetermined system routes (as identified on page 53 of the forest plan; Table 16). The Travel Management process will address these non-system routes to either add them to the system or close and decommission, if not needed. Currently, 1,294 miles of undetermined system routes are utilized by the public for motorized travel (Table 16). It is important to note that non-motorized non-system routes (as identified in Table 16) may not be considered secure habitat to grizzly bears because there is evidence that the route has previously or has the potential to support motorized use (i.e. no barrier preventing motorized travel). Once the travel management process identifies the designation for these routes (motorized or non-motorized), the open motorized road and trail density would likely change whereas total motorized road density and secure habitat acres may not. Secure habitat metrics are calculated by-the-ground motorized access or *potential* for motorized access instead of route designation (motorized or non-motorized).

The BDNF currently identifies 5,493 miles of motorized roads and 918 miles of motorized trails that are open for use during all or part of the year, excluding over-the-snow vehicles (Table 16). New permanent road construction is rare, although temporary roads may be utilized for project implementation (refer to Other Management Activities and Issues section). The Forest strives to decommission unnecessary motorized routes for natural resource management. Since 2009, the BDNF has not constructed any new permanent roads with the exception of some special use driveways to access private inholdings. However, 0.7 miles and 27.45 miles of system and non-system routes, respectively, have been decommissioned in the last 11 years.

Table 16. Miles of route types either open or closed to public motorized use.

| Route Type | Public Motorized (miles) | Public Non-Motorized (miles) |
|---|--------------------------|------------------------------|
| National Forest System Roads (National Forest, state, county, interstate, and other agency) | 4,199 | 679 |
| National Forest System Trails | 918 | 1,347 |
| System Route Subtotal | 5,116 | 2,027 |
| Non-system Routes (page 53) | 1,294 | 1,439 |
| Total | 6,411 | 3,465 |

The plan also established motorized route management objectives at two scales to reduce the miles of routes open to motorized use to maintain and improve wildlife habitat. The plan sets open motorized road and trail density goals and objectives by landscape (between May 15 and December 1) and Montana Fish, Wildlife, and Parks 2006 hunting units (between October 15 and December 1). Site-specific travel planning would move conditions towards goals and objectives. Refer to the Wildlife Habitat section for existing conditions and associated effects on grizzly bears and grizzly bear habitat.

Maintaining existing roads occurs annually on the BDNF. Road maintenance and repair activities consist of grading, blading, ditch cleaning, culvert cleaning or replacement, brushing, tree removal, graveling, among others. These occur throughout the summer as weather permits and are prioritized by Forest need, so the location or maintenance activities varies by year.

Minerals, Oil, and Gas

Activities associated with exploration, extraction, and reclamation of minerals, oil, and gas include the use of explosives, heavy equipment, pumping water, drilling, vegetation management, and creating or repair of roads. Effects from temporary road construction or repair are analyzed in Other Management Activities and Issues.

Minerals

Most Federal lands are open to locatable mineral mining under the Mining Law of 1872, as amended. These minerals are valuable deposits subject to exploration and development under this law. More than half of BDNF lands are considered favorable for one or more polymetallic locatable or precious mineral deposits although demand is tied to economics and international markets. Most current mining activities on the BDNF consist of short-term (one year or less) mineral, energy, or geophysical investigations and their incidental support activities typically occurring on small claims or exploratory drilling. These mining and associated activities are submitted to the Forest under a mining Plan of Operations or Notice of Intent with the exception of some small-scale mining exploration activities (locatable minerals, e.g. gold panning, metal detecting, rock hounding, etc.). These activities occur but are not possible to quantify due to the lack of permitting requirements under the law.

The BDNF currently has 516 mining claims, of which 88 occur within grizzly bear secure habitat (Table 17). Not all mining claims consist of active mines where activities may be occurring. Active mines require a Plan of Operation where effects to grizzly bears are evaluated. Mines or mining claims within grizzly bear secure habitat do not have motorized access and are generally single drill pits (which may require short-term motorized equipment), adits, or placer mines. The greatest numbers of mines that occur within secure habitat occur on the west side of the Forest in the Big Hole Landscape (19) and the Pioneer

Landscape (17). Northern landscapes on the BDNF that contain the most mines outside of secure habitat are the Clark Fork Flints (91) and Boulder River (76).

Table 17. Mining claims and associated Grizzly Bear Analysis Units on the Beaverhead-Deerlodge National Forest as of August 17, 2023.

| Reporting Landscape (per the forest plan) | GBAU Name | Total Active Mines (number) | Active Mines Within Secure Area (Number) | Active Mines Outside Secure Area (Number) |
|---|---------------------|-----------------------------|--|---|
| Big Hole | Fleecer | 22 | 3 | 19 |
| | Pintler | 1 | 0 | 1 |
| | Ruby | 33 | 15 | 18 |
| | Seymour | 0 | 0 | 0 |
| | Tie | 1 | 0 | 1 |
| | Upper Big Hole | 4 | 1 | 3 |
| Boulder River | Basin | 52 | 3 | 49 |
| | Little Boulder | 7 | 0 | 7 |
| | Upper Boulder | 21 | 1 | 20 |
| Clark Fork Flints | Dry Cottonwood | 26 | 1 | 25 |
| | East Flints | 9 | 0 | 9 |
| | Georgetown | 1 | 0 | 1 |
| | Harvey Willow | 9 | 5 | 4 |
| | South Flints | 25 | 1 | 24 |
| | West Flints | 30 | 2 | 28 |
| Gravelly | Black Butte | 1 | 1 | 0 |
| | Greenhorns | 9 | 7 | 2 |
| | Snowcrest | 0 | 0 | 0 |
| | Wall Creek | 2 | 0 | 2 |
| | West Fork Madison | 3 | 3 | 0 |
| Jefferson River | Bull | 4 | 0 | 4 |
| | Highland | 30 | 1 | 29 |
| | O'Neill | 20 | 0 | 20 |
| Lima Tendoy | Governor | 1 | 0 | 1 |
| | Medicine Lodge | 7 | 3 | 4 |
| | Muddy Creek | 1 | 0 | 1 |
| | Selway | 0 | 0 | 0 |
| | Sheep Creek | 1 | 0 | 1 |
| | Upper Horse Prairie | 5 | 4 | 1 |
| Madison | Hillgard BMU | 0 | 0 | 0 |
| | Lee Metcalf North | 0 | 0 | 0 |
| | Lee Metcalf South | 0 | 0 | 0 |
| Pioneer | Birch Creek | 46 | 6 | 40 |
| | Browns Lake | 12 | 7 | 5 |
| | Bryant Creek | 3 | 0 | 3 |
| | Maverick | 10 | 2 | 8 |

| Reporting Landscape (per the forest plan) | GBAU Name | Total Active Mines (number) | Active Mines Within Secure Area (Number) | Active Mines Outside Secure Area (Number) |
|---|---------------|-----------------------------|--|---|
| | Pettengill | 5 | 0 | 5 |
| | Quartz Hill | 8 | 2 | 6 |
| Tobacco Root | Meadow Creek | 12 | 2 | 10 |
| | Mill Creek | 29 | 5 | 24 |
| | South Boulder | 25 | 7 | 18 |
| Upper Rock Creek | Copper | 4 | 2 | 2 |
| | Ross Fork | 5 | 0 | 5 |
| | Stony | 32 | 4 | 28 |
| | Total | 516 | 88 | 428 |

The BDNF does not have any active large-scale mines, although there are four existing footprints under the Comprehensive Environmental Response, Compensation, and Liability Act (CERLCA; also known as superfund). Mines under remediation include Beal Mountain and Basin Creek, both on the Butte Ranger District. The two legacy superfund sites where cleanup is ongoing include Black Pine Mine on the Pintler Ranger District and Elkhorn Mine on the Wisdom Ranger District. There are other legacy mine sites that could become CERLCA cleanup sites in the future.

The BDNF has not approved any large-scale mines since 2009 although small-scale exploration has occurred. Mining operations may require cross-country travel by vehicles and equipment, construction of less than one mile of low standard road or use and minor repair of existing roads. Footprints for these projects varies from a few square feet to hundreds of acres, depending on the mining project scale. Small minerals exploration projects are short-term, with exploration and reclamation typically occurring within the same year. Large scale operations may occur over a long duration and reclamation requirements may also vary depending on site-specific analysis. Generally, mining operations do not occur in winter but can occur depending on the project and outcome of project-specific analysis. Large-scale mining may require year-round use.

The Forest Service also permits removal of saleable or common variety minerals, such as sand, gravel, stone, clay, and decorative rock or landscaping stones. Due to changes in demand, the yearly number of permits and volumes for saleable material is challenging to predict. However, the Forest is the primary user of borrow pit material for construction and maintenance of forest roads and facilities (U.S. Department of Agriculture 2009a). This material occurs in varying locations in differing amounts across the Forest.

Oil and Gas

There are three forest plan Oil and Gas standards that could impact grizzly bears or bear habitat:

- Standard 1: Lease terms for occupied grizzly bear habitat exist: controlled surface use is permitted but restricted or prohibited during certain time periods. There are lease terms for inventoried roadless areas (controlled surface use) but leases are not legal in Wilderness, Recommended Wilderness, or in the West Pioneer WSA.

- Standard 2: Any new road constructed for oil and gas activity will be obliterated unless the road is needed as part of the Forest Service permanent transportation system.
- Standard 3: All drill pads will be obliterated.

Oil and gas exploration consist of drilling one or more holes through directional drilling on a single or multiple pad configuration. Because semi-trucks transport drill rigs to perspective sites, road reconstruction and road building may accompany oil and gas proposals. The BDNF requires obliteration of pad sites after exploration, use, or leasing is completed (Minerals, Oil, and Gas Standard 3). Currently, there are no ongoing oil and gas projects on the BDNF.

In general, the potential for occurrence of oil and gas on the BDNF is considered low or very low, although some areas have a moderate potential (U.S. Department of Agriculture 2009b). Areas of interest for oil and gas leasing include a portion of the Lima-Tendoy Mountains and the Big Hole Valley. In 1995, a Reasonably Foreseeable Development (RFD) scenario predicted there would be low-level of drilling on the BDNF and assumed there could be up to ten wildcat and four development wells drilled over a fifteen-year period (U.S. Department of Agriculture 2009b) (reviewed in 2012 and still deemed sufficient). The majority of the wells would be dry holes (lasting only one year) unless the wells were productive. The RFD predicted foreseeable wells would require pads averaging 6.7 acres per well and changes to roads, although sites would be reclaimed after drilling.

Timber and Vegetation Management

Although there is no specific forest plan direction specific to grizzly bears for timber and vegetation management, there are components that may influence grizzly bear habitat on the BDNF. These include:

- Timber Lands Not Suitable for Timber Production but Timber Harvest is Permitted to Meet Other Resource Objectives Goal: Manage lands where timber harvest is allowed to protect other resource values. Resource objectives may include, but are not limited to, protection of wildland urban interface, protection of improvements, aquatic system restoration, fuel reduction, wildlife habitat enhancement, fisheries habitat enhancement, range improvement, and grass and shrub land maintenance.
- Timber Standard 2: On lands suitable for timber production, the maximum size of openings created by one regeneration harvest operation shall not exceed 40 acres. Exceptions can be made where a natural event, such as fire, insect, disease, or windthrow created an undesirable opening. A regeneration harvest larger than 40 acres may be allowed after public notice, and review and approval by the officer one level above the responsible official. This only applies to harvest on suitable timber lands for timber production activities.
- Timber Standard 3: On lands suitable for timber production, even aged management regeneration harvest shall not occur unless the stand has reached the culmination of mean annual increment. An exception occurs where the primary purpose of treatment is for wildlife enhancement, visual enhancement, riparian area improvement or public safety or protection of property. The culmination of mean annual increment of growth requirement does not apply to cutting for experimental or research purposes; to non-regeneration harvests, such as thinning or other stand improvement measure; to management of uneven aged stands or to stands under uneven aged silvicultural system; and to salvage or sanitation harvesting of timber stands which are

substantially damaged by events such as fire, insects, disease or windthrow. This only applies to harvest on suitable timber lands for timber production activities.

- Vegetation Biodiversity Goal: A variety of disturbance processes are managed or allowed to occur that produce resilient vegetation communities able to sustain diversity in the face of uncertain future climate-influenced disturbances. Resilient vegetation communities will have a mosaic of species and age classes of trees, shrubs, grasses, and forbs for animal forage and cover, and perpetuate the diversity of plants and the microbial and insect communities upon which they are dependent. Old growth is managed on a forest wide basis and is well distributed.
- Forested Vegetation Objective
 - Resiliency: Reduce forest density in the large size classes of dry forest communities and some lodgepole pine communities to maintain or improve resilient forest conditions.
 - Douglas-fir Type: Increase the number of acres in the 0 to 5-inch DBH class on approximately 20,000 acres, where one or more of the following circumstances occurs:
 - Where burned or insect infested stands are dead or dying
 - Where needed to reduce the risk from wildfire for public and firefighter health and safety, or to protect structures, infrastructure, and municipal watersheds.
 - Where needed to meet objectives for lands suitable for timber production.
 - Douglas-fir which has established itself in former grasslands/shrublands (colonization) is not considered part of the Douglas-fir base described above.
 - Lodgepole Pine Type: Increase the number of acres in the 0 to 5-inch DBH class by approximately 74,000 acres, where one or more of the following circumstances occurs:
 - Where burned or insect infested stands are dead or dying (see Glossary)
 - Where needed to reduce the risk from wildfire for public and firefighter health and safety, or to protect structures, infrastructure and municipal watersheds
 - Where needed to meet objectives for lands suitable for timber production.
 - Aspen Component: Increase the aspen component within lodgepole pine and other vegetation types, on 67,000 acres.
 - Whitebark Pine/Sub-Alpine Fir Type: Promote regeneration of whitebark pine on approximately 45,000 acres, largely through the use of fire.
 - All Other Forested Vegetation Types: Manage within the historic range of variability.
- Vegetation Noxious Weed Objective: Prevent, reduce, or eliminate infestations of non-native or noxious weed species with emphasis on areas where there is a high likelihood of establishment and spread. Manage noxious weeds through Integrated Pest Management as described in the most current Beaverhead-Deerlodge Noxious Weed Control Record of Decision.

The BDNF divides vegetation management areas into three categories: those that are suitable for timber production (the management of tree stands for industrial or consumer use), areas unsuitable for production, but where harvest is allowed for another reason (managing fire risk, aspen restoration, salvage, etc.), and areas that are unsuitable for production and no harvest is allowed (fragile soils,

wetlands, areas withdrawn by an act of Congress, etc.). In areas where harvest is permitted, a variety of methods may be utilized for tree removal, including: pre-commercial thinning (non-commercial; removal of individual or stands of trees before trees reach marketable maturity), regeneration harvest (commercial; clear cuts with reserves, shelterwood or seed tree cuts where there are little to no seedlings or saplings established in the understory), salvage harvest (commercial; intermediate harvest, where seedling, saplings, or residual stocking levels are sufficient for stocking purposes, generally at or above 200 trees per acre), and commercial thin harvest (commercial; intermediate harvest, leaving generally in the range of a density of 40-80 basal area, which equates to removing 30-70 percent of the pre-existing stand densities and is generally focused in Douglas-fir dominated vegetation types). Timber management also includes conifer removal for research purposes (e.g., demonstration plots) or whitebark pine restoration. Vegetation management projects also include tree removal for aspen restoration, conifer encroachment, and special forest products. Harvest or public availability (via special forest products) of competing trees is considered a by-product of these activities. Other actions associated with timber and vegetation management that may affect grizzly bears or their habitat include temporary road construction (analyzed in Other Management Activities and Issues).

The BDNF commercially treats an average of 2,000 acres per year, with a general range between 1,500 to 2,500 acres. Of these, 40 to 80 percent (800 to 1,600 acres, based on the average) are considered suitable for timber production with 20 to 60 percent (400 to 1,200 acres, based on the average) classified as not suitable, but harvest is permitted for other objectives. Although changes may occur, the October 2023 five-year program of work indicates this trend will continue (Brennick pers. comm. 2023).

Recent Regional Office direction indicates timber harvest will remain stable with the potential for a slight increase. This direction could cause the BDNF to increase commercial treatments to 3,000 acres per year, on average, with a general range of 2,500 to 3,500 acres per year (Brennick pers. comm. 2023).

Wildlife Habitat

The forest plan contains numerous goals, objectives, and standards that may benefit grizzly bears and their habitats. These include:

- **Habitat Goal:** Cover and forage for animals is provided by a mosaic of species and age classes of native trees, shrubs, grasses, and forbs. See Vegetation Goals for details.
- **Grizzly Bear Conflicts Goal:** Conflicts between grizzly bears and humans or human activities in occupied grizzly bear habitat, are managed such that the removal of a bear is not necessary.
- **Connectivity Goal:** Forest management contributes to wildlife linkages between landscapes, unless landscape isolation is determined to be beneficial. Linkage areas are those areas identified for large carnivores and ungulates through multi-agency coordination. Options may include, but are not limited to:
 - Maintaining Forest Service ownership at highway and road crossings,
 - Consolidating ownership at approach areas to highway and road crossings substantiated by empirical data as necessary to facilitate wildlife movement, and
 - Providing secure habitat at the landscape scale to facilitate large animal movement.
- **Wildlife Secure Areas and Connectivity:** Secure areas and connectivity for ungulates and large carnivores are provided, while recognizing the variety of recreational opportunities.

- Grizzly Bear Security Goal: The Gravelly Landscape is maintained to achieve 60% or greater secure areas (Scale - Gravelly Landscape).
- Wildlife Security: Manage density of open motorized roads and trails by landscape year-round, except fall rifle big game season, to achieve levels at or below the following (Scale - Landscapes):

| Landscape | Desired Open Motorized Road and Trail Density (miles per square mile) |
|---------------------|--|
| Big Hole | 1.2 |
| Boulder River | 1.9 |
| Clark Fork - Flints | 1.9 |
| Gravelly | 0.7 |
| Jefferson River | 1.6 |
| Lima Tendoy | 1.0 |
| Madison | 0.0 |
| Pioneer | 1.5 |
| Tobacco Roots | 1.3 |
| Upper Clark Fork | 2.0 |
| Upper Rock Creek | 0.9 |

- Elk Security Goal: Elk security is managed to provide quality elk habitat, provide a variety of recreational hunting opportunities, and provide support for Montana’s fair chase emphasis. Manage open motorized road and trail density by MTFWP hunting units as of 2006 - on National Forest lands during the fall rifle big game season, to achieve levels at or below the following: (Scale - Hunting Unit)

| Hunting Unit | Desired Fall Open Motorized Road and Trail Density (miles per square mile) |
|---------------------|---|
| 210 | 0.9 |
| 211 | 0.5 |
| 212 | 1.4 |
| 213 | 1.4 |
| 214 | 1.6 |
| 215 | 1.5 |
| 216 | 0.8 |
| 300 | 0.6 |
| 302 | 1.0 |
| 311 | 0.0 |
| 318 | 1.8 |
| 319 | 0.6 |
| 320 | 0.8 |
| 321 | 1.1 |
| 323 | 0.5 |
| 324 | 0.4 |
| 327 | 0.8 |
| 328 | 0.8 |

| Hunting Unit | Desired Fall Open Motorized Road and Trail Density (miles per square mile) |
|--------------|--|
| 329 | 1.1 |
| 330 | 0.7 |
| 331 | 1.5 |
| 332 | 0.8 |
| 333 | 0.9 |
| 340 | 1.4 |
| 341 | 0.5 |
| 350 | 1.3 |
| 360 | 0.0 |
| 362 | 0.0 |
| 370 | 1.0 |

- Grizzly bear Conflicts Objective: Implement food storage and sanitation orders in areas classified as occupied grizzly bear habitat.
- Road and Trail Densities by Hunting Unit Objective: From October 15 to December 1, reduce the open motorized road and trail densities in hunting units 215 to 1.5; 300 to 0.6; 302 to 1.0; 318 to 1.8; 333 to 0.9; 341 to 0.5; and 350 to 1.3 miles per square mile or less.
- Road and Trail Densities by Landscape Objective: Reduce the open motorized road and trail densities from May 16 to December 1 in the Boulder River Landscape to 1.9 and Jefferson River Landscape to 1.6 miles per square miles or less.
- Sensitive and Federally Listed Species Objective: Information in the following sources should be considered when designing projects that may affect sensitive species or federally listed species: Grizzly Bear Conservation for the Greater Yellowstone Area National Forests (GYA).
- Standard 1: From October 15 to December 1 Hunting Units that exceed the open motorized road and trail density objective will have no net increase in designated open motorized road and trail mileage (Scale - Hunting Units on National Forest lands).
- Standard 2: Landscapes that exceed the open motorized road and trail objective will have no net increase in designated open motorized road and trail mileage (Scale – Landscapes on National Forest System lands).
- Standard 5: Sheep allotments in the Gravelly Landscape that become vacant will be closed to sheep grazing or the vacant allotment may be used by an existing Gravelly Landscape sheep permittee, with no increase in permitted use (Scale - Gravelly Landscape).
- The Grizzly Bear Amendment applies to only the Beaverhead- portion of the BDNF and is incorporated as Appendix G.

Previous consultations relied on the security goals for open motorized road and trail density as a metric to describe effects to grizzly bears. Table 18 identifies the existing open motorized road and trail density for each landscape as of March 15, 2023 and the comparison to the forest plan Wildlife Security Goal. This information applies to the general season, which utilizes routes legally open to motorized use at any time during the year. Currently, the Boulder River, Jefferson River, and Upper Rock Creek landscapes exceed the OMRTD goals set in the forest plan.

Table 18. Existing and desired conditions for open motorized road and trail density by landscape as compared to the goals identified in the forest plan (year-round).

| Landscape | Area (miles ²) | Forest Plan OMTRD Goal (miles/mile ²) | Existing OMRT (miles) | Existing OMTRD (miles/mile ²) | Miles Needed to Close to Meet Goal | Miles before Goal is Exceeded |
|---------------------|----------------------------|---|-----------------------|---|------------------------------------|-------------------------------|
| Big Hole | 848.1 | 1.2 | 1014.6 | 1.2 | N/A | 45.6 |
| Boulder River | 341.8 | 1.9 | 745.3 | 2.2 | 78.7 | N/A |
| Clark Fork - Flints | 666.8 | 1.9 | 1289.9 | 1.9 | N/A | 10.5 |
| Gravelly | 741.3 | 0.7 | 514.9 | 0.7 | N/A | 41.0 |
| Jefferson River | 331.6 | 1.6 | 621.4 | 1.9 | 74.3 | N/A |
| Lima Tendoy | 582.7 | 1.0 | 526.7 | 0.9 | N/A | 85.1 |
| Madison | 198.6 | 0.0 | 0.6 | 0.0 | N/A | 9.4 |
| Pioneer | 912.1 | 1.5 | 1107.3 | 1.2 | N/A | 306.5 |
| Tobacco Roots | 293.0 | 1.3 | 353.2 | 1.2 | N/A | 42.3 |
| Upper Clark Fork | 146.8 | 2.0 | 287.9 | 2.0 | N/A | 13.0 |
| Upper Rock Creek | 454.0 | 0.9 | 483.1 | 1.1 | 51.8 | N/A |

Similar to the Wildlife Security Goal, the Elk Security Goal establishes desired conditions for OMTRD for the fall season by hunting unit. The fall season refers to roads and trails open to motorized use from October 15 – December 1 and utilizes the 2006 Montana Fish, Wildlife, and Parks Hunting Units. Table 19 identifies the existing and desired conditions for the Elk Security Goal as of March 15, 2023. Currently, hunt units 210, 211, 213, 216, 300, 302, 318, 323, 327, 333, 341, 350, and 370 exceed the OMTRD goal in the forest plan for the fall season.

Table 19. Existing and desired conditions for open motorized road and trail density by 2006 Hunt Unit as compared to the goals identified in the forest plan (fall season only).

| 2006 Hunt Unit | Area (miles ²) | Forest Plan OMTRD Goal (miles/mile ²) | Existing OMRT (miles) | Existing OMTRD (miles/mile ²) | Miles Needed to Close to Meet Goal | Miles before Goal is Exceeded |
|----------------|----------------------------|---|-----------------------|---|------------------------------------|-------------------------------|
| 210 | 137.7 | 0.9 | 148.1 | 1.1 | 17.3 | N/A |
| 211 | 304.3 | 0.5 | 201.1 | 0.7 | 33.8 | N/A |
| 212 | 276.1 | 1.4 | 396.3 | 1.4 | N/A | 3.9 |
| 213 | 109.4 | 1.4 | 167.8 | 1.5 | 9.1 | N/A |
| 214 | 108.8 | 1.6 | 175.8 | 1.6 | N/A | 3.7 |
| 215 | 125.9 | 1.5 | 187.1 | 1.5 | N/A | 8.0 |
| 216 | 110.2 | 0.8 | 100.5 | 0.9 | 6.8 | N/A |
| 300 | 119.9 | 0.6 | 80.7 | 0.7 | 2.7 | N/A |
| 302 | 111.2 | 1.0 | 118.7 | 1.1 | 1.9 | N/A |
| 311 | 3.6 | 0.0 | 0.0 | 0.0 | N/A | 0.2 |
| 318 | 223.6 | 1.8 | 446.7 | 2.0 | 33.0 | N/A |
| 319 | 248.5 | 0.6 | 163.9 | 0.6 | N/A | 21.1 |
| 320 | 133.4 | 0.8 | 112.6 | 0.8 | N/A | 0.8 |
| 321 | 486.0 | 1.1 | 511.8 | 1.1 | N/A | 47.1 |
| 323 | 155.6 | 0.5 | 102.4 | 0.7 | 16.9 | N/A |

| 2006 Hunt Unit | Area (miles ²) | Forest Plan OMTRD Goal (miles/mile ²) | Existing OMRT (miles) | Existing OMTRD (miles/mile ²) | Miles Needed to Close to Meet Goal | Miles before Goal is Exceeded |
|----------------|----------------------------|---|-----------------------|---|------------------------------------|-------------------------------|
| 324 | 274.9 | 0.4 | 108.2 | 0.4 | N/A | 15.5 |
| 327 | 200.1 | 0.8 | 171.2 | 0.9 | 1.1 | N/A |
| 328 | 194.7 | 0.8 | 146.3 | 0.8 | N/A | 19.2 |
| 329 | 219.4 | 1.1 | 181.4 | 0.8 | N/A | 70.9 |
| 330 | 110.7 | 0.7 | 75.8 | 0.7 | N/A | 7.2 |
| 331 | 463.6 | 1.5 | 581.4 | 1.3 | N/A | 137.2 |
| 332 | 448.7 | 0.8 | 350.1 | 0.8 | N/A | 31.3 |
| 333 | 159.6 | 0.9 | 184.7 | 1.2 | 33.1 | N/A |
| 340 | 169.2 | 1.4 | 232.7 | 1.4 | N/A | 12.6 |
| 341 | 59.0 | 0.5 | 42.2 | 0.7 | 9.7 | N/A |
| 350 | 263.7 | 1.3 | 368.8 | 1.5 | 30.7 | N/A |
| 360 | 110.9 | 0.0 | 0.5 | 0.0 | N/A | 5.0 |
| 362 | 83.8 | 0.0 | 0.1 | 0.0 | N/A | 4.1 |
| 370 | 65.8 | 1.0 | 80.9 | 1.2 | 11.9 | N/A |

In addition to secure habitat, the Forest will continue to describe OMRTD conditions for both general and fall seasons per the goals and objectives in the forest plan. Table 20 displays the total amount of secure habitat for GBAUs grouped within landscapes to provide a comparison between road density and secure habitat metrics. GBAUs are assigned to the landscape by the greatest area of overlap as there is not an exact intersection (Figure 4; Figure 11). Landscapes are too large to quantify meaningful effects to grizzly bears from projects as they are substantially larger than a typical grizzly bear home range.

Table 20. Amount of secure habitat within landscapes as identified in the forest plan.

| Reporting Landscape | GBAUs within Landscape (number) | Total area of GBAUs within Landscape (acres) | Secure Habitat within GBAUs (acres) | Secure habitat within GBAUs (percent) |
|-------------------------------|---------------------------------|--|-------------------------------------|---------------------------------------|
| Big Hole | 6 | 531,347 | 261,236 | 49 |
| Boulder River | 3 | 216,597 | 53,436 | 25 |
| Clark Fork Flints | 6 | 537,618 | 141,800 | 26 |
| Gravelly | 5 | 474,554 | 274,258 | 58 |
| Jefferson River | 3 | 249,315 | 62,953 | 25 |
| Lima Tendoy | 6 | 413,284 | 160,398 | 39 |
| Madison | 2 | 155,048 | 41,512 | 27 |
| Pioneer | 6 | 583,750 | 286,176 | 49 |
| Tobacco Root | 3 | 187,487 | 63,376 | 34 |
| Upper Clark Fork ^a | 0 | N/A | N/A | N/A |
| Upper Rock Creek | 3 | 228,980 | 119,083 | 52 |

^aGBAUs are assigned to the landscape with the greatest amount of overlap. The Upper Clark Fork landscape is very small and intersecting GBAUs were assigned to adjacent landscapes because of this rule.

More specifically, OMTRD and associated linear miles of route types within each GBAU were also calculated to provide a baseline (Table 21). However, there are not any recommendations for desired values of linear miles of roads or OMTRD by GBAU in the Forest Plan. Rather, these metrics are used to describe existing motorized conditions within GBAUs in addition to using secure habitat. Specific descriptions of the routes used for these calculations are described in Table 6.

Table 21. Open motorized road and trail density and route lengths within grizzly bear analysis units.

| Reporting Landscape and Forest Plan OMTRD goal and existing conditions (miles/mile ²) | GBAU Name | Total GBAU area (mile ²) | OMTRD (miles/mile ²) | Route Length by Access Status ^a | | |
|---|---------------------|--------------------------------------|----------------------------------|--|---------------------------------|-----------------------------|
| | | | | Open (OMRT; miles) ^b | Restricted (miles) ^c | Closed (miles) ^d |
| Big Hole Goal: 1.2 Existing: 1.2 | Fleecer | 160 | 2.0 | 313 | 69 | 5 |
| | Pintler | 136 | 0.4 | 53 | 9 | 93 |
| | Ruby | 145 | 1.1 | 153 | 38 | 54 |
| | Seymour | 104 | 0.7 | 72 | 0 | 56 |
| | Tie | 139 | 2.0 | 278 | 42 | 23 |
| | Upper Big Hole | 146 | 1.2 | 181 | 22 | 45 |
| Boulder River Goal: 1.9 Existing: 2.2 | Basin | 117 | 2.5 | 291 | 38 | 15 |
| | Little Boulder | 113 | 1.7 | 188 | 18 | 4 |
| | Upper Boulder | 108 | 2.6 | 278 | 32 | 6 |
| Clark Fork Flints Goal: 1.9 Existing 1.9 | Dry Cottonwood | 130 | 2.5 | 321 | 45 | 4 |
| | East Flints | 101 | 1.2 | 120 | 24 | 18 |
| | Georgetown | 135 | 1.5 | 204 | 158 | 41 |
| | Harvey Willow | 169 | 1.7 | 258 | 90 | 13 |
| | South Flints | 151 | 1.7 | 258 | 90 | 13 |
| | West Flints | 154 | 2.3 | 348 | 65 | 17 |
| Gravelly Goal: 0.7 Existing: 0.7 | Black Butte | 143 | 1.0 | 148 | 3 | 45 |
| | Greenhorns | 111 | 0.9 | 98 | 7 | 28 |
| | Snowcrest | 164 | 0.3 | 54 | 28 | 124 |
| | Wall Creek | 146 | 1.0 | 146 | 3 | 31 |
| | West Fork Madison | 179 | 1.0 | 177 | 2 | 21 |
| Jefferson River Goal: 1.6 Existing: 1.9 | Bull | 101 | 1.6 | 164 | 27 | 3 |
| | Highland | 170 | 1.8 | 304 | 102 | 27 |
| | O'Neill | 118 | 2.0 | 238 | 77 | 14 |
| Lima Tendoy Goal: 1.0 Existing: 0.9 | Governor | 87 | 1.1 | 92 | 14 | 8 |
| | Medicine Lodge | 139 | 0.9 | 124 | 76 | 25 |
| | Muddy Creek | 111 | 1.1 | 122 | 81 | 4 |
| | Selway | 132 | 1.1 | 140 | 77 | 28 |
| | Sheep Creek | 141 | 0.6 | 88 | 87 | 46 |
| | Upper Horse Prairie | 36 | 0.7 | 27 | 38 | 5 |

| Reporting Landscape and Forest Plan OMTRD goal and existing conditions (miles/mile ²) | GBAU Name | Total GBAU area (mile ²) | OMTRD (miles/mile ²) | Route Length by Access Status ^a | | |
|---|---------------------------|--------------------------------------|----------------------------------|--|---------------------------------|-----------------------------|
| | | | | Open (OMRT; miles) ^b | Restricted (miles) ^c | Closed (miles) ^d |
| Madison Goal: 0.0 Existing: 0.0 | Hillgard BMU ^b | 110 | 0 | 0 | 0 | 74 |
| | Lee Metcalf North | 81 | 0.2 | 15 | 0 | 17 |
| | Lee Metcalf South | 51 | 0 | 0 | 0 | 18 |
| Pioneer Goal: 1.5 Existing: 1.2 | Birch Creek | 144 | 2.0 | 291 | 30 | 20 |
| | Browns Lake | 173 | 1.0 | 181 | 13 | 43 |
| | Bryant Creek | 154 | 1.4 | 222 | 26 | 8 |
| | Maverick | 144 | 0.8 | 122 | 23 | 73 |
| | Pettengill | 155 | 0.8 | 132 | 18 | 53 |
| | Quartz Hill | 142 | 1.3 | 188 | 21 | 27 |
| Tobacco Root Goal: 1.3 Existing: 1.2 | Meadow Creek | 94 | 1.2 | 117 | 9 | 26 |
| | Mill Creek | 92 | 1.2 | 108 | 25 | 35 |
| | South Boulder | 107 | 1.2 | 127 | 16 | 7 |
| Upper Rock Creek Goal: 0.9 Existing: 1.1 | Copper | 139 | 1.2 | 164 | 19 | 54 |
| | Ross Fork | 140 | 0.9 | 132 | 18 | 53 |
| | Stony | 78 | 1.7 | 130 | 18 | 7 |

^aIncludes all known non-temporary motorized roads and trails (system, non-system, public, administrative, etc.)

^bOpen route length includes roads or trails legally open to public motorized use, including those on private inholdings.

^cRestricted route length includes roads or trails closed to the public but open for permitted or administrative purposes.

^dClosed route length includes non-motorized foot trails.

Appendix G in the Forest Plan for the Greater Yellowstone Ecosystem

The BDNF incorporated the Forest Plan Amendment for Grizzly Bear Habitat Conservation for the Greater Yellowstone Area National Forests (U.S. Department of Agriculture 2006) as Appendix G to the Plan. The purpose of the amendment is to:

- Ensure conservation of habitat to sustain the recovered Yellowstone grizzly bear population;
- Update the management and monitoring of grizzly bear habitat to incorporate recent interagency recommendations and agreements, as described in the Conservation Strategy;
- Improve consistency among Greater Yellowstone Area national forests in managing grizzly bear habitat;
- Ensure the adequacy of regulatory mechanisms for grizzly bear habitat protections upon delisting as identified in the Recovery Plan.

Appendix G references the “1998 baseline”, which was established to provide a reliable estimate of habitat conditions when the grizzly population growth rate was 4-7 percent annually in the Greater Yellowstone Ecosystem that was observed from the mid-to-late 1980s and into the 1990s (Yellowstone

Ecosystem Subcommittee 2016b). Data collection efforts to create the baseline resulted in identifying developed sites, inventory associated infrastructure, and updating the Motorized Access GIS database (Yellowstone Ecosystem Subcommittee 2016b). The baseline provided a point of comparison for standards and monitoring items in Appendix G for Bear Management Units (BMUs) at other points in time³. Within PCAs, BMU subunit conditions are compared to the 1998 baseline. This only applies to a very small area on the BDNF, specifically the Hilgard BMU (the #1 subunit), which is located on the Madison Landscape in the designated Lee Metcalf Wilderness (Figure 9; Figure 10).

Updates to Chapter 3 and Appendix E of the GYE Conservation Strategy were approved in 2022 and updates to Chapter 2 were drafted and available for public comment in 2023 (available at <https://igbconline.org/committees/yellowstone/>) (Appendix G). The Conservation Assessment allows for revisions to habitat standards based on the best available science and are updated, as necessary (Yellowstone Ecosystem Subcommittee 2016a). This biological assessment utilizes the updated information for analysis, including the draft version of Chapter 2 (which does not change standards). The revised information helps clarify habitat standards to provide better direction on a local project level.

These updates address changes necessary to support increased visitation, such as a need for additional infrastructure to manage the impacts of more people while ensuring protection of grizzly bears (reference Appendix F in this document for the specific changes). The recommendation to apply a “footprint” approach to identify and manage areas of concentrated human use associated with previously listed developed sites was adopted, which clarified the secure habitat definition. Secure habitat is now defined as any contiguous area greater than or equal to 10 acres in size and more than 500 meters from an open or gated motorized access route (road or trail), prescribed footprint of a developed site, or recurring low level helicopter line during the non-denning period (March 1- November 30). Gated routes that are closed year-round to public motorized use but remain accessible to administrative personnel are still considered motorized access routes. Decommissioned routes that are permanently and effectively closed to the public and administrative staff do not count against this standard. Administrative sites are defined as areas of focused visitor and/or administrative activity with associated infrastructure that similarly detracts from secure grizzly bear habitat.

The applicable guidance and direction from Appendix G and the updated chapters include:

- Habitat Goal: Manage grizzly bear habitat within the PCA to sustain the recovered Yellowstone grizzly bear population. Outside the PCA in areas identified in state management plans as biologically suitable and socially acceptable for grizzly bear occupancy, accommodate grizzly bear populations to the extent that accommodation is compatible with the goals and objectives of other uses.
- Standard 1 (updated): Inside the PCA, the percentage of secure habitat within each bear management subunit must be maintained at or above levels that existed in 1998 (updated Appendix E). The sole exception to the 1998 secure habitat baseline applies to the three subunits identified in the 2007 Conservation Strategy as in need of improvement above 1998 levels (Gallatin #3, Henrys Lake #2, and Madison #2). These three subunits must be maintained

³ Bear Management Units (BMUs) and Grizzly Bear Analysis Units (GBAUs) are not the same areas. BMUs were developed in the 1993 Grizzly Bear Recovery Plan and established in the Greater Yellowstone Conservation Strategy. BMUs are too large to use for secure habitat analysis for projects occurring on the Beaverhead-Deerlodge National Forest. However, the BDNF uses BMU boundaries for reporting requirements as outlined in Appendix G.

at or above levels attained from full implementation of the 2006 Gallatin National Forest Travel Management Plan (Appendix E). Authorized Federal projects that result in temporary or permanent changes to secure habitat are allowed per the Application Rules.

- Standard 2: Inside the PCA, maintain the number and capacity of developed sites at or below 1998 levels with the following exceptions: any proposed increase, expansion, or change of use of developed sites from the 1998 baseline in the PCA is analyzed and potential detrimental and positive impacts on grizzly bears are documented through a biological evaluation or assessment. Projects that change the number or capacity of developed sites must follow the Application Rules.
 - Update: In an effort to ensure accuracy in defining and tracking developed sites that comprise the 1998 baseline for public lands within the PCA, national park and forest units have mapped spatial polygons or ‘footprints’ for specific categories of developed sites, including visitor overnight lodges, developed campgrounds, administrative sites, and major developments.
- Standard 3: Inside the PCA, do not create new active commercial livestock grazing allotments, do not increase permitted sheep animal months from the identified 1998 baseline, and phase out existing sheep allotments as opportunities arise with willing permittees.
- Standard 5: Coordinate with state wildlife management agencies to apply Conservation Strategy nuisance bear standards.
- Standard 6: Inside the PCA, minimize grizzly bear/human conflicts using food storage, information and education, and other management tools.
- Guideline 1: Inside the PCA, use localized area restrictions to address conflicts with winter use activities, where conflicts occur during denning or after bear emergence in the spring.
- Guideline 2: Inside the PCA, cattle allotments or portions of cattle allotments with recurring conflicts that cannot be resolved through modification of grazing practices may be retired as opportunities arise with willing permittees. Outside the PCA in areas identified in state management plans as biologically suitable and socially acceptable for grizzly bear occupancy, livestock allotments or portions of allotments with recurring conflicts that cannot be resolved through modification of grazing practices may be retired as opportunities arise with willing permittees.
- Guideline 3: Outside the PCA in areas identified in state management plans as biologically suitable and socially acceptable for grizzly bear occupancy, emphasize proper sanitation techniques, including food storage orders, and information and education, while working with local governments and other agencies.
- Guideline 4: Inside and outside the PCA in areas identified in state management plans as biologically suitable and socially acceptable for grizzly bear occupancy, maintain the productivity, to the extent feasible, of the four key grizzly bear food sources as identified in the Conservation Strategy. Emphasize maintaining and restoring whitebark pine stands inside and outside the PCA.
- Monitoring Item 1: Inside the PCA, monitor, compare to the 1998 baseline, and annually submit for inclusion in the Interagency Grizzly Bear Study Team Annual Report: secure habitat,

open motorized access route density (OMARD) greater than one mile per square mile, and total motorized access route (TMARD) density greater than two miles per square mile in each BMU subunit on the national forest. Outside the PCA in areas identified in state management plans as biologically suitable and socially acceptable for grizzly bear occupancy, monitor, and submit for inclusion in the Interagency Grizzly Bear Study Team Annual Report: changes in secure habitat by national forest every two years.

- Monitoring Item 2: Inside the PCA, monitor, and submit for inclusion in the Interagency Grizzly Bear Study Team Annual Report: changes in the number and capacity of developed sites on the national forest and compare with the 1998 baseline.
- Monitoring Item 3: Inside the PCA, monitor, and submit for inclusion in the Interagency Grizzly Bear Study Team Annual Report: the number of commercial livestock grazing allotments on the national forest and the number of permitted domestic sheep animal months. Inside and outside the PCA, monitor and evaluate allotments for recurring conflicts with grizzly bears.
- Monitoring Item 4: Inside the PCA, monitor, and every five years submit for inclusion in the Interagency Grizzly Bear Study Team Annual Report: changes in seasonal habitat effectiveness in each BMU and subunit on the national forest through the application of the Cumulative Effects Model or the best available system and compare outputs to the 1998 baseline. Annually review the Cumulative Effects Model databases and update as needed. When funding is available, monitor representative non-motorized trails or access points where risk of grizzly bear mortality is highest.
- Monitoring Item 5: Monitor whitebark pine occurrence, productivity, and health inside and outside the PCA in cooperation with other agencies. Annually submit for inclusion in the Interagency Grizzly Bear Study Team Annual Report results of whitebark pine cone production from transects or other appropriate methods, and results of other whitebark pine monitoring.

Since the BDNF has lands both within and outside of the PCA, different monitoring metrics apply. The updated guidance and direction for PCAs is limited to the Madison Landscape, specifically the Hilgard BMU (the #1 subunit). Hilgard #1 is entirely within the Taylor-Hilgard Unit of the designated Lee Metcalf Wilderness (Figure 10). Within the PCAs, the BMU subunits are compared against the 1998 benchmark on an annual basis for secure habitat, open motorized access route density, and total motorized access route density (Monitoring Item 1), changes in the number and capacity of developed sites compared to the 1998 baseline (Monitoring Item 2), and the number of commercial livestock grazing allotments and permitted domestic sheep animal months (Monitoring Item 3). Every five years changes in seasonal habitat effectiveness are reported within the PCAs. Outside of the PCA, the BDNF reports changes every two years to secure habitat (Monitoring Item 1) at the BMU level. The 1998 baseline (updated) for subunit monitoring metrics are in the updated Appendix E, tables 5-9 (Appendix F in this document).

Changes to the monitoring metrics are documented in an annual report from the Interagency Grizzly Bear Study Team. This document utilizes information from the 2023 report (Interagency Grizzly Bear Study Team 2024). Of note, data presented as part of Appendix G monitoring requirements reflect the information reported for the *entirety* of the Hilgard Bear Management Unit which has multiple ownerships (Figure 10). The BDNF portion does not contain roads or trails, but secure habitat calculations are affected by the private lands adjacent to the Hilgard #1 BMU (resulting in an 88 percent secure habitat within the portion managed by the BDNF; Table 4). The entire area managed by the BDNF is designated Wilderness, so no changes in secure habitat are anticipated within the BDNF boundary.

This is in comparison to the 83.1 percent secure habitat within the Hilgard #1 subunit as a whole, which consists of lands with multiple jurisdictions (Table 22; Figure 10).

BEAVERHEAD-DEERLODGE NF
GYE 2007 Bear Management Units

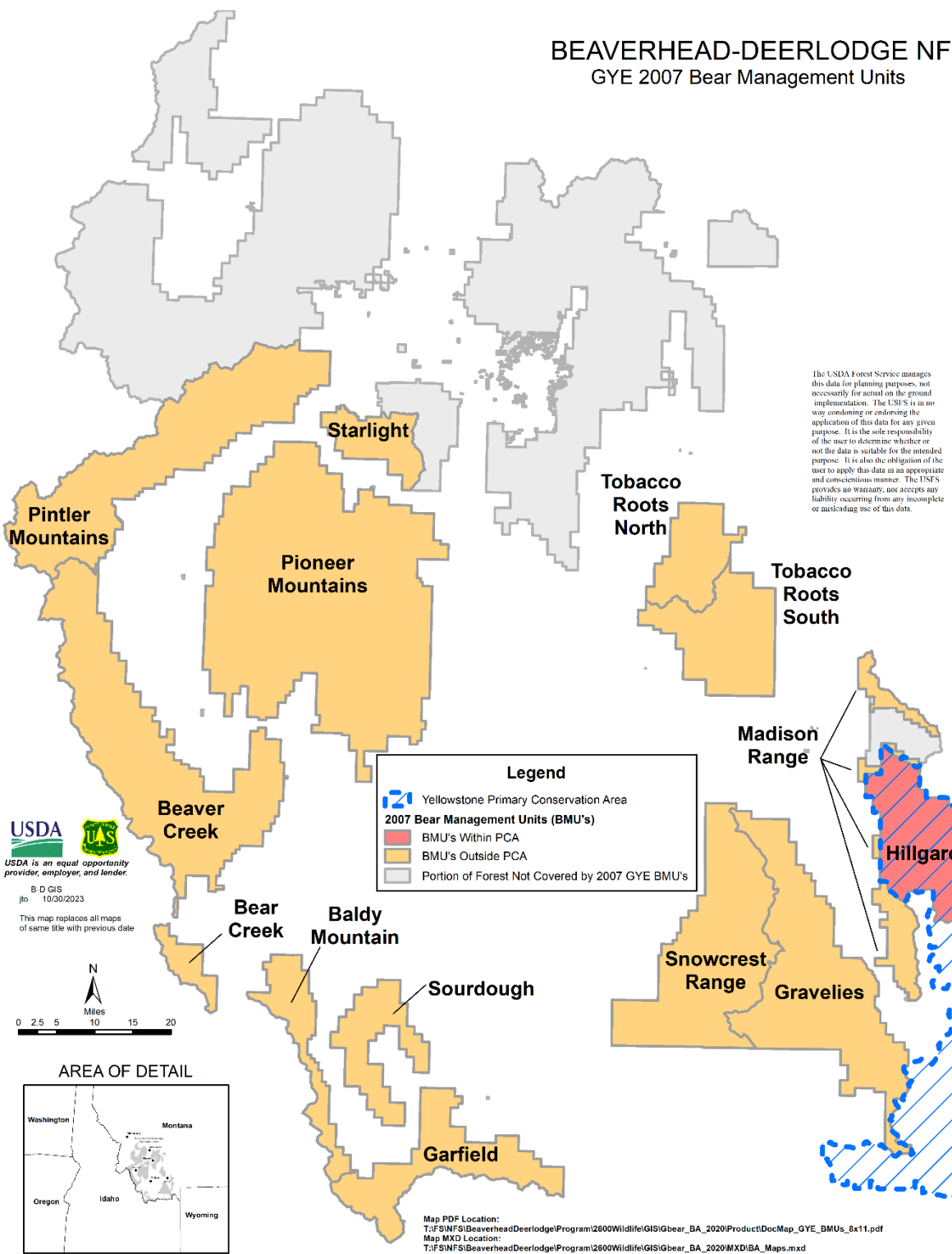


Figure 9. Bear Management Units on the Beaverhead-Deerlodge National Forest as established by the Conservation Strategy for the Greater Yellowstone Area.

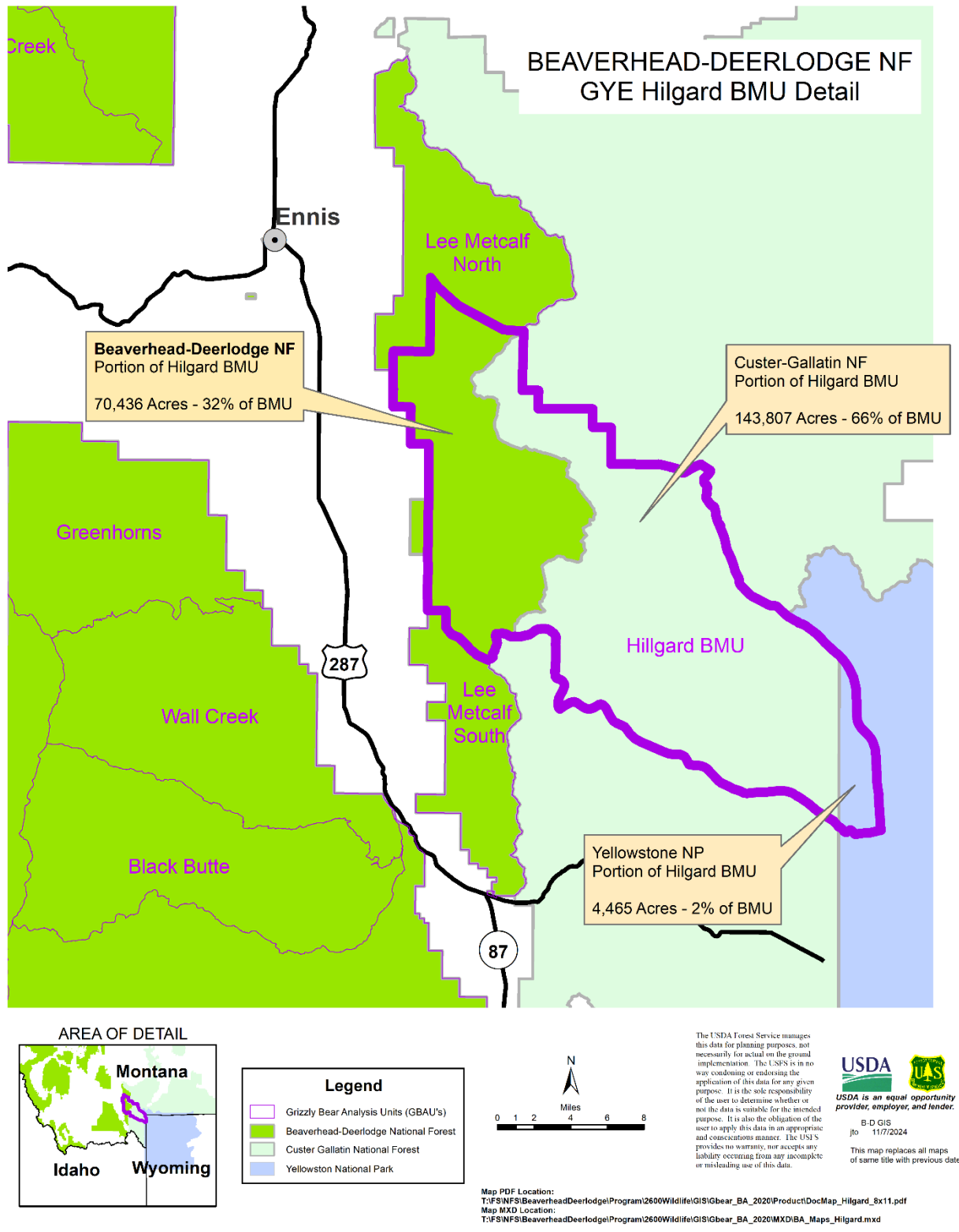


Figure 10. The spatial distribution of the Hilgard Bear Management Unit.

Monitoring Item 1

For purposes of this calculation, OMARD is a measure of the density of routes open to public motorized use at least one or more days during the non-denning portion of the year when grizzly bears are considered active (March 1 – November 30). TMARD is a measure of the density of roads and trails that are open to the public or administrative personnel for motorized use on one or more days during the active season. Densities are reported as the percent area of each subunit where open motorized access route density is greater than 1 mile per square mile and total motorized access route density is greater than 2 miles per square mile. Changes in secure habitat are achieved by decommissioning roads open to motorized access (Interagency Grizzly Bear Study Team 2024). Secure habitat is defined as any contiguous area greater than 10 acres in size and more than 500 meters from an open or gated motorized road or trail.

Within the PCA, the percentage of OMARD and TMARD decreased since 1998, which increased the amount of secure area (Table 22) within Hillgard #1. This information is reported on an annual basis.

Outside the PCA, the change from 2008 and the percent secure habitat within each BMU is identified in Table 23 (Schwartz et al. 2009). The Forest as a whole had a slight increase of secure habitat at the Bear Management Unit level (+3.1 percent since 2008). This information is reported every two years.

The BDNF anticipates no changes to OMARD, TMARD, or secure habitat within the Beaverhead-Deerlodge administered portion of Hillgard #1 unless better on-the-ground data is obtained. Since this unit is within designated Wilderness, no additional motorized access roads or routes are anticipated for construction.

Table 22. 1998 and 2023 percent areas of open motorized access route density (OMARD), total motorized access route density (TMARD), and secure habitat within BMU subunits on the Beaverhead-Deerlodge National Forest (Interagency Grizzly Bear Study Team 2024).

| Bear Management Subunit | Percent OMARD | | | Percent TMARD | | | Percent Secure Habitat | | | Area (miles ²) | | |
|-------------------------|---------------|------|----------------|---------------|------|----------------|------------------------|------|----------------|----------------------------|---------------------|---------------------|
| | 1998 | 2023 | Percent change | 1998 | 2023 | Percent change | 1998 | 2023 | Percent change | Subunit | Secure Habitat 1998 | Secure Habitat 2023 |
| Hillgard #1 | 29 | 13.3 | -15.7 | 15.3 | 4.4 | -10.9 | 69.8 | 83.1 | 13.4 | 201.2 | 140.3 | 167.2 |

Table 23. Secure habitat changes on the Beaverhead-Deerlodge National Forest within Bear Management Units outside of the Greater Yellowstone Primary Conservation Area. This metric is reported every-other year and is not yet available for 2024 (Interagency Grizzly Bear Study Team 2023).

| Bear Management Unit (BMU) | Analysis Unit Area (miles ²) | 2008 Percent Secure Habitat | 2022 Percent Secure Habitat | Percent Change |
|----------------------------|--|-----------------------------|-----------------------------|----------------|
| Baldy Mountain | 96.9 | 46.2 | 55 | +8.8 |
| Bear Creek | 36.4 | 60.8 | 62.6 | +1.8 |
| Beaver Creek | 478.9 | 48.6 | 57.3 | +8.7 |
| Garfield | 182.0 | 64.8 | 71.6 | +6.8 |
| Gravelies | 384.4 | 60.6 | 58.5 | -2.1 |
| Madison Range | 89.2 | 100 | 99.4 | -0.6 |
| Pintler Mountains | 410.3 | 59.2 | 57.6 | -1.6 |
| Pioneer Mountains | 912.2 | 53 | 55.1 | +2.1 |
| Snowcrest Range | 357.2 | 71 | 74.8 | +3.8 |
| Sourdough | 111.2 | 40.1 | 46.9 | +6.8 |
| Starlight | 79.0 | 40.1 | 34.8 | -5.3 |
| Tobacco Roots North | 106.7 | 52.8 | 53.4 | +0.6 |
| Tobacco Roots South | 186.3 | 47 | 47.5 | +0.5 |
| Total Area/Mean Secure | 3,431 | 56.5 | 59.6 | +3.1 |

Monitoring Item 2

On the BDNF, there are currently three administrative sites included within the updated footprint. A data error in previous reports only documented one administrative site (Interagency Grizzly Bear Study Team 2024) ; however, the updated baseline was the result of an administrative omission and no changes on-the-ground occurred. There are no anticipated plans to increase the size of affected footprints within the BDNF portion of Hilgard #1 subunit. This information was incorporated into the new baseline for the updated GYE Conservation Strategy.

Monitoring Item 3

Since 1998, there are no changes to the number of cattle allotments (3 in total), although now none are vacant compared to two vacant in 1998 (Interagency Grizzly Bear Study Team 2024). Sheep allotments remained the same at zero. The BDNF does not expect to change cattle or sheep grazing within the PCA except for allotments changing from in use to vacant.

Monitoring Item 4

A defined in Appendix G, habitat effectiveness is a quantitative measure of resources potentially available to bears given their response to humans where a higher number indicates a greater habitat effectiveness. This is calculated using a Cumulative Effects Model via specific software which evaluates information such as vegetation, ungulate winter ranges, and human activities (type, intensity, and duration). Following the update of the Conservation Strategy in 2016, habitat effectiveness is no longer measured or reported as a monitoring item. This item is not further analyzed within this document.

Monitoring Item 5

Due to the decline of whitebark pine and its susceptibility to mountain pine beetle and white pine blister rust, the Greater Yellowstone Whitebark Pine Monitoring Working Group was formed and developed a long-term strategy for monitoring this species in the GYE. There are whitebark pine transects on the BDNF as part of the 2016 Conservation Strategy (Yellowstone Ecosystem Subcommittee 2016a) to monitor the health of this species as a potential food source for grizzly bears. Although the BDNF does not always participate in the monitoring effort, the results from this interagency group help inform whitebark pine management on the forest.

Other Management Activities and Issues

Outside of the programs and activities identified above, other federally authorized activities occur on the BDNF that could potentially affect grizzly bears. These past and present activities are ongoing and are part of the current baseline habitat conditions experienced by grizzly bears on the Beaverhead-Deerlodge National Forest. It is important to note that these actions occurred and are ongoing in areas where grizzly bears continue to expand outside of the recovery zone. These activities are evaluated site-specifically during project-level analyses.

Administrative Sites

The facilities goal (which also applies to recreation) provides guidance for infrastructure on the BDNF: administrative and/or recreation facilities are constructed, managed, and maintained to meet land and resource objectives and address recreation demand.

In addition to developed recreation sites, this goal comprises a variety of government-owned and maintained infrastructure including radio repeater sites, guard station cabins, ranger stations, pastures, gravel pits, helicopter pads (landing zones), boneyards (storage yards), and housing quarters located across the forest. These sites and structures play a critical role in the administration of the national forest and are permanent in nature, requiring year-round motorized access (including the use of helicopters). Associated activities include landscape maintenance, irrigation, fence and gate maintenance, painting, staining, hazard tree removal, clearing brush and vegetation around structures, grazing, reconstruction, paving, snow removal, sign installation and maintenance, septic and toilet pumping, water system maintenance, garbage service, trenching and digging (buried utility lines), use of heavy equipment, firewood cutting and storage, maintenance of solar arrays, propane tanks, and fuel storage.

Roads and Travel

Permanent and Temporary Road Construction

Construction of permanent roads is very rare; the BDNF has not constructed any new permanent roads for public use since 2009. Some special use roads to access inholdings were constructed, but those are not within secure habitat as inholding boundaries are buffered. Many permanent road projects on the BDNF involve re-routing roads for various reasons, such as resource damage, safety, or other purposes. It is possible the BDNF may need to construct a new permanent road open to public motorized users during the life of this analysis; however, effects to secure habitat would be limited to only one percent of existing secure habitat within GBAUs and across the BDNF as a whole (Table 4).

Although miles of temporary roads are no longer the preferred metric for surrogate take, the BDNF will likely continue to propose and construct temporary roads for project purposes. The 2012 supplemental consultation (USDA FS 2012) and corresponding biological opinion (USDI FWS 2013) established a maximum of 70 miles of temporary road construction across the Forest. As noted in the Need for Re-assessment Based on Changed Conditions, the BDNF consulted on 78.5 miles of temporary road. Low-standard temporary roads are usually constructed for timber harvest and are typically reclaimed after harvest activities. However, temporary roads may be constructed for other purposes, such as access to mineral, oil, and gas leases, infrastructure installation (such as fish barriers), or other actions. Temporary roads are approximately ten feet wide and vary in length, but generally do not exceed 1 mile. Since 2009, 37.6 miles of temporary roads have been constructed. Temporary roads are reclaimed after use is over. This trend of proposing, building, and decommissioning temporary roads will likely continue.

Unauthorized Motorized Access

A private entity's non-compliance with the Forest's access management direction is an illegal, unauthorized activity. Illegal motorized access situations can and do occur on the Beaverhead-Deerlodge National Forest. Unauthorized motorized use occurs when a route is driven using a motorized vehicle in areas where motorized access is not permitted, such as lands within non-motorized areas (e.g. Wilderness, non-motorized allocations, etc.), on routes identified as non-motorized, or motorized use of land on undetermined routes that lack motorized status (e.g. user-created routes, cross-country travel). Unauthorized motorized access is not considered a Forest action because it is not authorized, funded, or carried out, in whole or in part by Federal agencies (U.S. Department of the Interior and Service 1998). Because it is not considered a federal action, unauthorized motorized access is not analyzed as an effect of an action but is described as part of the environmental baseline and a cumulative effect. It is not

possible to quantify the amount and location of every unauthorized motorized access incident, although information from law enforcement provides some insight.

Law enforcement data from 2021-2023 reveals 50 unauthorized motorized access violations (Table 24). Examples of these violations include motorized cross-country travel and motorized use within non-motorized areas where signs were present (including Wilderness and recommended wilderness). Spatial mapping of the locations revealed four cross-country travel violations (two in 2021 and one each in 2022 and 2023) near or on the Lower Whitetail Road on Butte Ranger District, but the rest were well-distributed across the Forest. Another instance in 2022 on the Dillon Ranger District in Chute Canyon identified multiple motor vehicle tracks on a user-created route along a ridgeline with removal of the closure sign, so it is likely multiple unauthorized motorized violations occurred. It stands to reason more unauthorized motorized access (either in new areas or repeated use) occurred on the Forest during this time, although it remains unreported to law enforcement and the BDNF.

Table 24. The number of unauthorized motorized violations as reported by law enforcement on the Beaverhead-Deerlodge National Forest from 2021-2023.

| District | Travel Management or Off-Road Violations (number) ^a |
|----------|--|
| Dillon | 14 |
| Wisdom | 2 |
| Butte | 17 |
| Madison | 12 |
| Pintler | 5 |

^aMadison Ranger District is the only area where unauthorized motorized vehicles are considered “travel management violations” as this district has a travel management decision at the time of this writing. On all other districts, unauthorized motorized access violations are considered “off-road violations” and are described in the Northern Region Occupancy and Use Order (R1-2022-01).

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.

Chronic unauthorized motorized access occurs regularly within the Pipestone area on the Butte Ranger District (primarily by off-road vehicles). This area contains a large network of user-created motorized routes and trails. The BDNF cannot utilize IGBC barriers, fences, or other barricades to control motorized access at Pipestone due to the existing topography (flat and open) and lack of vegetation. However, the Forest identified known user-created routes in this area and applied the road buffer to model secure habitat within this area. Managing Pipestone for authorized motorized access will be part of the travel management planning process.

It is possible other areas where unauthorized motorized access becomes frequent or chronic may be discovered during the life of this document. In general, “chronic” use is evident when the BDNF receives multiple reports or it is visually evident that unauthorized access occurs regularly (tire tracks, looks like a road any public user could follow, etc.). In these instances, the BDNF intends to respond to this

unauthorized access to the best of its ability by placing signs, removing access, or other means to deter motorized use. If a project is occurring within these places, the BDNF will consider these undetermined roads not secure for grizzly bears and a site-specific analysis will occur.

Other 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 the 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 travel. These areas are still considered “secure” as we assume this use is extremely infrequent, short-term, temporary, and spatially disparate across the landscape.

Historically, when unauthorized motorized access is discovered in project areas, the BDNF addresses these issues through corrective actions such as issuing tickets to the parties, signing the area with a clear notice that motorized use is prohibited, replacing broken locks, or other actions. It is not possible to identify areas where one-time cross-country travel occurred and there is no visible evidence of unauthorized motorized travel. The only situation where unauthorized motorized access may affect the Forest’s metrics used in calculating effects to grizzly bears from motorized access would be if the Forest was aware of unauthorized use at a given location and did not or were unable to address the issue or stop the unauthorized use from occurring, thereby resulting in chronic unauthorized motorized access.

The BDNF typically (but not always; e.g. signage) use closure devices or methods recognized by the IGBC ((Interagency Grizzly Bear Committee (IGBC) 1998) as effective to restrict motorized access. It is not the intent or purpose of the BDNF to implement closure devices recognized by the IGBC that are meant to be ineffective, but no closure device can be 100 percent effective because at any given time a Forest user could breach a closure device recognized by the IGBC as an effective method in restricting motorized access. The BDNF uses all potential corrective actions and allowing for unauthorized motorized access is not the intent of the road restriction.

Gate and barrier monitoring on the Forest is ongoing and will be part of the travel management process. In the near future, the BDNF will implement a forest-wide trespass monitoring and response plan that will track instances of unauthorized motorized use across the Forest (not just in project areas). This will enable the forest to respond accordingly, which may include immediate actions (such as law enforcement response, signage, barricades, etc.), intermediate actions (such as identifying locations for closures and associated analysis, as required), or long-term actions (such as monitoring to determine the extent and nature of the unauthorized trespass), among others. This tracking system will help the BDNF document and identify areas of frequent illegal access and use the most effective management strategy.

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 access on grizzly bears. When bear movements were studied bear movements in relation to open, restricted, and closed roads, some level of unknown illegal or unauthorized motorized access 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 access that was occurring during the scientific research. As such, continued

sporadic unauthorized motorized access would not result in a need to update the Forest's motorized access metrics.

Low-Elevation Flights

Low-elevation aircraft flights (less than 500 meters above ground level; AGL), occur on the BDNF for a variety of activities, including but not limited to: wildland and prescribed fire ignition or suppression actions, invasive weeds treatment, species reconnaissance (e.g., population counts by the state), military operations, recreation special uses, minerals, oil, and gas exploration, or other emergency responses (e.g., flooding). Increasing numbers of activities are utilizing unmanned aircraft systems (UAS; such a drones) in addition to helicopters and fixed-wing aircraft. It is not possible to quantify the amount of low-elevation flights from both aircraft and drone use, but use of aircraft is expected to continue and potentially increase for the life of this document.

The Montana/Northern Idaho Level 1 Terrestrial Biologist team assembled a guidance document (Anderson et al. 2009) to provide additional information and improve consistency for estimating effects and potential minimization criteria to reduce disturbance to grizzly bears from aircraft. This document is currently under revision by a subset of the Level 1 team. This guidance and future revisions will incorporate the best available science to potentially reduce effects from low-level flights from both aircraft and drones. The BDNF will utilize this new information and guidance in future project-level analyses.

Programmatic Screens

The U.S. Forest Service and the U.S. Fish and Wildlife Service collaboratively developed screening criteria to identify straightforward projects that have insignificant or discountable effects on grizzly bear (U.S. Department of Agriculture 2020). The programmatic biological assessment and corresponding concurrence provide a streamlined way to identify whether or not proposed actions may lead to a “not likely to adversely affect” conclusion by providing sideboards to specific actions that are known to have insignificant and discountable effects to bears. Proposed actions could proceed once the documentation is in place . The area of analysis includes the Custer-Gallatin, Helena-Lewis and Clark, Flathead, Lolo, Beaverhead-Deerlodge, Bitterroot, Idaho Panhandle, Kootenai, and Nez Perce-Clearwater National Forests .

The screening document is updated every five years. The Forest anticipates continually utilizing the programmatic screens for projects where the criteria is met.

Landscape-Level Considerations

Habitat Connectivity

Connectivity between grizzly bear ecosystems can reduce genetic fragmentation and enhance genetic diversity (U.S. Department of the Interior 1993, Miller and Waits 2003, Proctor et al. 2005), which improves resiliency of these populations. Human settlements, highways, and human-caused mortality contribute to grizzly bear population fragmentation (Servheen et al. 2001), including reduced rates of movement and genetic interchange. Although male bear movements across landscapes contributes to gene flow, female grizzly bear movement within and between ecosystems influences population trends (Proctor et al. 2012). Because female grizzly dispersal is generally shorter in distance compared to males, it is important to maintain habitat components in adjacent areas to support female life history

requirements to promote dispersal (Proctor et al. 2004;2005, Proctor et al. 2015, Proctor et al. 2018). Since grizzly bears require large blocks of land with limited human influence to accommodate natural history needs (home range sizes, food diversity, cover, dens, etc.) (Mace et al. 1996, Schwartz et al. 2010, U.S. Department of the Interior 2022b, Proctor et al. 2023), maintaining or improving connectivity in linkage areas by reducing human influence and improving secure habitat (i.e., attractant storage and motorized access reductions) is important for demographic connectivity (Proctor et al. 2018, Whittington et al. 2022).

The Interagency Grizzly Bear Study Team (IGBST) monitors population size and genetic diversity within recovery zones. Grizzly bears in the GYE show low rates of inbreeding and an increase in population size between 1982 to 2007 (U.S. Department of the Interior 2022b). In addition, there is no indication of habitat fragmentation within this population (U.S. Department of the Interior 2022b). Bears in the NCDE have a high genetic diversity, are sufficiently geographically connected to populations in Canada, and has a population large enough to ensure genetic health (U.S. Department of the Interior 2022b). The only suggestion of human-caused population fragmentation within the NCDE is on the western side of US Highway 2/BNSF rail line corridor between Glacier National Park and Forest Service lands (not on the BDNF) (U.S. Department of the Interior 2022b).

Connectivity between the GYE and the NCDE is a long-term goal in the state of Montana, which includes potential translocations to improve or enhance genetic diversity (Montana Fish Wildlife and Parks 2013). Recent connectivity modeling predicted pathways of greatest use were associated with forested mountain ranges with two primary pathways connecting the NCDE and GYE: one west of Helena and Bozeman along the Garnet, Nevada, Boulder, Tobacco Root, Madison, and the Gravelly Mountains, and one east of both towns along the Big Belt, Bridger, and Gallatin Mountains. The GYE and Bitterroot Ecosystem were connected by the Sapphire, Anaconda, Highland, Tobacco Root, Gravelly, and Gallatin Mountains and one along the Beaverhead, Tendoy, and Centennial mountains, with grizzly bear verified sightings within some predicted pathways (Sells et al. 2023). In addition, Peck et al. identified potential routes for male gene flow through the BDNF that linked the GYE and NCDE, although successful immigration events may remain rare until the distance decreases between recovery zones by bears successfully residing outside recovery zones (2017).

Climate Change

Projected and observed changes in climate are well-documented (Intergovernmental Panel on Climate Change 2022), with the western United States potentially experiencing milder, wetter winters and warmer, drier summers, with an overall decrease in snowpack and change in the timing of snowmelt (U.S. Department of the Interior 2022b and references therein). The 2022 Grizzly Bear Species Status Assessment identified potential effects to grizzly bear from climate change that may result in changes to grizzly bear habitat, including a reduction in snowpack levels that may shorten the denning season, denning time shifts, and changes in the abundance and distribution of food sources (U.S. Department of the Interior 2022b and references therein).

Reduced snowpack and a shorter denning season may improve over-winter survival of bears, assuming sufficient food availability. However, warmer autumn temperatures, delayed snowfall, and earlier arrival of spring may result in later den entry and earlier den exit which may also increase the potential for human-bear conflicts in the spring and fall (Servheen and Cross 2010, Pigeon et al. 2016). Hunters or

recreationists may encounter a bear earlier or later in the season than usual as bears may spend less time denning (Servheen and Cross 2010).

Temporal and spatial shifts in grizzly bear food sources could occur because of climate change (Roberts et al. 2014, Prev y et al. 2020). The extent and rate of impacts to individual plants species or plant communities from climate change is not predictable with any level of certainty (Walther et al. 2002, Fagre et al. 2003), but these shifts may also influence potential mammalian prey distributions (White et al. 2018). Research in Canada acknowledged that higher temperatures and earlier snowmelt may contribute to improved food resources for grizzly bears (Nielsen et al. 2013, Roberts et al. 2014). Because grizzly bears adapt well to diet changes and can find alternative food sources (van Manen et al. 2013), they may not be impacted directly by diet changes caused by climate change (Servheen and Cross 2010). However, shifts in food sources may cause additional human-bear conflict which may lead to mortality, depending on the location and abundance of the source (Servheen and Cross 2010).

Altered fire regimes caused by climate change may also change habitat for grizzly bears based on increasing intensity or patterns of wildfires. Bears highly utilize burned habitats when food resources become more plentiful after vegetation recovers (McLellan and Hovey 2001a, Apps et al. 2004). Thus, depending on fire size and severity, fires may only have a short-term adverse effect on grizzly bears (with immediate food reduction) but may provide long-term benefits (U.S. Department of the Interior 2022b).

Ongoing Conservation Efforts

Food and Attractant Storage

The wildlife section of the forest plan contains a grizzly bear conflict objective. It states: implement food storage and sanitation orders in areas classified as occupied grizzly bear habitat. The BDNF has a history of maintaining food storage orders (FSO) to prevent bear-human conflict. Currently, the BDNF has two active food storage orders: order 02-00-22-02 which applies to the entirety of the Beaverhead-Deerlodge National Forest with the exception of the Elkhorns (expires on December 1, 2026) and order R1-2023-02 which applies to the Elkhorn area of the Forest (expires on December 31, 2028). These orders provide enforceable language regarding food, attractant, and carcass storage and handling to prevent human-grizzly bear conflicts. This analysis assumes new FSOs will be drafted and signed after the current orders expire as the duration of this analysis is longer than the current FSOs (refer to assumption 10). All public and permitted users of the Beaverhead-Deerlodge National Forest are required to follow the orders with the exception of people with a special use authorization or other authorization that specifically exempts them from the effects of the order or any federal, state, or tribal employee placing baits for research or management purposes as part of their official duties.

In addition to the FSO, the BDNF is making a concerted effort to provide food storage signage and bear-proof storage infrastructure (e.g., meat poles, food lockers) in areas with frequent public use or within areas heavily used by grizzly bears. This effort is ongoing and the BDNF continues to pursue funding and partners to support this effort.

The BDNF also provides bear-resistant food coolers (per IGBC recommendations) for public use through a check-out system at district offices. Additional items (such as electric fencing, hanging systems, etc.) are available or may become available in the future at district offices to promote safe backcountry food attractant options.

Interagency Coordination

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

In addition to IGBC, the BDNF also works closely with Montana Fish, Wildlife, and Parks (MTWFP) biologists and technicians and non-governmental agencies for issues regarding both black and grizzly bears. Some of these issues include (but are not limited to): bear sightings, conflicts, food attractants, educational signs and materials, and public outreach.

Information and Education

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

The BDNF supported a seasonal bear technician position since 2005. This position provides a point of contact for partner agencies (e.g. People and Carnivores, MTFWP, etc.) to implement the Bear Aware program and address identified issues, such as food attractants and public education. This person also contacts forest users and neighboring communities and conducts school programs to educate the public about the Bear Aware program. Other duties include coordinating with internal and external partners to hang signs, conduct inventory of bear-proof structures, and provide training to firefighting teams working incidents on the BDNF. In 2024, the BDNF hired a permanent bear technician in Butte as a Forest-wide resource that is employed for at least thirteen pay periods every year.

Environmental Consequences

The forest plan is a programmatic decision and does not authorize any direct, site-specific management in the planning area. Therefore, the effects to grizzly bears and bear habitat that may result from continuing to implement the forest plan can only be discussed in broad, general terms. Direct and indirect effects that would result from implementation of project-level actions cannot be predicted until those projects are planned and locations are identified. Specific effects to grizzly bears and bear habitat would then be analyzed and discussed at the project level during the project section 7 consultation process.

Each section of this analysis discloses effects from the BDNF's forest plan and associated actions on grizzly bears and bear habitat (with an emphasis on secure habitat). Appendix C provides a summary of all relevant forest plan goals, objectives, and standards that may affect grizzly bears, habitat, or management on the BDNF. Three unknown variables are consistent among all analyses in this assessment: 1) the BDNF cannot predict exact locations of future projects that may build permanent or

temporary roads which could temporarily or permanently change secure habitat; 2) the BDNF may learn of additional unauthorized motorized access routes during project-level analyses, which may change some baseline secure habitat within GBAUs; and 3) the BDNF cannot predict locations where bears may disperse or establish a home range during the life of this document. Thus, baseline conditions as described in this document may change as more information is obtained and additional verified sightings of grizzly bears are reported. However, the extent of the effects as disclosed in this document should remain the same as these impacts are programmatic in nature.

In this analysis, the word “disturbance” refers to a behavior response with an insignificant effect to an individual grizzly bear due to activity location, environmental factor, short duration of exposure, or other reasons. “Displacement” describes individual grizzly bears avoiding otherwise usable habitat because of disturbances related to human access in either the short- or long-term. Significant displacement effects are measurable at the scale of an individual animal and may manifest in reduced body condition, growth rate, reproductive rate, or other physiological factors. It is not possible to disclose effects to individual bears for specific projects within this analysis, but general effects from typical project activities are disclosed.

Forest Plan Components

Aquatic Management

Implementing watershed goals and objectives should maintain or improve water quality and aquatic ecosystem function within streams, rivers, ponds, reservoirs, wetlands, and riparian areas, all of which a grizzly bear may utilize during various times of the year. These ecosystems support complex communities that may provide food, cover, or connectivity habitat for a grizzly bear (U.S. Department of the Interior 2022b). In particular, the Aquatic Management Roads Objective is beneficial to grizzly bears. Closing or obliterating roads not needed for future management could maintain or improve secure habitat for grizzly bears (analyzed in greater detail in Travel Management, Wildlife Habitat, and Unauthorized Motorized Access).

Actions to meet aquatic management goals and objectives could cause some temporary disturbance to grizzly bears or secure habitat if mechanized equipment is used to install fish barriers, replace culverts, install beaver-dam analogs, or other activities. However, these effects would only occur during human presence or from machinery noise and habitat should return to baseline conditions once activities cease. Overall, effects from these actions would cause a short-term temporary effect but would benefit grizzly bear habitat in the long term as riparian and forage conditions would likely improve as a result from these projects. Project level effects to grizzly bears would be disclosed during site-specific analysis. It is not possible to quantify the amount of grizzly bear secure habitat that intersects with actions associated with aquatics management. However, it is reasonable to assume that these activities could temporarily alter individual behavior and affect secure habitat while actions are occurring but would likely improve or maintain habitat for grizzly bears over the long-term. Thus, implementing aquatic management actions per the forest plan would affect, but is not likely to adversely affect, grizzly bears as effects are insignificant and discountable.

The BDNF will likely utilize the 2021 programmatic biological assessment for some aquatic activities (USDA FS and USDI BLM 2021), which applies to bull trout on the BDNF. Grizzly bears were analyzed as part of this assessment and conservation measures were included with the result of a “may affect, not

likely to adversely affect determination". Continued use of this document is beneficial because it incorporates best available science and facilitates faster documentation for some projects the BDNF authorizes, funds, or carries out that fall under the categories analyzed in the aquatics programmatic that may affect grizzly bears.

Fire Management

Grizzly bears evolved with fire as part of the landscape, can move long distances, and adapt well to changing conditions. Evidence from the 1988 Yellowstone National Park fire suggests that wildfires likely benefit grizzly bears in the long-term (U.S. Department of the Interior 2022b). This extremely large fire (3,213 km² or 1,240 mi²) resulted in the probable deaths of only a few grizzly bears but bear home range size or daily movements did not change before or after the fire (Blanchard and Knight 1990). Some bear avoidance occurred after the fire, but use of the areas in subsequent years suggested increased forage production as a result of the fires were beneficial to bears (U.S. Department of the Interior 2022b and references therein). Other research found that grizzly bears prefer areas of natural disturbance, such as wildfires, compared to harvested areas (Kearney et al. 2019). Although bears may avoid wildfire areas immediately after the incident, burned areas become valuable habitat to bears because fires can reduce canopy cover which may increase food resources (including ungulate use) after vegetation recovers (Apps et al. 2004, McLellan 2015, U.S. Department of the Interior 2022b, Proctor et al. 2023).

The BDNF also supports the threatened whitebark pine (*Pinus albicaulis*) which is a known food source for grizzly bears. Whitebark pines are well adapted to mixed and high-severity fire, which has contributed to maintaining whitebark pine ecosystems at the landscape scale (U.S. Department of the Interior 2022a). Low-intensity fire primarily affects individuals at the stand scale and is unlikely to affect the species distribution as a whole (U.S. Department of the Interior 2022a). Research indicates that one-cub litters are more common in years following poor whitebark pine seed production (Schwartz et al. 2006), although declines of whitebark pine seed production has not caused a negative grizzly bear population trend (U.S. Department of the Interior 2022b). Grizzly bears are not wholly dependent upon whitebark pine seeds for survival nor do they specialize in the consumption of these seeds (U.S. Department of the Interior 2022b). Thus wildland fires that remove or reduce whitebark pine seeds in localized areas is not a detriment to grizzly bear populations, as bears can and will find other food sources (Schwartz et al. 2014).

In general, wildfires may have a short-term effect on grizzly bears while providing long-term benefits. As disclosed in the Recreation and Travel Management and Low-Elevation Flights sections, grizzly bears may be temporarily disturbed (duration would depend on fire longevity) by human presence and mechanized noise during wildland fire suppression activities. Secure habitat may also be temporarily affected from motorized use including large machinery, aircraft, and UAS. Temporary or administrative roads may be created or opened during fire suppression activities (refer to Other Management Activities and Issues: Permanent and Temporary Road Construction) or off-road motorized use could also occur, which may also temporarily affect secure habitat. Open motorized routes may also experience an increase in traffic and human presence which may further cause bears to avoid these areas due to increased human presence. Roads created or opened for fire suppression are typically closed and rehabbed after fire activities cease. Fire camps associated with fire suppression are also potential sources of conflict because of improper food or attractant storage. However, the BDNF's bear technician (refer to Ongoing Conservation Efforts: Information and Education) and resource advisors assigned to the fire may address these concerns during suppression efforts.

Implementing the fuels management goals and standards are beneficial to grizzly bears over the long term although some effects are possible. The use of prescribed fire in conjunction with using wildland fire as a tool for unplanned ignitions will help maintain natural ecosystem processes that support grizzly bear foraging habitat. Like effects from wildland fire, grizzly bears may be temporarily disturbed from areas from increased human presence or mechanized equipment during prescribed fire actions, which is insignificant and discountable. Some forested denning habitat may be removed due to wildland or prescribed fire but would recover over time. It is not possible to quantify the intensity and duration of disturbance to grizzly bears or the amount of secure habitat or denning habitat that could be affected from all fire management activities. However, grizzly bears would likely return to normal behavior once project activities cease. Grizzly bears may avoid the area for denning due to a lack of vegetation but may utilize the burned area for foraging. Use of low-level flights during spring and den emergence for prescribed fire ignitions may affect individual grizzly bears, especially females with cubs (refer to Low-Elevation Flights). It is possible adverse effects could occur if cubs are separated from their mothers during den emergence due to low-elevation flight disturbances.

The BDNF anticipates increasing annual fuels treatments which may result in some localized affects to grizzly bears (disturbance or displacement from human activity or habitat loss immediately after fire) and secure habitat. There is potential for some adverse effects to individuals, especially if females are separated from cubs due to low-level flights. Because some bears, especially males, can travel long distances, it is likely they would leave an area where wildfire or large prescribed fires are occurring and would relocate to adjacent, undisturbed habitat. Long-term effects to foraging and cover habitat are beneficial to this species from fire management activities.

Lands

Lands Special Uses

Existing infrastructure for lands special uses, such as gas pipelines, telecommunication lines, water lines, rights of way, easements, and others, are unlikely to affect grizzly bears as the infrastructure is part of the landscape. However, maintenance of this infrastructure by either repair or replacement could potentially require access via motorized means in areas where motorized use doesn't generally occur (e.g., off designated forest system routes, such as within or adjacent to an existing right-of-way; refer to Appendix E: Lands Special Uses). This may result in a temporary change to secure habitat (if it overlaps with the infrastructure) during the time the action is occurring. Grizzly bears may alter their behavior and leave an area while the maintenance activity is occurring. Once the action is completed, the habitat would again be considered secure and grizzly bears would likely utilize the area. These effects are insignificant and discountable as access to maintain or repair existing infrastructure for lands special uses occurs relatively infrequently and are well-dispersed over the landscape.

Encroachment issues where a property owner builds or extends structures beyond their property line can and do arise on Forest Service administrative lands (e.g., homeowner yards, landscaping, etc.). If a new encroachment occurs, this could reduce secure habitat for grizzly bears if the encroachment involved motorized access and overlapped with existing secure habitat. This potential effect is unusual and generally localized in scope so actual changes to secure habitat are not possible to quantify. It is possible that food attractants may be associated with new encroachments, which could cause human-bear conflict. Due to the localized nature of typical encroachments (which may or may not have existing

infrastructure), the likelihood of overlap between grizzly bear secure habitat and a new encroachment is very small, especially because the BDNF buffers 500 meters from private land boundaries.

It is possible that new infrastructure may be proposed on the BDNF during the life of this document as the state of Montana grows in population. If this occurs, effects to grizzly bears and secure habitat would be disclosed at the project level.

Land Conveyance, Acquisition, Boundary Adjustments, Survey, and Exchange

Acquisition and disposal of lands may be beneficial or detrimental, respectively, to grizzly bears and their habitat. In general, the BDNF acquires more land than disposes. Acquisitions may be beneficial to grizzly bears if the acquired land contains secure habitat with limited motorized access. The forest plan would apply to these acquired lands which may protect existing secure habitat within the acquisition from further development. This may result in a benefit to bears as the Forest could potentially maintain or improve secure habitat for grizzly bears. This could also positively influence connectivity between other secure habitat patches. Alternatively, the acquired lands may also contain no secure habitat, and thus an acquisition would not affect grizzly bears as the Forest would not acquire additional secure habitat.

In some instances, lands acquired by the BDNF include existing easements and rights-of-way that must be honored in perpetuity by the Forest Service. For example, if a parcel that includes a utility line and subsequent easement for operation and maintenance of the line, the utility company owns unfettered access to the easement. This access is not subject to Federal regulation as it is a form of property ownership and designation of winter access routes does not apply. This may result in motorized access to the infrastructure during any time of the year. However, these localized effects are discountable and insignificant as they likely occur infrequently and are well-dispersed over the landscape.

Land disposal, although infrequent, may not affect or may cause a reduction of grizzly bear secure habitat, depending on the existing condition and size of the land exchange. Secure habitat would not be affected for the Forest if none existed within the parcel originally. However, if the parcel contained secure habitat and the land was conveyed to a private owner or organization, this land would no longer be considered secure by the Forest Service as any type of motorized use or development could occur within the boundary. That could result in a permanent loss of secure habitat both within the parcel and within 500 meters of the Forest Service administrative border (as defined by the GBAU secure habitat process: “apply a 500-meter buffer to all Forest Service lands adjacent to and within the Forest Service administrative boundary that are not under Forest Service ownership.”; Appendix A). This may result in an adverse impact on secure habitat for grizzly bears depending on the extent and location of this reduction.

The size and location of land disposal would further clarify the extent of the effects. If the land disposal is very small (as per the history on the BDNF where approximately 17 acres were conveyed to private entities or organizations since 2009), it is likely the effects to grizzly bears are insignificant and discountable. This is because grizzly bears require large areas of secure habitat to meet life history traits and are extremely adaptable, thus any present grizzly bears would likely move to other areas of secure habitat and a loss of small acreages would be immeasurable. Although large land disposal has not occurred on the BDNF since 2009, it is possible but unlikely that this action may occur in the future.

It is possible food storage issues could result from land conveyances as the food storage order is not applicable on private lands. Private landowners may keep bees, plant attractants such as orchards, or

store refuse in containers that are not resistant to bears. This could result in additional conflict between landowners and grizzly bears which may result in removal.

At the landscape scale, land conveyances, acquisitions, and exchanges result in a range of beneficial or potentially adverse effects to grizzly bears and secure habitat. A majority of parcels subject to ownership changes are acquisitions by the BDNF which would be subject to direction in the forest plan which would likely protect or improve existing secure habitat. Infrequent sales or exchanges to private or other ownership that could happen within the next fifteen years are expected to be insignificant and discountable as these exchanges are typically small (generally less than ten acres). However, the disposal of large tracts of lands that contain secure habitat could result in adverse effects to grizzly bears because of a permanent loss of secure habitat both within the parcel and within the 500-meter buffer on adjacent lands managed by the Forest Service.

Range Management

Livestock Grazing

This analysis incorporates the effects disclosed in the 2020 Amended Biological Assessment and Opinion for livestock grazing in the Yellowstone Analysis Area of the Beaverhead-Deerlodge National Forest on the grizzly bear (Appendix B). In general, livestock grazing does not affect secure habitat for grizzly bears (see Range Infrastructure Maintenance and Noxious Weed Control), but individual grizzly bears may be affected by activities associated with livestock grazing.

The Livestock Grazing Forage use goal is beneficial to grizzly bears as it provides guidance on use levels to ensure riparian areas maintain or improve in function. Grizzly bears may utilize habitat within riparian areas for cover, foraging, or other life history requirements (U.S. Department of the Interior 2022b).

Grizzly bears predate all age classes of sheep and cattle and have a history of depredations on the BDNF (Table 10). Currently, the southern end of the Gravelly Landscape (Madison Ranger District) has the most livestock depredations by grizzly bears. In general, livestock conflicts where depredations occurred have been increasing on the Forest since 2016 with some annual fluctuations (Table 10). Although a majority of the livestock conflicts occur on the Madison Ranger District, conflicts also occurred on the Butte and Wisdom Ranger Districts in 2021 and 2022 (but no bears were removed as part of the livestock loss).

With increasing geographic distribution and population densities, livestock depredations by grizzly bears may increase on public and private lands. This may result in additional grizzly bear removals occurring on the BDNF due to livestock losses during the life of this analysis. The BDNF expects livestock conflicts to continue to occur and may happen in new places as grizzly bears continue to expand across the landscape. Conflicts may result in the relocation of problem bears, bear mortality from defense-of-life situations from ranchers, herders, permittees, or others during management duties (fence maintenance, livestock checking, trailing, etc.), or lethal removal of individual bears that prey on livestock. Continuing grazing on the Beaverhead-Deerlodge National Forest may affect and is likely to adversely affect grizzly bears because bears may be lethally removed during of defense-of-life encounters associated with livestock activities or direct livestock conflict.

In areas of the BDNF where grizzly bears are expanding, the removal of a female bear from livestock conflict may have a greater impact on grizzly bear distribution compared to places where grizzly bears are well established (e.g., the Madison Ranger District). Because it takes longer for females to disperse

compared to males (Mace and Waller 1997c, McLellan and Hovey 2001b, Proctor et al. 2004) and female grizzly bear movement within and between ecosystems influences population trends (Proctor et al. 2012), lethal removal of females may slow the anticipated genetic connectivity between the NCDE and GYE.

Conservation measures and education for permittees may potentially reduce effects to individual grizzly bears (refer to Conservation Measures: Range Management). Conflict may occur at carcass sites, as part of a trailing or gathering effort, or other activities associated with livestock management where a bear could be encountered. The conservation measures and education requirements focus on conflict-reducing efforts, such as food storage requirements, the use of bear spray, bear behavior, and proper management of camps and other facilities. This may prevent conflict as food attractants (including carcasses) are not available to bears and permittees, ranchers, riders, or herders may use non-lethal methods or avoidance when a grizzly bear is detected during livestock operations. The BDNF anticipates continuing conservation measures and educational requirements to reduce mortality caused by human-bear encounters during livestock operations. Despite this ongoing effort, the BDNF has reported at least one bear removal due to livestock conflicts almost annually since 2015 (with none occurring in 2016, 2020, or 2022 although livestock were depredated in those years).

At the time of this writing, not all annual operating instructions (AOI) include the range management conservation measures for grizzly bears. However, this information is part of the AOI on the Madison Ranger District where a majority of the conflicts occur. The BDNF recognizes the need and benefits for continued permittee engagement regarding the expanding grizzly bear population on the remainder of the Forest outside of the Greater Yellowstone Ecosystem.

Honeybees are classified as livestock in Montana (MCA 15–24–921) and can attract grizzly bears. There are apiaries on private land but none on the Forest. It is possible the BDNF may permit honeybees via a special-use permit during the life of this document. Effects to grizzly bears would be disclosed in a project-specific analysis if an apiary is proposed for special uses.

Range Infrastructure Maintenance

Maintaining range infrastructure associated with grazing operations is vital to proper livestock management. Although the number of currently utilized and functioning structures on the BDNF varies annually depending on livestock location and number, degradation, and accessibility, it is likely some of these structures are visited or maintained every year (although the same structure may not be visited in sequential years). The actions associated with this maintenance may cause temporary disturbance to an individual grizzly bear because of noise and human presence during the duration of the maintenance. The duration of this disturbance may vary depending on the complexity of the action, but effects are localized to the area where implementation is occurring. An individual grizzly bear may leave the area during the activity but would likely return once activities cease.

Off-road motorized access may also occur as supplies may be required to repair or maintain a livestock structure. Secure habitat would be temporarily affected during the duration of the access if the motorized travel occurs within an existing secure area. It is not possible to quantify the amount of secure habitat that could be affected by this activity because: 1) this activity occurs in different places depending on need; 2) the structures may or may not be within or adjacent to secure habitat that would be needed for access; and 3) the number of times infrastructure would be accessed may vary, depending on project complexity, although it is likely short (less than 10 days). Usually this access is of short

duration, occurs infrequently over the same area, and would only affect linear strips of secure habitat temporarily while the off-road motorized access was occurring. Grizzly bears may be temporarily disturbed due to motorized access and move out of the immediate area but would likely return once the activity stops. For these reasons, effects to grizzly bears from maintaining existing range infrastructure are insignificant and discountable and may affect, but are not likely to adversely affect, this species.

Noxious Weed Control

The Vegetation Noxious Weed Objective and the Noxious Weed Control Program intend to prevent, reduce, or eliminate infestations of non-native or noxious weeds on the BDNF. Treating weeds is beneficial to grizzly bears because habitat may improve from weed reduction by improving biodiversity and increasing palatable species.

The actions associated with weed spraying may include increased human presence, off-road motorized travel, and aerial spraying. Grizzly bears may be temporarily disturbed by increased human presence in areas where pesticide applicators are working, although they would likely return after activities cease. It is possible encounters between grizzly bears and pesticide applicators may occur during ground-spraying activities. Weed-spraying crew members are trained to work in bear country, including carrying and deployment of bear spray, making noise, and understanding bear behavior. This may prevent surprise encounters from occurring although may cause bears to temporarily leave the area.

Weed control sometimes involves cross-county motorized access to treat infestations. Like range infrastructure maintenance, secure habitat may be temporarily affected if applicators have to work in or drive through an existing secure area. This would only occur during the motorized access activity and the habitat would return to secure (baseline) after weed spraying is complete.

Weed spraying often happens when the target species is the most susceptible, which changes depending on species. Thus, this temporary change in secure habitat or potential for disturbance from human presence would change depending on the location, size, and treatment method of the infestation, as it may take more than one day for applicators to treat an infested area. Many of these treatments only occur once per year but may occur over successive years in the same area. Even if areas are treated in consecutive years, it is unlikely grizzly bears would continually avoid areas treated by weeds after implementation ceases because noise and human presence would return to baseline conditions.

Approximately 1,200 acres of weed infestations are treated annually via aerial spraying on the BDNF, which consists of low-level flights. It is possible additional acres may be treated with this method during the life of this document as additional infestations are discovered or treatments are needed over larger areas. Research regarding the effects from aircraft disturbance on grizzly bears is limited, however, bears may demonstrate different responses and tolerances to disturbance (Interagency Grizzly Bear Committee 1987, Anderson et al. 2009) (refer to Low-Elevation Flights analysis). Secure habitat may be temporarily affected by low-level aerial spraying but would return to the baseline secure status after the activity ceases. It is not possible to quantify the amount of secure habitat affected because aerial spraying may occur over large areas with several slightly overlapping passes to ensure adequate application of pesticide or herbicide. Aerial spraying generally occurs in open areas and not in areas with heavy canopy. This effect is temporary in nature and may cause a behavior change in individual bears, such as leaving the area, but bears would likely resume normal behavior after the activity ceases.

Biological controls of invasive species could utilize goats and sheep (USDA FS 2002). Goat and sheep presence may cause a conflict with grizzly bears if depredation occurs. Because this method has not been used on the BDNF to date, communication with contactors offering this service regarding potential livestock conflicts with bears would occur prior deploying biological controls.

Overall, effects to grizzly bears from noxious weed treatments are localized and may cause a temporary change in secure habitat or disturb individuals. This would likely result in insignificant and discountable effects to this species as bears would benefit overall from weed infestation treatments despite the short-term change in secure habitat caused by motorized access and aerial spraying. Implementing this activity would result in a may affect, not likely to adversely affect determination for grizzly bears.

Recreation and Travel Management

The primary concern related to increased recreation is the potential increase of probability of human-grizzly encounters (U.S. Department of the Interior 2022b). Negative human-bear encounters can and do occur from public users in recreational settings and may result in bear mortality from self-defense, poaching, mistaken identity during hunting, or management removal. These encounters are not part of the proposed action and are not included in this analysis. However, future projects designed to address recreation issues should consider this potential consequence during implementation.

Summer Allocations

Summer non-motorized goals and standards are designed to offer primitive or semi-primitive opportunities to mountain bike, utilize stock animals, hike, and camp, and other activities. Forty percent of the BDNF offers these settings. Areas within GBAUs allocated for non-motorized use range from 98 percent (Lee Metcalf South) to zero percent (Fleecer) (Table 12; Figure 6). Effects on grizzly bears from non-motorized trail use are varied and range from none or weak avoidance (Donelon 2004, Ladle et al. 2019) to some disturbance or greater avoidance because of human or trail presence (McLellan and Shackleton 1989b, Kasworm and Manley 1990, Graves 2002, Mattson 2019, Ordiz et al. 2019, Naidoo and Burton 2020). Non-motorized trail uses inherently have some risk of facilitating grizzly bear-human conflicts (Gunther et al. 2004, Smith and Herrero 2018), but bear mortality as a result from non-motorized recreation is rare and population-level effects have not been documented (U.S. Department of the Interior 2022b). Continuing to implement non-motorized summer allocations per the forest plan may be beneficial to bears because it limits areas where motorized access could disturb or temporarily displace a grizzly bear (but see Unauthorized Motorized Access). This action may affect, but is not likely to adversely affect, grizzly bears because effects are either beneficial or insignificant and discountable.

Sixty percent of the BDNF is managed for summer motorized allocations, with every GBAU having at least some motorized areas (Table 12; Figure 6). Summer motorized goals and standards provide semi-primitive motorized recreation settings and offer roaded natural and rural recreational opportunities. Effects to grizzly bears from motorized recreation is well-established and includes displacement from habitat (reduction in secure area), decreasing habitat where bears could forage, increasing human interaction and potential grizzly bear mortality risk, and the potential for increasing human habituation (U.S. Department of the Interior 2022b) (refer to Wildlife Habitat for open road density and Roads and Travel for more specific analysis). In some areas around Butte, Montana, many GBAUs are open for summer motorized allocations (Dry Cottonwood, Fleecer, Upper Boulder, and Highland) (Table 12; Figure 6). This equates to very low amounts of available secure habitat for grizzly bears to utilize in some places, which could potentially slow dispersal (refer to Wildlife Habitat).

Managing existing summer motorized recreation allocations per the forest plan would not change secure habitat conditions unless a future project proposed additional motorized roads or trails. It is possible additional roads or motorized trails could be constructed within summer motorized allocations to address recreation needs or for other projects. In this instance, secure habitat could change temporarily or permanently (depending on the action) within these motorized allocations and effects to grizzly bears would be disclosed during project-level analysis.

The BDNF anticipates increasing use of UTVs and similar technology in areas where motorized access is permitted. Recreationists may access motorized places on the BDNF where standard vehicles may not reach due to road conditions. Increased use of UTVs may cause some localized disturbance while the motorized use is occurring which may cause a grizzly bear to temporarily avoid an area if human use is high where previous use was none or extremely low. Increased UTV use may slightly increase the probability of bear-vehicle collisions resulting in mortality. This is highly unlikely to occur because vehicle speeds on Forest System motorized roads and trails are generally slow due to topography and road conditions.

Managing summer motorized allocations per the forest plan would continue permitting motorized road and trail use which may cause potential and temporary disturbance of grizzly bears if a bear encounters a motorist. Bears may avoid existing roads if human presence or vehicle noise increases above current background levels. Despite increasing visitor and recreation use, bears continue to expand on the Beaverhead-Deerlodge. Continuing to manage existing summer allocations per the direction in the forest plan would result in insignificant and discountable effects to grizzly bears.

Winter Allocations

Winter non-motorized and motorized activities overlap with 6 percent and 8 percent of modeled bear denning habitat on the Beaverhead-Deerlodge National Forest, respectively. Secure habitat for grizzly bears could be temporarily affected due to machinery noise and human presence, especially since this activity may occur off-road in areas of persistent snow. However, grizzly bears are denning during this time so the likelihood of a bear encountering a recreationist or experiencing a temporary change in secure habitat due to noise or presence is extremely low. Secure habitat conditions would return to baseline after motorized recreationists leave the area, so any changes to secure habitat are short in duration (likely lasting less than a day) and may or may not occur over the same area over the winter season.

Although it is possible recreationists may disturb denning grizzly bears (Swenson et al. 1997), there is no data or information that supports winter recreation negatively affecting grizzly bear populations (U.S. Department of the Interior 2022b). In Montana, grizzly bears did not exhibit any negative effects of snowmobiles on denning behavior or abandonment (Mace and Waller 1997a, Hegg et al. 2010). The likelihood of winter recreationists encountering a grizzly bear den is extremely low due to the probability of overlap between a grizzly den and a person. Bears are denning on the Beaverhead Deerlodge (mostly on the Madison Ranger District, but there is some evidence of a den in the Big Hole) and will den in new places as the population continues to expand.

Disturbance from snowmobiles is likely most consequential shortly before or after den emergence of a female with cubs. Females with cubs have high energetic needs, and cubs have limited mobility for several weeks after leaving the den, therefore they remain in the den site area for several weeks after emergence from dens (Haroldson et al. 2002; Mace and Waller 1997a). Disturbance levels that cause a

female to prematurely leave the den in spring or move from the den area could impair the fitness of the female and safety of the cubs. Due to the potential for snowmobiling to disturb post-den emergence females with cubs, continuing to implement winter allocations may affect, and is likely to adversely affect grizzly bears.

Wilderness and Recommended Wilderness

The Designated Wilderness and Recommended Wilderness Goals and Recreation Standards 10-13 are all beneficial for grizzly bears. Areas relatively free of motorized access during the non-denning period are important to support adult females that have successfully reared offspring (Mace et al. 1996, Wakkinen and Kasworm 1997, Boulanger and Stenhouse 2014, Proctor et al. 2019). Providing primitive and semi-primitive non-motorized settings in Designated and Recommended Wilderness would maintain existing secure habitat for grizzly bears and prevent further road (permanent or temporary) development from occurring (Standard 12). Existing secure habitat may be enhanced since these designations also protect habitat from new road construction, new oil and gas development, new livestock allotments, and timber harvest activities (U.S. Department of the Interior 2022b). Wilderness and Recommended Wilderness comprise 13 percent of the BDNF (Table 14). Continuing to implement these goals and standards would support grizzly bears during all life history stages and provide secure habitat for dispersal.

Temporary effects to secure habitat within these areas should not typically occur because of the non-motorized setting. Although rare, the Forest Service may permit or authorize mechanical or motorized use in Designated or Recommended Wilderness for emergencies (e.g. fire, helicopter rescue) or for special projects that would require motorized access (e.g. maintenance on water impoundments). This may cause a temporary change in secure habitat during these extenuating circumstances, although secure habitat would return to baseline conditions once actions cease.

Wilderness Study Areas have both motorized and non-motorized allocations. In Wilderness Study Areas where motorized access is permitted, the BDNF “shall, until Congress determines otherwise, be administered by the Secretary of Agriculture so as to maintain their presently existing wilderness character and potential for inclusion in the National Wilderness Preservation System” (Montana Wilderness Study Act, PL 95-150). Thus, no additional permanent or temporary roads may be created in these areas for projects so existing on-the-ground secure habitat should not change. However, grizzly bears and secure habitat may be temporarily affected in Wilderness Study Areas where motorized access occurs from winter over-the-snow travel (refer to the analysis in Winter Allocations).

Overall, the BDNF continuing to implement the forest plan goals and standards for Wilderness, Recommended Wilderness, and Wilderness Study Areas is beneficial, but may affect and is not likely to adversely affect for grizzly bears and their habitat due to some permitted motorized use in Wilderness Study Areas. However, the Wilderness and Recommended Wilderness goals and standards are wholly beneficial to grizzly bears as these areas should remain non-motorized. Because some semi-primitive motorized settings are permitted in Wilderness Study Areas, the Wilderness Study Area Goal may affect, but is not likely to adversely affect, grizzly bears and their habitat.

Developed Recreation

The number of developed recreation sites within GBAUs varies from 0-36 (Georgetown GBAU with the most). A majority of developed recreation sites on the BDNF are not in secure habitat because of motorized access to these sites. Some developed sites may be within secure habitat but are still

accessible via motorized means (such as a rental cabin accessible via snowmobile). Maintaining or using existing developed recreation sites and facilities per the forest plan would not cause permanent changes to existing secure habitat on the Beaverhead-Deerlodge, although temporary effects may occur during maintenance activities or recreation use from noise and human presence (refer to Appendix E: Developed Recreation).

The primary concern related to developed sites is mortality from human-bear conflicts, generally caused by unsecured attractants which may potentially result in management removals (U.S. Department of the Interior 2022b). Bears that obtain anthropogenic food rewards often lead to repeated visits and conflicts (Gunther et al. 2004), which could result in lethal removal of a bear. To date, grizzly bears have not been lethally removed from the BDNF as a result of unsecured attractants (Table 10) and the Forest will continue to provide education and infrastructure (refer to Ongoing Conservation Efforts) to prevent future conflict. Although the potential for conflict in developed recreation sites still exists, effects are discountable due to the food storage order and continued educational efforts.

Concentrating use at developed sites around recreation demand (per the Developed Sites and Facilities goals) may result in additional bear displacement due to increased length of time of human use, increased human disturbance to surrounding areas, or bears that become habituated to human presence (Mattson et al. 1987, Kasworm and Manley 1990, Mattson 1990, Fortin et al. 2016, U.S. Department of the Interior 2022b). In addition to potential displacement, the potential for human-bear conflict could occur because of increased recreation and grizzly bear expansion. These potential effects are likely discountable as there is available, undisturbed habitat where bears could disperse free from human influence outside of developed recreation areas and the forest has a food storage order in place to prevent conflicts and habituation from unsecured attractants. Bears generally avoid areas with frequent human presence, so it is unlikely individual grizzly bears would utilize popular developed recreation areas.

During the life of this analysis, new recreation developments may be proposed on the BDNF, although new resorts or residence tracts will not be permitted (Recreation and Travel Management Standard 6). In general, landscape modification (such as development, agriculture, and transportation infrastructure, among other variables) reduces bear associations with an area (Suraci et al. 2021). The BDNF would disclose effects to grizzly bears and secure habitat from new developments in project-specific analysis.

Continuing to implement developed recreation goals and standards may affect, but is not likely to adversely affect, grizzly bears. Effects to secure habitat are likely temporary and would only occur during human use or maintenance activities if the developed site is within a secure area. Continuing to provide educational signs and food storage order enforcement may mitigate potentially adverse effects to grizzly bears from unsecured attractants and potential habituation. Thus, any potential effects are discountable to grizzly bears.

Dispersed Recreation

Dispersed recreation would not affect existing secure habitat (but see Unauthorized Motorized Access) as no infrastructure is associated with this activity. Research indicates bears avoid people but not necessarily backcountry campsites (Coleman et al. 2013). In general, effects from dispersed recreation range from temporarily disturbing bears by human presence (as disclosed in other sections), changing the time of day bears are active to avoid human activity (Fortin et al. 2016, Ordiz et al. 2019), limiting

access of a food resource because of human presence (Fortin et al. 2016, Nunlist et al. 2023), to habituation of human presence (Jope 1985, McLellan and Shackleton 1989b).

Frequent and regular disturbance from concentrated food sources (e.g., army cutworm moth sites, salmon streams) may have a negative impact on grizzly bear via decreased body condition (Fortin et al. 2016). Although decreases in body condition may subsequently decrease in reproductive success in female bears (Robbins et al. 2012), there is no current data on recreation effects to bear energetic costs (Fortin et al. 2016). Dispersed recreation on the BDNF is generally well-distributed and the likelihood of disturbance of bears from a food resource is rare because concentrated food sources may vary in location and may not be present for long durations. If this does occur, the disturbance from a food resource is temporary because there is a 16-day dispersed camping limit on the Forest. Areas on the BDNF where bears could aggregate are most likely associated with gut piles, mammal winter kills, livestock carcasses, or whitebark pine stands. The BDNF lacks dense huckleberry patches (limited on the Forest) or army cutworm moth sites (none at the time of this writing). The intensity of disturbance at concentrated food sources from dispersed recreation is most likely infrequent at best on the BDNF. When concentrated food sources (e.g., multiple livestock carcasses) are discovered in areas with frequent use, the BDNF is very responsive and may temporarily close an area, use explosives for carcasses, or move carcasses to safer locations if safety is a concern. This could mitigate potential human-bear conflicts from dispersed recreation activities.

It is not possible to quantify the duration or intensity of effects to individual grizzly bears from dispersed recreation because the overlap between bears and human presence on the landscape is varied and unknown. To date, the BDNF has no known grizzly bear conflicts or removals associated with dispersed recreation (Table 10) and the Forest will continue to provide education and infrastructure (signs) at developed sites to describe the food storage order and continue promoting backcountry safety in bear country to prevent future conflicts. Bear disturbance because of backcountry human presence is possible but unlikely and temporary. Bears would likely return once people depart from dispersed sites. The potential for conflicts in dispersed sites due to unsecured attractants still exists but the Forest has no previous reports of any incidences. The BDNF is generally very responsive to known carcasses or that may attract bears in areas with frequent dispersed visitor use and is proactive by placing “bear in area” signs, creating temporary closures, or removing the attractants. Therefore, dispersed recreation may affect, but is not likely to adversely affect, grizzly bears.

Recreation Special Uses

All recreation special use permits have some inherent risk of human-bear conflict because guided hunts, tours, or other services may encounter a bear during any permitted activity. Competitive racing events where individuals could run, bike, or travel through bear country may experience a surprise encounter while moving a fast rate of speed. Special use activities also have the potential to attract bears via improperly stored food. Every permit includes the food storage order which could mitigate potential human-bear conflicts if food is stored properly as part of a recreation special use.

Both non-motorized and motorized short-term special uses have the potential to effect individual grizzly bears. If the use involves a motorized activity, secure habitat may be temporarily affected if use occurs outside of designated open motorized roads or trails. As previously disclosed, disturbance from human activity or a temporary change in secure habitat may occur from actions such as races, game retrieval, educational tours, among others) (Appendix E: Recreation Special Uses), although habitat would return

to baseline conditions once activities ceased. Grizzly bears would likely avoid areas where one-time uses are occurring and human use is concentrated. For activities where a single person may encounter a bear (such as a foot or bicycle race), additional bear safety messaging may be included as part of the permit. Effects from these actions are relatively short in duration and localized and would not likely become adverse to grizzly bears.

Longer-term special uses are built into the baseline for this analysis and include ski areas, concession campgrounds, marinas, resorts, and recreation-residences. Depending on the amount of activity that occurs within the baseline, bears may already avoid the area (such as a ski resort) or may encounter people very infrequently (such as isolated cabins) and could be disturbed when a person is present. In general, the existing infrastructure usually is not within secure habitat because of motorized access to the facility (see Developed Recreation), but it is possible some temporary changes to secure may occur if motorized access is utilized to reach a destination (e.g. an isolated cabin accessible via snowmobile). This disturbance is also temporary and localized and would likely not cause adverse effects to grizzly bears or their habitat.

Outfitting and guiding includes a wide variety of activities (Appendix E; Table E- 4), including base camps and guided hunts. In 2024, there was one instance of a grizzly bear entering an outfitting camp on the Madison Ranger District while no people were present. The bear damaged some property, but all food attractants were properly secured. Permitted outfitters are required to follow all food storage orders which mitigates the potential for conflict due to unsecured attractants, as evidenced by the incident on the Madison Ranger District.

Guided big game hunting activities are one of the most common special use activities on the BDNF, including hunting bears. The State of Montana regulates hunting for black bears and other wildlife species. Hunting grizzly bears in Montana became illegal in 1991 although hunting black bears is permitted MTFWP provides a variety of public information and education programs, including a mandatory black bear hunter testing and certification program to help reduce identification errors. Hunters and guides are required to take an online training in the identification of species when purchasing a license and the Forest has engaged outfitters and guides about the increasing likelihood of encountering a grizzly bear as they expand in range and population, thus potential mistaken identify during black bear hunting are minimized by education, training, and guide experience. No cases of mistaken identification of bear species are known to have occurred by outfitter and guides permitted by the Beaverhead-Deerlodge. Black bear hunting seasons have been shortened in recent years, which further reduces the potential for mistaken identity.

Some hunting units that overlap with the Beaverhead-Deerlodge allow spring black bear hunting with dogs. Black bears can be legally hunted with hounds between April 15 and May 25 (spring hound season). Hounds can further be used to pursue bears during a special "Hound Training Season" between May 26 and June 15. Bear hunting with hounds is currently prohibited in habitats determined by MTFWP to be occupied by grizzly bears. It does not include areas where grizzly bears may make occasional forays or where low-density populations occur. It is therefore possible for outfitters and guides hunting bears with hounds to accidentally encounter grizzly bears. Future changes to hunting regulations are unknowable, however, as grizzly bear populations continue to increase it is likely that all areas where current outfitter and guide permittees operate will be occupied by grizzly bears and changes to regulations may occur.

Potential for damaging effects for grizzly bears from black bear hunting with hounds exists. Hounds cannot discriminate between a black bear and grizzly bear scent and may track and chase either species during the spring bear season. The spring black bear hound hunting season is a critical time for all bears as they emerge from dens and seek sustenance to revive energy stores after hibernation. During spring emergence cubs are small and most dependent on their mothers for survival outside the den. It is impossible for dogs to differentiate between grizzly bears and black bears making grizzlies vulnerable to pursuit. The chance for human confrontation increases as grizzlies may become defensive when pursued and threaten the life of dogs or humans. Hounds could pursue grizzly bears and create excessive stress from being chased, deplete energy reserves, separate mothers and cubs, injure, or kill grizzly bears. Lion hunting with hounds does not have the same risk as the season lions can be hunted and the conventional practice of setting dogs upon an identified lion track significantly reduces the potential for a grizzly bear to be accidentally chased and effects are therefore discountable. While bear hunting with dogs this may not have been a widespread issue in previous years, increases and expansion of grizzly bear populations could lead to an increased probability of conflict. It is unlikely this event would lead to mortality because adult grizzly bears may become defensive, but it is possible injuries to people, dogs, or bears may occur as a result of this action

All visitors to the BDNF have the possibility of encountering a grizzly bear. Outfitter and guides are no exception. While efforts are made to prepare permit holders and their clients or guests for a non-lethal bear encounter, grizzly bears may be killed in defense of life situations during guided big-game hunts. Although there is no history of this occurring on the BDNF with outfitters, this action has occurred on other Forests. Reducing such conflicts is a priority of the Forest and interagency partners. Outfitters and guides are encouraged to use non-lethal methods to reduce negative encounters with grizzly bears. The Forest engages with outfitter and guide permit holders providing education on reducing conflicts and, while not expressly written in permits, highly encourages all guides and clients to carry bear spray. All guides and clients are strongly encouraged to carry bear spray regardless of activity. Outfitters and guides are educated about the grizzly bear protective status and best practices in bear country by Forest employees including Wildlife Biologist. They are required to share this information with their clients and guest to recreate safely in bear country and prevent grizzly bear conflicts with humans.

Per Standard 5, new outfitter and guide permits and increases to existing permits would be based on need and heliskiing operations are prohibited. The BDNF is currently considering expanding the existing outfitter and guide program and effects to bears from new or increasing outfitting and guiding activities would be disclosed as part of project-specific analysis. Prohibiting heliskiing is beneficial because denning bears (including females with cubs) would not be disturbed by this action, which could result in den abandonment (see Low-Elevation Flights). Continuing to implement Recreation and Travel Management Standard 5 for outfitting and guiding may affect but is not likely to adversely affect grizzly bears.

In general, recreation special use permits contain the food storage orders and bear safety messaging to potentially reduce potential negative effects from permitted actions. Although some temporary disturbance and secure habitat changes are possible, continuing to implement the existing recreation special uses program has insignificant and discountable effects to grizzly bears except for the outfitting and guiding program. Due to the potential for defense-of-life mortalities resulting from big game hunting and potential harassment from spring black bear hunting with dogs, implementing the recreation special uses program may affect and is likely to adversely affect grizzly bears.

Travel Management

Motorized access brings humans into grizzly bear habitats, which may disturb, displace, or cause mortality of bears if human-bear conflicts cause defense of life kills or management removals (U.S. Department of the Interior 2022b). Motorized access may also reduce the quality and quantity of intact blocks of secure habitat which could slow or prevent dispersal or cause direct mortality from vehicle strikes. Although the forest plan does not provide specific thresholds for grizzly bear secure habitat (as defined in this document; refer to the Wildlife Habitat analysis), maintaining secure habitat by controlling motorized access is important to grizzly bear survival and dispersal and reduces human-caused mortality and increases habitat effectiveness (Mace et al. 1996, Interagency Grizzly Bear Committee (IGBC) 1998, Schwartz et al. 2010, Proctor et al. 2019, U.S. Department of the Interior 2022b).

In some instances, motorized wheeled cross-country travel is permitted and limited to administrative access, permitted operations, or emergency services (e.g., fire suppression, prescribed fire, weed control, range infrastructure maintenance, etc.) (per Standard 3). This would result in a temporary change to grizzly bear secure habitat if this access occurs within or across existing secure habitat. Most of the time, this access is limited to a single or a few out-and-back trips which would result in a very localized and temporary effect. Bears may be temporarily disturbed during this activity and may leave the area but would likely return once the person leaves and secure habitat would return to baseline conditions. In other instances, such as wildlife or emergency response, human presence via motorized access may persist longer on the landscape depending on the duration of the emergency. In these cases, secure habitat and individual grizzly bears would still experience the same temporary effect but for a longer duration. The effects of this action are likely not permanent and would not rise to adversely affecting grizzly bears.

Per the proposed action, the BDNF could permanently reduce secure habitat by 14,640 acres (1 percent) by constructing new, permanent roads for motorized access (Table 4; also refer to analysis in Roads and Travel). It is extremely unlikely the BDNF will permanently reduce secure habitat by the full one percent as the BDNF has not constructed any new, permanent roads to date (with the exception of some special use driveways to provide inholding access, although these are not within secure habitat due to buffers around inholdings). However, it is possible new roads may be needed to manage future access as visitor use is expected to increase. It is not possible to quantify the extent of effects from this action within this analysis, but effects to bears are likely to be distributed across the landscape and within GBAUs due to the linear nature of road and trail features. Effects to individual grizzly bears, secure habitat, and connectivity would be disclosed at the project-level. Depending on the location and use of a new motorized road or trail, grizzly bear habitat may be reduced or fragmented which may displace bears, slow or prevent dispersal, or bring more people into previously secure habitats. This may affect, and is likely to adversely affect, grizzly bears and secure habitat at the landscape level, but project-level effects are likely more limited and localized.

In the last 11 years, the BDNF has decommissioned 0.7 miles and 27.45 miles of system roads and non-system routes, respectively. Road decommissioning is beneficial to grizzly bears because motorized access cannot occur, which may result in secure habitat increases or reductions in potential disturbance. Depending on location, road decommissioning may reduce habitat fragmentation, provide better access to forage, or limit human-bear conflicts. It is well established that managing motorized access is an effective habitat management tool to reduce grizzly bear mortality risk and ensure bears have secure

areas away from human influences (Schwartz et al. 2010, Proctor et al. 2019, U.S. Department of the Interior 2022b, USDA FS and USDI FWS 2023c). In addition, the recreation and travel management conservation measures in previous biological assessments for grizzly bears emphasizes continuing to manage access on the Forest to achieve lower road densities (refer to Conservation Measures: Recreation and Travel Management; analyzed more thoroughly in Wildlife Habitat). The BDNF is actively working to reduce road densities, where possible, and effects to grizzly bears and secure habitat are disclosed in project-level analysis.

Road maintenance and repair activities may cause some disturbance to grizzly bears, but none of these activities would occur within secure habitat. Effects to individual bears is likely limited to disturbance from noise and human presence. It is expected bears would flee to secure areas or return once road maintenance or repair activities cease.

The BDNF is currently conducting a travel management analysis to establish a Motor Vehicle Use Map (with the exception of the Madison Ranger District, which completed travel management in 2011). Effects to grizzly bears and secure habitat as a result of this effort will be disclosed within project-level analysis.

Continuing to implement the goals and standards as part of travel management are overall beneficial for grizzly bears, although creating new, permanent motorized roads may affect and is likely to affect grizzly bears. In general, identifying a system of routes and areas designated for motorized and non-motorized use (Road and Trail Use Goal) and restricting road construction and motorized travel (Standards 1-3), and preventing extreme sport course development (Standard 4) ensures secure habitat for grizzly bears will continue to persist on the BDNF.

Minerals, Oil, and Gas

Effects to grizzly bears from minerals, oil, and gas activities are potentially adverse. Mineral, oil and gas development may be associated with higher road densities and increased human access which may result in more human-bear encounters and potential mortalities (as disclosed in Developed Recreation) (McLellan and Shackleton 1988, McLellan and Shackleton 1989a, U.S. Department of the Interior 2022b). Noise and human presence from heavy machinery, explosives, off-road motorized travel, low-elevation flights, or other actions may cause bears to temporarily avoid areas where minerals, oil, and gas actions are occurring. Disturbance of females with cubs while denning due to activities associated with minerals, oil, and gas may occur (Harding and Nagy 1980) and may cause cub mortality or a decline in body condition (Swenson et al. 1997). However, information on the intensity and extent of disturbance from seismic exploration is varied (see Reynolds et al. 1986) and is likely extremely rare due to the potential for overlap between minerals, oil, and gas activities and a denning grizzly bear.

Building new roads for access may also cause disturbance during road-building and longer-term displacement, depending on the road longevity and frequency of use (refer to Permanent and Temporary Road Construction). Road building and other infrastructure associated with mineral, oil, and gas development may also affect secure habitat by facilitating motorized access in areas where habitat was previously inaccessible. Effects from infrastructure are not typically permanent because Standards 2 and 3 of the forest plan require obliteration of new roads and drill pads constructed for this purpose; however, this infrastructure may remain on the landscape while minerals, oil, and gas developments are utilized for a number of years. The duration of use averages from 1-5 years, although a larger-scale project could have a longer duration (Hammer pers. comm. 2024). Footprints for mining operations may

range from a few square feet to hundreds of acres. Despite the requirements for obliteration after the project is completed, there is still the potential for roads and infrastructure to cause temporary habitat fragmentation if large blocks of secure habitat are fractured by new access infrastructure. This may displace or slow dispersal for grizzly bears in the area while these features are on the landscape.

In general, actions associated with Minerals, Oil, and Gas may be potentially adverse for individual grizzly bears, but standards in the forest plan may mitigate some of the potential long-term effects by using timing restrictions, stopping activity, and obliterating roads and infrastructure. These effects would be disclosed in analyses for minerals, oil, and gas activities at the project level. Continuing to implement the standards in the forest plan may affect and is likely to adversely affect grizzly bears because bears may be displaced by infrastructure, secure habitat may be changed for a long duration, or denning bears may be disturbed from actions associated with minerals, oil, and gas.

Minerals

Currently 88 of the 516 active mining claims on the BDNF (17 percent) are within secure grizzly bear habitat (Table 17). These generally do not have motorized access and are extremely localized in scale, generally consisting of single drill pots, adits, or placer mines. Due to the lack of motorized access to these areas, it is likely effects from these actions result in temporary disturbance from the area due to human presence. Secure habitat may be temporarily affected if access is permitted via off-road motorized means, although habitat would return to secure once access ceases. Grizzly bears would likely return to these areas once activities cease. Mineral mines are fairly well-distributed across the BDNF as a whole, and it is unlikely all of them would have concurrent disturbance from human presence.

The remainder of active mines (428; 83 percent) on the BDNF are not within secure habitat (Table 17). There are no active large-scale mineral mines with ongoing activities at the time of this writing. It is possible grizzly bears may also avoid active mine areas because of proximity to roads accessible via motorized means. It is unlikely every active mine supports consistent and frequent access via a motorized vehicle, so effects from existing mines outside of secure habitat are most likely infrequent.

Activities occurring as part of remediation, superfund sites, or removing saleable minerals may also temporarily disturb grizzly bears in the area from motorized use, noise, and human presence. Over time, localized grizzly bear habitat may improve as a result of reclamation if human access is prevented, ecological functions are restored, and foraging or cover habitat improves.

Oil and Gas

Currently there are no ongoing oil and gas projects on the BDNF and the potential for occurrence is considered low or very low, with some areas having a moderate potential (U.S. Department of Agriculture 2009b). As previously disclosed, temporary disturbance effects from motorized access and human use and longer-term displacement from larger-scale operations are possible. Effects to grizzly bears and secure habitat would be disclosed within project-level analysis and would adhere to standards within the forest plan.

Standard 1 allows controlled surface use and occupancy with restrictions for areas with occupied grizzly bear habitats. Per leasing terms, if threatened or endangered species or substantial environmental effects are encountered during construction, all work affecting the resource will stop and the land management agency will be contacted (U.S. Department of Agriculture 2009a). The intent is to ensure proposed activities do not adversely affect the viability of grizzly bears by designing operation locations,

coordinating timing and timing adjustments for activities, or limiting noise levels (U.S. Department of Agriculture 2009a). Ensuring this standard is met is beneficial to grizzly bears; although some individual grizzly bears may be adversely affected by minerals, oil, and gas activities and associated actions (see above), the restrictions in this standard may limit some of those effects by preventing disturbance during sensitive time periods.

Similar to Minerals, Oil, and Gas Standard 1, Standards 2 and 3 are beneficial to grizzly bears because roads and drill pads associated with minerals, oil, and gas activities will be obliterated (unless the road is needed as part of the Forest Service permanent transportation system; Standard 2). This would maintain or improve secure habitat for grizzly bears because motorized access would no longer occur. Grizzly bears have been documented to utilize reclaimed open pit mines, especially if motorized access is controlled (Cristescu et al. 2011).

Timber and Vegetation Management

In general, effects from timber and vegetation management actions range from potentially adverse (temporary road building) to beneficial, depending on the activities associated with vegetation management. As previously disclosed, grizzly bears may temporarily avoid areas where vegetation management activities are occurring due to noise and increased human activity and bears would likely return once activities cease.

Depending on the intensity of the harvest, some cover may be removed which grizzly bears may utilize for hiding, day-bedding, or other activities. This may cause grizzly bears to seek cover elsewhere outside of the project boundary. However, areas where harvest occurs are generally small compared to the surrounding habitat available to bears. Over time, increased sunlight and less competition may improve available cover for bears within treatment units as vegetation re-establishes. Given that male bears can move large distances within a short time and cover would re-establish over a longer duration, localized cover removal most likely insignificant and discountable for some males. However, depending on the location and size of the treatment, it is possible a female bear with cubs may be displaced by cover removal as female dispersal is generally shorter compared to males. This may result in limited effects to individual female bears and cubs if bears avoid the area until vegetation recovers (but see forage analysis below). It is not likely this would result in measurable negative effects to the overall grizzly bear population because adjacent cover habitat likely exists outside of project areas. The intensity of these effects would be disclosed within project-level analysis.

Timber harvest may have similar effects to food availability as fire management treatments (disclosed in Fire Management). Vegetation management (refer to Timber Standards 2 and 3) encourages early seral vegetation growth for foraging (Nielsen et al. 2004c) and bears select areas where timber treatment occurred in absence of clearings created by natural disturbance (Kearney et al. 2019, Souliere et al. 2020, Colton et al. 2021). There is some discrepancy over the duration of which harvested areas provide attractive habitat to bears from an average of 20 years (Kearney et al. 2019) to over 30 years during late hyperphagia (Nielsen et al. 2004a). Overall, timber and vegetation projects may provide a benefit to bears by increasing forage availability over several years. Combinations of timber harvest and fire (either wildland or prescribed) would likely continually recruit vegetation in early successional stages that produce a variety of bear foods and maintaining a mosaic of food and cover over time.

The use of temporary roads or increased traffic during hauling activities are associated with vegetation management actions. Effects from temporary roads are potentially adverse and are disclosed in Other

Management Activities and Issues: Permanent and Temporary Road Construction. Increased traffic during hauling has the potential to increase mortality risk from bear-vehicle collisions, but this is unlikely because vehicle speeds on Forest System motorized roads are generally slow due to topography and road conditions.

Changes in the distribution, quantity, and quality of cover are not necessarily detrimental to grizzly bears as long if they are coordinated on a landscape scale to ensure that grizzly bear needs are addressed throughout the various projects occurring on at any given time (U.S. Department of the Interior 2022b). In general, projects on the BDNF are well-dispersed over the entire forest. The combination of existing habitat and modified habitat by vegetation treatments likely provides enough forage, cover, and denning habitat to meet life history needs, as evidenced by the increasingly expanding population of bears on the BDNF. However, localized effects are possible due to human disturbance and potential displacement because of project activities or reductions in localized cover.

Continuing to implement the timber and vegetation management goals, objectives, and standards are beneficial to grizzly bears over the long-term. Many of the guidelines protect or improve habitat and support healthy ecosystems (Timber Lands Not Suitable for Timber Production Goal, Vegetation Biodiversity Goal, among others), support regeneration of whitebark pine (Forested Vegetation Objective), and reduce noxious weeds (Vegetation Noxious Weed Objective), all of which benefit grizzly bear habitat and meets life history needs. Overall, timber and vegetation management provides long-term benefits to grizzly bear habitat and effects from timber and vegetation activities may affect, but are not likely to adversely affect grizzly bears (with the exception of temporary roads, as analyzed within Other Management Activities and Issues: Permanent and Temporary Road Construction).

Wildlife Habitat

The goals, objectives, and standards for wildlife habitat benefit grizzly bears and grizzly bear habitat. In general, the Habitat Goal and Elk Security Goal support maintaining or improving a mosaic of species and age classes of native species that grizzly bears could use for foraging, cover, dispersal, or other behaviors for life history requirements. The Grizzly Bear Conflicts Goal and Grizzly Bear Conflict Objective intend to prevent conflict between humans and grizzly bears by implementing food storage or other management strategies so management removal is not necessary. However, the BDNF recognizes that lethal removal may occur from improperly stored attractants (as disclosed in other sections), but the intention is prevention and reduction of potential conflict. As discussed in Ongoing Conservation Efforts, the BDNF has an enforceable food storage order and provides education to public users, range permittees, special use permit holders, and others to reduce potential conflicts. In the Gravelly Landscape, sheep allotments that become vacant will no longer support sheep grazing unless an existing sheep permittee utilizes the vacancy without an increase in use (Standard 5). This may limit the potential for grizzly-livestock conflict for sheep, although sheep depredations may still occur (refer to Range Management: Livestock Grazing).

The plan also identifies habitat connectivity goals for grizzly bears (Connectivity Goal and Wildlife Secure Areas and Connectivity Goal), which are beneficial for grizzly dispersal and gene transmission (refer to Landscape-Level Considerations: Habitat Connectivity). On the BDNF, habitat connectivity is maintained by retaining federal ownership of secure habitat (refer to Lands: Land Conveyance, Acquisition, Boundary Adjustments, Survey, and Exchange), considering habitat fragmentation effects when analyzing project activities (e.g. creating temporary or permanent roads), providing secure habitat at larger scales to facilitate dispersal (e.g., decommissioning roads where possible), among other similar actions.

The other goals, objectives, and standards identify the open motorized road and trail desired conditions for landscapes (for all seasons) and hunt units (for the fall season). Managing human access to grizzly bear habitat is the key to effective habitat management by reducing human-caused mortality and increasing habitat effectiveness (Mattson et al. 1987, Boulanger et al. 2013, McLellan 2015, Proctor et al. 2019, U.S. Department of the Interior 2022b). Unmanaged motorized access impacts grizzly bears by potentially increasing human interaction and grizzly bear mortality risk, decreasing available habitat important for life history requirements, displacing bears from available habitat, and increasing habituation to humans (U.S. Department of the Interior 2022b).

Currently, three landscapes exceed the OMTRD goals set in the forest plan for the general season: Boulder River, Jefferson River, and Upper Rock Creek (Table 18) and thirteen hunt units exceed the OMTRD goals in the fall season: 210, 211, 213, 216, 300, 302, 318, 323, 327, 333, 341, 350, and 370 (Table 19). Despite limited secure habitat and road densities higher than goals in the forest plan, the grizzly bear distribution line encompasses the Boulder River and partially covers Upper Rock Creek and Jefferson River Landscapes (Figure 11). The GBAUs in the Boulder River and Jefferson River Landscape have some of the lowest amount of available secure habitat for grizzly bears on the entirety of the BDNF (25 percent in each landscape; Table 20). Existing baseline road density conditions are not so adverse that bears are displaced from these landscapes, and it is likely bears will continue to disperse across the BDNF. The frequency of road use may influence bear behavior (e.g., avoidance or displacement) (Northrup et al. 2012), so it is possible bears may continue to use areas with high road densities but less frequent human use, which may pertain to specific places on the BDNF.

Forest plan goals and objectives that suggest reducing open motorized road and trail densities (Grizzly Bear Security Goal, Wildlife Security Goal, Elk Security Goal, Road and Trail Densities by Hunting Unit Objective, Road and Trail Densities by Landscape Objective) or standards that prevent additional increases in open motorized road and trail densities in areas that exceed objectives (Standards 1 and 2) are beneficial to grizzly bears. Reducing or preventing increases in motorized access and associated human presence may limit potentially adverse effects to grizzly bears by reducing human-bear conflict, maintaining or improving secure habitat for bears to utilize for forage, travel, or other life-history needs, and increasing habitat connectivity.

The forest plan does not contain any standards for secure habitat as defined by Region 1 guidance (USDA FS and USDI FWS 2023c), as described in this document. There is currently no identified minimum patch size with a minimum number of resources needed for secure habitat to be considered effective in areas outside of recovery zones or the amount of effective habitat needed to avoid ongoing adverse impacts associated with motorized access (USDA FS and USDI FWS 2023a, USDA FS and USDI FWS 2023c). It is unlikely baseline secure habitat conditions prevent grizzly bear dispersal as evidenced by the continued expansion of this species. It is possible some specific areas may have adverse baseline conditions if there are high human densities and chronic motorized use that may cause grizzly bears to avoid specific places, but it is equally possible grizzly bears may habituate to such disturbances (as the bears in Yellowstone have demonstrated). However, it is not possible to identify areas that bears may avoid as the BDNF does not have collar data on dispersing bears. As previously disclosed for road density, maintaining or improving secure habitat is beneficial for grizzly bears and may promote continued expansion and habitat connectivity while limiting human-bear conflicts that could result in mortality.

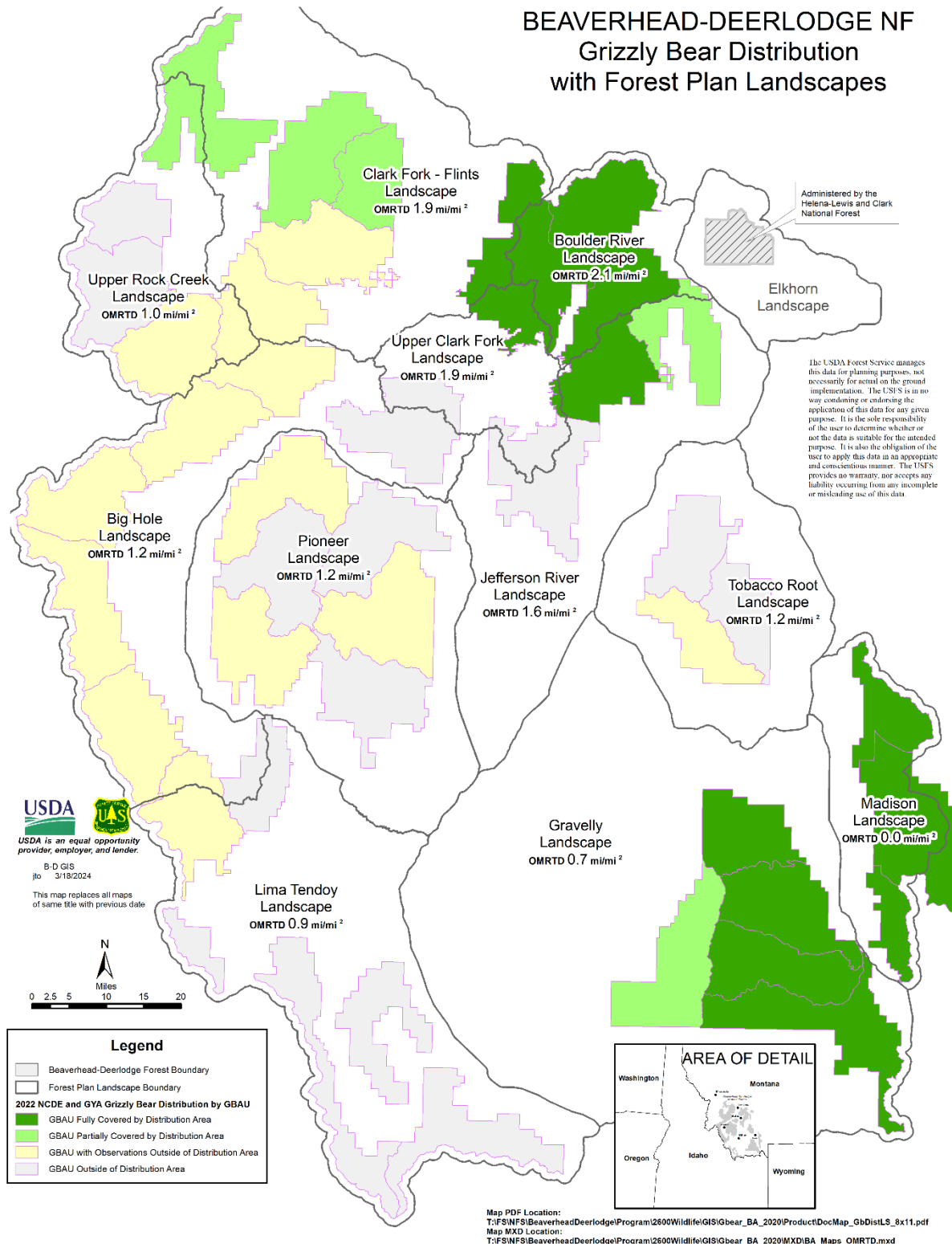


Figure 11. Grizzly Bear distribution areas and landscapes with corresponding open motorized road and trail densities on the Beaverhead-Deerlodge National Forest (as of March 18, 2023).

Appendix G in the Forest Plan for the Greater Yellowstone Ecosystem

Appendix G in the forest plan applies to specific areas within and outside of the Primary Conservation Area on the BDNF (Figure 9). The Hilgard BMU (subunit #1), which is located in the Lee Metcalf Wilderness on the Madison Landscape, is the only BMU on the Forest that is inside the PCA (Figure 9; Figure 10). Goals, standards, and guidelines identified in this appendix are designed to maintain or improve secure habitat for grizzly bears and prevent grizzly bear mortality caused by bear-human conflicts. Specifically, the standards call for no net loss in secure habitat and no net increase in the number of human developed sites and livestock grazing allotments with respect to those in existence in 1998 (Interagency Grizzly Bear Study Team 2024), all of which benefit individual grizzly bears and ensures population viability. As previously disclosed in other sections, continuing to follow guidance in Appendix G benefits grizzly bears as it reduces potential human-bear and bear-livestock conflicts (Standards 3, 5, and 6; Guidelines 1, 2, and 3) and maintains or improves secure or foraging habitat for grizzly bears (Habitat Goal; Standards 1 and 2; Guideline 4).

Monitoring Item 1

The standard for no net loss in secure habitat with respect to 1998 baseline levels has been consistently met in all 40 subunits inside the recovery zone since its formulation in the 2007 conservation strategy and several units reported gains in secure habitat (Interagency Grizzly Bear Study Team 2024).

Within the PCA, secure habitat improved by 13.4 percent on the Hilgard #1 Unit since 1998. The BDNF does not anticipate any future changes to OMARD or TMARD within the area that the forest manages because of its location in the Lee Metcalf Wilderness. However, improving secure habitat for grizzly bears is beneficial to this species although it is outside of the area managed by the BDNF. Improving secure habitat within this subunit may improve dispersal or provide habitat for bears for life history requirements.

Outside of the PCA, there were no changes in secure habitat to the BMUs on the BDNF from 2020-2022 (Interagency Grizzly Bear Study Team 2023). Overall, a majority of the BMUs on the BDNF had increases in secure habitat since 2008 although four BMUs had slight decreases (Table 23). The Conservation Strategy does not impose mandatory standards for motorized route density (Yellowstone Ecosystem Subcommittee 2016a). Grizzly bears continue to expand across the BDNF despite the slight decrease in secure habitat at the BMU level in some places. It is likely these changes are not significant to grizzly bears at this scale; although it is important to note that BMU boundaries are substantially larger than GBAUs (as analyzed within the remainder of this document).

Monitoring Item 2

On the BDNF portion of Hilgard #1, there are no on-the-ground changes to the number of developed sites as reported from 1998 (although there is an administrative omission that will be corrected). As disclosed in Developed Recreation, human use of these sites may lead to improperly stored food attractants, potential for bear disturbance or displacement depending on frequency of use, or habituated bears. However, maintaining the same number of developed sites (or using the footprint approach per the updated standard) will not change on-the-ground secure habitat for grizzly bears on the BDNF portion of this BMU and bears will continue to persist in this area.

Monitoring Item 3

The BDNF currently has three cattle allotments inside the Grizzly Bear Recovery Zone. All three are currently in use, although allotments may become vacant during the life of this document. Eight allotments on the BDNF within the GYE experience reoccurring conflicts, where cattle or sheep depredation incidents occur on a given allotment in 3 or more years during the preceding 5 year period (Interagency Grizzly Bear Study Team 2024). As reviewed in Range Management: Livestock Grazing, grizzly bears will likely continue to have conflict with livestock in this area, which could lead to management removals.

Monitoring Item 4

This item is no longer measured or reported per the updated 2016 Conservation Strategy.

Monitoring Item 5

Results of current whitebark pine status and trends are available online at the Greater Yellowstone Network Inventory and Monitoring Website (<https://www.nps.gov/im/gryn/reports-publications.htm>). The most recent published report revealed that blister rust infection is widespread throughout the GYE with varying intensity, with rates of infection varying from 14-26 percent from 2012-2015 (Group 2020). The BDNF has documented infestations of mountain pine beetle although there were no increases in the number of transects with evidence of mountain pine beetle in 2019 (Group 2020). Contributing to this long-term monitoring program will help determine the likelihood of whitebark persisting as a functional part of the ecosystem. Although grizzly bears on the BDNF do not rely exclusively on whitebark pine as a food source, they may aggregate in stands to feed when seeds are available.

Other Management Activities and Issues

Administrative Sites

The facilities goal in the forest plan identifies that facilities are constructed, managed, and maintained to meet land and resource objectives and address recreation demand. Effects to grizzly bears from new construction of administrative sites would be disclosed in project-level analysis. Effects to grizzly bear from managing and maintaining existing administrative sites could result in potential disturbance effects to individuals if human presence and noise levels from machinery increases above the typical baseline, depending on the required activity. Some of the structures require year-round motorized access that could occur cross-country; in these instances, secure habitat may be temporarily affected if motorized vehicles cross or are within secure habitat areas (including helicopters; see Low-Elevation Flights). However, motorized access is likely short in duration depending on the extent of the maintenance activity. These sites are also distributed widely over the Forest and management and maintenance activities generally focus on places with greatest need.

Continuing to manage and maintain existing administrative sites would result in insignificant and discountable effects to grizzly bears because effects are likely short-term and localized and secure habitat would return to baseline conditions once activities cease. This results in a may effect, not likely to adversely affect, determination for this activity.

Roads and Travel

Permanent and Temporary Road Construction

Building permanent or temporary roads as part of connected project actions has the potential to adversely affect individual grizzly bears and secure habitat. Motorized access can have significant negative consequences at both the individual and population levels by affecting habitat use, home range selection, movements, fragmentation, survival, and reproductive rates (Kasworm and Manley 1990, Mace et al. 1996, Boulanger and Stenhouse 2014, Proctor et al. 2019, U.S. Department of the Interior 2022b). Controlling motorized access management is an effective strategy to mitigate these potential negative effects (U.S. Department of the Interior 2022b).

Building permanent or temporary roads as part of connected project actions has the potential to affect grizzly bear secure habitat. The BDNF may temporarily affect up to 74,212 acres (5 percent) of secure habitat and permanently reduce secure habitat by 14,640 acres (1 percent) over the life of this document (Table 4). The BDNF would not affect all these secure habitat acres concurrently because implementation schedules for specific projects would vary, so on-the-ground temporary affects would fluctuate in both location and duration. In addition, the effects to secure habitat would be distributed across GBAUs (compared to localized in one large area) which would leave adjacent, undisturbed habitat for grizzly bears to use. In general, the degree to which motorized access affects grizzly bears depends on the spatial pattern of routes and travel, location of motorized travel relative to important food resources, amount and type of motorized travel, and characteristics of individual grizzly bears (USDA FS and USDI FWS 2023c). Permanent or temporary road effects would be disclosed at the project-level and would analyze road effects important to grizzly bears, such as changes in the amount of available secure habitat, duration and intensity of road use, potential fragmentation, and other issues.

Because temporary roads are reclaimed once use is over, secure habitat should return to baseline conditions once reclaiming activities cease. Temporary roads may persist on the landscape for several years depending on the need for access. Vegetation on reclaimed roads may take some time to recover; however, motorized access would be prevented so the area would be considered secure for grizzly bears.

Construction of permanent and temporary roads is infrequent on the BDNF. Since 2009, no permanent roads have been constructed although several re-routes have occurred for various reasons. Although the BDNF analyzed effects from 78.5 miles of temporary roads to since 2009, only 37.6 miles have been constructed during that time and some of those roads have since been decommissioned. Regardless of the frequency of construction, adding permanent or temporary roads to the landscape may affect, and is likely to adversely affect, grizzly bears, although not every road may be adverse depending on the location, duration, and frequency of use.

Unauthorized Motorized Access

Even with ongoing efforts (enforcement, blocking access, etc.), some individuals may continue to break the law and illegally access parts of the BDNF. This unauthorized use could occur anywhere on the Forest and at any given time and may occur cross-country, within non-motorized allocations, on roads or trails not designated for motorized access, or on user-created routes. It's likely new illegal motorized access routes (e.g. user-created routes) will be discovered or created within the scope of this analysis (up to 2036). Project-level ground truthing sometimes reveals new information regarding on-the-ground unauthorized motorized access locations within project areas. When that occurs, effects to grizzly bears

and secure habitat are disclosed for particular project locations. However, the amount, location, duration, and timing of effects resulting from such illegal use is not fully known. The probability of unauthorized motorized use coinciding with the presence of grizzly bears is also unknown. It is possible illegal road creation and the subsequent unauthorized motorized access or motorized cross-country travel could affect grizzly bears as secure habitat may be altered (i.e., it is no longer secure) while the motorized access is occurring.

When private individuals breach a closure device or drive in an area that is not authorized for such use, the information on such use is challenging or impossible to obtain. The BDNF may be able to assess the points where unauthorized motorized access begins (i.e. the point where an unauthorized user leaves an authorized route), information as to the following, among other conditions, is often unknown: the length of unauthorized use (was it a 100 feet or several miles?), duration of unauthorized use (how long was the unauthorized use – several minutes or several days?), amount of unauthorized use (how many trips – 1 trip or 100 trips?), type of unauthorized use, and location (where did the unauthorized use occur in relation to other motorized routes and what was the grizzly bear use at a given time?). Because of the unknown nature of motorized unauthorized use, it is not possible to quantify the extent of the effects to grizzly bears.

Unauthorized motorized access has likely had some influence on the environmental baseline, but it is not possible to quantify the effects to grizzly bears because the history of occurrence is not known. Law enforcement reported 50 motorized access violations between 2021-2023, with the greatest number occurring on the Butte Ranger District. However, it is unlikely these violations account for all of the motor vehicle use issues or violations that occur on the BDNF. Citations for unauthorized access and cross-country travel are not an accurate measure of the total amount of unauthorized motorized use or a measure 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. It is likely most of the illegal motorized access is spatially diffuse, sporadic, and of short duration.

The probability of unauthorized use that coincides with grizzly bear presence is also unknown but probably low, as evidenced by the expanding population of grizzly bears across the BDNF despite unauthorized motorized access occurring across the landscape. It is possible a grizzly bear could be temporarily disturbed from unauthorized motorized access, but the effect is likely extremely short term and insignificant unless the unauthorized motorized use becomes chronic and occurs over the same area. Because the BDNF typically responds to known unauthorized motorized access through corrective actions, effects to grizzly bears in these instances likely result in a temporary disturbance to grizzly bears (if bears are present during the illegal use) and are thus short-term and insignificant. The timing for corrections may vary depending on seasonal and/or weather conditions and the type of correction needed (replacing a broken lock or gate, fixing a barrier, or redesigning and/or constructing a new barrier, placing a sign, among others).

In instances where more extensive work is required to stop chronic unauthorized motorized access (e.g. road recontouring to slope, decommissioning far distances, etc.), effects to grizzly bears may persist longer while a site-specific environmental analysis is completed for the corrective action. In these instances, effects to individual bears and secure habitat would be disclosed for grizzly bears at the project level. However, it is possible that grizzly bears may avoid these areas of chronic use while the

user-created route remains open for motorized access if human use is frequent. The probability of long-term unauthorized motorized access coinciding with the presence of grizzly bears is anticipated to be low but is unknown. It is also unknown if the baseline condition in this case is adverse for grizzly bears as there is no evidence supporting long-term displacement of bears because of chronic unauthorized motorized access on the BDNF. In these cases, the Forest quantifies effects from chronic use by considering the area not secure for grizzly bears.

The amount, location, duration, and timing of effects to grizzly bears resulting from unauthorized motorized access that is not chronic is not possible to quantify now or in the future. However, any potential disturbance effects associated with unauthorized motorized access is expected to be spatially disparate, short-term, and temporary as opposed to long-term displacement effects, because the BDNF corrects the situation as soon as possible. It is not appropriate to consider non-chronic unauthorized motorized access as part of baseline secure habitat metrics because there is no on-the-ground evidence (e.g. a user-created route, tire tracks, etc.) to infer the access point and the distance of the motorized use. Therefore, there is no route to buffer for secure habitat. However, the BDNF does recognize that this use may occur, and it is possible, but extremely unlikely, to have an effect on individual grizzly bears by potentially causing short-term disturbance due to human presence.

In the 1993 Recovery Plan, the Fish and Wildlife Service stated that “unpredictable, random road use, the kind of use that may occur with administrative use of closed roads, may be even more disturbing to bears that have a negative association with roads. In this way, learned avoidance behavior can persist for several generations of bears before they again utilize habitat associated with closed roads” (U.S. Department of the Interior 1993). While this statement suggested that even sporadic use may affect bears, more recent scientific studies indicate that the density of motorized routes, the level of use of motorized routes, and the amount of secure habitat should also be considered. Many grizzly bears may be more tolerant of low-use roads and some bears’ responses to roads may be more nuanced than suggested by the 1993 Plan. Sporadic road use may not necessarily lead to multi-generational avoidance, or avoidance at all, if intensity is low. In addition, not all grizzly bears are affected in the same way by motorized access. Some bears have adapted to the types of habitat and relatively low levels of security near human developments as compared to more remote areas. In particular, Ruby (2014) found that bears that used areas near roads and human development did so when human use was low, such as at night, and that bears rested less in these areas than in areas away from roads and human development. Northrup et al. (2012) investigated levels of road use (low, medium and high) and found that during the day bears avoided crossing roads of all use levels, however bears were more likely to avoid roads with higher use levels. Low volume routes were crossed during both day and night hours. As such, this type of expected short-term, temporary unauthorized motorized access is not likely to significantly affect grizzly bears using the area of unauthorized motorized use. Further, as previously stated, the likelihood of a grizzly bear being in the area of unauthorized motorized access when the unauthorized use occurs would be very low due to the size of a grizzly bear home range.

Unauthorized motorized access occurs regularly within the Pipestone area on the Butte Ranger District. Due to the challenges of barricading and controlling access points in Pipestone, it is likely unauthorized motorized access will continue to occur. The BDNF does not consider this area as secure for grizzly bears because of the known motorized access in the area. It is possible the frequency and intensity of unauthorized motorized access in Pipestone may result in displacement of grizzly bears from the area. Although grizzly bears could move through adjacent areas, the heavy use in this area may slow dispersal.

Individual bears may also be disturbed due to higher human presence as a result of motorized accessibility in Pipestone.

In addition, the BDNF secure habitat model is conservative and likely underestimates secure habitat. Known, unauthorized routes were included in the analysis for this baseline and were buffered by 500 meters. Because the BDNF considers the *potential* for motorized access instead of the route designation (user-created route, motorized, administrative, gated, etc.) as defining secure habitat, secure habitat estimates on the BDNF may be lower in some areas than on-the-ground conditions if the unauthorized routes are no longer accessible via motorized means. In other places, the BDNF may learn of new, unauthorized routes where motorized access is occurring but was not modeled in baseline conditions.

Of note, some undetermined motorized access routes are not factored into road density calculations as defined by the forest plan (described in Road Density and Secure Habitat Metrics). Undetermined routes (or user-created routes) that are discovered on the landscape that are not identified on page 53 are considered closed for motorized access for the purpose of road density calculations. However, the BDNF acknowledges that these on-the-ground routes could affect grizzly bears and secure habitat because motorized access is possible. These routes are incorporated into secure habitat metrics to account for those potential effects although road density calculations may not change. In some areas, unauthorized motorized access may not affect secure habitat at all. This happens when the unauthorized access occurs within 500 feet of the route legally open to motorized use.

The BDNF also plans to implement a forest-wide trespass monitoring and response plan to address unauthorized motorized access. This will allow the BDNF to respond to access issues in accordance with law, regulation, and policy. Implementing closure strategies to manage unauthorized access is beneficial to grizzly bears because it ensures bears have secure areas away from human influences and may reduce the potential for direct mortality (as described in Travel Management).

Overall, it is not possible to quantify the intensity of effect of unauthorized routes because it depends on location, frequency, and intensity of use. It is likely effects from unauthorized motorized access range from may affect, not likely to adversely affect (single or very infrequent unauthorized uses) to may affect and is likely to adversely affect (as in Pipestone where grizzly bears may be displaced). Regardless of the on-the-ground conditions caused by unauthorized motorized access, grizzly bears continue to disperse across the BDNF so effects are most likely insignificant and discountable with some localized exceptions. Baseline effects from unauthorized motorized use will be disclosed at the project level.

Low-Elevation Flights

Science on effects to grizzly bears on low-elevation aircraft (including UAS) is not well established. Much of the research (which also includes captive and wild black bears and polar bears) on aircraft and UAS describes various levels of disturbance, movement, or escape behaviors (Harding and Nagy 1980, Interagency Grizzly Bear Committee 1987, Aune and Kasworm 1989, McLellan and Shackleton 1989a, Larkin et al. 1996, Stoen et al. 2010, Barnas et al. 2018, Deacy et al. 2019, Quigley et al. 2024), physiological changes (such as elevated heart rates in black bears) (Ditmer et al. 2015), or habituation due from frequent human disturbance (McLellan and Shackleton 1989a, Ditmer et al. 2019). Effects to bears in dens and diurnal resting sites may be low (Reynolds et al. 1986) or may cause some activity (Schoen et al. 1986), especially if the frequency of disturbance increases (Churchill et al. 2003, Larson et al. 2020). Disturbance of denning bears can result in cub abandonment or early den exit, which could cause mortality if no food is available (Schwartz et al. 2003, Fortin et al. 2016). There is also the potential

of separating a mother from her cubs, which may result in cub mortality. There is some indication that bears in areas with heavy cover (McLellan 1989) or inactive individuals (e.g., bedded) (Quigley et al. 2024) may be potentially less reactive. Although effects to grizzly bears are not intensively researched, low-elevation aircraft and UAS clearly have *some* effect on grizzly bears, although the intensity and long-term implications of these effects are unknown.

Low elevation aircraft and UAS use will likely become more frequent on the BDNF as technology advances for survey and surveillance. Permitted outfitters or filmmakers may use UAS to record and create media. Wildland fire teams, biologists, and other specialists may utilize low-level aircraft technology to collect habitat, vegetation, or fire data at any time of the year. Noxious weeds and prescribed fire utilize aircraft for project implementation and military operations practice on National Forest System lands. There are many uses for low elevation aircraft and UAS that may not be disclosed in this document but could happen during the life of this analysis. The frequency of this use may vary from one single trip of relatively short duration (such as a single administrative site repair, population survey, or other similar actions) to repeated trips over the same area (as during wildland fire events, prescribed fire ignitions over multiple days, and others). Single trips with low-elevation aircraft and UAS would likely affect grizzly bears for a shorter duration of time compared to reoccurring flights over the same area. Thus, effects to bears may also vary depending on the duration and frequency of low-elevation aircraft and UAS use, which would be disclosed within project-level analysis.

Low-elevation aircraft may be utilized for activities such as prescribed burning in spring, which could overlap with den emergence. Disturbance of denning bears can result in cub abandonment or early den exit, which may cause mortality (as disclosed in Recreation and Travel Management: Winter Allocations). If there is significant snowpack on the ground during low-elevation helicopter or aircraft use, cubs may not be able to follow their mother if disturbance occurs. However, the BDNF typically includes project-level design features to prevent cub abandonment for projects where this activity could occur (e.g., Greenhorns Project).

The BDNF considers low-level flights a temporary effect to secure habitat because of noise and potential disturbance to bears per scientific literature. On-the-ground permanent effects as a result from low-elevation flights and UAS use do not typically occur as secure areas return to baseline conditions once aircraft and UAS depart, although the duration of the effect may vary depending on if the flight is single or reoccurring.

Effects to grizzly bears from low-flying aircraft and UAS ranges from may affect and is not likely to adversely affect to likely to adversely affect, depending on the frequency, duration, location, and timing of flight disturbance. The current programmatic screens document also addresses aircraft use and considers aircraft or helicopter use a not likely to adversely affect for grizzly bears if use occurs less than two activities per year per action area and less than two days per activity. In general, project-specific analysis will disclose potential effects to grizzly bears from low elevation flights and will use the best available science and most recent programmatic screening documents (if applicable). The BDNF may also recommend minimization measures to help reduce potential effects to grizzly bears which may change as more research occurs. Current tips for responsible recreational use of UAS on National Forest System Lands can be found here: <https://www.fs.usda.gov/managing-land/fire/aviation/uas/responsible-use>.

Programmatic Screens

Continuing to use the programmatic screens is beneficial for both the BDNF and the US Fish and Wildlife Service. The programmatic screens are updated every five years at the regional level in cooperation with US Fish and Wildlife Service so the best available science is used to determine if specific actions are not likely to affect the grizzly bear. The programmatic screens facilitate faster communication and documentation for some actions the BDNF authorizes, funds, or carries out that may affect grizzly bears. The BDNF anticipates continuing to utilize this process to document effects for this species, when appropriate.

Landscape-Level Considerations

Habitat Connectivity

Maintaining the presence of dispersing bears by reducing conflict-related mortality would likely facilitate potential grizzly bear movements between the NCDE and GYE (U.S. Department of the Interior 2022b). Many of the standards, guidelines, and objectives in the forest plan (e.g. the Wildlife Habitat Connectivity goal, Wildlife Habitat Grizzly Bear Conflict goal, Recreation and Travel Management Standard 1, among others) supports reducing conflicts and improving or maintaining secure habitat that would be beneficial for bears (also refer to the Ongoing Conservation Efforts section). In addition, the BDNF supports ongoing research to monitor bear movements via telemetry and natural dispersal genetic sampling, as described in the Known Distribution on the Beaverhead-Deerlodge National Forest section.

At the time of this writing, the Bitterroot Ecosystem is considered unoccupied for grizzly bears (U.S. Department of the Interior 2022b). Currently, the US Fish and Wildlife Service is analyzing alternatives for grizzly bear restoration within this ecosystem. This environmental impact statement (EIS) will analyze potential effects on the human environment, address management approaches for conflicts, assess considerations for connectivity between recovery zones (of which the BDNF will be included), and analyze other relevant impacts for alternatives. The BDNF anticipates participating in this process and effects to connectivity from this action will be disclosed as part of the EIS. Participating in this process is one example of how the BDNF meets the conservation measures as disclosed in previous biological opinions (participate in interagency efforts to identify, map, and manage linkage habitat essential to grizzly bear movement between ecosystems; refer to Conservation Measures: General).

Climate Change

Most grizzly bear biologists in the United States and Canada do not expect direct threats to grizzly bears from habitat changes linked to climate change (Servheen and Cross 2010). Although climate models predicts increased growing season length, winter and spring water availability, and wildfire but decreases in snowpack, grizzlies will likely persist due to their adaptability and ability to move to shifting food sources (Roberts et al. 2014, Ransom et al. 2018).

Ongoing Conservation Efforts

Food and Attractant Storage

Continuing to implement the grizzly bear conflict objective regarding food storage and sanitation orders could prevent human-bear conflict. The BDNF will continue to re-issue new food storage orders when the current orders expire. These orders in combination with food storage signage and bear-resistant

storage infrastructure may mitigate potential conflicts with grizzly bears and forest users. Proper food storage (as enforced by the food storage order) increases the difficulty for bears to receive a food reward and signage describing the food storage orders may educate public forest users on proper storage techniques. Implementing this objective is beneficial to grizzly bears as potential human-bear conflicts may be prevented.

Interagency Coordination

The BDNF will continue to work with other federal, state, and non-profit organizations to support recovery of grizzly bear populations. The BDNF role in each of these partnerships varies but will likely continue. This is beneficial for grizzly bears as multiple agencies work together on policy, planning, management, research and communication.

Information and Education

Providing information to public users, range permittees, special use permit holders, and others on the Beaverhead-Deerlodge is beneficial to grizzly bears as potential conflicts may be avoided when bears are encountered. In addition, the BDNF supports a bear technician to further educate public users about grizzly bears, the food storage order, and other bear-related issues. This position will continue to contact forest users (including internal users, such as fire teams from out-of-state) on bear safety. Education and training on recreating and working in bear country is important to prevent human-bear conflict (Fortin et al. 2016, Gunther and Haroldson 2020).

Cumulative Effects

Under the ESA, future state, tribal, private, or local activities not involving federal actions that are reasonably certain to occur within the action area are subject for consideration for cumulative effects. For this analysis, the cumulative effects boundary consists of lands within the BDNF boundary. Federal lands other than those administered by the Forest are not included as part of the analysis because those areas are subject to their own section 7 consultation requirements. A majority of the forest boundary (94 percent) consists of federally-managed lands with the remainder (6 percent) in private ownership or managed by the state of Montana (Table 25).

Table 25. Area within the Beaverhead-Deerlodge National Forest managed by the Forest Service or other non-federal entities.

| Ranger District | Total Area (acres) | Forest Service Ownership Area (acres/percent) | State or Private Ownership Area (acres/percent) |
|-----------------|--------------------|---|---|
| Dillon | 579,691 | 571,691/99 | 8,010/1 |
| Wisdom | 896,262 | 878,563/98 | 17,699/2 |
| Butte | 654,820 | 591,749/90 | 63,072/10 |
| Madison | 750,807 | 705,975/94 | 44,831/6 |
| Pintler | 731,194 | 644,152/88 | 87,042/12 |
| Total | 3,612,784 | 3,392,131/94 | 220,653/6 |

Non-federal Activities

Only six percent of lands within the BDNF administrative boundary are managed by non-federal entities. Although the BDNF manages a majority of the land, activities and human presence on lands not

managed by the Forest Service may disturb or displace grizzly bears depending on the frequency and type of use. Activities such as vegetation and fire management, mineral, oil, and gas development, private land development (homes, roads, buildings, utility corridors), off-road motorized recreation, dispersed recreation, livestock grazing, hunting, and other actions may occur within these lands. As disclosed in this analysis, all of these activities could affect individual grizzly bears, especially additional human development such as motorized roads or homes which may lead to increased human-bear conflicts or unsecured attractants and livestock grazing, which could lead to bear-livestock conflicts. The most frequent reason for management removals are conflicts on private lands (U.S. Department of the Interior 2022b) which may continue to occur as urban and rural sprawl continues.

Private land development may also lead to habitat fragmentation and could slow dispersal of grizzly bears. It is not possible to quantify effects to secure habitat from non-federal land activities, but the BDNF buffers 500 meters from all inholding boundaries to account for potential effects from human activities on privately owned lands. However, conservation easements may maintain some lands for grizzly bear use by protecting against future development while supporting traditional land uses.

Efforts are made to prevent grizzly bear conflict on private lands, including installing electric fences, practicing proper attractant storage, moving livestock carcass piles, and reporting sightings of grizzly bears or bear sign, among others. Although this may mitigate some potential effects to grizzly bears on non-federal lands, management removals are still possible.

Non-federal land development and the accompanying risk of human-grizzly conflicts has the potential to have cumulative adverse effects on grizzly bears and grizzly bear habitat within the BDNF administrative boundary.

Unauthorized motorized access is not a federal action and could occur on lands administered by the BDNF and other lands within the action area. This use is not reasonably certain to occur in any specific given area with the exception of those areas identified as chronic (e.g. Pipestone; refer to the Unauthorized Motorized Access section). These, and any other illegal or unauthorized activities are not the result of a federal action and are also considered for potential cumulative effects (due to the entity's unauthorized actions being non-federal). As previously disclosed, when illegal or unauthorized activity is discovered, the BDNF addresses the issue through a variety of means which decreases the likelihood of a long-term negative effect on grizzly bears.

No specific amount or location of unauthorized motorized access is reasonably certain to occur (as it is not supposed to occur in the first place), however, when it does occur, it may result in cumulative effects to grizzly bears. The information as to the length, duration, amount of use, type of use, and location, among other conditions, is and will continue to be unknown until such time that unauthorized use is found to be occurring. The probability of long-term unauthorized motorized access and the probability of unauthorized motorized access coinciding with the presence of grizzly bears is unknown, but likely low. Thus, the potential cumulative effect from unauthorized motorized use is also not possible to quantify and is unknown, but most likely insignificant to grizzly bears as evidenced by the expanding distribution and increasing population of this species.

In places where unauthorized motorized use is chronic and the area may require a corrective action that requires an analysis, grizzly bears may be displaced or avoid the area if human use is frequent enough to cause a longer-term effect. Effects to individual grizzly bears are not possible to quantify in this case, but

the BDNF recognizes these areas as not secure (if the Forest is aware of the issue) until a corrective action occurs. It is possible the baseline conditions for grizzly bears may be locally adverse in this situation until a corrective action occurs. These situations are analyzed during site-specific analysis and potential effects to grizzly bears are disclosed.

The BDNF is not aware of all past or future instances of unauthorized motorized access as that data is impossible to obtain. However, a low amount of Forest users will probably continue to engage in unauthorized motorized access. Because the Forest responds to use when it occurs, future unauthorized use will likely remain spatially disparate, short-term, and temporary in most instances. Thus, future unauthorized motorized access is not likely to collectively cause an adverse effect to grizzly bears unless it is not addressed by the forest and such use becomes chronic. This is also unlikely as the BDNF anticipates completing travel management planning and establishing a MVUM within the life of this document, which will identify areas open to motorized use easily accessible to public users. This may reduce some localized short-term disturbance effects to grizzly bears if public users were more informed and decided to remain on legally open roads.

Montana Department of Fish, Wildlife, and Parks

MTFWP completed a grizzly bear management plan for western Montana in 2006 (Dood et al. 2006) and a grizzly bear management plan for southwestern Montana in 2013 (Montana Fish Wildlife and Parks 2013). Grizzly bear management plans establish goals and strategies to manage and enhance grizzly bear populations and to minimize the potential for grizzly bear-human conflicts. Connectivity between the grizzly populations in the GYE and NCDE is a long-term goal in the state of Montana (Montana Fish Wildlife and Parks 2013).

MTFWP is very active in providing public information and education about conserving grizzly bears and their habitat. Several state bear management specialists work with private landowners and other agencies on grizzly bear issues to avoid or resolve conflicts and to reduce mortalities. Bear specialists also provide public information and assistance to landowners on appropriate ways to secure food and bear attractants and respond to reports of conflicts with black bears and grizzly bears. Outcomes from these successful programs include increasing public awareness, reducing the availability of attractants to bears on private and public lands, and reducing human-caused mortalities of grizzly bears.

No adverse cumulative effects to grizzly bears are anticipated due to management actions of Montana Fish, Wildlife, and Parks.

Environmental Consequences Summary

This proposed programmatic action identifies allowable uses on National Forest System lands and describes the spatial context over which they could be planned or occur. Allowable uses such as lands, range management, recreation and travel management, minerals, oil, and gas, timber and vegetation management, and other connected actions may impact grizzly bears by disturbing or displacing individuals, changing secure habitat, or via management removals. The proposed action does not determine the amount, location, type, or scope of future actions, but establishes the framework that future actions must consider. The magnitude of effects on grizzly bears and bear habitat would be established at the time of project planning, which will determine the actual presence, amount, and temporal context of potential effects.

Effects to grizzly bears and grizzly bear habitat are complex and varied and depend greatly on characteristics of individual bears, time of year, and duration and location of activities. Grizzly bears may be affected by stressors such as motorized access and management, developed recreation or infrastructure, fire management, timber and vegetation management, private land development, and others that alter habitat used for foraging, dispersal, denning, or other life-history requirements. Sources of human-caused mortality include management removals from livestock grazing or attractant storage, accidental killings (vehicle strike, mistaken identity), defense-of-life incidents, or illegal harvesting. Table 26 summarizes potential effects for forest plan categories on grizzly bears and habitat as disclosed within this analysis.

Table 26. Summary of general effects from implementing the forest plan on grizzly bears.

| Forest Plan Category | General Potential Effects to Grizzly Bear |
|----------------------|---|
| Aquatic Management | <ul style="list-style-type: none"> • Actions to meet goals and objectives could cause some temporary disturbance to grizzly bears or secure habitat if motorized equipment is used. • Actions would likely maintain or improve grizzly bear habitat over the long-term. |
| Fire Management | <ul style="list-style-type: none"> • Human presence and mechanical noise may disturb some grizzly bears while fire management actions are occurring. • Secure habitat may be temporarily affected from motorized use; temporary or administrative roads may be created or opened during fire suppression. Increase in traffic may also occur. Roads are usually closed and rehabbed after they are no longer needed. • Fire camps are potential sources for conflict although bear technicians and resource advisors may mitigate this issue. • Low-level flights or UAS may adversely affect grizzly bears if females with cubs emerge from dens early. • Fuels management goals and standards are beneficial over the long term for this species as foraging and cover habitat would likely improve. |
| Lands | <ul style="list-style-type: none"> • Off-road motorized access from special use permits may cause temporary displacement or changes in secure habitat if access occurs across or within existing secure areas. • Land acquisition, disposal, or exchange may be beneficial if secure habitat is included and connectivity improves. This action may be detrimental to bears if secure habitat is conveyed to a private owner or organization, depending on size and location. |
| Range Management | <ul style="list-style-type: none"> • Continued grazing may cause livestock-bear-human conflict which could result in management removals or defense of life mortality. • Conservation measures, education, and food storage may reduce potential conflicts. • Maintenance of existing infrastructure may cause a temporary change in secure habitat or disturbance if off-road motorized access is part of the action and is across or within secure areas. • Noxious weed control may cause temporary disturbance or a temporary change in secure habitat due to motorized activities, including low-elevation flights. |

| Forest Plan Category | General Potential Effects to Grizzly Bear |
|----------------------------------|--|
| Recreation and Travel Management | <ul style="list-style-type: none"> • Recreation effects are varied and range from beneficial (maintaining secure habitat in Wilderness and Recommended Wilderness) to adverse from lethal removal due to unsecured attractants in developed sites. • Effects from non-motorized use in summer (40 percent of the BDNF) and winter (6 percent that overlaps with denning habitat) may cause temporary disturbance but population-level effects have not been documented. • Effects from existing motorized use in summer (60 percent of the BDNF) and winter (8 percent that overlaps with denning habitat) may cause direct mortality from vehicle strikes or additional human-bear conflicts. • Bears generally avoid humans and human activity, which may result in avoidance of areas of frequent recreation use (e.g., resorts) or temporary disturbance from human presence (hiking, one-time special uses, etc.). • Outfitting and guiding special uses may result in self-defense mortalities of grizzly bears due to surprise encounters or grizzly bears may be chased or harassed by hounds during spring black bear season. • Managing for motorized access via travel management and decommissioning roads is beneficial as secure habitat is increased or maintained. • The BDNF could construct new motorized roads or trails which may permanently reduce secure habitat up to one percent. • Despite increased visitor use and outdoor recreation, grizzly bears continue to expand on the Beaverhead-Deerlodge National Forest. |
| Minerals, Oil, and Gas | <ul style="list-style-type: none"> • Human presence and mechanical noise may disturb some grizzly bears while minerals, oil, and gas actions are occurring. • Disturbance of denning females with cubs may occur which could result in mortality or a decline in body condition. • Building new roads or infrastructure could temporarily reduce secure habitat or cause habitat fragmentation. • Duration of road and infrastructure on the landscape may vary from 1-5 years or longer for larger-scale projects. Depending on the location and length, these features may displace or slow dispersal of grizzly bears. • Standards may mitigate some potential long-term effects by using timing restrictions, stopping activity, and obliterating roads and infrastructure. |
| Timber and Vegetation Management | <ul style="list-style-type: none"> • Grizzly bears may temporarily avoid areas where vegetation management activities are occurring due to noise and increased human activity and bears would likely return once activities cease. • Localized cover removal may displace female bears with cubs until vegetation recovers, but effects are not measurable. • Forage availability may improve due to early seral growth. • Effects from temporary roads are potentially adverse. • Increased traffic during hauling has the potential to increase mortality risk from bear-vehicle collisions. • Overall beneficial to bears over the long-term as habitat and ecosystem health may improve for this species. |
| Wildlife Habitat | <ul style="list-style-type: none"> • Three landscapes and thirteen hunt units exceed the OMRTD goals but grizzly bears are continuing to disperse on the BDNF. • Maintaining or improving secure habitat is beneficial for grizzly bears and may promote continued expansion and habitat connectivity while limiting human-bear conflicts that could result in mortality. |

| Forest Plan Category | General Potential Effects to Grizzly Bear |
|-----------------------------|---|
| Other Activities and Issues | <ul style="list-style-type: none"> • Human presence and mechanical noise may disturb some grizzly bears while actions are occurring. • Building permanent or temporary roads as part of connected project actions has the potential to affect grizzly bear secure habitat. The BDNF may temporarily affect up to 74,212 acres (5 percent) of secure habitat and permanently reduce secure habitat by 14,640 acres (1 percent). • Unauthorized motorized access could occur anywhere on the Forest at any given time, which may result in temporary effects to secure habitat. Extent of effects are not possible to quantify but are included in secure habitat calculations when known. The BDNF plans to implement a forest-wide trespass monitoring and response plan to address unauthorized motorized use. Longer-term displacement effects to grizzly bears are possible in areas with chronic unauthorized motorized access use. • Low-elevation aircraft and UAS have some effect on grizzly bears, although the intensity and long-term implications of these effects are unknown. Disturbance of denning bears is possible. • The forest plan supports habitat connectivity by providing guidance on reducing human-bear conflicts and improving or maintaining secure habitat that is beneficial for bears. • The BDNF has a food storage order, signage, and bear-proof infrastructure which may prevent or reduce grizzly bear conflicts. • The BDNF will continue to work with federal, state, and non-profit organizations to support recovery of grizzly bear populations. • The BDNF will continue to provide grizzly bear educational materials to the public, range permittees, and special use permit holders and offer training for employees working in bear country. |

Determination of Effects and Rationale

Implementing the proposed action may affect and is likely to adversely affect grizzly bears and grizzly bear habitat on the Beaverhead-Deerlodge National Forest based on the following:

- Male or female grizzly bears may be temporarily disturbed or displaced from areas depending on the intensity and frequency of human activity related to actions identified in the forest plan, such as wildland fire suppression or prescribed fire, developed and dispersed recreation, motorized access and travel, administrative site maintenance, low-level aircraft and UAS use, minerals, oil, and gas development, timber or vegetation projects, among others.
- Grizzly bears have a history of livestock conflict on the forest and management removals will likely continue, especially as bears continue to disperse and become established on the BDNF.
- Human-bear conflicts may occur from improper food storage, increased grizzly bear and human overlap during recreation activities, or from vehicle strikes (unlikely). The BDNF has a food storage order, informational signage, food storage infrastructure, and employs a bear technician to disseminate bear safety information to help mitigate the potential for conflict. However, management removals are still possible due to improperly stored attractants.
- Temporary or permanent road construction may occur as part of project-related actions which could temporarily affect or permanently reduce secure habitat available to grizzly bears to meet life-history needs.

- Continued implementation of forest plan goals, objectives, and standards would likely benefit the grizzly bear because healthy ecosystems are maintained or improved that provide required habitat to meet life-history needs, secure habitat is maintained in areas protected by Wilderness or Recommended Wilderness designations, and habitat connectivity is supported to promote dispersal.
- Cumulative effects from private land development may contribute to habitat fragmentation and slow dispersal and increase risks of human-grizzly conflict.

Glossary

Bear Management Unit (BMU): Areas within recovery zones that are utilized for habitat evaluation and population monitoring (U.S. Department of the Interior 1993). BMUs were established on the BDNF as part of the Greater Yellowstone Ecosystem Grizzly Bear Conservation Strategy. Projects on the BDNF do not use BMUs to analyze secure habitat. BMUs are used for reporting requirements outlined in Appendix G of the forest plan.

Chronic unauthorized motorized use: also referred to as “frequent” in some instances; an area on the BDNF where illegal access occurs such that there is evidence (a visible user-created road, tire tracks, etc.) that the use occurs more than once, and any public user may consider the visible route a drivable and legal road (e.g., there are no barriers, closed signs, etc.).

Demographic monitoring area (DMA): areas identified within recovery zones that contain suitable habitat to support a population of grizzly bears over the long term and the population is surveyed and estimated annually with limits on mortality.

Displacement: measurable effects to individual grizzly bears, which includes long-term or permanent avoidance of otherwise suitable habitat, that may manifest in reduced body condition, individual growth rates, reproductive rates, or other physiological factors.

Disturbance: behavioral response with an insignificant effect to an individual grizzly bear due to a short duration, activity location, environmental factors, or other reasons.

Fall Season Open Routes: miles of open motorized road and trail and open motorized road and trail densities that are legally open to motorized use during big game rifle season (generally October 15-December 1) using the 2006 Montana Fish, Wildlife, and Parks Big Game Hunt Units. Fall season miles and densities are calculated as part of the Elk Security Goal.

General Season Open Routes: miles of open motorized road and trail and open motorized road and trail densities that are legally open to motorized use any time during the year as calculated by landscapes identified in the forest plan. General season miles and densities are part of the Wildlife Security Goal.

Grizzly Bear Analysis Unit (GBAU): an area used to document secure habitat effects over time that is approximately the size of a female home range. On the BDNF, this equates to approximately 100 square miles.

Open road, trail, or route (secure habitat metric): Any road or trail that is potentially drivable (i.e. any roads or trails that are authorized for motorized use, either for public or for administrative use only) and any road or trail that is not authorized but accessible via motorized vehicle (i.e. undetermined roads or roads closed only by sign or MVUM), or new, user-created roads. These roads and routes are buffered by 500 meters and not included in secure habitat. Numbers of locations of open routes are subject to change if additional on-the-ground information is collected as part of project analysis.

Open motorized road and trail density (road density metric; OMTRD): any road or trail open to public motorized use, any road or trail closed to the public but open for permitted or administrative purposes, any route permitted under a special use permit, such as a private road use, where motorized vehicles

may be utilized, or any route with unknown status occurring on non-Forest Service inholdings (such as non-easement private routes). These are identified on page 53 of the forest plan and contribute to open motorized road and trail density calculations.

Primary conservation area (PCA): areas identified within recovery zones where the most conservative habitat protection occur, with maintenance of habitat conditions that are compatible with increasing grizzly populations and allowing for expansion outside of the PCA.

Primitive: an area characterized by essentially unmodified natural environment of fairly large size. Interaction between users is very low and evidence of other area users is minimal. The area is managed to be essentially free from evidence of man-induced restrictions and controls. Motorized use within the area is not permitted (U.S. Department of Agriculture 2009b).

Recreation Use: Low is 0-20 people per day; moderate is 20-40 people per day; high is over 40 people per day (U.S. Department of Agriculture 2009b).

Route: refers to roads and trails, either motorized or non-motorized.

Secure habitat: areas which are greater than 500 meters away from any other ownership, greater than 500 meters away from any route where motorized access is possible and are greater than 10 acres in size.

Semi-primitive non-motorized: areas characterized by a predominately natural or natural-appearing environment of moderate-to-large size. Interaction between users is low, but there is often evidence of other users. The area is managed in such a way that minimum on-site controls and restrictions may be present, but are subtle. Motorized use is not permitted, including airplanes, helicopters, etc. (U.S. Department of Agriculture 2009b).

Semi-primitive motorized: areas characterized by a predominately natural or natural-appearing environment of moderate-to-large size. Interaction between users is low, but there is often evidence of other users. The area is managed in such a way that minimum on-site controls and restrictions may be present, but are subtle. Motorized use is permitted, including airplanes, helicopters, etc.. (U.S. Department of Agriculture 2009b).

Unauthorized motorized access: when a route is driven using a motorized vehicle in areas where motorized access is not permitted, such as lands within non-motorized areas (e.g. Wilderness, non-motorized allocations, etc.), on routes identified as non-motorized, or motorized use of land on undetermined routes that lack motorized status (e.g. user-created routes, cross-country travel), or temporary and intermitted off-road driving in areas where a route is not present (e.g. across meadows).

Undetermined route: Either non-system roads and trails (on page 53 of the forest plan) or user-created routes that were discovered as part of project specific planning efforts. If the route is not identified on page 53 of the forest plan, it is considered legally closed and motorized use is not permitted.

Wildland-Urban Interface (WUI): the line, area, or zone where structures and human development meet or intermingle with undeveloped wildland or vegetative fuel (U.S. Department of Agriculture 2009a). Although WUI areas are identified by counties with Community Wildfire Protection Plans, the term “WUI area” in this document utilizes the definition in the forest plan.

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Appendix A: Grizzly Bear Analysis Units and Secure Habitat on the Beaverhead-Deerlodge National Forest



United States Department of Agriculture

Grizzly Bear Analysis Unit and Secure Habitat Documentation on the Beaverhead-Deerlodge National Forest

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Introduction

This document describes the process to delineate Grizzly Bear Analysis Units (GBAUs) and model secure habitat for grizzly bear analysis on the Beaverhead-Deerlodge National Forest (“Forest” or “BDNF”). There are no specific guiding documents to create GBAUs for this species outside of grizzly bear recovery zones, although the Northern Regional Office provided guidance in a white paper (currently in draft: Montana/North Idaho Terrestrial Consultation Technical Team, 2022).

Bear Management Units and Analysis Units in the Greater Yellowstone Ecosystem

The Conservation Strategy for the Grizzly Bear in the Greater Yellowstone Ecosystem (GYE) delineated bear management units (BMUs) within the Primary Conservation Area (PCA) to measure the distribution of females with young and provide better resolution for habitat measurements (Figure 1) (Yellowstone Ecosystem Subcommittee, 2016). BMU size approximates the average lifetime range of an adult female grizzly bear in the GYE. In addition, BMUs were further divided into numbered subunits to represent the approximate average annual home range of an adult female grizzly bear. BMUs within the GYE includes portions of the BDNF and other federally managed lands. For example, the Hillgard BMU includes lands on both the Madison Ranger District of the Beaverhead-Deerlodge National Forest and the Bridger-Teton National Forest (Figure 1). Hillgard BMU, as referenced in this document, refers only to lands managed by the BDNF within the BMU.

The GYE also identifies Bear Analysis Units (BAU) for areas outside of the primary conservation area as part of biennial reporting requirements (Yellowstone Ecosystem Subcommittee, 2016) . However, the size of these BAUs is too large for secure habitat analysis. For example, the “Pioneer” bear management unit includes the entire Pioneer landscape (both east and west Pioneer Mountains) as well as portions of both Dillon and Wisdom Ranger Districts (Figure 1). For this reason, the BDNF developed more appropriately scaled Grizzly Bear Analysis Units for analyzing effects to secure habitat for grizzly bears, although the BDNF continues to use the GYE BAUs to meet reporting requirements.

Portions of the BDNF are also within the demographic monitoring area (DMA) in the GYE (Figure 2). The DMA has protocols which monitor and document population size, distribution of females with young, and mortality.

Grizzly Bear Management Unit and Secure Habitat Development on the Beaverhead-Deerlodge National Forest

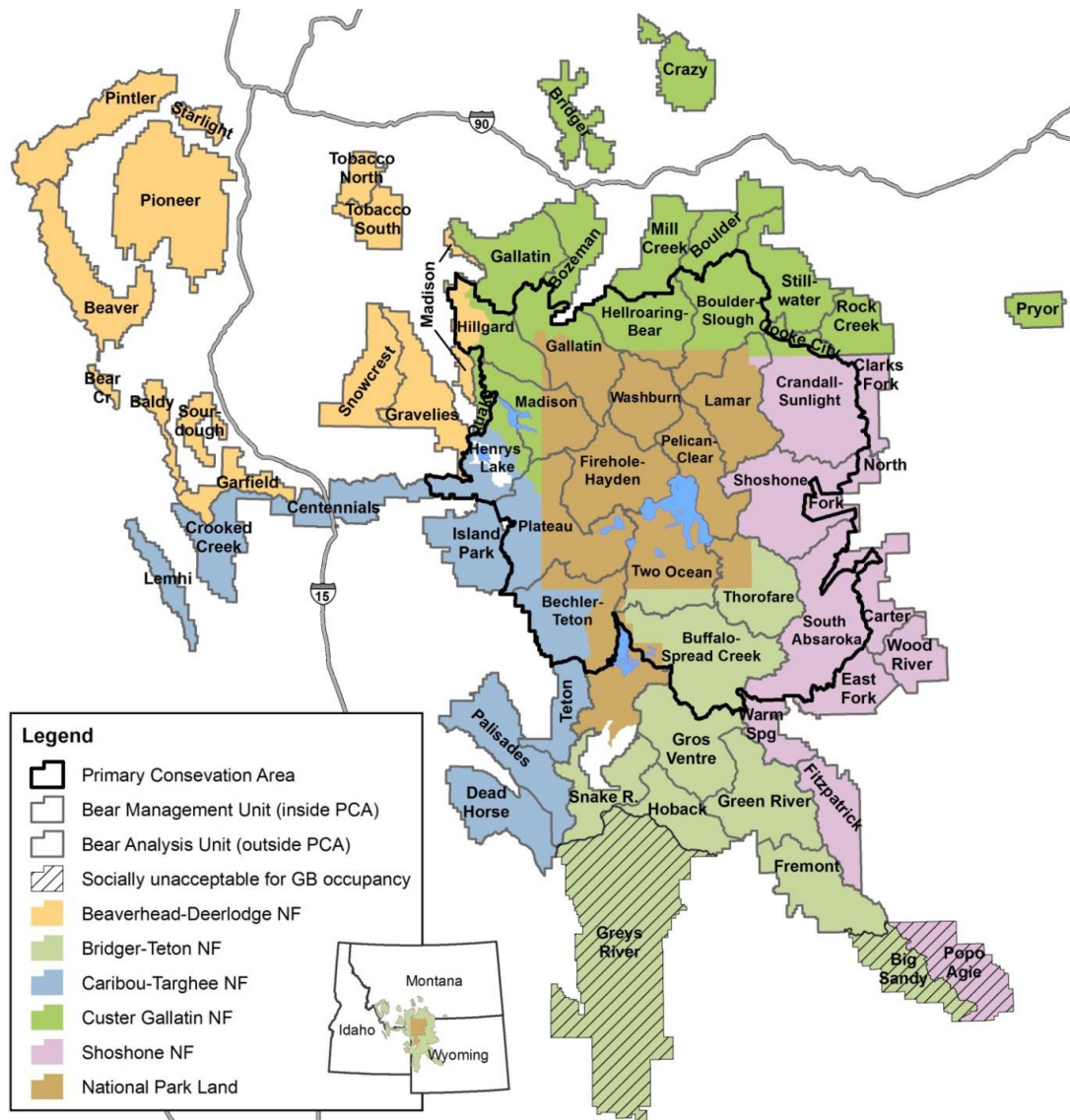


Figure 1. Bear management and bear analysis units as identified in the 2016 Conservation Strategy for the Grizzly bear in the Greater Yellowstone Ecosystem.

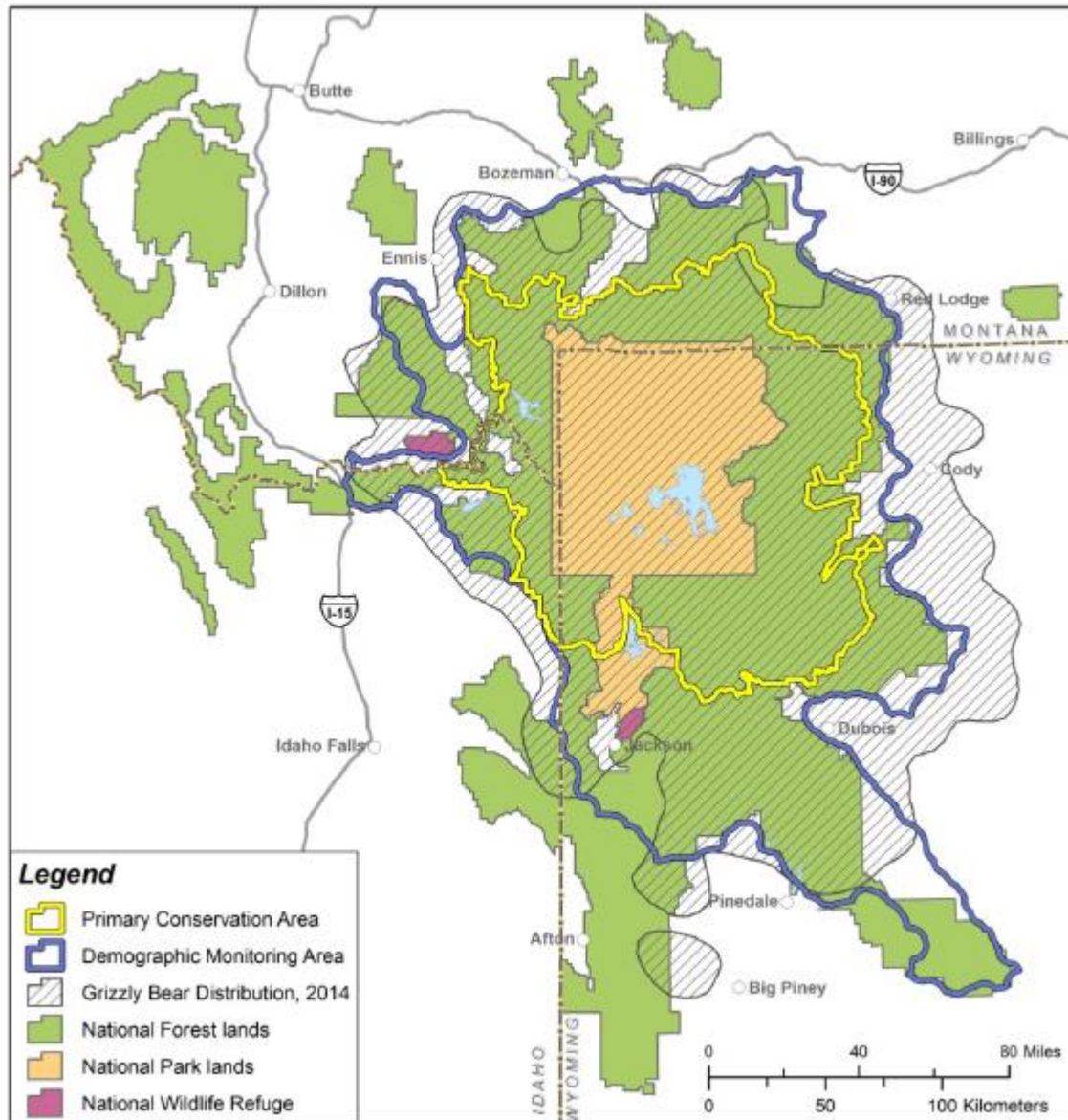


Figure 2. Federal lands within the Greater Yellowstone Ecosystem, the Primary Conservation Area (PCA), and the Demographic Monitoring Area (DMA). The Beaverhead-Deerlodge National Forest has some overlap with both the PCA and the DMA.

Bear Management Units and Zones in the Northern Continental Divide Ecosystem

Similar to the GYE, the Northern Continental Divide Ecosystem (NCDE) identifies PCAs and three additional management zones (Northern Continental Divide Ecosystem Subcommittee, 2021). The PCA in the NCDE is managed as a source area with continual occupancy by grizzly bears and maintenance of habitat condition. It represents core habitat for grizzly bears and is expected to support the highest densities of bears with long-term population stability. Like the GYE, the PCA is subdivided into BMUs for habitat evaluation and population monitoring. The BDNF does not

Grizzly Bear Management Unit and Secure Habitat Development on the Beaverhead-Deerlodge National Forest

intersect with the NCDE PCA (Figure 3). For this reason, none of the existing BMUs within the NCDE PCA were considered for secure habitat analysis on the Forest.

There are three management zones within the NCDE, each with varying levels of habitat protections depending on the importance to grizzly bear populations. The BDNF intersects with Management Zone 2, which is managed to provide the opportunity for grizzly bears to move between the NCDE and adjacent ecosystems. Habitat management direction is maintained at the Federal and State Level. However, the size of the zones are too large for secure habitat analysis (7,280 square miles; Figure 3) (Northern Continental Divide Ecosystem Subcommittee, 2021).

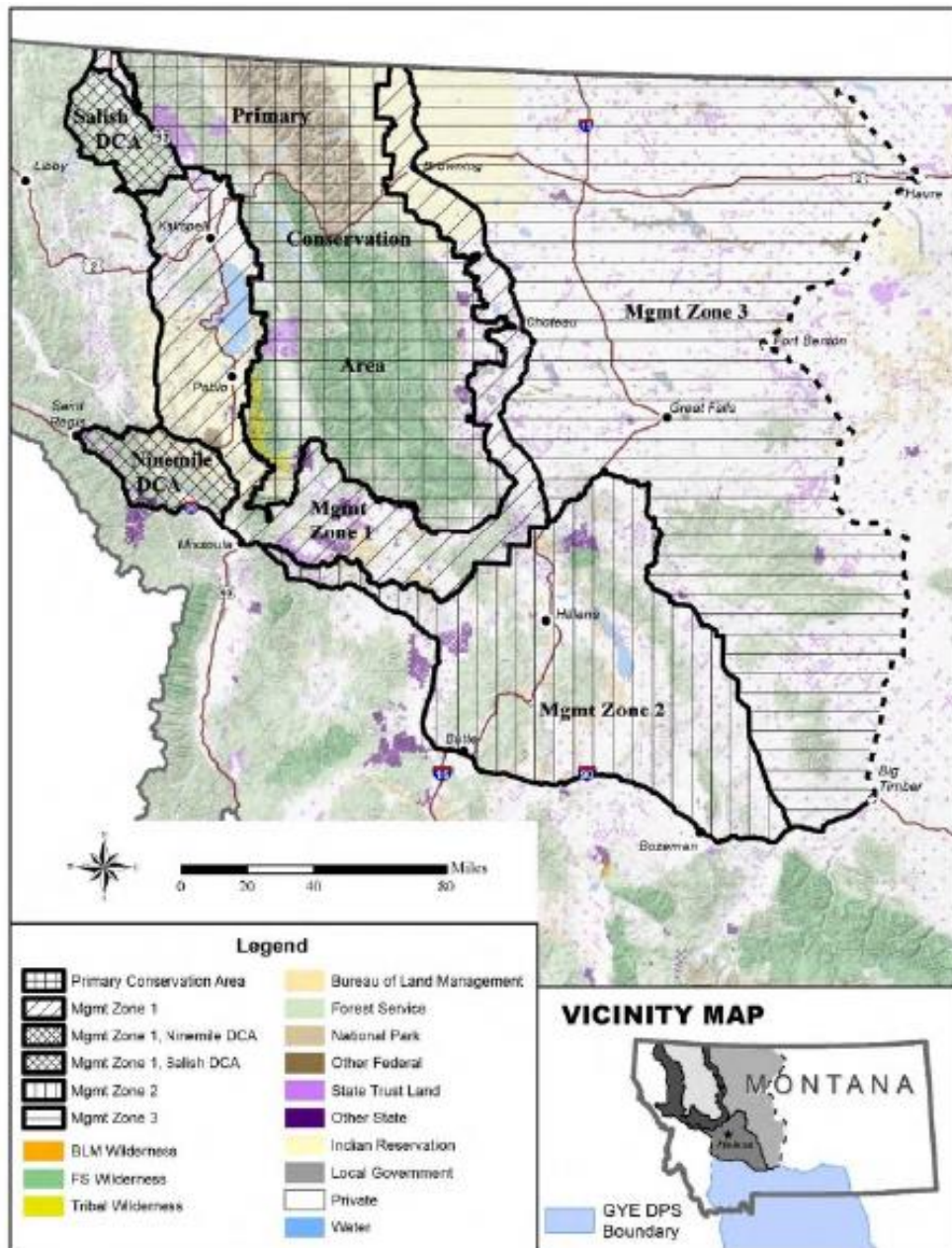


Figure 3. Grizzly bear primary conservation area and management zones in the Northern Continental Divide Ecosystem.

Previous Secure Habitat Analysis Methods

The BDNF previously utilized a variety of methods to analyze effects to wildlife secure habitat, including calculations of both open motorized road and trail density (OMRTD; see glossary) by landscape, 2006 hunting units (as described in the forest plan; USDA 2009), and/or a project-specific analysis area. Secure habitat, defined as areas larger than 10 acres that are 0.3 miles or more from a route open to motorized vehicles, were also used to analyze project effects.

Updated Secure Habitat Analysis Method

Analysis units delineated within Grizzly Bear Recovery Zones or in Primary Conservation Areas on some National Forests use the term “Bear Management Units” (BMU) and “Bear Analysis Units” (BAU). A majority of the BDNF consists of lands outside of these areas, although portions of the Butte and Pintler Ranger Districts are within Zone 2 of the NCDE and some portions of the Madison Ranger District are within the GYE grizzly bear DMA and the Yellowstone Grizzly Bear Recovery Zone.

To eliminate confusion, the BDNF decided to use the term “Grizzly Bear Analysis Unit” (GBAU) to avoid any inference that these units are necessary for analysis, monitoring, or management related to black bears. GBAU delineations are solely for the purpose of maintaining consistent analysis boundaries so the analysis of potential effects to grizzly bear secure habitat is more easily compared and monitored over time and across projects. GBAUs do not constrain nor direct management, nor are they meant to communicate an intent to manage for grizzly bear survival and reproductive success like recovery zones.

The Forest delineated grizzly bear analysis units (except for subunits previously identified within the GYE) beginning in January of 2021. The Forest held a formal meeting on June 3, 2021 to propose draft units. Initial discussions incorporated adjacent federal lands (such as the Bureau of Land Management), although these lands were eventually removed from GBAUs because of the challenge in obtaining open motorized use information across agencies and differing definitions in agency guiding documents. The Elkhorn portion of the Forest is identified as a GBAU (Boulder River BDNF) by the Helena-Lewis and Clark National Forest and is addressed in that document (Clark, 2020; Appendix A).

Data Sources and Assumptions

National Forest Administrative Boundary

The Forest limited GBAUs to the Beaverhead-Deerlodge National Forest external administrative boundary, as delineated in the USDA Automated Lands Program (ALP) database (obtained from the Northern Regional Enterprise Data Warehouse).

National Resource Conservation Service (NRCS) 5th code (HUC10) watersheds

NRCS 5th code watershed layers, obtained from the Northern Region Enterprise Data Warehouse, served as a starting point for GBAU delineation. On the BDNF, these watersheds vary in size from 58 to 387 square miles.

Transportation

Transportation infrastructure, including known existing roads open to motorized use, restricted, administrative, and other designations (refer to the glossary) from the INFRA database (obtained from the Northern Region Enterprise Data Warehouse) were used to identify potential GBAU boundaries in some areas and calculate secure habitat. Refer to the *Secure Habitat* section for additional descriptions.

The Forest acknowledges that some routes may not exist within the aforementioned dataset and other corporate data. These routes are generally considered non-system/unauthorized and may or may not be accessible or used by motorized equipment. The BDNF makes every effort to identify and incorporate all routes regardless of status into secure habitat calculations for grizzly bear. For example, if a route is identified during project planning that has the potential for motorized use and is not part of the corporate databases, a buffer would be applied to the extent of this route and the area would be removed from secure habitat calculations as if it were an open and designated motorized route. We assume that motorized use is occurring on all routes that exist on the ground and the lands adjacent to these routes are subtracted from secure area, unless and until proven otherwise. This represents the most conservative method to analyze secure habitat for this species.

Streams

Perennial, intermittent, and ephemeral streams and associated drainages from the National Hydrologic Dataset (NHD) were also utilized to draw GBAU polygons if other data sources did not provide a clear boundary. This was rarely used but provided an additional linear feature to create polygons of the appropriate size.

Grizzly Bear Analysis Units

On the BDNF, the size of grizzly bear analysis units was based on the best available information for annual female home range. Home range size varies in relation to food availability, weather conditions, and interactions with other bears. In addition, individual bears may extend their range seasonally from one year to the next. Female grizzly bear home ranges vary based on location, with areas between 26-94 square miles used in the NCDE (Northern Continental Divide Ecosystem Subcommittee, 2021) and between 100-150 square miles in the GYE (Bjornlie et al., 2014). Because the BDNF is located between two these two ecosystems and grizzly bear sightings have increased, the Forest decided to use 100 square miles as the minimum GBAU size. In addition, habitat, food sources, and elevations within the BDNF are generally more similar to the GYE compared to the NCDE.

Guidelines

1. GBAUs should be biologically meaningful and incorporate an adequate range of habitats and elevations to include areas suitable for denning, summer, and spring use.
2. GBAUs may be larger than the minimum of 100 square miles, if needed, to incorporate the large range of habitats needed to support a female bear.
3. GBAUs should not extend beyond the National Forest administrative boundary. Data to determine secure habitat within GBAUs outside of National Forest system lands may not be attainable (refer to Secure Habitat section).

4. Private land within the administrative boundary (e.g., checkerboard or inholdings) are included as part of GBAU size calculations.
5. Areas that are not part of GBAUs include small, isolated parcels that are not contiguous with other National Forest System lands, such as small administrative sites. Areas where this has occurred is noted within the maps in Appendix A and in Table B-2.
6. Units are developed without considering the amount or pattern of motorized routes.
7. Use existing features (ridgetops, major roads, rivers, watersheds) to define GBAU boundaries.
8. Extremely linear and narrow GBAUs or those with a linear section may not be as biologically meaningful to bears (see guideline 1). Therefore, adjustments to areas that contained linear shapes were made, where possible.

Process

The stepwise process for designing GBAUs follows:

1. Identify existing recovery zone BMUs. Only one falls within the BDNF: the Hillgard Bear Management Unit as part of the GYE (Figure 1). This area is considered a standalone unit and was not altered or divided into GBAUs with the exception of an adjacent 45-acre polygon west of the Hillgard BMU. This 45-acre area is part of the Lee Metcalf Wilderness and was not included in the Hillgard BMU during designation. If a project occurs within this small area, the entirety of the habitat within the adjacent Hillgard BMU and this 45 acre area would be considered as part of the analysis (refer to the “isolated” area adjacent to the Hillgard BMU in Appendix A).
2. Clip HUC10 watershed boundaries to the National Forest Administrative Boundary. Lands outside of the administrative boundary were not considered as part of BDNF GBAUs.
3. Calculate acres of the resulting polygons and inspect each to ensure minimum square miles (rationale 2) and narrow and linear polygon (rationale 8) parameters are met.
4. In areas where guidelines 2 and 8 are not met, use roads and stream layers to refine GBAU boundaries.
5. Re-calculate polygon areas based on new boundaries and ensure all guidelines are met. This includes individual review from biologists familiar with the area to ensure there is available habitat and elevation within each proposed GBAU. This step was reiterated multiple times as boundary changes affected multiple GBAUs.
6. This resulted in 43 GBAUs (excluding Hillgard BMU; Appendix A). Seven separate GBAUs did not meet the 100 square miles guidance for size because of constraints on the shape of the administrative boundary (Appendix B). In these instances, adjacent GBAUs could be considered for project-specific analyses at the biologist’s discretion.

Secure Habitat

Analyzing secure habitat within grizzly bear analysis units provides a consistent method to analyze potential effects to grizzly bears on the BDNF. Recent literature (e.g., Northrup et al., 2012; Proctor et al., 2018; Proctor et al, 2019) suggests the distance and location of roads in relation to certain habitats may be as or more important than road density in predicting impacts to bears. This measure of “secure habitat” (refer to glossary) that results from the distance from motorized roads is one of the key issues related to the effects of motorized access on grizzly bears and is important to the survival and reproductive success of this species. Secure habitat more adequately represents the potential effects related to motorized access as it provides a more accurate indication of the spatial mix of motorized routes and secure habitat. Limiting impacts from roads to bears depends on use, location, and distribution of secure habitat that is a function of the spatial arrangement of motorized routes.

Secure habitat is relatively free of motorized access during the non-denning period and an important habitat component for adult females to successfully rear and wean offspring (Mace & Manley, 1993; Mace et al., 1996; Wakkinen & Kasworm, 1997). Since the BDNF is between both the GYE and the NCDE recovery zones, guidance for both areas was considered to define secure habitat. Within the GYE, secure habitat is defined as area that is more than 500 meters from an open or gated motorized access route or reoccurring helicopter flight line and must be greater than or equal to 10 acres in size (Yellowstone Ecosystem Subcommittee, 2016). Within the NCDE, the term “secure core” is used in a similar manner and consists of an area within the primary conservation area (which is specifically managed for grizzly bear populations) of more than 500 meters from a route open to wheeled motorized use during the grizzly bear non-denning season, or a gated route, and that is greater than or equal to 2,500 acres in size (Northern Continental Divide Ecosystem Subcommittee, 2021).

The BDNF decided to utilize the GYE recommendation, which consists of at least 10 acres that is greater than 500 meters from an open or gated motorized access route. The habitat on the BDNF is more similar to the GYE than the habitat within the NCDE. In addition, grizzly bears use and can successfully rear cubs in areas with less than 2,500 acres of secure habitat (as evidenced in the GYE ecosystem). In general, secure blocks of 2,500 acres or greater are typically part of designated wilderness or roadless areas. On the BDNF, these large secure tracks are infrequent, and bears continue to expand their distribution and use the landscape. Therefore, using 10 acre blocks for secure habitat for bears makes sense within the Forest boundary.

Guidelines

1. Identify route type and determine if a 500 meter buffer is warranted:
 - a. Motorized access routes are defined as all routes having motorized use or the potential for motorized use (including restricted roads that are not permanently blockaded), such as motorized trails, highways, and forest roads. Private, state, and county roads that intersect or are within 500 meters of the Forest boundary are also considered motorized (USDA 2009). Secure habitat is calculated using a 500 meter buffer from routes with this classification.
 - b. Restricted routes are those in which use is restricted seasonally or yearlong (USDA 2009). These roads are generally gated to control access but may also include routes where use is allowed by permittees but not the general public.

Because these routes are navigable and may be driven, they are considered motorized and are buffered by 500 meters. These roads may fall into the “administrative” category (see glossary).

- c. Permanently restricted routes are those in which are considered impassible because of vegetation growth or permanent, impassable barriers. These areas are not subject to the 500 meter buffer for secure habitat calculations as the route is not accessible to motorized travel.
 - d. Decommissioned, obliterated, or reclaimed routes are managed with the long-term intent of no motorized use and no longer function as motorized routes. These roads are not subject to the 500 meter buffer for secure habitat calculations unless they have known and existing motorized use. If project decisions authorize decommissioning, obliteration, or reclaiming roads to prevent motorized use, then secure habitat calculations would change after the project is implemented.
2. If non-system/unauthorized routes or trails are discovered within a project area, calculations for secure habitat are based on the potential for motorized use. If the route or trail is potentially accessible via motorized means, it is considered the same as an open, motorized route and the 500-meter buffer is applied. If no confirmation of accessibility can be made, the route is assumed accessible by motorized vehicles and the 500-meter buffer is applied.
 3. Apply a 500-meter buffer to all Forest Service lands adjacent to and within the Forest Service administrative boundary that are not under Forest Service ownership. The Forest lacks inventory information and has no management authority over non-Forest lands, so this buffer is a conservative approach from effects that may result from non-Forest actions on non-Forest lands that may occur adjacent to Forest lands.

Process

1. Create a 500 meter buffer on Forest lands from all non-Forest Service ownership, including external adjacent lands and inholdings.
2. Create a 500 meter buffer on motorized access roads and trails, restricted roads, and other roads and trails that have known motorized use.
3. Use “erase” to remove the buffers developed in the previous steps.
4. Remove any remaining polygons that are less than ten acres in size.
5. Merge remaining polygons into a single polygon, then intersect with GBAU boundaries.
6. The resulting polygons represent secure habitat, which excludes buffers from adjacent non-Forest Service ownership (step 1) and motorized routes and trails (step 2), and are larger than 10 acres (step 4). This resulted in a total of 1,509,700 acres of secure habitat (42 percent of the Forest; Appendix B) on the BDNF. This calculation represents a baseline of known motorized routes and trails.

Future Updates and Other Issues

Although infrequent, land sales, purchases, donations, and exchanges occur between the Beaverhead-Deerlodge National Forest and private individuals or organizations. In these instances, GBAU boundaries and secure habitat may be adjusted or recalculated based on land exchanges. If these types of changes are required, the US Fish and Wildlife Service will be notified of these updates.

The most up-to-date road and trail inventory, based on the most current information, is used to inform grizzly bear secure habitat. Site-specific inventories may reveal the need for route position or alignment corrections, such as finding additional non-system/unauthorized routes (which may or may not support illegal motorized access) or discovering a route that is passable with a motorized vehicle despite a non-motorized status. Inventory will be updated after such discoveries.

As the inventory is updated with new or better site-specific data, secure habitat calculations will change. There are two types of changes to secure area: 1) secure area baseline calculations are updated due to improved accuracy of inventory data which results in baseline changes, but *no* changes to on-the-ground effects (addressed at the programmatic level); and 2) secure area changes because of on-the-ground actions (road decommissioning, obliteration, etc. as part of a project) which results in changes to both the baseline secure area *and* on-the-ground effects (addressed at the project level). This will likely occur at least once annually or as project-specific inventories are conducted and the U.S. Fish and Wildlife Service will be notified through the appropriate means.

Glossary and Abbreviations

Administrative road: a road that is restricted for public use but may be used or permitted by a resource management agency to obtain access to specific public land areas.

Bear Analysis Unit (BAU): areas outside of the primary conservation area where habitat for grizzly bears is measured and reported on even-numbered years per the Conservation Strategy for the Grizzly Bear in the Greater Yellowstone Ecosystem (2016).

Bear Management Unit (BMU): areas within primary conservation areas in the Greater Yellowstone Ecosystem that are used to measure the distribution of females with young and provide for better resolution of habitat measurement.

Grizzly Bear Analysis Unit (GBAU): an area developed for the purpose of analyzing project-specific effects to grizzly bears on the Beaverhead-Deerlodge National Forest.

Greater Yellowstone Ecosystem (GYE): an area in northwest Wyoming, eastern Idaho, and southwest Montana that contains the Greater Yellowstone grizzly bear Recovery Zone.

Motorized access route: all routes having motorized use or the potential for motorized use (e.g., restricted roads), including motorized trails, highways, and forest road. Private roads and state and county highways are included (USDA 2009).

Northern Continental Divide Ecosystem (NCDE): an area in northwest Montana that contains the Northern Continental Divide grizzly bear Recovery Zone.

Open motorized road and trail density (OMRTD): a measurement of motorized routes open to use, measured at the completion of project implementation in miles per square mile. This consists of motorized roads and trails that fall within the external forest boundary and are (1) open to public motorized use, (2) open for permitted and/or administrative use and remain on the landscape, and (3) motorized routes on private inholdings.

Primary Conservation Area (PCA): areas identified within the 2019 Conservation Strategy for the Grizzly Bear in the Northern Continental Divide Ecosystem and in the 2016 Conservation Strategy for the Grizzly Bear in the Greater Yellowstone Ecosystem. Within the NCDE, the PCA is defined as an area to be managed as a source area for the grizzly bear population (Northern Continental Divide Ecosystem Subcommittee, 2021). Within the GYE, the PCA is defined as an area identified within the 1993 Grizzly Bear Recovery Plan where grizzly bear population and habitat is actively managed with specific direction. The PCA is considered a secure area for grizzly bears with population and habitat conditions maintained to ensure a recovered population is maintained for the foreseeable future and to allow bears to continue to expand outside of this area (Yellowstone Ecosystem Subcommittee, 2016).

Recovery Zone: areas established by the U.S. Fish and Wildlife Service in 1993 to delineate regions that have sufficient habitat to recover grizzly bear populations.

Restricted road: a road on which motorized vehicle use is restricted seasonally or yearlong by an effective physical obstruction, such as a gate (Interagency Grizzly Bear Committee, 1994) .

Route: a collective term that refers to either roads and/or trails that may or may not be motorized.

Secure habitat: areas outside of recovery zones or Primary Conservation areas which contain no motorized travel routes during the active bear year, are more than 0.31 miles (500 meters) from an open or gated motorized route, and are at least 10 acres in size.

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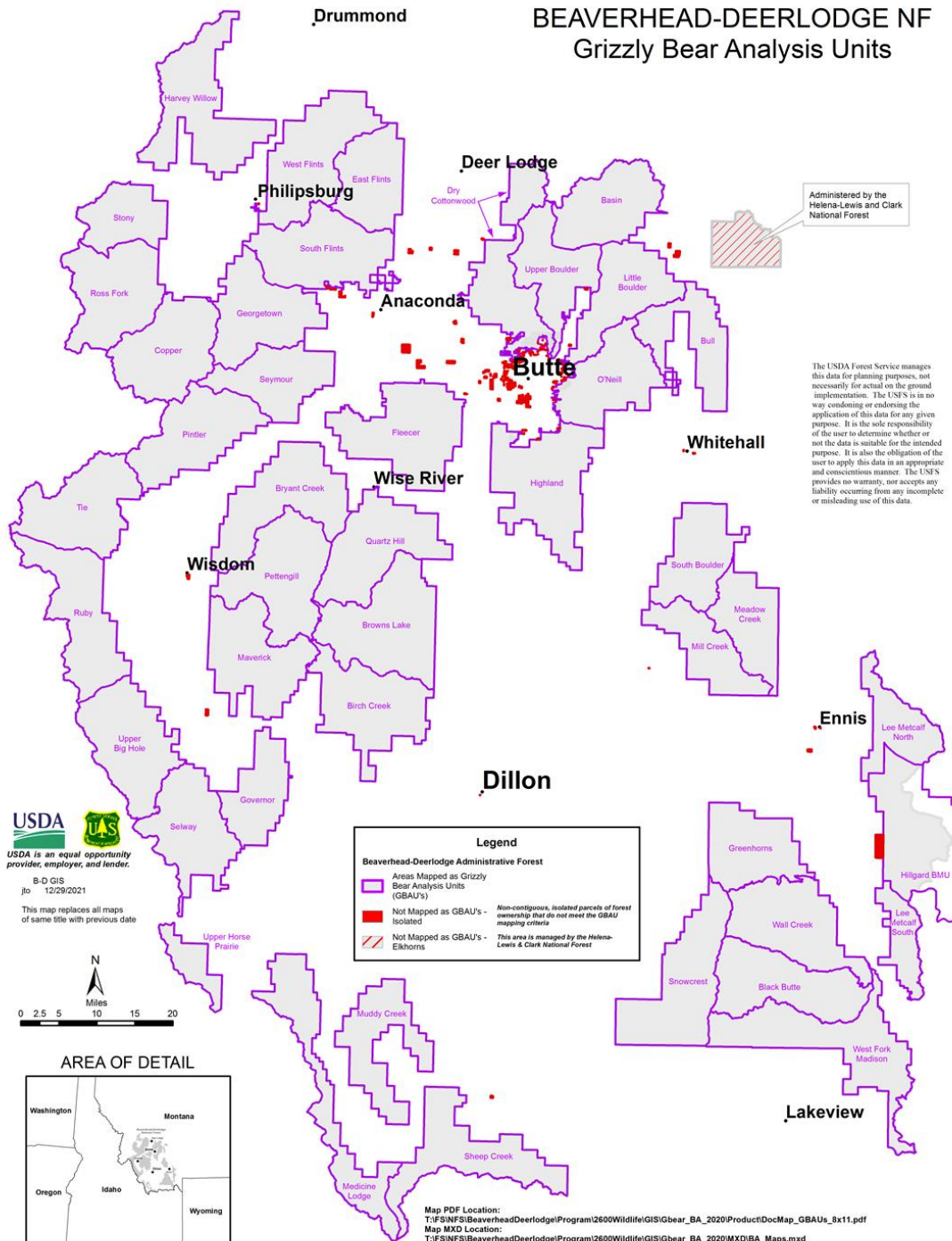
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Grizzly Bear Management Unit and Secure Habitat Development on the Beaverhead-Deerlodge National Forest

[USDA] U.S. Department of Agriculture, Beaverhead-Deerlodge National Forest. 2009. Land and Resource Management Plan. 566 pp.

Appendix A: Map of Grizzly Bear Analysis Units on the Beaverhead-Deerlodge National Forest.



Appendix B: Grizzly Bear Analysis Unit names, associated areas, and excluded parcels on the Beaverhead-Deerlodge National Forest.

Table B- 1. Total area, ownership area, and secure area within Grizzly Bear Analysis Units on the Beaverhead-Deerlodge National Forest.

| Reporting Landscape ^a | GBAU Name | Total Area | | Ownership | | | | Secure Area | | Elevation range (feet) |
|----------------------------------|----------------|--------------|---------|----------------|------------------|---------------------------|-----------------------------|-------------|-----------------|------------------------|
| | | Square miles | Acres | Forest (acres) | Forest (percent) | Private Inholding (acres) | Private Inholding (percent) | Acres | Percent of GBAU | |
| Big Hole | Fleecer | 160 | 102,597 | 99,024 | 97 | 3,573 | 3 | 23,488 | 23 | 5,419-9,423 |
| | Pintler | 136 | 86,885 | 84,969 | 98 | 1,916 | 2 | 57,196 | 66 | 6,038-10,788 |
| | Ruby | 145 | 92,669 | 90,549 | 98 | 2,120 | 2 | 52,965 | 57 | 6,216-10,407 |
| | Seymour | 104 | 66,764 | 66,188 | 99 | 576 | 1 | 30,168 | 34 | 6,048-10,788 |
| | Tie | 139 | 89,163 | 88,713 | 99 | 450 | 1 | 30,168 | 34 | 6,134-8,853 |
| | Upper Big Hole | 146 | 93,269 | 90,045 | 97 | 3,224 | 3 | 40,316 | 43 | 6,649-10-614 |
| Boulder River | Basin | 117 | 74,723 | 66,916 | 90 | 7,808 | 10 | 13,796 | 18 | 5,340-8,748 |
| | Little Boulder | 113 | 72,508 | 69,050 | 95 | 3,458 | 5 | 22,392 | 35 | 4,585-8,810 |
| | Upper Boulder | 108 | 69,366 | 63,064 | 91 | 6,302 | 9 | 14,142 | 20 | 5,560-8,446 |
| Clark Fork Flint | Dry Cottonwood | 130 | 83,334 | 66,969 | 80 | 16,395 | 20 | 9,557 | 11 | 5,114-8,446 |
| | East Flints | 101 | 64,827 | 60,517 | 93 | 4,310 | 7 | 31,776 | 49 | 5,196-10,184 |
| | Georgetown | 135 | 86,081 | 70,857 | 82 | 15,225 | 18 | 32,020 | 37 | 5,442-10,624 |
| | Harvey Willow | 169 | 108,448 | 100,013 | 92 | 8,436 | 8 | 30,126 | 28 | 3,926-8,289 |
| | South Flints | 151 | 96,516 | 74,881 | 78 | 21,635 | 22 | 19,342 | 20 | 5,064-9,066 |
| | West Flints | 154 | 98,411 | 83,735 | 85 | 14,676 | 15 | 15,509 | 16 | 4,720-9,515 |
| Gravelly | Black Butte | 143 | 91,232 | 91,023 | >99 | 209 | <1 | 56,792 | 62 | 5,999-10,529 |
| | Greenhorns | 111 | 70,887 | 70,305 | 99 | 528 | 1 | 37,224 | 53 | 5,874-9,696 |
| | Snowcrest | 164 | 105,007 | 103,851 | 99 | 1,156 | 1 | 73,797 | 70 | 5,855-10,578 |
| | Wall Creek | 146 | 93,181 | 91,846 | 99 | 1,335 | 1 | 53,402 | 57 | 5,822-10,266 |

Grizzly Bear Management Unit and Secure Habitat Development on the Beaverhead-Deerlodge National Forest

| Reporting Landscape ^a | GBAU Name | Total Area | | Ownership | | | | Secure Area | | Elevation range (feet) |
|----------------------------------|---------------------------|-----------------|---------|----------------|------------------|---------------------------|-----------------------------|-------------|-----------------|------------------------|
| | | Square miles | Acres | Forest (acres) | Forest (percent) | Private Inholding (acres) | Private Inholding (percent) | Acres | Percent of GBAU | |
| | West Fork Madison | 179 | 114,246 | 112,400 | 98 | 1,847 | 2 | 52,900 | 46 | 5,848-10,204 |
| Jefferson River | Bull | 101 | 64,482 | 50,309 | 78 | 14,173 | 22 | 10,662 | 17 | 4,726-8,600 |
| | Highland | 170 | 109,013 | 101,476 | 93 | 7,537 | 7 | 27,306 | 25 | 5,428-10,217 |
| | O'Neill | 118 | 75,819 | 72,586 | 96 | 3,233 | 4 | 26,635 | 35 | 5,150-8,630 |
| Lima Tendoy | Governor | 87 ^b | 55,995 | 55,875 | >99 | 120 | <1 | 29,196 | 52 | 6,655-9,804 |
| | Medicine Lodge | 139 | 88,695 | 87,381 | 99 | 1,314 | 1 | 36,663 | 41 | 6,855-11,129 |
| | Muddy Creek | 111 | 71,125 | 70,804 | >99 | 321 | <1 | 16,058 | 23 | 6,045-9,696 |
| | Selway | 132 | 84,283 | 81,599 | 97 | 2,683 | 3 | 31,298 | 37 | 6,622-9,797 |
| | Sheep Creek | 141 | 89,976 | 88,690 | 99 | 1,286 | 1 | 40,576 | 45 | 6,311-10,965 |
| | Upper Horse Prairie | 36 ^b | 23,211 | 23,211 | 100 | 0 | 0 | 7,486 | 32 | 7,052-9,558 |
| Madison | Hillgard BMU ^c | 110 | 70,436 | 68,419 | 97 | 2,017 | 3 | 61,790 | 88 | 6,114-11,273 |
| | Lee Metcalf North | 81 ^b | 51,663 | 22,274 | 43 | 29,389 | 57 | 14,634 | 28 | 5,455-11,145 |
| | Lee Metcalf South | 51 ^b | 32,949 | 32,316 | 98 | 632 | 2 | 26,878 | 82 | 6,147-11,293 |
| Pioneer | Birch Creek | 144 | 92,307 | 90,189 | 98 | 2,118 | 2 | 32,226 | 35 | 5,852-11,136 |
| | Browns Lake | 173 | 110,463 | 109,359 | 99 | 1,105 | 1 | 61,631 | 56 | 5,524-11,129 |
| | Bryant Creek | 154 | 98,450 | 98,009 | >99 | 440 | <1 | 40,372 | 41 | 5,750-9,492 |
| | Maverick | 144 | 92,398 | 90,764 | 98 | 1,634 | 2 | 57,590 | 62 | 6,173-9,407 |
| | Pettengill | 155 | 99,509 | 98,987 | 99 | 522 | 1 | 58,889 | 59 | 6,160-9,496 |
| | Quartz Hill | 142 | 90,623 | 86,608 | 96 | 4,015 | 4 | 35,020 | 39 | 5,261-10,414 |
| Tobacco Root | Meadow Creek | 94 ^b | 60,083 | 58,161 | 97 | 1,922 | 3 | 19,904 | 33 | 5,776-10,604 |

Grizzly Bear Management Unit and Secure Habitat Development on the Beaverhead-Deerlodge National Forest

| Reporting Landscape ^a | GBAU Name | Total Area | | Ownership | | | | Secure Area | | Elevation range (feet) |
|----------------------------------|---------------|-----------------|-----------|----------------|------------------|---------------------------|-----------------------------|-------------|-----------------|------------------------|
| | | Square miles | Acres | Forest (acres) | Forest (percent) | Private Inholding (acres) | Private Inholding (percent) | Acres | Percent of GBAU | |
| | Mill Creek | 92 ^b | 59,160 | 56,354 | 95 | 2,806 | 5 | 20,677 | 35 | 6,038-10,581 |
| | South Boulder | 107 | 68,244 | 59,476 | 87 | 8,769 | 13 | 22,983 | 34 | 4,963-10,588 |
| Upper Rock Creek | Copper | 139 | 88,946 | 84,875 | 95 | 4,071 | 5 | 45,358 | 51 | 5,548-10,457 |
| | Ross Fork | 140 | 89,850 | 85,606 | 95 | 4,245 | 5 | 53,586 | 60 | 5,350-8,997 |
| | Stony | 78 ^b | 50,184 | 45,370 | 90 | 4,814 | 10 | 20,047 | 40 | 4,743-8,653 |
| TOTAL WITHIN GBAUS | | 5,591 | 3,577,979 | 3,363,580 | 94 | 214,399 | 6 | 1,509,700 | 42 | |

^aReporting landscape: this refers to the landscapes as outlined in the forest plan. The Forest is currently required to report the linear road densities by landscape to meet the requirements of the 2013 biological opinion for Grizzly Bear on the BDNF: This metric will likely change with a new biological opinion as the BDNF changes analysis to secure area.

^bGBAU that is less than the preferred 100 square miles, most likely due to limitations in the shape of the Forest boundary. Governor is limited by the Forest boundary to the north and east. Upper Horse Prairie is an isolated island parcel. Lee Metcalf North and Lee Metcalf South are both restrained by the Hillgard BMU and the Forest boundary. Meadow Creek and Mill Creek in the Tobacco Root Mountains are also constrained by the Forest boundary. Stony is restricted by the Forest boundary on the north and west sides.

^cThe Hillgard bear management unit is part of the Greater Yellow Ecosystem Recovery Zone. Only those acres on the Beaverhead-Deerlodge National Forest are reported in this table. However, the entire BMU is used for reporting requirements in the GYE.

Table B- 2. Areas on the Beaverhead-Deerlodge National Forest not included as part of Grizzly Bear Analysis Units (refer to map in Appendix A for locations).

| Area Name | Description | Total Area | | Ownership | | | |
|------------------|--|--------------|--------|----------------|------------------|---------------------------|-----------------------------|
| | | Square miles | Acres | Forest (acres) | Forest (percent) | Private Inholding (acres) | Private Inholding (percent) |
| Elkhorn | Managed by the Helena-Lewis & Clark National Forest | 52 | 33,527 | 30,974 | 92 | 2,553 | 8 |
| Isolated parcels | Non-contiguous areas on the Beaverhead-Deerlodge National Forest | 9 | 5,474 | 5,474 | 100 | 0 | 0 |

Appendix B: 2020 Amended Biological Assessment to the 2012 forest plan Supplemental Biological Assessment on the Effects of Livestock Grazing in the Yellowstone Analysis area of the Beaverhead-Deerlodge National Forest on the Threatened Grizzly Bear

2020 Amended Biological Assessment
to the 2012 Forest Plan Supplemental Biological Assessment
on the Effects of Livestock Grazing in the Yellowstone Analysis Area
of the Beaverhead-Deerlodge National Forest
on the Threatened Grizzly Bear (*Ursus arctos horribilis*)

Prepared by Jenna Roose
Wildlife Biologist
October 8, 2020


/s/  _____ October 8, 2020
Jenna Roose, Wildlife Biologist Beaverhead-Deerlodge NF

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Introduction and Consultation History

This amended biological assessment documents the evaluation of effects of permitted livestock grazing and associated activities on the Threatened Grizzly Bear within livestock grazing allotments in the Yellowstone Analysis Area of the Beaverhead-Deerlodge National Forest (BDNF).

The need for an amendment and reinitiation of formal consultation is the result of the BDNF exceeding its incidental take for livestock related management removal of grizzly bears in the Yellowstone Analysis Area during the season of 2019.

That incidental take was determined in a 2010 Biological Opinion (File: M19 Beaverhead-Deerlodge National Forest October 4, 2010 (Revised forest plan)).

Consultation history for the revised forest plan began in 2008. The Forest Service initiated formal consultation on the effects of the Revised forest plan in 2008 during a time when the Yellowstone Grizzly Bear DPS was delisted. A revised biological assessment on the effects of the proposed action on grizzly bears when relisted was submitted in 2010 and applied to the Yellowstone Distinct Population Segment (DPS) portion of the BDNF. At the time, this is where grizzly bears were known to be present. The Yellowstone DPS portion of the BDNF encompasses the Madison, Gravelly and Tobacco Root landscapes in their entirety and the Highland Mountains. All areas are south and east of interstate highways 90 and 15. The take statement for grizzly bears at that time was anticipated at no more than 2 for the life of the Revised forest plan (considered 10-15 years) related to permitted grazing or associated activities authorized under the Revised forest plan that are reasonably believed to have contributed to the injury or death of a grizzly bear.

A Supplemental Biological Assessment was completed in 2012 to explain and document grizzly bear presence on the north end of the Forest, outside of the Yellowstone DPS. These grizzly bears were associated with the Northern Continental Divide Ecosystem (NCDE). A new analysis area was considered in this 2012 supplement titled the West and North Analysis Area (WNAA). The Yellowstone Analysis area stayed the same as in the 2010 biological assessment, the incidental take statement also remained the same and these items were incorporated by reference. A Biological Opinion was received in 2013 (06E11000-2012-F-0352 Revised forest plan).

This 2020 amendment amends the analysis on effects to grizzly bears from livestock management and associated activities in the Yellowstone Analysis Area. This 2020 biological assessment supersedes the previous BA's for this analysis area (original 2008, revised 2010 and supplemental 2012) prepared for the effects from livestock grazing in the Yellowstone Analysis area and will be used to tier to for future BA's prepared for livestock grazing.

As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary federal agency involvement or control over the action has been maintained (or is authorized by law) and if: (1) the amount or extent of incidental is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

Description of the Proposed Action

Action Area

The Yellowstone action area is the Yellowstone Grizzly Bear Distinct Population Segment (DPS) area, bounded by I-15 on the west, northwards to its junction with I-90. Interstate 90 forms the northern boundary of the Yellowstone grizzly bear DPS (Figure 1). The four Forest Service land areas within the DPS are the Gravelly Landscape (474,610 acres), the Madison Landscape (127,132 acres), the Tobacco Root Landscape (187,523 acres) and the Highland Mountains (108,261 acres). National Forest System lands within the DPS total 897,526 acres, or approximately 27 percent of the BDNF. The Madison Landscape includes portions of the Taylor-Hillgard unit of the Lee Metcalf Wilderness. The Taylor-Hillgard unit is included in the Grizzly Bear Recovery Zone (USFWS 1993).

A substantial portion of the action area occurs within habitat biologically suitable for grizzly bears identified by the U.S. Fish and Wildlife Service, a very similar area identified as the Demographic Monitoring Area (DMA), with minor boundary modifications (Figure 1).

Continued Livestock Grazing

The proposed action specifies the permitting of livestock grazing on the Forest contingent on the continued implementation of measures that provide for protection and conservation of the grizzly bear. There are no significant changes to the allotments analyzed in the proposed action from the 2010 or the 2012 Biological Assessment (BA). The most notable change is clarification of range management activities that are critical and required to manage livestock in these allotments such as salting and infrastructure maintenance (fences, corrals, rider cabins/buildings, water developments etc.).

General Description of Beaverhead-Deerlodge National Forest Grazing Allotments – Yellowstone AA

There are 64 active livestock grazing allotments in the Yellowstone Action area (Table 1). Of the total, 8 of these allotments have domestic sheep grazing (7 sheep/horse and 1 cattle/sheep/horse). Sheep grazing on these allotments generally occurs from July to October. Grazing in cattle/horse allotments occurs generally from June to October annually. It appears that rangelands in most allotments have stable to upward vegetation trends.

Table 1: Number of Allotments and Type of Livestock within the Yellowstone Action Area 2020

| Livestock Type | Total Number of Allotments | Number in DMA* | Number in Recovery Zone |
|--------------------|----------------------------|----------------|-------------------------|
| Bison | 1 | 0 | 0 |
| Cattle/Horse | 51 | 27 | 3 |
| Cattle/Sheep/Horse | 1 | 1 | 0 |
| Sheep/Horse | 7 | 5 | 0 |
| Vacant | 4 | 1 | 0 |
| Totals | 64 | 34 | 3 |

*DMA Demographic Monitoring Area

Required Grizzly Bear Conservation Measures

The following conservation measures and recommendations relative to livestock grazing are designed to minimize grizzly bear/livestock and grizzly bear/human conflicts, reducing the overall incidence of adverse effects on grizzly bear. Conservation measures from the 2010 BA (included in the 2012 BA as an appendix) that are still appropriate and effective were brought forward into this BA along with the inclusion of additional measures that have been ongoing in the action area but not previously stated.

1. All livestock depredation is reported to USDA Wildlife Services, MT Fish Wildlife and Parks Bear Management and the Forest Service.
2. Livestock depredations will be investigated and managed by Montana Fish Wildlife and Parks or its authorized agent (USDA Wildlife Services, see explanation below) following Interagency Nuisance Bear Guidelines (U.S. Fish and Wildlife Service et al. 1986, pp. 51-70).

3. Forest-wide Food Storage Order is required for all operations.
4. All dead livestock deemed to be a human health or safety hazard following distances in the Forest-wide Food Storage Order will be moved when the area is deemed safe for entry. When it is not reasonable or necessary to move dead livestock, permittees will promptly report carcass locations to the Forest Service and the Forest Service will work with the permittee to jointly determine the appropriate action.
5. Herders and riders will continue to watch livestock closely for sick, injured or stray animals.
6. The Forest Service will continue to provide information to livestock grazing permittees and their employees about conservation of grizzly bears, the potential occurrence of grizzly bears on grazing allotments, the risks of working in bear country, the need for heightened awareness of bears, appropriate personal safety measures, and proper behavior in bear country
7. Permittees and the Forest Service will continue to work in cooperation with Montana Fish Wildlife and Parks, USDA Wildlife Services and the Interagency Grizzly Bear Study Team to identify and collect information related to the habitat use, survival, reproduction, and depredation tendencies of grizzly bears inhabiting livestock grazing allotments in the action area.
8. Permittees and the Forest Service will continue to identify and implement opportunities that reduce the potential for grizzly bear conflicts. Permittees may be provided opportunity to change/move pastures to avoid conflict with large carnivores.
9. It is recommended that all permittees and their representatives (herders, riders, or other employees) carry bear spray while working within allotments. Spray canisters should be holstered or otherwise carried so that they are available for use in the event of encounters with bears. Storing spray canisters in back packs, saddle bags, and vehicles are acceptable methods of storage during non-working time periods
10. During the annual operating instruction meetings with permittees - discussion with permittees will include the possible risks of running livestock and working in grizzly bear country, regulations concerning the taking of grizzly bears, and employee training on grizzly bear awareness and procedures. BDNF staff can provide training information as requested by the permittee. Employee training will include
 - a. the status of the grizzly bear,
 - b. grizzly bear behavior,
 - c. human behavior in bear country to minimize conflicts,
 - d. Food Storage order requirements - including carcass handling and disposal
 - e. Encounter procedures and use of bear spray,
 - f. Bear activity reporting, including encounters, livestock deaths and actions taken relative to disposal/removal, suspected depredation by grizzly bears and existing or potential bear conflict situations
 - g. Management of cow/sheep camps, facilities and corral areas

Montana Fish, Wildlife and Parks (MFWP) has a statewide legal memorandum of understanding (MOU) with USDA/APHIS – Wildlife Services (WS) that makes WS the lead investigators on wildlife-caused livestock depredations and predator control. For livestock producers incurring depredation losses due to grizzly bears, WS field specialists must verify the loss as a confirmed or probable depredation for the producer to be reimbursed for the livestock loss by the state Livestock Loss Board. In consultation with MFWP and the U.S. Fish and Wildlife Service (USFWS), WS may attempt capture or removal of an

offending bear(s). If WS captures a grizzly bear, MFWP and USFWS determine the fate of the bear and MFWP conducts those management actions.

Status of the Species

Distribution and Occupancy of the Yellowstone Ecosystem

The action area is partially within habitat biologically suitable and socially acceptable for grizzly bears identified by the U.S. Fish and Wildlife Service identified as the Demographic Monitoring Area (Figure 1). This area is identified as occupied habitat and a portion is within the Recovery Zone identified for the Yellowstone grizzly bear (U.S. Fish and Wildlife Service 1993). Grizzly bear distribution continues to expand north out of the Gravelly and Greenhorns Mountains. A portion of the Lee Metcalf Wilderness is within the Grizzly Bear Recovery Zone. There are 7 allotments within the boundaries of the Recovery Zone. There has been no increase of allotments within the Recovery Zone.

Population Size and Trend

The Interagency Grizzly Bear Study Team annually monitors unduplicated counts of females with cubs of the year within the Greater Yellowstone Ecosystem; calculates a total population estimate for the entire ecosystem based on the model-averaged estimate of females with cubs-of-the-year, monitors the distribution of females within each bear management unit within the Recovery Zone, and monitors sources of mortality.

The protocols and recovery criteria were updated in the 2017 Supplement to the Grizzly Bear Recovery Plan (U.S. Fish and Wildlife Service 2017). The update designating a Demographic Monitoring Area (DMA) is most notable:

3. Designate a Demographic Monitoring Area (DMA) (Figure 1) within which all demographic criteria are assessed. This means the Interagency Grizzly Bear Study Team would no longer count mortalities of bears against sustainable mortality limits in areas outside the Demographic Monitoring Area. Conversely, in this approach bears observed outside this DMA it would not count toward estimates of population size.

These demographic criteria apply to the area defined as the “Demographic Monitoring Area”. The project area lies within the Demographic Monitoring Area (DMA) within occupied habitat and portions are within the Recovery Zone. The DMA is similar to the biologically suitable area designated by the USFWS with minor adjustments.

Estimated Population 2019 GYE

In 2019, the model averaged Chao2 estimate was 66 females with cubs within the DMA from which the IGBST derived a total population estimate of 737. These estimates are slightly higher than those of previous years.

Referencing the total population estimate of 737 against the 2016 Conservation Strategy total mortality thresholds for independent-age (2 years or older) females, independent-age males and dependent young are 9, 20 and 9% respectively. Long term mortality rates are below these thresholds. The mean mortality rate (total mortality/total population size) for the period of 2002-2019 was 6.9% for independent females and 10% for independent males. These data indicate the population status within the DMA remains stable to increasing (van Manen, F. T. and M. A. Haroldson. 2020).

Grizzly Bear Mortalities 2019 Greater Yellowstone Ecosystem

The IGBST documented 45 known and probable mortalities during 2019 with 5 of the 45 still under investigation. Of the 45 known and probable mortalities in 2019, 37 were attributed to human causes. Ten (27%) of the 37 human-caused losses were hunting related including 2 mistaken identities and 8 losses from reported self-defense kills. Fifteen (40.5%) were related to livestock depredations and seven (18.9%) were related to anthropogenic site conflicts. Other human-caused losses included 4 mortalities from vehicle strikes and one capture related mortality (Haroldson, M. A and K. L. Frey. 2020).

Human-Grizzly Conflicts in 2019 in Montana

The following is a summary of the human-grizzly conflicts in Montana during 2019 (Frey, K. L. and J. Smith. 2020), with focus on the livestock portion of the report.

During 2019, there were a total of 10 known or probable human-caused grizzly bear mortalities. The main causes were self-defense, depredations and illegal/mistaken ID.

Livestock depredations accounted for 5 of the 6 management grizzly bear captures. The 5-year average is 6 management captures per year. With greater geographic distribution and increased bear densities, livestock (cattle) depredations are increasing on public and private land inside and outside the DMA in Montana. Depending on geographic area, all age classes of cattle are depredated upon and depredation rates fluctuate annually.

There were 49 confirmed or probable depredations investigated by USDA Wildlife Services (WS), assisted by Montana Fish, Wildlife and Parks (MFWP) personnel. There were 53 cattle depredations assisted with the 49 conflicts sites. Most depredations occurred in MFWP Region 5 near Red Lodge, Montana. These depredations were all on private land and occurred outside the DMA.

There were 21 cattle depredations in the western portion of MFWP Region 3, mainly on public lands inside the DMA, and 6 depredations in the eastern portion of Region 3 on public and private land within the DMA.

Property loss associated with conflicts caused by grizzly bears was lower during 2019. Property loss includes other livestock (poultry, sheep, swine, and dogs). An event occurred in MFWP Region 3 that a presumed bear(s) caused loss (probably depredation) to 5 sheep and 2 guard dogs. This occurred on the BDNF in the Gravelly Mountains.

Table 2: Human-grizzly bear conflicts in Montana portion of the Greater Yellowstone Ecosystem, 2019 (Frey K. L and J. Smith. 2020).

| Conflict Type | Number of Conflicts |
|--|-----------------------------------|
| Encounter Situations | 18 (5 human injuries) |
| Livestock – Cattle | 49 (53 cattle killed or injured) |
| Livestock – Sheep | 1 (5 sheep and 2 dogs killed) |
| Livestock – Poultry | 6 |
| Property Loss | 1 |
| Anthropogenic foods | 8 |
| Anthropogenic foods with property damage | 0 |
| Near developed site -safety concerns | 25 |
| Management Removal | 3 (2 adult males, 1 adult female) |
| Total | 111 |

Environmental Baseline

The environmental baseline for BA includes the existing grizzly bear habitat conditions and conflict situation within the action area since the time of initial consultation of this project (forest plan Consultation 2010 and Supplement in 2012), relationship to threats to the species and grizzly bear

management direction in the existing BDNF Revised forest plan and best available science. The 2017 updates to the 1993 Recovery Plan and the Conservation Strategy are determined to be best available science regarding grizzly bear management.

Status of Grizzly Bear in the Yellowstone Action Area of the BDNF

Grizzly bear numbers and distribution have consistently increased in the action area since the consultation on the forest plan in 2010 and the supplement in 2012. The grizzly bear distribution map was last updated in and showed the occupied line including the northern end of the Gravelly Landscape. The Tobacco Roots and the Highlands are still not considered within current grizzly bear distribution, however, there have been reported observations outside the distribution line, mostly to the west.

The most notable change during this time can be shown with the distribution of the unduplicated females with cubs of the year (COY) that is conducted annually by the IGBST. The data below is summarized from the maps in IGBST annual reports from 2010 to 2019. These females with COY are verified unique females with cubs of the year. It is not meant to represent all the females with cubs of the year in the action area but is used in population estimate. This number is valuable to use in the status of the grizzly bear in the action area as it is a consistent number that shows unique females spatially on the landscape and it is standardized by the IGBST.

Beginning in 2010, 2 unduplicated (meaning unique) females with cubs of the year were documented in the BDNF portions of the action area that overlap BDNF lands (Haroldson, M. A. 2011). One was documented in the Madison landscape but also showed movement into the Gravelly Landscape. Another was in the southern Gravelly Landscape.

In 2011 and 2012, one female with cubs was recorded in the Madison Landscape just outside of the Recovery Zone line and within the DMA (Haroldson, M. A. 2012 and van Manen F. T and M. A. Haroldson 2013). In 2013, two were documented. One female was in the southern end of the Madison Landscape but showed movement between the Madison and Gravelly Landscapes. The other female was in the north end of the Madison Landscape both inside and outside of the Recovery Zone. Both unique females were in the DMA (van Manen F.T. et al. 2014). In 2014, only one was documented in the north end of the Madison Landscape (van Manen F.T. et al. 2015). In 2015, there were 2 documented females with cubs of the year. One was recorded in the Madison landscape and one in the Southern Gravelly Landscape (van Manen F.T. et al. 2016).

Beginning in 2017 there were 3 documented unduplicated females with cubs of the year. These observations also increased in distribution with 2 documented in the Gravelly Landscape, one inside the DMA in the north end of the Gravelly Landscape and one outside of the DMA in the southern end of the Gravelly Landscape. The third female was within the Madison Landscape within the DMA.

In 2019, the IGBST documented 5 unique females with cubs of the year in the action area. Two were outside of the DMA in the Gravelly Landscape portion of the action area. There were also 3 unique females with cubs of the year documented in the Madison Landscape within the DMA and one of those within the recovery zone (Haroldson et al. 2020).

In the past 10 years (2010-2019) the numbers of detected unique females with cubs of the year in the action area that utilize the livestock allotments has increase from 2 to 5 (a 150% increase).

Grizzly-Livestock Conflicts within the Action Area

All grizzly bear conflicts are documented annually in the IGBST reports and are also submitted annually to the USFWS by the BDNF as required monitoring for our forest plan BO.

The Grizzly Bear Reporting Requirements (Updated per the May 28, 2013 Biological Opinion) include specific requirements related to livestock conflicts:

3. An up to date record of grizzly bear-human conflict and or management removal of a grizzly bear resulting from improper storage of food or attractants or livestock depredation

Grizzly bear-livestock conflicts increased noticeably between 2016 and 2017 in the action area with 4 conflicts recorded in both 2015 and 2016 to 19 conflicts in 2017 and then 30 conflicts in 2018 (Table 3). There were 20 conflicts reported in 2019. The increase from 2016 to 2017 was 375% and the increase from 2017 to 2018 was 57%. Conflicts then decreased 33% from 2018 to 2019. Zero conflicts were recorded for the years 2010 and 2014.

Each conflict generally has one depredation associated with it (one calf or cow for example) however a few incidents in 2017, 2018 and 2019 had multiple depredations associated with one conflict record. This causes the number of recorded livestock losses to be slightly higher than the conflict number in certain years. Sheep conflicts unlike cattle conflicts generally consist of multiple sheep losses in a single conflict record. The 2019 conflict associated with sheep grazing was deemed a probable depredation. The event was recorded that a 'presumed bear' caused the loss of 5 sheep and 2 guard dogs.

The data below (Table 3) is summarized from the annual reports the BDNF submits to the USFWS from data received directly from MFWP Bear Management.

Table 3: Livestock-grizzly bear conflicts in the Action Area 2010-2020

| Year | Cattle Conflicts | Sheep Conflicts | Management Removals | Mortalities Self Defense – Riders/Herders | Livestock Related Mortalities Under Investigation |
|--------|------------------|---------------------------|---------------------|---|---|
| 2010 | 0 | 0 | 0 | 0 | 0 |
| 2011 | 2 | 0 | 0 | 0 | 0 |
| 2012 | 3 | 0 | 0 | 0 | 0 |
| 2013 | 0 | 1 (4 sheep) | 0 | 1 – sheep allotment | 0 |
| 2014 | 0 | 0 | 0 | 0 | 0 |
| 2015 | 4 | 0 | 1 | 0 | 0 |
| 2016 | 4 | 0 | 0 | 0 | 0 |
| 2017** | 19 | 0 | 1 | 1 – cattle allotment | 0 |
| 2018 | 30 | 0 | 1 (probable) | 1 – deemed possible cattle allotment | 0 |
| 2019 | 19 | 1 (5 sheep, 2 guard dogs) | 1 | 0 | 0 |
| 2020* | *6 | *1 (6 sheep) | *0 | *0 | 2 |
| Total | 68 | 3 | 4 | 3 | 2 |

*2020 conflict data was incomplete at time of report however two mortalities are under investigation. Personal communication between K. Frey MFWP and K. Glazier USDA WS

** 2017 the grizzly bear was delisted

During 2020 to date, 2 known/confirmed grizzly mortalities have occurred on BDNF associated with livestock grazing and they are under investigative review by USFWS. Conflicts have not been compiled this year so the official totals are unavailable but there have been both sheep and cattle conflicts in the action area in allotments that have had previous conflicts.

Other livestock management grizzly bear mortalities occurred in 2015, 2016, 2018, 2019. In 2018, one was deemed a probable mortality. There have also been 3 self-defense related grizzly bear mortalities in the action area from riders or herders during surprise encounters (2013 and 2017). The 2017 mortalities occurred when the bear was delisted.

Effects of the Action

Direct and Indirect Effects

Both the 2010 and 2012 BA did a thorough job of disclosing effects of livestock grazing on the grizzly bear. Those effects are still pertinent to this analysis. The main update to this analysis is the increased level of effects related to increased grizzly bear distribution and bear densities.

Depending on geographic area, all age classes of cattle and sheep are depredated upon and depredation rates fluctuate annually. With greater geographic distribution and increased bear densities, livestock depredations are increasing on public and private land inside and outside the DMA in Montana, especially within the Gravelly landscape of the action area. The southern end of the Gravelly Landscape continues to be the main area with clusters of livestock depredations by grizzly bears. Depredations are beginning to be documented further north each year down the Ruby Valley and close to the Greenhorn Mountains in the Gravelly Landscape. It is assumed that as bear densities continue to increase and bear distribution continues to spread, conflicts will also increase and be documented in new areas.

The Tobacco Root and Highland Landscapes within the action area are yet to have a confirmed grizzly bear livestock depredation. It is also uncommon for the allotments in the Madison landscape to have confirmed grizzly bear livestock conflicts.

There is no change in effects from continued livestock grazing on secure habitat definitions as defined by open motorized road and trail densities as it does not add or remove any currently open motorized roads. There is no change to the number of livestock allotments inside the recovery zone from the 1998 baseline. Grizzly bear/livestock conflicts are likely to continue as a result of this activity and are a direct impact to the grizzly bear through management removals of individuals who prey on livestock. Mortalities also result in defense of life situations when riders/herders encounter bears during their management duties (fence maintenance, riding, checking livestock, etc.)

Conservation measures required in permits addressing livestock carcass management can reduce the likelihood of a human-grizzly bear conflict at the carcass site. Conflicts may result in the relocation of problem bears inside or outside of the action area or result in direct mortality of individuals. As bears continue to increase in density and distribution in Montana, relocation of grizzly bears is less common than removal.

Information and education requirements with permittees will also contribute to reducing circumstances that could cause a human-grizzly conflict with increased training on how to work in bear country. Annual meetings with permittees and cooperating agencies (MFWP and WS) also increase understanding of bear use and activity throughout the action area which contributes towards grizzly bear conservation.

Cumulative Effects

Cumulative effects as defined by the Endangered Species Act are those effects of future State or private activities, not involving Federal activities that are reasonably certain to occur within the action area of the Federal action (50 CFR 402.02). There are no new future state or private activities that would contribute additional substantial negative cumulative effects to the grizzly bear that haven't been identified in the previous biological assessments or the Grizzly Bear Conservation Strategy and the 2006 Grizzly Bear forest plan Amendments (USDA FS 2006) that is amended to the forest plan. Highways, unsecured attractants, livestock grazing, agriculture, hunting related and mistaken identify mortalities are all ongoing state and private activities that impact the grizzly bear. Overall, the GYE grizzly bear population has continued to increase in number and distribution throughout the years even in the presence of these factors.

Determination of Effects and Rationale

Livestock grazing in areas occupied by grizzly bears has been identified as a risk factor that will likely affect individual bears and may affect grizzly bear populations. Grizzly bear populations have expanded and are expected to continue to expand throughout the Beaverhead-Deerlodge National Forest. It is likely that several grizzly bears will be affected by grazing activities and the potential adverse effects can be minimized through adherence to the terms and conditions and design features.

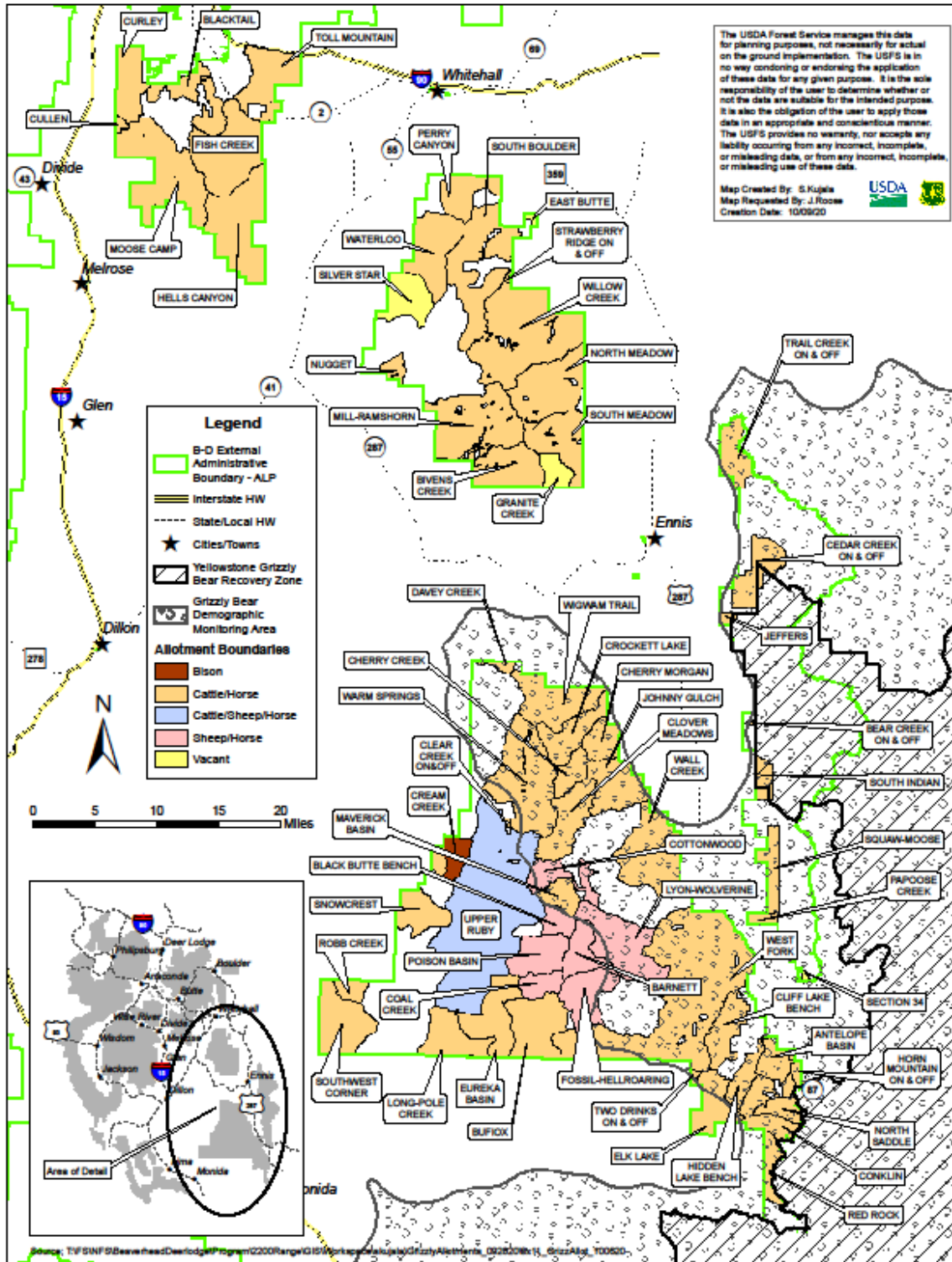
Nevertheless, in light of exceeding the Incidental Take of 2 grizzly bears, the high potential for grizzly bear/livestock interactions to continue, depredation, and the resulting control actions as well as the high potential for grizzly bear/human conflicts relative to activities associated with grazing in grizzly habitat (cow camps, carcass removal, surprise encounters, etc.), it is the conclusion and determination that this action (continued livestock grazing), **“may affect, is likely to adversely affect”** individual grizzly bears. As a result of this determination and exceeding incidental take, reinitiation of formal consultation is necessary.

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Figure 1: Action Area



Supplemental Materials to the 2020 Biological Assessment

From: Roose, Jenna -FS <jenna.roose@usda.gov>

Sent: Tuesday, April 13, 2021 10:24 AM

To: Dixon, Katrina

Subject: FW: BDNF conflict data 2020

Hey Katrina – here is the updated table for 2020.

YES there are changes.

There is also one mortality that is not on this list that I emailed you about on October 1, 2020.

I sent an email to Kevin.

I included it ‘under investigation’ column.

Here is the corrected table updated as of today:

Table 3: Livestock-grizzly bear conflicts in the Action Area 2010-2020

| Year | Cattle Conflicts | Sheep Conflicts | Management Removals | Mortalities Self Defense – Riders/Herders | Livestock Related Mortalities Under Investigation |
|--------|------------------|---------------------------|---------------------|---|---|
| 2010 | 0 | 0 | 0 | 0 | 0 |
| 2011 | 2 | 0 | 0 | 0 | 0 |
| 2012 | 3 | 0 | 0 | 0 | 0 |
| 2013 | 0 | 1 (4 sheep) | 0 | 1 – sheep allotment | 0 |
| 2014 | 0 | 0 | 0 | 0 | 0 |
| 2015 | 4 | 0 | 1 | 0 | 0 |
| 2016 | 4 | 0 | 0 | 0 | 0 |
| 2017** | 19 | 0 | 1 | 1 – cattle allotment | 0 |
| 2018 | 30 | 0 | 1 (probable) | 1 – deemed possible cattle allotment | 0 |
| 2019 | 19 | 1 (5 sheep, 2 guard dogs) | 1 | 0 | 0 |
| 2020* | 13 | *1 (2 sheep) | 0 | 1 – sheep allotment | 1 |
| Total | 94 | 3 | 4 | 4 | 1 |

From: Roose, Jenna -FS <jenna.roose@usda.gov>
Sent: Thursday, June 24, 2021 12:19 PM
To: Dixon, Katrina <katrina_dixon@fws.gov>
Subject: [EXTERNAL] Livestock grazing additional info - attempts trap/snare

This email has been received from outside of DOI - Use caution before clicking on links, opening attachments, or responding.

Additional information to add to the BA about Wildlife Services trap/capture attempts for grizzly livestock depredations.

In the past 5 years, there have been between 1-5 attempts by WS to management trap bears yearly in the allotments for grizzly livestock depredations. Notes also include areas that were too rugged to trap or a trap would have been set. Capture attempts did not result in a trapped bear.

It is likely, based on communication with FWP Kevin Frey, that bears that when are caught in a capture attempt are removed from the population.

| Year | Capture Attempts (notes) |
|-------------|---------------------------------|
| 2020 | 1 capture attempt |
| 2019 | 2 capture attempts |
| 2018 | 2 capture attempts |
| 2017 | 5 capture attempts |
| 2016 | 2 capture attempts |
| 2015 | Too rugged to trap the location |



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Caring for the land and serving people

Appendix C: Beaverhead-Deerlodge plan direction relevant to grizzly bear management.

Forest plan goals, objectives, and standards that apply to grizzly bear management on the BDNF are listed in Table C- 1 and Table C- 2. There may be some forest plan direction that is redundant to grizzly bear management.

Table C- 1. Beaverhead-Deerlodge National Forest goals, objectives, and standards from the 2009 revised forest plan that apply to grizzly bear management.

| Section | Forest Plan Direction | Application to Grizzly Bear Management |
|-------------------|---|---|
| Aquatic Resources | Watershed goal: Watersheds are maintained to ensure water quality, timing of runoff, and water yields necessary for functioning riparian, aquatic ecosystems, wetlands, and to support native aquatic species reproduction and survival. Watershed restoration projects promote long-term ecological integrity of ecosystems, conserve genetic integrity of native species, and contribute to attainment of desired stream function and support beneficial uses (IN 1). | Maintains/improves ecological health and function which supports grizzly bear habitat and food sources. |
| Aquatic Resources | Restoration Key Watershed goal: fish habitat, riparian habitat, and water quality are recovered to desired conditions developed through watershed assessments. | Maintains/improves ecological health and function which supports grizzly bear habitat and food sources. |
| Aquatic Resources | Watershed Restoration Projects goal: Projects are designed and implemented to promote long-term ecological integrity of ecosystems, conserve the genetic integrity of native species, and contribute to attainment of desired stream function (WR-1). | Maintains/improves ecological health and function which supports grizzly bear habitat and food sources. |
| Aquatic Resources | Riparian Area goal: Riparian habitat, species composition, and structural diversity of native and desired non-native riparian plant communities are maintained or restored to (IN 5-6): Provide an amount and distribution of woody debris characteristic of functioning aquatic and riparian ecosystems; Provide adequate summer and winter thermal regulation for streams to support beneficial uses; Provide bank stability to maintain rates of surface erosion, bank erosion, and channel migration which are characteristic of functioning aquatic and riparian ecosystems; Effectively trap and store sediment, build stream banks and floodplains, and promote recovery after watershed disturbance. | Maintains/improves ecological health and function which supports grizzly bear habitat and food sources. |
| Aquatic Resources | Roads Objective: Close and stabilize or obliterate and stabilize roads not needed for future management activities (RF 3c). | May improve or increase available secure habitat for grizzly bears. |

| Section | Forest Plan Direction | Application to Grizzly Bear Management |
|-----------------------------|---|--|
| Economics and Social Values | Coordination Goal: Increase coordination with federal, state, county and tribal governments and strive for coordination and dialogue with a broad range of stakeholders. | Facilitates dialogue around grizzly bear management issues, such as livestock conflicts, population expansion, and other concerns. |
| Fire Management | Fuels Management Goal: A full range of fuels management activities is available to achieve ecosystem sustainability, including economic and social components. | Utilizing fuels management to reduce wildfire risk and improve ecosystem function are beneficial over the long-term for grizzly bear habitat. |
| Fire Management | Wildfire Hazard Reduction Goal: Effects of unplanned and unwanted wildlife are reduced by moving areas of condition class 2 and 3 to a condition class 1 for all fire regimes and by mainlining areas in condition class 1. | Reducing fuels so fires burn within the natural range of viability (historical frequency, severity, and pattern of fires) could improve ecosystem function which is beneficial for grizzly bear habitat. |
| Fire Management | Standard 2: Wildland fire use is an available tool for all unplanned ignitions. | Restoring fire to the landscape may have a range of effects to grizzly bear habitat depending on fire intensity, location, severity, and duration (positive or negative effects would be disclosed in emergency consultation, if required). |
| Infrastructure | Transportation System Goal: The minimum transportation system necessary is identified and managed. Roads and trails are identified in the transportation atlas maintained at the Forest Supervisor's Office. Roads and trails are constructed, managed, and maintained to meet land and resource objectives. | Location and type (motorized versus non-motorized) of road or trail contributes to the amount and accessibility of secure habitat for grizzly bears across the landscape. Closing roads and trails or constructing new ones that meet land and resource objectives may influence this habitat (the positive or negative effect would be disclosed within project-specific analysis). |
| Infrastructure | Facilities Goal: Administrative and/or recreation facilities are constructed, managed, and maintained to meet land and resource objectives and address recreation demand. | Constructing, managing, and maintaining administrative and recreation sites to meet demand could effect grizzly bear behavior depending on food storage options or increased human activity. Site-specific analysis of the project area would disclose these effects. |
| Lands | Land Adjustments Goal: Land ownership adjustments are pursued as opportunities arise, to improve national forest management through purchase, exchange, or other authority. | The BDNF may acquire land important for grizzly bear life history in a land adjustment. Alternatively, grizzly bear secure habitat may be lost in a land adjustment. Site-specific analysis of the project would disclose these effects. |
| Livestock Grazing | Forage Use Goal: Use of forage by domestic livestock will maintain or enhance the desired structure and diversity of plant communities on grasslands, shrublands, and forests. Use will be managed to maintain or restore riparian function as defined in the allotment management plan | Livestock grazing should be managed to maintain or restore riparian function, which may provide valuable food or cover habitat for grizzly bears. |

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| Minerals, Oil, and Gas | Standard 1: Lease terms for occupied grizzly bear habitat exist: controlled surface use is permitted but restricted or prohibited during certain time periods. There are also lease terms for inventoried roadless areas (controlled surface use) but leases are not legal in Wilderness, Recommended Wilderness, or in the West Pioneer WSA. | Reduces disturbance and potential displacement of grizzly bears by allowing for sensitive time restrictions. |
| Minerals, Oil, and Gas | Standard 2: Any new road constructed for oil and gas activity will be obliterated unless the road is needed as part of the Forest Service permanent transportation system. | Road obliteration may increase secure habitat for grizzly bears, depending on the road location. |
| Minerals, Oil, and Gas | Standard 3: All drill pads will be obliterated. | Drill pad obliteration may increase habitat for grizzly bears, depending on the location and size. |
| Recreation and Travel Management | Designated Wilderness Goal: Provide primitive and semi-primitive non-motorized settings, and offer opportunities for foot, stock, ski, snowshoe travel, dispersed camping, and other activities allowed in Wilderness. | Non-motorized settings are important habitat for grizzly bear for a variety of life-history needs. |
| Recreation and Travel Management | Recommended Wilderness Goal: Provide semi-primitive non-motorized settings and offer opportunities for foot, stock, ski, snowshoe travel, dispersed camping, and other activities. | Non-motorized settings are important habitat for grizzly bear for a variety of life-history needs. |
| Recreation and Travel Management | Wilderness Study Areas Goal: Wilderness Study Areas (WSA) are managed to protect Wilderness character according to the Montana Wilderness Study Act of 1977. WSA Summer: Provide semi-primitive non-motorized and semi-primitive motorized settings, and offer opportunities for wheeled motorized travel on routes as shown on the travel plan. WSA Winter: Provide semi-primitive motorized settings and offer opportunities for snowmobiling December 2 through May 15. WSA Winter Non-Motorized: Provide primitive non-motorized settings December 2 through May 15. | Maintaining areas for non-motorized or motorized use can have positive or negative effects to grizzly bears and habitat, depending on use type and location. |
| Recreation and Travel Management | Summer Non-Motorized Allocations Goal: Provide semi-primitive non-motorized recreation settings, and offer opportunities for mountain biking, horse and stock travel, hiking, dispersed camping, and other activities. | Non-motorized settings are important habitat for grizzly bears for a variety of life-history needs. |
| Recreation and Travel Management | Summer Motorized Backcountry Allocations Goal: Provide semi-primitive motorized recreation settings and offer opportunities for varied types of travel and recreational activities. | Motorized recreation settings could disturb or displace grizzly bears. |
| Recreation and Travel Management | Winter Non-Motorized Allocations Goal: Provide primitive and semi-primitive non-motorized recreation settings in these areas, and offer opportunities for ski touring, snowshoeing, and hiking, and other non-motorized activities. | Non-motorized winter recreation areas may provide important denning habitat for grizzly bears. |

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| Recreation and Travel Management | Winter Motorized Allocations Goal: Provide roaded and semi-primitive motorized recreation settings in these areas and offer opportunities for a variety of motorized and non-motorized travel and activities. The majority of these allocations provide opportunities for travel by snowmobile. | Motorized recreation settings could disturb or displace grizzly bears during denning season. |
| Recreation and Travel Management | Road and Trail Use Goal: A system of routes and areas designated for non-motorized and motorized use are identified and available for public use. A Roaded or Backcountry recreation allocation does not determine the motorized status of any route, including the CDNST, within those allocations. A non-motorized recreation allocation (Summer Non-Motorized, Recommended Wilderness, or designated Wilderness) does not close all routes within the area to motorized use. Resources are protected and user conflicts are minimized by allowing motorized wheeled travel only on designated routes and areas. Established routes to dispersed campsites are recognized as part of the Forest transportation system. A system of trails designated for non-motorized uses are also identified and available for public use. | Location and type (motorized versus non-motorized) of route contributes to the amount and accessibility of secure habitat for grizzly bears across the landscape. Closing areas seasonally may influence secure habitat availability. |
| Recreation and Travel Management | Developed Sites Goal: High quality developed recreation facilities are strategically located to concentrate use, provide access to backcountry settings, and protect natural resources. Sites are clean, well maintained, and designed for universal accessibility. | Developed sites may concentrate human activity and foods that may attract bears. |
| Recreation and Travel Management | Standard 1: Permanent road construction is not allowed in summer non-motorized allocations or in areas evaluated for wilderness potential. | New, permanent roads will not be constructed within summer non-motorized areas, which should retrain existing secure habitat over the long-term. |
| Recreation and Travel Management | Standard 2: Motorized vehicles are not allowed in summer or winter non-motorized allocations except for permitted or administrative use. | Motorized use in a non-motorized area for permitted or administrative use could reduce secure habitat. |

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| Recreation and Travel Management | <p>Standard 3: Restrict year-round, wheeled motorized travel to designated routes or areas.</p> <p>Where routes have not been designated through site specific travel planning, restrict motorized vehicles to open motorized routes identified on the forest plan Interim Roads and Trails Inventory GIS Layer displayed on page 53. Motorized wheeled travel on routes leading to identified dispersed campsites is allowed. Exceptions may be authorized for:</p> <p>Motorized wheeled cross-country travel for any military, fire, search and rescue, or law enforcement vehicle used for emergency purposes.</p> <p>Authorized motorized wheeled cross-country travel is limited to official administrative duties or emergency services such as, fire suppression, prescribed fire, noxious weed control, vegetation restoration, surveying, and law enforcement.</p> <p>Motorized wheeled cross-country travel for other government entities on official administrative business as authorized through the normal permit processes or a memorandum of understanding.</p> <p>Motorized wheeled cross-country travel for lessees and permittees limited to terms described in the federal lease or permit.</p> | Restricting motorized use to identified routes or areas maintain secure habitat for grizzly bears. However, allowing use for administrative or emergency duties may reduce secure habitat. |
| Recreation and Travel Management | <p>Standard 4: Extreme sport courses such as motocross trails, technical mountain bike courses, and motor vehicle challenge routes will not be constructed.</p> | Extreme sport courses will not remove secure habitat for grizzly bears. |
| Recreation and Travel Management | <p>Standard 5: New outfitter and guide permits or increases in existing permits, will be only be made based on need, administrative capability, and a suitable mix of guided and non-guided public capacity determined by a forestwide capacity study. This mix may vary by type of activity and/or season of use. Capacity validation will be made on an area-specific basis when the general forestwide capacity determination does not adequately address the management situation. Heli-skiing operations will not be permitted.</p> | New or increased outfitter and guide permits may cause disturbance to bears, depending on the activity. Site-specific effects would be disclosed in project analysis. |
| Recreation and Travel Management | <p>Standard 6: New recreation resorts or residence tracts will not be permitted, nor will permits be issued for unoccupied tracts or lots.</p> | Developing new resorts is not permitted which may maintain habitat and habitat connectivity for grizzly bears, depending on secure habitat availability. |
| Recreation and Travel Management | <p>Standard 7: Manage summer non-motorized allocations for either a primitive or semi-primitive non-motorized setting from May 16 thru December 1, (page 54).</p> | Non-motorized settings are important habitat for grizzly bears for a variety of life-history needs. |
| Recreation and Travel Management | <p>Standard 8: Manage winter non-motorized allocations for a primitive or semi-primitive non-motorized setting from December 2 thru May 15, (page 55).</p> | Non-motorized winter recreation areas may provide important denning habitat for grizzly bears. |
| Recreation and Travel Management | <p>Standard 9: Manage summer backcountry allocations for a semi-primitive motorized setting from May 16 thru December 1, (page 54).</p> | Motorized activity may disturb bears and effect secure habitat. |

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| Recreation and Travel Management | Standard 10: Manage recommended Wilderness for primitive or semi-primitive non-motorized settings and protect Wilderness character. | Non-motorized settings are important habitat for grizzly bears for a variety of life-history needs. |
| Recreation and Travel Management | Standard 11: Commercial timber harvest is prohibited in recommended Wilderness. | Available cover for grizzly bears is maintained in recommended Wilderness. |
| Recreation and Travel Management | Standard 12: Road construction is not permitted in recommended Wilderness. | Secure habitat is maintained in recommended Wilderness. |
| Recreation and Travel Management | Standard 13: Wheeled or motorized vehicles designed for the primary purpose of transporting people, except for wheel chairs, are prohibited in recommended wilderness except for permitted or administrative uses. | Permitted or administrative use of motorized vehicles in recommended wilderness may reduce secure habitat. |
| Timber Management | Lands Not Suitable for Timber Production but Timber Harvest is Permitted to Meet Other Resource Objectives Goal: Manage lands where timber harvest is allowed to protect other resource values. Resource objectives may include, but are not limited to, protection of wildland urban interface, protection of improvements, aquatic system restoration, fuel reduction, wildlife habitat enhancement, fisheries habitat enhancement, range improvement, and grass and shrub land maintenance. | Timber management projects may benefit grizzly bear by improving habitat quality over the long term for both bears and prey species. |
| Timber Management | Standard 2: On lands suitable for timber production, the maximum size of openings created by one regeneration harvest operation shall not exceed 40 acres. Exceptions can be made where a natural event, such as fire, insect, disease, or windthrow created an undesirable opening. A regeneration harvest larger than 40 acres may be allowed after public notice, and review and approval by the officer one level above the responsible official. This only applies to harvest on suitable timber lands for timber production activities. | Regeneration harvest openings are limited, which can have positive or negative effects on prey species for grizzly bear, depending on the location. Site-specific analysis of projects would disclose these effects. |
| Timber Management | Standard 3: On lands suitable for timber production, even aged management regeneration harvest shall not occur unless the stand has reached the culmination of mean annual increment. An exception occurs where the primary purpose of treatment is for wildlife enhancement, visual enhancement, riparian area improvement or public safety or protection of property. The culmination of mean annual increment of growth requirement does not apply to cutting for experimental or research purposes; to non-regeneration harvests, such as thinning or other stand improvement measure; to management of uneven aged stands or to stands under uneven aged silvicultural system; and to salvage or sanitation harvesting of timber stands which are substantially damaged by events such as fire, insects, disease or windthrow. This only applies to harvest on suitable timber lands for timber production activities. | Wildlife habitat quality for grizzly bears and prey species could improve over the long-term depending on project location. Site-specific analysis of the project would disclose these effects. |

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| Vegetation | <p>Biodiversity Goal: A variety of disturbance processes are managed or allowed to occur that produce resilient vegetation communities able to sustain diversity in the face of uncertain future climate-influenced disturbances. Resilient vegetation communities will have a mosaic of species and age classes of trees, shrubs, grasses, and forbs for animal forage and cover, and perpetuate the diversity of plants and the microbial and insect communities upon which they are dependent. Old growth is managed on a forest wide basis and is well distributed.</p> | <p>Creating or maintaining resilient and diverse vegetation communities are beneficial to habitat for grizzly bears and prey species.</p> |
| Vegetation | <p>Forested Vegetation Objective: Forested Vegetation Resiliency: Reduce forest density in the large size classes of dry forest communities and some lodgepole pine communities to maintain or improve resilient forest conditions. Douglas-fir Type: Increase the number of acres in the 0 to 5-inch DBH class on approximately 20,000 acres, where one or more of the following circumstances occurs: Where burned or insect infested stands are dead or dying (see Glossary) Where needed to reduce the risk from wildfire for public and firefighter health and safety, or to protect structures, infrastructure, and municipal watersheds. Where needed to meet objectives for lands suitable for timber production. Douglas-fir which has established itself in former grasslands/shrublands (colonization) is not considered part of the Douglas-fir base described above. Lodgepole Pine Type: Increase the number of acres in the 0 to 5-inch DBH class by approximately 74,000 acres, where one or more of the following circumstances occurs: Where burned or insect infested stands are dead or dying (see Glossary) Where needed to reduce the risk from wildfire for public and firefighter health and safety, or to protect structures, infrastructure and municipal watersheds Where needed to meet objectives for lands suitable for timber production. Aspen Component: Increase the aspen component within lodgepole pine and other vegetation types, on 67,000 acres. Whitebark Pine/Sub-Alpine Fir Type: Promote regeneration of whitebark pine on approximately 45,000 acres, largely through the use of fire. All Other Forested Vegetation Types: Manage within the historic range of variability.</p> | <p>Improving timber stands to reduce wildfire risk, increasing aspen stands, and promoting whitebark are beneficial over the long-term for grizzly bear habitat.</p> |

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| Vegetation | <p>Noxious Weed Objective: Prevent, reduce, or eliminate infestations of non-native or noxious weed species with emphasis on areas where there is a high likelihood of establishment and spread. Manage noxious weeds through Integrated Pest Management as described in the most current Beaverhead-Deerlodge Noxious Weed Control Record of Decision.</p> | <p>Prevention, reduction, or elimination of infestations of non-native or noxious weeds are beneficial to ecosystem health which may improve habitat for the grizzly bear over the long-term. However, biocontrol using targeted livestock grazing may cause additional conflicts between bears and livestock.</p> |
| Wildlife Habitat | <p>Habitat Goal: Cover and forage for animals is provided by a mosaic of species and age classes of native trees, shrubs, grasses, and forbs. See Vegetation Goals for details.</p> | <p>Creating or maintaining resilient and diverse vegetation communities are beneficial to habitat for grizzly bears and prey species.</p> |
| Wildlife Habitat | <p>Grizzly Bear Conflicts Goal: Conflicts between grizzly bears and humans or human activities in occupied grizzly bear habitat, are managed such that the removal of a bear is not necessary.</p> | <p>Conflicts are reduced to prevent bear removal.</p> |
| Wildlife Habitat | <p>Connectivity Goal: Forest management contributes to wildlife linkages between landscapes, unless landscape isolation is determined to be beneficial. Linkage areas are those areas identified for large carnivores and ungulates through multi-agency coordination. Options may include, but are not limited to:</p> <ul style="list-style-type: none"> Maintaining Forest Service ownership at highway and road crossings, Consolidating ownership at approach areas to highway and road crossings substantiated by empirical data as necessary to facilitate wildlife movement, and Providing secure habitat at the landscape scale to facilitate large animal movement. | <p>Landscape and secure habitat connectivity may promote grizzly bear expansion from the NCDE and GYA recovery areas, which would benefit the species as a whole.</p> |
| Wildlife Habitat | <p>Wildlife Secure Areas and Connectivity Goal: Secure areas and connectivity for ungulates and large carnivores are provided, while recognizing the variety of recreational opportunities.</p> | <p>Secure habitat is important for grizzly bear life history traits.</p> |
| Wildlife Habitat | <p>Grizzly Bear Security Goal: The Gravelly Landscape is maintained to achieve 60% or greater secure areas (Scale - Gravelly Landscape).</p> | <p>The Gravelly Landscape will continue to support grizzly bears and aid expansion into new areas by providing secure habitat that meets requirements for life history needs (denning, foraging, etc.).</p> |

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| Wildlife Habitat | <p>Wildlife Security Goal: Manage density of open motorized roads and trails by landscape year-round, except fall rifle big game season, to achieve levels at or below the following (Scale - Landscapes):</p> <p>Table 13. Density of Roads and Trails Open to Motorized Use by Landscape</p> <table border="1"> <thead> <tr> <th>Landscape</th> <th>Desired Open Motorized Road and Trail Density Miles per Sq. Mile*</th> </tr> </thead> <tbody> <tr> <td>Big Hole</td> <td>1.2</td> </tr> <tr> <td>Boulder River</td> <td>1.9</td> </tr> <tr> <td>Clark Fork - Flints</td> <td>1.9</td> </tr> <tr> <td>Gravelly</td> <td>0.7</td> </tr> <tr> <td>Jefferson River</td> <td>1.6</td> </tr> <tr> <td>Lima Tendoy</td> <td>1.0</td> </tr> <tr> <td>Madison</td> <td>0.0</td> </tr> <tr> <td>Pioneer</td> <td>1.5</td> </tr> <tr> <td>Tobacco Roots</td> <td>1.3</td> </tr> <tr> <td>Upper Clark Fork</td> <td>2.0</td> </tr> <tr> <td>Upper Rock Creek</td> <td>0.9</td> </tr> </tbody> </table> <p>*This includes roads available for permitted or administrative use.</p> | Landscape | Desired Open Motorized Road and Trail Density Miles per Sq. Mile* | Big Hole | 1.2 | Boulder River | 1.9 | Clark Fork - Flints | 1.9 | Gravelly | 0.7 | Jefferson River | 1.6 | Lima Tendoy | 1.0 | Madison | 0.0 | Pioneer | 1.5 | Tobacco Roots | 1.3 | Upper Clark Fork | 2.0 | Upper Rock Creek | 0.9 | <p>Location and status (open or closed) of motorized roads and trails contributes to the amount and accessibility of secure habitat for grizzly bears across the landscape. Closing areas seasonally may improve secure habitat availability temporarily. Permanently closing roads to meet this standard within landscapes may also increase secure habitat for grizzly bears, depending on location.</p> |
| Landscape | Desired Open Motorized Road and Trail Density Miles per Sq. Mile* | | | | | | | | | | | | | | | | | | | | | | | | | |
| Big Hole | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Boulder River | 1.9 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Clark Fork - Flints | 1.9 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Gravelly | 0.7 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Jefferson River | 1.6 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Lima Tendoy | 1.0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Madison | 0.0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pioneer | 1.5 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Tobacco Roots | 1.3 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Upper Clark Fork | 2.0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Upper Rock Creek | 0.9 | | | | | | | | | | | | | | | | | | | | | | | | | |

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| Wildlife Habitat | <p>Elk Security Goal: Elk security is managed to provide quality elk habitat, provide a variety of recreational hunting opportunities, and provide support for Montana's fair chase emphasis.</p> <p>Manage open motorized road and trail density by MTFWP hunting units as of 2006 - on National Forest lands during the fall rifle big game season, to achieve levels at or below the following: (Scale - Hunting Unit)</p> <p>Table 14. Hunting Season Open Motorized Road/Trail Densities by Hunting Unit</p> | | <p>Location and status (open or closed) of motorized roads and trails contributes to the amount and accessibility of secure habitat for grizzly bears within hunting units. Closing areas seasonally may improve secure habitat availability temporarily. Permanently closing roads to meet this standard within hunting units may also increase secure habitat for grizzly bears, depending on location.</p> |
| | Hunting Unit | Desired Fall Open Motorized Road and Trail Density Miles per Sq. Mile* | |
| | 210 | 0.9 | |
| | 211 | 0.5 | |
| | 212 | 1.4 | |
| | 213 | 1.4 | |
| | 214 | 1.6 | |
| | 215 | 1.5 | |
| | 216 | 0.8 | |
| | 300 | 0.6 | |
| | 302 | 1.0 | |
| | 311 | 0.0 | |
| | 318 | 1.8 | |
| | 319 | 0.6 | |
| | 320 | 0.8 | |
| | 321 | 1.1 | |
| | 323 | 0.5 | |
| | 324 | 0.4 | |
| | 327 | 0.8 | |
| | 328 | 0.8 | |
| | 329 | 1.1 | |
| | 330 | 0.7 | |
| | 331 | 1.5 | |
| | 332 | 0.8 | |

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| | <table border="1"> <tr> <td>333</td> <td>0.9</td> </tr> <tr> <td>340</td> <td>1.4</td> </tr> <tr> <td>341</td> <td>0.5</td> </tr> <tr> <td>350</td> <td>1.3</td> </tr> <tr> <td>360</td> <td>0.0</td> </tr> <tr> <td>362</td> <td>0.0</td> </tr> <tr> <td>370</td> <td>1.0</td> </tr> </table> <p>*This includes roads available for permitted or administrative use.</p> | 333 | 0.9 | 340 | 1.4 | 341 | 0.5 | 350 | 1.3 | 360 | 0.0 | 362 | 0.0 | 370 | 1.0 | |
| 333 | 0.9 | | | | | | | | | | | | | | | |
| 340 | 1.4 | | | | | | | | | | | | | | | |
| 341 | 0.5 | | | | | | | | | | | | | | | |
| 350 | 1.3 | | | | | | | | | | | | | | | |
| 360 | 0.0 | | | | | | | | | | | | | | | |
| 362 | 0.0 | | | | | | | | | | | | | | | |
| 370 | 1.0 | | | | | | | | | | | | | | | |
| Wildlife Habitat | Grizzly Bear Conflicts Objective: Implement food storage and sanitation orders in areas classified as occupied grizzly bear habitat. | Food storage and sanitation orders may reduce grizzly bear conflicts. | | | | | | | | | | | | | | |
| Wildlife Habitat | Road and Trail Densities by Hunting Unit Objective: From October 15 to December 1, reduce the open motorized road and trail densities in hunting units 215 to 1.5; 300 to 0.6; 302 to 1.0; 318 to 1.8; 333 to .9; 341 to .5; and 350 to 1.3 miles per square mile or less. | Location and status (open or closed) of motorized roads and trails contributes to the amount and accessibility of secure habitat for grizzly bears within hunting units. Closing areas seasonally may improve secure habitat availability temporarily. Permanently closing roads to meet this standard within hunting units may also increase secure habitat for grizzly bears, depending on location. | | | | | | | | | | | | | | |
| Wildlife Habitat | Road and Trail Densities by Landscape Objective: Reduce the open motorized road and trail densities from May 16 to December 1 in the Boulder River Landscape to 1.9 and Jefferson River Landscape to 1.6 miles per square miles or less. | Location and status (open or closed) of motorized roads and trails contributes to the amount and accessibility of secure habitat for grizzly bears across the landscape. Closing areas seasonally may improve secure habitat availability temporarily. Permanently closing roads to meet this standard within landscapes may also increase secure habitat for grizzly bears, depending on location. | | | | | | | | | | | | | | |
| Wildlife Habitat | Sensitive and Federally Listed Species Objective: Information in the following sources should be considered when designing projects that may affect sensitive species or federally listed species. • Grizzly Bear Conservation for the Greater Yellowstone Area National Forests (GYA) | Consider available science when designing and analyzing projects for effects to grizzly bears. | | | | | | | | | | | | | | |
| Wildlife Habitat | Standard 1: From October 15 to December 1 Hunting Units that exceed the open motorized road and trail density objective will have no net increase in designated open motorized road and trail mileage (Scale - Hunting Units on National Forest lands). | Within hunting units in fall, secure habitat for grizzly bears will not decrease by opening additional motorized road and trails that exceed the density objective. | | | | | | | | | | | | | | |

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| Wildlife Habitat | Standard 2: Landscapes that exceed the open motorized road and trail objective will have no net increase in designated open motorized road and trail mileage (Scale – Landscapes on National Forest System lands). | Within landscapes, secure habitat for grizzly bears will not decrease by opening additional motorized road and trails that exceed the density objective. |
| Wildlife Habitat | Standard 5: Sheep allotments in the Gravelly Landscape that become vacant will be closed to sheep grazing or the vacant allotment may be used by an existing Gravelly Landscape sheep permittee, with no increase in permitted use (Scale - Gravelly Landscape). | Sheep grazing numbers will be maintained or reduced over time, which may reduce conflict with grizzly bears. |
| Wildlife Habitat | Standard 6: The Grizzly Bear Amendment applies to only the Beaverhead-portion of the BDNF and is incorporated as Appendix G. | Refer to the next table for the applicable goals, objectives, and standards as part of Appendix G. |

Appendix G in the forest plan contains the Record of Decision for a forest plan Amendment for grizzly bear habitat conservation for the Greater Yellowstone Area National Forests (USDA FS, 2006). These Forests include: the Beaverhead-Deerlodge, the Bridger-Teton, the Caribou-Targhee, the Custer-Gallatin, and the Shoshone. Within the Beaverhead-Deerlodge National Forest, Appendix G only applies to areas that consist of the Beaverhead-portion of the BDNF, which consists of the Madison, Dillon, and Wisdom Ranger Districts. A majority of the direction in Appendix G refers to the Primary Conservation Area (PCA), which is only within the Madison Ranger District and overlaps with the Hillgard BMU (which consists of the Lee Metcalf Wilderness; Figure 3). The direction outlined in Appendix G and its application to grizzly bear management on the BDNF is outlined in Table C- 2.

Table C- 2. Direction in Appendix G (amendment 10 to the 2009 revised forest plan) and application to grizzly bear management.

| Direction | Application to grizzly bear management |
|---|---|
| Conservation Goal: Manage grizzly bear habitat within the Primary Conservation Area to sustain the recovered Yellowstone grizzly bear population. Outside the Primary Conservation Area in areas identified in state grizzly bear management plans as biologically suitable and socially acceptable for grizzly bear occupancy, accommodate grizzly bear populations to the extent that accommodation is compatible with the goals and objectives of other uses. | Grizzly bear habitat will be managed within the Hillgard BMU to sustain populations of grizzly bears. |
| Standard 1, Secure Habitat: Inside the Primary Conservation Area, maintain the percent of secure habitat in Bear Management Unit subunits at or above 1998 levels. Projects that change secure habitat must follow the Application Rules. | Secure habitat cannot decrease within the Hillgard BMU. |

| Direction | Application to grizzly bear management |
|--|--|
| <p>Standard 2, Developed Sites: Inside the Primary Conservation Area, maintain the number and capacity of developed sites at or below 1998 levels, with the following exceptions: any proposed increase, expansion, or change of use of developed sites from the 1998 baseline in the Primary Conservation Area is analyzed and potential detrimental and positive impacts on grizzly bears are documented through a biological evaluation or assessment. Projects that change the number or capacity of developed sites must follow the Application Rules.</p> | <p>The number and capacity of developed sites within the Hillgard BMU should not change, unless documented through a biological assessment.</p> |
| <p>Standard 3, Livestock Grazing: Inside the Primary Conservation Area, do not create new active commercial livestock grazing allotments, do not increase permitted sheep animal months from the identified 1998 baseline, and phase out existing sheep allotments as opportunities arise with willing permittees.</p> | <p>Livestock grazing would not increase inside the Hillgard BMU (within the Forest boundary) which could prevent future bear-livestock conflicts</p> |
| <p>Standard 5, Nuisance Bears: Coordinate with state wildlife management agencies to apply Conservation Strategy nuisance bear standards.</p> | <p>Coordination occurs between agencies to haze or remove problem bears to mitigate potential issue with food rewards, human conflict, or other issues.</p> |
| <p>Standard 6, Food Storage: Inside the Primary Conservation Area, minimize grizzly bear/human conflicts using food storage, information and education, and other management tools.</p> | <p>A variety of tools are utilized to prevent bears from achieving food rewards within the Hillgard BMU. This may prevent bears from learning to associate human activity with food which is dangerous to both people and bears.</p> |
| <p>Guideline 1, Winter Motorized Access: Inside the Primary Conservation Area, use localized area restrictions to address conflicts with winter use activities, where conflicts occur during denning or after bear emergence in the spring.</p> | <p>Motorized winter restrictions within the Hillgard BMU prevent negative effects to denning or emerging bears.</p> |
| <p>Guideline 2, Livestock Grazing: Inside the Primary Conservation Area, cattle allotments or portions of cattle allotments with recurring conflicts that cannot be resolved through modification of grazing practices may be retired as opportunities arise with willing permittees. Outside the Primary Conservation Area in areas identified in state management plans as biologically suitable and socially acceptable for grizzly bear occupancy, livestock allotments or portions of allotments with recurring conflicts that cannot be resolved through modification of grazing practices may be retired as opportunities arise with willing permittees.</p> | <p>Retiring grazing practices in areas with reoccurring conflicts may prevent future livestock conflicts.</p> |
| <p>Guideline 3, Food Storage: Outside the Primary Conservation Area in areas identified in state management plans as biologically suitable and socially acceptable for grizzly bear occupancy, emphasize proper sanitation techniques, including food storage orders, and information and education, while working with local governments and other agencies.</p> | <p>The BDNF should continue to improve food storage, education, cooperation, and other methods to reduce the potential for grizzly bear conflict on public lands.</p> |

| Direction | Application to grizzly bear management |
|---|---|
| <p>Guideline 4, Food Sources: Inside and outside the Primary Conservation Area in areas identified in state management plans as biologically suitable and socially acceptable for grizzly bear occupancy, maintain the productivity, to the extent feasible, of the four key grizzly bear food sources as identified in the Conservation Strategy. Emphasize maintaining and restoring whitebark pine stands inside and outside the Primary Conservation Area.</p> | <p>The BDNF should continue supporting projects that maintain the productivity of ecosystems that support food sources for grizzly bears, including whitebark pine.</p> |

Appendix D: The change in distribution of grizzly bears as related to Grizzly Bear Analysis Units and verified sightings on the Beaverhead-Deerlodge National Forest since 2000.

This appendix documents the location of the grizzly bear distribution line as identified by the US Fish and Wildlife Service as relevant to GBAUs on the Beaverhead-Deerlodge National Forest (Fortin-Noreus pers. comm. 2022). It is important to note that the BDNF distribution area documented in this appendix differs from the “may be present” mapping effort (USDI FWS 2023). The BDNF intersection between distribution and GBAUs was provided by the USFWS (Fortin-Noreus pers. comm. 2022) whereas the “may be present” map utilizes verified sightings, mortalities, radio-telemetry data, etc. to provide information on where grizzly bears may be present. The most current “may be present” area can be found at: <https://www.fws.gov/media/grizzly-bear-species-list-area-map-0>.

Table D- 1 documents the change in distribution type within 25 GBAUs. The remainder of the GBAUs not included in this table do not currently overlap with the distribution area and do not have verified sightings as of the time of this writing. There are five types of changes:

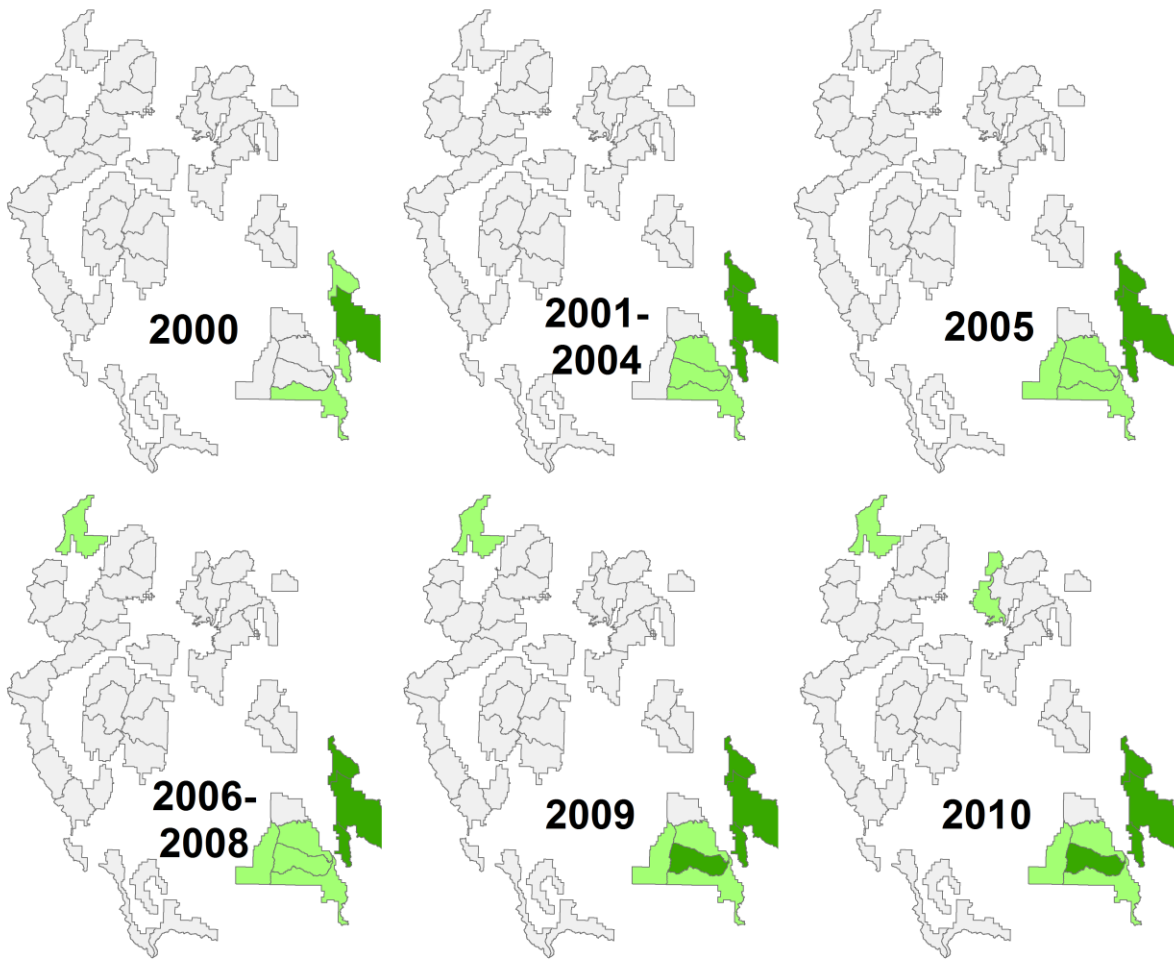
- None to full distribution: in 2000, the GBAU did not contain the distribution area but changed to encompass the entire GBAU by 2023 (8 GBAUs);
- None to partial distribution: in 2000, the GBAU did not contain the distribution area but changed to partially encompassing some of the GBAU by 2023 (5 GBAUs);
- Partial to full distribution: in 2000, the GBAU partially contained the distribution area and changed to encompass the entire GBAU by 2023 (3 GBAUs);
- No distribution but verified sightings: from 2000-2023, the distribution area does not overlap with the GBAU, although there are verified sightings within the GBAU (8 GBAUs);
- Full distribution: the GBAU always overlapped with the distribution area and there was no change (1 GBAU).

Figure D- 1, Figure D- 2, and Figure D- 3 also document the number of verified sightings within GBAUs outside of the distribution area from 2000-2011. If the distribution line partially overlaps a GBAU, verified sightings could occur either side of the distribution area. In this case, the number of verified sightings outside of the distribution area is documented.

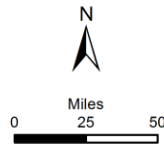
Table D- 1: The change of the grizzly bear distribution type from years 2000-2022 as it relates to Grizzly Bear Analysis Units on the Beaverhead-Deerlodge National Forest.

| GBAU | Grizzly Bear distribution type (2000-2022) | Amount of secure habitat (acres/percent) |
|--------------|--|--|
| Basin | None to full distribution | 13,722 / 18 |
| Black Butte | None to full distribution | 56,881 / 62 |
| Browns Lake | No distribution but verified sightings | 61,390 / 56 |
| Bryant Creek | No distribution but verified sightings | 40,369 / 41 |
| Bull | None to partial distribution | 10,609 / 17 |
| Copper | No distribution but verified sightings | 45,512 / 51 |

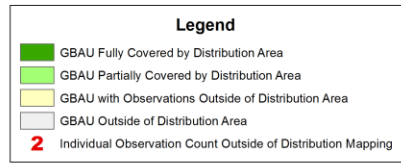
| GBAU | Grizzly Bear distribution type (2000-2022) | Amount of secure habitat (acres/percent) |
|-------------------|---|---|
| Dry Cottonwood | None to full distribution | 10,547 / 13 |
| East Flints | None to partial distribution | 32,112 / 50 |
| Georgetown | No distribution but verified sightings | 33,621 / 39 |
| Greenhorns | None to full distribution | 37,226 / 53 |
| Harvey Willow | None to partial distribution | 30,145 / 28 |
| Hillgard BMU | Full distribution | 61,790 / 88 |
| Lee Metcalf North | Partial to full distribution | 14,634 / 28 |
| Lee Metcalf South | Partial to full distribution | 26,878 / 82 |
| Little Boulder | None to full distribution | 25,314 / 35 |
| O'Neill | None to full distribution | 25,884 / 34 |
| Ruby | No distribution but verified sightings | 52,943 / 57 |
| Selway | No distribution but verified sightings | 31,818 / 38 |
| Snowcrest | None to partial distribution | 73,836 / 70 |
| South Flints | No distribution but verified sightings | 19,407 / 20 |
| Upper Big Hole | No distribution but verified sightings | 40,348 / 43 |
| Upper Boulder | None to full distribution | 14,399 / 21 |
| Wall Creek | None to full distribution | 53,404 / 57 |
| West Flints | None to partial distribution | 15,968 / 16 |
| West Fork Madison | Partial to full distribution | 52,912 / 46 |



BEAVERHEAD-DEERLODGE NF
 Grizzly Bear Analysis Units by
 NCDE and GYA Distribution Status
Map 1 of 3



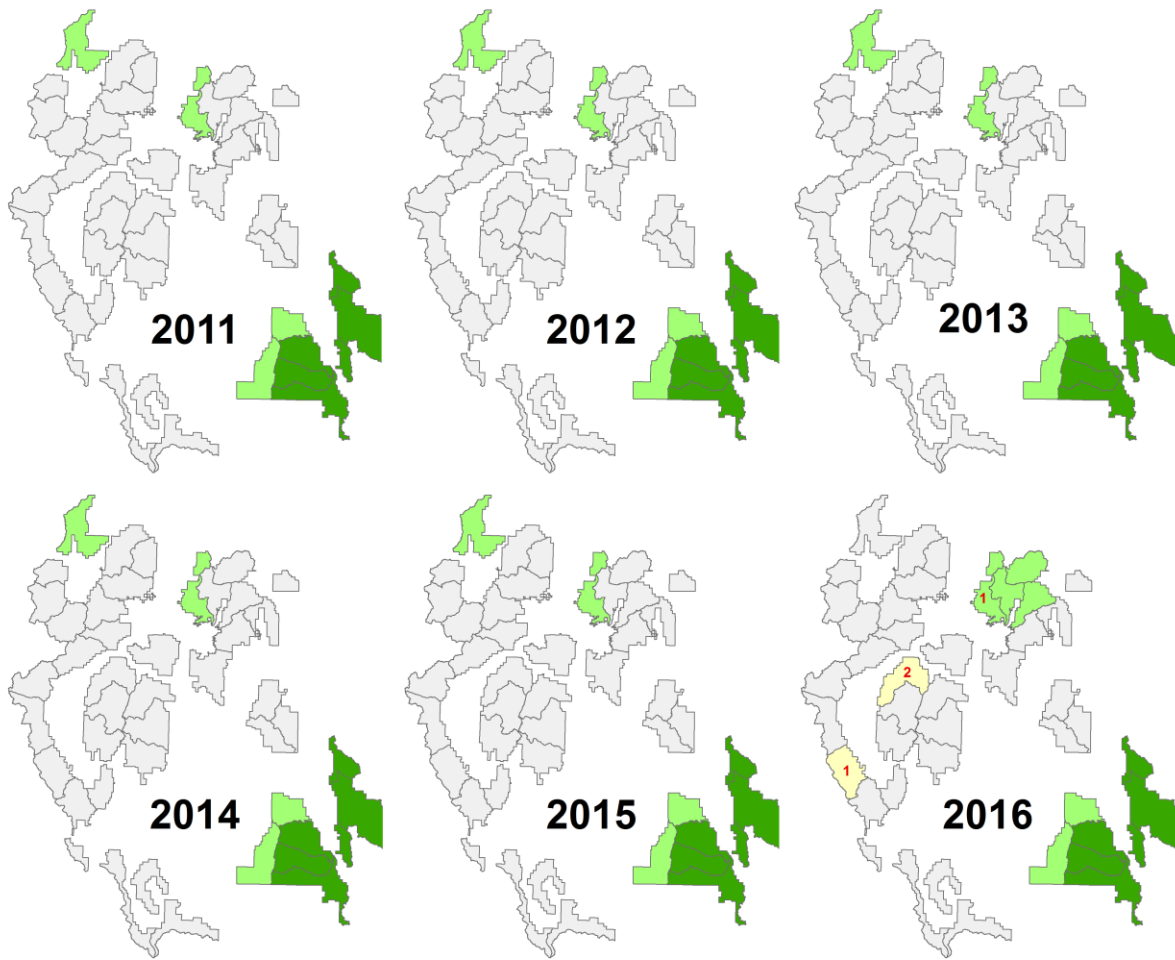
DISCLAIMER:
 The USDA Forest Service manages this data for planning purposes, not necessarily for actual on the ground implementation. The USFS is in no way condoning or endorsing the application of this data for any given purpose. It is the sole responsibility of the user to determine whether or not the data is suitable for the intended purpose. It is also the obligation of the user to apply this data in an appropriate and conscientious manner. The USFS provides no warranty, nor accepts any liability occurring from any incomplete or misleading use of this data.



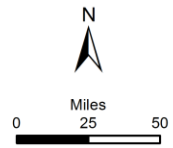
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 This map replaces all maps of same title with previous date

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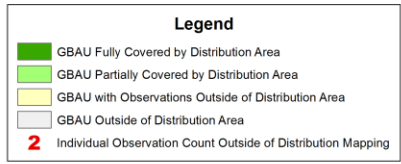
Figure D- 1: The change of grizzly bear “may be present” distribution status overlap with Grizzly Bear Analysis Units on the Beaverhead-Deerlodge National Forest from 2000-2010.



BEAVERHEAD-DEERLODGE NF
 Grizzly Bear Analysis Units by
 NCDE and GYA Distribution Status
Map 2 of 3



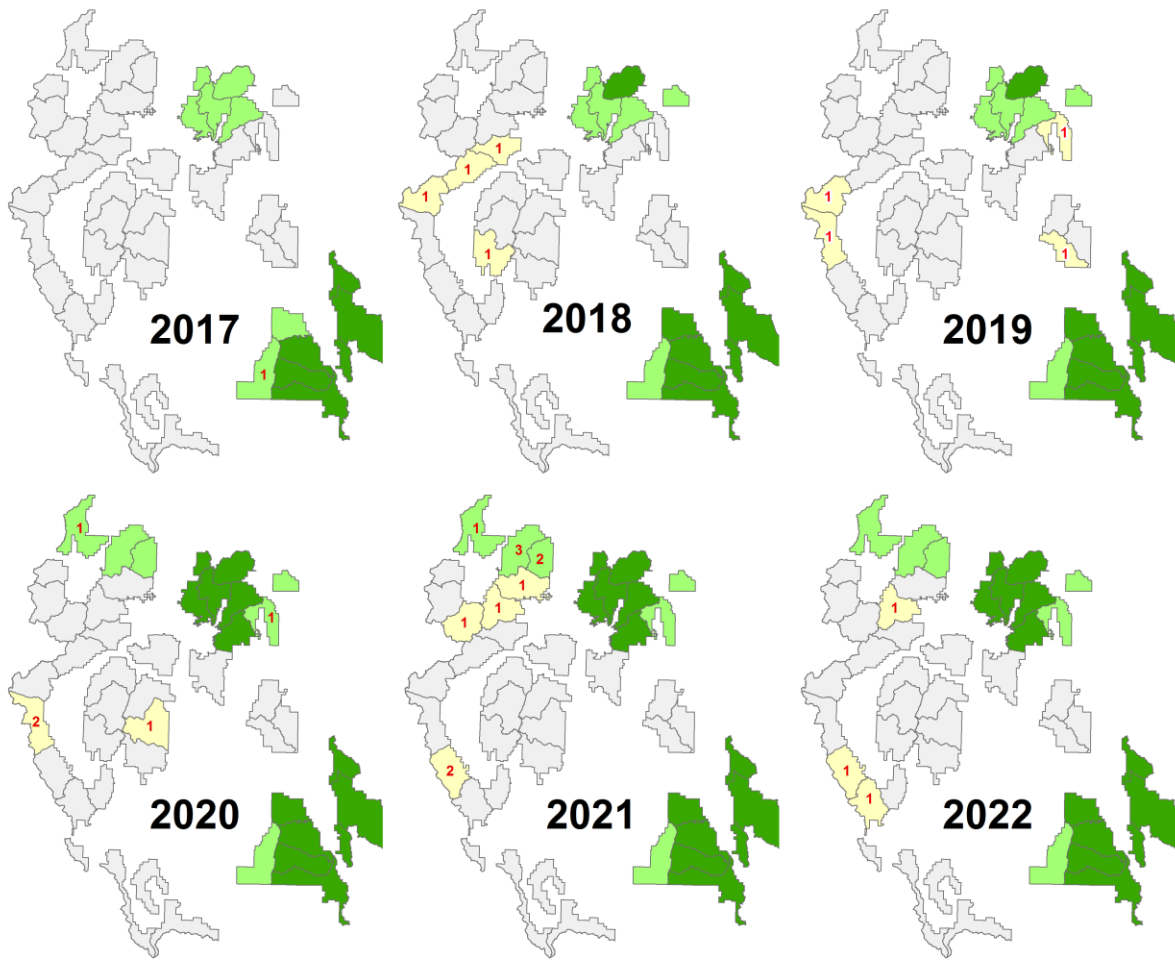
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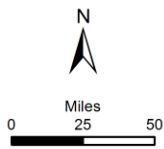
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 Map MXD Location:
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Figure D- 2: The change of grizzly bear “may be present” distribution status overlap with Grizzly Bear Analysis Units on the Beaverhead-Deerlodge National Forest from 2011-2016.

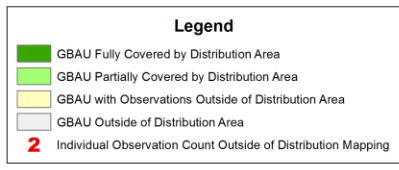


BEAVERHEAD-DEERLODGE NF
 Grizzly Bear Analysis Units by
 NCDE and GYA Distribution Status

Map 3 of 3



DISCLAIMER:
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B-D GIS
 jto 7/20/2023
 This map replaces all maps of same title with previous date

Map PDF Location:
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 Map MXD Location:
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Figure D- 3: The change of grizzly bear “may be present” distribution status overlap with Grizzly Bear Analysis Units on the Beaverhead-Deerlodge National Forest from 2017-2022.

Appendix E: Lands and Recreation Uses and Associated Activities.

Lands Special Uses

Table E- 1 displays lands special uses activities and associated operation and maintenance activities. The use description reflects the actual special uses authorization as defined in FSH 2709.11, Chapter 10. The majority of these uses require ongoing year-round motorized access, which is authorized through special use permits, rights-of-way, and easements. In some cases, this access occurs off designated forest system routes (e.g., within or adjacent to rights of way).

Table E- 1. Types of lands special uses on the Beaverhead-Deerlodge National Forest.

| Use | Associated Infrastructure | Operation and Maintenance Activities | Requires year-round motorized access (yes/no) | Grizzly Bear Concerns |
|------------------|---|---|---|---|
| Cultivation | Irrigation lines and ditches | <ul style="list-style-type: none"> Use of heavy equipment, hand tools, and motorized or over-the-snow vehicle access Debris removal | Yes | Disturbance from human presence and increased motorized use |
| Sign | Business signs, directional signs, entrance signs, etc. | <ul style="list-style-type: none"> Replacement of signposts and signs Painting/staining Vegetation removal | Yes | Localized cover removal, disturbance from mechanized equipment during activity |
| Service building | Volunteer fire department facilities | <ul style="list-style-type: none"> Use of heavy equipment, hand and power tools, motorized or over-the-snow vehicle access Operation and maintenance of buildings, septic system, and parking lot Snow removal | Yes | Disturbance from human presence and increased motorized use depending on facility use |
| Mailbox | Rural community post boxes | <ul style="list-style-type: none"> Replacement of signposts and mailboxes Painting/staining | Yes | Localized cover removal, disturbance from mechanized equipment during activity |

| Use | Associated Infrastructure | Operation and Maintenance Activities | Requires year-round motorized access (yes/no) | Grizzly Bear Concerns |
|---|---|--|---|--|
| Encroachment ^a | Homeowner yards, parking areas | <ul style="list-style-type: none"> • Motorized vehicle use and parking • Landscaping (e.g., gardening, lawn mowing, sprinkler systems) • Fence maintenance | Yes | Disturbance from human presence and increased motorized use, creating food attractants, may decrease secure habitat depending on location. |
| Research/experimental | Unexploded ordnance destruction and removal, seismometers, remote sensing equipment, gauges, weather stations, snow pillows, etc. | <ul style="list-style-type: none"> • Surface removal of munitions and explosives • Scientific research including the placement and monitoring of data-gathering instruments (e.g., remote sensing technology, weather stations, etc.) • Use of heavy equipment and motorized vehicles for access • Use of power and hand tools for maintenance of equipment • Vegetation removal • Munitions debris treatment and non-munitions waste stream treatment • Fencing and fence maintenance • Posting warning signs | Yes | Disturbance from human presence and noise from heavy equipment use during activity. |
| Non-disturbing use (archaeological surveys) | None | <ul style="list-style-type: none"> • Archaeological surface surveys conducted by contractors and partners on foot | No | Surprise encounters. |
| Temporary construction (removal) | Decommissioned water transmission system (pipeline, ditch, culvert, earthen dam) | <ul style="list-style-type: none"> • Use of heavy equipment, hand and power tools, and motorized vehicles for access • Trenching, digging, and backfilling | No | Disturbance from human presence and increased motorized use during activity. |

| Use | Associated Infrastructure | Operation and Maintenance Activities | Requires year-round motorized access (yes/no) | Grizzly Bear Concerns |
|--------------------|--|---|---|---|
| Warehouse/storage | MT DOT stockpile, storage | <ul style="list-style-type: none"> • Use of heavy equipment and motorized or over-the-snow vehicle access • Storage of winter road treatment materials (de-icing materials) | Yes | Disturbance from human presence and increased motorized use during activity. |
| Commercial filming | None | <ul style="list-style-type: none"> • Accessing filming locations by motor vehicle, over-the-snow vehicle, on foot, horseback, or on skis • Staging trailers, film crews, camera lights, film equipment (cameras, booms, etc.) • Use of drones • Use of props | Yes | Surprise encounters, disturbance from human presence and increased motorized use during activity. |
| FERC. BPA | Hydroelectric Dams, Transmission Lines/Facilities, | <ul style="list-style-type: none"> • Use of heavy equipment and motorized or over-the-snow vehicle access • Staging materials and supplies for repair and maintenance of infrastructure • Trenching, digging • Road maintenance • Use of helicopters (pole placement or large infrastructure installation) • Substantial vegetation removal | Yes | Disturbance from human presence, increased motorized use, or low-level flights during activity. |

| Use | Associated Infrastructure | Operation and Maintenance Activities | Requires year-round motorized access (yes/no) | Grizzly Bear Concerns |
|----------------------|--|--|---|---|
| Oil and gas pipeline | Above ground and buried natural gas pipelines | <ul style="list-style-type: none"> • Use of heavy equipment and motorized or over-the-snow vehicle access • Staging materials and supplies • Trenching and digging • Road maintenance • Substantial vegetation removal | Yes | Disturbance from human presence and increased motorized use during activity. |
| Powerline | Above ground and buried transmission and distribution lines, power poles, towers | <ul style="list-style-type: none"> • Use of heavy equipment and motorized or over-the-snow vehicle access • Staging materials and supplies • Trenching and digging • Road maintenance • Use of helicopters (pole replacement) • Substantial vegetation removal | Yes | Disturbance from human presence, increased motorized use, or low-level flights during activity. |
| Aircraft facilities | Airport runway, airway beacon | <ul style="list-style-type: none"> • Use of heavy equipment, hand and power tools, and motorized or over-the-snow vehicle access • Aircraft presence (on ground and overhead) • Snow removal | Yes | Disturbance from human presence, increased motorized use, or low-level flights during activity. |

| Use | Associated Infrastructure | Operation and Maintenance Activities | Requires year-round motorized access (yes/no) | Grizzly Bear Concerns |
|---|---|---|---|---|
| Federal Highways Administration (DOT Easement) | State or county highways (paved or gravel) and associated right-of-ways | <ul style="list-style-type: none"> • Use of heavy equipment, hand and power tools, and motorized or over-the-snow vehicle access • Snow removal • Staging materials and supplies • Road Resurfacing, blading, trenching, digging, clearing debris/rockfall/slides, culvert replacement, blasting and sign placement and maintenance • Vegetation removal | Yes | Disturbance from human presence and increased motorized use during activity, potential displacement if major highway or county road is constructed. |
| FRTA, FLPMA easements and permits | Driveways, access roads to private inholdings, motorized and non-motorized trails, bridges, culverts, gates | <ul style="list-style-type: none"> • Use of heavy equipment, hand and power tools, and motorized or over-the-snow vehicle access • Snow removal • Road resurfacing, blading, clearing debris/rockfall/slides, and culvert replacement • Vegetation removal | Yes | Disturbance from human presence and increased motorized use during activity. |
| Communication Users (broadcast and non-broadcast) | Amateur radio towers, microwave sites, private mobile radio towers, cellular and wireless internet towers and vaults, monitoring equipment, FAA navigation equipment (VORTAC) | <ul style="list-style-type: none"> • Use of hand and power tools and motorized or over-the-snow vehicle access • Replacement of communication site vaults • Use of helicopters • Fence maintenance | Yes | Disturbance from human presence, increased motorized use, or low-level flights during activity. |

| Use | Associated Infrastructure | Operation and Maintenance Activities | Requires year-round motorized access (yes/no) | Grizzly Bear Concerns |
|--------------------|--|--|---|---|
| Telephone | Above ground and buried telephone lines and fiber optic cable, utility service boxes | <ul style="list-style-type: none"> • Use of heavy equipment, hand and power tools, and motorized or over-the-snow vehicle access • Staging materials and supplies for repair and maintenance of lines • Trenching, digging, boring, drilling • Use of helicopters (e.g., pole replacement) • Vegetation removal | Yes | Disturbance from human presence, increased motorized use, or low-level flights during activity. |
| Water transmission | Livestock irrigation ditches, irrigation pipelines, water transmission pipelines | <ul style="list-style-type: none"> • Use of heavy equipment, hand and power tools, and motorized or over-the-snow vehicle access • Vegetation removal | Yes | Disturbance from human presence and increased motorized use during activity. |
| Water impoundment | Earthen or concrete dams, spillways, reservoirs, diversions, and weirs | <ul style="list-style-type: none"> • Use of heavy equipment, hand and power tools, and motorized or over-the-snow vehicle access • Trenching, digging • Vegetation removal | Yes | Disturbance from human presence and increased motorized use during activity. |
| Water development | Wells, spring boxes | <ul style="list-style-type: none"> • Use of heavy equipment, hand and power tools, and motorized or over-the-snow vehicle access • Trenching, digging • Vegetation removal | Yes | Disturbance from human presence and increased motorized use during activity. |

^aThis category of uses originates through unauthorized occupancy of National Forest System lands. See FSM 5330 for policy on violations and FSM 5450 and 36 CFR 254.3 if the use involves a title claim or possible sale under the Small Tracts Act (96 Stat. 2535). Special use authorizations do not substitute for judicial resolution of the encroachment. The only valid reasons for issuing permits for encroachment are to: 1) provide a mechanism to authorize temporary use of the land in conjunction with the legal action on the encroachment; or 2) serve as a tool in tracking or managing encroachments.

Developed Recreation

Table E- 2 displays developed recreation by facility type and associated uses. The heaviest use occurs during summer.

Table E- 2. Developed recreation by facility type and associated uses on the Beaverhead-Deerlodge National Forest.

| Developed Site Type | Associated Infrastructure | Operation and Maintenance Activities | Uses | Season of Heaviest Use | Grizzly Bear Concerns |
|---------------------|--|---|--|------------------------|--|
| Campground | Access roads, tent and RV pads, picnic tables, fire rings, water hydrants, vault toilets, flush toilets, fencing, food lockers, kiosks, signs, storage sheds, bridges, meat poles, fee collection infrastructure | <ul style="list-style-type: none"> • Use of heavy equipment and high levels of motor vehicle traffic • Painting/staining • Repaving, chip sealing, blading/grading, trenching (buried utility lines) • Food storage • Toilet pumping and water system maintenance • Fee collection • Vegetation removal (including hazard trees), piling and burning | Overnight accommodations | Summer | Disturbance from human presence and increased motorized use during activity, localized cover removal, food attractants |
| Day Use Area | Access roads, parking lots, picnic tables, group shelters, fire rings, water hydrants, vault toilets, flush toilets, kiosks, signs, swimming docks, shoreline benches, fencing, fee collection infrastructure | <ul style="list-style-type: none"> • Use of heavy equipment and high levels of motor vehicle traffic • Painting/staining • Repaving, chip sealing, blading/grading • Food storage • Toilet pumping and water system maintenance • Fee collection • Snow removal • Vegetation removal (including hazard trees), piling and burning | Picnicking, scenery viewing, wildlife viewing, ice fishing, swimming | Summer and winter | Disturbance from human presence and increased motorized use during activity, localized cover removal, food attractants |
| Marina | Access roads, parking lots, picnic tables, fire rings, water hydrants, vault toilets, flush toilets, kiosks, signs, fencing, fee collection infrastructure | <ul style="list-style-type: none"> • Use of heavy equipment and high levels of motor vehicle traffic • Painting/staining • Repaving, chip sealing, blading/grading • Food storage • Toilet pumping and water system maintenance • Fee collection • Vegetation removal (including hazard trees) | Boat launch, fishing | Summer | Disturbance from human presence and increased motorized use during activity, localized cover removal, food attractants |

| Developed Site Type | Associated Infrastructure | Operation and Maintenance Activities | Uses | Season of Heaviest Use | Grizzly Bear Concerns |
|---------------------|---|---|---|------------------------|--|
| Rental cabin | Access roads, parking areas, cabins, sheds, vault toilets, corrals, gates, water hydrants, meat poles | <ul style="list-style-type: none"> • Use of heavy equipment, motor vehicle traffic, and motorized over-the-snow access • Painting/staining • Repaving, chip sealing, blading/grading, trenching (buried utility lines) • Food storage • Toilet pumping and water system maintenance • Vegetation removal (including hazard trees), piling and burning • Firewood cutting and storage | Overnight accommodations, stock use, skiing, snowmobiling | Summer and winter | Disturbance from human presence and increased motorized use during activity, localized cover removal, food attractants |
| Roads and trails | Maintenance level 1-5 roads (native surface, gravel, paved), trail classes 1-5 (primitive, native surface, and paved), signs, rolling dips, water bars, culverts, rip-rap, puncheon, retaining wells, bridges, trestles, tunnels, cattleguards, gates | <ul style="list-style-type: none"> • Use of heavy equipment, power and hand tools, motorized or over-the-snow vehicle access • Resurfacing, blading/grading, repair/replacement/maintenance of bridges, culverts, and cattle guards, digging, back-filling, blasting, rocking/tread work • Sign replacement and maintenance • Vegetation removal and brushing (including hazard trees), stump removal | Pleasure driving, OHV riding, pack stock use, hiking, mountain biking | Summer | Disturbance from human presence and increased motorized use during activity, localized cover removal |
| Trailheads | Access roads, parking lots, vault and flush toilets, kiosks, fences, signs, food lockers, pack stock loading ramp and hitching rails, corrals, parking stops/boulders | <ul style="list-style-type: none"> • Use of heavy equipment and high levels of motor vehicle traffic • Blading/grading, resurfacing, and paving • Pack stock and OHV staging • Vegetation removal (including hazard trees) • Fence and sign maintenance | Parking, staging, camping | Summer | Disturbance from human presence and increased motorized use during activity, localized cover removal, food attractants |

| Developed Site Type | Associated Infrastructure | Operation and Maintenance Activities | Uses | Season of Heaviest Use | Grizzly Bear Concerns |
|---------------------|---|---|--|------------------------|--|
| Groomed trails | Compacted surfaces, bridges, signs, snow stakes/markers | <ul style="list-style-type: none"> Use of over-the-snow motorized vehicles, snowcat and snowmobile-towed groomers Blasting Vegetation removal and brushing (including hazard trees), stump removal | Nordic skiing, snowmobiling, tracked motor vehicles, fat tire and motorized snow biking, hiking, snowshoeing | Winter | Disturbance from human presence and increased motorized use during activity, localized cover removal |

Recreation Special Uses

Table E- 3 displays use types and associated activities permitted under recreation special uses on the BDNF. The use description reflects the actual special uses authorization as defined in FSH 2709.11, Chapter 10. Many activities require year-round access.

Table E- 3. Recreation special uses use types, infrastructure, and associated operation and maintenance activities.

| Use | Associated Infrastructure | Operation and Maintenance Activities | Requires year-round access (yes/no) | Grizzly Bear Concerns |
|---------------------|---|---|-------------------------------------|---|
| Boat dock and wharf | Boat docks, vault toilets, parking areas | <ul style="list-style-type: none"> Use of heavy equipment, hand tools, and motorized vehicles Storage of buoys/boat slips Blading/grading Toilet pumping Snow removal | No | Disturbance from human presence and increased motorized use during activity, food attractants |
| Shelter | Warming huts, parking lots, outhouses, signs, fencing | <ul style="list-style-type: none"> Use of heavy equipment and hand tools High levels of motor vehicle traffic Painting/staining Blading/grading Toilet pumping Firewood cutting and storage Snow removal | Yes | Disturbance from human presence and increased motorized use during activity |

| Use | Associated Infrastructure | Operation and Maintenance Activities | Requires year-round access (yes/no) | Grizzly Bear Concerns |
|----------------------|--|--|-------------------------------------|---|
| Organization camp | Main camp lodge, cabins, outbuildings, water systems, septic systems, parking lots, ball courts propane tanks, picnic tables, fire rings, fencing, driveways, signs, and other associated infrastructure | <ul style="list-style-type: none"> • Use of heavy equipment, hand tools, and high levels of motor vehicle traffic • Painting/staining, construction, and reconstruction • Repaving, chip sealing, blading/grading, trenching (buried utility lines) • Food storage • Toilet pumping and water system maintenance • Snow removal • Vegetation removal (including hazard trees) | No | Disturbance from human presence and increased motorized use during activity, food attractants |
| Isolated cabin | Cabins | <ul style="list-style-type: none"> • Motorized vehicle, hand and power tool use • Snow removal • Vegetation removal (including hazard trees) | Yes | Disturbance from human presence and increased motorized use during activity, food attractants |
| Recreation residence | Cabins, outbuildings, driveways, septic systems, water systems, propane tanks, landscaping, fencing, gates, docks, campfire rings/fire pits | <ul style="list-style-type: none"> • Use of heavy equipment, hand and power tools, and high levels of motor vehicle traffic • Painting/staining, construction, and reconstruction • Toilet pumping and water system maintenance • Snow removal • Vegetation removal (including hazard trees) | Yes | Disturbance from human presence and increased motorized use during activity, food attractants |

| Use | Associated Infrastructure | Operation and Maintenance Activities | Requires year-round access (yes/no) | Grizzly Bear Concerns |
|------------------------|---|--|-------------------------------------|---|
| Privately-owned resort | Lodges, cabins, outbuildings, laundry facilities, propane tanks, fencing, RV pads, campsites, horse corrals, ball-courts, picnic tables, fire rings, dump station, hazmat storage (fuel), hot spring pools, parking lots, driveways, water system, septic system, signs | <ul style="list-style-type: none"> • Use of heavy equipment, hand and power tools, and high levels of motor vehicle traffic • Painting/staining, construction, and reconstruction • Repaving, chip sealing, blading/grading, trenching (buried utility lines) • Food storage • Toilet pumping and water system maintenance • Snow removal • Vegetation removal (including hazard trees) | Yes | Disturbance from human presence and increased motorized use during activity, food attractants |
| Marina | Boat launch, dock, vault and flush toilets, outbuildings, parking lot | <ul style="list-style-type: none"> • Use of heavy equipment, hand and power tools, and high levels of motor vehicle traffic • Repaving, chip sealing, blading/grading • Toilet pumping, septic system, and water system maintenance | No | Disturbance from human presence and increased motorized use during activity, food attractants |
| Concession campground | Developed campsites, restroom facilities, septic systems, water systems, kiosks, parking barriers, fencing, site markers, signs, fee collection infrastructure | <ul style="list-style-type: none"> • Use of heavy equipment, hand and power tools, and high levels of motor vehicle traffic • Painting/staining, construction, and reconstruction • Repaving, chip sealing, blading/grading, trenching (buried utility lines) • Food storage • Toilet pumping, septic system, and water system maintenance • Vegetation removal (including hazard trees) | No | Disturbance from human presence and increased motorized use during activity, food attractants |

| Use | Associated Infrastructure | Operation and Maintenance Activities | Requires year-round access (yes/no) | Grizzly Bear Concerns |
|-------------------------------------|--|--|-------------------------------------|---|
| Outfitting and Guiding ^a | Season-long camps, seasonal placement of yurts, caching of equipment | <ul style="list-style-type: none"> • Over-the-snow motorized vehicle use • Camping, backpacking, hiking, backcountry and Nordic skiing, trail running, mountain biking, canoeing • Fly-fishing, hunting (rifle, archery, with or without dogs) • Pack trips (llamas, goats, or equines), horseback riding, grazing • Commercial filming • High-altitude military-style maneuvers • Trail maintenance (rocking, tread work, clearing) • Food preparation and storage • Vegetation removal and brushing | Yes | Disturbance from human presence, increased motorized use, and low-level flights during activity, food attractants, surprise encounters, |

| Use | Associated Infrastructure | Operation and Maintenance Activities | Requires year-round access (yes/no) | Grizzly Bear Concerns |
|------------------------------|---|--|-------------------------------------|--|
| Winter resort and ski trails | Ski lodges, outbuildings, ski lifts, ski runs, ski trails, communication towers/antennae, solar arrays, hazmat storage (fuel), warehouses, garages, maintenance yards, snowmaking equipment, water systems, septic systems, parking lots, signs, access roads | <ul style="list-style-type: none"> • Heavy equipment, motorized over-the-snow vehicle, and helicopter use • High levels of motor vehicle traffic • Repaving, chip sealing, blading/grading • Avalanche control (use of explosives) • Erosion control, slash pile creation and burning • Septic pumping and water system maintenance • Food storage • Snow grooming, snow removal, snow making • Vegetation removal (including hazard trees) | Yes | Disturbance from human presence and increased motorized use during activity, food attractants |
| Ski slope or ski trail | Ski runs and trails, signs | <ul style="list-style-type: none"> • Motorized over-the-snow vehicle use • Erosion control • Snow grooming • Vegetation removal | Yes | Disturbance from human presence and increased motorized use during activity |
| Target range | Entrance gate, targets, practice range, picnic tables, fire ring, swing set, vault toilet, storage sheds | <ul style="list-style-type: none"> • Motorized vehicle and hand and power tool use • Painting/staining • Toilet pumping | No | Disturbance from human presence and increased motorized use during activity, food attractants |
| Recreation event | Signs, checkpoints, trail marking (flagging), check stations | <ul style="list-style-type: none"> • Motorized vehicle or over-the-snow vehicle use • Bicycle racing, trail running, swimming • Snow grooming | Yes | Disturbance from human presence and increased motorized use during activity, food attractants, surprise encounters |
| Non-commercial group use | None | <ul style="list-style-type: none"> • None | Yes | Disturbance from human presence and increased motorized use during activity, food attractants |

^aRefer to Table E- 4 for uses specifically associated with outfitting and guiding.

Outfitting and Guiding

Table E- 4 displays use types and associated activities permitted under outfitter and guide permits on the BDNF. These activities include those considered under the expanded Outfitting and Guiding Environmental Assessment (in progress). Not all activities may be occurring within any given year.

Table E- 4. Recreation special uses use types, infrastructure, and associated outfitting and guiding activities.

| Use | Operation Activities | Requires year-round access (yes/no) | Grizzly Bear Concerns |
|--------------------------|---|-------------------------------------|--|
| Auto tours | <ul style="list-style-type: none"> • Driving on Forest roads • Picnicking • Parking • Human waste • Trash generation | Yes | Disturbance from human presence and increased motorized use during activity, food attractants, potential for user-created roads and spurs |
| ATV and motorcycle tours | <ul style="list-style-type: none"> • Driving/riding on Forest motorized roads and trails • Picnicking • Parking • Human waste • Trash generation | Yes | Disturbance from human presence and increased motorized use during activity, food attractants, potential for user-created roads and spurs |
| Backcountry Skiing | <ul style="list-style-type: none"> • Over-snow travel • Yurt use, including set-up and take down • Meal preparation and trash generation • Wood stove use • Firewood cutting • Use of a snowcat • Shoving test pits for avalanche assessments • Trail marking (snow poles) • Drone use (marketing, client memorabilia) | Yes | Disturbance from human presence, increased motorized use during activity, and low-level flights from drones, localized cover removal, food attractants |

| Use | Operation Activities | Requires year-round access (yes/no) | Grizzly Bear Concerns |
|--|--|-------------------------------------|---|
| Backpacking | <ul style="list-style-type: none"> • Hiking on Forest trails, including cross-country hiking • Cooking meals • Human waste • Tent camping • Firewood cutting • Use of a cook stove • Trash generation | Yes | Disturbance from human presence and increased motorized use during activity, localized cover removal, food attractants, surprise encounters |
| Biking (road cycling, mountain biking, e-bikes, and fat-tire bikes) | <ul style="list-style-type: none"> • Riding on Forest roads and trails • Riding on groomed winter trails • Human waste • Trash generation | Yes | Disturbance from human presence and increased motorized use during activity, food attractants, surprise encounters |
| Boating (motorboat, wake boarding, paddle boarding, kayaking, canoeing, rafting, float tubing, etc.) | <ul style="list-style-type: none"> • Portaging, mooring, and wading • Human waste • Trash generation | No | Disturbance from human presence and increased motorized use during activity, food attractants |
| Camping | <ul style="list-style-type: none"> • Parking along forest roads and in spurs • Firewood cutting • Cooking meals • Human waste • Tent, RV, or trailer camping • Campfire • Use of a cook stove • Use of barbeque grills • Wood stoves for heat • Trash generation | Yes | Disturbance from human presence and increased motorized use during activity, localized cover removal, food attractants |
| Cross-country skiing and snowshoeing | <ul style="list-style-type: none"> • Skiing or snowshoeing on groomed trails • Skiing or snowshoeing over-the-snow • Trail marking (snow poles) • Human waste • Trash generation | Yes | Disturbance from human presence and increased motorized use during activity, food attractants, surprise encounters |

| Use | Operation Activities | Requires year-round access (yes/no) | Grizzly Bear Concerns |
|-------------------|--|-------------------------------------|---|
| Dogsledding | <ul style="list-style-type: none"> • Travel on groomed routes • Trail marking (snow poles) • Human waste • Animal waste • Trash generation | No | Disturbance from human presence and increased motorized use during activity, food attractants |
| Educational tours | <ul style="list-style-type: none"> • Driving on Forest roads • Hiking on Forest trails • Non-motorized cross-country travel • Picnicking • Parking • Meal preparation • Public speaking • Human waste • Trash generation • Educational exercises (including but not limited to journaling, photography, investigating plants, avalanche training, snow shelters, insects, bird and wildlife watching, orienteering, rock samples, soil samples, surveys, etc.) | Yes | Disturbance from human presence, increased motorized use, food attractants, surprise encounters, potential for user-created roads and spurs |
| Fishing | <ul style="list-style-type: none"> • Driving on Forest Roads • Horseback riding on Forest trails • Hiking on Forest trails • Cross-country hiking • Use of user-created fishing trails to access lakeshores and streambanks • Picnicking • Meal preparation • Wading and use of waders • Firewood cutting and campfire use • Dead fish and discarded entrails • Human waste • Trash generation | No | Disturbance from human presence and increased motorized use during activity, food attractants, surprise encounters, localized cover removal, potential for user-created roads and spurs |

| Use | Operation Activities | Requires year-round access (yes/no) | Grizzly Bear Concerns |
|-----------------------------|--|-------------------------------------|---|
| Game retrieval | <ul style="list-style-type: none"> • Riding equines and/or packing with equines or llamas on Forest roads, trails, and cross-country • Dragging carcasses short distances • Using sleds to transport carcasses short distances • Human waste • Animal waste | Yes | Disturbance from human presence and increased motorized use during activity, food attractants, surprise encounters |
| Hang gliding or paragliding | <ul style="list-style-type: none"> • Staging areas (take-off and landing zones) • Installing temporary windsocks • Parking • Driving on Forest roads to pick up hang gliders/paragliders at meet-up points • Human waste • Trash generation | No | Disturbance from human presence and increased motorized use during activity, localized cover removal, food attractants, surprise encounters |
| Hiking | <ul style="list-style-type: none"> • Hiking on Forest trails • Cross-country travel • Human waste • Trash generation | Yes | Disturbance from human presence and increased motorized use during activity, food attractants, surprise encounters |
| Horseback riding | <ul style="list-style-type: none"> • Riding on Forest roads and trails • Tying horses • Watering horses • Picnicking • Human waste • Animal waste • Trash generation | Yes | Disturbance from human presence and increased motorized use during activity, food attractants, surprise encounters |

| Use | Operation Activities | Requires year-round access (yes/no) | Grizzly Bear Concerns |
|---------|---|-------------------------------------|--|
| Hunting | <ul style="list-style-type: none"> • Harvesting game animals • Hiking on and off trail • Driving on Forest roads • Snowmobiling • Riding equines on Forest roads and trails • Riding equines off trail • Watering horses and mules • Riding ATVs on Forest motorized roads and trails • Use of firearms and archery equipment • Use of dogs • Use of pack stock • Use of base camps • Camping • Trailer/RV camping • Campfires • Firewood cutting • Human waste • Animal waste • Trash generation • Use of cook stoves • Game processing • Animal calls • Wearing animal scent • Stealth, concealment, and stalking game • Electric fencing • Drone use (marketing, client memorabilia) | Yes | Disturbance from human presence, increased motorized use, and low-level drone flights during activity, food attractants, surprise encounters, localized cover removal, potential for user-created roads and spurs, mistaken identity (grizzly bear for black bear) |

| Use | Operation Activities | Requires year-round access (yes/no) | Grizzly Bear Concerns |
|---------------------------------|---|-------------------------------------|---|
| Livery | <ul style="list-style-type: none"> • Dropping off and picking up clients at trailheads and parking areas • Deliver and pick-up of gear • Deliver and pick-up of pack and riding stock • Deliver and pick-up of watercraft • Delivery of motorized vehicles • Parking | Yes | Disturbance from human presence, increased motorized use, potential for user-created roads and spurs |
| Mountaineering or rock climbing | <ul style="list-style-type: none"> • Hiking off trail • Hiking on Forest trails • Use of base camp • Meal preparation • Use of a cook stove • Placement of temporary and permanent anchors in rock faces • Human waste • Trash generation | Yes | Disturbance from human presence and increased motorized use during activity, food attractants, surprise encounters |
| Outdoor skills training | <ul style="list-style-type: none"> • Orienteering • Shelter building • Avalanche training • Campfires • Firewood cutting • Dead and down tree cutting • Camping • Meal preparation • Use of a cookstove • Use of airplanes • Parachuting • Landing zones for parachutists • Human waste • Trash generation • Drone use | Yes | Disturbance from human presence, increased motorized use during activity, and low-level flights from planes or drones, localized cover removal, food attractants, surprise encounters |

| Use | Operation Activities | Requires year-round access (yes/no) | Grizzly Bear Concerns |
|---|---|-------------------------------------|--|
| Over-the- snow motorized tours (snowmobiles and other tracked vehicles) | <ul style="list-style-type: none"> • Use of tracked vehicles over-the-snow and on groomed trails • Trail marking (snow poles) • picnicking • Human waste • Trash generation | No | Disturbance from human presence and increased motorized use during activity, food attractants |
| Packing (with equines llamas, and goats) | <ul style="list-style-type: none"> • Horseback riding on Forest trails • Horseback riding on use-created trails to access established campsites • Non-motorized cross-country travel • Tying animals • Watering animals • Using a bell mare • Picnicking • Human and animal waste • Trash generation • Corrals • Latrines • Transporting and feeding forage • Grazing • Use of base camps • Camping • Meal preparation • Use of cook stoves • Campfires • Firewood cutting • Dead and down tree cutting (corrals) • Electric fencing • Packers dogs on trail and camp • Disposal of deceased pack and riding stock | Yes | Disturbance from human presence and increased motorized use during activity, food attractants, surprise encounters, localized cover removal, potential for user-created roads and spurs, livestock carcasses |

| Use | Operation Activities | Requires year-round access (yes/no) | Grizzly Bear Concerns |
|--|---|-------------------------------------|---|
| Sleigh rides (horse drawn) | <ul style="list-style-type: none"> • Pulling a sleigh over groomed trails • Picnicking • Human and animal waste • Trash generation | No | Disturbance from human presence during activity, food attractants |
| Trail running | <ul style="list-style-type: none"> • Running on Forest roads and trails • Human waste • Trash generation | Yes | Disturbance from human presence, food attractants, surprise encounters |
| Wagon Rides | <ul style="list-style-type: none"> • Use of horses • Pulling a wagon on Forest roads • Picnicking • Animal waste • Trash generation | Yes | Disturbance from human presence, food attractants, surprise encounters |
| Weddings (wedding organizes/officiants) ^a | <ul style="list-style-type: none"> • Photography • Public speaking • Awnings • Driving on Forest roads • Trash generation • Drone use (photography) | Yes | Disturbance from human presence during activity and low-level drone flights, food attractants |

^aWeddings include ministers, officiants, and wedding organizes who offer a commercial service to plan and/or conduct wedding ceremonies. "Weddings" under outfitting and guiding does not include activities associated with a wedding reception.

Appendix F: Chapter 2, Chapter 3, and Appendix E updates to the 2016 Conservation Strategy for the Grizzly Bear in the Greater Yellowstone Ecosystem.

Chapter 2 Demographic Criteria and Monitoring

Introduction

To maintain a healthy (recovered) grizzly bear population in the GYE, it is necessary to have adequate numbers of bears that are widely distributed with a balance between reproduction and mortality. Because grizzly bears are a difficult species to monitor and manage, multiple criteria are identified to provide sufficient information upon which to base management decisions.

In assessing and identifying demographic criteria for post-delisting management, this Conservation Strategy applies best available science, such as the IGBST implementation of the integrated population model (IPM) in 2021.

The IGBST has generated extensive information useful to determine the status of the GYE grizzly bear population. Few populations have benefited from the amount of effort in data collection, as has the GYE population. Agencies responsible for management will continue their commitment to data collection so population status can be determined and all designated criteria maintained.

Under this Conservation Strategy, all mortalities and all reports of unique females with cubs-of-the-year will be monitored within the Demographic Monitoring Area (DMA) (Figure 1) (see Chapter 1). The reduction in the area monitored for population estimates and estimating mortality rates focuses the monitoring efforts to the DMA, which corresponds to the area monitored by the IGBST. The DMA is based on delineation of suitable grizzly bear habitat, along with narrow areas along valleys bounded by suitable habitat that could act as potential mortality sinks (IGBST 2012).

The demographics and vital rates of the GYE grizzly bear population have changed over time, and the IGBST has periodically reviewed and adjusted mortality limits to ensure a total GYE population of at least 500 bears and to meet the occupancy criterion for breeding female bears.

The GYE population has far surpassed the USFWS recovery criterion for a minimum population size of 500 grizzly bears for more than two decades. Beginning in the early 2000s, the GYE population growth rates slowed, and the population began exhibiting signs of density dependence in core portions of the DMA, as documented in peer-reviewed literature (e.g., population growth fluctuations, decreased home-range size, reduced dependent young survival, and increased competition as more bears occupied the same suitable habitat) (van Manen et al. 2016).

In 2021, the IGBST adopted the integrated population model (IPM) framework, based on a Bayesian statistical framework, as the estimator of population size and vital rates for the GYE⁴. The IPM continues to use documentation of females with cubs-of-the-year and the Chao2 estimate, which has been used for GYE population estimation since 2007, with refinements in the interim (IGBST 2021). The IPM also uses other modeled and field-collected data inputs, such as survival, mortality, and reproduction data. The IPM allows

⁴ The IPM population size estimate is reported as a median value

the agencies to estimate population vital rates annually by sex- and age-specific cohorts, and to derive mortality limits incorporating those rates. With the adoption of the IPM, the management agencies are able to apply a more responsive approach for evaluating mortality rates on an annual basis.

The demographic criteria and objectives in this Conservation Strategy reflect the IGBST’s adoption of the IPM and related updates. The IGBST has used the IPM to estimate the population size (abundance) in the DMA and the annual population growth rate for the DMA for the period from 1984 to 2022 (Figures 3A and 3B). Data from each additional monitoring year will be added to the IPM model in the future and extend the time period of the population size estimates. (As new data are added to the model in the future, the IGBST will not retroactively adjust all prior year estimates to reflect variations in subsequent individual model runs.)

Figure 3A. Population size in the DMA, estimated by the IPM for the period 1984 – 2022. The 95% credible intervals are shown as the shaded area. The IPM was developed by the IGBST in collaboration with SpeedGoat, LLC.

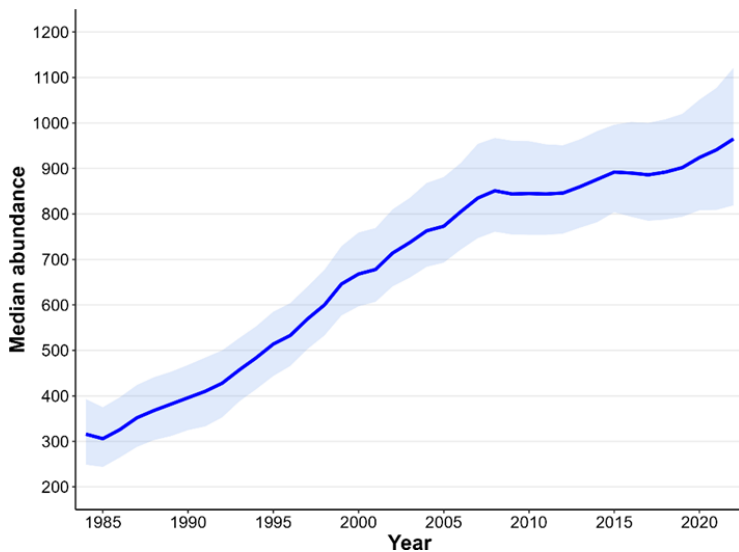
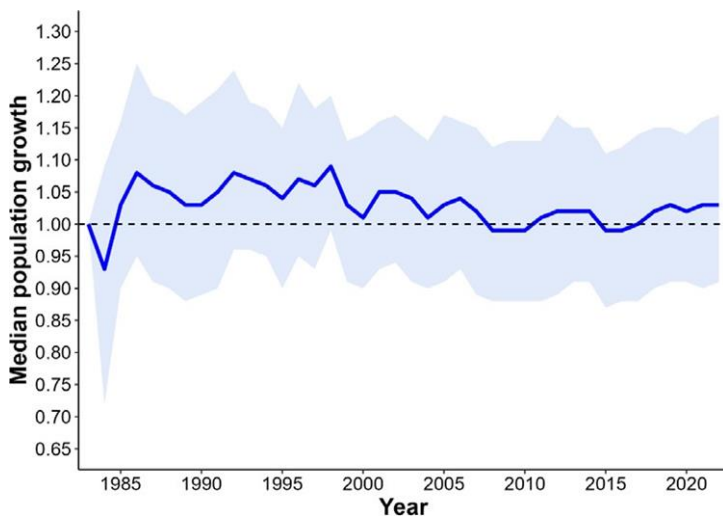


Figure 3B. Annual population growth rate (λ , blue line) estimates for grizzly bears in the DMA for the period 1984 – 2022, based on the IPM. The 95% credible intervals are shown as the shaded area.



Population Monitoring

Demographic monitoring protocols for the GYE population focus on the area within the DMA. These protocols will monitor and document population size, distribution of females with young, and all forms of mortality. Additional monitoring and research may be conducted as determined by the IGBST.

Demographic Criteria for the Greater Yellowstone Ecosystem

The demographic criteria below were developed to maintain a recovered population and reflect implementation of the IPM.

Demographic Criterion 1 — Maintain a minimum population size of 500 grizzly bears⁵ and at least 48 females with cubs-of-the-year, as calculated by the IGBST using the most updated Protocol (posted on IGBST website) and peer-reviewed methods. The estimate of total population size cannot drop below 500 or 48 females with cubs-of-the-year in three consecutive years. The 48 females with cubs-of-the-year metric will be evaluated by the estimated number of unique females with cubs-of-the-year based on the IPM (see Monitoring Protocol section).

Demographic Criterion 2—Sixteen of 18 bear management units within the PCA (Figure 2) must be occupied by females with young, with no two adjacent bear management units unoccupied, during a 6-year sum of observations. This criterion is important as it ensures that reproductive females occupy the majority of the PCA and are not concentrated in only one portion of the ecosystem.

Demographic Criterion 3 - Maintain the population in the DMA within or above a range of 800-950 (applying the IPM population size estimate), by determining and applying annual mortality limits for independent females and independent males, according to the management framework in Table 2 (see Appendix O). The population range of 800-950 is reflective of population sizes that have exhibited density dependent effects since the early 2000s, as well as other considerations (see Appendix O).

| Table 2. Management Framework based on DMA Population Size (IPM Population Size Estimate) (See Appendix O, Tri-State MOA) | |
|--|--|
| <p style="text-align: center;">800* – 950</p> <ul style="list-style-type: none"> ➤ Manage to maintain the population within or above this range. ➤ Use IPM to determine mortality limits for population stability, slight increase, or slight decrease, remaining within or above the population range: $0.98 \leq \lambda \leq 1.02$ ➤ Manage conflicts and authorize hunting at individual agency discretion, based on allocated mortality limits. The agencies' choices may result in $\lambda > 1.02$. | <p style="text-align: center;">> 950</p> <ul style="list-style-type: none"> ➤ Manage to maintain/reduce population. ➤ Use IPM to determine mortality limits for population stability or decrease. $0.95 \leq \lambda \leq 1.00$ ➤ If mortality limits are determined for a population decrease, the decrease will not exceed 5% ($\lambda \geq 0.95$). ➤ Manage conflicts and authorize hunting at individual agency discretion, based on allocated mortality limits. The agencies' choices may result in $\lambda > 1.00$. |

* See below for management strategies if the population falls below the 800 IPM population size estimate.

Note: Lambda (λ) denotes the change in population size from one year to the next: $\lambda = 1.0$ represents no change in population size between two years; $\lambda > 1.0$ indicates population increase and $\lambda < 1.0$ indicates population decrease.

⁵ The identification of a minimum population size of 500 in Demographic Criterion 1 is consistent with USFWS' recovery criterion for the GYE to ensure short-term genetic fitness; it is not the agencies' objective for managing the population. Demographic Criterion 3 reflects the agencies' population management objective for the DMA.

As described in Appendix O, if the IPM population size estimate for the population within the DMA is less than 800, which should not occur due to interagency commitments, the agencies will:

- Manage the population for increase above 800. (Use the IPM to determine mortality limits based on $\lambda > 1.0$).
- Request an IGBST biology and monitoring review, and consider the results of the IGBST review in determining appropriate changes to the management framework.
- Close the DMA within their respective jurisdictions (Idaho, Montana, and Wyoming) to hunting until the population increases above 800 grizzly bears.

Process for Determining Annual Mortality Limits

The adoption of the IPM provides the capability to review vital rates and demographics for the GYE population annually. Each year the IGBST will estimate the total population size for grizzly bears in the DMA by demographic class (independent males, independent females, dependent young) using the IPM. These estimates will be used to establish mortality limits for the upcoming year within the DMA as per Tables 2, above, and 4, below, consistent with the respective management scenario (stability, increase, decrease).

Mortalities are tracked and reported annually using data obtained within the DMA. Tables C1 and C2 in Appendix O provide examples of the process for deriving available harvest mortality and allocation of available harvest mortality by management jurisdiction.

Unique Females with Cubs-of-the-Year

Background

Females with cubs-of-the-year occupy all of the existing bear management units within the PCA as well as areas outside the PCA (Table 3). Not all portions of the DMA currently have observations of females with cubs-of-the-year, however, several have been observed outside the DMA in recent years.

Monitoring Protocol

Monitoring unique females with cubs-of-the-year provides information to demonstrate adequate reproduction and to derive annual estimates of total population size. Beginning in 2007, the IGBST estimated total population size using the model-averaged Chao2 estimate (as refined since the 2021 monitoring year) of females with cubs-of-the-year within the DMA, using the sightings and re-sightings of unique females with cubs-of-the-year within the DMA. Sightings and re-sightings of females with cubs-of-the-year inside the DMA are obtained from numerous sources, including systematic observation flights conducted annually in the DMA, and opportunistic confirmed sightings from aerial and ground observations.

Observation flights are primarily designed to survey the DMA and the number of flights conducted is standardized to ensure consistent effort in obtaining data. The IGBST verifies the reliability of all sightings. The IGBST plots all sightings and summarizes data for unique females and numbers of cubs-of-the-year seen for the entire population. Methodology developed by Knight et al. (1995) is used to separate duplicated from unduplicated sightings.

As the grizzly bear population increased, model-averaged Chao2 estimates became increasingly prone to underestimation, primarily due to the use of a conservative distance criterion of 30 km in the rule set to distinguish sightings of unique females with cubs-of-the-year. The original rule set was conservative by

design and reduced the risk of identifying more female with cubs-of-the-year than actually existed during the early stages of population recovery. When initially used, the technique was relatively unbiased because of the lower number and density of females with cubs. In 2021, the IGBST updated the rule set to use a 16-km distance criterion (IGBST 2021).

The IPM continues to use documentation of females with cubs-of-the-year and the Chao2 estimate. The IPM also uses other modeled and field-collected data inputs, such as survival, mortality, and reproduction data. Starting with the 2022 monitoring year, the IGBST has used the IPM to provide population size estimates and population growth rates for prior years for data comparability from 1984 to the present (Figures 3A and 3B).

This methodology provides the basis for mortality management and trend monitoring of the grizzly bear population in the DMA⁶. Mortality from all causes is tracked within the DMA for independent females (≥ 2 years old) and independent males (≥ 2 years old), and human-caused mortality is tracked for dependent young (< 2 years old). The total population size estimate is used to determine available mortality as per Table 2 based on the specified growth rate.

The IGBST will continue to investigate improved and new methods for population estimation as appropriate. Should a new population estimation method be incorporated to estimate size and evaluate survival/mortality of the GYE grizzly bear population, managers will recalibrate population metrics used to determine mortality limits (see Appendix O).

Distribution of Females with Young

Background

The Demographic Criterion of having 16 of 18 BMUs occupied, with no two adjacent units vacant, during a 6-year sum of observations continues to be met (Table 3). This criterion is important as it ensures that reproducing females occupy the majority of the PCA and that successful reproductive females are not just concentrated in one portion of the ecosystem. Distribution of females in the DMA with young of all ages is presented by decade for 1975–2022 (Figure 4).

Monitoring Protocol

This effort provides information to assess distribution of the reproductive cohort in all occupied habitats, although the specific distribution criterion for reproducing females applies only to the PCA. A recovered population should be well distributed throughout grizzly bear range. Successful reproduction is one indicator of habitat sufficiency, thus distribution of family groups of grizzly bears is one indicator of suitable habitat in areas where such sightings occur. Since subadult females usually establish home ranges adjacent to that of their mothers, the distribution of family groups is also an indication of future occupancy of these areas by grizzly bears. Radio tracking flights, observation flights, agency personnel sightings, and verified reports from other individuals are the primary methods employed to collect female distribution data. The IGBST verifies all reports and maintains these reports and other data.

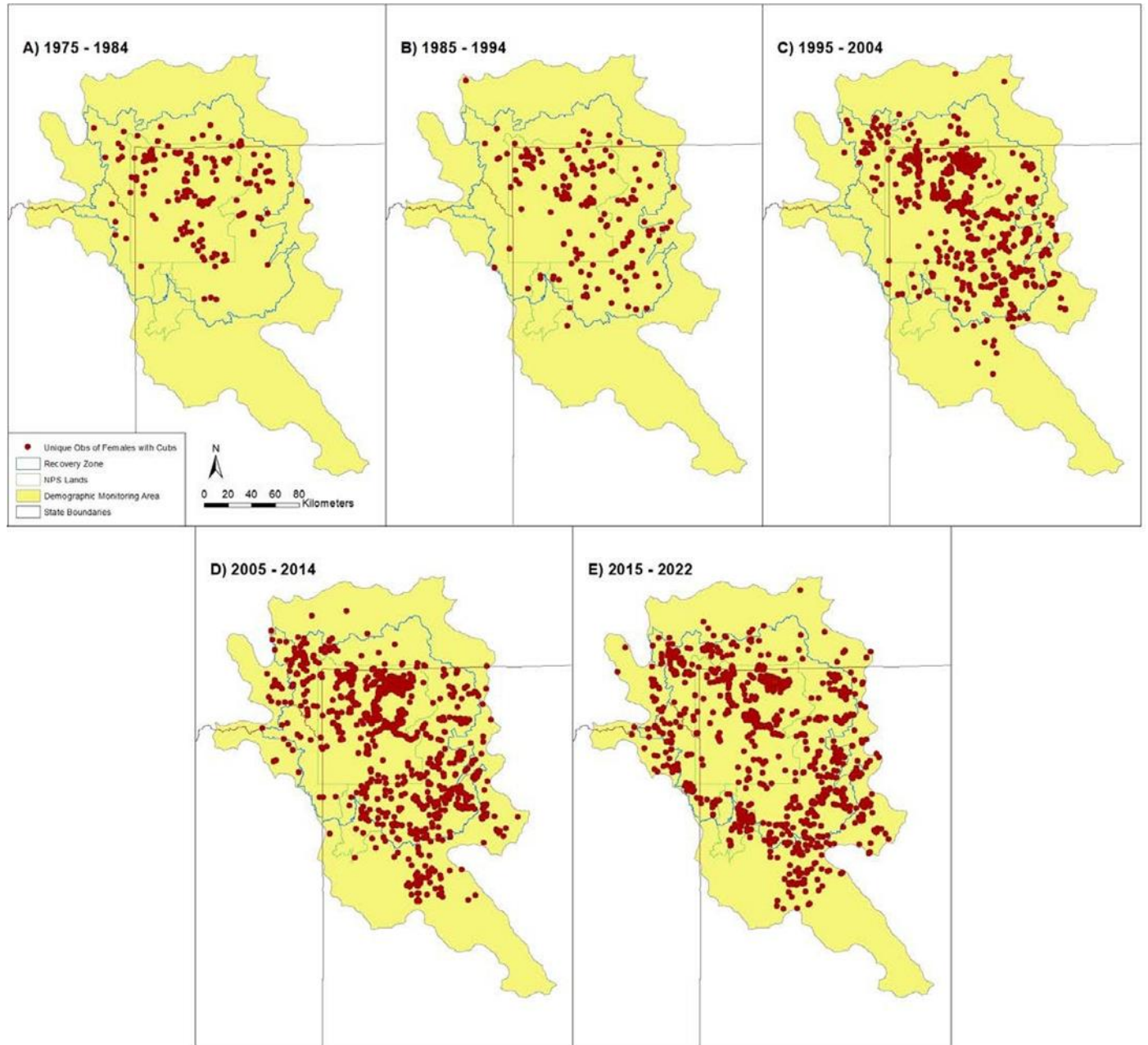
⁶ The original methodology of the 1993 Recovery Plan focused mortality management and population monitoring on the Conservation Management Area. The 2007 Recovery Plan Supplement identified revised methodology in which a total population estimate using the model-averaged Chao2 method was made based on sightings of unique females with cubs-of-the-year within the Conservation Management Area.

The number of BMUs occupied by females with young will be reviewed on a rolling six-year sum of observations. Females with young outside the PCA are also reported, but only those females with young within the PCA are used to document achievement of this distribution criterion.

Table 3. Bear management units occupied by females with young based on verified reports, 2017–2022 (Haroldson and Karabensh 2023).

| Bear Management Unit | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | Years occupied |
|----------------------|------|------|------|------|------|------|----------------|
| 1) Hilgard | X | X | X | X | X | X | 6 |
| 2) Gallatin | X | X | X | X | X | X | 6 |
| 3) Hellroaring/Bear | X | X | X | X | X | X | 6 |
| 4) Boulder/Slough | X | X | X | X | X | X | 6 |
| 5) Lamar | X | X | X | X | X | X | 6 |
| 6) Crandall/Sunlight | X | X | X | X | X | X | 6 |
| 7) Shoshone | X | X | X | X | X | X | 6 |
| 8) Pelican/Clear | X | X | X | X | X | X | 6 |
| 9) Washburn | X | X | X | X | X | X | 6 |
| 10) Firehole/Hayden | X | X | X | X | X | X | 6 |
| 11) Madison | X | X | X | X | X | X | 6 |
| 12) Henry's Lake | X | X | X | X | X | X | 6 |
| 13) Plateau | X | X | X | X | X | X | 6 |
| 14) Two Ocean/Lake | X | X | X | X | X | X | 6 |
| 15) Thorofare | X | X | X | X | X | X | 6 |
| 16) South Absaroka | X | X | X | X | X | X | 6 |
| 17) Buffalo/Spread | X | X | X | X | X | X | 6 |
| 18) Bechler/Teton | | X | X | X | X | X | 5 |
| Totals | 17 | 18 | 18 | 18 | 18 | 18 | |

Figure 4. Initial sightings of unique females with cubs-of-the-year in the GYE DMA by decade, 1975–2022 (IGBST Data).



Mortality

Background

Agencies have invested significant effort aimed at limiting human-caused deaths for grizzly bears. These efforts have reduced human-caused mortality and allowed the population to increase since it was listed in 1975.

The distribution of known and probable human-caused mortalities in the DMA during 1975– 2022 is shown in Figure 5. As the population has continued to expand, the percentage of known and probable mortalities

occurring outside the PCA and outside the DMA has increased, which was expected due to increased conflicts in these areas.

Monitoring Protocol

Management of human-caused mortality of grizzly bears is vital to the successful maintenance of the grizzly bear population in the GYE. Mortality limits are a necessary tool for managers in regulating human impacts to any wildlife population, including grizzly bears. Managing mortality is necessary to avoid the unregulated killing that occurred with European/American settlement of the GYE during the late 1800s, and to build support for long-term survival of the population. Higher numbers of mortalities can be expected in areas outside the DMA as the grizzly bear population expands, particularly in areas on the periphery of occupied range when bears move onto private lands or in areas with higher levels of human development. Mortality management recognizes the need for some bears to be removed to address recurring conflicts to meet management needs for conflict bears, human safety issues, etc.

State wildlife agencies (Montana, Wyoming, and Idaho) have signed a Memorandum of Agreement setting forth how they will coordinate bear management actions and limit discretionary mortality to ensure it will not jeopardize the recovery and survival of the GYE grizzly bear population (Appendix O). This document also summarizes each state's regulatory mechanisms for regulating discretionary mortality, including harvest (see Chapter 7). The states may use regulated harvest as a management tool when and where appropriate. All known and probable mortalities will be limited by the overall mortality limits within the DMA, as described in Tables 2 and 4.

As per the States' Memorandum of Agreement (Appendix O), they will conduct an annual meeting to evaluate the status of the population and develop allowable discretionary mortality by the States. The States will confer with the National Park Service (NPS), the U.S. Forest Service (USFS), and the Bureau of Land Management (BLM) annually and will invite representatives of both GYE National Parks, the NPS regional office, the GYE USFS Forest Supervisors, Tribes of the Wind River Reservation (WRR) (Eastern Shoshone and Northern Arapahoe tribes), and a representative from the BLM to attend the annual meeting.

Figure 5. Distribution of known and probable mortalities from all causes in the GYE DMA, by decade, 1975–2022 (IGBST Data).



Table 4. Framework to manage grizzly bear mortality inside the GYE DMA.

| Management Framework | Background and Application Protocol |
|--|---|
| 1. Area within which mortality limits apply | 49,928 sq km (19,279 sq mi) Demographic Monitoring Area (DMA) (Figure 1). |
| 2. Conservation Strategy Goal/Demographic Criteria | To ensure the continuation of a recovered grizzly bear population in accordance with the established Demographic Criteria: Criterion 1 (<i>insert page #</i>) Criterion 2 (<i>insert page#</i>) Criterion 3 (<i>insert page #</i>) |
| 3. Population estimator | The integrated population model (IPM) will be used as the population estimation tool for the foreseeable future. The IPM continues to use documentation of females with cubs-of-the-year and the refined Chao2 estimate, along with other inputs. |

| Management Framework | Background and Application Protocol |
|--|---|
| 4. Mortality limit setting protocol | The IGBST will annually produce a total population estimate and review related vital rates for the DMA using the IPM. That population estimate will be used to establish mortality limits for each age/sex class for the following year as per #8 (below) and Appendix O. |
| 5. Allocation process for managed mortalities by demographic and age class (independent females (≥ 2 years old), independent males (≥ 2 years old), dependent young < 2 years old) | Per Table 2 and Appendix O, the States will meet annually to review population monitoring data supplied by IGBST and collectively establish discretionary mortality limits per age/sex class available for regulated harvest for each jurisdiction (MT, ID, WY) in the DMA, so DMA thresholds are not exceeded. If requested, the Wind River Reservation will receive a portion of the available mortality limit based on the 4% of the WRR geographic area within the DMA. Mortalities outside the DMA are the responsibility of each State and do not count against mortality limits. |
| 6. State Regulatory Mechanisms specific to discretionary sport take | For specific state regulatory mechanisms, please reference the Tri-state MOA found in Appendix O. |
| 7. Management review by the IGBST | The IPM provides the capability to review vital rates and make appropriate adjustments to mortality limits annually. A demographic review will also be conducted by the IGBST every 5–10 years at the direction of the YGCC. This management review will assess if the management system is achieving the desired goal of ensuring a recovered grizzly bear population in accordance with Demographic Criteria. The management review is a science-based process that will be led by the IGBST (which includes all State and Federal agencies and the WRR Tribes) using all recent available scientific data to assess population numbers and trend against Demographic Criteria. |

Known and probable human-caused mortalities are defined as follows:

Known. Carcass recovered or evidence to indicate known status due to radio telemetry. Known deaths require a carcass, management removal, or a cut radio collar. Found collars having the appearance of being cut should receive additional forensic review for definitive proof.

Probable. Strong evidence to indicate mortality, reported by highly reliable sources, no carcass recovered. Probable deaths include those cases where there is supportive evidence that a bear was wounded. Circumstances of each reported instance should be considered. Probable includes those cases where evidence of blood, hair, or other tissues clearly indicates wounding serious enough to result in death. The literature is unclear on the likelihood of survival for orphaned cubs, therefore, any cub(s) orphaned during its first year of life because of a known mortality of its mother is considered a probable mortality.

Because probable mortalities will be factored into total mortality, and because separate mortality limits apply to independent males and independent females, each probable mortality must be assigned a sex. Sex will be assigned in the following manner:

- Probable deaths of adult bears where cubs-of-the-year are reported present will be classified as female.
- Lone bears classified as probable deaths will be assigned sex based upon statistics available from known deaths in the ecosystem. The percentage of known male and female deaths in the GYE between 1975 and 1998 is 59% and 41% respectively. These estimates exclude natural mortalities, management removals, and females with young. Therefore, sex will be assigned to probable adult mortalities in the GYE at a ratio of 59:41, male: female.
- Cubs-of-the-year that are orphaned and counted as mortalities will be assigned sex based on a 50:50 sex ratio at birth (Eberhardt et al. 1994). For each cub, a random number will be drawn between 1

and 100. If the number is 1 through 50, the sex will be assigned as male; if the number is 51 to 100, the sex will be assigned as female.

State agencies will manage mortalities within the limits determined as described in Table 2, Table 4, and Appendix O, by implementing specific regulatory mechanisms in state law and regulation.

It is recognized that established mortality limits might be exceeded in any given year. Any mortality threshold will not affect the immediate management of bears for human safety concerns or for management of conflict grizzly bears. Appendix O describes agency responsibilities and actions to reduce mortality should this occur. State plans provide for the take of conflict bears regardless of the current mortality limit upon consultation among all involved agencies.

Each State wildlife agency, Tribe, and National Park will provide mortality information to the IGBST, who will update and report ongoing mortalities within the DMA to all agencies so that the states may adjust management actions under their purview if a mortality limit is approached or exceeded. The IGBST will annually summarize all mortality information as to location, type, date, sex, and age for the GYE and produce this information in their annual reports. A statistical estimate of total mortality for each demographic class will be derived annually from the IPM analysis. This estimate accounts for both documented mortalities (e.g., naturally occurring mortality or human-caused mortality, such as illegal shootings, defense-of-human-life shootings, and vehicle collisions) and unknown, unreported mortalities within the DMA (see Cherry et al. 2002).

Population Trend

Background

While the actual level of increase since the grizzly bear was listed in 1975 includes uncertainty, all information, including numbers of unique females with cubs-of-the-year, distribution of reproducing females (Figure 4), and the distribution of verified grizzly bear occurrences support that this population has increased in both numbers of bears and the geographic area they occupy (e.g., Figure 6).

Harris et al. (2006) used data from 1983 through 2001 to assess population trend, and the IGBST has examined more recent time periods. Because the fates of some radio-collared bears are unknown, Harris et al. (2006) and the IGBST (2012) calculated two separate estimates of population growth rate: one based on the assumption that every bear with an unknown fate had died (a conservative estimate); and the other simply excluding data from bears with an unknown fate from the sample (i.e., individuals whose telemetry transmitter had failed or been lost). The true population growth rate is assumed to be somewhere in between these two estimates because we know from 30 years of tracking grizzly bears with radio-telemetry that not every lost transmitter indicates a dead bear. Based on population projections, Harris et al. (2006) found the GYE grizzly bear population increased at a rate between 4.2 and 7.6% from 1983 to 2001.

Beginning in the early 2000s, the GYE population growth rates slowed, and began exhibiting signs of density dependence, indicative of a wildlife population at or above carrying capacity (e.g., population growth fluctuations, decreased home-range size, reduced dependent young survival, increased competition as more bears occupied the same suitable habitat) (see Figure 3B).

Schwartz et al. (2006a) estimated survivorship of cubs-of-the-year, yearlings, and independent bears as well as reproductive performance to estimate population growth. They examined geographic patterns of population growth based on whether bears lived inside Yellowstone National Park, outside the Park but inside the Primary Conservation Area (PCA), or outside the PCA entirely. The PCA boundary (containing

23,853 sq km (9,210 sq mi)) corresponds to that of the Yellowstone Recovery Zone (USFWS 1993) and will replace the Recovery Zone boundary (Figure 1). They suggested that grizzly bears were approaching carrying capacity inside Yellowstone National Park. Consistent with this interpretation, the IGBST (2012)

documented lower cub and yearling survival than in the previous time period. Importantly, annual survival of independent females (the most influential age-sex cohort on population trend) remained the same while independent male survival had increased (IGBST 2012). Collectively, these two studies indicate that the growth rate of the grizzly bear population had slowed as bear densities may be nearing carrying capacity in portions of the GYE, particularly in the core area of occupied range. Using a derived index of grizzly bear density (Bjornlie et al. 2014), van Manen et al. (2016) provided further evidence for density-dependent population regulation where bear densities are high.

Monitoring Protocol

This Conservation Strategy recognizes that any one factor cannot provide the needed information to assess population size and trend. Ultimately, population assessments will require multiple sources of information.

Methods will be used as supportive information to evaluate population trend as appropriate. For example, IGBST has previously used: (1) mark-resight estimator (Higgs et al. 2013); (2) population projections from known-fate analysis (Schwartz et al. 2006a, entire; IGBST 2012); and (3) population reconstruction (IGBST, unpublished data). The adoption and continued refinement of the IPM will allow estimation of population vital rates annually by sex- and age- specific cohorts.

The IGBST's goal will be to maintain a minimum of 25 adult female grizzly bears fitted with radio collars and a similar representative sample of males (Schwartz et al. 2006a). To adequately sample survival, these 25 adult females will be spatially distributed throughout the ecosystem. The target distribution of these 25 radio-collared adult females will be determined by the IGBST; the expected distribution of collared females by agency will be assigned. Each female will be monitored using aerial telemetry flights every 10–14 days during the active season and approximately once every month during the denning season. When a radio collar indicates via a mortality signal that a bear may have died, a field crew will evaluate the bear's status and, if a mortality is observed, determine cause of death. The IGBST will coordinate collection of mortality data on each bear.

Data to estimate reproductive parameters, such as litter size, and survival of cubs-of-the-year and yearlings, are collected in conjunction with telemetry flights in all areas occupied by grizzly bears throughout the DMA. These data sets will be maintained by the IGBST and used to inform the IPM's vital rate and population size estimation and evaluation of population trend.

Genetic Management

The GYE supports the southernmost population of grizzly bears remaining in North America, and this population has been isolated from other grizzly bear populations. A previous question of concern was whether genetic factors, now or in the future, would compromise the long-term viability of the GYE grizzly bear population.

DNA analyses conducted on museum specimens by Miller and Waits (2003) indicated a slight decline in genetic diversity in the GYE population since the early 20th century; however, this loss of diversity was less severe than previously hypothesized. Indeed, a more recent study by Kamath et al. (2015) using advances in genetic analysis techniques (Luikart et al. 2010) indicated that despite isolation, genetic diversity in the contemporary population has not declined. Kamath et al. (2015) found that the rate of inbreeding in the

GYE grizzly bear population was very low (0.2%) over the period 1985 - 2010. Likewise, the effective population size (N_e), which in its simplest form reflects the number of reproducing individuals in a population, was greater than prior estimates across several techniques evaluated by Kamath et al. (2015).

The estimator for parentage assignment (EPA) method indicated estimates near the 500 threshold starting around 2005–2007 (IPM estimates range from 773 to 835 during this time frame) (Kamath et al. 2015). Extrapolating beyond 2007, N_e likely consistently exceeded the threshold for long-term evolutionary potential of $N_e = 500$ (Franklin 1980) starting in 2010. Associated IPM-based estimates for the census population (i.e., total population abundance) during that time period (2005–2010) are between 775 and 845 (Gould et al. 2023).

These results collectively indicate that, at population levels consistent with the described management objective (maintain the population in the DMA within or above a range of 800 – 950 grizzly bears, applying the IPM population size estimate) and under current or similar environmental conditions, genetic factors do not pose a risk to the viability of the GYE grizzly bear population. Kamath et al. (2015) concluded that nonetheless, the historically small N_e , relatively low diversity, and isolation over many generations suggest the grizzly population could benefit from increased fitness with additional gene flow, particularly given the unpredictability of future climate and habitat changes.

Sightings, captures, telemetry data, and mortalities in the past decade indicate that grizzly bears from the GYE and the NCDE are expanding their distribution, and there is considerable potential for these populations to connect (see Appendix H, Montana Grizzly Bear Management Plan).

Moreover, Montana’s plan identifies a long-term goal to allow the grizzly bear populations in southwest and western Montana to reconnect through the maintenance of non-conflict grizzly bears in areas between the ecosystems.

Management of non-conflict grizzly bears in areas between the NCDE management area and the DMA of the GYE will be compatible with maintaining some grizzly occupancy. Maintaining presence of non-conflict grizzly bears in areas between the NCDE management area and the DMA of the GYE, such as the Tobacco Root and Highland Mountains, would likely facilitate periodic grizzly movements (potentially facilitating genetic connectivity) between the NCDE and GYE. The Montana Grizzly Bear Management Plan indicates that the state of Montana will retain a priority around conflict management and removal of problem grizzly bears in this area, similar to the rest of Montana.

Human safety will always be prioritized over facilitation of grizzly movement for genetic connection between the ecosystems. However, the state of Montana has indicated that while discretionary mortality may occur here as needed, they will manage discretionary mortality in this area to retain the opportunity for natural movements of bears between ecosystems.

Additionally, it is Montana Fish, Wildlife and Parks’ (MFWP) opinion that expanding the current level of habitat restriction and programs to bear-occupied areas outside the PCA would not generate social acceptance for the grizzly bear, nor is expansion of habitat restrictions necessary for population recovery. Incorporating the grizzly bear as another component of MFWP’s ongoing programs for all wildlife is a more productive approach. The level of social acceptance of grizzly bears in historical habitat changes based on how the issues are approached, the density of the bear population, and how much faith people have in wildlife managers.

MFWP anticipates that successful implementation of this plan, along with adequate local involvement, can allow this to occur, and MFWP commits to continue to address land-use patterns that promote or hinder bear movement.

Genetic Monitoring Protocol

Genetic samples will be collected from all grizzly bear captures and mortalities in the GYE for analysis via cooperative efforts between the IGBST and recognized genetic experts. Genetic analyses of these samples will be conducted and evaluated for potential evidence of grizzly bears from other populations immigrating into the GYE population and producing offspring. Monitoring of radio-collared grizzly bears will be used to document potential movements between other ecosystems and the GYE.

To address potential threats to the long-term genetic health of the GYE population, the States of Idaho, Montana, and Wyoming have made the following commitment in the Tri-State Memorandum of Agreement (Appendix O):

By 2025, the States will translocate at least two grizzly bears from outside the GYE into the GYE, unless migration from outside the GYE is detected in the interim. Genetic monitoring of the GYE population will continue, and genetic diversity and effective population size (N_e) will be re-assessed at least every 14 years (i.e., one generation). If effective migration (i.e., an individual bear from outside the GYE that survives, breeds, and whose offspring survive) is not detected, the Parties will continue to make additional translocations from outside the GYE.

Chapter 3 Habitat Standards and Monitoring

Background

Habitat standards and monitoring protocol in this Conservation Strategy identify provisions that Federal and State land managers throughout the GYE are committed to for habitat preservation of a recovered GYE grizzly bear population. Between 1986 and the initial 2007 delisting of the GYE grizzly bear population, grizzly bear habitat in the GYE was managed under standards and guidelines established by the Interagency Grizzly Bear Committee (IGBC 1986) and specified in National Forest and National Park management plans. Acknowledging that humans are the primary agent of grizzly bear mortalities, a principal objective of the IGBC was to improve survival rates by implementing management strategies that minimized anthropogenic influences and grizzly bear-human conflicts. The IGBC measures implemented inside the Grizzly Bear Recovery Zone (GBRZ) led to improved management of garbage and food attractants, reduced sheep grazing, and restrictions on motorized access and human development. These standards and guidelines that were imposed upon public lands were instrumental in the recovery of the grizzly bear in the GYE throughout the mid-1980s and into the 1990s.

The subsequent 1993 Grizzly Bear Recovery Plan (USFWS 1993) required the preservation and monitoring of habitat necessary to support a recovered population. This led to the development of more explicit and measurable habitat criteria to be applied inside the GBRZ, as per the Recovery Plan Supplement: Habitat-based Recovery Criteria for the Greater Yellowstone Ecosystem (USFWS 2007c). To satisfy this requirement, measurable habitat criteria were established that called for no net loss of secure habitat with respect to 1998 conditions. These criteria were embraced and incorporated into the draft Conservation Strategy and released for public comment in 2000. Analysis of public comments and new information was used to establish the final habitat standards for a recovered GYE population as identified in the 2007 Conservation Strategy (USFWS 2007a) and appended in a supplement to the Recovery Plan (USFWS 2007c). This 2016 revision of the Conservation Strategy includes some changes to the 2007 document that help clarify habitat standards as they pertain to the 1998 baseline.

Clarifying language to the application rules was inserted where necessary to provide better direction for application of these standards on a local project level. Some modifications in habitat monitoring protocols have been made and are documented in this chapter and Appendix E. Upon delisting of the GYE population, the GBRZ will be referred to as the Primary Conservation Area (PCA) to reflect the shift from managing for recovery to one of conservation.

Since 1998, visitor use in National Park lands and surrounding federal public lands has increased significantly. During this time there was a significant increase in grizzly bear numbers and occupied range such that there are more bears in more places. Adherence to the habitat standards and its associated sideboards to human activities has contributed to the successful recovery of the GYE grizzly bear population. However, the habitat standards associated with the 1998 baseline and the administrative mandates to manage for increased visitation have not kept pace with the recent changes in a manner that allows land managers to responsibly accommodate the current, and likely future, increase in visitor use. For example, the steady increase in visitor numbers may necessitate more administrative infrastructure to strategically manage the impacts of more people on the landscape while ensuring the continued protection of grizzly bears and their habitat.

Therefore, it is necessary to reconsider the role and responsibility for stewardship and resource management of public lands inside the PCA and throughout the GYE. Specifically, how could future modifications to the 1998 baseline standards be designed so that increased visitation can be addressed without threatening the habitat and population gains that have been secured? As such, the 2016 Conservation Strategy proposed a multi-agency effort be conducted to determine the best long-term solutions for alleviating administrative pressures associated with increased visitation. Any management changes proposed in this effort were to be evaluated in a cooperative and meaningful manner with full consideration to long-term consequences. Proposed modifications will minimize deviations to the 1998 baseline. A multi-agency planning group was established to complete this re-evaluation effort on or before the end of calendar year 2018.

Managers extended this date and discussion, with agreement by U. S. Fish and Wildlife Service.

In 2017, a multi-agency technical team was tasked with recommending changes to the standards and application rules for managers' consideration. The most significant recommendation is to apply a "footprint" approach to identify and manage areas of concentrated human use associated with developed sites that were previously listed and counted as points on the landscape, regardless of areal extent. The application rules for habitat standards in this updated document spell out how new infrastructure may be authorized to manage the effects of increased visitation. Refer to Appendix E for a complete discussion on the methods and rationale for the footprint approach.

The final revision document and all future revisions to the Habitat Chapter must be agreeable to each of the affected federal land management agencies represented on the YGCC, including the National Park Service, U.S. Forest Service, Bureau of Land Management, as well as the U.S. Fish and Wildlife Service.

Introduction

The overall objective for habitat management inside the PCA is to reduce access-related disturbances and human-caused mortalities by maintaining or improving habitat with respect to 1998 conditions while maintaining options for resource management activities at approximately the same level as existed in 1998. Habitat standards apply to Federal lands inside the PCA and identify three factors that must be maintained at, or improved upon with respect to conditions existing in 1998: (1) secure habitat, (2) number and capacity of developed sites, and (3) number and acreage of active commercial livestock grazing allotments. All three of these factors are linked to human activities that affect grizzly bear mortality and displacement. These three standards apply to public lands within the PCA, the area where past recovery efforts and present habitat conservation measures are primarily focused. The PCA accounts for approximately 34% of the GYE grizzly bear's occupied range as estimated from methods of Bjornlie et al. 2014 (Figure 6). The 1998 baseline for habitat standards was selected because studies showed (and recently affirmed) that the GYE grizzly bear population was increasing annually at a robust rate of 4.2 to 7.6 percent between 1983 and 2001 (Harris et al. 2006, 2007, IGBST 2012). Habitat conditions in 1998 were considered representative of this time period since levels of secure habitat and developed sites inside the PCA had remained relatively constant in the 10 years preceding 1998 and beyond (USDA 2004). Hence, conditions in 1998 are believed to have supported and contributed to the population growth observed during 1983–2001. Habitat standards, as they apply to the 1998 baseline, impose measurable side boards on allowed levels of human activity inside the PCA and establish a clear benchmark against which future improvements and impacts of habitat can be measured.

To facilitate management of habitat throughout the PCA, the area inside the PCA is divided into 18 distinct bear management units (BMUs) and 40 subunits (Figure 2). BMU boundaries were delineated to

approximate the average lifetime range of an adult female grizzly bear in the GYE. Each BMU was further subdivided into one or more subunits comparable in size to the average annual home range of an adult female grizzly bear. Monitoring habitat at a subunit scale provides greater spatial resolution and proved to be better suited for analyzing habitat use patterns and ensuring good distribution of bear habitat throughout the PCA (USDA 1985).

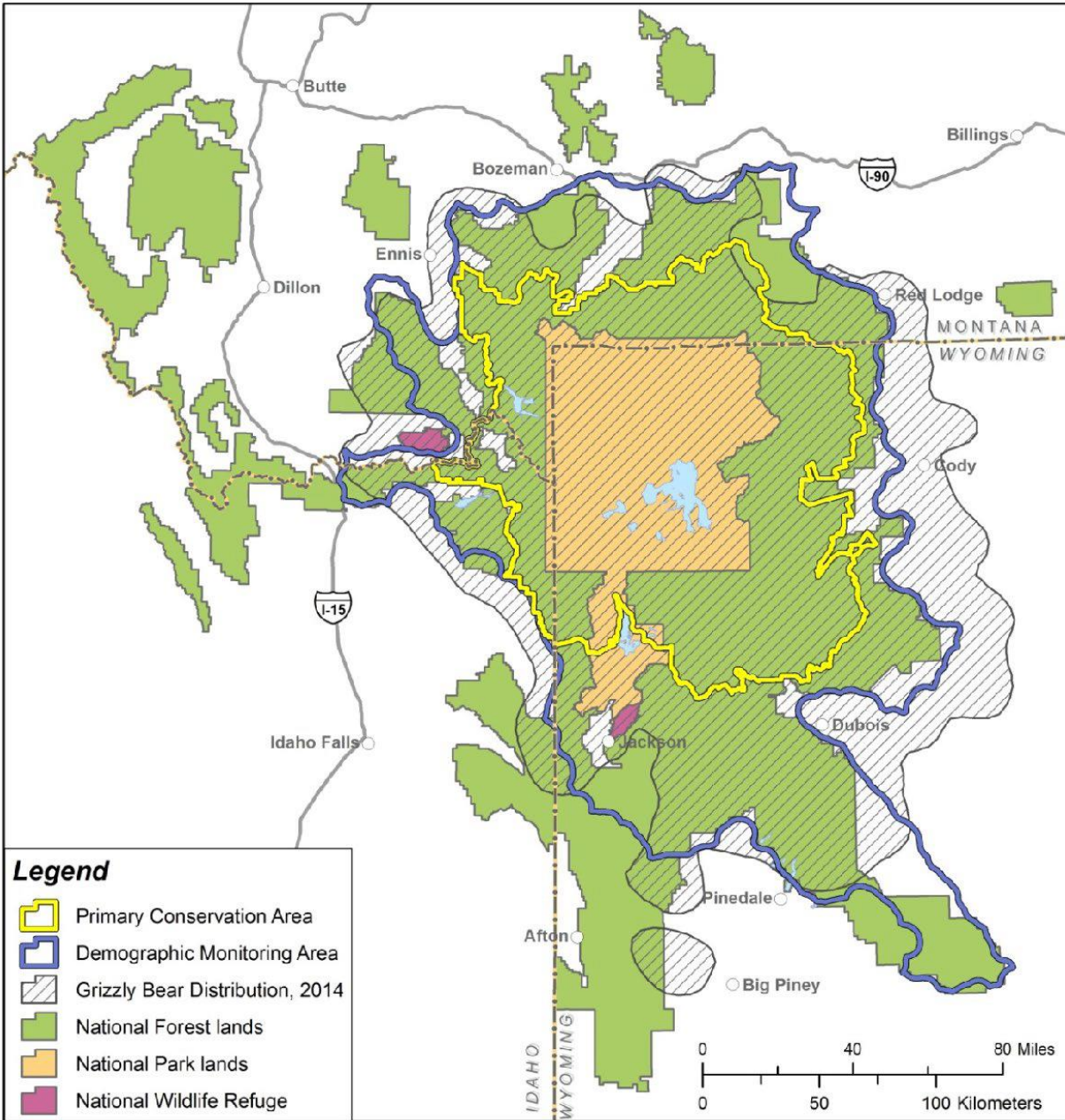
Hence, conditions pertaining to secure habitat and developed site standards are measured and compared against 1998 levels for each of the 40 bear management subunits within the PCA. To date, habitat-based criteria throughout the PCA have been successfully maintained at, or improved upon, 1998 levels for all 40 subunits. Adherence to these standards ensures that sufficient habitat for the GYE grizzly bear will continue to be available into the foreseeable future. Habitat standards in this document are subject to revision based on the best available science and will be reviewed and updated as necessary.

In addition to mandatory habitat standards, several other habitat parameters will be monitored and evaluated to determine the overall condition of habitat for grizzly bears in the PCA. These additional monitoring items include productivity or grizzly bear use of the following foods: (1) ungulates, (2) cutthroat trout, (3) army cutworm moths, and (4) whitebark pine seeds.

Information on monitoring protocols for these items is found in subsequent sections of this chapter.

Agencies responsible for management of grizzly bear habitat in the GYE are committed to continue collecting the necessary information to evaluate adherence to habitat standards and monitoring protocols throughout the PCA. The habitat standards and monitoring requirements in this Conservation Strategy have been incorporated into National Forest plans, National Park compendiums, and BLM plans.

Figure 6. Federal lands comprising the Greater Yellowstone Ecosystem (GYE), the Primary Conservation Area (PCA), the Demographic Monitoring Area (DMA), and current (2006– 2020) grizzly bear occupied range as estimated based on techniques described in Bjornlie et al. (2014).



Outside the PCA, grizzly bears have expanded into adjacent areas considered biologically suitable and socially acceptable, as per direction in the State and Tribal management plans (Appendices H, I, J, and N). The key to successful management of grizzly bears outside the PCA is a sustainable balance that accommodates the needs of grizzly bears along with the competing demands of human use. As such, an important management objective for areas outside the PCA is to maintain existing resource management and recreational uses and allow agencies to respond to demonstrated problems with appropriate management actions.

Approximately 83 percent of suitable habitat outside the PCA occurs on federally owned land and about 98 percent of that suitable habitat is occupied by grizzly bears (Figure 6). Most lands outside the PCA are under Forest Service management and the majority of those lands will remain as relatively secure habitat due to land designations. The Forest Service manages 76 percent (17,292 sq km (6,676 sq mi)) of suitable habitat outside of the PCA, of which nearly 71 percent (12,396 sq km (4,786 sq mi)) is relatively secure because they are congressionally designated as Wilderness, Wilderness Study Area, or Inventoried Roadless Area. These designations provide regulatory mechanisms outside of this Conservation Strategy that minimize impacts to secure grizzly bear habitat. A flexible management strategy is crucial for promoting acceptance and tolerance for grizzly bears as they continue to expand into suitable habitat outside the PCA. Standards and guidelines for other wildlife species identified in National Forest and Park management plans indirectly provide additional habitat management direction for bears outside the PCA.

State grizzly bear management plans for Idaho, Montana, and Wyoming recommend and encourage land management agencies to maintain or improve habitats important to grizzly bears and to monitor habitat conditions outside the PCA. These three states acknowledge the importance of secure habitat (see secure habitat definition below), motorized access management, and road density issues related to the survival of grizzly bears and other wildlife. Consequently, levels of secure habitat are monitored on federal lands outside the PCA. Land management agencies work cooperatively with state wildlife agencies to meet identified population and habitat goals for grizzly bears in the GYE. The process of implementing state and federal grizzly bear management is coordinated by the YGCC representing all respective land management agencies in the GYE (see Chapter 6 Implementation and Evaluation).

Habitat Standards inside the Primary Conservation Area

Human activity is the primary factor negatively impacting availability and security of grizzly bear habitat in the GYE. The relationship between bears and habitat is extremely complex and difficult to quantify. However, unfettered human activity is known to result in displacement and mortality of grizzly bears and was a significant contributing factor leading to listing the grizzly bear in the conterminous U.S. as a Threatened species in 1975. Restrictions in human activities due to management practices implemented by the IGBC in the mid-1980s correlate strongly with the steady increase in the GYE grizzly bear population observed between 1983 and 2001.

Habitat standards formalized in this document impose measurable sideboards on levels of road development, construction of developed sites, and livestock allotments allowed on Federal lands inside the PCA, thereby reducing opportunities for grizzly bear-human conflicts, habitat disturbance, and displacement of grizzly bears from valuable habitat.

Habitat standards identified in this document address three key factors related to human activity (motorized access, site development, and commercial livestock grazing) and specifically call for no net loss in secure habitat inside the PCA from what existed in 1998 (Appendix E). Adequate secure habitat is essential to the survival and reproductive success of grizzly bears.

It is the goal of habitat management agencies to maintain or improve habitat conditions throughout the PCA at or above 1998 levels, as measured per bear management subunit. These levels of secure habitat have been maintained and will continue to be maintained, and improved on where possible, for the foreseeable future. Potential impacts to grizzly bears and their habitat resulting from federal activities occurring inside the PCA will be evaluated and mitigated using the criteria and standards in this Conservation Strategy in coordination with state wildlife agencies.

Corrections to the 1998 habitat measurements comprising the baseline (Appendix E) may be made for errors of omission when based on new and well documented information substantiating the existence and status of anthropomorphic features (i.e., motorized routes, developed sites, or livestock allotments) that were not properly accounted for in the 1998 baseline. When verified, legitimate corrections to the baseline will be tracked and reported and will constitute new baseline habitat levels against which future change will be measured.

Application rules specific to each habitat standard provide additional direction on how these standards are to be implemented at a Federal project level. The following habitat standards and application rules apply to all Federal lands inside the PCA.

Secure Habitat Standard

The Secure Habitat Standard requires that inside the PCA the percentage of secure habitat within each bear management subunit must be maintained at or above levels that existed in 1998 (Appendix E). The sole exception to the 1998 secure habitat baseline applies to the three subunits identified in the 2007 Conservation Strategy as in need of improvement above 1998 levels (Gallatin #3, Henrys Lake #2, and Madison #2). These three subunits must be maintained at or above levels attained from full implementation of the 2006 Gallatin National Forest Travel Management Plan (Appendix E). Authorized Federal projects that result in temporary or permanent changes to secure habitat are allowed per the Application Rules identified below.

Secure habitat is defined as any contiguous area ≥ 10 acres in size and more than 500 m from an open or gated motorized access route (road or trail), prescribed footprint of a developed site or recurring low level helicopter line during the non-denning period (March 1 – November 30). Gated routes that are closed year-round to public motorized use but remain accessible to administrative personnel are still considered motorized access routes, and hence, detract from secure grizzly bear habitat.

Decommissioned routes that are permanently and effectively closed to the public and administrative staff do not count against this standard. Lakes larger than 2.6 sq km (1 sq mi) in spatial extent are excluded from secure habitat calculations. Specific activities allowed in secure habitat that do not violate standards or count as motorized access route are listed below.

Developed sites are areas of focused visitor and/or administrative activity with associated infrastructure that similarly detract from secure grizzly bear habitat; they are addressed further in the next section of this chapter. For the purposes of this chapter, secure habitat is correlated with key habitat components, such as foods, cover, space, arrangement of habitat types, and the ability of grizzly bears to move between them. For the purposes of describing habitat management and conservation in this chapter, secure habitat has no direct link to discretionary mortality. Any potential population and conflict management activities are distinctly separate components of this Conservation Strategy and addressed in other chapters.

Application Rules for Permanent Changes in Secure Habitat

Permanent changes to secure habitat are allowed inside the PCA when associated with an authorized Federal project involving construction of new motorized routes (i.e., roads or trails), reconstruction of existing motorized routes, or opening of a previously decommissioned route if, and only if, the following conditions are met:

- Any loss in secure habitat below baseline levels is replaced by restoring secure habitat of equivalent quality and quantity (e.g., through decommissioning) in the same bear management subunit. Habitat quality must be assessed based on the best collective scientific understanding of grizzly bear habitat ecology and the rationale for all mitigation measures must be fully documented.
- Replacement habitat must be in place before project implementation or concurrent with project development as an integral part of the project plan. Replacement habitat must remain in place for a minimum of 10 years before it can be subsequently replaced and mitigated for per application rules (this duration is based on the approximate generation time of a female grizzly bear, or the time it takes to replace herself in the population).
- For those subunits identified as in need of improvement above 1998 levels (Gallatin #3, Madison #2, and Henry's Lake #2), secure habitat will be maintained at or above levels associated with full implementation of the 2006 Gallatin National Forest Travel Management Plan (see Appendix E).
- For activities based on statutory rights, such as access to private lands under the Alaska National Interest Lands Conservation (ANILCA) or the 1872 General Mining Law, where permanent reductions in secure habitat cannot be replaced within the affected subunit, then secure habitat will be compensated at a commensurate level at or above the baseline in the nearest possible subunit. In these rare situations, subsequent changes to secure habitat in the two affected subunits constitute permanent changes to the baseline.
- Honor existing oil and gas or other mineral leases. Proposed Applications for Permit to Drill (APDs) and operating plans within those leases would strive to meet the application rules for changes to secure habitat. New leases, APDs, and operating plans must meet the secure habitat and developed site standards.
- Motorized routes on private land that post-date 1998 are not counted against this standard. However, for motorized roads or trails acquired through land exchanges or acquisition that are desirable to maintain for public use, mitigation is strongly recommended.
- Emergency repairs, replacements, or realignments of existing primary or secondary roads, power lines, utilities systems, and/or associated infrastructure may be made adjacent to existing roads, power lines, utilities systems, and/or infrastructure when repair or replacement within existing alignments is not feasible (e.g., due to new knowledge of geology, soils, or engineering standards as well as geologic events such as landslides or emergence of new thermal features).

Application Rules for Temporary Changes in Secure Habitat

Temporary reductions in secure habitat below baseline levels inside the PCA are allowed when associated with authorized Federal projects. Project activities should be concentrated in space and time to minimize disturbance. The following conditions must be met for temporary projects:

- Only one project affecting secure habitat may be active within a given bear management subunit at any one time.

- Total acreage of secure habitat affected within a given BMU does not exceed 1 percent of the acreage in the largest subunit within that BMU. The acreage of a project that counts against the 1 percent limit (i.e., the amount of secure habitat affected) is measured as the acreage within the 500-meter buffer around any temporary motorized access route or low-level helicopter flight line that intrudes into existing secure habitat.
- Use of project roads will be limited to administrative purposes associated with project activities. Project implementation shall not reduce secure habitat below baseline levels for more than 4 consecutive years. The collective set of project roads that affect secure habitat below baseline levels shall be closed to all motorized travel after 3 years. Project roads shall be decommissioned such that secure habitat is restored within 1 year after road closure.

Activities Allowed in Secure Habitat

The following activities are allowed in secure habitat inside the PCA without violating the standard:

- Activities that do not require route construction or reconstruction, re-opening of a permanently closed road, or recurring low-level helicopter flight lines.
- Helicopter use for short term (no more than 2 days in the duration of a project), or at higher elevations (> 500 m above ground level with no landing). Aircraft used in emergency firefighting are allowed.
- Non-wheeled, over-the-snow use (i.e., snow machines) is allowed unless new research identifies a threat. Conflicts associated with winter-use activities that develop either during denning or after den emergence in the spring can be addressed with local area restrictions.
- Access to power lines and/or utility corridors for occasional and necessary maintenance service and other administrative activities that do not require new route construction and is used only for administrative purposes related to power line/utility maintenance.
- Project activities (e.g., temporary road construction and maintenance, or use of recurring low-level helicopter flights) that occur during the grizzly bear denning season between December 1 and February 28.
- Construction of temporary work camps that operate outside the denning season for highway construction, fire/emergency response, or other critically needed maintenance projects are exempt from mitigation if food storage orders and best management practices are followed.

Developed Site Standard

The Developed Site Standard requires that on Federal lands inside the PCA, the number of developed sites and their capacity for overnight visitor use must be maintained at or below the 1998 levels (Appendix E), with limited exceptions per the application rules.

Developed sites refer to those sites or facilities on public land with features intended to accommodate administrative needs and public recreational use. Such sites typically are identified or advertised via visitor maps, information displays, or administrative personnel as discernable destination sites promoted by the agency. Developed sites are often associated with human activities that may disrupt grizzly bear use of habitat or have attractants that potentially lead to increased human-bear conflicts. Research has demonstrated that, while developed areas may be associated with human attractants (e.g. garbage), they also generally cause bears to avoid or spend less time in these areas. Because developed areas are not

managed for grizzly bear occupation, they are considered 'non-secure' habitat and measurably detract from secure habitat calculations. Examples of developed sites include, but are not limited to: campgrounds, picnic areas, trailheads, boat launches, rental cabins, summer homes, lodges, service stations, restaurants, visitor centers, and administrative sites. Administrative sites are those sites or facilities constructed for use primarily by government employees and their cooperators/partners (e.g., concessioners, permittees, cooperating agencies) to facilitate the administrations and management of public lands. Administrative sites are counted towards developed sites. Examples include: administrative headquarters, ranger stations, patrol cabins, park entrances, environmental education centers, employee and concessioner housing, and other facilities supporting government operations. Dispersed sites, in contrast to developed or administrative sites, are those not associated with a developed site, such as a front-country campground. These sites are typically characterized as having minimal to no human infrastructure and may include primitive road access. Dispersed sites are not counted toward developed sites.

In an effort to ensure accuracy in defining and tracking developed sites that comprise the 1998 baseline for public lands within the PCA, national park and forest units have mapped spatial polygons or 'footprints' for specific categories of developed sites, including visitor overnight lodges, developed campgrounds, administrative sites, and major developments.

Developed sites with no authorized footprints are typically isolated point-sources of human activity supporting minimal infrastructure with little to no need of enhancement. Such sites include, but are not limited to, trailheads, backcountry patrol or rental cabins, summer homes, and day-use sites including picnic areas, boat launches, fishing access, and target ranges. The rationale and methodology for footprint delineation, and tables of all sites constituting the 1998 baseline, can be found in Appendix E, tables 5 and 6.

Application Rules for Developed and Dispersed Sites

On Federal lands inside the PCA, changes to developed sites or construction of new developed sites are allowed if the following conditions are met:

- Overnight visitor use does not increase above approved levels that existed in 1998, except that a) a net increase of 10% per footprint in the capacity of visitor overnight use may occur at lodges, guest ranches, and organizational camps that operate under special-use permits on national forest lands, and in national park lodges that are below the capacity of previously approved capacity ("pillow count") as outlined in park Master Plans (for example, Master Plan, Yellowstone National Park/Wyoming- Montana-Idaho (National Park Service 1974); and b) an increase in the number of campsites is permitted at developed campgrounds on national forest lands. All new infrastructure must be within the authorized footprints of existing developed sites and best management practices (such as food storage requirements) must be maintained.
- Construction of new visitor day-use sites (e.g., roadside pull-offs, parking areas, restrooms/pit toilets, mass transportation shuttle stops, trailheads, and picnic areas) within primary road corridors as defined in Appendix E (figure 1) is allowed without mitigation if the following conditions are met:
 - ◆ 1. new roadside day-use facilities must be contained within 300 meters (approximately 1000 ft) on either side of an existing primary road. The concept of the 300-meter development buffer is not intended as a replacement to addressing the challenges of managing significantly increasing visitation. Rather, it will provide flexibility to accommodate considerations for visitor safety, pristine viewsheds, and other resource protection concerns when placing new day-use facilities.

- ◆ 2. new roadside day-use facilities cannot be constructed within high quality grizzly bear habitat, including riparian areas and wetlands, whitebark pine stands, and habitat adjacent to cutthroat trout spawning streams.
- ◆ 3. managers anticipate that such new sites will be small. They could affect up to but no more than 10% of the existing mapped primary road corridors (measured within each jurisdiction).
- ◆ 4. public transportation sites and its associated utility infrastructure are the only new commercial facilities allowed to be constructed under this application rule.
- ◆ 5. best management practices, including bear-resistant garbage cans, dumpsters, and recycling containers as well as human-bear conflict reduction outreach to visitors must be used both during the construction phase and during the post construction visitor use phase of these facilities.
- ◆ 6. for monitoring purposes, new roadside day-use sites will be reported and documented in the Interagency Grizzly Bear Study Team annual reports.
- ◆ 7. the need for and efficacy of this application rule will be assessed 5 years after implementation.
- Construction of new sites that do not meet the exceptions in these application rules (i.e., are outside the polygon/footprints of existing developed areas or road corridors) will be mitigated for , within the same bear management subunit or as close as possible, by closure of another site of comparable human use to offset any increase in the number of developed sites or capacity for human use and restoring secure habitat of equivalent quality and quantity.
- New emergency administrative/maintenance infrastructure is allowed outside of prescribed footprints without mitigation if such construction is necessary to reduce resource damage or potential for human-grizzly bear conflicts or increase visitor safety. Examples of new allowed infrastructure could include replacement or new construction of critically needed water, sewage or electric utilities or the replacement of administrative or visitor infrastructure damaged by natural hazard.
- Construction of new facilities within developed sites and road corridors will be analyzed through the NEPA process to ensure that proposed projects would not have a significant impact on the environment and on grizzly bears and their habitat. Mitigation measures to prevent or to adequately compensate for the type and extent of detrimental impacts will be implemented within the affected subunit and will be in place before implementation of the project or included as an integral part of completion of the project.
- Construction and/or expansion of day-use and administrative sites is allowed within an existing footprint without mitigation. Temporary construction of work camps for highway construction, emergency response (such as fire) or other critically needed maintenance projects are exempt from human capacity mitigation if other viable alternatives are not available. Food storage orders and best management practices must be followed.
- Modifications to existing developed sites/points for which there is no mapped polygon/footprint are permitted when needed to reduce resource damage, detrimental environmental impacts, and/or the potential for grizzly bear conflicts (e.g., installing a vaulted toilet to avoid damage to water resources or installing bear-resistant storage structures to reduce conflict).

- Modifications to dispersed campsites that reduce resource damage and/or the potential for grizzly bear conflicts (e.g., installing bear-resistant storage structures and limiting parking expansion) are allowed without mitigations as long as they are not permanent or irretrievable. The need for and efficacy of this application rule will be assessed 5 years after implementation. Dispersed campsite monitoring is recommended to secure information to make this assessment.
- For activities based in statutory rights (e.g., 1872 General Mining Law, Americans with Disability Act, ANILCA, etc.), if the number of developed sites exceeds the 1998 baseline, the Forest Service will, to the fullest extent of its regulatory authority, reduce developed sites to commensurate levels and mitigate to offset any increases in human capacity, habitat loss, and increased access to surrounding habitat within the affected subunit if possible. In those rare cases where mitigation cannot be accomplished within that subunit, commensurate compensation will be accomplished in the nearest subunit and changes in the two affected subunits become permanent changes to the baseline.
- Developments on private land are not counted against this standard. However, for developed sites acquired through land exchanges or acquisitions that are desirable to maintain, mitigation is strongly encouraged but not required. The rationale behind this is to encourage acquisition and transformation of private land to public ownership since this negates the potential for future development and results in better management for grizzly bears.

Livestock Allotment Standard

The Livestock Allotment Standard requires that on Federal lands inside the PCA, there will be no increase in the number or acreage of active commercial livestock grazing allotments nor an increase in permitted sheep Animal Months (AMs) relative to that which existed in 1998 (Appendix E). Existing sheep allotments will be monitored, evaluated, and phased out as the opportunity arises with willing permittees.

Application Rules

Grazing allotments tracked for purposes of grizzly bear conservation include both vacant and active commercial livestock units for sheep, cattle, and/or horses on Federal lands inside the PCA. Active allotments are livestock units with active grazing permits. Vacant allotments are those without an active permit, but which may be restocked or grazed periodically by other permittees at the discretion of the land management agency to resolve resource issues or other concerns. Changes in livestock allotments inside the PCA that satisfy the allotment standard may occur if the following conditions are met:

- A vacant allotment may be reissued an active permit resulting in an increase in the number of permitted cattle as long as the number and net acreage of active allotments inside the PCA does not exceed the 1998 baseline. Appropriate analysis by the action agency must be conducted to evaluate impacts on grizzly bears.
- Combining or dividing existing allotments is allowed as long as the net acreage and number of active allotments inside the PCA does not exceed 1998 levels.
- Where chronic grizzly bear conflicts occur on livestock allotments inside the PCA, and an opportunity exists with a willing permittee, alternatives for resolving conflicts may include authorization of a non-use permit, moving livestock to a vacant allotment where there is less likelihood of conflict, or cattle grazing can be phased out on that allotment.

Appendix E. 1998 Baseline for Habitat Standards

I. Introduction

The 1998 baseline refers to the measurements of habitat conditions on public lands inside the Primary Conservation Area (PCA) as they existed in 1998. Habitat standards identified in the Conservation Strategy for Grizzly Bears in the Greater Yellowstone Ecosystem pertain to 3 factors known to affect grizzly bear mortality: 1) secure habitat, 2) developed sites, and 3) livestock grazing allotments. The standards require that all three factors be maintained at, or improved upon, conditions that existed in 1998. The rationale for 1998 as a baseline is predicated on evidence that habitat conditions at the time contributed to the vigorous 4–7 % annual growth rate of the grizzly bear population in the Greater Yellowstone Ecosystem (GYE) that was observed from the mid-to- late 1980s and throughout the 1990s (Harris et al., 2006, 2007; IGBST 2012). The 1998 baseline represents the most reliable estimate of habitat conditions at the time and establishes a benchmark against which future improvements and impacts can be assessed. It also provides a clear standard for agency managers to follow when considering potential impacts of local projects. This appendix documents estimates for baseline habitat values so that current and future conditions throughout the PCA can be evaluated for compliance with the standards as formalized in the Conservation Strategy.

In theory, the 1998 baseline should consist of static measurements bound to a single point in time. In reality, this baseline continues to evolve as more reliable information is acquired; errors in the baseline are identified and corrected; and as new geoprocessing tools and methodologies are developed that more accurately compute habitat parameters. Since the release of the initial 2007 Conservation Strategy (USFWS 2007), new information has become available and some errors in the 1998 baseline have been identified. Consequently, baseline values have been corrected when necessary to more accurately reflect 1998 ground conditions. The 1998 baseline database will continue to be improved when and if errors are identified and when more accurate habitat monitoring measures are implemented. All corrections to the baseline are documented, tracked, and reported in the Interagency Grizzly Bear Study Team (IGBST) annual reports, Yellowstone Grizzly Bear Investigations. Baseline values presented in this appendix represent the best available information at the time and will serve as a basis for monitoring and evaluating future changes in habitat conditions.

II. Recent change to Baseline: Footprint approach

A recent change in the method for measuring and tracking developed sites on public lands inside the PCA led to the development of a “footprint” approach. This new approach has the following two ramifications: 1) it changes how developed sites are delineated and categorized; and 2) accounts for measurable impacts on secure grizzly bear habitat associated with areas of concentrated human use. As a result of this new approach, values for the 1998 habitat baseline have changed to more accurately reflect conditions on the ground. The habitat baseline values in this current document supersede those documented in the 2007 Conservation Strategy and comprise the current benchmark against which all future change is to be measured.

A) Why the footprint approach?

The Developed Sites Standard in all versions of the Conservation Strategy requires that the number and capacity for human use of developed sites on public lands inside the PCA be maintained at or below 1998 levels, with special exemptions for expansion (in capacity and acreage) at existing administrative sites. However, in previous versions of the Strategy, developed sites, ranging from simple trailheads to complex major developments such as Grant Village in Yellowstone National Park, were represented and counted equally as mere points on the landscape and did not detract from calculated secure habitat. New language in Chapter 3 of the Strategy applies a spatial “footprint” approach to qualified developed sites based on polygons, rather than points, to delineate areas of concentrated human use associated with developed sites. With this method, footprint areas are buffered by 500 meters and the entire buffered areas are subtracted from measured secure habitat. The rationale for using the footprint approach is that it: 1) uses a more reliable, consistent, and accurate method for representing and tracking human development; 2) more accurately accounts for the reduction in secure habitat due to human development; 3) delineates prescribed areas within which managers may authorize new or enhanced infrastructure without mitigation per application rules in Chapter 3; 4) limits new infrastructure to those areas already developed and considered non-secure areas incompatible with grizzly bear occupation; and 5) remains consistent with and true to the intent of the original 1998 developed sites baseline.

The impetus for revisions to the measurement and tracking of developed sites is in direct response to significant changes in the GYE. Since 2007, when habitat standards were first implemented, the number of visitors on public lands throughout the GYE has increased significantly. In Yellowstone National Park alone, annual visitation increased by more than 40% during the period 2008–2018, surpassing 4 million visitors per year since 2016 (National Park Service website). In 2016, the Conservation Strategy was revised as part of the effort to delist grizzly bears in the GYE. In the revised Strategy, land managers identified a need for more flexibility to address insufficient staffing levels, overspill at designated campgrounds, traffic congestion, and aging infrastructure in a manner that stays true to the original intent of the 1998 habitat standards.

Consequently, a placeholder was added to the 2016 Strategy that called for the establishment of an interagency technical team (referred to as the Developed Sites Technical Team). The team was tasked with reevaluating habitat standards for developed sites and recommending changes to the standards and application rules that would provide managers the needed flexibility for authorizing new infrastructure. Imposed constraints required that the recommendations strike a balance between management needs and grizzly bear habitat protection with minimal deviation from the 1998 baseline.

The footprint approach allows managers to authorize new infrastructure deemed critical to the management of public lands (e.g., employee housing, administrative offices, maintenance facilities, public restrooms, parking areas) within the prescribed area, or footprint, of an existing developed site. Restricting infrastructure expansion to within prescribed footprints reduces the need for human development incursions into areas that serve as secure or “core” grizzly bear habitat. Instead, new infrastructure is limited to those areas that bears naturally tend to avoid because of high levels of human presence. Although expansion is categorically restricted to administrative infrastructure and spatially limited to within prescribed footprints, special exceptions are identified in the applications rules (Chapter 3).

B) Methods

A number of steps, many of which were preparatory measures, were identified and undertaken by the Developed Sites Technical Team to ensure the efficacy of the footprint approach. The transition to a new method presented a timely opportunity to reevaluate the accuracy of the database for developed sites comprising the 1998 baseline. Spatial data on human infrastructure associated with developed sites (e.g., buildings, maintenance facilities, motorized access) needed to be compiled to more accurately demarcate areas of human use. To bring consistency to the process, definitions and classifications of developed sites had to be clearly established. Likewise, a consistent and repeatable method for delineating footprint polygons had to be generated, reviewed and implemented. And finally, any consequential effects on secure habitat measurements had to be calculated and documented. Some of the more significant of these efforts are briefly chronicled as follows:

Definitions and new classification of developed sites

During 1999–2002 when the inventory of developed sites was initially compiled for public lands inside the PCA, there was no guiding language defining what constitutes a qualified developed site within the context of grizzly bear conservation. This lack of definition often led to confusion and resulted in inconsistencies between data sets compiled by the 5 National Forest and 2 National Park units that comprise approximately 98% of the PCA. Definitions were formalized by the technical team and new categories were constructed for parsing developed sites. The objective was to construct a set of mutually exclusive categories that distinguish between day-use and overnight- use and between administrative versus visitor use. This new categorization of developed sites (Table 2) is better suited to apply the current set of application rules (Chapter 3) that differentiate between the various types of use. In some cases, multiple distinct sites were merged into a single developed site. The merging of multiple smaller sites into a single larger site applied primarily to major developments like the Madison area in Yellowstone National Park (Figure 7).

Reassessment of developed sites

The inventory of developed sites on public lands inside the PCA was initially assembled and incorporated into the 2003 draft Conservation Strategy. At that time, digital records of administrative and recreational sites often were lacking and paper records were not always readily available. Over time, more accurate and complete digital records have been developed and maintained. Early in the recent review process, the Technical Team initiated a thorough accuracy assessment of the seminal database that serves as an inventory of developed sites comprising the 1998 baseline. Furnished with newly established definitions of developed sites, each administrative unit was tasked with reviewing the list of developed sites located on lands inside the PCA under their jurisdiction. Agency staff were asked to identify and correct errors of omission and commission and to correct spatial inaccuracies of site locations. Sites that were verified as existent in 1998, but which had not been previously accounted for in the database, were documented and officially appended to the developed sites database. Likewise, baseline sites that did not meet the criteria for a developed site specific to the purpose of grizzly bear conservation (e.g., radio repeater towers, interpretive signs at road pullouts), were documented and removed from the database. This process resulted in a more complete, consistent and accurate representation of qualified developed sites known to exist in 1998.

Inventory of associated infrastructure

Developed sites on public lands refer to those sites that have been enhanced with human infrastructure intended to accommodate public recreational use and administrative needs. Reliable spatial locations and descriptive information accounting for a site's infrastructure was determined essential to ensure that the intended objectives of prescribed footprints were met. A database accounting for all known infrastructure associated with developed sites was compiled and recorded in the newly refurbished inventory of the 1998 baseline. This spatial and descriptive information was obtained by local data stewards and supplemented via national databases such as the USDA Enterprise Data Warehouse (EDW) hosted by the Forest Service and the Wildland Fire Decision Support System (WFDSS) database maintained by the U.S. Geological Survey. When digital infrastructure data were lacking, spatial locations of structures were digitized directly from high resolution photo imagery. The 1998 status of infrastructure was verified against vintage imagery. Descriptive building information was identified with assistance from local administrative staff so that capacity of visitor overnight use could be documented as the number of individual units accommodating visitor overnight use (e.g., guest cabins, lodges, campsites).

Enhancement of motorized access database

To more accurately elucidate areas of human use associated with developed sites, it was imperative that spatially explicit information pertaining to motorized access to site infrastructure was accurate. The grizzly bear Motorized Access GIS database, which contains spatial data for motorized routes throughout the ecosystem, was crucial to the delineation of footprint polygons. However, in certain areas, the database often lacked the necessary level of detail for motorized access to individual structures at a given site. In order to guarantee the efficacy of the footprint approach, it was necessary to enhance the accuracy of the Motorized Access database. When available, more spatially accurate corporate data for motorized routes were integrated into the Motorized Access database. The accuracy of linear features in the database was also verified against current and historic photo imagery, with special effort focused near developed areas.

Digital route features were spatially aligned to more accurately represent ground conditions. Roads that were not originally accounted for in the database were digitized directly from georeferenced photo imagery and appended to the Motorized Access database. Each feature that was appended to the current motorized route database was also compared against Google Earth historic imagery to determine if the motorized route existed in 1998. Routes determined to exist at that time were also appended to the baseline database representing 1998 baseline conditions. All corrections to the original baseline database were tracked and documented. To illustrate this process, Figure 6 provides a visual comparison of motorized access for the Old Faithful area in Yellowstone National Park before and after photo imagery correction.

Criteria for assignment of footprints

In the footprint approach, not all developed sites are equal. Although special provisions allow for critically needed infrastructure, the degree and nature of authorized construction depends on the type of developed site and differentiates between those sites with and without prescribed footprints. Developed sites that warrant footprints primarily include: 1) areas with permanent infrastructure and invested management capital accommodating relatively high levels of administrative and/or recreational use, and 2) those areas identified by land managers as having the greatest need for infrastructure growth to meet administrative challenges imposed by increased visitation to public lands. Specific

development categories that warrant prescribed footprints include: a) Administrative facilities constructed for use primarily by government and concessionaire employees that facilitate the administrations and management of public lands; b) Visitor Overnight sites on National Forest lands comprised of multiple building units accommodating overnight visitor use via special use permits (i.e., visitor lodges and guest ranches); c) Developed Campgrounds on National Forest lands; and d) Major Developments characterized as expansive areas with concentrated human use on National Park lands that typically host a complex combination of administrative and visitor uses. Developed sites with no prescribed spatial footprint are best characterized as isolated point sources of human activity supporting minimal infrastructure and demonstrating little need for enhancement. Such sites include day use picnic areas, boat ramps, backcountry patrol/rental cabins, and trailheads.

Method for footprint delineation

The method for generating footprint polygons was designed to be consistent and easily repeatable. The Convex Hull geoprocessing algorithm (XTools Pro v.17.2 extension inside ArcGIS v.10.5.1 software) was used to generate polygons of minimum perimeter that enclose all selected motorized road features providing immediate access to a developed site's buildings and other infrastructure. An additional buffer distance of 60 meters was specified in the algorithm to force the external footprint boundary outward an additional 60 meters from the selected motorized route features.

The reason for this additional 60 meters was to ensure that structures on both sides of motorized access routes were captured in the footprint. A level of detail parameter in the Convex Hull algorithm allows one to manage how precisely the outer hull follows a site's unique configuration of motorized access route features. By specifying a value ranging from 0 to 100, polygons of various degrees of complexity can be generated. Lower values yield a polygon hull of minimal complexity and maximum area. Higher values yield a tighter and more detailed polygon of minimal size that more precisely follows the selected route configuration. The level of detail parameter has no effect on footprint size or shape when the motorized access to a site exhibits a very simple configuration (i.e., a single strait access road). However, for more complex road configurations, such as in major developments like Old Faithful (Figure 6), the level of detail parameter has a greater effect on the final shape and size of the footprint polygon. There are no empirical data to support one level of detail over another. Instead, a trial-and-error process was conducted to determine which levels of complexity resulted in footprint polygons that consistently included all of the relevant infrastructure associated with various sites of varying complexity. The intent was to generate polygons that best capture the area of concentrated human activity at a given site.

Outlying infrastructure that is sufficiently offset from a site's core area (i.e., a campground water spigot located a quarter mile down the road), or infrastructure that lacks immediate motorized access (i.e., expansive livestock pastures, fence lines, or corrals), may not be entirely captured within a site footprint. The reason for this allowance is that forcing footprint polygons to enclose all outlying structures, including those structures with little or no associated human presence, would yield larger footprint areas, which, in turn, could potentially be developed in the future and thus further reduce secure habitat. Table 1 summarizes the level of detail parameters assigned to different categories of developed sites. Figures 2–5 provide visual examples of rendered footprints with different levels of detail.

Impacts on secure habitat

One of the objectives of the footprint approach was to more accurately account for loss of secure habitat due to human development. In all previous versions of the Conservation Strategy, secure habitat was

based solely on proximity to motorized routes. The habitat standards in chapter 3 of the current Strategy identifies a revised definition for secure habitat. Secure grizzly bear habitat is currently defined as any contiguous area ≥ 10 acres in size and >500 meters from an open or gated motorized route, recurring low-level helicopter line, or perimeter of a prescribed developed site footprint. To account for this enhanced definition of secure habitat, prescribed footprints are buffered by an additional 500 meters and the entire footprint and buffered area is stamped non-secure. This method for measuring loss of habitat due to human development has been integrated into the algorithms that calculate secure habitat. Updated values for secure habitat and motorized route density incorporating the footprint approach are shown in Table 4.

The collective result of the footprint approach has not led to significant changes in measured values for secure habitat. Decreases in secure habitat measurements for all 40 bear management subunits range from 0 to 1.1% with respect to original baseline values. The reason for such minor changes is because detracting in secure habitat is mostly accounted for by measuring direct effects of motorized access.

Table 1. Summary of convex hull parameters assigned to categories of developed sites with prescribed footprints.

| Developed site category | Detail parameter | Buffer distance | Summary |
|-------------------------|------------------|-----------------|---|
| Campground | 0 | 60-meters | Campgrounds on National Forest lands were identified by land managers as a high priority for infrastructure growth to meet increasing visitation demands and to accommodate the overflow of campers displaced from National Parks. National Forests under proprietary jurisdiction have unique environmental challenges with dispersed camping. Therefore, the intent is to concentrate human activity in developed campgrounds, where grizzly bear use is already discouraged, rather than adding new visitor dispersed sites or constructing new campgrounds. Rather than increasing camping opportunities in National Parks where grizzly bear densities are generally higher, increasing capacity at National Forest campgrounds on the perimeter of the GYE is an effective approach. Additional campsites may be authorized within the prescribed footprint. Campground footprints are assigned using a minimum level of detail value of 0 to generate footprints of minimal complexity and maximum area. |
| Administrative | 50 | 60-meters | Federal agencies require managerial flexibility to expand administrative sites in response to increased visitor use. Specifically, this requires more staff and facilities related to law enforcement, emergency response, visitor education, and maintenance. Increased infrastructure may be required to meet these needs, including housing for additional agency staff, new office space, utility and maintenance facilities, and storage of equipment and supplies. New infrastructure may be authorized within the prescribed footprint. Administrative footprints are prescribed using a moderate value of 50 for the level of detail parameter. |
| Visitor overnight | 70 | 60-meters | Visitor overnight sites refer to areas with visitor overnight accommodations managed by private entities under special-use permits on National Forest lands. Increased visitor overnight use may be authorized within prescribed footprints to offset the overflow of campers displaced from National Parks (refer to application rules, chapter 3). A level of detail value of 70 is used for a relatively detailed shape hull of minimal area that follows motorized access with a moderately high level of precision. |

| Developed site category | Detail parameter | Buffer distance | Summary |
|-------------------------|------------------|-----------------|--|
| Major Development | 75 | 60-meters | Major developments are relatively large expansive areas with interstitial spaces separating distinct areas of concentrated human activity. These sites typically have one or more administrative/maintenance hubs offset from or intermingling with the main visitor activity. Major developments are the focal point of National Park efforts to accommodate visitor needs and are not managed as suitable grizzly bear habitat. A relatively high level of detail value of 75 is used to yield tighter polygons of more complex shape. The intent is to delineate footprints that envelop the multiple distinct areas of human use and restrict future expansion of the development to interstitial undeveloped spaces that grizzly bears already tend to avoid. |

Table 2. Current and previous categories of developed sites. Categories to which the footprint approach is applied are indicated.

| Developed Site Categories | | |
|-------------------------------|------------------------|-----------|
| Previous | Current ^a | Footprint |
| Administrative or maintenance | Administrative | Yes |
| Developed campground | Developed campground | Yes |
| Trailhead | Trailhead | No |
| Summer homes | Summer homes | No |
| Major development | Major development | Yes |
| Plans of operation | Plans of operation | No |
| Other | Visitor day site | No |
| | Visitor overnight site | Yes |
| | Backcountry cabin | No |

^a See Table 3 for definitions for developed site categories.

Table 3. Definitions applicable to developed sites.

| Developed Site Definition | |
|--|--|
| <p>Developed sites refer to those sites or facilities on public land that have been enhanced with human infrastructure intended to accommodate public recreational use and agency administrative needs. Such sites typically are identified or advertised via visitor maps, information displays, or agency personnel as discernable destination sites promoted by the host agency.</p> <p>Developed sites are often associated with human activities that may disrupt grizzly bear use of habitat or have attractants that potentially lead to increased human-grizzly bear conflicts. Examples of developed sites include, but are not limited to campgrounds, picnic areas, trailheads, boat launches, rental and patrol cabins, summer homes, guest lodges, major visitor complexes, maintenance facilities, employee housing, ranger stations, and other recreational and administrative sites.</p> | |
| Developed Site Category Definitions | |
| Administrative | Administrative sites are those sites or facilities constructed for use primarily by government or concessionaire employees to facilitate the administrations and management of public lands. Examples include: administrative headquarters, ranger stations, park entrance stations, employee housing, maintenance utilities, and other facilities supporting government operations. |

| | |
|----------------------|---|
| Developed campground | Developed campgrounds are front-country camping areas with multiple clearly designated campsites. Developed campgrounds are managed to accommodate overnight use by individuals, families, and groups, and range from fully developed sites with paved access and numerous visitor amenities, to minimal development and few amenities. |
| Major development | Major Developed sites are large expansive destination complexes of highly concentrated human use on National Park lands that typically host a multitude of intermingled day-use and overnight-use infrastructure, supporting a combination of visitor recreational and administrative management needs. |
| Trailheads | Trailheads are marked sites located along motorized access routes designed to provide staging for back-country or front-country trail use. Trailheads range from fully developed parking areas with restrooms to a simple turn-out along a road corridor. |
| Plans of operation | Plans of operation are groups of site-specific mining claims or oil and gas leases protected under statutory rights under the 1872 General Mining Law. Mining claims or oil and gas leases, in and of themselves, do not necessarily constitute a site development, but have the potential to be developed sometime in the future. |
| Summer homes | Summer home sites consist of one or more privately built and owned recreation residence authorized on Forest Service lands under special use permits. Summer home sites can range from a single isolated home to a residential complex comprised of multiple residences. |
| Visitor day | Visitor day use sites are recreational sites that do not accommodate overnight visitor use. These sites include, but are not limited to, picnic areas, boat launches, target ranges, and fishing access sites. |
| Visitor overnight | Visitor overnight sites are recreational sites under special-use permits on National Forest lands that host multiple structures designed to accommodate overnight visitor use. These sites include, but are not limited to lodges, guest ranches, and resorts. |
| Backcountry cabins | Patrol and rental cabins that are spatially isolated with minimal infrastructure that provides backcountry overnight accommodations for administrative or recreational purposes. Most of these solitary cabins have no direct motorized access. |

Figure 1. Primary transportation corridors inside the grizzly bear Primary Conservation Area with special provisions for roadside development.

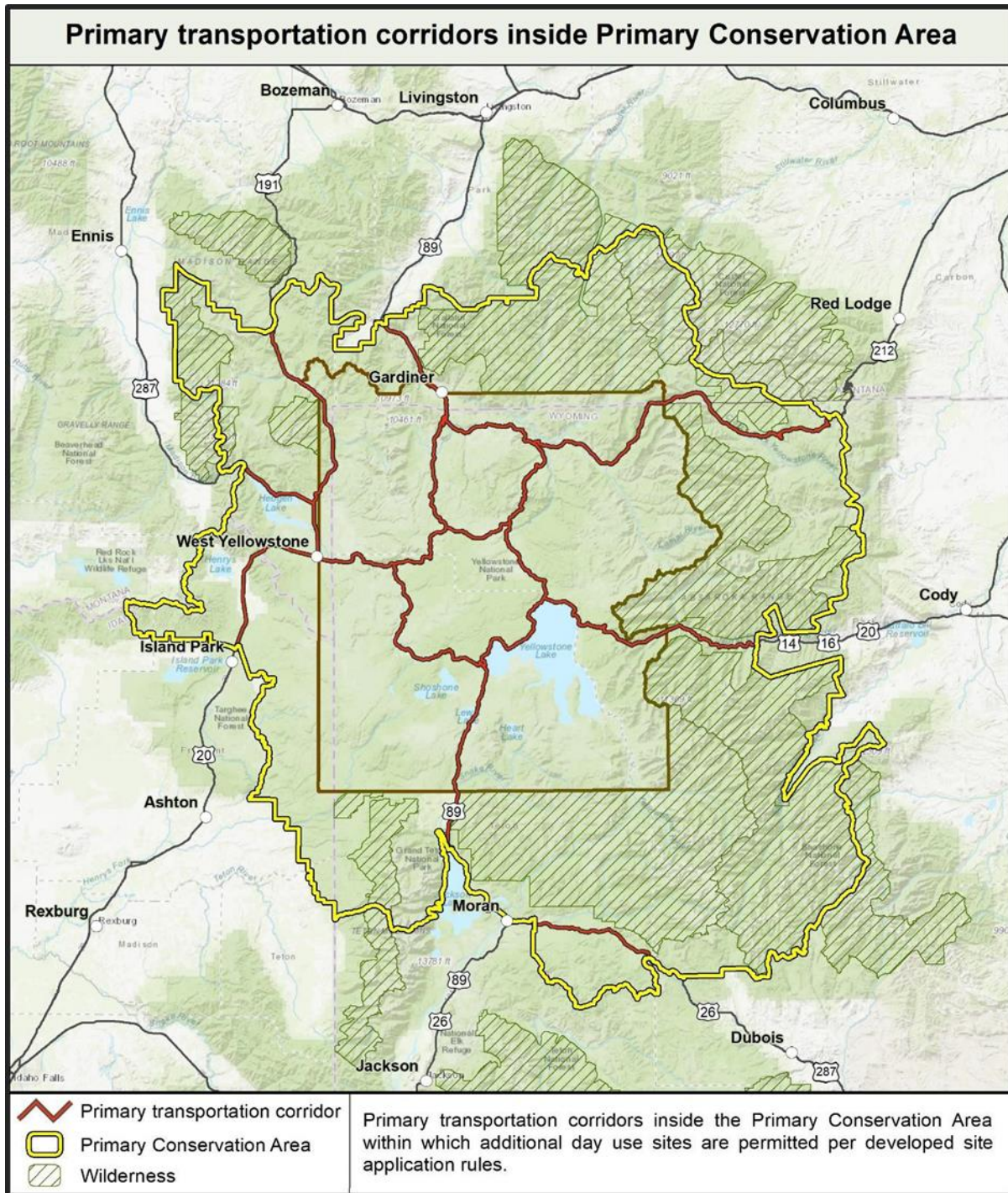


Figure 2. Example of a Campground footprint with level of detail = 0; Beaverhead Campground, Custer-Gallatin National Forest, Montana.



Figure 3. Example of an Administrative Site footprint with level of detail = 50; Porcupine Guard Station, Caribou-Targhee National Forest, Idaho.

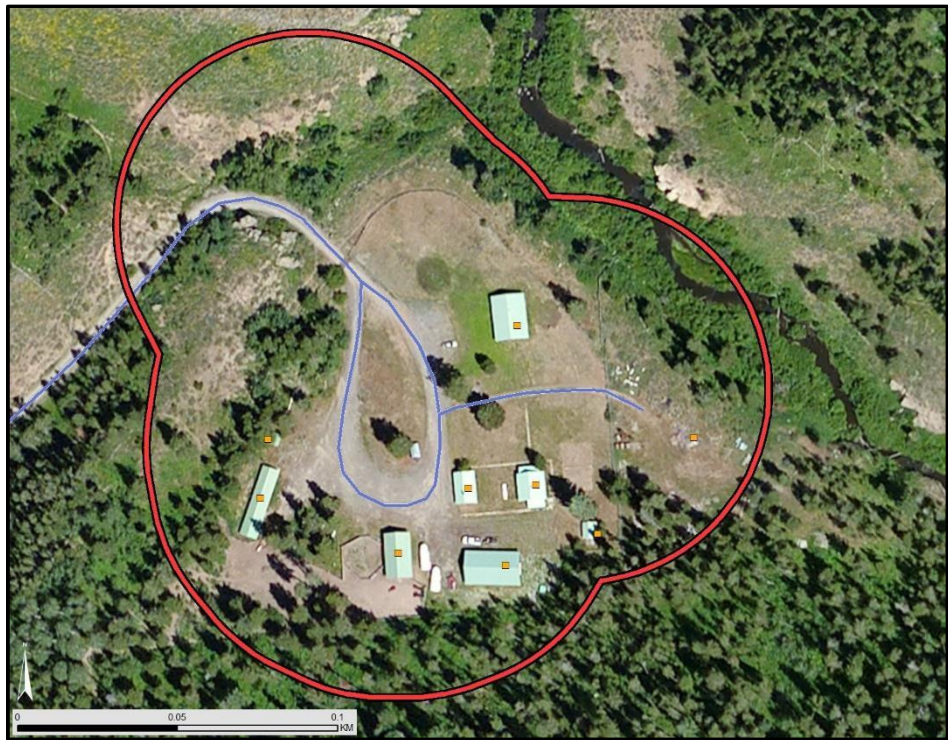


Figure 4. Visitor Overnight Site footprint with level of detail = 70; Togwotee Guest Lodge, Bridger-Teton National Forest, Wyoming.

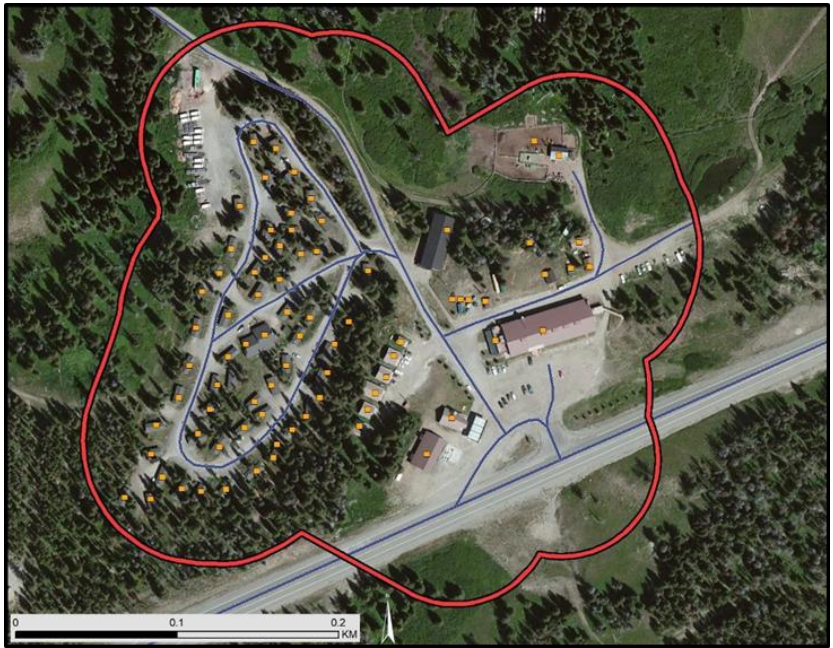


Figure 5. Example of a Major Development footprint with level of detail = 75; Grant Village, Yellowstone National Park, Wyoming.

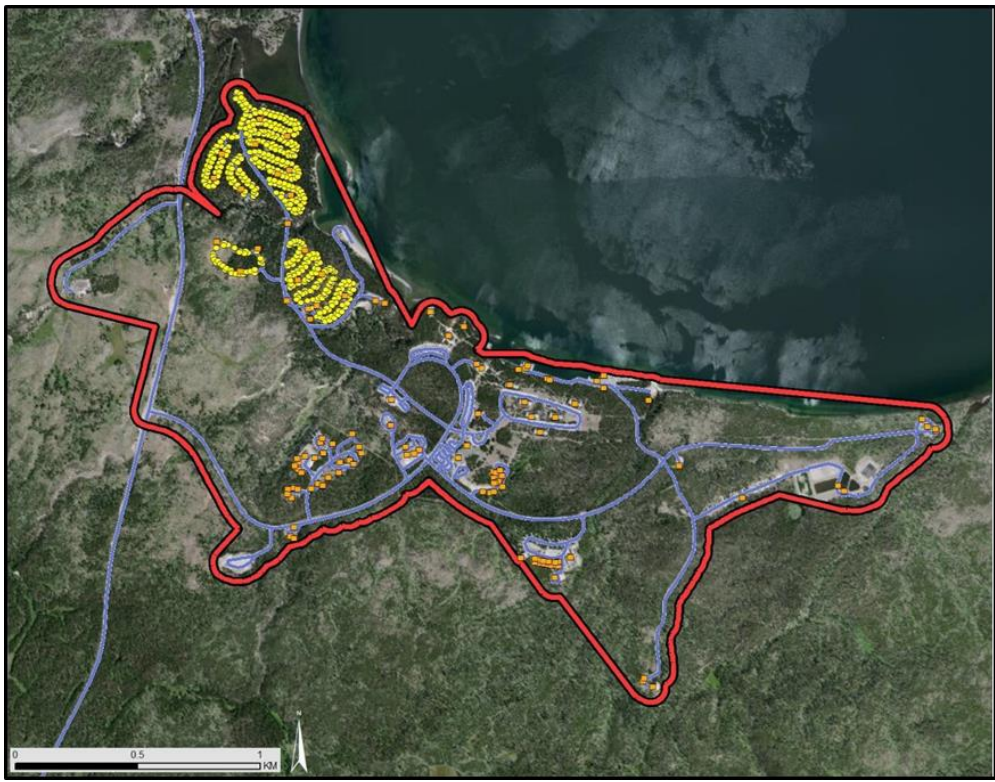


Figure 6. Example of corrections to the motorized access database, Old Faithful area, Yellowstone National Park. Motorized road configuration (a) pre-correction and (b) post-correction.

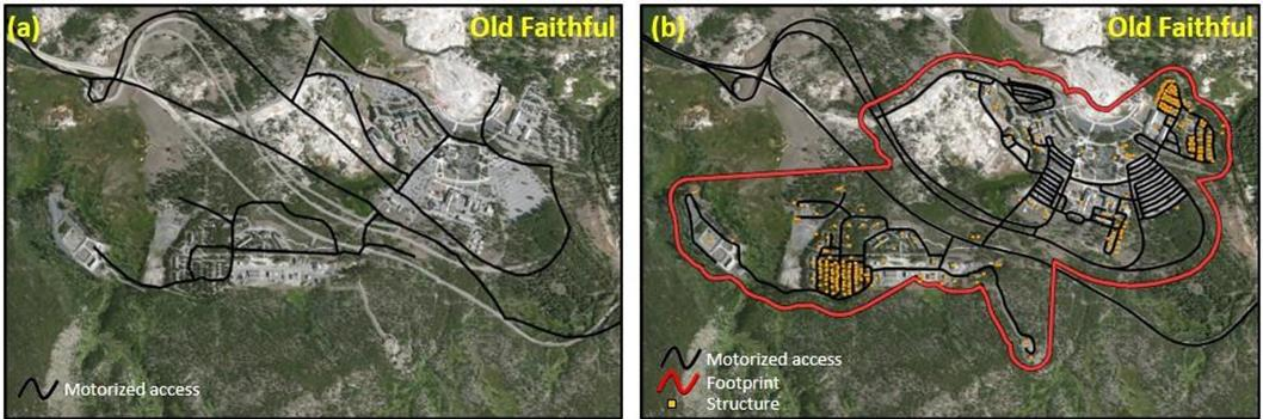
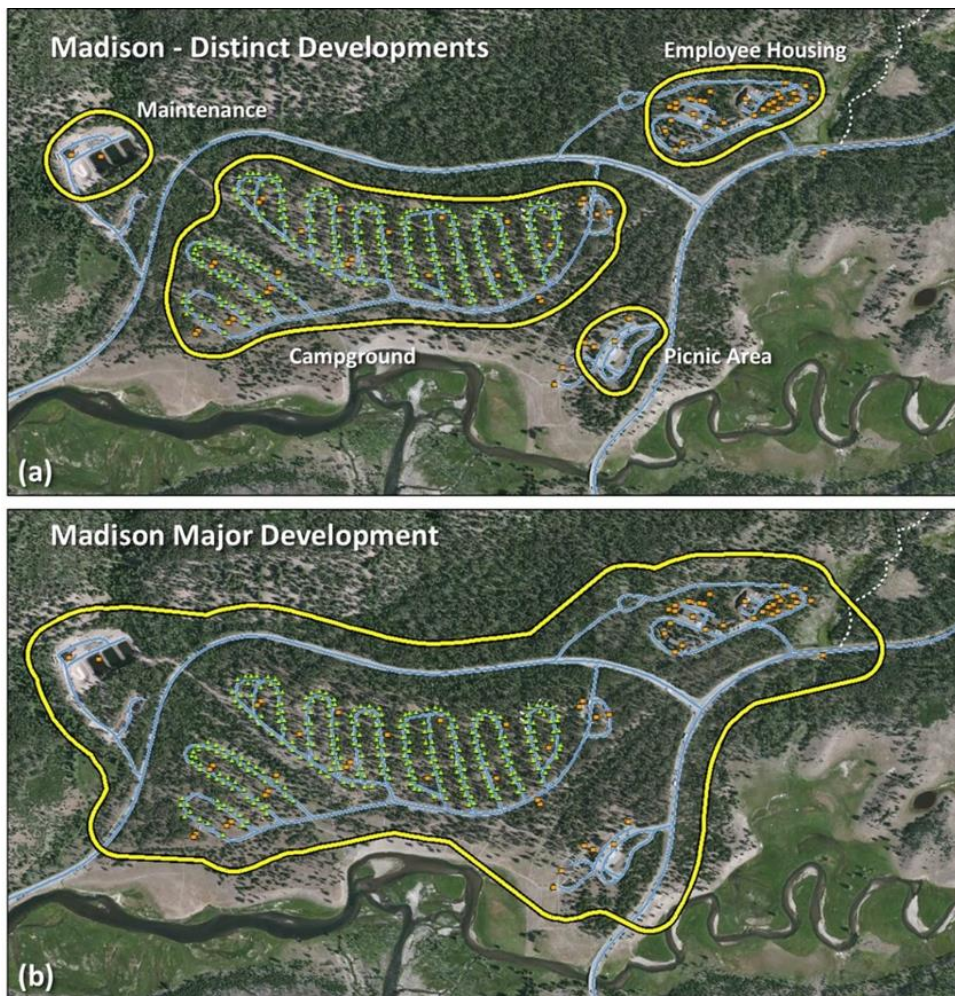


Figure 7. Example of difference in delineation of developed sites using the footprint approach, Madison area, Yellowstone National Park. (a) original distinct baseline sites (b) merged into a single major development.



III. Secure Habitat

The 1998 baseline for secure habitat is comprised of the best available estimates of secure habitat levels known to exist in 1998 (Table 4). Secure habitat is defined as any contiguous area greater than 10 acres in size and more than 500 meters from an open or gated motorized route, prescribed footprint of a developed site, or recurring low-level helicopter line. Values for percent secure habitat are measured per bear management subunit and reported annually against 1998 levels. The most significant detractor of secure habitat inside the PCA is motorized routes (roads and trails) that provide access to our public lands. Routes that are open to the public at any time during the non-denning season (March 1–November 30) detract from secure habitat. Likewise, gated routes that are closed to the public but remain accessible to administrative personnel also detract from secure habitat. Decommissioned routes that effectively prohibit motorized use by both the public and administrative personnel do not detract from secure habitat.

Exceptions to the 1998 baseline for secure habitat

Three subunits, Gallatin #3, Henrys Lake #2, and Madison #2, were targeted in the 2007 Conservation Strategy as needing improvement in secure habitat with respect to 1998 levels. The specific areas identified with potential for improvement in these three subunits fall within the Custer Gallatin National Forest boundary and hence, the quantity and timing of improvements was to be determined by the Gallatin National Forest Travel Management Plan (TMP; USDA Forest Service 2006c). A primary factor contributing to impoverished secure habitat levels in these three subunits was motorized access on private land inholdings. Since 1998, the Gallatin National Forest conducted several land exchanges under the Gallatin Range Consolidation and Protection Act in areas inside and outside the PCA. These land exchanges resulted in the acquisition of formerly private parcels which are now administered as part of the Custer Gallatin National Forest. With implementation of the 2006 Gallatin TMP, many roads inherited from these exchanges have been permanently decommissioned. Non-system routes that are not maintained by the Forest Service have subsequently been closed, with a high priority given to road decommissions in the three subunits identified as in need of improvement. With full implementation of the Gallatin TMP very near completion, measurable increases in secure habitat with respect to 1998 baseline levels have been achieved in the three targeted subunits. Subsequently, the Custer Gallatin National Forest, via a Travel Plan Amendment, have established the improved levels of secure habitat resulting from full implementation of the TMP as new baseline levels for these 3 subunits. These new thresholds override the 1998 baseline and effectively raise the bar for baseline conditions in the 3 identified subunits. The enhanced levels of secure habitat for the 3 targeted subunits will constitute new measures against which future change will be made (refer to lower portion of Table 4).

IV. Motorized Access Route Density

Although the Conservation Strategy does not impose mandatory standards upon motorized route density, the density of motorized routes inside the PCA is monitored and reported per subunit on an annual basis. Monitoring protocol specifically requires that open motorized access route density (OMARD) and total motorized access route density (TMARD) inside the PCA be monitored and reported annually against 1998 levels.

OMARD is a measure of the density of motorized routes (roads and trails) that are open to the public for one or more days during the non-denning portion of the year when grizzly bears are active (March 1 –

November 30). TMARD measures the density of motorized routes open to the public and/or administrative personnel for one or more days during the non-denning season.

Hence, routes that are closed to the public year-round and accessible only to administrative staff contribute to TMARD but do not contribute to OMARD. Route densities are reported as the percent area of a subunit where $OMARD > 1 \text{ mi/mi}^2$ and $TMARD > 2 \text{ mi/mi}^2$. Thus, although TMARD is a measure of total route density, values are typically lower than OMARD because the threshold density for TMARD is established at a higher level. State, county, and private roads occurring on federal lands are included in these calculations; however, roads occurring on private inholdings reflect 1998 conditions and are not tracked in the motorized access database through time. Calculations for the percentages of secure habitat, OMARD, and TMARD per subunit are generated using the Motorized Access Model, a customized collection of geoprocessing tools compatible with ArcGIS mapping software.

The most current 1998 baseline estimates for secure habitat, OMARD, and TMARD are presented in Table 4. Since the initial 2007 Conservation Strategy was implemented, high resolution photo imagery and newer technologies with enhanced mapping functionality have become more readily available. Overtime, spatial transportation layers in the Motorized Access Model have been integrated with more spatially accurate data. The habitat values in this current document supersede those presented in the 2007 Conservation Strategy and comprise the current benchmark against which all future change is to be measured.

V. Developed Sites on Public Lands

Developed sites refer to those sites or facilities on public land that have been enhanced with human infrastructure intended to accommodate public recreational use and agency administrative needs. Such sites are often associated with human activities that may disrupt grizzly bear use of habitat or have attractants that potentially lead to increased human-grizzly bear conflicts. Inside the PCA, developed sites on public lands are currently inventoried and tracked in existing GIS databases. Table 5 provides the number of developed sites known to exist per bear management unit (BMU) subunit as of 1998.

Activities based in statutory rights, such as oil and gas leases and mining plans of operation under the 1872 General Mining Law are also tracked as part of the developed site monitoring effort. Mining claims and or oil and gas leases do not in and of themselves necessarily constitute a site development, but have the potential to be developed sometime in the future. It is also important to note that a single operating plan may apply to numerous mining claims. In 1998, approximately 1,354 mining claims associated with 28 plans of operation had been filed throughout nine BMU subunits; however, no oil and gas leases existed inside the PCA at that time. Claims are often staked around known mineral deposits to protect the original claim and a single operating plan can sometimes encompass hundreds of claims. However, many filed claims, upon detailed exploration, often do not have enough mineralization to be economically developed and consequently are never acted upon. Approved operating plans associated with mining claims or claim groups are included as a separate category in the developed site baseline (Table 5). A detailed itemized list of all developed sites (names and types) comprising the 1998 baseline is documented in Table 6.

New provisions in the developed site application rules (Chapter 3) allow for an increase in the capacity of overnight visitors at lodges, guest ranches, and organizational camps that operate under special-use permits on National Forest lands inside the PCA. The new provision allows for a net increase of 10% in

the capacity of visitor overnight use with no required mitigation. Any new infrastructure needed to accommodate this increased capacity, must be constructed within the prescribed footprint of the special-use site. Tables 7 lists the best available estimates for the baseline values of visitor overnight use at these special-use sites on National Forest lands.

Historic OTO Ranch – An exception

The management plan for the historic OTO Ranch on the Custer Gallatin National Forest constitutes an exception to the restrictions for increased visitor overnight use established per the Developed Sites Application Rules in Chapter 3. The following summary of the OTO management plan for this highly unique piece of property is provided in the following summary.

History

The Forest Service acquired the OTO Tract in 1991 as part of the Northern Yellowstone Winter Range Acquisition Project. The project was a cooperative effort between Yellowstone National Park, Montana Fish, Wildlife, and Parks, the Rocky Mountain Elk Foundation, and the US Forest Service. When the OTO Ranch was fully functioning, it was complete with a 6,000 square foot lodge, guest cabins, a powerhouse, ice house, commissary, post office, and several other outbuildings which still stand today. The OTO Ranch was listed on the National Register of Historic Places in 2004.

The OTO Tract (3,265 acres) was one of the primary areas targeted for acquisition because of its excellent habitat qualities, particularly winter range for big game and habitat for grizzly bear. Situated along Cedar Creek in the Absaroka Mountains on the Custer Gallatin National Forest, the unique combination of quality wildlife habitat and a historic ranch provides the Forest Service a great opportunity to conserve these unique features while educating the public and preserving the character of the ranch through well managed use.

Existing and Changed Conditions

During the late 1990's and early 2000's, ranch activities focused on historic preservation. Efforts to maintain the historic character and structures of the ranch involved approximately three weeks of overnight use and four weeks of day by volunteers involved in preservation projects during the summer months. In adherence to the 1998 baseline, the Custer Gallatin National Forest is currently operating under comparable activity levels. Under current management of the site, there may be three weeks of overnight use and 4 weeks of day use between June 15 and October 1.

Over the decades there has been increased interest from the public to utilize the OTO Ranch for other purposes, most notably youth/environmental education. For several years now, the forest has welcomed youth education groups to the OTO, within the temporal management sideboards noted. Limiting ourselves to three weeks overnight and four weeks of additional day use has forced us to turn down educational groups that request use of the ranch.

Nationally, the Forest Service is emphasizing youth education with the intent to expose the future generation to the natural world and build future advocates for the forests. The OTO Ranch provides a perfect setting to do just that. Future use of the OTO Ranch is no longer just historic preservation, but tied to the mission of the Forest Service in fulfilling our goal of providing youth/environmental education opportunities.

Proposed Management

Future management is primarily focused on the currently developed portion of the OTO Ranch itself (22 acres), with no existing plans or need for further development. However, any unforeseen infrastructure enhancement will be reviewed for consistency with resource management on the National Forest at that time and limited to within the developed portion of the ranch as delineated by site's prescribed footprint. The surrounding National Forest areas will still be managed for big game and grizzly bear habitat.

Currently, the demand for use of OTO is strictly during the summer season. However, Custer Gallatin land managers have addressed future demands and needs and are leaving some flexibility for long term options through the fall/winter/spring. Use proposals would be carefully vetted with staff prior to authorizing use in the fall/winter/spring months. Seasonality differences in management will reflect the more sensitive seasons for wildlife by limiting impacts during those times and ensuring a reduced risk of human/bear conflict.

Recreation/Activities:

- The Forest Service does not plan to open the cabins or facility to public rental. Public rentals may result in further undesired dispersal of use at the OTO into surrounding habitat. It could also create easier access to the forest during hunting seasons, increasing pressure on wildlife habitat.
- Authorized or sponsored overnight and day use (under special use permits) may occur year-round, with the vast majority occurring during the summer months between June 15 and September 30, when human use is less likely to compete with wildlife needs, and access conditions are good.
- Use between October 1 and December 1 would be limited to one week of overnight use and three weeks of day use. This restriction reflects concerns for bear security during the fall. The December 1 date aligns with the Custer Gallatin Food Storage Order dates.
- Use between December 2 and February 28/29 will be open to overnight or day use.
- Use between March 1 and June 15 would be limited to two weeks of overnight and two weeks of day use. March 1 aligns with the Custer Gallatin Food Storage Order dates.
- Overnight use would be limited to those groups that meet our Forest Service goal of enhancing youth/environmental education. Weddings, and other non-educational groups would be limited to day use.
- Maximum number of users per authorized event would be 75 for overnight use and 100 for day use. This would allow people to fully use the facilities provided, while not over-burdening the facility and impairing the historic and wildlife characteristics of the ranch. These numbers are based on previous use of the facility. Past weddings have included approximately 100 people on average, while overnight use has been around 75 people on rare occasions.
- Restroom facilities would need to be provided prior to this level of use.

Additional Management:

- Proper food storage; bear boxes, or other means necessary to reduce human-bear conflict will be installed.

- The Forest Service is currently in the process of developing an interpretive plan for the OTO Ranch historic site. This plan will include a walking tour brochure, and the potential for several interpretive panels on wildlife management techniques and OTO Ranch history.
- Management is considering volunteer hosts that would stay at the OTO and educate visitors on wildlife management, OTO history, and bear awareness during high use seasons.

The OTO Ranch, its history, and surrounding national forest gives us a wonderful opportunity to showcase wildlife conservation through a balance of habitat conservation and managed use while simultaneously preserving the location’s historical and cultural value. Through managed use by education, interpretation, and administration, we can turn full circle in creating future stewards in wildlife conversation and historical preservation.

VI. Livestock Grazing

The livestock allotment standard established in the Conservation Strategy requires that there be no net increase in the number or acreage of active commercial livestock grazing allotments or in permitted sheep animal months (AMs) inside the PCA from that which existed in 1998. Existing sheep allotments will be monitored, evaluated, and phased out as the opportunity arises with willing permittees. Sheep animal months (AMs) are calculated by multiplying the permitted number of sheep times the months of permitted use.

In 1998 there were 101 active or vacant commercial livestock grazing allotments and 23,900 permitted sheep animal months (AMs) inside the PCA (Table 8). Of these, 83 were cattle and/or horse allotments and the remaining 18 were for sheep. Operational status of allotments is categorized as active, vacant, or closed. An active allotment is one with a current grazing permit, although a “no-use” permit can be granted on a year-by-year basis when a permittee chooses not to graze livestock. Vacant allotments are those without an active permit but may be used periodically by other permittees at the discretion of the land management agency to resolve resource issues or other concerns. Reissuance of permits for vacant cattle allotments may result in an increase in the number of permitted cattle but the number and acreage of active allotments inside the PCA must remain at or below 1998 baseline levels. Combining or dividing existing allotments is allowed as long as net acreage in active allotments does not increase above 1998 levels. Any such use of vacant cattle allotments resulting in an increase in cattle numbers will only be allowed after an analysis to evaluate impacts on grizzly bears. Where chronic conflicts occur on cattle allotments inside the PCA, and an opportunity exists with a willing permittee, one alternative for resolving the conflict may be to phase out cattle grazing or to move the cattle to a currently vacant allotment where there is less likelihood of conflict.

Table 4. 1998 Baseline values (and exceptions) for percentage of open motorized access route density (OMARD), total motorized access route density (TMARD), and secure habitat for all 40 bear management unit (BMU) subunits in the Primary Conservation Area.

| BMU subunit name | 1998 % OMARD (> 1 mi / mi ²) | 1998 % TMARD (> 2 mi / mi ²) | % 1998 Secure Habitat | Subunit area (mi ²) (excluding lakes) |
|-------------------------|---|---|--------------------------|--|
| Bechler/Teton | 17.1 | 6.0 | 78.0 | 534.3 |
| Boulder/Slough #1 | 3.2 | 0.4 | 96.5 | 281.9 |
| Boulder/Slough #2 | 2.2 | 0.0 | 97.6 | 232.4 |
| Buffalo/Spread Creek #1 | 10.6 | 3.9 | 89.3 | 219.9 |
| Buffalo/Spread Creek #2 | 16.9 | 11.8 | 73.3 | 507.6 |

| BMU subunit name | 1998 % OMARD (> 1 mi / mi ²) | 1998 % TMARD (> 2 mi / mi ²) | % 1998 Secure Habitat | Subunit area (mi ²) (excluding lakes) |
|--|---|---|--------------------------|--|
| Crandall/Sunlight #1 | 19.3 | 7.1 | 81.0 | 129.8 |
| Crandall/Sunlight #2 | 16.5 | 10.1 | 82.3 | 316.2 |
| Crandall/Sunlight #3 | 19.2 | 9.8 | 80.4 | 221.8 |
| Firehole/Hayden #1 | 10.5 | 3.1 | 87.5 | 339.2 |
| Firehole/Hayden #2 | 9.7 | 2.6 | 87.9 | 172.2 |
| Gallatin #1 | 3.5 | 0.3 | 96.3 | 127.7 |
| Gallatin #2 | 9.8 | 5.6 | 89.4 | 155.2 |
| Gallatin #3* | 45.8 | 23.1 | 55.1 | 217.6 |
| Hellroaring/Bear #1 | 23.3 | 16.1 | 76.6 | 184.7 |
| Hellroaring/Bear #2 | 0.1 | 0.1 | 99.5 | 228.9 |
| Henry's Lake #1 | 49.2 | 31.9 | 45.3 | 191.2 |
| Henry's Lake #2* | 48.1 | 35.3 | 45.6 | 140.2 |
| Hilgard #1 | 29.7 | 15.5 | 69.5 | 201.2 |
| Hilgard #2 | 20.9 | 13.4 | 71.5 | 140.5 |
| Lamar #1 | 10.1 | 4.3 | 89.2 | 299.9 |
| Lamar #2 | 0.0 | 0.0 | 100.0 | 180.8 |
| Madison #1 | 30.0 | 13.2 | 71.5 | 227.9 |
| Madison #2* | 34.3 | 25.8 | 66.3 | 149.4 |
| Pelican/Clear #1 | 2.2 | 0.5 | 97.7 | 108.4 |
| Pelican/Clear #2 | 5.8 | 0.7 | 93.8 | 251.6 |
| Plateau #1 | 22.3 | 13.2 | 68.6 | 286.3 |
| Plateau #2 | 8.5 | 3.5 | 88.7 | 419.9 |
| Shoshone #1 | 1.5 | 1.2 | 98.5 | 122.2 |
| Shoshone #2 | 1.3 | 0.7 | 98.8 | 132.4 |
| Shoshone #3 | 3.9 | 2.1 | 96.9 | 140.7 |
| Shoshone #4 | 5.4 | 3.0 | 94.8 | 188.8 |
| South Absaroka #1 | 0.6 | 0.1 | 99.2 | 163.2 |
| South Absaroka #2 | 0.0 | 0.0 | 99.9 | 190.6 |
| South Absaroka #3 | 2.4 | 1.8 | 96.8 | 348.3 |
| Thorofare #1 | 0.0 | 0.0 | 100.0 | 273.4 |
| Thorofare #2 | 0.0 | 0.0 | 100.0 | 180.1 |
| Two Ocean/Lake #2 | 0.0 | 0.0 | 100.0 | 124.9 |
| Washburn #1 | 16.7 | 6.1 | 81.9 | 178.3 |
| Washburn #2 | 7.6 | 1.6 | 91.8 | 144.1 |
| Mean % / Total area for PCA | 12.8 | 6.9 | 85.4 | 9025 |
| * Baseline values for the three subunits identified as in need of improvement (Gallatin #3, Henrys Lake #2, and Madison #2) are no longer based on 1998 levels, but rather on improved levels achieved with full implementation of 2006 Gallatin National Forest Travel Management Plan. See appended table below. | | | | |
| Exceptions to 1998 Baseline | | | | |
| (New baseline values based on 2006 Gallatin National Forest Travel Management Plan levels) | | | | |
| Gallatin #3 | 28.7 | 12.9 | 71.1 | 217.6 |

| BMU subunit name | 1998 % OMARD (> 1 mi / mi ²) | 1998 % TMARD (> 2 mi / mi ²) | % 1998 Secure Habitat | Subunit area (mi ²) (excluding lakes) |
|------------------|---|---|--------------------------|--|
| Henry's Lake #2 | 40.5 | 29.0 | 52.0 | 140.2 |
| Madison #2 | 32.5 | 22.6 | 67.4 | 149.4 |

Table 5. The 1998 baseline for numbers of developed sites on public lands in each bear management subunit in the GYE.

| Subunit | Admin Unit ⁽¹⁾ | Administrative | Backcountry Cabin | Developed Campground | Major Development | Plan of Operation | Summer Homes | Trailhead | Visitor Day | Visitor Overnight | Total Count |
|-------------------------|---------------------------|----------------|-------------------|----------------------|-------------------|-------------------|--------------|-----------|-------------|-------------------|-------------|
| Bechler-Teton #1 | CTNF | 3 | 0 | 2 | 0 | 0 | 0 | 8 | 4 | 2 | 44 |
| | GTNP | 0 | 3 | 8 | 1 | 0 | 0 | 2 | 3 | 0 | |
| | YNP | 2 | 1 | 0 | 0 | 0 | 0 | 3 | 2 | 0 | |
| Boulder-Slough #1 | CGNF | 0 | 1 | 1 | 0 | 8 | 3 | 8 | 1 | 0 | 22 |
| Boulder-Slough #2 | CGNF | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 9 |
| | YNP | 0 | 2 | 1 | 0 | 0 | 0 | 2 | 1 | 0 | |
| Buffalo-Spread Creek #1 | BTNF | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 1 | 0 | 18 |
| | GTNP | 3 | 0 | 1 | 0 | 0 | 0 | 8 | 1 | 0 | |
| Buffalo-Spread Creek #2 | BTNF | 3 | 2 | 4 | 0 | 1 | 1 | 7 | 4 | 3 | 25 |
| Crandall-Sunlight #1 | CGNF | 0 | 2 | 2 | 0 | 0 | 0 | 3 | 2 | 0 | 21 |
| | SNF | 2 | 0 | 2 | 0 | 0 | 0 | 5 | 2 | 1 | |
| Crandall-Sunlight #2 | SNF | 3 | 0 | 5 | 0 | 0 | 0 | 6 | 3 | 1 | 19 |
| | WG&F | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Crandall-Sunlight #3 | SNF | 1 | 0 | 2 | 0 | 0 | 0 | 4 | 2 | 0 | 12 |
| | WG&F | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Firehole-Hayden #1 | YNP | 5 | 2 | 0 | 2 | 0 | 0 | 22 | 12 | 0 | 43 |
| Firehole-Hayden #2 | YNP | 0 | 0 | 0 | 2 | 0 | 0 | 4 | 9 | 0 | 15 |
| Gallatin #1 | YNP | 0 | 1 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 5 |
| Gallatin #2 | CGNF | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 |
| | YNP | 4 | 4 | 1 | 1 | 0 | 0 | 7 | 2 | 0 | |
| Gallatin #3 | CGNF | 1 | 2 | 2 | 0 | 0 | 2 | 6 | 3 | 0 | 17 |
| | YNP | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Hellroaring-Bear #1 | CGNF | 4 | 0 | 4 | 0 | 7 | 0 | 11 | 3 | 0 | 30 |
| | YNP | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Hellroaring-Bear #2 | CGNF | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 4 |
| | YNP | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | CTNF | 5 | 2 | 3 | 0 | 1 | 2 | 0 | 5 | 0 | |

| Subunit | Admin Unit ⁽¹⁾ | Administrative | Backcountry Cabin | Developed Campground | Major Development | Plan of Operation | Summer Homes | Trailhead | Visitor Day | Visitor Overnight | Total Count |
|-------------------|---------------------------|----------------|-------------------|----------------------|-------------------|-------------------|--------------|-----------|-------------|-------------------|-------------|
| Henrys Lake #1 | IBLM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 20 |
| Henrys Lake #2 | CGNF | 0 | 1 | 3 | 0 | 0 | 5 | 8 | 2 | 0 | 23 |
| | CTNF | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | |
| Hilgard #1 | BDNF | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 16 |
| | CGNF | 1 | 3 | 0 | 0 | 0 | 1 | 6 | 1 | 1 | |
| Hilgard #2 | CGNF | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 6 |
| | YNP | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | |
| Lamar #1 | CGNF | 4 | 0 | 1 | 0 | 9 | 0 | 6 | 0 | 0 | 35 |
| | YNP | 2 | 1 | 1 | 0 | 0 | 0 | 8 | 3 | 0 | |
| Lamar #2 | YNP | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| Madison #1 | CGNF | 2 | 2 | 1 | 0 | 0 | 0 | 10 | 4 | 0 | 19 |
| Madison #2 | CGNF | 6 | 0 | 2 | 0 | 0 | 8 | 1 | 3 | 1 | 27 |
| | YNP | 2 | 1 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | |
| Pelican-Clear #1 | YNP | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 4 |
| Pelican-Clear #2 | YNP | 1 | 4 | 0 | 1 | 0 | 0 | 6 | 4 | 0 | 16 |
| Plateau #1 | CTNF | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4 |
| | YNP | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Plateau #2 | CTNF | 1 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 7 |
| | YNP | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Shoshone #1 | SNF | 0 | 1 | 2 | 0 | 0 | 2 | 0 | 2 | 0 | 7 |
| Shoshone #2 | SNF | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 |
| Shoshone #3 | SNF | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 1 | 4 |
| Shoshone #4 | SNF | 0 | 0 | 3 | 0 | 0 | 6 | 4 | 2 | 6 | 22 |
| | WG&F | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| South Absaroka #1 | SNF | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| South Absaroka #2 | SNF | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| South Absaroka #3 | SNF | 2 | 2 | 2 | 0 | 0 | 1 | 4 | 1 | 1 | 13 |
| | BTNF | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |

| Subunit | Admin Unit ⁽¹⁾ | Administrative | Backcountry Cabin | Developed Campground | Major Development | Plan of Operation | Summer Homes | Trailhead | Visitor Day | Visitor Overnight | Total Count |
|--------------------|---------------------------|----------------|-------------------|----------------------|-------------------|-------------------|--------------|-----------|-------------|-------------------|-------------|
| Thorofare #1 | YNP | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| Thorofare #2 | BTNF | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Two Ocean-Lake #1 | BTNF | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 15 |
| | GTNP | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | |
| | YNP | 0 | 3 | 1 | 1 | 0 | 0 | 4 | 2 | 0 | |
| Two Ocean-Lake #2 | BTNF | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| | YNP | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Washburn #1 | YNP | 3 | 4 | 1 | 2 | 0 | 0 | 17 | 6 | 0 | 33 |
| Washburn #2 | YNP | 1 | 0 | 1 | 0 | 0 | 0 | 8 | 6 | 0 | 16 |
| Total count in PCA | | 67 | 77 | 64 | 10 | 27 | 34 | 211 | 100 | 18 | 608 |

(1) Administrative Units: Beaverhead-Deerlodge National Forest (BDNF), Bridger-Teton National Forest (BTNF), Custer Gallatin National Forest (CGNF), Caribou-Targhee National Forest (CTNF), Grand Teton National Park (GTNP), Idaho Bureau of Land Management (IBLM), Wyoming Game and Fish (WG&F), Yellowstone National Park (YNP)

Table 6. Developed sites (type and name) comprising the 1998 baseline per Bear Management Subunit inside the Primary Conservation Area.

| Bear Management subunit | Admin Unit ⁱ | Name and type of developed sites |
|-------------------------|-------------------------|--|
| Bechler/Teton #1 | CTNF | Administrative (3): Granite Creek cow camp, Squirrel Meadows guard station, Porcupine guard station. Campgrounds (2): Cave Falls, Porcupine Creek. Trailheads (8): Cascade Creek, Coyote Meadows, Fish Lake, Hominy Peak, Indian Meadows, McRenolds Reservoir, Poacher's, South Boone Creek. Visitor Day (4): Bergman Reservoir dam, Grassy Lake dam, Gravel pit/target range, Tillery Lake dam. Visitor Overnight (2): Idaho Youth Services Camp and Loll Scout Camp. |
| | GTNP | Backcountry Cabins (3): Lower Berry, Moose Basin and Upper Berry patrol cabins. Campgrounds (8): Grassy Lake Road front country campsites (8 distinct sites). Major Developments (1): Flagg Ranch. Trailheads (2): Glade Creek and Huckleberry Hot Springs. Visitor Day (3): Flagg Ranch and South Gate boat launches, South Gate picnic area. |
| | YNP | Administrative (2): Bechler and South Entrance ranger stations. Backcountry Cabin (1): Union Falls patrol cabin. Trailheads (3): Bechler Ranger Station, Cave Falls, and Phantom/Pitchstone. Visitor Day (2): Cave Falls and Snake River picnic areas. |
| Boulder/Slough #1 | CGNF | Backcountry Cabins (1): Box Canyon patrol cabin. Campgrounds (1): Hicks Park. Plans of Operation (8): Carolyn Sluice Box, Crescent Creek Beartooth Platinum, Crescent Creek Chromium Corp America, Crescent Creek Pan Palladium, East Iron Mountain Beartooth Plateau 1, East Iron Mountain Beartooth Plateau 2, Independence mine, and Iron Mountain Idaho Construction Metal. Summer Homes (3): Johnson, Mandeville, and Rooney (2 lots). Trailheads (8): Box Canyon, Bridge Creek, Buffalo Divide, Copper Creek, Goose Lake, Independence, Sheep Creek, and Upside-down Creek. Visitor Day (1): Rasnick Historic Home. |
| Boulder/Slough #2 | CGNF | Backcountry Cabins (2): Buffalo Fork and Slough Creek patrol cabins. Trailheads (1): Upper Stillwater/Lake Abundance. |
| | YNP | Backcountry Cabins (2): Elk Tongue and Lower Slough patrol cabins. Campgrounds (1): Slough Creek. Trailheads (2): Slough Creek and Specimen Ridge. Visitor Day (1): Yellowstone River picnic area/trailhead. |
| Buffalo/Spread Creek #1 | BTNF | Backcountry Cabins (1): Huckleberry fire lookout. Campgrounds (1): Pacific Creek. Trailheads (2): Colter Dump and Pacific Creek. Visitor Day (1): Teton Horseback Adventures. |
| | GTNP | Administrative (3): Colter Bay staging area, Moran administrative site, Willow Flats employee housing. Campgrounds (1): Lizard Creek. Trailheads (8): Arizona Creek #1, Arizona Creek #2, Arizona Lake, Christian Pond #1, Christian Pond #2, Grand View Point #1, Grand View Point #2, Pilgrim Creek, Visitor Day (1): Two Ocean Lake picnic area/trailhead. |
| Buffalo/Spread Creek #2 | BTNF | Administrative (3): Blackrock administrative site, Blackrock District Ranger Station, Hatchet administrative compound. Backcountry Cabins (2): Enos Lake and Nowlin Meadows patrol cabins. Campgrounds (4): Angles, Box Creek, Hatchet, Turpin Meadows Outfitter. Plans of Operation (1): WYDOT gravel quarry. Summer Homes (1): Turpin Meadows (19 lots). Trailheads (7): Angles, Box Creek, Clear Creek, Hatchet Snowmobile, Lava Creek, Togwotee Snowmobile, Turpin Meadows. Visitor Day (4): Four Mile picnic area, Togwotee Interpretive Site, UW Forestry Walk VIS, Vista View interpretive site. Visitor Overnight (3): Heart 6 Guest Ranch, Togwotee Mountain Lodge, Turpin Meadows Guest Ranch. |
| | CGNF | Backcountry Cabins (2): Kersey Lake and Round Lake rental cabins. Campgrounds (2): Chief Joseph and Colter. Trailheads (3): |

| Bear Management subunit | Admin Unit ⁱ | Name and type of developed sites |
|-------------------------|-------------------------|--|
| Crandall/Sunlight #1 | | Broadwater, Clarks Fork, Round Lake. Visitor Day (2): Arbor Day interpretive site/trailhead, Clarks Fork picnic area/fishing site. |
| | SNF | Administrative (2): Clay Butte interpretive site, YNP highway maintenance site. Campgrounds (2): Beartooth Lake. Island Lake. Trailheads (5): Beartooth Lake, Clay Butte, Island Lake, Morrison Jeep, Muddy Creek. Visitor Day (2): Island Lake boat ramp, Pilot/Index overlook. Visitor Overnight (1): Top of the World Store. |
| Crandall/Sunlight #2 | CGNF | No Developed Sites |
| | SNF | Administrative (3): Beartooth Highway gravel pit, Crandall Ranger Station Work Center, Crandall waste transfer site. Campgrounds (5): Crazy Creek, Fox Creek, Hunter Peak, Lake Creek, Lily Lake. Trailheads (6): Clarks Fork, Crazy Creek, Lodgepole, North Crandall, Pilot Creek, Squaw Creek. Visitor Day (3):, Clarks Fork overlook, Reef Creek picnic area, Swamp Lake boat ramp. Visitor Overnight (1): K- Z Lodge complex. |
| | WGF | Administrative (1): Crandall WGF cabin. |
| Crandall/Sunlight #3 | SNF | Administrative (1): Sunlight Ranger Station. Campgrounds (2): Dead Indian and Little Sunlight. Trailheads (4): Cooper Lakes, Dead Indian, Hoodoo Basin, Little Sunlight. Visitor Day (2): Sunlight Bridge overlook, Sunlight picnic area. |
| | WGF | Administrative (1): WGF Sunlight Work Center. Campgrounds (2): WGF Sunlight Unit #1 and WGF Sunlight Unit #2. |
| Firehole/Hayden #1 | YNP | Administrative (5): Firehole Boneyard, Mesa gravel pit north, Mesa gravel pit south, Norris employee housing /museum, Norris hot mix plant. Backcountry Cabin (2): Mary Lake and Nez Perce patrol cabins. Major Developed Sites (2): Madison, Old Faithful. Trailheads (22): Artists' Paintpots, Biscuit Basin, Black Sand Basin Boardwalk, Fairy Falls, Fountain Flats/Freight Road, Fountain Paint Pots Boardwalk, Harlequin Lake, Howard Eaton, Lone Star, Lower Geyser Basin Boardwalk, Madison River Boardwalk, Mallard Creek, Mary Mountain, Midway Geyser Basin Boardwalk, Monument Geyser Basin, Mud Volcano Boardwalk, Nez Perce, Norris Geyser Basin, Norris Geyser Basin Boardwalk, Purple Mountain, Seven Mile Bridge, Terrace Springs. Visitor Day (12): 11 picnic areas (Caldera Rim, Cascade, Firehole River, Gibbon Falls, Gibbon Meadows, Iron Springs, LeHardy Rapids, Nez Perce, Nez Perce Ford, Tuft Cliffs, and Whiskey Flats picnic areas); and Madison River picnic area/boat ramp. |
| Firehole/Hayden #2 | YNP | Major Developed Sites (2): Bridge Bay, Lake Village. Trailheads (4): De Lacy Creek, Divide, Duck Lake, Natural Bridge. Visitor Day (9): DeLacy Creek, East Divide, Fisherman's Access, Gull Point, Hard Road to Travel, Pumice Point, Sand Point, Spring Creek and Spruce- Fir Exhibit picnic areas. |
| Gallatin #1 | YNP | Backcountry Cabins (1): Daly Creek patrol cabin. Trailheads (4): Bighorn Pass, Black Butte, Daily Creek, Specimen Creek. |
| Gallatin #2 | CGNF | Administrative (1): Gardiner District Compound. |
| | YNP | Administrative (4): Gardiner gravel crusher/asphalt plant, Indian Creek gravel pit, North Entrance Administrative Compound, Stephens Creek Bison Facility. Backcountry Cabins (4): Deaf Jim, Fawn Pass, Mt Holmes Lookout, and Winter Creek patrol cabins. Campgrounds |

| Bear Management subunit | Admin Unit ⁱ | Name and type of developed sites |
|-------------------------|-------------------------|--|
| | | (1): Indian Creek. Major Developed Sites (1): Mammoth. Trailheads (7): Boiling River, Bunsen Peak, Fawn Pass, Golden Gate, Mammoth Terraces Boardwalk, Rescue Creek, Snow Pass. Visitor Day (2): 45 th Parallel and Sheepeater Cliff picnic areas. |
| Gallatin #3 | CGNF | Administrative (1): Porcupine Guard Station. Backcountry Cabins (2): Buffalo Horn patrol cabin, Windy Pass rental cabin. Campgrounds (2): Red Cliff, Tom Miner. Summer Homes (2): Buffalo (4 lots), Porcupine Creek (1 lot). Trailheads (6): Beattie Gulch, Buffalo Horn, Sunlight, Tepee Creek, Twin Cabin, Wilson Draw. Visitor Day (3): Cinnabar fishing /boat ramp, Red Cliff and Yankee Jim picnic areas. |
| | YNP | Backcountry Cabins (1): Sportsman Lake patrol cabin. |
| Hellroaring/Bear #1 | CGNF | Administrative (4): Blanding Station Horse Facility, Chicken Ranch, Hayes/McPherson Administrative Site, OTO Ranch. Campgrounds (4): Bear Creek, Canyon, Eagle Creek, Timber Group Camp. Plans of Operation (7): Counts mine, Livingston marble and granite mine, Mineral Hill mines #1–#5 (5 distinct Mineral Hill plans). Trailheads (11): Bear Creek, Cedar Creek, Crevice Creek, Joe Brown, La Duke, Little Trail Creek, Lower Palmer, North Fork Bear Creek, Palmer Mountain, Pine Creek, Sixmile. Visitor Day (3): La Duke picnic area, McConnell fishing and boat access, Yankee Jim boat ramp. |
| | YNP | Backcountry Cabins (1): Crevice Mountain patrol cabin. |
| Hellroaring/Bear #2 | CGNF | Backcountry Cabins (1): Hellroaring patrol cabin. Trailheads (1): West Fork Mill Creek. |
| | YNP | Administrative (2): Buffalo Plateau and Hellroaring patrol cabins. |
| Henrys Lake #1 | CTNF | Administrative (5): Fremont County State administrative site, Fremont County water treatment plant, Macks Inn Substation, Sawtelle FAA site, Sawtelle Peak Electronics site. Backcountry Cabins (2): Big Springs fire tower, Big Springs Snow Park warming hut. Campgrounds (3): Big Springs, Flat Rock, Upper Coffee Pot. Plans of Operations (1): Willow Creek mine. Summer Homes (2): Big Springs North (7 lots), Big Springs South (7 lots). Visitor Day (5): Big Springs boat ramp, Big Springs boat takeout, Viewing Big Springs interpretive trail, Johnny Sack interpretive cabin. |
| | IBLM | Campground (1): Frome Park. Visitor Day (1): South Shore boat ramp. |
| Henrys Lake #2 | CGNF | Backcountry Cabins (1): Basin Station rental cabin. Campgrounds (3): Cherry Creek, Lonesomehurst, Spring Creek. Summer Homes (5): Clark Springs (8 lots), Lonesomehurst A (10 lots), Lonesomehurst B (3 lots), Romsett (9 lots), Rumbaugh Ridge (5 lots). Trailheads (8): Basin, Buttermilk Creek, Mile Creek, Reas Pass, Targhee Pass, Watkins Creek, West Denny, West Fork Denny. Visitor Day (2): Fisherman's Point picnic area, Lonesomehurst boat ramp. |
| | CTNF | Backcountry (1): Defosses cabin. Plans of Operation (1): Turquoise Mountain mine. Trailheads (1): Targhee Creek. Visitor Day (1): Howard Springs picnic area. |
| | BDNF | Administrative (1): Bear Creek administrative site. Backcountry Cabins (1): McAtee patrol cabin. Campgrounds (1): Bear Creek. |

| Bear Management subunit | Admin Unit ⁱ | Name and type of developed sites |
|-------------------------|-------------------------|---|
| Hilgard #1 | CGNF | Administrative (1): Elkhorn River Ford horse access. Backcountry Cabins (3): Cinnamon Guard Station, Cinnamon Mountain, and Yellow Mule rental cabins. Summer Homes (1): Buck Creek. Trailheads (6): Cache Creek, Cinnamon Creek, Eldridge, Lower Wapiti/Albino Lake, Meadow Creek Cutoff, Taylor Falls/Lightning Creek (moved to Hilgard #2 in 2005). Visitor Day (1): Red Cliff target range. Visitor Overnight (1): Covered Wagon Guest Ranch. |
| Hilgard #2 | CGNF | Backcountry Cabins (2): Eldridge and Wapiti rental cabins. Trailheads (2): Sage Creek, Upper Wapiti. |
| | YNP | Trailheads (2): Bacon Rind, Fawn Pass. |
| Lamar #1 | CGNF | Administrative (4): Cooke City burn pile, Cooke City compacting facility, Cooke City Guard Station, Cooke City Highway borrow pit. Campgrounds (1): Soda Butte. Plans of Operation (9): Cray Placer, Mine tailings repository, New World mines #1–#7 (7 distinct New World mine POOs). Trailheads (6): Daisy Pass, Lady of Lake, Lower Lady of the Lake, Republic Creek, Wolverine Pass, Woody Creek. |
| | SNF | No Developed Sites |
| | YNP | Administrative (2): Lamar Buffalo Ranch Institute, Northeast Entrance Ranger Station. Backcountry Cabins (1): Cache Creek patrol cabin. Campgrounds (1): Pebble Creek. Trailheads (8): Bannock Ski Trail, Barronette Ski Trail, Lamar Stock Cutoff, Pebble Creek, Soda Butte, Thunderer, Trout Lake, Warm Creek. Visitor Day (3): Buffalo Ranch/Lamar River, Soda Butte, and Warm Creek picnic areas. |
| Lamar #2 | YNP | Administrative (4): Calfee Creek, Cold Creek, Lamar Mountain, and Upper Miller Creek patrol cabins. |
| Madison #1 | CGNF | Administrative (2): Grayling gravel pit, Tilted Lake Interpretive Site. Backcountry Cabins (2): Beaver Creek and Cabin Creek rental cabins. Campgrounds (1): Beaver Creek. Trailheads (10): Cub Creek, Fir Ridge, Johnson Lake, Kirkwood, Mount Hebgen, Potamogeton, Red Canyon, Tepee Creek, West Fork Beaver Creek, Whits Lakes. Visitor Day (4): Hebgen Dam fishing access, North Shore picnic area, Tepee Creek snowmobile parking area, Yellowstone Holiday picnic area. |
| | YNP | No Developed Sites |
| Madison #2 | CGNF | Administrative (6): Hebgen Game Warden Residence, Hebgen Lake Ranger Station, Hebgen solid waste transfer station (SUP), Horse Butte administrative site/picnic site, Horse Butte bison capture facility (SUP), Interagency Fire Center. Campgrounds (2): Bakers Hole, Rainbow Point. Summer Homes (8): Baker's Hole (3 lots), California (2 lots), Horse Butte (2 lots), Lakeshore A (6 lots), Lakeshore B (8 lots), Lakeshore C (3 lots), Lakeshore E (19 lots), Railroad (3 lots). Trailheads (1): Rendezvous Ski Trail complex. Visitor Day (3): Madison and Rainbow Point picnic area/boat ramps; West Yellowstone target-range. Visitor Overnight (1): Madison Arm Resort & Marina. |
| | YNP | Administrative (2): Soldiers Gravel Pit, West Entrance Ranger Station. Backcountry Cabins (1): Cougar Creek patrol cabin. Trailhead (1): Cable Car, Riverside Ski, Two Ribbons. |
| Pelican/Clear #1 | YNP | Trailheads (3): Artists Point, Lower Falls, Wapiti Lake. Visitor Day (1): Chittenden Bridge picnic area. |

| Bear Management subunit | Admin Unit ⁱ | Name and type of developed sites |
|-------------------------|-------------------------|---|
| Pelican/Clear #2 | YNP | Administrative (1): East Entrance Ranger Station. Backcountry Cabins (4): Clear Creek, Fern Lake, Pelican Cone, and Pelican Springs patrol cabins. Major Developed Sites (1): Fishing Bridge. Trailheads (6): Avalanche Peak, Clear Creek, Nine Mile, Pelican Valley, Storm Point. Visitor Day (4): Eleanor Lake, Sedge Bay, Steamboat Point, and Sylvan Lake picnic areas. |
| Plateau #1 | CGNF | No Developed Sites. |
| | CTNF | Backcountry Cabin (1): Lucky Dog Lodge (SUP). Summer Home Complexes (1): Moose Creek (12 lots). |
| | YNP | Administrative (2): Buffalo Lake and South Riverside patrol cabins. |
| Plateau #2 | CTNF | Administrative (1): Warm River Guard Station. Campgrounds (2): Pole Bridge, Warm River. Trailheads (1): Moose Creek/Trail Canyon. |
| | YNP | Administrative (3): Cove, Outlet, and 3 Rivers patrol cabins. |
| Shoshone #1 | SNF | Backcountry Cabins (1): Robbers Roost cabin/cow camp. Campgrounds (2): Newton Creek and Rex Hale. Summer Homes (2): Moss Creek (7 lots), Newton Creek (1 lot). Visitor Day (2): Blackwater Pond picnic/fishing area, Newton Springs picnic area. |
| Shoshone #2 | SNF | Trailheads (1): Blackwater. Visitor Overnight (1): Blackwater Guest Lodge. |
| Shoshone #3 | SNF | Summer Home Complexes (2): Eagle Creek (8 lots), Kitty Creek (14 lots). Trailheads (1): Kitty Creek. Visitor Overnight (1): Buffalo Bill Boy Scout Camp. |
| Shoshone #4 | SNF | Campgrounds (3): Eagle Creek, Sleeping Giant, Three Mile. Summer Home Complexes (6): Bluher (1 lot), Family Trust (1 lot), Grinnell Creek (2 lots), Mormon Creek (13 lots), Pahaska (2 lots), Wilkerson (1 lot). Trailheads (4): Eagle Creek, Fishhawk, Mormon Creek, Pahaska. Visitor Day (2): Sleeping Giant ski area, Wayfarers Chapel. Visitor Overnight (6): Absaroka Mountain, Creekside, Crossed Sabres, Elephant Head, Pahaska Teepee, and Shoshone Guest Lodges. |
| | WGF | Administrative (1): WGF North Fork cabin |
| South Absaroka #1 | SNF | No Developed Sites. |
| South Absaroka #2 | SNF | Backcountry Cabins (2): Needle Creek and Venus Creek patrol cabins. |
| South Absaroka #3 | SNF | Administrative (3): Gilroy transfer corral, Pinnacles transfer corral/Bridger-Teton Outfitters. Backcountry Cabin (2): West Dunoir patrol cabin, Winter cabin/warming hut. Campgrounds (2): Brooks Lake, Pinnacles. Summer Homes (1): Pinnacles (20 lots). Trailheads (4): Bonneville, Brooks Lake, Pinnacles, Wolf Creek/Dunoir. Visitor Day (1): Brooks Lake picnic area/boat ramp. Visitor Overnight (1): Brooks Lake Guest Lodge. |
| Thorofare #1 | BTNF | Backcountry Cabins (1): WGF patrol cabin. |
| | YNP | Backcountry Cabins (4): Cabin Creek, Howell Creek, Thorofare, and Trail Creek patrol cabins. |
| | BTNF | Administrative (1): Hawk's Rest patrol cabin. |

| Bear Management subunit | Admin Unit ⁱ | Name and type of developed sites |
|-------------------------|-------------------------|---|
| Thorofare #2 | YNP | No Developed Sites. |
| Two Ocean/Lake #1 | BTNF | Campgrounds (1): Sheffield. Trailheads (1): Sheffield. |
| | GTNP | Administrative (1): Snake River gravel pit. Other (1): Snake River picnic area. |
| | YNP | Backcountry Cabins (3): Harebell, Heart Lake and Mount Sheridan Lookout patrol cabins. Campgrounds (1): Lewis Lake. Major Developed Sites (1): Grant Village. Trailheads (4): Heart Lake, Lake Overlook, Riddle Lake Shoshone/Dogshead. Visitor Day (2): Frank Island picnic area, West Thumb Information Station/boardwalk. |
| Two Ocean/Lake #2 | BTNF | Backcountry Cabins (1): Fox Park patrol cabin. |
| | YNP | Backcountry Cabins (2): Fox Creek and Peale Island patrol cabins. |
| Washburn #1 | YNP | Administrative (3): Frog Rock and Grebe Lake gravel pits, Tower employee housing. Backcountry Cabins (4): Lower Blacktail, Mount Washburn Lookout; Observation Peak and Upper Blacktail patrol cabins. Campgrounds (1): Tower. Major Developed Sites (2): Canyon Village, Roosevelt Lodge. Trailheads (17): Blacktail Creek, Blacktail Self-Guided, Blacktail Stock, Brink of the Lower Falls, Calcite Springs Boardwalk, Cascade Creek, Cascade Lake, Children's Fire Boardwalk, Dunraven Pass, Glacial Boulder, Hellroaring, Mount Washburn, North Rim, South Rim, Tower Creek, Tower Falls Overlook, Wraith Falls, . Visitor Day (6): Antelope Creek, Cascade Lake, and Dunraven picnic areas; Lava Creek picnic area/trailhead, Tower Falls general store, Yanceys Hole cookout site. |
| Washburn #2 | YNP | Administrative (1): Ice Lake gravel pit. Campgrounds (1): Norris (and Ranger Station). Trailheads (8): Cygnet Lakes, Grebe Lake, Grizzly Lake, Ice Lake, Indian Creek, Solfatara Creek, Winter Creek, Wolf Lake Cutoff. Visitor Day (6): Apollinaris Springs and Beaver Lake picnic areas; Museum of the National Park Ranger, Norris Meadows, Otter Creek, and Virginia Meadows picnic areas. |

ⁱ Administrative unit abbreviations: BDNF = Beaverhead-Deerlodge National Forest, CGNF = Custer Gallatin National Forest, CTNF = Caribou-Targhee National Forest, GTNP = Grand Teton National Park, SNF = Shoshone National Forest, WGF = Wyoming Game and Fish, YNP = Yellowstone National Park.

Table 7. Baseline values for visitor overnight capacity at lodges under special-use permits on Forest Service lands inside the PCA.

| Baseline values for Visitor Overnight Capacity at USFS Special Use Guest Lodges ⁽¹⁾ | | | |
|--|---------------------------|---|--|
| National Forest | Lodge/Ranch/Resort | Overnight Infrastructure | Overnight Capacity (individual visitors) |
| Bridger-Teton | Heart Six Guest Ranch | 5 cabins, 2 teepees, 1 employee dorm | 42 |
| | Togwotee Mountain Lodge | 1 lodge, 54 guest cabins, and 7 employee cabins | 461 |
| | Turpin Meadows Ranch | 1 lodge, 2 chalets, 8 guest cabins, 3 employee housing buildings, 1 manager's residence | 52 |
| | Idaho Youth Services Camp | 3 guest cabins (sleeps total of 20) | 20 |

| Baseline values for Visitor Overnight Capacity at USFS Special Use Guest Lodges ⁽¹⁾ | | | |
|--|------------------------------------|---|--|
| National Forest | Lodge/Ranch/Resort | Overnight Infrastructure | Overnight Capacity (individual visitors) |
| Caribou-Targhee | Loll Scout Camp | 1 lodge, 3 guest cabins, 26 campsites (sleeps total of 500) | 500 |
| Custer Gallatin | Covered Wagon Guest Ranch | 10 guest cabins, 5 crew cabins (sleeps 24 guests and 17 employees) | 24 |
| | Madison Arm Resort & Marina | 8 guest cabins, 3 mobile homes, approximately 83 RV / Tent campsites (sleeps 300 guests and 10 employees) | 300 |
| Shoshone | Absaroka Mountain Lodge | 15 guest cabins | 67 |
| | Blackwater Lodge | 15 guest cabins | 50 |
| | Brooks Lake Guest Lodge | 8 guest cabins, 1 motel with 7 rooms | 47 |
| | Buffalo Bill Scout Camp | 6 guest cabins, 11 campsites | 311 |
| | Creekside (Goff Creek) Lodge | 10 guest cabins | 47 |
| | Crossed Sabres Ranch | 19 guest cabins | 60 |
| | Elephant Head Lodge | 15 guest cabins | 68 |
| | K-Bar Z Guest Ranch | 6 guest cabins | 35 |
| | Pahaska Tepee Lodge | 15 guest cabins | 147 |
| | Shoshone Lodge | 18 guest cabins | 76 |
| Top of the World Store | 1 motel with 4 rooms, 10 campsites | 48 | |

Table 8. Number and acreage of commercial livestock grazing allotments and number of sheep animal months inside the Yellowstone Primary Conservation Area (PCA) in 1998.

| Administrative unit | Cattle Allotments | | Sheep Allotments | | Sheep AMs |
|-------------------------|-------------------|--------|------------------|--------|-----------|
| | Active | Vacant | Active | Vacant | |
| Beaverhead-Deerlodge NF | 3 | 2 | 0 | 0 | 0 |
| Bridger-Teton NF | 9 | 0 | 0 | 0 | 0 |
| Caribou-Targhee NF | 11 | 1 | 7 | 4 | 14,163 |

| Administrative unit | Cattle Allotments | | Sheep Allotments | | Sheep AMs |
|--------------------------------------|-------------------|--------|------------------|--------|-----------|
| | Active | Vacant | Active | Vacant | |
| Custer-Gallatin NF | 23 | 10 | 2 | 4 | 3,540 |
| Shoshone NF | 25 | 0 | 2 | 2 | 5,387 |
| Grand Teton NP | 1 | 0 | 0 | 0 | 0 |
| Total number in PCA | 72 | 13 | 11 | 10 | 23,090 |
| Total area in PCA (acres) | 660,845 | 67,893 | 148,368 | 77,665 | NA |
| Total area in PCA (km ²) | 2,674 | 275 | 600 | 312 | NA |

Table 9. 1998 Baseline values (and exceptions) for percentage of open motorized access route density (OMARD), total motorized access route density (TMARD), and secure habitat for all 40 Bear Management Subunits in the Primary Conservation Area. Current (post-revision) values are compared against values established before revisions resulting from implementation of the footprint protocol.

| BMU subunit name | 1998 % OMARD (> 1 mi / mi ²) | | | 1998 % TMARD (> 2 mi / mi ²) | | | 1998 % Secure Habitat | | | Subunit area (mi ²) |
|-------------------------|---|---------------|----------|---|---------------|----------|-----------------------|---------------|----------|---------------------------------|
| | Pre-revision | Post-revision | % change | Pre-revision | Post-revision | % change | Pre-Revision | Post-Revision | % change | |
| Bechler/Teton | 17.0 | 17.1 | 0.1 | 5.8 | 6.0 | 0.2 | 78.1 | 78.0 | -0.1 | 534.3 |
| Boulder/Slough #1 | 3.2 | 3.2 | 0.0 | 0.3 | 0.4 | 0.1 | 96.6 | 96.5 | 0.0 | 281.9 |
| Boulder/Slough #2 | 2.1 | 2.2 | 0.2 | 0.0 | 0.0 | 0.0 | 97.7 | 97.6 | -0.1 | 232.4 |
| Buffalo/Spread Creek #1 | 11.5 | 10.6 | -0.9 | 5.3 | 3.9 | -1.4 | 88.3 | 89.3 | 1.0 | 219.9 |
| Buffalo/Spread Creek #2 | 15.6 | 16.9 | 1.3 | 12.7 | 11.8 | -0.9 | 74.3 | 73.3 | -1.0 | 507.6 |
| Crandall/Sunlight #1 | 19.3 | 19.3 | 0.0 | 7.2 | 7.1 | 0.0 | 81.1 | 81.0 | -0.1 | 129.8 |
| Crandall/Sunlight #2 | 16.6 | 16.5 | -0.1 | 11.7 | 10.1 | -1.5 | 82.3 | 82.3 | 0.0 | 316.2 |
| Crandall/Sunlight #3 | 19.2 | 19.2 | 0.0 | 10.6 | 9.8 | -0.9 | 80.4 | 80.4 | 0.0 | 221.8 |
| Firehole/Hayden #1 | 10.4 | 10.5 | 0.2 | 1.7 | 3.1 | 1.4 | 88.3 | 87.5 | -0.8 | 339.2 |
| Firehole/Hayden #2 | 9.0 | 9.7 | 0.6 | 1.5 | 2.6 | 1.1 | 88.4 | 87.9 | -0.6 | 172.2 |
| Gallatin #1 | 3.6 | 3.5 | -0.1 | 0.5 | 0.3 | -0.2 | 96.3 | 96.3 | 0.0 | 127.7 |
| Gallatin #2 | 9.5 | 9.8 | 0.3 | 4.5 | 5.6 | 1.1 | 90.2 | 89.1 | -1.1 | 155.2 |
| Gallatin #3* | 46.0 | 45.8 | -0.1 | 22.9 | 23.1 | 0.2 | 55.3 | 55.1 | -0.1 | 217.6 |

| BMU subunit name | 1998 % OMARD (> 1 mi / mi ²) | | | 1998 % TMARD (> 2 mi / mi ²) | | | 1998 % Secure Habitat | | | Subunit area (mi ²) |
|---------------------|---|---------------|----------|---|---------------|----------|-----------------------|---------------|----------|---------------------------------|
| | Pre-revision | Post-revision | % change | Pre-revision | Post-revision | % change | Pre-Revision | Post-Revision | % change | |
| Hellroaring/Bear #1 | 23.1 | 23.3 | 0.2 | 15.8 | 16.1 | 0.3 | 77.0 | 76.6 | -0.3 | 184.7 |
| Hellroaring/Bear #2 | 0.1 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 | 99.5 | 99.5 | 0.0 | 228.9 |
| Henry's Lake #1 | 49.0 | 49.2 | 0.2 | 31.2 | 31.9 | 0.7 | 45.4 | 45.3 | -0.1 | 191.2 |
| Henry's Lake #2* | 49.9 | 48.1 | -1.8 | 35.2 | 35.3 | 0.1 | 45.7 | 45.6 | -0.1 | 140.2 |
| Hilgard #1 | 29.0 | 29.7 | 0.7 | 15.3 | 15.5 | 0.2 | 69.8 | 69.5 | -0.3 | 201.2 |
| Hilgard #2 | 21.0 | 20.9 | -0.2 | 13.6 | 13.4 | -0.2 | 71.4 | 71.5 | 0.1 | 140.5 |
| Lamar #1 | 9.9 | 10.2 | 0.4 | 3.8 | 4.5 | 0.7 | 89.4 | 89.0 | -0.4 | 299.9 |
| Lamar #2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 | 0.0 | 180.8 |
| Madison #1 | 29.5 | 30.0 | 0.6 | 12.5 | 13.2 | 0.7 | 71.5 | 71.5 | 0.0 | 227.9 |
| Madison #2* | 33.7 | 34.3 | 0.5 | 24.0 | 25.8 | 1.8 | 66.5 | 66.3 | -0.2 | 149.4 |
| Pelican/Clear #1 | 2.0 | 2.2 | 0.2 | 0.5 | 0.5 | 0.0 | 97.8 | 97.7 | -0.1 | 108.4 |
| Pelican/Clear #2 | 5.4 | 5.8 | 0.3 | 0.4 | 0.7 | 0.3 | 94.1 | 93.8 | -0.2 | 251.6 |
| Plateau #1 | 22.2 | 22.3 | 0.1 | 12.9 | 13.2 | 0.3 | 68.8 | 68.6 | -0.2 | 286.3 |
| Plateau #2 | 8.5 | 8.5 | 0.0 | 3.5 | 3.5 | 0.0 | 88.7 | 88.7 | 0.0 | 419.9 |
| Shoshone #1 | 1.5 | 1.5 | 0.0 | 1.1 | 1.2 | 0.0 | 98.5 | 98.5 | 0.0 | 122.2 |
| Shoshone #2 | 1.3 | 1.3 | 0.0 | 0.7 | 0.7 | 0.0 | 98.8 | 98.8 | 0.0 | 132.4 |
| Shoshone #3 | 3.9 | 3.9 | 0.0 | 2.1 | 2.1 | 0.0 | 97.0 | 96.9 | 0.0 | 140.7 |
| Shoshone #4 | 5.3 | 5.4 | 0.1 | 2.9 | 3.0 | 0.0 | 94.9 | 94.8 | -0.1 | 188.8 |
| South Absaroka #1 | 0.6 | 0.6 | 0.0 | 0.1 | 0.1 | 0.0 | 99.2 | 99.2 | 0.0 | 163.2 |
| South Absaroka #2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 99.9 | 99.9 | 0.0 | 190.6 |
| South Absaroka #3 | 2.4 | 2.4 | 0.0 | 2.7 | 1.8 | -1.0 | 96.8 | 96.8 | 0.0 | 348.3 |
| Thorofare #1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 | 0.0 | 273.4 |
| Thorofare #2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 | 0.0 | 180.1 |
| Two Ocean/Lake #1 | 3.5 | 3.9 | 0.4 | 0.3 | 1.4 | 1.1 | 96.3 | 96.0 | -0.4 | 371.9 |
| Two Ocean/Lake #2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 | 0.0 | 124.9 |

| BMU subunit name | 1998 % OMARD (> 1 mi / mi ²) | | | 1998 % TMARD (> 2 mi / mi ²) | | | 1998 % Secure Habitat | | | Subunit area (mi ²) |
|--|---|---------------|----------|---|---------------|----------|--|------------------|---|---------------------------------|
| | Pre-revision | Post-revision | % change | Pre-revision | Post-revision | % change | Pre-Revision | Post-Revision | % change | |
| Washburn #1 | 16.1 | 16.7 | 0.6 | 4.2 | 6.1 | 1.9 | 83.0 | 81.9 | -1.0 | 178.3 |
| Washburn #2 | 7.4 | 7.6 | 0.2 | 1.1 | 1.6 | 0.6 | 92.0 | 91.8 | -0.2 | 144.1 |
| Primary Conservation Area | 12.7 | 12.8 | 0.1 | 6.7 | 6.9 | 0.2 | 85.6 | 85.4 | -0.2 | 9,025 |
| * Baseline values for the three subunits identified as in need of improvement (Gallatin #3, Henrys Lake #2, and Madison #2) will no longer be established at 1998 levels, but rather at improved levels based on full implementation of Travel Management Plan. See appended table below. | | | | | | | | | | |
| Exceptions to 1998 Baseline | | | | | | | Gallatin NF Travel Plan Baselines (supersede 1998 thresholds) | | | |
| As of 2016, three subunits (Gallatin #3, Henrys Lake #2, and Madison #2) have new threshold for secure habitat baselines established at values to be achieved with full implementation of the 2006 Gallatin National Forest Travel Management Plan. These 3 subunits were identified in the 2007 Conservation Strategy as needing improved secure habitat levels above 1998 conditions. New baseline thresholds raise the bar for these 3 subunits and supersede 1998 thresholds for secure habitat. | | | | | | | Subunit | % Secure Habitat | Area (mi ²) Secure Habitat | |
| | | | | | | | Gallatin #3 | 71.1 | 154.8 | |
| | | | | | | | Henrys Lake #2 | 52.0 | 72.9 | |
| | | | | | | | Madison #2 | 67.4 | 100.7 | |

Note: Tables in this appendix represent the most current baseline information available and supersede comparable tables in the appendices of all previous versions of the Conservation Strategy; forest plan Amendment for Grizzly Bear Habitat Conservation for the Greater Yellowstone Area National Forests, Final Environmental Impact Statement (USDA Forest Service 2006a); and the 2006 forest plan Amendment Record of Decision (USDA Forest Service 2006b).

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