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Intermountain Region/Caribou-Targhee National Forest

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Monitoring Evaluation Report for the Caribou National Forest

Fiscal years 2004 – 2022



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Cover Image: Caribou Mountain, Caribou-Targhee National Forest, Idaho (Forest Service photo by Nate Lowe)

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Table of Contents

Why Monitoring Matters.....	1
Summary Of This Report	3
Forest Supervisor's Certification	5
Long-term Soil Productivity	6
Watersheds and Aquatic Species	9
Vegetation Communities.....	12
Plant and Animal Diversity	16
Livestock Grazing and Mineral Resource Development.....	23
Fuels Management	26
Economic and Social Benefits.....	29
Visitor Use	32
Summary Table.....	34
Partners and Collaborators	38
References.....	39

Why Monitoring Matters

There is no single correct approach to managing a forest or grassland. Each decision maker must weigh the ecological complexity of these ecosystems, the changing environmental conditions, the many different viewpoints of the public, and uncertainty about long-term consequences.

Data from monitoring can therefore be extremely useful. A robust, transparent, and meaningful monitoring program can provide information on specific resources, management impacts, and overall trends in condition – in other words, feedback on whether we are meeting our management objectives or not.

Each national forest or grassland has a land management plan or “forest or grassland plan” that balances tradeoffs among recreation, timber, water, wilderness, wildlife habitat, and other uses. The plan describes a set of desired conditions – a science-based vision for what forest or grassland conditions should be once the goals of the plan are met. The forest or grassland plan also includes a monitoring program, organized around a set of monitoring questions and indicators that are designed to track progress toward achieving the desired conditions in the plan.

Monitoring of certain resources is required by law, regulation, or directive (see box below for the required nine monitoring topics). Other monitoring occurs depending on specific needs of the national forest or grassland. Decision makers, such as forest and grassland supervisors, use these monitoring evaluation reports to update their knowledge and assess progress toward the desired conditions in the forest or grassland plan. The public uses these monitoring evaluation reports to understand what’s happening on the land that they depend upon and enjoy.

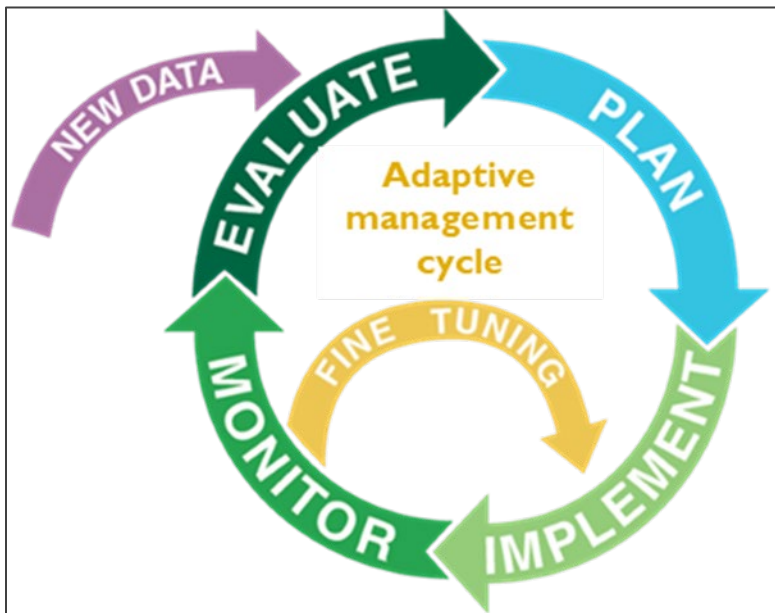


Figure 1. Adaptive Management Cycle.

If the report reveals that we are not quite meeting the mark, then there’s a need to change management in some way; this is adaptively managing. Monitoring data allows us to learn through management and adjust our strategies based on what we learned. Monitoring also helps us be accountable and transparent to interested and affected parties and colleagues.

Forest Service monitoring programs include questions and indicators that address eight topics.

1. Status of select watershed conditions.
2. Status of select ecological conditions including key characteristics of terrestrial and aquatic ecosystems.
3. Status of focal species to assess the ecological conditions.
4. Status of a select set of the ecological conditions to contribute to the recovery of federally listed threatened and endangered species, conserve proposed and candidate species, and maintain a viable population of each species of conservation concern.
5. Status of visitor use, visitor satisfaction, and progress toward meeting recreation objectives.
6. Measurable changes on the plan area related to climate change and other stressors that might be affecting the plan area.
7. Progress toward meeting the desired conditions and objectives in the plan, including for providing multiple use opportunities.
8. Effects of each management system to determine that they do not substantially and permanently impair the productivity of the land.

Figure 2. Forest Service monitoring questions.

Because monitoring can be expensive, time-consuming, and labor-intensive, we rely on the help of our partners and work collaboratively with them to accomplish monitoring objectives. We also rely on existing data sources such as national and regional inventory, monitoring, and research programs; federal, state, or local government agencies; scientists, partners, and members of the public; and information from Tribal communities.

Monitoring evaluation reports, like this one, are critical to adaptive management because they tell us and the public whether the land management plan is working. We don't make any decisions in monitoring evaluation reports; instead, we simply document and share monitoring results.

Summary Of This Report

This 2023 monitoring evaluation report for the Caribou National Forest documents monitoring activities that occurred during fiscal years 2004 through 2022. Resource specialists answered 14 of the 17 monitoring questions using 36 of the 40 indicators to determine if current activities and monitoring described in the 2016 Caribou Monitoring Plan are moving the forest toward or maintaining the desired conditions or objectives.

The detailed resource data and reports that were used to build this monitoring report are available in the project record upon request. For a complete listing of monitoring elements, see the [2016 Caribou Monitoring Plan](#) which reflects an [administrative change](#) to the monitoring elements found in Chapter 5 of the [2003 Caribou Revised Forest Plan](#) (forest plan). This monitoring and evaluation report and previous monitoring reports are available at: <https://www.fs.usda.gov/detail/ctnf/landmanagement/planning/?cid=fseprd1072393>. If monitoring questions are not answered in this report either the available data was unclear, or they do not indicate a statistically significant trend. This might be because data for some resources is collected on 5-year or other cycles or there was insufficient data, at this time. We will address the status of these monitoring questions in the next monitoring report.

Of the 36 indicators examined, we are meeting plan objectives or progress towards our desired conditions in 20 indicators. To move the Caribou National Forest closer to the desired condition for vegetation and habitat, we need to increase active management of forests and shrublands to reduce fuels and promote regeneration of species like aspen. We also need more active management to increase forest diversity at the landscape scale, expand early seral habitat, improve resiliency, and minimize insect and disease outbreaks. Increasing active management will directly and indirectly increase social and economic contributions to the forest's area of influence¹.

Improved monitoring methods are needed to monitor wildlife and aquatic species. Several monitoring questions need to be refined to use existing relevant monitoring and data sources, capitalize on existing partnerships, and apply best available science (see [Summary Table](#) at the end of this report). Additionally, we may consider developing more meaningful monitoring questions or indicators for assessing recreation on the Forest.

The 2003 Revised Caribou Forest Plan was completed under the 1982 Planning Rule. It therefore contains plan components for management indicator species and population trend monitoring for those species, as was required at that time. In 2012, the Department of Agriculture released a new Planning Rule (36 CFR 219) which did not include the use of management indicator species². The provisions under §219.9 of the 2012 Planning Rule focus on maintaining or restoring the ecological conditions necessary to maintain the diversity of plant and animal communities and support the persistence of native species in the plan area rather than focus on population trends as in the 1982 Planning Rule. Subsequently, plan component requirements under the 2012 Planning Rule differ from those required in the 1982 rule. As described in the Plant and Animal Diversity recommendations section below, there is a need to remove direction for management indicators species and shift to new plan components consistent with the 2012 Planning Regulations to describe how plant and animal

¹ An area influenced by the land management plan that is used during the land management planning process to evaluate social, cultural, and economic conditions. The area is usually a grouping of counties.

² The theory that monitoring the population trend of one species could be extrapolated to form conclusions regarding the status and trends of other species, that is using "management indicator species," has been discredited.

diversity will be maintained through the planning area. Development of new plan components for plant and animal diversity require amendment or revision of the 2003 Revised Caribou Forest Plan.

Table 1 summarizes the results of evaluating the monitoring questions covered in this report. The table shows whether the monitoring is meeting the forest plan direction and, if not, whether changes to the forest plan, management activities, or plan monitoring program should be considered.

Table 1. Summary of recommendations for all 40 indicators

Recommendation Factors	Yes	Uncertain	No
Forest plan direction met	20	12	8
Change to management activities recommended	5	0	35
Change to plan monitoring program recommended	12	5	23

In the following pages of this report, you'll learn details about the key results of our monitoring efforts, and the changes that we're recommending to our forest supervisor. Lastly, we provide a summary table (Table 5) at the end of the report that rolls up the progress and recommendations for each of the 40 indicators.

Forest Supervisor's Certification

This report documents the results of monitoring activities that occurred through fiscal year 2022 on the Caribou National Forest. Monitoring on some topics is long-term and evaluation of those data will occur later in time.

I have evaluated the monitoring and evaluation results presented in this report. I have found that there are no immediate recommended changes to the 2003 Land Management Plan, as amended at this time. However, the recommendations provided in this report inform the need for change as we prepare for Forest Plan Revision. I therefore consider the 2003 Land Management Plan sufficient to guide current land and resource management of the Caribou National Forest and plan a deeper examination of the recommended changes through engagement with resource specialists and the public when we start Forest Plan Revision.

Melvin Bolling

Forest Supervisor

Caribou-Targhee National Forest and Curlew National Grassland

06/16/2023

Long-term Soil Productivity

The mountainous landscape of the Caribou National Forest supports a variety of soils and native plant communities due in part to variations in annual moisture and temperature. Average annual precipitation varies from about 20 inches at lower elevations to 50 inches at higher elevations. The forest experiences snowy winters and dry summers at lower elevations, and snowy winters with more overall precipitation throughout the year on north-facing slopes and higher elevations. Parent materials also vary from drifts of wind-blown silt to colluvium (rock transported downslope by gravity) from a wide range of sedimentary, meta-sedimentary and volcanic rock.

One goal of the forest plan is to manage the diverse ecological types found on the Caribou National Forest within their capability with the intent of maintaining or improving long-term soil productivity and hydrologic function. Soil should have adequate ground cover, including herbaceous or woody litter cover in rangeland areas, and organic surface horizons and coarse woody debris in forested areas.

Erosion in mountainous regions like the Caribou National Forest is a natural process that occasionally increases when intense storms or runoff events coincide with natural or managed disturbances. Forest staff measure indicators, like ground cover, that effect erosion rates. This information can inform adaptive management to reduce erosion rates that may be detrimental to soil productivity. A few small erosion plots are measured annually on the forest and provide a quantitative estimate of erosion rates.

Forest staff work to make sure that management actions are designed to fit the capability of the land and to limit or mitigate soil disturbances that could be detrimental to soil productivity and hydrologic function. Examples of disturbances or management actions include wildfire, prescribed fire, and timber harvest. Soil disturbance is assessed qualitatively for many types of projects. More intensive quantitative assessment is completed for timber harvest units using ground-based equipment.



Figure 3. Soil data collection on the Caribou National Forest (Forest Service photo).

Monitoring Questions, Indicators, and Key Results

Monitoring questions 1, 2, and 5 address long-term soil productivity and ground cover in the context of our management activities.

MQ1. Are management activities allowing soils to rebuild?

Indicator 1 – Woody residue

- The 13 harvest units evaluated since 2007 had an average of 18 tons/acre of woody residue³, which met guidelines in our forest plan for minimum woody residue (ranges from 3-5 to 15-20 tons per acre by forest habitat type; see [Caribou Forest Plan](#), Table 3.1 on page 3-7).
- The amount of woody residue left in units increased after 2004, evidence that the forest plan guideline for coarse woody debris is being implemented.



Figure 4. Hollows timber sale, assessed in 2014 (Forest Service photo).



Figure 5. Slug Creek erosion plot, fall 2022 (Forest Service photo).

MQ2. Are management activities meeting the Regional Soil Quality Standards?

Note: Current Regional direction provides *examples* of soil quality standards and guidelines. The forest plan contains standards and guidelines for soil resource management.

Indicator 2 – Surface erosion

- Average annual erosion rates of 0.1 to 0.6 tons/acre/year were collected at a few small rangeland erosion plots from 2004-2021. Both qualitative and quantitative data support the conclusion that management units are meeting forest plan guidance.

³ Wood or logs in various stages of decay on the forest floor.

Indicator 3 – Detrimental soil disturbance

- Data from older⁴ timber harvest units show that most disturbance naturally recovers over time. Recent harvest units (evaluated within 3 years of treatment) have an average of 3 percent detrimental disturbance.

MQ5. How long does it take for habitat types to recover from hydrologic disturbance?

Indicator 8 – Ground cover recovery after hydrologic disturbance

- In general, timber harvest units in subalpine fir and moist Douglas-fir series habitat types with loamy surface soil textures have recovered to an average of 88 percent of the area with undisturbed to slight soil disturbance within 3 years of treatment.
- Monitoring shows that prescribed fire and lower severity wildfire that result in low to moderate soil burn severity generally have some ground cover that persists and recovers to more than 60 percent ground cover within 1-2 years. We have observed this recovery in the following plant community types: moister-cooler sagebrush, mountain shrub, quaking aspen, bigtooth maple, and Douglas-fir and subalpine fir habitat types.
- Wildfire resulting in moderate to high soil burn severity in subalpine fir habitat types has recovered to about 60 percent ground cover in 5 years, and 70-80 percent cover in 10 years. We have seen similar ground cover recovery in drier-warmer sagebrush and juniper plant communities with cheatgrass as an undesirable component of the ground cover.

Recommendations

- Continue to evaluate timber harvest units for woody residue and soil disturbance, including class of disturbance rather than just identifying disturbance considered to be detrimental to soil productivity.
- Continue to collect data and maintain the plot infrastructure at a subset of the monitoring plots established in 1982. Consider redirecting effort into rangeland monitoring that includes soil and site properties and is compatible with ecological site descriptions.
- Continue to evaluate the rate at which habitat types and ecological sites recover following hydrologic disturbance. Classify ecological types (including describing soil properties, site, and plant composition information) to enable learning and comparison to other areas of the forest.

⁴ Evaluated 20 or more years after harvest and prior to the current forest plan.

Watersheds and Aquatic Species

Watersheds on the Caribou National Forest provide infiltration, retention, and release of water for multiple uses, as well as nutrients, energy, and habitat for a variety of aquatic and riparian species. We manage these habitats to contain sufficient complexity, diversity, and productivity so that they can maintain viable populations of native and desirable nonnative species, while balancing physical landscape components – terrestrial habitats, riparian areas, wetlands, and clean water.

Riparian areas on the forest include banks and adjacent areas of water bodies that have considerably moister soils than contiguous floodplains and uplands. Wetlands have more available water for longer periods of time than riparian areas. These areas are vital because they provide specialized wildlife habitat and their localized vegetation notably contributes to stream bank and floodplain stability, as well as water temperature and quality.

We know that projects and activities on forest lands can impact soil, water quantity and quality, and air resources. We use standardized best management practices to ensure water quality is maintained or improved, and we also ensure that the guidelines in our forest plan are incorporated into management actions to ensure that water quality is maintained or improved. We also monitor to help us determine the types and level of the impacts to watershed resources—these results will help us to prioritize areas in need of management attention.



Figure 6. Stream near Eight Mile Guard Station (Forest Service photo).

On the Caribou National Forest, about 10 percent of watersheds were impacted by disturbances and need restoration. About 80 percent are in moderate condition and continue to support physical and biological processes; in these areas some restoration and improvement is needed. The remaining 10 percent of watersheds are in good or better condition; in these areas, conditions need to be maintained. The Forest uses a collaborative approach to ensure that water quality is maintained or improved through a partnership with the states of Idaho and Wyoming.

Monitoring Questions, Indicators, and Key Results

Monitoring questions 3 and 4 address whether watersheds are within landform capability and provide for aquatic species.

MQ3. Are habitats on the Forest adequate to provide for all life stages of aquatic species?

Indicator 4 – Fish Habitat Conditions

- More than 300 streams were surveyed between 1997-2005. Streams in which cutthroat trout were found were sampled again between 2007-2012. As fine sediment increased in streams, there was a corresponding decrease in trout abundance.

Indicator 5 – Fish Distribution Changes

This forest-wide inventory included the Targhee National Forest. (The formerly separate forests were merged into one administrative unit in 2000.)

- Monitoring suggests that trout abundance across the Caribou-Targhee National Forest, including brook trout, was slightly higher during the 2007-2012 sampling period than during earlier sampling from 1997-2005. Proportion of cutthroat trout did not change significantly between time periods.
- Monitoring efforts and surveys indicate that populations of northern leatherside chub, considered a sensitive species by the Forest Service, are declining relative to historical levels, primarily caused by habitat fragmentation. Much of this fragmentation is caused by human factors including irrigation projects, water diversion, habitat degradation, and the introduction of non-native fish predators. The strongest population on the Caribou-Targhee National Forest has been identified in the Jackknife drainage, and other populations have also been identified in tributaries to the Salt River.

MQ4. Are standards and guidelines protecting beneficial uses?

Indicator 6 – Water Quality on Water Quality Limited Streams

- Year-round temperature monitoring of forest streams began in 2012. Most streams across the forest met the cold-water criteria of a daily average temperature of no greater than 19°C and a daily maximum no greater than 22°C.
- Very few streams, however, across all years surveyed met the salmonid spawning criteria⁵ of a daily average temperature no greater than 9°C and a daily max no greater than 13°C. Idaho Department of Environmental Quality, which sets water quality standards under the Clean Water Act, defers to additional biological and habitat monitoring for streams if the temperature exceedance is 10 percent or less. Following this guidance, most streams meet temperature standards for protection of aquatic life.

⁵ Salmonids, which include cutthroat trout, are cold-water fish. Salmonid spawning is therefore considered a more protective subcategory of cold-water aquatic life.

Indicator 7 – Best Management Practices Compliance Effectiveness

- Our monitoring shows that 77 percent of the total projects evaluated from 2013-2022 scored in the good or excellent categories. See Table 2 below.

Table 2. Summary of Caribou-Targhee best management practices monitoring for all activities 2013-2022.

*Note that this data includes the Targhee National Forest because we use a forest-wide reporting database. (The formerly separate forests were merged into one administrative unit in 2000.)

Composite Score of Implementation and Effectiveness	Count	Percent of total projects evaluated
Excellent	27	55
Good	11	22
Fair	4	8
Poor	6	12
No plan	2	4
Total	49	

Recommendations

- Improved monitoring methods would maximize the inferential power of future fish data collection. Specific objectives and recommendations include:
 - Determine trends in proportions and abundance in streams or HUC4s in which both cutthroat trout and brook trout occur.
 - Monitor cutthroat trout populations in selected streams or HUC4s.
 - Focus time-period comparisons on specific HUC4s of interest, probably those in which brook trout appear to be invading.
- Lack of funding and support did not allow us to complete our 2020 fish surveys. Seek support and funding to complete fish surveys.
- Continue stream restoration work to benefit northern leatherside chub.
- Continue water quality monitoring coordination with state agencies.

Vegetation Communities

We embrace the concept of ecosystem⁶ management. This is an approach to natural resource management that strives to ensure healthy, productive, sustainable ecosystems by blending the needs of people and environmental values. Healthy ecosystems are those that retain all their parts and functions for future generations even though vegetation patterns, human uses, or other conditions may change.

The Caribou National Forest manages ecological systems and their components to be dynamic and resilient to disturbance, while maintaining physical and biological processes at any temporal or spatial scale. When disturbances happen, these management practices mean ecosystems are not at risk of being disturbed beyond the point of resiliency and sustainability.



Figure 7. Beaver dam along the restored section of Paris Creek (Forest Service photo by Rose Lehman).

Vegetation communities assessed as being high risk include Engelmann spruce/subalpine fir, aspen, juniper riparian/wetland and tall forb, due to overall departure from historical ranges of variation in sustainability indicators. The Engelmann spruce/subalpine fir is at risk primarily due to the dominance of mature and old age structure and changes in the historical non-lethal fire regimes. The aspen type is at risk because many stands are in a mature and old age structure, conifer is succeeding, and the historical fire regime is outside historical ranges. Juniper has increased in distribution and density from historical ranges, resulting in changes in ecological processes, such as water intake and erosion. Tall forb types are at risk due to the loss of historical structure and composition, excessive bare soil and erosion, invasion by tarweed, and alteration in disturbance regimes and patterns. Understanding ecological processes (fire and other natural disturbances) and how these processes

⁶ An ecosystem is a complex system of living and nonliving components that interact and change continually.

shape vegetative patterns over time in a landscape are important steps towards implementing ecosystem management.

In 2002, a high elevation tall forb community restoration study was established on the Montpelier Ranger District to evaluate the potential of reintroducing and establishing native tall-forb and grass communities into monocultures of mountain tarweed. Starting in 2009, three consecutive years of short-duration sheep bedding on a portion of the study area was used to build up organic matter followed by reseeding in 2011.

Monitoring helps us determine if we are maintaining a good balance of size and age classes in forested and non-forested ecosystems. Our specific goals include reducing aspen decline and promoting multi-aged and diverse plant species through natural insect and disease disturbance, vegetation management, and fire.



Figure 8. Resprouting aspen and Indian paintbrush seven years after the Soda Peak prescribed fire, Montpelier Ranger District (Forest Service photo by Rose Lehman).

Monitoring Question, Indicators, and Key Results

Monitoring question 6 addresses whether vegetation communities are moving toward their historical range of variability⁷ in structure, composition, and distribution on the landscape.

MQ6. Are management activities and wildland fire use moving the forest towards historical range of variability and improving ecological sustainability?

Indicator 9 – Aspen: 30-40 percent mature and old

- See indicator 10 for overall forested acres monitoring results.

⁷A description of the change over time and space in the ecological condition of potential natural vegetation types and the ecological processes that shape those types.

Indicator 10 – Conifers: 30-40 percent mature and old

- Lack of structural diversity persists across the forest and mature and late-seral⁸ size classes are overrepresented. Forest-wide vegetation data from 2016 indicates 95% of all forested acres are classified as mature or late seral.
- A 2020 forest inventory on the Montpelier and Soda Springs ranger districts identified 88-100% of forested acres by watershed as mature or late seral.

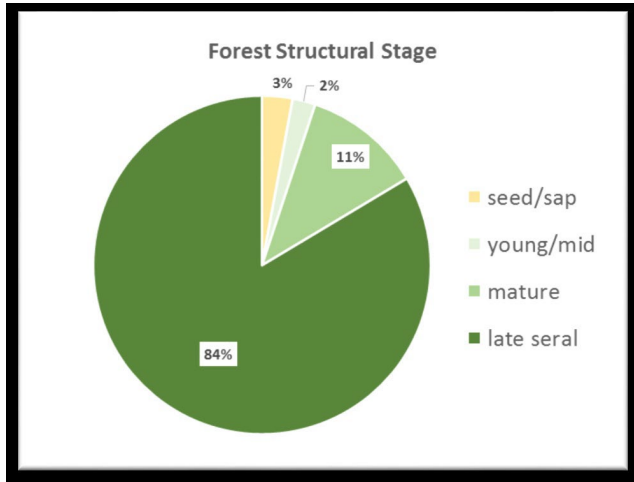


Figure 9. Forest structural stage distribution on the Caribou National Forest.

Indicator 11 – Sagebrush: 30-50 percent in greater than 15 percent canopy cover

- For ecosystem biodiversity, it is important to maintain a balanced range of canopy cover densities for sagebrush. There is a shortage of canopy cover density less than 15 percent, and a surplus of acres with a canopy cover density greater than 15 percent. This imbalance is due to a lack of disturbances. Disturbances, such as fire, result in greater ecosystem diversity on the landscape.

Indicator 12 – Tall forb

- The tall forb restoration study indicates that herbicide initially reduced tarweed and benefited the initial establishment of reseeded native vegetation. Increased organic matter from sheep bedding improved germination rates and seeding establishment. Fencing, however, did not reduce tarweed presence or result in the re-establishment of native tall-forb and grass communities. Findings also highlighted plant species with promise for restoration success for other project areas: aspen fleabane (*Erigeron speciosus*), sticky purple geranium (*Geranium viscosissimum*), white sagebrush (*Artemisia ludoviciana*), and sticky cinquefoil (*Potentilla glandulosa*).
- Approximately, 8,000 acres of tall forb were mapped on the forest in 2014 as part of the Vegetation, Classification, Mapping and Quantitative Inventory Program in Region 4. At that relatively small scale, we were unable to determine vegetation composition or trend for tall forb vegetation communities on the forest.

⁸ A broad category of stand conditions typified by large trees, slowed tree growth, and occurrence of features such as snags, down logs, and mortality of overstory trees. Potential natural condition species are dominant, although long-lived, early seral tree species (ponderosa pine, western larch, etc.) may still persist.



Figure 10. Franklin Basin tall forb plots (Forest Service photo).



Figure 11. Tall forb meadow, Soda Springs Ranger District (Forest Service photo by Garth Nelson).

Recommendations

- Increase the pace and scale of treatments. There is still a need to increase forest diversity at the landscape scale and increase early seral species like aspen. Treatments need to increase the seedling/sapling class and reduce the late seral class to “improve overall habitat diversity” and maintain a “dynamic and resilient” landscape.
- A summary of the forest management activities database (FACTS) from 2003 to 2016 indicates that about 14,000 acres of treatments that could have affected forest structural stages have occurred. That equates to about 1,000 acres per year. Most of these treatment acres were broadcast burning (12,149 acres) while 1,746 acres were harvested (about 125 acres/year average). This is about one third of what was predicted in the forest plan FEIS (2-66): 2,000 acres of burning and 1,100 acres per year of harvest. The “restoration and regeneration” emphasis of the forest plan has not met expectations. In fact, harvest has only been about 11% of what was predicted. More treatment is needed to meet restoration needs on the landscape.
- There is a need to improve the overall composition, health and resilience of the sagebrush/mountain brush vegetation community across the forest. The lack of heterogeneity in canopy cover that dominates most stands create conditions that will most likely result in larger patches of mortality from fire or other disturbance agents than would not have been common under a natural disturbance regime. Increase treatments, such as prescribed fire to help address these needs.
- Tarweed dominated sites are not easily converted to what they may have been a long time ago. Gophers, past disturbances that created soil loss, and harsh pH conditions, among other conditions are all likely contributing factors to consider with restoration efforts. One lesson for future managers on similar restoration projects or tarweeds sites may be to manage for site potential, not a version of the past, for example a high elevation sagebrush site with native forbs and bunch grasses may be a more successful restoration target than a tall forb site.
- Future restoration efforts should include the plant species identified as most promising for restoration success: aspen fleabane (*Erigeron speciosus*), sticky purple geranium (*Geranium viscosissimum*), white sagebrush (*Artemisia ludoviciana*), and sticky cinquefoil (*Potentilla glandulosa*).

Plant and Animal Diversity

The Caribou National Forest has a variety of diverse habitats that are home to approximately 300 species of nesting birds, 85 species of mammals, and 17 amphibians and reptiles. These habitats provide cover, forage, water, and reproductive sites for these species. The most diverse wildlife composition occurs in cottonwood river bottoms adjacent to rivers and streams, particularly if talus and rock outcroppings occur.



Figure 12. Great horned owl on the Caribou-Targhee National Forest, May 2020 (Forest Service photo by Kelly Wickens).

There are three species of wildlife observed on the forest listed as threatened or proposed for listing under the Endangered Species Act: grizzly bear, Canada lynx, and wolverine. Management indicator species on the Caribou National Forest are northern goshawk (indicator of mature and old forest habitats), sage grouse (indicator of sagebrush habitats), and Columbian sharp-tailed grouse (indicator of grassland and open canopy sagebrush habitats). We monitor these species to track their relative abundance and because they were considered an indication of biodiversity when the forest plan was written. As described in the Summary section, the current 2012 Planning Rule does not contain requirements or provide monitoring elements for management indicator species. Future plan revision or amendment efforts will shift to plant and animal diversity elements required under the 2012 Planning Rule and use best available science.

The forest has a diverse variety of native plants and plant communities. Rare plants are often found in unique areas such as the cold north-facing headwalls of Bloomington Lake, limestone outcroppings and other areas with features not common to the overall landscape. Bloomington Lake is a popular mountain lake in the summer months for recreationists and is also recognized as a special emphasis area for botanical resources in the Caribou Forest Plan for the unique plants found there.

Currently, there is only one known occurrence for whitebark pine on the Caribou National Forest at treeline on Caribou Mountain. Whitebark pine was recently listed as a “threatened” species under the Endangered Species Act. There are no other known occurrences of listed plant species on the forest. There are three plant species tracked as Forest Service sensitive species for the forest: starveling milkvetch (*Astragalus jejunus* var. *jejunus*), cache penstemon (*Penstemon compactus*), and Payson’s bladderpod (*Physaria carinata* ssp. *paysonii*).

Monitoring Questions, Indicators, and Key Results

Monitoring questions 7 and 8 address plant and animal diversity response to managing vegetation communities nearer to their historical range of variability.

MQ7. Are management activities providing adequate habitat to maintain populations of management indicator species?

Indicator 13 - Columbian sharp-tail grouse

- There are five known leks, four of which occur on private lands. We monitor all five because seasonal activity and habitat extend to the forest. Data since 2010 indicates that populations in southeastern Idaho are stable. Recent data from hunter-harvested birds indicate an increasing population.

Indicator 14 – Sage grouse

- There is one active lek on the Forest; however, we also monitor several additional leks immediately adjacent to the forest. Generally, sage-grouse populations statewide have shown a declining trend between 2010 and 2020 (Figure 13). The one lek on Forest Service-administered land has followed the same trend. Sage grouse are monitored in collaboration with Idaho Department of Fish and Game.

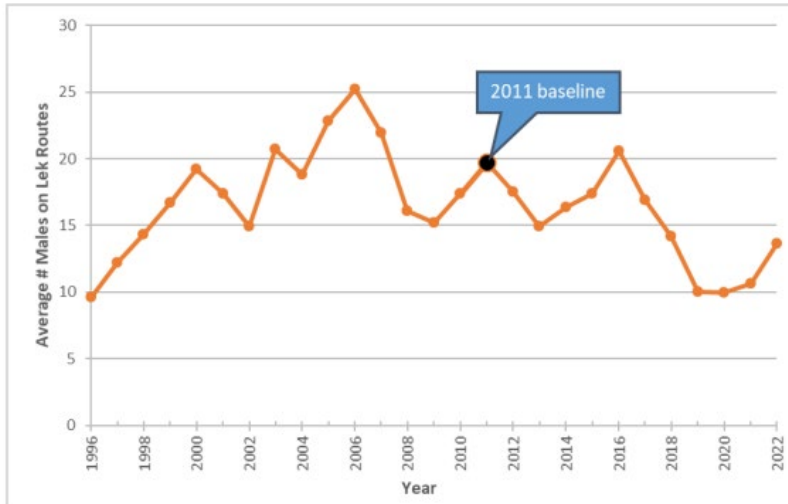


Figure 13. Statewide sage-grouse populations from 1996 to 2022, 2011 was set as a baseline for the statewide conservation planning work. Generally, the statewide trend between 2010 and 2020 was negative.

Indicator 15 – Northern goshawk

Many factors influence goshawk territory occupancy and reproductive success across time, including annual climate fluctuations, spring moisture, prey cycles and availability, natural disturbance regimes, management actions, predation and mortality. Since we did not have climate, prey, or mortality data during this reporting cycle, we assume that occupancy fluctuations across time reflect our management actions without considering climate, prey, or mortality factors.

- Based on available data, it can be inferred that management activities on the forest are being implemented to maintain goshawk habitat and populations across time.
- As of 2022, there are 37 known territories and overall northern goshawk territory occupancy trends across the forest were stable. Recent data indicates that occupancy is declining between 2021 and 2022, but this could simply be a result of reduced sample size.

Table 3. Northern goshawk nest occupancy and productivity on the Caribou National Forest 2004-2015.

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2015 ¹	Mean
Number of monitored territories	27	16	16	16	16	16	16	16	16	16	15	16
Percent occupied² territories	56%	44%	50%	31%	56%	63%	50%	25%	50%	56%	53%	37%
Percent successful³ territories	41%	14%	63%	40%	22%	60%	63%	25%	63%	55%	47%	27%

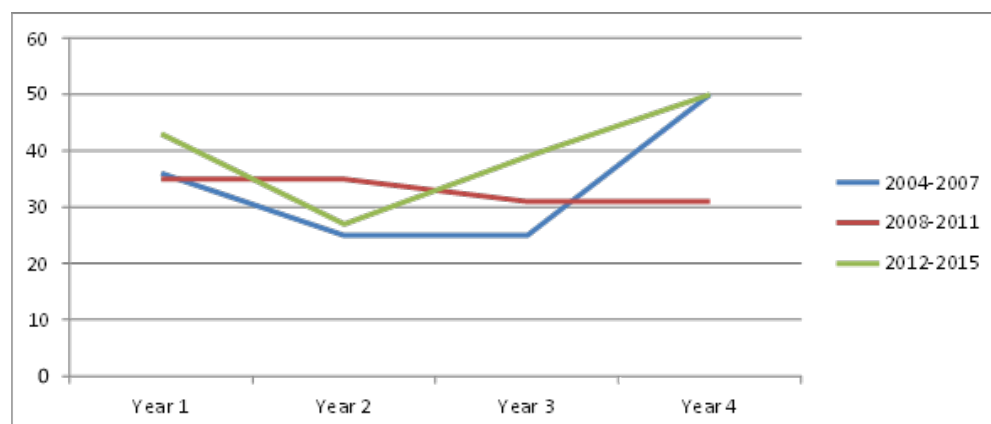
Table 4. Northern goshawk nest occupancy and productivity on the Caribou National Forest 2015, 2017, 2019-2022.

	2015	2017	2019 ¹	2020	2021	2022	Mean
Number of monitored territories	15	14	7	6	7	6	9.1
Percent occupied² territories	53%	21%	57%	83%	29%	17%	43%
Percent successful³ territories	47%	14%	29%	67%	14%	17%	31%

¹Switched in 2013 to every other year monitoring thus no data exists for 2014. Switched again in 2019 to monitoring every year but reduced territory numbers.

²Occupied territories are those where at least two individual sightings were made of an adult northern goshawk exhibiting territorial behavior.

³Successful territories are those that fledged at least one nestling.

**Figure 14. Caribou National Forest Four-Year Goshawk Nest Occupancy Percentage Comparison.**

*Year 3 (2014) during period 2012-2015 estimated to be the average of 2013 and 2015 since it was not monitored.

- From 2004-2016, there was no discernible sustained downward trend in adult occupancy except for 2008-2011. During this time, the 4-year trend was slightly downward; however, compared with the previous 4 years it was stable and slightly upward.

The forest changed the northern goshawk monitoring design in 2014 so it would be achievable given limited staff and time, and then further revised methods in 2019 so that the forest can better assess trend with a reduced monitoring rate. Because of this change, the mean percent of occupied territories cannot be meaningfully compared between methods. There is a need to work with a statistician or other partners to develop meaningful monitoring elements to help answer the question of whether we are providing adequate late seral/old growth habitat to maintain viable goshawk populations across the forest. The current monitoring indicator does not adequately address whether forest management has any impact on goshawk population viability. This is primarily because we have treated so few acres across the forest in late seral/old growth habitat since the plan was signed in 2003 that there is no way to tie changes in territory occupancy or activity over time to management actions (88 percent to 100 percent of forested acres in watersheds across the forest are currently classified as late seral/mature).

MQ8. Is the forest providing habitat to assist recovery of listed species, preclude listing of sensitive species, and protect rare species?

Indicator 16 – Bald eagle

The annual Midwinter Bald Eagle Survey has been completed by many conservation agencies and citizen scientists since 1986. Data through 2012 is readily available through an older database, however data since 2012 is in transition to a new database and is not currently available for summary reporting.

- The forest had a slightly positive trend (+2%) for midwinter bald eagle counts using available data from 1986-2012.

Indicator 17 – Peregrine falcon

- In southeast Idaho, there are two known peregrine falcon nest sites in southeastern Idaho: one on the forest and the other on private land adjacent to the forest. Both nests have been stable during the last several years. Statewide population trends for Idaho indicate a stable peregrine falcon population, with a stable to increasing population trend.

Indicator 18 – Small forest carnivores (lynx, fisher, marten, wolverine)

- Canada lynx and fisher were not detected in monitoring surveys from 2005-2022. Additionally, there have been no other sightings, observations, or indications of their presence on the forest.
- Monitoring indicates that marten are well distributed in four ecological subunits and that distribution has not changed in areas of past timber harvest programs.
- During the past 20 years, one wolverine track was observed in 2008. In another location, we observed a suspected wolverine track and a camera trap image that appeared to be a wolverine. Idaho Fish and Game, maintains an extensive camera trap grid system across southeast Idaho, including on the forest, and wolverine was not detected on any of their camera stations. Therefore, we believe that wolverines occasionally move through the area, but do not regularly reside on the forest for any length of time.

Indicator 19 – Forest owls

- Owls are surveyed at the project level and design features are incorporated into the proposed action to protect individuals, nest sites, and habitat.

Indicator 20 – Townsend's big-eared bat

- Bat counts at Minnetonka Cave, conducted in partnership with Idaho Fish and Game, show an overall increase from 2004-2022, specifically for Townsend's big-eared bat and *Myotis* species. The installed bat gate discourages illegal entry and has no signs of vandalism.
- We detected the fungus that leads to white-nose syndrome in 2021 and are monitoring bats annually for white-nose syndrome.



Figure 15. Hibernating Townsend's (Western) big-eared bat, Minnetonka Cave Hibernaculum Survey 2022 (Forest Service photo by Michael Larsen).



Figure 16. Bat gate at the mouth of Minnetonka Cave (Forest Service photo by Chris Colt).

Indicator 21 – Boreal toad

- Boreal toad monitoring was contracted, and surveys were completed, however, no report was produced. Boreal toads are known to occur in the Tin Cup drainage and are regularly observed there.

Indicator 22 – Snag recruitment versus loss from treatment

- Overall snag levels have increased across the forest since 2003. Monitoring data indicates that the forest is providing enough snags in all size classes to provide for 100 percent of the biological needs for all cavity nesting woodpeckers.
- At the vegetation management unit scale⁹, snag levels have increased from 2003 to 2016 in all but three units where there was a decrease in snag levels. However, snag estimate methods differ greatly from when the forest plan was signed, so no meaningful interpretation is possible. The forest plan process for snag guidelines likely greatly overcalculated the number of snags needed for woodpeckers. Given this, even with the decrease in snags in the three units, snag estimates would provide for 100 percent of the needs of all sizes of cavity nesting woodpeckers in these areas and across the forest. See (Silvey 2018) and (Beck 2016) for a more detailed analysis of these results.

⁹ Vegetation management unit (VMU) closely (but not entirely) represents principal watershed 5th code hydrologic unit code (HUC), the scale for assessing snag loss outlined by the Caribou monitoring plan. Summarizing by vegetation management unit is as close as we get to addressing this indicator at the principal watershed or 5th HUC scale.

- The drastic increase in mountain pine beetles from 2008 to 2011 provided an abundance of snag habitat that we predict will flow through the ecosystem for years as snags and large woody debris. The 2016 snag estimate is likely similar to current snag levels given snag retention estimates (Beck 2016).
- Timber harvest from 2003 to 2015 has not had a measurable effect on the number of snags on the landscape. We predict that insect outbreaks and wildfire are likely to be the primary drivers for creation of snags, and timber harvest will continue to have a very limited effect on cavity nesting habitat forest wide. Based on this assessment we are meeting our objective for maintaining adequate snag habitat.

Indicator 23 – Plant species of concern

- Monitoring, although limited indicates that sensitive, rare and forest watch plants are present on the forest, however information on trend is unavailable.
 - Known occurrences and suitable habitat for starveling milkvetch (*Astragalus jejunus* var. *jejunus*) were visited and documented in 2008. Cache penstemon (*Penstemon compactus*) was surveyed extensively in 2003 and reported in the previous forest monitoring report. Payson's bladderpod (*Physaria carinata* ssp. *paysonii*) is only known to occur on Caribou Mountain and is an isolated occurrence of this regionally native species. There are few known threats to Payson's bladderpod.
 - Windward's goldenbush (*Ericameria winwardii*) was surveyed in 2008. Of 10 areas surveyed, Winward's goldenbush was found at two sites—Snowslide Canyon and the Little Beaver Creek/Whiskey Creek area, including Whiskey Flat.
 - Forest Watch Plants: Green spleenwort (*Asplenium viride*) and Mt. Naomi musineon (*Musineon naomiensis*) were observed at Bloomington Lake in 2021. Both species were located, and no new threats detected.



Figure 17. Windward's goldenbush, a rare plant surveyed and documented on the Caribou National Forest (Forest Service photo by Rose Lehman).

Recommendations

- Transition to the 2012 Planning Rule requirements for focal species and species of conservation concern. Determine if this is best achieved through forest plan revision or amendment. This will allow the forest to adequately address plant and animal diversity by developing more meaningful monitoring elements to help answer the question: Is the forest providing adequate habitat to maintain viable plant and animal populations across the planning area? Monitoring sage grouse and sharp-tailed grouse lek counts does not inform whether we are providing adequate habitat to maintain populations across the planning unit, because there are so few leks on the forest.
- Partner with the Intermountain Bird Observatory to improve northern goshawk monitoring methods and statistical analysis to help us better answer the monitoring question. Northern goshawk monitoring methods were changed in 2014 which does not allow the forest to compare recent results against past results. A new monitoring method is needed to more adequately address whether management actions are impacting the ability for goshawks to maintain viable populations to persist over time.
- Obtain midwinter bald eagle survey summary data from 2012 to present once it is available from the Avian Knowledge Network. Refine the monitoring plan activity to align with existing relevant monitoring and data sources.
- Refine the peregrine falcon monitoring plan activity to align with existing relevant monitoring and data sources.
- Refine forest owl monitoring to be more relevant to habitat changes due to vegetation management.
- Continue expanded monitoring for Townsend's big-eared bat across the Forest in partnership with Idaho Fish and Game.
- Work with specialists at Idaho Fish and Game and the Bat Working Group to improve the design of grate structures to maximize bat access to the cave while prohibiting illegal human entry.
- Develop snag monitoring indicators that better assess snag levels at the scales indicated by the forest plan guidance (principal watershed 5th hydrologic unit code level and management prescription area). Work on need for change to address errors in snag level assessment for biological potential in preparation for forest plan revision.
- Revisit known occurrences of rare plants to the extent possible over the next five years and share with the Idaho Fish and Game Natural Heritage Program and formally document in the Forest Service Natural Resource Management System.
- Work with the Intermountain Regional Office concerning sensitive plant species updates based on the best available scientific information and support working with Idaho Native Plant Society Idaho Rare Plant Working Group concerning the identification and rarity ranking of species known to occur on the Caribou National Forest.
- Update the Caribou Forest Watch species list consistent with intent of the forest plan. Use the new floristic inventory that will be completed in 2023 to assess what species should be of conservation concern on the Caribou-Targhee National Forest and Curlew National Grassland.
- Continue to transition monitoring to the 2012 Planning Rule in preparation for forest plan revision, including identifying and adopting species of conservation concern and focal species.

Livestock Grazing and Mineral Resource Development

Rangelands form a major component of ecosystems in the Caribou National Forest. Vegetative communities represented include grasslands, shrub-lands, woodlands, riparian ecosystems, and open canopied forests. Forest rangelands are managed with the goal of providing healthy ecosystems and sustainable resource uses. Well-managed rangelands provide wildlife habitat, livestock forage, stable watersheds, and recreational opportunities.

Our monitoring plan instructs us to monitor during and after grazing period in key areas on at least one third of the allotments. Riparian area grazing standards are established through the [Caribou Grazing Implementation Guide](#). Upland standards are established through the Caribou Forest Plan. The standards have been incorporated into grazing practices through the term grazing permits, allotment management plans, and annual operating instructions. Monitoring of the standards and guides is done by Forest Service range staff.

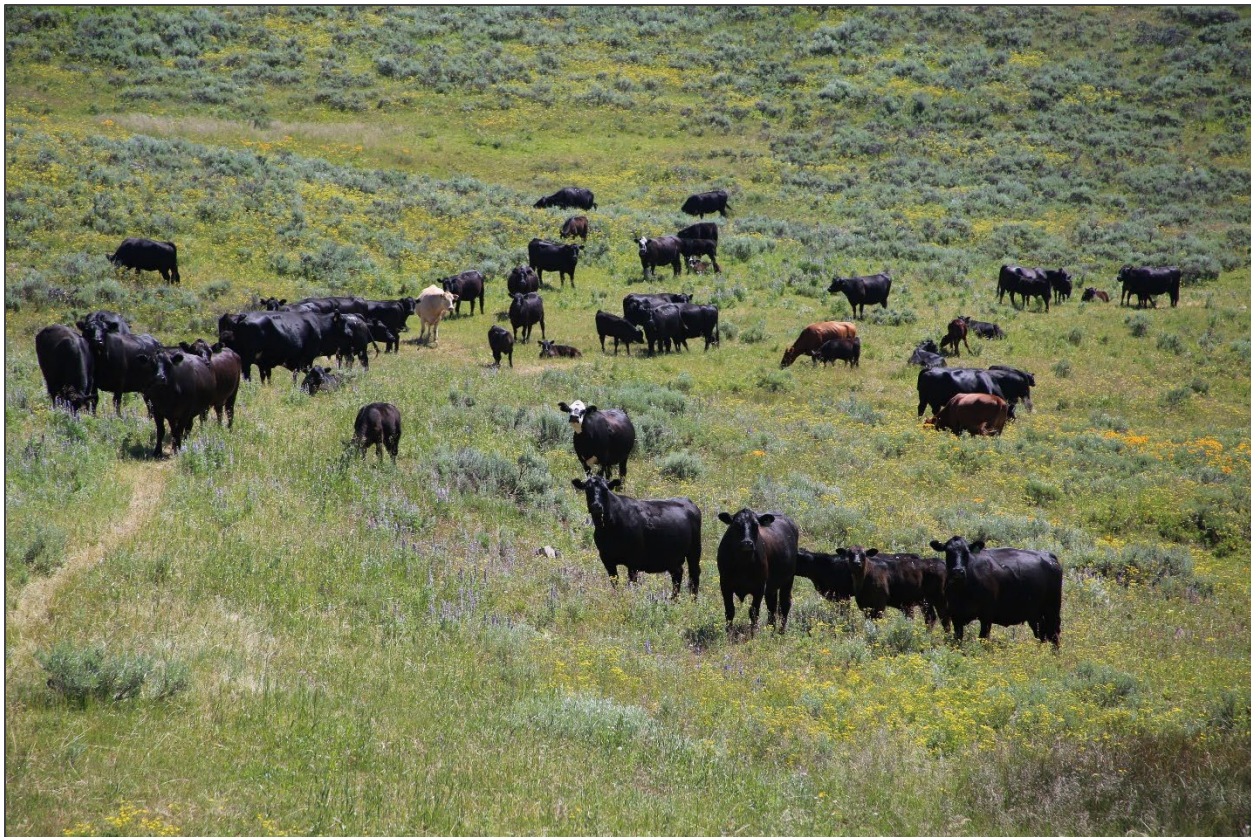


Figure 18. Cows grazing on the Soda Springs Ranger District, June 2017 (Forest Service photo by Charity Parks).

Mineral resources on the forest land include leasable minerals (phosphate, coal, oil gas), locatable minerals (gold, silver, travertine), and mineral materials (gravel). The unique geologic history of southern Idaho makes it one of the largest sources of phosphate ore in the United States, and phosphate mining has been an important industry in the area since the early 20th century. Phosphate ore is accessed and mined in the region through the creation of open pits. If not managed properly, selenium and other hazardous substances can potentially pollute the nearby water, soil, sediments, or plants. The Comprehensive Environmental Response, Compensation, and Liability Act provides a framework to address these issues. Investigations and planning for cleanup at several sites are ongoing under the oversight of the U.S. Environmental Protection Agency and/or the USDA Forest

Service and/or the Idaho Department of Environmental Quality, exercising its authorities under state law. The Bureau of Land Management, Shoshone-Bannock Tribes, and U.S. Fish and Wildlife Service participate as support agencies.

Monitoring Questions, Indicators, and Key Results

Monitoring question 9 addresses the compatibility of livestock grazing with other resource goals. Monitoring questions 10 and 11 address mineral resource development consistency with other resource uses.

MQ9. Is the livestock grazing permitted by the forest maintaining or allowing recovery of riparian and upland vegetation?

Indicator 24 – Compliance with riparian and upland standard

- At least one-third of allotments have been monitored annually in key areas since 2003. During the last 10 years an average of 82 percent of key areas were monitored annually. Since 2013, estimated compliance ranged from 87 percent to 100 percent.
- In 2005, all term grazing permits were modified to meet forage utilization standards. In addition, 85 allotments (66 percent) followed the Grazing Implementation Guide during allotment planning. No notices of non-compliance were issued from 2020-2022. In the past 10 years, notices of non-compliance have ranged from 0 to 13 percent of monitored allotments (average less than 1 percent). Notices of non-compliance have been issued for a variety of issues and have been used to implement forest plan goals and objectives.

Indicator 25 – Actual use

- Authorized livestock use numbers compared to permitted use from 2003 – 2022, were closely related, see table below.

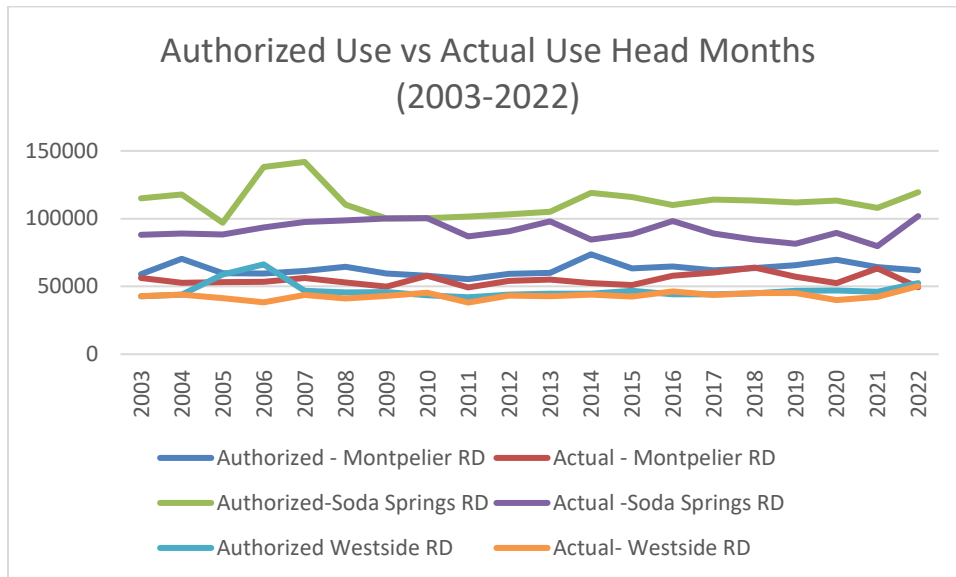


Figure 19. Actual use from 2003-2022.

Indicator 26 – Riparian and long-term trend

- 153 riparian and 189 upland long-term trend studies were established in a 20-year period. These studies are being used to inform allotment management planning and rangeland best management practices. The data document a stable to upward trend.

MQ10. Are best management practices being followed and are they adequate to prevent resource degradation?

Indicator 27 – Water quality

- There were no reported water quality issues from 2003-2021.

Indicator 28 – Soil conditions

- No soil issues were reported from 2003-2021 for approved mining activities or permitted mineral materials sites such as gravel pits.
- There was one instance, in 2008, in which a mine had a deficit of topsoil required for reclamation. In that case, we worked with the Bureau of Land Management and the mine operator to identify a suitable borrow source.

Indicator 29 – Vegetation

- For phosphate mines, there were some minor instances for which we identified inadequate monitoring/treatment of noxious weeds. These were documented in inspection reports and tracked to ensure compliance.
- Between 2003 and 2021, there were two mineral materials sites where noxious weeds were documented, and the operator was immediately notified of required action. Compliance was ensured by follow-up inspections.

MQ11. Are terms of mine plans and reclamation goals met?

Indicator 30 – Condition of reclaimed areas

- No issues were identified from 2003-2021.

Recommendations

- Continue to provide technical support to mine managers and inspectors.

Fuels Management

At more than 3 million acres, the Caribou-Targhee National Forest has a robust fire management program. Operating out of four different zones (Henry's Fork, South Fork, Portneuf, and Bear River), engines and crews are strategically based to provide rapid and effective fire response. In the right place at the right time and under the right conditions, wildland fire can create many environmental benefits, such as promoting a more historic fire regime and reducing grass, brush, and trees that can fuel large and severe wildfires and improve wildlife habitat. In the wrong place at the wrong time under the wrong conditions, wildfires can wreak havoc and threaten lives, homes, communities, and natural and cultural resources.

The Caribou National Forest has been implementing fuels management and wildland fire planning for decades. In 2003 the forest completed its first Wildland Fire Use Guidebook and partnered with the Bureau of Land Management to implement a pilot wildland urban interface fuels reduction project as part of the Healthy Forest Initiative. The forest's current focus areas are national fire situational awareness for mapping current fires in partnership with the National Wildfire Coordinating Group; fire prevention and education integrated with the Firewise USA program to help people living in the wildland urban interface; and fuel management and treatments. The program is also attempting to align with the national cohesive strategy with a focus on three key areas: 1) restore and maintain landscapes, 2) promote fire adapted communities, and 3) response to wildfire.

Prescribed fire and mechanical fuels treatments are key management techniques to protect high value areas, such as homes within the wildland urban interface, and to restore important ecological processes. Fuels reduction improves forests and rangelands resilience to disturbances such as wildfire, insect outbreaks, and non-native plant invasions.



Figure 20. Fall Creek firing operations (Forest Service photo by Erich Horn Jr.).

Monitoring Question, Indicators, and Key Results

Monitoring question 12 addresses whether fuels management activities are meeting the intent of the forest plan by helping management response to wildfires and by maintaining and restoring ecosystem processes with a natural disturbance.

MQ12. Are management activities reducing wildland fire risk?

Indicator 31 – Fuel levels in the wildland-urban interface

- Monitoring past projects in the wildland urban interface and on the landscape indicates that we have been successful at reducing wildland and activity fuels in alignment with vegetation management objectives.
- Mechanical and prescribed fire treatments on all ranger districts have reduced wildland fuels and vegetation cover. Treatments promote younger seral conditions that can limit fire spread and intensity and promote habitat diversity.



Figure 21. Treated areas in the wildland urban interface near Pocatello, ID highlight wildfire risk. Juniper cover and dense brush in untreated areas would result in higher flame lengths during suppression activities. Vegetation treatment of fuels in juniper and open brush/grass would result in lower intensity during wildfire conditions.

Indicator 32 – Fire condition classes

Fire regime condition class is an assessment used to determine the degree of ecological departure from historical vegetation, fuels, and disturbance regimes. Condition classes 2 and 3 indicate greater departure from historical conditions.

- Modeling indicates that project implementation will slightly reduce the current departure from historical vegetation, fuels, and disturbance regimes in the overall landscape condition. However, landscape-scale fire condition class monitoring on the Caribou National Forest shows that condition classes 2 and 3 continue to dominate much of the landscape.
- Recent project analysis on various portions of the forest reveal on a landscape scale (5th Code HUC) that after treatment, many areas are still projected to be dominated by condition class 2 and 3. While shifting acres at the project and stand scale is appropriate in these analyses, it demonstrates that the scale of needed treatment across the watersheds is lacking to shift a majority of condition classes from 2 and 3 to class 1 (move toward historical conditions). See Figure 22 for illustration.



Figure 22. Photos from 1910 (top) and 2006 (bottom) to show change in species composition and structure in Johnson Creek, Soda Springs District. (2006 photo recreated by Victor Bradfield, Caribou-Targhee National Forest.)

Recommendations

- Increase the pace of projects to reduce more fuels in the wildland urban interface (WUI) of the Caribou National Forest.
- Increase the spatial size of projects to restore fire regime condition class 2 and 3 back to historic or reference conditions.
- Continue to utilize prescribed fire and wildfire managed for resource benefit to help restore ecosystems and maintain natural processes on the landscape.

Economic and Social Benefits

We manage the Caribou National Forest for a healthy and diverse forest with a mosaic of different sizes, ages and heights of tree species. The emphasis is on scheduled timber production, timber growth, and yield while maintaining or restoring forested ecosystem processes and functions to resemble historical ranges of variability more closely with consideration for long-term forest resilience. Several management objectives are tied to vegetation management, including timber production, road systems, motorized use, livestock grazing, recreation site development, and firewood availability.

Monitoring allows managers to identify forest types that are under-represented across the landscape and areas where the pace and scale of treatment does not meet the desired goals.

Monitoring Question, Indicators, and Key Results

Monitoring question 14 addresses the desired condition to provide wood fiber, while maintaining a healthy, sustainable forest.

MQ14. Is the timber program meeting the output expectations of the plan?

Indicator 34 – Total sale program quantity

- As seen in the figure below, we have been inconsistent in achieving the annual objective for total sale program quantity, which is the total volume harvested through our timber program. From 2003-2012, we were within 25 percent of our objective, but during from 2013-2022, we are more than 25% below objective. However, during the entire reporting period from 2003-2022, we met the threshold defined in our forest plan of deviating less than 25 percent from our objective. This was primarily due to a larger demand and harvest of personal-use firewood and harvest from mining activities. Personal use firewood harvest was predicted much lower in the forest plan and there was no estimation of timber harvest resulting from mining activity.

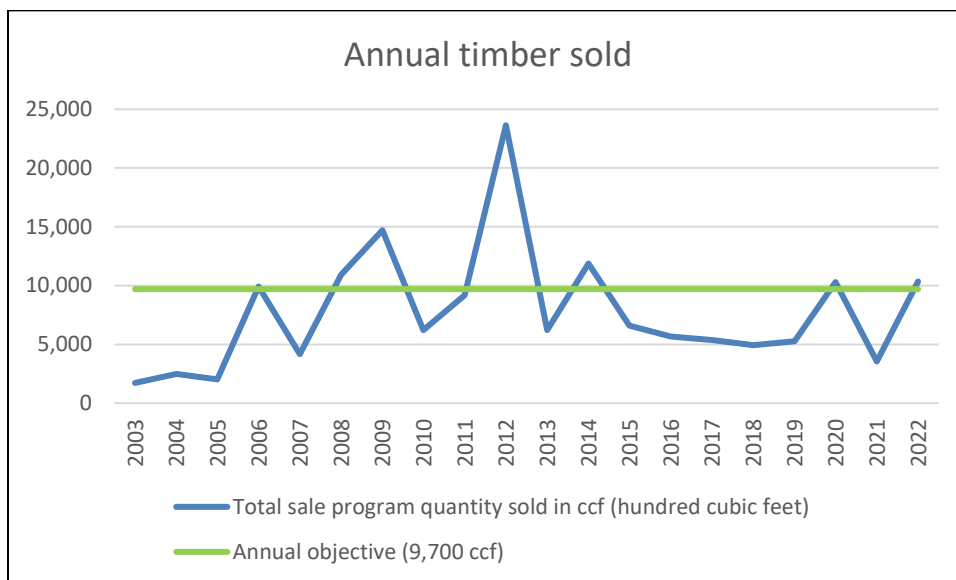


Figure 23. Annual timber sold from 2003 to 2022.

Indicator 35 – Allowable sale quantity

- Based on the expectations of our forest plan, more timber harvest should have occurred on suitable timber lands to meet our annual objective for allowable sale quantity, which is the maximum amount of timber potentially available from lands suitable for timber production. From 2003 to 2022, only 2 years met or exceeded our threshold (see figure below). Overall, we averaged 25 percent of our objective. Several factors have contributed to our failure to meet our objective: annual budgets and organizational capabilities; and environmental analysis, appeals, and litigation. In some years, volume sold was focused on removing timber for mining activities rather than achieving restoration activities on suitable timber land. In recent years, compliance with outdated forest plan standards and guidelines, and litigation and appeals have been the primary reason we have not met objectives for timber harvest.

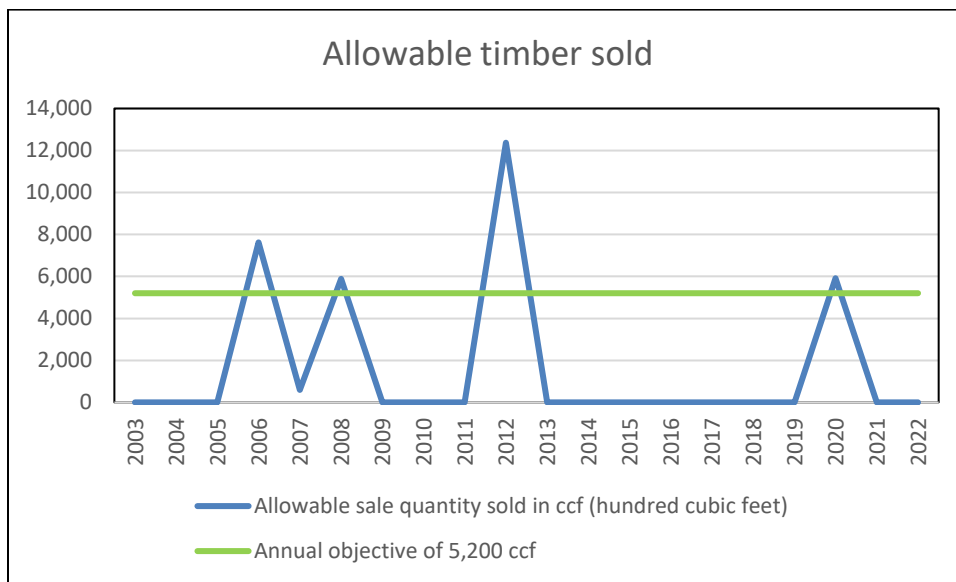


Figure 24. Allowable timber sold from 2003 to 2022.

Indicator 36 – Acres treated on unsuitable lands

- The forest plan's primary objective for treatment of unsuitable acres is to restore aspen. As the figure below shows, we have not achieved our objective for timber harvest on unsuitable acres where restoring aspen was the primary emphasis. Currently, no timber harvest has occurred on unsuitable lands to restore aspen. Additionally, the acres treated on unsuitable lands is primarily in phosphate mining areas.

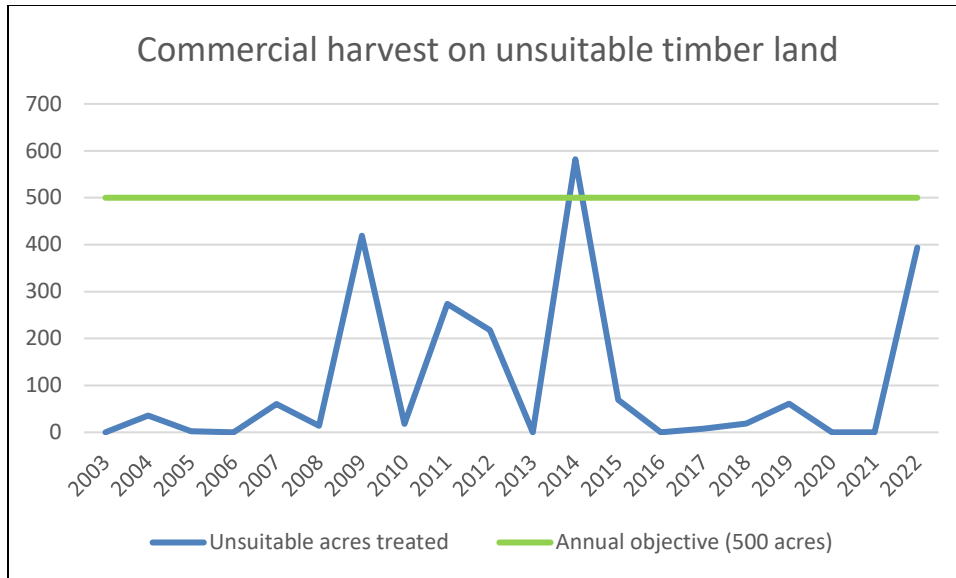


Figure 25. Commercial Harvest on unsuitable timber land from 2003 to 2022.

Recommendations

- To better determine if the timber program is meeting expectations of the forest plan, monitoring questions should be refined. For total sale program quantity and allowable sale quantity, a breakdown of timber volume by product (sawtimber, non-sawtimber, fuelwood) would be more informative for determining whether we are meeting the social and economic needs of the community.
- To be consistent with analysis in the forest plan, timber volume harvested due to special use areas such as rights of way or mining activity should not be accounted for in the total sale program number and should be tallied separately. Additionally, only treatments that emphasize ecological restoration objectives on unsuitable lands should be monitored.

Visitor Use

Recreation activities provide enjoyment for millions of national forest and grassland visitors. Recreation improves physical and mental health and helps people connect with the outdoors. Participation in recreational activities is how most of us experience our national forests and grasslands. The Caribou National Forest boasts rugged mountains, fertile valleys, rivers, campgrounds, wildlife, and scenery. Many visitors enjoy camping, hiking, fishing, and hunting among other activities.



Figure 26. Bloomington Lake is a popular recreation destination on the Montpelier Ranger District (Forest Service photograph by Joe Beck).

Monitoring Questions, Indicators, and Key Results

Monitoring questions 13, 15, 16, and 17 address scenery objectives and visitors' recreational experience.

MQ13. Do recreation experiences and settings meet public expectations of quality and variety while complementing other resources?

Indicator 33 – User satisfaction

Monitoring results are compiled from across the Caribou-Targhee National Forest.

- For developed sites on the Caribou-Targhee National Forest, results from National Visitor Use Monitoring¹⁰ reports from 2005, 2010, 2015, and 2020 show high levels of visitor satisfaction. On average, across the 15 years, 93 percent of visitors reported satisfaction with access to developed sites. Notably, visitor satisfaction with services at developed sites improved from 80 percent in 2005 to 95 percent in 2020.
- For undeveloped sites, visitor satisfaction averaged 90 percent in 2005, but decreased to 77 percent in 2010. By 2020, visitor satisfaction had improved to an average of 94 percent.
- Total visitation numbers to the Caribou-Targhee National Forest have fluctuated across the last reporting period, with a low in 2015 of 1,468,000 rising to 2,403,000 visits in 2020. Meanwhile, the amount of time visitors spend on the forest has varied. In 2010, which was a high year for overall visits (2,065,000), visits to

¹⁰ The National Visitor Use Monitoring program surveys visitors to National Forest System lands every 5 years, providing statistically sound estimates of visitation to each national forest as well as information about who these visitors are demographically, why they come to the national forests, how satisfied they are with the facilities and services provided, and how much money they spend on their visit.

day-use sites were short; half of those visits lasted at most 2 hours. The overall visit length, which includes overnight stays on our forest was only 12 hours in 2010. See figure below.

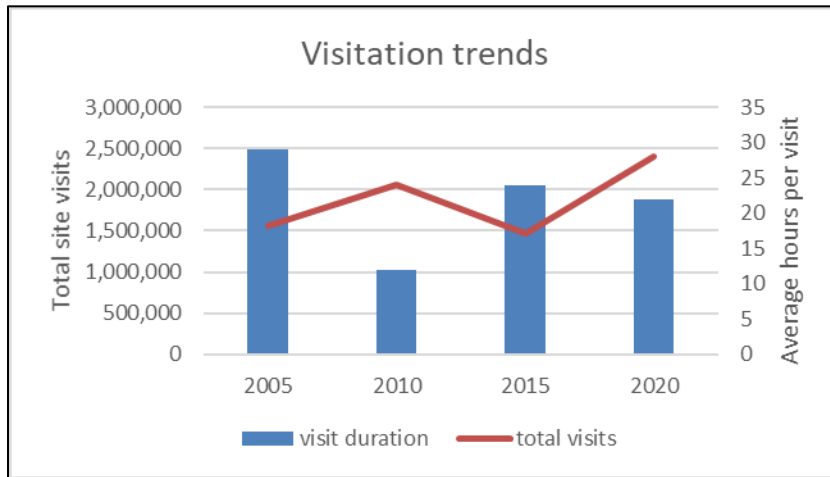


Figure 27. Visitor trends from 2005 to 2020.

We do not have data to support indicators 37 – 40, and thus cannot provide results for monitoring questions:

MQ15 – Are management activities adversely affecting recreation opportunities?

MQ16 – Are management activities adversely affecting recreation opportunities?

MQ17 – Is recreation adversely affecting other resources?

Recommendations

- Continue to leverage National Visitor Use Monitoring reports for information.
- Develop a more meaningful monitoring question(s) and indicator(s) for assessing recreation on the Forest. Utilize existing reporting and data collection sources such as NRM and rec.gov to collect and track relevant recreation data.

Summary Table

Caribou Forest Plan monitoring questions and evaluation addressed in this report. Possible types of recommendations include changes to the land management plan, changes in management activities or the monitoring program, and recommendations for a new assessment.

Table 5. Summary of monitoring recommendations

Monitoring question (MQ)	Indicators	Progress Toward Land Management Plan Desired Conditions and Objectives	Recommended Action
MQ1. Are management activities allowing soils to rebuild?	1. Woody residue	Projects are consistently meeting this guideline.	
MQ2. Are management activities meeting the Regional Soil Quality Standards?	2. Surface erosion 3. Detrimental soil disturbance	Erosion tanks are maintained and monitored to provide baseline data. Projects are allowing soils to rebuild. Regional soil quality guidance and forest plan guidance for desired conditions are being met.	
MQ3. Are habitats on the Forest adequate to provide for all life stages of aquatic species?	4. Fish habitat conditions 5. Fish distribution changes	Trout abundance was a decreasing function of percent surface fines. Trout abundance may have slightly increased within the sampling period. Northern leatherside chub are declining relative to historical levels due to habitat fragmentation	Improve monitoring methods for future fish data collection. Seek support and funding to complete fish surveys. Continue stream restoration work.
MQ4. Are standards and guidelines protecting beneficial uses?	6. Water quality on WQLS ¹¹ 7. BMP ¹² compliance and effectiveness	Collaboration with the states of Idaho and Wyoming helps ensure that water quality is maintained or improved. Best management practices for management activities are implemented and effective.	Continue water quality monitoring coordination with state agencies.
MQ5. How long does it take for habitat types to recover from hydrologic disturbance?	8. Ground cover	Recovery after hydrologic disturbance has been evaluated on a variety of habitat types.	

¹¹ WQLS – water quality limited streams

¹² BMP – best management practices

Monitoring Evaluation Report – Caribou National Forest

Monitoring question (MQ)	Indicators	Progress Toward Land Management Plan Desired Conditions and Objectives	Recommended Action
MQ6. Are management activities and wildland fire use moving the Forest towards HRV ¹³ and improving ecological sustainability?	9. Aspen: 30-40% mature and old 10. Conifers: 30-40% mature and old 11. Sagebrush: 30-50% in >15% canopy cover 12. Tall forb	<p>Overall, there is not enough forest structural diversity, and mature and old forests are overrepresented.</p> <p>Sagebrush with dense canopy cover is also overrepresented across the Forest. We were unable to determine tall forb trends.</p>	<p>Increase the pace and scale of treatments to increase forest diversity at the landscape scale and promote early seral species like aspen.</p> <p>Increase treatment, such as prescribed burning to improve the overall composition, health, and resilience of the sagebrush/mountain brush vegetation community.</p> <p>Consider using identified plant species for future restoration efforts.</p>
MQ7. Are management activities providing adequate habitat to maintain populations of Management Indicator Species?	13. Columbian sharp-tailed grouse 14. Sage grouse 15. Northern goshawk	<p>Data indicates Columbian sharp-tailed grouse populations are stable to increasing.</p> <p>Statewide sage-grouse populations show a declining trend.</p> <p>Overall, northern goshawk territory occupancy trends across the Forest were stable.</p>	<p>Work with partners and universities to update northern goshawk monitoring methods and statistical analysis to better answer the monitoring question.</p> <p>Continue to transition monitoring to meet 2012 Planning regulations in preparation for forest plan revision, including identifying and adopting species of conservation concern and focal species.</p>
MQ8. Is the Forest providing habitat to assist recovery of listed species, preclude listing or sensitive species, and protect rare species?	16. Bald eagle 17. Peregrine falcon 18. Small forest carnivores (lynx, fisher, marten, wolverine) 19. Forest owls 20. Western big-eared bat 21. Boreal toad	<p>Midwinter bald eagle counts from 1986-2012 had a slightly positive trend.</p> <p>Peregrine falcon nests have been stable; statewide population trends are stable to increasing.</p> <p>There is no indication of a sustained downward trend of small forest carnivore species on the Forest.</p> <p>Owls are surveyed at the project level.</p> <p>Bat counts show an overall increase; bat gate has maintained its structure.</p> <p>We do not have summary data for boreal toad surveys.</p>	<p>Obtain recent bald eagle survey data once it's available. Refine bald eagle monitoring activity to align with existing relevant monitoring and data sources.</p> <p>Refine peregrine falcon monitoring activity to align with existing relevant monitoring and data sources.</p> <p>Refine forest owl monitoring to be more relevant to habitat changes due to vegetation management.</p> <p>Refine bat monitoring to align with current efforts through partnerships. Work with partners to improve grate structure design.</p>

¹³ HRV – historical range of variability

Monitoring Evaluation Report – Caribou National Forest

Monitoring question (MQ)	Indicators	Progress Toward Land Management Plan Desired Conditions and Objectives	Recommended Action
(MQ8 continued)	<p>22. Snag recruitment vs. loss from treatment</p> <p>23. Plant species of concern</p>	<p>Snag habitat has improved; timber harvest has not had a measurable effect on snags. A number of plant species of concern were surveyed, and no new threats detected.</p>	<p>Develop snag monitoring indicators to better assess snag levels at appropriate scales. Address errors in snag level assessment for biological potential in preparation for forest plan revision.</p> <p>Work within the Forest Service and with partners to update and monitor sensitive plant species using best available science. Use partnerships and best available science to update plant species of concern.</p> <p>Continue to transition monitoring to meet 2012 Planning regulations in preparation for forest plan revision, including identifying and adopting species of conservation concern and focal species.</p>
MQ9. Is the livestock grazing permitted by the Forest maintaining or allowing recovery of riparian and upland vegetation?	<p>24. Compliance with riparian and upland standards</p> <p>25. Actual use</p> <p>26. Riparian and long-term trend</p>	<p>Overall, livestock grazing is compatible with other resource goals and maintains or allows recovery of riparian and upland vegetation.</p>	
MQ10. Are BMPs being followed and are they adequate to prevent resource degradation?	<p>27. Water quality</p> <p>28. Soil conditions</p> <p>29. Vegetation (As required by mine and reclamation plans)</p>	<p>BMPs are followed as required by mine and reclamation plans. Compliance is ensured with follow-up inspections as needed.</p>	
MQ11. Are terms of mine plans and reclamation goals met?	<p>30. Condition of reclaimed areas.</p>	<p>We conduct regular inspections, and no issues were identified.</p>	
MQ12. Are management activities reducing wildland fire risk?	<p>31. Fuel levels in the wildland-urban interface</p> <p>32. Fire condition classes</p>	<p>Mechanical and prescribed fire treatments on all ranger districts have reduced wildland fuels and vegetation cover</p> <p>Project implementation will slightly reduce the current departure from historical conditions, but condition classes 2 and 3 will still dominate the landscape.</p>	<p>Increase the pace and scale of projects to reduce more fuels and restore fire regime condition classes back to historic or reference conditions.</p>

Monitoring Evaluation Report – Caribou National Forest

Monitoring question (MQ)	Indicators	Progress Toward Land Management Plan Desired Conditions and Objectives	Recommended Action
MQ13. Do recreation experiences and settings meet public expectations of quality and variety while complimenting other resources?	33. User satisfaction	Visitor satisfaction is high as measured by the National Visitor Use Monitoring program.	
MQ14. Is the timber program meeting the output expectations of the Plan?	34. Total sale program quantity 35. Allowable sale quantity 36. Acres treated on unsuitable lands	We are below objectives for all metrics and are not meeting forest plan desired conditions.	Refine monitoring questions. Consider increasing management activities.
MQ15. Are project activities meeting plan scenery objectives?	37. Scenery objectives	No data	Update monitoring using existing, relevant monitoring and data sources
MQ16. Are management activities adversely affecting recreation opportunities?	38. ROS category	No data	Update monitoring using existing, relevant monitoring and data sources
MQ17. Is recreation adversely affecting other resources?	39. Dispersed campsite conditions 40. Field conditions survey of trails	No data	Refine monitoring indicators; use existing relevant monitoring and data sources.

Partners and Collaborators

We want to thank and include all the partners and collaborators that have helped in our monitoring, and we look forward to future partnerships.

- American Penstemon Society
- Avian Knowledge Network
- Bureau of Land Management
- City of Pocatello
- Henry's Fork Foundation
- Idaho Department of Environmental Quality
- Idaho Department of Fish and Game
- Idaho Department of Lands
- Idaho Department of Parks and Recreation
- Idaho OHV Public Outreach Project
- Idaho Forest Products Commission
- Midwinter Bald Eagle survey participants
- Pocatello Trails Collaborative
- Wyoming Department of Environmental Quality

References

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