

Biennial Monitoring Evaluation Report for the Mt. Baker - Snoqualmie National Forest



Photo: Sunrise from Artist Point in winter. Courtesy of A. Kachulis.



For More Information Contact:

Mt. Baker Snoqualmie National Forest, Supervisor's Office
2930 Wetmore Ave. Suite 3A
Everett, WA 98201
(425) 783-6000
<https://www.fs.usda.gov/mbs>

In accordance with Federal civil rights law and U.S. Department of Agriculture (USDA) civil rights regulations and policies, the USDA, its Agencies, offices, and employees, and institutions participating in or administering USDA programs are prohibited from discriminating based on race, color, national origin, religion, sex, gender identity (including gender expression), sexual orientation, disability, age, marital status, family/parental status, income derived from a public assistance program, political beliefs, or reprisal or retaliation for prior civil rights activity, in any program or activity conducted or funded by USDA (not all bases apply to all programs). Remedies and complaint filing deadlines vary by program or incident.

Persons with disabilities who require alternative means of communication for program information (e.g., Braille, large print, audiotape, American Sign Language, etc.) should contact the responsible Agency or USDA's TARGET Center at (202) 720-2600 (voice and TTY) or contact USDA through the Federal Relay Service at (800) 877-8339. Additionally, program information may be made available in languages other than English.

To file a program discrimination complaint, complete the USDA Program Discrimination Complaint Form, AD-3027, found online at http://www.ascr.usda.gov/complaint_filing_cust.html and at any USDA office or write a letter addressed to USDA and provide in the letter all of the information requested in the form. To request a copy of the complaint form, call (866) 632-9992. Submit your completed form or letter to USDA by: (1) mail: U.S. Department of Agriculture, Office of the Assistant Secretary for Civil Rights, 1400 Independence Avenue, SW, Washington, D.C. 20250-9410; (2) fax: (202) 690-7442; or (3) email: program.intake@usda.gov.

USDA is an equal opportunity provider, employer, and lender.

About our Plan Monitoring Program

Purpose

The purpose of the biennial monitoring evaluation report is to help the responsible official determine whether a change is needed in forest plan direction, such as plan components or other plan content that guide management of resources in the plan area. The biennial monitoring evaluation report represents one part of the Forest Service's overall monitoring program for this national forest unit. The biennial monitoring evaluation report is not a decision document—it evaluates monitoring questions and indicators presented in the Plan Monitoring Program, Chapter 5, of the forest plan, in relation to management actions carried out in the plan area.

The 1990 MBS Land and Resource Management Plan stated the Forest would consider revisions every 10-15 years, with updates occurring every 5 years. Although this has not occurred, this monitoring report hopes to guide future revisions, updates, and other management decisions when they occur. The monitoring questions in this report were developed in 2016 to comply with FSH 1909.12 Section 32, Plan Monitoring Program.

Our monitoring plan covers these nine topics required under FSH 1909.12, in addition to social, economic and cultural sustainability. You'll find each of these topics addressed in this report.

1. The status of select watershed conditions.
2. The status of select ecological conditions including key characteristics of terrestrial and aquatic ecosystems.
3. The status of focal species to assess the ecological conditions required under § 219.9.
4. The status of a select set of the ecological conditions required under § 219.9 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. The 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 may be affecting the plan area.
7. Progress toward meeting the desired conditions and objectives in the plan, including for providing multiple use opportunities.
8. The effects of each management system to determine that they do not substantially and permanently impair the productivity of the land (16 U.S.C. 1604(g)(3)(C)). (36 CFR 219.12(a))
9. The contributions of the National Forest to social, cultural and economic sustainability.

How Our Plan Monitoring Program Works

Monitoring and evaluation requirements have been established through the National Forest Management Act (NFMA) at 36 CFR 219. Additional direction is provided by the Forest Service in Chapter 30 – Monitoring – of the Land Management Handbook (FSH 1909.12).

The Mt. Baker-Snoqualmie monitoring program was developed in 2016. Monitoring questions and indicators were selected to inform the management of resources on the plan area and not every plan component was determined necessary to track [36 CFR 219.12(a)(2)]. See the Plan Monitoring Program at <https://www.fs.usda.gov/main/mbs/landmanagement/planning> for discussion on how the monitoring questions were selected and consistent with the 2012 planning regulations contained in 36 CFR 219.12.

Providing timely, accurate monitoring information to the responsible official and the public is a key requirement of the plan monitoring program. This biennial monitoring evaluation report is the vehicle for disseminating this information.

Monitoring Objectives

The objectives of our monitoring plan include:

- Assess the current condition and trend of selected forest resources.
- Document implementation of the Forest Plan monitoring Program
- Evaluate relevant assumptions, changed conditions, management effectiveness, and progress towards achieving the selected desired conditions, objectives, and goals described in the Forest Plan.
- Assess the status of previous recommended options for change based on previous monitoring & evaluation reports.
- Document scheduled monitoring actions that have not been completed and the reasons and rationale why.
- Present any new information not outlined in the current plan monitoring program that is relevant to the evaluation of the selected monitoring questions.
- Present recommended change opportunities to the responsible official.

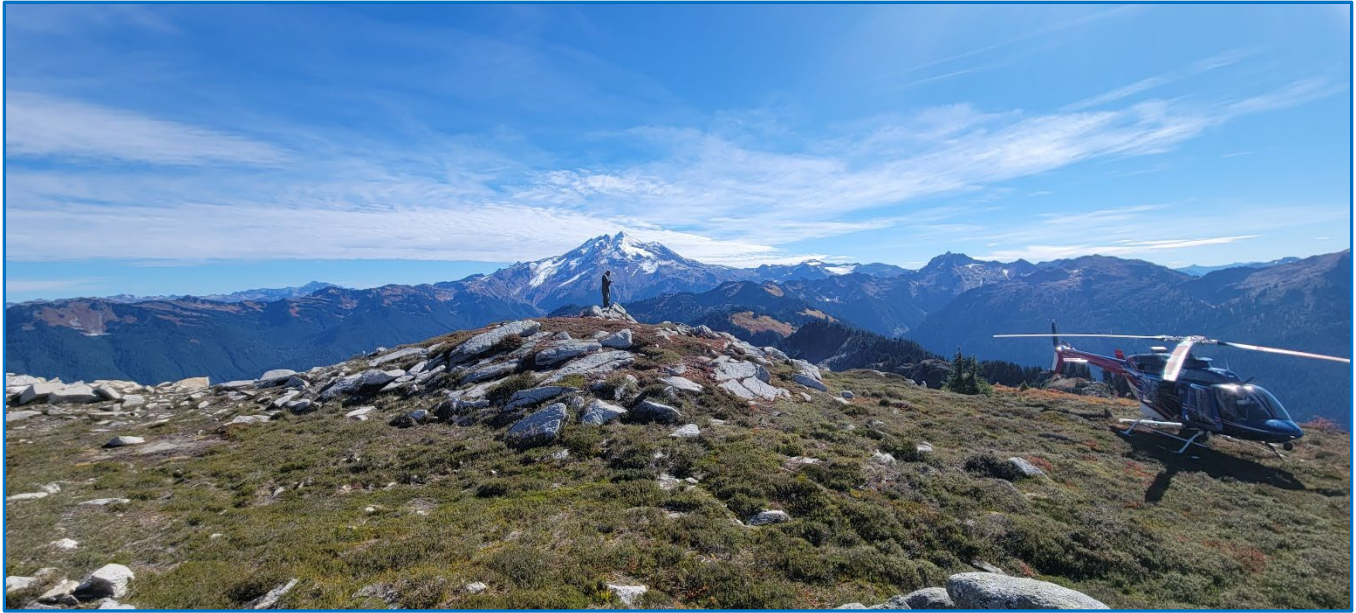


Photo: A helicopter lands near Lost Creek, looking towards Glacier Peak. Courtesy of Z. Fister.

Monitoring Results Summary

The Mount Baker Snoqualmie National Forest created a biennial monitoring program in 2016. Staff turnover and position vacancies delayed the start of the BMER in 2018, and the COVID-19 pandemic allowed for an additional deferment for the report in 2020. These same challenges delayed or prevented some of the monitoring activities that would usually occur in regards to the Forest Plan as well. When staff revisited the BMER in 2023, some data was absent, either for some years or all. Other data was no longer being collected due to the postponement of citizen science activities during the pandemic. Other data, however, was collected on schedule as previously planned, such as National Visitor Use Monitoring and Watershed Condition Framework evaluations. As a result, some recommendations in this report are uncertain. In addition, time constraints and staff workload resulted in on 1-2 monitoring questions assessed for each of the 9 monitoring items. Tables 1 and 2 below summarize current adaptation recommendations for line officer consideration.

Table 1. Quantitative summary of adaptive management recommendations for all monitoring questions addressed in this report (15 total).

Recommendation	Yes, need for change	Unsure	No Change Total:
Results inconsistent with Forest Plan direction	4	0	6
Change to Forest Plan warranted	3	1	
Change to management activities warranted	2	0	
Change to Plan monitoring program warranted	1	1	
Focused assessment needed	0	0	

Table 2. Summary of findings for each plan monitoring item (questions and indicators)

Monitoring Item	Consistency with Plan Intent¹ <i>Do results demonstrate intended progress of the plan components associated with this monitoring item?</i>	Recommendation² <i>Based on the evaluation of monitoring results, may changes be warranted?</i>	Type of Change(s) under consideration² <i>Where may the change be needed?</i>
1A – BMPs	Yes	No	N/A
1B - Watersheds	Yes	No	N/A
2A - Forest Ecosystem Structure	Uncertain - B	Yes	Plan monitoring (fire impacts)
2B – Aquatic Habitat	Uncertain - B	No	N/A
3A - Woodpecker Habitat	Yes	No	N/A
4A - Northern Spotted Owl	No	Yes	Management activities (barred owl); Focused assessment needed
4B - Marbled Murrelet	Yes	No	N/A
5A - Recreation Opportunities	Yes	No	N/A
6A – Climate Change	Uncertain - C	Yes	Change to Forest Plan (climate change)
6B – Outbreaks & Infestations	Yes	No	N/A
7A - Timber Production	No	Yes	Change to Forest Plan (harvest quantities)
7B - Deer, Elk, Mountain Goat Habitat	No	Yes	Management activities (vegetation management)
8A – Timber Programming	Yes	No	N/A
9A - Local Economics	Yes	No	N/A
9B - Heritage	Yes	No	N/A
9C - Transportation	No	Yes	Change to Forest Plan (sustainable roads analysis)
9D - Tribal Consultation	Uncertain - C	No	N/A

¹Plan intent:

(A) Uncertain – Interval of data collection beyond this reporting cycle (indicate date of next time this monitoring item will be evaluated);

(B) Uncertain – More time/data are needed to understand status or progress of the Plan Component(s);

(C) Uncertain – Methods inadequate to answer monitoring question.

²Refer to pages below for more details regarding any specific recommendations for change.

Forest Supervisor's Certification

This report documents the results of monitoring activities that occurred through Fiscal Year 2023 on the Mt. Baker Snoqualmie 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 examined the recommended changes to the 1990 Land Management Plan, as amended at this time. I therefore consider the 1990 Land Management Plan sufficient to continue to guide land and resource management of the Mt. Baker Snoqualmie National Forest for the near future but plan a deeper examination of the recommended changes through engagement with resource specialists and the public, particularly in regards to future revisions. Information about public engagement sessions will be posted at: <https://www.fs.usda.gov/projects/mbs/landmanagement/projects>.

JODY WEIL, FOREST SUPERVISOR

June 15, 2023

1. Status of Select Watershed Conditions

Summary

The Mt. Baker-Snoqualmie National Forest strives to maintain aquatic and riparian resource protection during and after implementation of construction or reconstruction of aquatic or riparian ecosystem improvements, including those that involve perennial and intermittent streams, rivers, ponds, wetlands, and/or their banks, shorelines, or floodplains. This goal is derived from the Watershed component of the of the Forest Management Objectives outlined in the 1990 forest plan, as amended by the Aquatic Conservation Strategy Objectives in the 1994 Northwest Forest Plan ROD Basis for Standards and Guidelines.

The Forest also strives to maintain and restore the resilience of forest ecosystems through aquatic and riparian resource protection and improvements. The MBS uses the USFS Watershed Condition Framework (WCF) to identify and strategically plan for identification and implementation of essential projects to improve condition classes of designated focus watersheds (5th Code HUC) and priority sub-watersheds (6th Code HUC). This goal is derived from the Watershed component of the Forest Management Objectives outlined in the 1990 forest plan, as amended by the Aquatic Conservation Strategy Objectives in the 1994 forest plan ROD, Basis for Standards and Guidelines.

Monitoring Questions

1A: Are BMPs planned and implemented at project scales, and are they effective?

1B: Are key WCF indicators of the priority sub-watersheds improving, maintaining, or degrading?

Key Results - BMPs

- Best Management Practices (BMPs) and project designed criteria (PDCs) are occurring as a component of restoration projects, such as commercial/non-commercial thinning.
- In addition, specific emergency response (ERFO), aquatic organism passage and road improvement projects are regularly occurring and have associated BMPs.
- The effectiveness ratings for BMPs from 2016-2022, as evaluated each year, are high, with an average of 82.5% of the BMPS receiving a rating of “Effective” or “Good.”
- Within this 6-year period, 38 BMP sites were created and 27 of them evaluated for effectiveness.

- However, not all management activities had effective BMPs, such as road, recreation and water use projects (6 total projects rated “not effective”).
- A lack of hydrology staff in 2022 resulted in limited data and analysis.

Recommended Changes – BMPs

- There are no recommended plan changes for Best Management Practices.
- In future Forest Plan revisions, consider adding or modifying standards and guidelines for recreation, mineral, water use and road projects that result in more effective BMPs.

Year	Percent of the BMPS Effectiveness Rating of Effective or Good		Sites Measured		Total Number of Sites
2016	100.0%		6		6
2017	50.0%		4		5
2018	85.7%		7		14
2019	75.0%		4		6
2020	66.7%		3		4
2021	100.0%		2		2
2022	100.0%		1		1
Average Annual Percentage	82.5%	Total	27		38

Figure 1A-1: Evaluations by fiscal year for BMP targets, 2016 to 2022.

Monitoring Activity	Effectiveness					Total	Measured	Percent Measured BMPs Effective or Mostly Effective
	Effective	Mostly	Marginal	Not	Not Evaluated			
Construction of Aquatic Improvements	4	0	1	0	1	6	5	80.0%
Chemical Use Near Waterbodies	3	0	0	0	0	3	3	100.0%
Facilities	2	0	0	0	0	2	2	100.0%
Fire	2	0	0	0	0	2	2	100.0%
Mines	2	1	0	1	0	4	4	75.0%
Recreation	2	1	0	2	1	6	5	60.0%
Road	5	0	2	1	3	11	8	62.5%
Vegetation (Harvest)	5	0	0	0	2	7	5	100.0%
Water Uses (Diversions)	0	0	1	2	0	3	3	0.0%

Figure 1A-2: Effectiveness evaluations for BMPs by monitoring activity, for projects completed in 2016-2022.

Key Results – Watersheds

- The MBS has 6 priority sub-watersheds and has proposed 2 additional.
- Within these watersheds, a number of aquatic organism passage, bank stabilization and road improvement projects have occurred.
- No BMPs were evaluated for projects within our priority sub-watersheds. However, BMPs for similar projects outside of the priority areas have proven effective (see Monitoring Question 1A above).
- WCF indicators for all priority sub-watersheds are maintaining overall. One particular WCF, canopy cover, has shown to be increasing in some sub-watersheds, as a result of contemporary timber and silviculture management practices.
- Similarly, mean stream temperatures for individual streams, some of which exceeded temperatures standards 20 years ago, are now showing decreases in temperatures.
- Only one priority sub-watershed, Hedrick Creek – North Fork Nooksack, is functioning at risk.
- There is still a lack of data collected for some of the priority watersheds, making this monitoring element difficult to regularly assess.

Recommended Changes - Watersheds

- There are no recommended plan changes for watershed management.
- However, the Forest should strive to collect regular data on the 6 priority sub-watersheds and 2 proposed priority sub-watersheds for the purpose of future monitoring.

Priority Watersheds	WRAP as shown on WCF site	WRAP as shown in MBS Files	WCF Function	HUC
Big Creek	COMPLETED	COMPLETED	Functioning Properly	171100060304
Tenas Creek -Suiattle R	NOT COMPLETED	COMPLETED	Functioning Properly	171100060305
Sulphur Creek	COMPLETED	DRAFT	Functioning Properly	171100060203
Upper SF Skykomish R	COMPLETED	COMPLETED	Functioning Properly	171100090302
Lower Greenwater R	NOT COMPLETED	COMPLETED	Functioning at Risk	171100140306
Circle Creek - Suiattle R	COMPLETED	COMPLETED	Functioning Properly	171100060303
Hedrick Creek - NF Nooksack R	PROPOSED	DRAFT	Functioning at Risk	171100040106
Upper SF Skykomish R	PROPOSED	PROPOSED	Functioning Properly	171100090302

Figure 1B: Priority watersheds with completed WRAPs and their associated WCF functions.

2. Status of Select Ecological Conditions

Summary

Our goal is to maintain forest plant species, structure, and landscape patterns moving toward desired conditions. This goal is derived from the Diversity and Long-term Productivity component of the of the Forest Management Objectives outlined in the 1990 forest plan, as amended by the Ecological Principles for Management of Late-Successional Forests in the 1994 Northwest Forest Plan ROD Basis for Standards and Guidelines.

The desired landscape within the Mt. Baker-Snoqualmie National Forest is an interconnected mosaic of large blocks of older forest with a mix of younger forests of various age classes that fit a natural disturbance regime for this area and time period. This landscape maintains and enhances biological diversity. The forest contains approximately 50 percent congressionally designated wilderness and under the current forest plan, much of the rest of the forest is within Late-Successional Reserve allocations. The management objective in Late-Successional Reserves is to protect and enhance late-successional and old-growth forest ecosystems, which serve as habitat for late-successional and old-growth related species, including the northern spotted owl. New information collected or compiled from the last evaluation report in 2016 has been incorporated.

Goals from the 1990 MBS Land and Resource Management Plan include: to provide a diversity of aquatic communities while maintaining water quality applicable to areas containing anadromous and resident fish habitat (4-126); maintain or improve habitats for all threatened or endangered plant and animal species on the forest (4-127). Additional components are described in the 1994 NWFP ROD basis for standards and guidelines.

Monitoring Questions

2A: What are the spatial trends in forest stand seral conditions, including age and structural distribution?

2B: Is aquatic habitat quality being maintained to support viable populations of focal fish species (chinook salmon, steelhead trout and bull trout?)

Key Results – Spatial Trends

- Indicators used to assess this monitoring question include forest type distribution, age class distribution, patch size, interior core area and connectivity.
- Davis et al (2022) focused on changes in late succession and old growth (LSOG) forests between 1993 and 2017, measuring old growth structural indices for four structure elements – density of large live trees, diversity of live-tree size classes, density of large snags and percentage cover of down woody material.
- The Western Washington Cascades (including MBS) showed greater gains than losses in both age categories researched (gains more than twice the amount of losses for the 80 year mature threshold, see Figure 1).
- This research suggests that at least as of 2017, forest conditions on the MBS are improving in regard to type distribution (gains in total LSOG forests) and age class distribution (gains in both age thresholds studied). It can also be inferred from this information that gains have likely occurred in patch size and interior core area as well.
- This data does not include the years 2018 to present. The wildland fires of 2022, as well as any future fires, may have had impacts on LSOG forest stands, which are currently unassessed.
- The MBS is meeting goals outlined in the Diversity and Long-Term Productivity Component of the 1990 Forest Plan (4-122).

Recommended Changes – Spatial Trends

- Suggest an assessment of impacts to LSOG from 2022 fire events on the MBS. Consider adding monitoring and management actions to the Forest Plan in regards to future fire impacts.
- Continue to support ongoing data collection by the Pacific Northwest Research Station in regard to LSOG forest distribution and conditions for years 2018 to present.

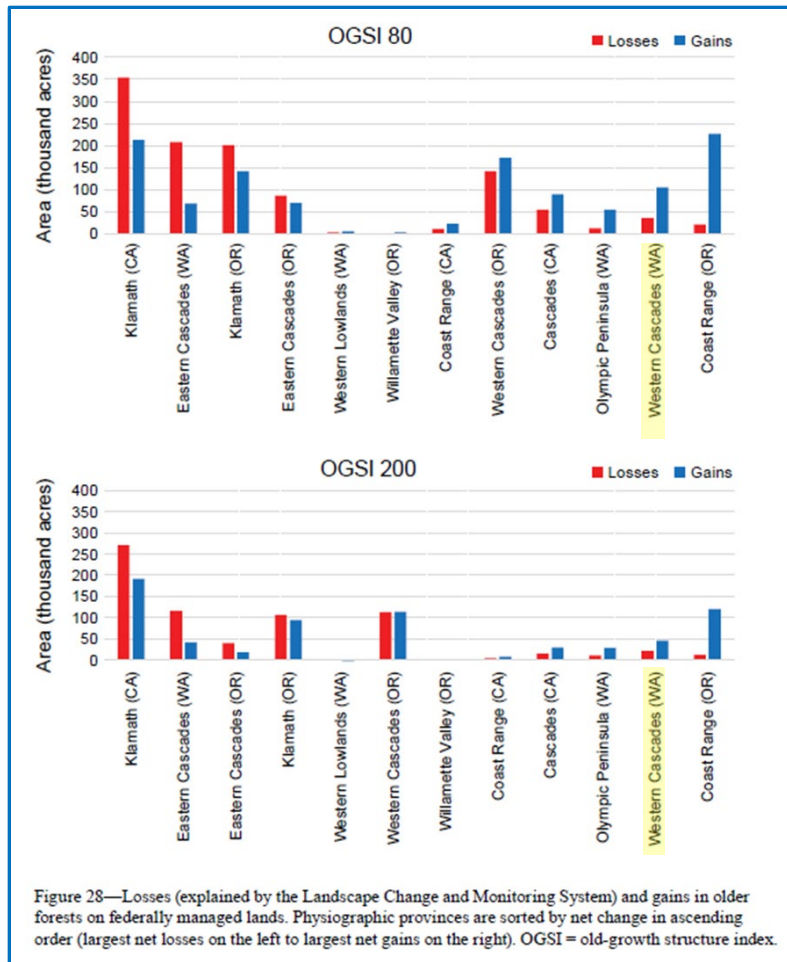


Figure 2A: Gains and losses for both age thresholds throughout Region 6 (Davis et al, 2022).

Key Results – Aquatic Habitat

- The Aquatic and Riparian Effectiveness Monitoring Program (AREMP) monitors the effectiveness of the Northwest Forest Plan’s Aquatic Conservation Strategy. Status and trends of in-channel and upslope-riparian watershed conditions are evaluated for randomly selected subwatersheds. 17 MBS subwatersheds included in AREMP, 12 subwatersheds had surveys repeated since the last MBS monitoring report. The most recent data for sites were compared with that from the previous survey and are summarized Figure 2B.
- 17 subwatersheds across the MBS are included in the Watershed Restoration Action Plan, with Watershed Condition Framework indicators such as water quality, quantity, and aquatic habitat. While scores for some indicators were changed, the overall condition of these subwatersheds remained unchanged. Watershed condition for a subset of indicators for selected subwatersheds were re-evaluated in 2021 and are summarized in Figure 2C. An interactive map viewer for watershed classifications can be found at: <https://usfs.maps.arcgis.com/apps/MapSeries/index.html?appid=f4332e5b80c44874952b57e1db0b4407>

- All subwatersheds except found to be functioning properly, except Lower Greenwater River is functioning at risk and therefore aquatic species habitat may not be maintaining in that subwatershed.

Subwatershed Name	Survey Years Considered	Wood, >= 24" diameter and minimum 33ft	Average residual pool depth	Substrate, D50; Size Class Description Between Survey Years	
Glacier Creek	2013, 2021	Increasing	Decreasing (-11%)	Boulder, medium	Boulder, small
Green River Headwaters	2014, 2022	Decreasing	Increasing (+6%)	Cobble, large	Cobble, large
Lower Baker Lake	2009, 2017	Decreasing	Increasing (+80%)	Boulder, medium	Boulder, small
Middle Cascade River	2009, 2017	Increasing	Increasing (+150%)	Bedrock	Bedrock
Upper South Fork Nooksack River	2014, 2022	Decreasing	Increasing (+79%)	Boulder, small	Boulder, small
Upper North Fork Skykomish River	2012, 2020	No Trend	Decreasing (-41%)	Boulder, large	Boulder, small
Sloan Creek	2014, 2022	Increasing	Increasing (+40%)	Boulder, small	Boulder, medium
North Fork Stillaguamish River at Squire Creek	2013, 2021	No Trend	No Trend (-1%)	Boulder, small	Boulder, small
Taylor River	2012, 2020	Decreasing	No Trend (+3%)	Bedrock	Bedrock
Upper Green River/Twin Camp Creek	2009, 2017	Increasing	Increasing (+30%)	Boulder, very large	Bedrock
Upper Greenwater River	2015, 2019	Increasing	Decreasing (-13%)	Boulder, small	Boulder, small
Upper White River/Silver Creek	2010, 2018	No Trend	No Trend (+3%)	Boulder, medium	Cobble, large

Figure 2B: Summary of selected AREMP indicators for MBS subwatersheds since the last monitoring report.

Recommended Changes – Aquatic Habitat

- There are no recommended Forest Plan changes for aquatic habitat.
- Continue actions to improve and accelerate the development of aquatic habitat.

Subwatershed (HUC12) Name	Indicators Re-evaluated	Overall Condition
Tenas Creek-Suiattle River	Water Quality, Roads and Trails, Fire Regime/Wildfire, Forest Health	Functioning Properly
Upper South Fork Skykomish River	Water Quality, Roads and Trails, Fire Regime/Wildfire, Forest Health	Functioning Properly
Upper Middle Fork Snoqualmie River	Water Quality, Roads and Trails, Fire Regime/Wildfire, Forest Health	Functioning Properly
Middle Middle Fork Snoqualmie River	Water Quality, Roads and Trails, Fire Regime/Wildfire, Forest Health	Functioning Properly
Lower Middle Fork Snoqualmie River	Water Quality, Roads and Trails, Fire Regime/Wildfire, Forest Health	Functioning Properly
Upper Greenwater River	Water Quality, Roads and Trails, Soils, Fire Regime/Wildfire, Forest Cover, Forest Health	Functioning Properly
Lower Greenwater River	Water Quality, Aquatic Habitat, Roads and Trails, Soils, Fire Regime/Wildfire, Forest Cover, Forest Health	Functioning at Risk

Figure 2C: MBS subwatersheds and indicators evaluated in 2021 for watershed condition.

3. Status of Focal Species

Summary

The MBS strives to maintain habitat for woodpecker species associated with snags. This goal is derived from the Wildlife Habitat Management indicators component outlined in the 1990 Forest Plan (4-124), as amended by the coarse woody debris and snag components in the 1994 Northwest Forest Plan ROD Basis for Standards and Guidelines.

The desired condition is a landscape with snag numbers that support viable populations of cavity excavating birds/woodpeckers across the Forest.

Monitoring Question

3A. Are forest landscapes contributing desired snag numbers?

Key Results

- The indicator used to assess this monitoring question is the percentage of the landscape within the DecAID threshold for snags. DecAID assessments exist for both the Forest and several project areas within the Forest (South Fork Stillaguamish, Snoquera, North Fork Nooksack and North Fork Stillaguamish landscape analyses).
- DecAID analyses show an increasing trend in the percentage of the landscape within the 50% and 80% thresholds for snag and down wood levels. However, the amount of Forest assessed through these analyses is limited, and project-specific analyses vary in their results, with some showing only small percentages of the landscape meeting tolerance levels.
- Other research performed by Bell et al (2021) shows only negligible increase in snags for habitat types represented by the MBS NF.
- Wildland fires on the MBS between 2017 and 2022 likely have contributed to snag recruitment. RAVG data from the Norse Peak fire, 2017, suggest several thousand acres of recruitment. RAVG data may soon be available for the Bolt and Loch Katrine fires, 2022, as well.
- It is difficult to determine if these analyses are indicative of the larger landscape, including wilderness areas where management activities have not occurred. Therefore, we are unable to determine a greater trend for snags contributions.

Recommended Changes

Based on these results, we are considering the following possible changes:

- No changes to the plan are recommended. Continue to include snag recruitment strategies to Forest management actions whenever feasible.
- Conduct snag inventories alongside other Forest management activities whenever possible in order to improve data and understanding.
- Create snags during these activities in a manner consistent with current research and monitoring for efficacy.

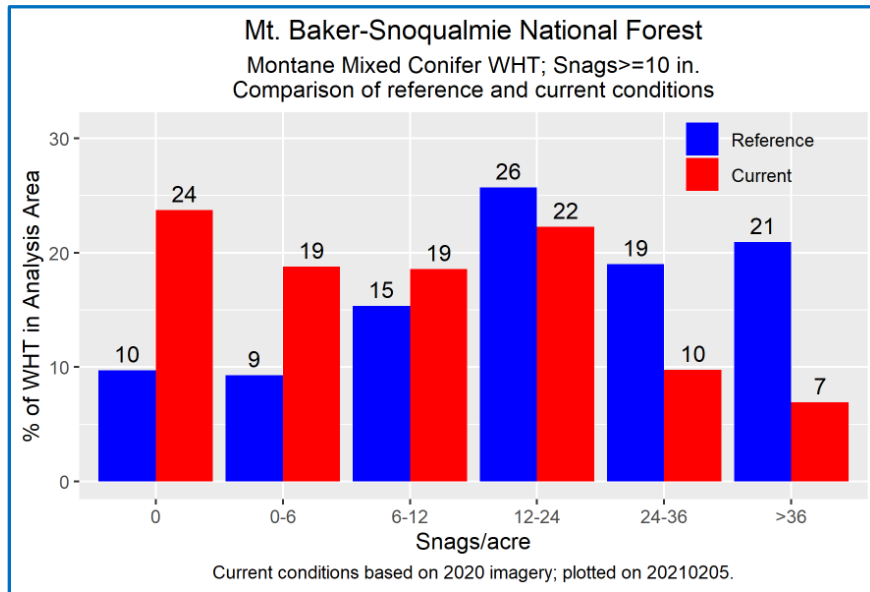


Figure 3A-1: Forest-wide distribution analysis of snags on the MBS

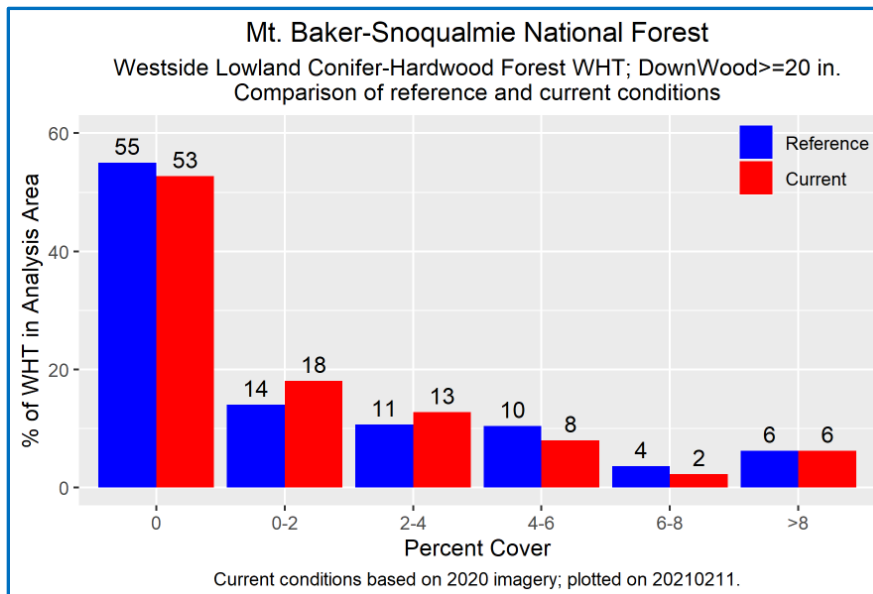


Figure 3A-2: Forest-wide distribution analysis of down wood on the MBS NF.

4. Status of Select Set of Ecological Conditions Required to Contribute to Species Recovery

Summary

The MBS strives to maintain suitable habitat on the Forest to contribute to northern spotted owl population recovery within the range of this species. This goal is derived from the Threatened, Endangered, and Sensitive Species component outlined in the 1990 forest plan, as amended by the Late-Successional Reserve objectives in the 1994 Northwest Forest Plan ROD Standards and Guidelines.

The desired condition is a well-distributed, genetically interacting, demographically diverse population of northern spotted owls inhabiting a high percentage of their native range within the Mt. Baker-Snoqualmie National Forest.

The MBS also strives to maintain suitable nesting habitat in the Mt. Baker-Snoqualmie National Forest to contribute to marbled murrelet population recovery within the range of this species. This goal is derived from the Threatened, Endangered, and Sensitive Species component of the outlined in the 1990 forest plan, as amended by the as amended by the Late-Successional Reserve objectives in the 1994 Northwest Forest Plan ROD Standards and Guidelines.

Marbled murrelet population recovery is a primary goal for lands within the range of the species. The desired future condition is a well distributed, genetically interacting, demographically diverse population of marbled murrelet that inhabits a high percent of their native range.

Monitoring Questions

4A. What is the health of the northern spotted owl population in the North Cascades? Is the northern spotted owl population decreasing, stabilizing, or increasing across the Mt. Baker – Snoqualmie National Forest?

4B. What is the health of the marbled murrelet population that inhabits murrelet conservation zone 1 (Puget Sound)? Is the marbled murrelet population decreasing, stabilized, or increasing?

Key Results – Northern Spotted Owl

- Indicators for this question include the results and conclusions from the Northern Spotted Owl Effectiveness Monitoring Plan
- Franklin et al (2021) noted trends of decline in northern spotted owl (NSO) throughout its native range between 1993 and 2018. Part of their study area (Rainier Study Area) included the south end of the

MBS.

- Results of this study continue to support the decline of the species throughout its range, consistent with 25 years of data collection indicating the same.
- This decline is largely attributed to barred owl occupancy. However, maintenance and restoration of NSO habitat is still believed to be an important factor that can dampen extinction rates and support colonization.
- Autonomous recording units recently deployed on the Forest suggest occasional spotted owl detections.
- At the time of the creation of the MBS Forest Plan and NWFP, barred owl occupancy was not fully predicted. The management of barred owls is outside the control of the MBS National Forest.

Recommended Changes – Northern Spotted Owl

- There are no recommended plan changes for NSO management at this time.
- Continue actions to improve and accelerate the development of habitat for foraging as well as roosting/nesting for NSO.
- Consider the influence of management actions on barred owl distribution and abundance, when applicable. Additional consideration for this may need to be added to the Forest Plan in light of the observed decline of the NSO.

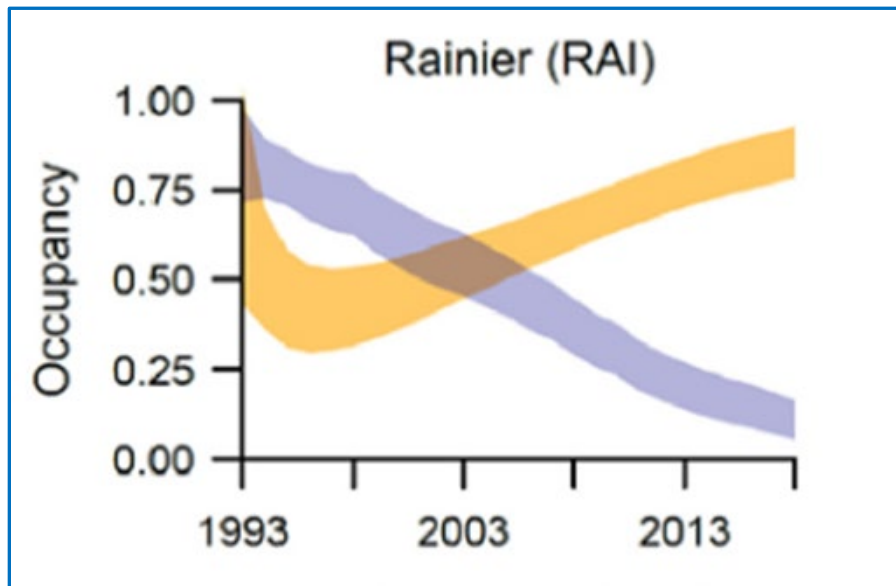


Figure 4A: Trends in territory occupancy over time for northern spotted owl pairs (purple) and for one or more barred owls (yellow), based on two-species occupancy models from 1993 through 2018 (Franklin et al, 2021).

Key Results – Marbled Murrelet

- Indicators for this question include trends in acres of suitable nesting habitat, marbled murrelet (MM) densities within the conservation zone, trends in juvenile ratios and results and conclusions from the Marbled Murrelet Effectiveness Monitoring Plan for the Northwest Forest Plan.
- McIver et al (2021) population surveys indicate a continual declining trend (nearly 5% annually) in numbers of MM between 2011 and 2018 for Conservation Zone 1 (which is closest to the MBS NF).
- Study suggests that this decline should warrant a review of management actions and responses in regards to MM.
- Lorenz et al (2021) also note a net decrease in the amount of nesting habitat between 1993 and 2017 and found that timber harvest on State and private lands contributed the most to the loss. On federal lands, timber harvest and wildland fire contributed to some of the loss of nesting habitat, but primary loss could not be attributed to any one cause.
- Human activity can also impact MM nesting by attracting nest predators via improper food sources near campgrounds, picnic areas, and similar facilities.
- The extent of this decline was not likely anticipated in the NWFP and Marbled Murrelet Recovery Plan.
- Autonomous recording units deployed on the MBS are yielding incidental detections of MM, which may help prioritize recovery efforts.

Recommended Changes – Marbled Murrelet

- No changes recommended. However, continue actions to improve and accelerate the development of habitat for Marbled Murrelet.
- Focus habitat enhancement in areas where the ARUs have detected a presence of MM.
- Continue with drafting and implementing a food storage order, to prevent undesirable human – wildlife interactions, for the benefit of many species, including marbled murrelet. As of May 2023, the MBS is close to signing such an order.

5. Visitor Use, Satisfaction, and Progress on Recreation Objectives

Summary

A goal of the MBS Forest Plan is to provide a broad spectrum of recreation opportunities and experiences on the Mt. Baker-Snoqualmie National Forest. Forest (4-84). Recreation settings and opportunities should provide high visitor satisfaction and meet current and future visitor demands in a sustainable way.

Monitoring Questions and Indicators

5A. Are visitors satisfied with the settings, opportunities and activities offered in the Mt. Baker-Snoqualmie National Forest?

Key Results

- National Visitor Use Monitoring data was collected in both 2015 and 2020 for the recreation facilities and opportunities across the Forest. The monitoring uses a randomized sampling of recreation sites and days, throughout the calendar year, to assess visitor experience.
- There was no dramatic change between the monitoring cycles for overall visitor satisfaction, with all “Satisfaction Elements” having roughly 50% or greater of survey participants rating their experience as “very satisfied.” This included categories such as restroom cleanliness, parking availability, employee helpfulness and trail condition.
- There was, however, some clear improvement in “Percent Meets Expectations” scores, which indicate any gaps between desires and performance. Some scores were higher in 2020 than 2015, particularly in regard to Developed Facilities, Access, Services and Feelings of Safety, indicating less of a gap and more satisfaction.
- The NVUM data suggests that most MBS visitors are finding their recreation needs met, and in many cases, their expectations are exceeded.

Recommended Changes

- There are no recommended plan changes for visitor satisfaction.
- Any future plan revisions should continue to prioritize high-quality recreation opportunities and access, particularly given increases in local populations (see Monitoring Item 9A).

Overall Satisfaction

Satisfaction for Visits to National Forest Recreation Facilities and Services

Satisfaction Element	Percent Rating Satisfaction as:					Mean Rating§	Mean Importance†	No. Obs‡
	Very Dissatisfied	Somewhat Dissatisfied	Neither Satisfied nor Dissatisfied	Somewhat Satisfied	Very Satisfied			
Restroom Cleanliness	7.5	13.0	12.6	13.2	53.7	3.9	4.6	189
Developed Facilities	0.6	0.5	6.6	11.3	75.9	4.5	4.6	159
Condition of Environment	0.0	1.7	1.7	18.3	78.3	4.7	4.8	280
Employee Helpfulness	0.0	11.6	19.6	4.8	54.4	3.7	4.3	73
Interpretive Displays	0.9	2.2	31.4	19.2	45.4	4.0	3.4	148
Parking Availability	0.7	11.1	4.4	13.9	65.5	4.2	4.6	273
Parking Lot Condition	0.1	4.2	5.7	20.2	65.5	4.3	4.4	261
Rec. Info. Availability	0.1	1.2	6.3	16.1	76.2	4.7	4.6	222
Road Condition	2.2	4.1	7.4	22.0	61.3	4.3	4.5	232
Feeling of Safety	0.0	1.5	0.8	6.3	91.3	4.9	4.7	276
Scenery	0.0	0.0	1.0	6.2	92.9	4.9	4.8	281
Signage Adequacy	0.8	3.3	5.6	18.1	71.3	4.5	4.6	268
Trail Condition	0.0	5.9	4.9	29.5	58.8	4.4	4.5	230
Value for Fee Paid	2.5	0.3	9.7	13.5	69.9	4.4	4.4	161

Selected Forests:
Mt Baker-Snoqualmie NF (FY 2020)

Figure 5A-1: Overall satisfaction rating for all categories assessed in the 2020 NVUM.

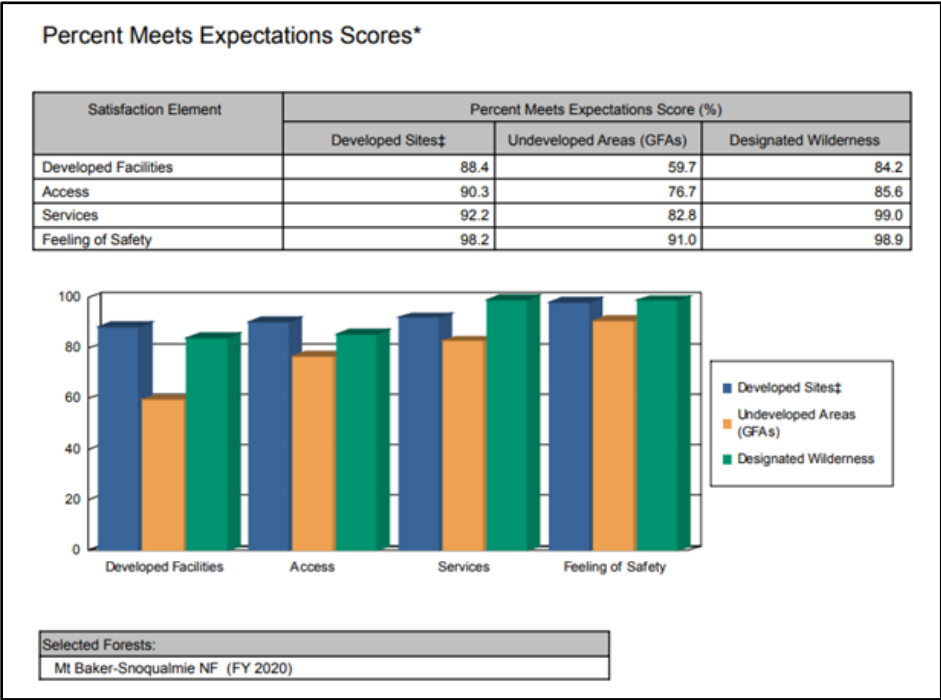


Figure 5A-2: Percent Meets Expectation scores for all categories assessed in the 2020 NVUM.

6. Climate Change and Other Stressors

Summary

In the 2016 monitoring plan for the Mt. Baker-Snoqualmie National Forest, a monitoring question was developed in regards to invasive species in wilderness areas. However, it was later evident that this question was difficult to assess longitudinally and relied too heavily on citizen science participation (which was affected by the COVID-19 pandemic). Forest staff considered various monitoring items that could be assessed more consistently and suggested the below monitoring question change.

Climate change was not a concern considered in the creation of the 1990 Forest Plan. However, insects and disease and the effects on timber were considered, and the Forest Plan states a need to select silvicultural systems that control or prevent outbreaks and infestations (4-133). Management that moves away from even-age stands and promotes structural diversity aids in this control and prevention.

Monitoring Questions

6A Original: *Are invasive plants increasing within designated wilderness areas in response to climate change?*

6A Modified: *Is snowpack decreasing across the Forest when compared to historic normal conditions?*

6B: *What are the trends in forest outbreaks and infestations?*

Key Results - Snowpack

- A Forest Service climate change vulnerability assessment was performed for the North Cascades region (Raymond et al, 2014). This assessment included annual snow water equivalencies on April 1 and compared them to the 30-year historic normal. It also compared percent of snow depth on April 1 relative to the median for the period of record.
- Snowpack is a critical source of water for both ecosystems and communities. Snow water equivalencies help water and resource managers plan for water use.
- Increased temperatures due to climate change will likely decrease snowpack in the Northwest, having broad impacts on water sources.
- Collected data from the vulnerability assessment was filtered for the Nooksack, Upper Skagit, Sauk, Skykomish, Snoqualmie and Puyallup subbasins, over the last 5 years.
- Results showed no visible trend in percent change of snow water equivalent or snow depth when compared with median historic conditions. No trend towards the predicted 2040 regime changes was detected for this 5-year period.

- These indicators are believed to be sensitive to spring warming trends and winter precipitation. At this time, and for this period, projected climate change trends are not impacting management actions on the MBS in regard to water availability or hydrologic regimes.
- However, this assessment does not include other potential climate change impacts to resources and concerns such as forest health, wildlife populations and visitor safety.

Recommended Changes - Snowpack

- Because climate change was not a topic considered in the 1990 Forest Plan, the MBS cannot determine if we are meeting the plan’s intent for this monitoring item.
- Future revisions of the MBS Forest Plan should include management strategies, mitigations and monitoring relevant to climate change.
- The MBS should reassess climate change vulnerability on a regular basis. The above monitoring question change would allow the Forest to reassess snowpack approximately every 2 years and note any trends that may impact forest management.

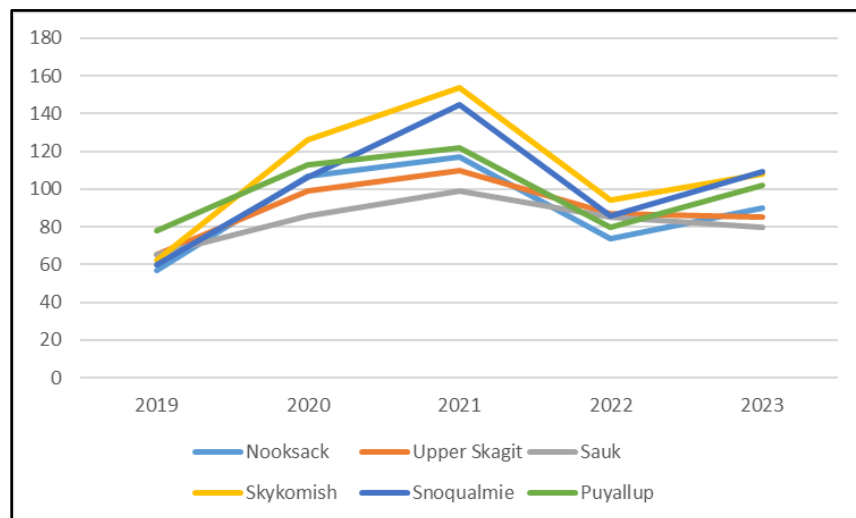


Figure 6A-1: Percent change in snow water equivalent on April 1, 2019-2023. Note that a value of “100” equates to value of historic condition; no significant trends above or below 100.

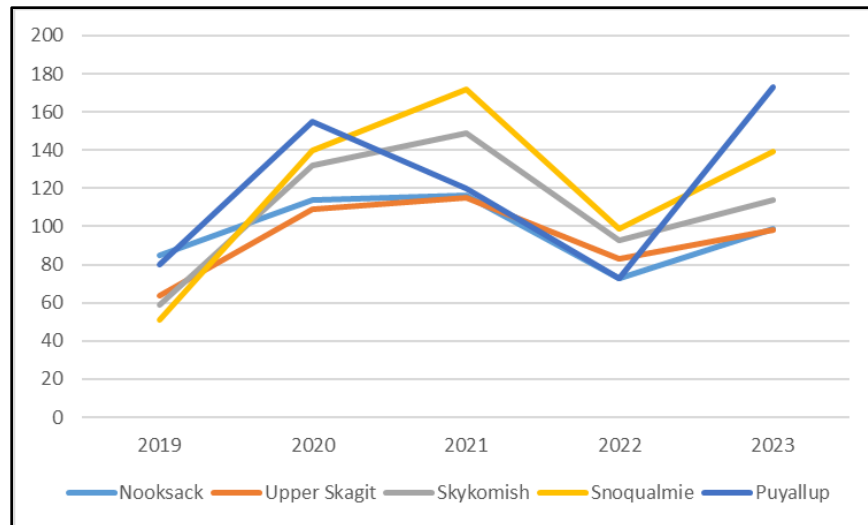


Figure 6A-2: Percent change in snow depth on April 1, 2019-2023. Value of “100” equates to historic condition.

Key Results – Outbreaks and Infestation

- Indicators for this monitoring question include acres of stands affected by insect and disease, as well as intensity of those outbreaks and infestations.
- Forest Health Protection provides aerial surveys of the MBS National Forest to detect insect and disease outbreaks and provides assistance for the management of pests. FHP also develops tools for detection and management.
- Damaging species on the MBS include:
 - Douglas-fir beetle
 - Fir engraver
 - Western hemlock looper
 - Balsam wooly adelgid
 - Mountain pine beetle
 - Silver fir beetle
 - Damage caused by bears (normally correlated with root rot or other disease in surveys)
- No significant difference was found between 2017 and 2021 surveys in the number or severity of affected acres.
- The number of “very severe” acres has slightly decreased, and the numbers of “light” and “very light” acres have increased only slightly (Figure 6B).

Recommended Changes – Outbreaks and Infestation

- No changes to the Forest Plan are recommended at this time.

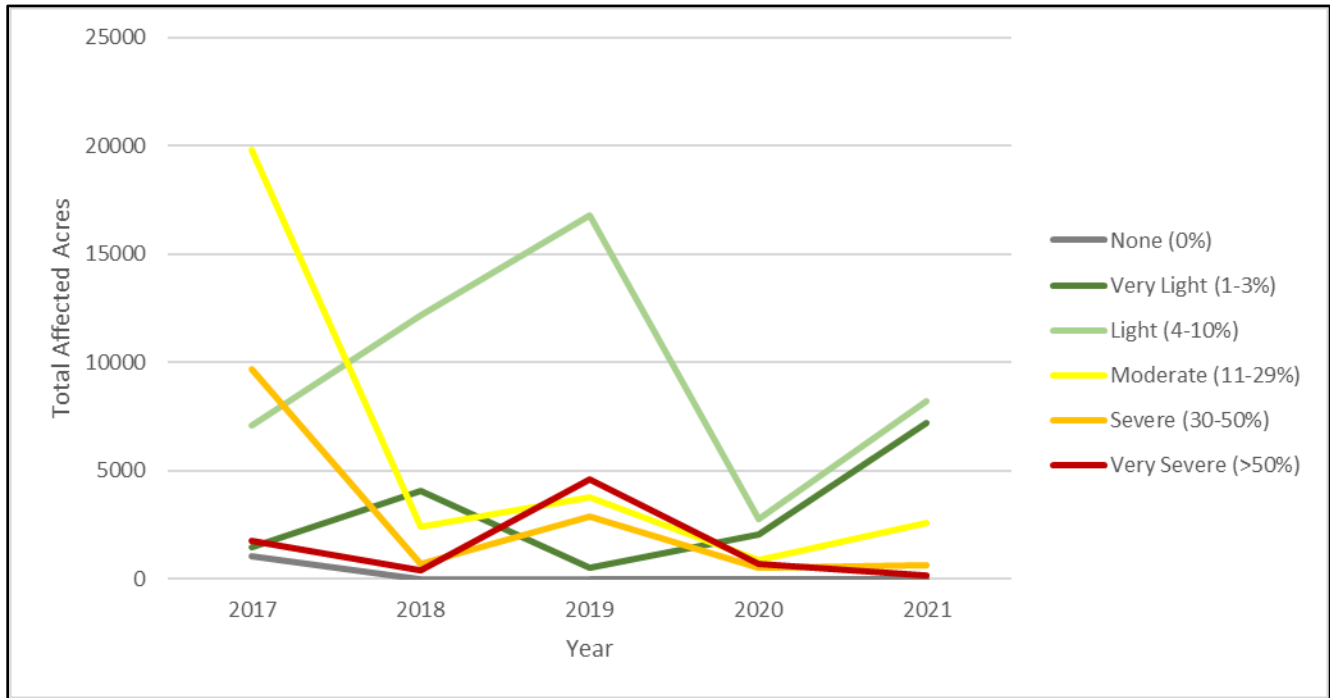


Figure 6B: Total acres affected by insects or disease by year.

7. Progress Toward Meeting Desired Conditions and Objectives

Summary

The 1990 Forest Plan desired to produce a predictable and sustainable level of timber and non-timber resources to meet projections under the 1990 forest plan as amended by the Northwest Forest Plan. A sustainable supply of timber and other forest products is needed to help maintain the stability of local and regional economies (Northwest Forest Plan ROD).

It is also desired in the plan to produce a sustainable, long-term supply of special forest products (SFPs). Along with personal and Tribal uses of SFPs, this will provide a commercial supply of SFPs that will create income for collectors.

The Forest Plan includes standards and guidelines for deer, elk and goat habitat, including winter/summer/transitional habitat and the effects of vehicular traffic on populations (2-15). The Plan allocated 34,000 acres for deer and elk habitat emphasis (MA-14) and an additional 17,000 acres for mountain goat (MA-15).

Monitoring Questions

7A. Is timber sale quantity similar to level predicted in the 1990 forest plan?

7B. Are management actions maintaining habitat for deer, elk and mountain goat at levels expected in the plan?

Key Results – Timber Sale Quantity

- 1990 MBS Plan was supplemented by the 1995 NW Forest Plan after the listing of the Northern Spotted Owl temporarily halted most harvests.
- As a result of this supplement, harvest quantities listed in the MBS Forest Plan are drastically different from the current harvests (average harvest of 10.8 MMBF per year in the Forest plan, versus an average of 5.1 currently).
- Current adjusted targets are set by the Regional Office; please see Figure 7A below for specific targets.
- With the exception of 2020, the MBS fell below timber targets in the last 7 years. Two major factors were identified:
 - Lack of staffing/vacant positions in the timber program.
 - High road maintenance and construction costs, leading to narrow profit margins for the timber industry.
- Special Forest Products data was not analyzed for this report.

Recommended Changes – Timber Sale Quantity

- Continue to pursue funding offsets from the Regional Offset for road costs.
- Maintain staffing levels for timber positions, particularly for sale administration positions.
- Should a revision of the Forest Plan occur, set harvest levels that are in alignment with the NWFP.

Year	Target (MMBF)	Sold (MMBF)	Harvest (MMBF)
2016	15	1.7	6.6
2017	14	3.1	2.5
2018	15	1.1	7.5
2019	26	2.7	5.6
2020	16	19.0	3.2
2021	20	10.4	Not Available
2022	8	6.6	Not Available

Figure 7A: Regional targets, MBS Forest harvests and sales by year.

Key Results for Deer, Elk and Mountain Goat Habitat

- Indicators for this monitoring question include population trends and distribution of deer, elk and mountain goats with the MBS NF.
- Washington Department of Fish and Wildlife harvest data, collected in 2022, may or may not provide a reliable picture of species populations, due to overlapping boundaries with non-NFS units and the subsequent differences in habitat values and access.
- However, in regards to harvest data for ungulates in units that contain land administered by the MBS, including some that contain only NFS land, annual harvest has been consistently very low.
- This information may indicate poor habitat conditions, access or other influencing factors.
- **Elk:** In areas where WDFW and Point Elliot treaty tribes are periodically conducting Elk population surveys, data does suggest stable or increasing elk populations. However, these entities have also noticed generally lower quality habitat on MBS administered lands within the game management units, as compared to others.
- This observation regarding poor quality habitat is supported by modeling using the Westside Elk Habitat Nutrition Model. This model shows relatively poor forage conditions across the MBS, compared to higher forage levels on adjacent state and private lands.

- Modeling experience has shown that commercial thinning, a typical vegetation management tool on the MBS, provides only modest gains in elk forage.
- Recent literature points to the impacts of recreation, including non-motorized recreation, on elk habitat use (Larson et al, 2016; Miller et al, 2020; Machowicz, Vanbianchi and Windell, 2022).

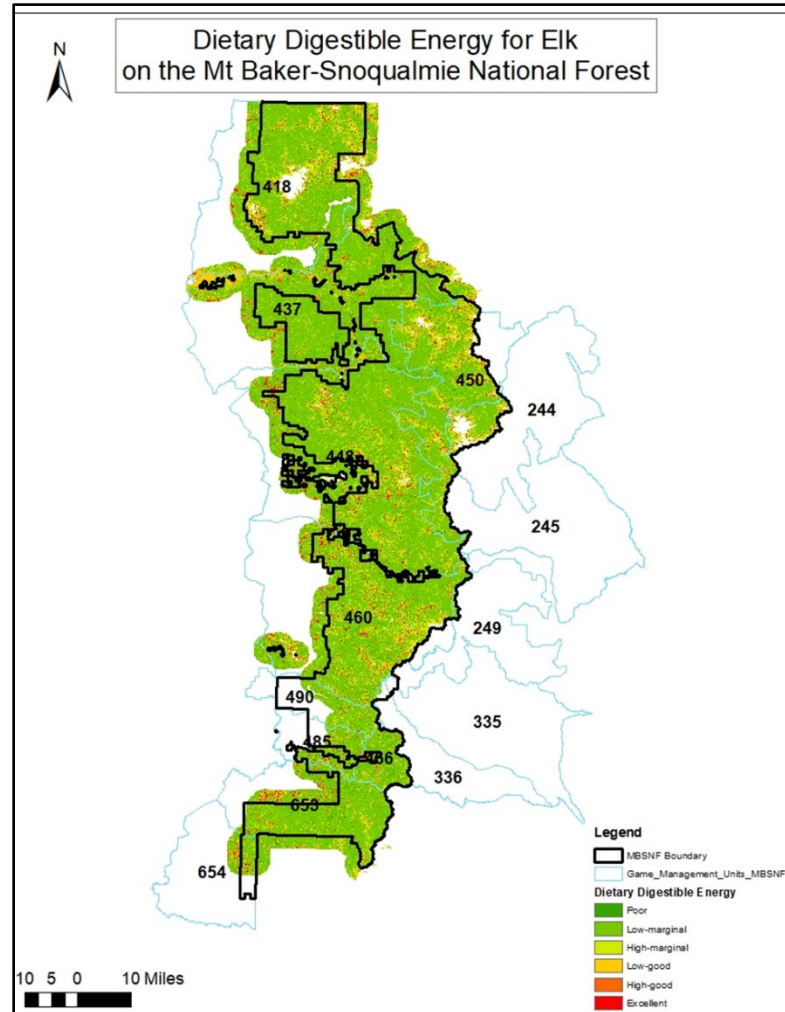


Figure 7B-1: Nutrition output from the Westside Elk Habitat for the Mount Baker-Snoqualmie National Forest, with overlapping State Game Management Units.

- **Mountain Goat:** as mentioned above, GMU boundaries for mountain goat overlap with various National Forest, State and private land boundaries, making it challenging to infer habitat conditions on MBS lands from WDFW data.
- Some bands of goats within the MBS are separate from those monitored by WDFW in hunting units.
- Since the last monitoring report in 2016, mountain goat translocation has occurred. This effort relocated 326 goats from the Olympic Mountain Range between 2018 and 2020. Some of the release sites for these goats were on the MBS, thereby increasing goat populations locally.
- Other longer-term effects of the mountain goat translocation have yet to be determined.

- As with elk above, literature reviews suggest that the impacts of recreation on mountain goats are increasing (Larson et al, 2016; Miller et al, 2020; Machowicz, Vanbianchi and Windell, 2022).
- **Deer:** Habitat quality for deer on the MBS is likely similar to that for elk. WDFW harvest data for deer has also shown a decrease since 2016 in some GMUs that overlap with the MBS.
- However, WDFW population data for black-tailed deer shows relatively stable populations.
- Similar to the above species, WDFW notes in a 2022 report their concerns regarding deer habitat conditions on federal lands, due to a low amount of forest openings and closed-canopy, mid-seral stands.
- For all 3 species, habitat quality is not improving as anticipated by the MBS Forest Plan in Chapter 4-42, specifically management areas MA-14 and MA-15.

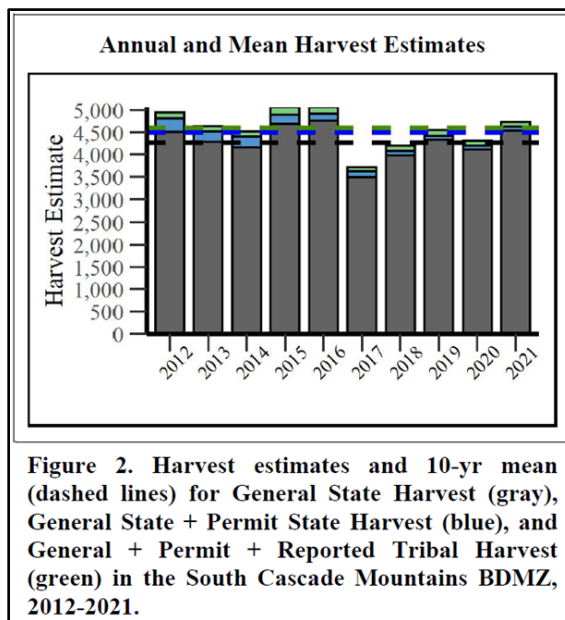


Figure 7B-2: 2022 WDFW deer harvest data for both state and tribal harvest, 2012 to 2021.

Recommended Changes – Deer, Elk and Mountain Goat Habitat

- Continue with vegetation management projects on the MBS, noting that commercial thinning offers only moderate gains.
- Consider modifying Forest Plan prescriptions to include treatment options and management actions based upon current science for deer, elk and mountain goat forage habitat.
- Mitigate the impacts of recreation, both motorized and non-motorized, on foraging habitat for all three species. Consider these impacts when analyzing any new recreation developments.

8. Effects of Management Systems on Productivity of the Land

Summary

Under the supplementary Northwest Forest Plan, the MBS works to conserve or enhance long-term site productivity during timber harvest (NWFP 4-4). Allowable sale quantity is programmed and harvested only on those lands classified as suitable for timber production, which are indicated in the prescriptions of the 1990 Forest Plan. On these lands, forest management activities support a landscape of productive forest stands. The programmed management areas for timber harvest are analyzed and adhered to during landscape-level and timber sale planning.

Monitoring Question

8A: Is allowable sale quantity programmed and harvested only on those lands classified as suitable for timber production?

Key Results

- The Forest Service Handbook is followed during all MBS timber sale design.
- The Handbook requires additional adherence to the Forest Plan standards and guidelines for timber sales, which are located in Chapter 4 of the plan (2-424).
- In multiple recent projects, including North Fork Stillaguamish Landscape Analysis and North Fork Nooksack Vegetation Management Project, all forest management activities and harvests were planned only for areas indicated as suitable for timber production and were carefully designed to meet all requirements outlined in Forest Plans.

Recommended Changes

- No changes to the Forest Plan are recommended.

9. Social, Economic, and Cultural Sustainability

Summary

This monitoring item was not included in the 2016 monitoring plan, but monitoring questions were later developed for this element to meet the desired biennial monitoring report content of Region 6, Pacific Northwest Region. This monitoring item reflects upon socioeconomic impacts of National Forest management on the surrounding populations, including indigenous communities and tribes.

Much of the socioeconomic considerations of the 1990 Forest Plan centered around timber production and its impacts to the local community (4-245). However, some consideration is given in the plan in regards to community access to the National Forest, mainly via roads (4-6). Standards and guidelines within the plan do state a need to consider “economic efficiency” in project planning, as well as participate in community development (4-96). The recreation standards and guidelines include responsiveness to a broader audience of visitors, including the very young, old and of varying ability level (4-2). In 2023, land managers understand that social and cultural impacts of their actions extend much further than just the timber industry.

Standards and Guidelines are present in the Forest Plan for American Indian Religious and Cultural Uses (4-97). These include communications with tribes in regards to planned projects, cultural site inventory and the development of mitigations with affected tribal groups. There is also emphasis on the need for Memoranda of Agreement with tribes. Expectations for database entry for tribal consultation exist in FSM 1563.14.

Monitoring Questions

9A. What changes are occurring in the social, cultural and economic conditions in the local areas?

9B. Are known heritage sites being protected/preserved?

9C. What is the trend in road decommissioning?

9D. Has the Forest consulted or coordinated with tribal governments in project development, planning, monitoring and implementation?

Key Results – Social, Cultural and Economic Conditions

- Several socioeconomic indicators were used to evaluate this monitoring question including:
 - Trends in population, employment and personal income
 - Components of population change
 - Employment by industry

- Unemployment rate
- Families in poverty/receiving public assistance
- Race and ethnicity
- Between 1970 and 2021, population growth in the local area near the MBS grew 118%, with much of that growth occurring since the 1990 MBS Forest Plan (growth between 2010 and 2021 alone was 15%).
- Employment and personal income have grown significantly as well (214% and 472%, respectively).
- Both of these growths offer insights into public use of, and needs for, National Forest System lands. Greater populations in an area correspond with an increased need for ecosystem services such as water and air quality, as well as physical forest products such as timber production.
- Projected population growth was cited in the 1990 Forest Plan as a reason for increasing wildlife and native fish populations for harvest (Forest Plan 2-8).
- The 1990 plan emphasized the need for locally-harvested wood products for the Puget Sound economy, a need that still exists today (Forest Plan 2-9).
- Larger populations increase pressure on recreation resources in the area, particularly for activities that are accessible to a wide variety of socioeconomic groups (i.e. day hiking, developed recreation).
- The 1990 MBS Forest Plan acknowledges the fact that more than half the state's population lives in the five counties surrounding the MBS National Forest. However, it states that the Forest in 1990 was "well below" capacity for recreation opportunities (Forest Plan 2-5). This is clearly not still the case in 2023, especially after the COVID-19 pandemic created a surge in outdoor recreation across the country.
- The 1990 plan did acknowledge that the wilderness areas of the MBS National Forest were near capacity at that time (Forest Plan 2-5). Wilderness areas have likely surpassed their capacity in 2023, and the Forest has responded with some permit systems and other management tools to mitigate resource impacts and promote visitor experience.

Recommended Changes – Social, Cultural and Economic Conditions

Based on these results, we are considering the following possible changes:

- No changes are recommended; however any future updates or amendments to the MBS Land and Resource Management Plan should reflect the rapid population growth and increased needs for ecosystem services.
- Continue to emphasize aquatic restoration projects and efforts across the forest.
- Pursue wildlife habitat emphasis projects across the Forest whenever possible (see also Monitoring Question 7B).
- Continue to value timber production as a vital component of multiple-use National Forest management.
- The Forest should assess recreation sites and resources for which both demand and resource impacts are high and discuss new or innovative management tools for these areas, including all wilderness areas.

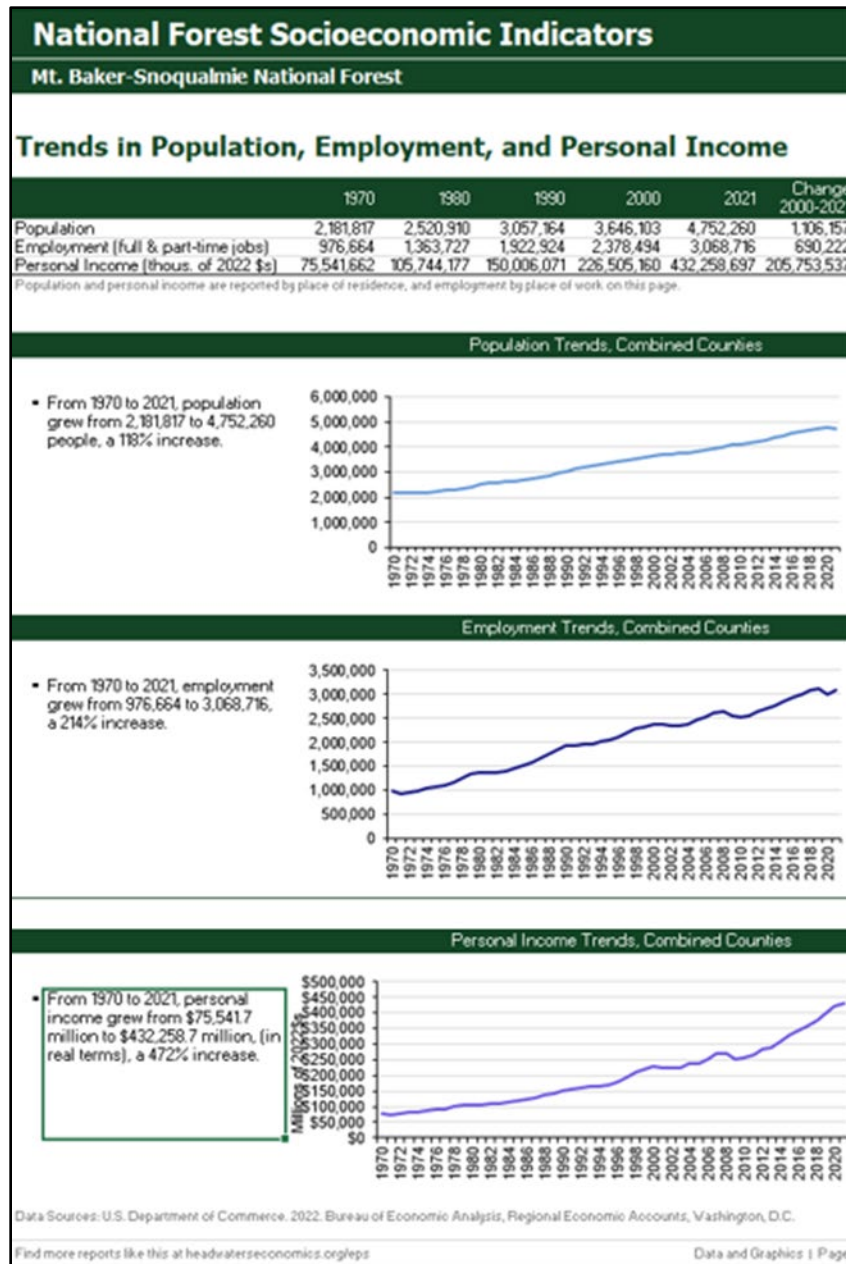


Figure 9A: Trends in population, income and employment in counties adjacent to the MBS National Forest. Source: Headwaters Economics.

Key Results – Heritage Sites

- Heritage professionals are responsible for documenting and maintaining cultural resource condition assessments to standard in the INFRA heritage database and in Heritage Program records (FSM 2309.12).
- Periodic monitoring and condition assessments are the basis for applying protective measures and treatments to vulnerable, deteriorating, or threatened cultural resources.
- Priority Heritage Assets should have condition assessments performed at least every 5 years. The MBS has 4 Priority Heritage Archaeological Sites/Districts and 19 Priority Heritage Architectural Sites/Districts.
- Only one PHA, Green Mountain Lookout, was found to be overdue for an assessment as of May 2023. Typically, a partner organization is responsible for assessments at this location.
- Because many of the sites are also used as administrative sites or housing, they receive more frequent inspection and assessment than formally documented.
- Generally, any lacking documentation of these inspections is due to record-keeping inconsistencies, not a lack of attention from the heritage program. Many inconsistencies also exist regarding annual target dates for assessments, due to errors with the Enterprise Data Warehouse application.

Recommended Changes – Heritage Sites

- No changes are recommended.
- Of 23 sites requiring formal condition assessments, the MBS is on track for all sites except one, whose maintenance is not performed by MBS staff.

FS Number	PHA Site/District Name	Last CA	Next CA due
06050500337	Corral Pass Archaeological District	2021-08-04	2026-09-30
06050100065	Baker Narrows #1	2020-09-22	2025-09-30
06050100108	Baker Narrows #2	2020-09-22	2025-09-30
06050600036	Wellington Townsite	2022-07-20	2027-09-30

Figure 9B-1: Archaeological site PHAs on the Mt. Baker-Snoqualmie National Forest.

FS Number	PHA Site/District Name	Last CA	Next CA due
06050100002	Hidden Lake Lookout	2020-09-22	2025-09-30
06050100043	Park Butte Lookout	2020-09-21	2025-09-30
06050200002	Suiattle Guard Station	2022-05-13	2027-09-30
06050200007	Miners Ridge Lookout	2021-08-21	2026-09-30
06050200012	Green Mountain Lookout	Overdue	
06050200049	Three Fingers Lookout	2022-09-05	2027-09-30

06050200243	Darrington Mule Barn	2017-07-07	2022-09-30
06050200043	Monte Cristo Ranger Station (Verlot)	2020-08-03	2025-09-30
06050200256	Verlot Ranger Station Warehouse #2259	2020-08-03	2025-09-30
06050200257	Verlot Four Vehicle Garage #1545	2020-08-03	2025-09-30
06050200258	Verlot Gas House #2545	2020-08-03	2025-09-30
06050200259	Verlot Ranger's Residence #1136	2020-08-03	2025-09-30
06050200260	Verlot Ranger's Residence Garage #1546	2020-08-03	2025-09-30
06050200261	Verlot Timber Office #1137	2020-08-03	2025-09-30
06050200262	Verlot Public Service Center #2031	2020-08-03	2025-09-30
06050300012	Winchester Mountain Lookout	2020-09-28	2025-09-30
06050300013	Austin Pass Warming Hut	2020-07-21	2025-09-30
06050600021	Stevens Pass Guard Station	N/A	2022-09-30
06050700027	Suntop Lookout	2021-08-10	2026-09-30

Figure 9B-2: Architectural site PHAs on the Mt. Baker-Snoqualmie National Forest

Key Results – Road Decommissioning

- The 1990 Forest Plan identified a need to better understand the effects of roads on wildlife populations (2-14, 2-17). In 2023, we have a much more thorough understand of road impacts on ecosystems.
- Decommissioning of roads was not discussed in the Forest Plan; at that time, scientific consensus on road impacts was not present, and timber harvest levels required a robust road system. The Forest Plan, to the contrary, suggested that road use had exceeded capacity and supported an increase in the road system. However, this does not align with the current restoration goals, scientific knowledge, or fiscal situation of the Forest.
- To comply with the 2012 Travel Management ruling, the MBS created a Sustainable Roads Strategy to guide the management of the road system. This strategy identified roads eligible for decommissioning, as well as the minimum road system necessary for safe and efficient operations.
- Analysis of INFRA data indicates that total road miles on the Forest reduce by about 10 miles annually, due to active decommissioning contracts.
- Funding opportunities such as NAMP and GAOA are sometimes used to secure funding for decommissioning contracts.
- NEPA analysis for road decommissioning is regularly included in landscape-level project planning, to prepare for funding and contracting opportunities.
- In 2013, 404 miles of road had been decommissioned Forest-wide. In 2018, that number rose to 495 miles and by 2023, 503 miles.

Recommended Changes – Road Decommissioning

- The 1990 MBS Forest Plan should be updated to reflect the results of the 2012 Sustainable Roads Strategy, as well as current scientific knowledge of the impacts of road systems on wildlife and aquatic resources.
- Continue to pursue opportunities to reduce the size of the MBS road system where appropriate.
- Continue to require the decommissioning of temporary roads, constructed for the purpose of timber sales, at the completion of the sale.

Key Results – Tribal Consultation

- The 1990 Forest Plan had limited standards and guidelines relevant to tribal consultation but did emphasize the need for ongoing Tribal consultation prior to planned work, particularly in inventoried areas with known cultural resources (3-7, 4-8).
- The Forest Plan stated that certain cultural resource areas will be protected from all development, and identified through consultation, in compliance with the American Indian Religious Freedom Act (4-35).
- The MBS continues to practice these standards and guidelines through regular consultation with many tribes indigenous to the area and enters these consultation events into the USDA Tribal Consultation Database.
- Consultation with tribes occurs during the NEPA process for project planning, through government-to-government meeting, program reviews and Section 106 compliance.
- However, due to the lack of a tribal liaison for the Forest, the MBS is unable to access the Office of Tribal Relations tracking database. This makes it difficult to determine how effectively or consistently the Forest is meeting requirements for consultation.
- One particular area of success is the 6 Tribal Memoranda of Agreements in effect for the Forest:
 - Nooksack Indian Tribe (2023)
 - Muckleshoot Indian Tribe (2017)
 - Tulalip Tribes (2011, includes a co-management agreement for the Harlan Ridge area)
 - Swinomish Indian Community (2011)
 - Sauk-Suiattle Tribe, (2011)
 - Stillaguamish Tribe (2011)

Recommended Changes – Tribal Consultation

- No changes to the Forest Plan are recommended. However, should a revision of the Forest Plan occur, consider augmenting the standards and guidelines to include database tracking of consultation. It is difficult to monitor efficacy of the Forest Plan without tracking.
- Consider the addition of a Tribal Liaison to the Forest staff, who would obtain access to the Office of Tribal Relations database. This would allow for a cohesive consultation program to measure the success/failure of the Forest's tribal engagement.

Public Engagement Opportunities

The Mt. Baker-Snoqualmie National Forest invites the public to provide feedback on its monitoring plan and evaluation. Additional information is available at the following link:

<https://www.fs.usda.gov/main/mbs/landmanagement/planning>

Electronic comments may be emailed to: FS-comments-pacificnorthwest-mtbaker-snoqualmie@usda.gov

Written comments may be mailed to:

Mt. Baker-Snoqualmie National Forest

2930 Wetmore Ave.

Suite 3A

Everett, WA 98201

References

- Aerial Detection Surveys (ADS). USDA Forest Service, Pacific Northwest Region, Forest Health and Protection, 2023. www.fs.usda.gov/detail/r6/forest-grasslandhealth/insects-diseases/?cid=stelprdb5286951
- Bell, DM et al. Quantifying regional trends in large live tree and snag availability in support of forest management. *Forest Ecology and Management* 479: 11854, 2021.
- Davis, Raymond J. et al. Northwest Forest Plan the first 25 years (1994-2018): status and trends of late-successional and old-growth forests. Gen. Tech. Rep. PNW-GTR-1004. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station, 2022.
- Franklin, AB et al. Range-wide declines of northern spotted owl populations in the Pacific Northwest: A meta-analysis. *Biological Conservation* 259: 109168, 2021.
- Harris et al. Olympic National Park Mountain Goat Removal and Translocation to the North Cascades: Progress Report, 2018-2020.
- Headwaters Economics Analysis Tools, 2023. <https://headwaterseconomics.org/>
- Larson et al. Effects of Recreation on Animals Revealed as Widespread through a Global Systematic Review. *PLoS ONE* 11(12): e0167259, 2018.
- Lorenz, TJ et al. Status and trend of nesting habitat for the marbled murrelet under the Northwest Forest Plan, 1993 to 2017. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station.
- Machowicz, A, C. Vanbianchi, and R. Windell. Recreation and Wildlife in Washington: Considerations for Conservation. Home Range Wildlife research, Winthrop, WA, and Conservation Northwest, Seattle, WA, 2022.
- McIver, William R et al. Status and trend of marbled murrelet populations in the Northwest Forest Plan area, 2000 to 2018. Gen. Tech. Rep. PNW-GTR-996. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station, 2021.
- Miller et al. Sustaining wildlife with recreation on public lands: a synthesis of research findings, management practices, and research needs. Gen. Tech. Rep. PNW-GTR-993. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station, 2020.
- Mt. Baker-Snoqualmie Land and Resource Management Plan. USDA Forest Service, 1990.
- Nelson, L.H., and D. Bailey. The “Recreation Boom” on Public Lands in Western Washington: Impacts to Wildlife and Implications for Treaty Tribes. Natural Resource Department, Treaty Rights Office, Tulalip Tribes, 2021.
- Northwest Forest Plan Record of Decision. USDA Forest Service, 1994.
- Northwest Indian Fisheries Commission. Annual Deer Harvest, 1997-2021. <https://nwifc.org/publications/big-game-harvest-reports/>

Rowland et al. Regional Westside Elk Habitat Use Models for Habitat and Conditions, 2018.

Spies, Thomas A. et al. Twenty-five years of the Northwest Forest Plan: what have we learned? The Ecological Society of America, Frontier Ecology Environment, 10.1002, 2019.

Washington Department of Fish and Wildlife. Elk and Deer Harvest Datasets, 2022.

<https://wdfw.wa.gov/hunting/management/game-harvest>

Watershed Condition Classification Technical Guide. USDA Forest Service, 2011.