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Forest Service Pacific Northwest Region

September 2008

Mount Baker-Snoqualmie National Forest

Fiscal Year 2007 Monitoring Report



On the cover: (Clockwise from upper left) Lake Twentytwo Research Natural Area, Canada thistle, spring flow in Skagit River just downstream from the Sauk River, Mountain Loop Highway monitoring review.

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Service

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Date: September 30, 2008

Dear Interested Party:

The Fiscal Year 2007 Mount Baker-Snoqualmie National Forest Plan Monitoring Report is enclosed.

The goal of Forest Plan monitoring is to determine what in the Plan is working well and what is not, and to help identify what changes are needed in management direction or monitoring methods.

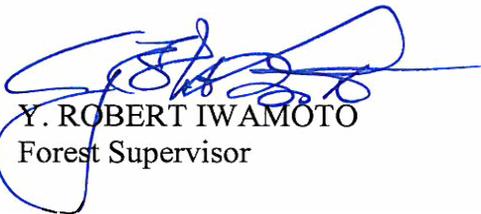
This monitoring report reviews results of monitoring conducted during fiscal year 2007 (October 1, 2006 through September 30, 2007). The year's report focuses not only on monitoring the elements from the Forest Plan's monitoring chapter (Chapter V) that remain pertinent, but also on evaluating the monitoring elements that are outdated and need change.

You can also access the 29-page Monitoring Report from our Forest web site at <http://www.fs.fed.us/r6/mbs/projects/>, or by requesting a printed copy from Forest environmental coordinator Curtis Spalding at (425) 783-6033. If you have any comments or questions on the report, we would welcome them.

The report covers only fiscal year 2007. The fiscal year 2008 Monitoring and Evaluation Report will be available by mid-2009.

Thank you for your interest and involvement in National Forest planning, management, and monitoring.

Sincerely,



Y. ROBERT IWAMOTO
Forest Supervisor



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Executive Summary

Annual Forest Plan monitoring provides an opportunity for leadership on the Mount Baker-Snoqualmie (MBS) National Forest to adaptively manage natural resources by continually identifying accomplishments and challenges.

For the Fiscal Year (FY) 2007 MBS Forest Plan Monitoring Report, an Interdisciplinary Team (ID Team) of specialists in the Forest Supervisor's Office collaborated to produce a broad management review of each of the Forest's resource areas. The findings in this report are based upon each specialist's observations relative to the monitoring elements outlined in Chapter Five of the MBS Forest Plan, as well as observations from a field monitoring visit to the Mountain Loop Highway repair project.

Based on these findings, the ID Team offers the following evaluations and recommendations:

Evaluations

A number of monitoring items from the 1990 Forest Plan are obsolete.

Better communication and coordination is desirable between planners, implementers, and specialists during all phases of project implementation.

- Adequate monitoring of all resource areas in any given year is not possible under current funding and staffing levels. Monitoring may have to be on a 2-5 year cycle rather than annually.

Recommendations

- Update and refine the Forest Plan monitoring approach in the upcoming Plan revision.
- Analyze each project for its level of complexity and risk, and allocate time and resources accordingly.
- Develop a "Monitoring and Evaluation of Acquisition of New Information" as specified in Information Needs, Chapter 2 of the Forest Plan. It is recommended that the Forest ID Team conduct this exercise in FY 2009 when adequate time is available.
- Bring Forest Plan monitoring into its rightful place within the Program of Work (POW). Monitoring is a Forest-scale activity and responsibility, not that of a specific staff area. As part of the final approved POW, identify those projects that will be monitored for the annual report and establish the team and process for monitoring. Build in time and responsibilities for implementation and effectiveness monitoring. Some effectiveness monitoring may be on projects conducted in previous years.
- Take extra efforts to communicate with key internal and external parties on particularly complex or risky projects.
- Begin monitoring of the previous FY's projects as soon as possible after project completion or when project's effects become apparent.

Introduction

The Land and Resource Management Plan (Forest Plan) for the Mount Baker-Snoqualmie National Forest (MBS) was approved by the Regional Forester in 1990. On April 23, 1994, the Secretaries of the Departments of Agriculture and Interior signed a Record of Decision for the Management of Habitat for late-Successional and Old-Growth Forest Related Species, commonly referred to as the Northwest Forest Plan (NWFP). The NWFP amended the Forest Plan by establishing new land allocations and standards and guidelines.

This monitoring report provides an update to the Regional Forester, MBS Forest managers, and the public on Fiscal Year 2007 Forest Plan implementation activities. Monitoring is conducted on an annual basis, and is intended to identify:

1. Whether Forest Plan goals, objectives, standards, and guidelines are being met,
2. Whether the Forest Plan monitoring approach remains valid, and
3. If changes are needed in Forest Plan implementation, or in the Forest Plan, what those changes are.

Monitoring is essential to adaptive management of the MBS's natural resources, because it allows resource managers to identify and respond to changing circumstances across the landscape.

Monitoring Strategy

For the 2007 Monitoring Report, the MBS used an interdisciplinary approach. Accordingly, the Forest Leadership Team (FLT) established a Monitoring Interdisciplinary Team (ID Team) to develop this report. The team consisted of specialists from each resource area in the Forest Supervisor's Office. Additional input was provided by personnel on the Ranger Districts.

Chapter Five of the 1990 MBS Forest Plan outlines 53 specific monitoring activities to be performed by each resource area. For this report, the ID Team developed monitoring questions for each of these 53 items and then divided these activities among themselves. Each ID Team member answered their assigned monitoring questions to the best of their ability, considering that the monitoring activities were developed 18 years ago and in some cases have become obsolete. To capture other monitoring activities that are now occurring but are not specifically listed in the Forest Plan, each specialist provided an analytical narrative answering a broad monitoring question on the status of their respective resource area.

Further, the ID Team conducted a field review of the Mountain Loop Highway repair project to gather on-the-ground monitoring results. Findings from this field trip are included in this report.

This report is divided into six sections: monitoring findings, field review findings, evaluation and recommendations, fiscal year 2007 accomplishments, and quick facts about the Forest. In the monitoring findings section, the numbered questions in the table correspond to the un-numbered monitoring items listed sequentially in Table 5-1 in the Forest Plan Monitoring chapter.

Physical Resources

Fire Management

Table 1. Fire management monitoring

Monitoring Question	Monitoring Activity	Summary of Monitoring Results	Recommendation for Future Monitoring
43. Fire: What is the status of program efficiency?	Comparison of expected with experienced efficiency	D) Other. Monitoring technique has evolved since the Forest Plan	Discontinue monitoring activity. Development of Fire Program Analysis (FPA) will replace forest level fire program monitoring.

The current MBS fire preparedness program resources and type are based on the National Fire Management Analysis System (NFMAS) analysis update completed in 1999. NFMAS models fire program efficiency by using forest land, weather, fire occurrence, and fuels data to determine a Most Efficient Level (MEL) preparedness program and funding level. The analysis also identifies funded program organizations with less than and greater than MEL funding.

The MEL preparedness program on the MBS consists of four engines with seven-day effective staffing and two prevention modules with five-day staffing. The engines are stationed centrally on two fire zones, the North Fire Zone (Mt. Baker and Darrington Ranger Districts) and the South Fire Zone (Skykomish and Snoqualmie Ranger Districts). The MBS program currently receives less than MEL funding.

In addition to the Forest preparedness program, the unit also hosts a Type 1 crew, a Type 2 initial attack (IA) crew, and a fire prevention technician. The Type 1 crew is a funded National Shared Resource. The Type 2 crew is funded through a combination of Forest preparedness funding and a Region 6 Fire and Aviation Director's earmark. The prevention technician is funded through the forest preparedness program. The current fire program leadership structure was established in 2003.

The interagency Fire Program Analysis (FPA) system will be utilized to develop future fire program configuration and funding. FPA utilizes Geographic Information System (GIS) geographic, weather, fuels, and fire occurrence data to determine organizational efficiency. The preliminary FPA run for the MBS conducted in 2006 supported preparedness resources, staffing, and placement consistent with the current program. A national FPA run scheduled for fall 2008 will be utilized to fund the 2010 fire program on the Forest.

Overall, the current MBS fire preparedness program is capable of meeting MBS Forest Plan direction regarding fire suppression. Resources and staffing are derived through systematic analysis of geographic, weather, fuels, and fire occurrence data. FPA provides a framework for continued analysis and monitoring of fire program efficiency. Continued Forest level fire program monitoring will not be required due to FPA

Roads

Table 2. Road construction and maintenance monitoring

Monitoring Question	Monitoring Activity	Summary of Monitoring Results	Recommendation for Future Monitoring
48. Roads: How many miles of new road construction/how many miles of roads are being decommissioned?	Engineering reports, database TIS	D) Other. Variables in 1990 Forest Plan are not relevant in today's environment. TIS database replaced by the I-Web database.	Consider discontinuing monitoring of new road construction. Begin monitoring of road reconstruction or improvements and decommissioning.

Policy changes over the past 20 years have had a profound effect on how roads are managed compared to when the thresholds of concern were formulated in the 1990 Forest Plan. In the past, the primary purpose for road construction, reconstruction, and maintenance on the Forest was to enable timber harvest. Reduced timber harvest levels have resulted in the need for significantly fewer miles of new road construction and reconstruction than anticipated in the 1990 Forest Plan. In fact, no new road construction and only 8.1 miles of timber purchaser road reconstruction or improvement were completed on the Forest during FY 2007. This falls far below the projected miles in the Forest Plan for Decade 2, with 11.1 miles of timber purchaser road construction and 46.0 miles of timber purchaser road reconstruction (permanent road, excluding temporary). However, there was a total of 92.7 miles of other road improvements accomplished during FY 2007 with funding from road maintenance, co-op maintenance, ERFO, Title II (RAC), and other non-Forest Service sources.

Timber revenue and road maintenance budgets have fallen significantly during the last 20 years. As a result, neither the Forest Service nor the Forest has the means or ability to maintain its entire road system. The agency must find an appropriate balance between the benefits of access to the National Forests and the costs of road-associated effects to ecosystem values. Providing road systems that are safe to the public, responsive to public needs, environmentally sound, affordable, and efficient to manage is among the agency's top priorities. In FY 2007, the Forest began an assessment of the road system, called Roads Analysis, to determine the optimum road system to support current land management objectives on the Forest.

The miles of road suitable for passenger cars have been reduced to 1121.2 miles so far from the 1204 miles projected for Decade 2 in the 1990 Forest Plan. The miles of road suitable for high clearance vehicles have been reduced to 919.8 miles versus the 1719 miles projected for Decade 2 in the 1990 Forest Plan. Additional reductions in the future will need to continue after the Roads Analysis is completed and as watershed analyses and Access and Travel Management (ATM) plans are completed and management decisions are made. Future funding for completing the necessary planning and implementation for road decommissioning and conversion to trails will be a challenge, but programs such as Legacy Roads, partnerships, and grant opportunities will help accomplish those objectives. The Lower Suiattle, Upper Sauk, and Skykomish Forks watersheds have been identified as priority areas for regional funding to restore watershed functions, including road decommissioning and other road treatments.

The table below shows the current road system and road related accomplishments on the Forest.

Table 3. Status of the forest's transportation system—fiscal year 2007

Road Construction, Reconstruction and Decommissioned

Miles of Road Constructed FY 2007	0.0
Miles of Road Reconstructed or Improved	100.8
Miles of Road Decommissioned	1.0

Existing Road System

Miles of Road Suitable for Passenger Cars	1121.2
Miles of Road Suitable for High Clearance Vehicles	919.8
Miles of Closed Road or Roads in "Storage"	<u>536.8</u>
Total Miles of Road	2577.8

Roads Maintained

Miles of Road Suitable for Passenger Cars	574.0
Miles of Road Suitable for High Clearance Vehicles	<u>67.0</u>
Total Miles of Road Maintained	641.0

Watersheds

Table 4. Watershed monitoring

Monitoring Question	Monitoring Activity	Summary of Monitoring Results	Recommendation for Future Monitoring
3. Watershed Rehabilitation: Achieving expected results?	Visual observations and transects in project area	A) Results acceptable. See narrative on Finney Creek, and Recreation-Riparian	Continue. Project monitoring provides valuable information in assessing the effectiveness of treatments.
4. Watershed S&Gs and Prescription: Are S&Gs effective?	Visual observations, sampling of one or more key water parameters, photos	D) Other. See narrative on Mountain Loop Scenic Highway monitoring	Continue. Transition this into BMP monitoring to comply with national direction.
24. Cumulative Effects and Watershed Condition: What is the in-channel condition of the Forest's watersheds?	Assess management history, unstable soils, stability rating, fish habitat capability, climatic conditions, downstream impacts	A) Results acceptable: see narrative on stream surveys. AREMP ¹ continues Regional scale effectiveness monitoring of the Forest Plan implementation	Continue at designated sites for trend monitoring. Establish a strategy for long term since results will be long term
25. Water: What is the condition of stream discharge/flow?	Streamflow gauges, staff gauges or other	D) Other. See narrative on Floods	Discontinue. Streamflow monitoring is expensive and is being done by other agencies. Only collect where streamflow data are not otherwise available and are needed to interpret other monitoring information.

Aquatics Effectiveness Monitoring Program

Watershed monitoring is intended to determine if watershed conditions on the Forest are being maintained such that watershed processes and functions are preventing watersheds from sustaining irreparable damage from management activities and climatic events. The Forest Plan watershed cumulative effects analysis made a determination of “acceptable” or “unacceptable” condition, based on the amount of watershed disturbance and upslope and channel conditions. Watershed conditions have been reviewed in watershed analyses since the amendments to the Forest Plan (USDA 1990) in 1994, by the *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl: Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species within the Range of the Northern Spotted Owl* (USDA and USDI 1994). For individual watershed conditions, refer to the specific watershed analysis. More detailed monitoring of watershed rehabilitation work is done on a project scale.

Water Temperature: Finney Creek

Cross-section and stream temperature data taken in the Upper Finney Creek instream restoration project area were analyzed during 2007. Large wood structures were constructed in Upper Finney Creek beginning in 2000 to narrow and deepen the channel with the goal of reducing stream temperatures. A statistically significant drop of one degree Fahrenheit in summer daily maximum stream temperature has been observed since 2002, which is beneficial to fish habitat. Cross-section data collected between 1999 and 2006 suggest some general increase in area of the low flow channel is occurring just above and below the wood structures, although it is not statistically significant.

Dispersed Camping Site Restoration: Beckler and Rapid Rivers

Uncontrolled camping in riparian areas can have substantial negative impacts on riparian function, stream stability, and water quality. In 2007, several dispersed sites in the Beckler and Rapid River watershed were treated to reduce impacts to the aquatic and riparian resources, and seven other dispersed sites in the

Greenwater and South Fork Snoqualmie River watersheds had non-permanent riparian fencing maintained.

Stream Surveys

Stream surveys are conducted each year on a limited number of stream miles using the Region Six Aquatic Survey protocols to provide a general characterization of aquatic habitat conditions (Aquatic Inventory) and the presence of aquatic species (Aquatic Biota). In 2007, a crew from the North Cascades National Park surveyed 27 miles of streams for the Forest. The stream surveys were entered into the Regional database and error checked. No analysis of the data was performed.

Floods

Major storms in November 2006 set record rainfall amounts in Seattle and other western Washington locations and caused extensive flooding on many of the major rivers of the northwest and on the Forest. The Forest does not maintain stream flow measuring stations due to the high cost and because other agencies maintain a network of stream gauges in the area. Due to costs, most of the agencies have had to cut back on the number of stations; therefore, most of the stations are downstream of National Forest System lands. However, the array of USGS stations, as well as State and county operated stations, provides invaluable information on floods and other flows that may be of interest to the Forest.

Figure 1. Forest Service Road 1550, Cascade River Bridge. November 8, 2006



There is some evidence that stream flows are increasing on some rivers; record floods on many of the rivers occurred on many of these rivers in October 2003, and the frequency of major floods appears to be on the increase. Although no definitive studies have been done, climate change may be responsible for the larger floods. The October 2003 flood was evidently an unprecedented “rain-on-glacier” event because there was no significant snowpack when the storm occurred. Some studies of snowpack are also showing a shift in the timing of snowmelt runoff to earlier in the Spring, leaving less snowmelt and ground water to sustain flows later in the summer. This information continues to be of great value to the Forest for completing transportation planning,

especially the storm-proofing of roads as part of watershed restoration.

Biological Resources

Botany

Table 5. Botany monitoring

Monitoring Topic	Monitoring Activity	Summary of Monitoring Results	Recommendation for Future Monitoring
52. What effects are proposed management actions having which have the potential to affect habitats of T, E, or S species? Are BEs being completed for all activities when Sensitive species are present? Is habitat managed to ensure that these species do not become threatened or endangered?	Completion of surveys and Biological Evaluations	A) Results acceptable	Activity should be continued to ensure the MBS is redeeming its responsibilities towards Sensitive species and other rare and uncommon species.
53. What is the status of occupied habitats of T, E, and S species?	Field visits	A) Results acceptable	Continue monitoring activities to know if we are meeting the agency's responsibilities towards Sensitive and other rare and uncommon species.
54. Are noxious weeds being controlled to the extent practical? Are small infestations of new noxious weeds being eradicated as quickly as possible?	Contract administration, field visits, documentation of new sites, completion of annual noxious weed NEPA, membership in several CWMAs	D) Other. Results are mixed. The MBS is making progress in some areas but losing ground in others.	Continue monitoring to determine when populations have been eradicated, when new populations occur, and to determine if MBS is meeting the goals and objectives of the 2005 ROD on invasive plants in Region 6.

*There are no monitoring questions for the Botany program in Chapter 5 in the MBS Forest Plan, so these topics come from the Standards and Guidelines for the Threatened and Endangered Species section pages 4-127 through 4-128, and the Vegetation Management Section page 4-135

Biological evaluations are completed for every project requiring one. Forest-wide, at least 30 are done yearly. Sites with Sensitive or other rare and uncommon species are typically managed to maintain the species on site unless the population there is sufficiently large that the loss of a few individuals will not lead to a trend toward listing. New sightings and re-visits are entered into the national Natural Resource Information System (NRIS) database annually, although there continues to be a disparity between the abundance of data and funding to manage that data.

Monitoring of sensitive and other rare and uncommon species is done primarily by volunteers. The University of Washington has a program called Rare Care which provides the MBS with trained volunteers to go to rare plants sites that the Forest designates. As very limited monitoring is done through appropriated funds, without the volunteers monitoring would be insufficient.

There are numerous documented invasive weed sites that are not being treated by any means due to funding limitations. Those sites are expected to be increasing in size. More survey work is needed to find the populations not yet documented that surely exist; however, that work is limited by staffing. The MBS target in FY2007 was 76 acres, which was met. Part of the success is due to partners who treated several sites at no cost. Some populations appear to be eradicated, but it takes several years of repeat monitoring to assure that is the case. Some species re-appear after a few years of "rest". The New Invaders Strategy (Forest Plan Amendment #26) allows the Forest to treat new infestations the year after they are

discovered. It should be noted that there is nothing in the MBS Forest Plan about native plant materials, which is becoming an increasingly important program element and is a requirement of national policy.

Ecology

Table 6. Ecology monitoring

Monitoring Question	Monitoring Activity	Summary of Monitoring Results	Recommendation for Future Monitoring
55. What is the status of Mountain Hemlock suitability?	Mt. Hemlock study plan	D) Other. Results and conclusions from the study resulted in action in the Forest Plan that removed the Mountain Hemlock Zone from the suitable land base due to failure to meet regeneration standards.	Mt Hemlock study plan was suspended indefinitely when the MBS Forest Plan was approved and implemented. Further study and monitoring on stand development in the Mountain Hemlock Zone was shifted to the MBS Ecology Benchmark plots.
14. Old-growth: What is the status of old-growth ecosystems?	Identify acres and distribution	A) Results acceptable	Continue monitoring. Status of old-growth ecosystems is complex and dynamic, and are not represented by a single type or age. Monitoring of old-growth and replacement old-growth stands will document old-growth status and changes over time.

The Western Washington Area Ecology program serves the three National Forests of Western Washington, including the MBS. The Ecology Program monitors conditions on National Forest lands with a network of permanent benchmark plots.

Figure 2. Big Four Mountain from the Barlow Pass area.



The objectives of these plots are to establish benchmarks of species composition and stand conditions for the different plant associations and age classes on the landscape. There are about 596 of these permanent plots installed on the MBS, which date back to 1983. Many of these plots have been periodically re-measured to document conditions, trends, and changes over time, including species composition, stand conditions, successional patterns, stand volume, and growth and mortality. This network of plots with repeated measurements provides data to address problems, land management issues, and questions such as thinning response, red alder growth and stand development, growth of young stands relative to culmination of mean annual increment and biomass accumulation (Henderson wedge), and an old-growth restoration plan for the Finney AMA. Ongoing

maintenance and re-measurements will continue to add value to the Forest and enable better land management decisions.

As part of this permanent plot network, monitoring plots in thinning treatments have been established to document stand responses to different treatments. In 2006 ecologists installed or re-measured six plots in the Sky Forks Sale area: Barclay (two plots), Northtown (three plots) and Salmon Creek (one plot). In 2007 five plots were installed in Forgotten Thin. These plots were established prior to treatment to document pre-thinning stand conditions, and will be re-measured periodically to document post-treatment

response. Ongoing measurements of these plots have revealed significant problems with the application of thinning treatments on certain types of sites. These problems include significant and unplanned regeneration of western hemlock, Douglas-fir, and western red cedar in the understory of thinned stands. Other benchmark plots installed or remeasured included five plots in 2007 and six plots in 2006.

In the 1980s, data from ecology plots showed that stands in the mountain hemlock zone had very slow regeneration and growth and very low productivity. The MBS Forest Plan removed most of the mountain hemlock zone from the commercial timber base, pending a study on regeneration and growth following harvest in these high elevation forest types. A network of plots for this study was established in the mountain hemlock zone, but these stands were never harvested, and the study was suspended indefinitely. However, the Ecology Program continues to monitor benchmark plots in the mountain hemlock zone, and data continue to show that these stands regenerate very slowly, and are very slow-growing.

The acreage and distribution of old-growth ecosystems on the MBS did not measurably change in 2007. In 2006 and 2007, there were no significant fires, blowdown, insect outbreaks, timber harvest, or stand disturbance events that would reduce the amount of old-growth on the Forest. Based on the fire history and stand year of origin data, 67% of the forested lands on the MBS is in old-growth forests, defined as stands at least 200 years of age. Of the total land area of the Forest, 54% is in old-growth forest. The amount of old-growth forest by 5th-field watershed averages 57% and ranges from 32 to 81%. The amount of old-growth forests on the MBS is within the historic range of variability, and is consistent with the long term average of about two-thirds of the landscape in old-growth forest condition (Henderson 1992).

Fisheries

Table 7. Fisheries monitoring

Monitoring Question	Monitoring Activity	Summary of Monitoring Results	Recommendation for Future Monitoring
19. Fish S&G and Prescriptions: Are area prescriptions effective toward protecting habitat capability?	Use FSH 2609.23/Hankin-Reeves stream survey methodology, stream channel stability evaluation	A) Results acceptable. See narrative on stream surveys; AREMP ¹ continues Regional scale effectiveness monitoring of Forest Plan implementation	Continue. Annual use of Hankin-Reeves is not appropriate for S&G effectiveness monitoring. AREMP is monitoring on large scale. Continue on project basis as BMP monitoring, as funds are available.
21. Water Quality/Fish Habitat Capability: Are BMPs effective?	Measure temperature, sediment, bedload, turbidity and pH	D) Other. See narrative on stream temperature; see Mtn. Loop Scenic Highway project monitoring discussion	Continue by transitioning to BMP monitoring to comply with national direction and document recovery and protection.
22. Fish Habitat Restoration and Improvement: Are habitat restoration and enhancement projects producing predicted fish outputs?	Calculate smolt production, estimate WFUDs derived from anadromous and resident fish	C) No monitoring done	Discontinue metrics of smolt production and WFUDs. May conduct some monitoring in cooperation with State. Difficult to interpret data, and Tribes have longer term data.
23. Cumulative Effects and Fish Habitat Capability: What are the cumulative cause/effect relationships between land disturbance and habitat capability?	Collect and evaluate fish habitat trend data	A) Results acceptable. See narrative on stream surveys, AREMP ¹ continues Regional scale effectiveness monitoring of Forest Plan implementation	Continue at designated sites for trend monitoring. Establish a strategy for long term, because results will be manifest over decades.

¹ Aquatic and Riparian Effectiveness Monitoring Program

The anadromous fisheries that utilize the Forest for spawning and rearing are under considerable stress from changing ocean conditions, exploding growth and development around estuaries and along rivers, and rural land management activities. Management activities on the Forest have complied with Forest Plan standards and guidelines, and considerable effort has been made to improve aquatic habitat across the Forest. Progress is being made toward improved habitat conditions on the Forest as noted in some of the monitoring items. However, the populations continue to be stressed at various stages of the fish life cycle. Specifically, floods continue to damage or destroy redds and impact over-wintering juveniles; stream temperatures are slow to recover, and climate change works against cooling temperatures; off-Forest influences such as predation, harvest, and marine water quality conditions affect the populations. Puget Sound steelhead was listed as threatened under the Endangered Species Act in 2007. Other listed fish species on the Forest include Chinook salmon and bull trout. The National Marine Fisheries Service has also designated critical habitat for Chinook on the Forest.

Stream Temperature

The MBS continued a small stream temperature monitoring program in 2007. Stream temperature monitoring is a required parameter in the Region 6 Stream Survey protocol for the year streams are surveyed. In addition, the Forest has monitored a few other sites to attempt to develop longer term trends for some streams.

In 2007, the Forest monitored seven sites in the upper North Fork Stillaguamish River watershed.

Mean daily maximum stream temperatures have not been calculated for these sites. It is probable that the mainstream North Fork Stillaguamish River exceeded Washington State temperature standards on the hottest days. The tributaries, except for Squire Creek, may have briefly exceeded standards. Squire Creek is much cooler than the North Fork of the Stillaguamish River. The standards used are 7-day mean maximum daily temperature of 16°C for salmonid spawning and 12°C bull trout for these streams.

The warmest reach of the North Fork Stillaguamish River, above South Branch, has a short section that is wide and shallow and is therefore very exposed to the summer sun. The river also flows directly south with a riparian zone dominated by small alder and willow that are ineffective at shading the channel. Plans are being developed to move Road 28 away from the river and restore the riparian vegetation and improve stream morphology.

Research Natural Areas

Table 8. Research Natural Areas monitoring

Monitoring Question	Monitoring Activity	Summary of Monitoring Results	Recommendation for Future Monitoring
42. Research Natural Areas: Are RNA management objectives being met?	Visual site inspection	D) Other. Results are mixed. Some RNAs are monitored, but most are not. Most RNA objectives are being met, while others are met marginally.	Continue. Monitoring should be not only continued but increased to all RNAs.

There are five established Research Natural Areas (RNAs) on the Forest, and only two have any monitoring occurring. Monitoring is accomplished through volunteers (the Research Natural Area Stewards Program) who walk the trails in the Lake 22 and Perry Creek RNAs to talk with the public and bring reports back to the Forest. These RNAs are sometimes visited by backcountry rangers, but their reasons for being there are very different than they would be for an RNA Coordinator or RNA Steward.

Of the RNA objectives, the one being marginally met is to “Protect against human-caused environmental disruptions” (FSM 4063.02). Use at Lake 22 is very high, although the Darrington Ranger District has implemented some projects in the last few years to reverse the effects of high use. The success of these

efforts is unknown. Recreation use in the Perry Creek RNA is also high, but a limited season also limits the total annual number of users compared to Lake 22. Nevertheless, there is a problem with multiple trails at the upper end of the RNA in Perry Creek meadows. Recreation use is known to occur in the North Fork Nooksack RNA resulting in non-system, braided trails, but the significance of those is unknown due to lack of detailed monitoring. Recreation use is also known to occur in the RJ Taylor RNA, but the numbers or the effects are also unknown. No monitoring of the Long Creek RNA has occurred. There was no funding in FY 2007 for RNA management, including the volunteer program.

Vegetation Management

Table 9. Vegetation monitoring

Monitoring Question	Monitoring Activity	Summary of Monitoring Results	Recommendation for Future Monitoring
5. Timber: What is the status of reforestation?	Plantation survival examinations	C) No monitoring done	Resume monitoring when planting occurs to determine if National Forest Management Act reforestation requirements are being met.
6. Timber: What is the status of timberland suitability?	Management reviews, resource inventory	B) No new results	Continue monitoring to provide accurate data for determining land base available for scheduled timber harvest.
7. Timber: What is the size of the harvest area?	EAs and TRI* database, field reviews	A) Results acceptable	Continue monitoring to determine if Forest Plan standards for size and dispersion of harvest units are met.
8. Timber: What are the impacts of insects and disease, animal damage, and air pollution to growing stock levels?	Aerial surveys, field observation, stand exams	A) Results acceptable	Continue monitoring to assess whether impacts of insects, disease, animal damage, and air pollution are affecting achievement of Forest Plan objectives.
9. Timber: What is the status of allowable sale quantity?	TSSA, Stars*	C) No monitoring done	Discontinue monitoring. The assumptions upon which the allowable sale quantity was calculated are no longer valid following implementation of the Northwest Forest Plan.
10. Timber: What is the timber sale program quantity?	TSSA, Stars*	C) No monitoring done	Discontinue monitoring. The assumptions upon which the timber sale program quantity was calculated are no longer valid following implementation of the Northwest Forest Plan.
11. Timber: How many acres per management area are using various silvicultural practices?	Number of acres harvested by silvicultural system or activity by management area	A) Results acceptable	Continue monitoring to determine whether silvicultural practices are consistent with management area direction and NWFP land allocations.
12. Timber: What is the distribution of timber harvest acres and volume?	SILVA*, TRACS,* attainment reports, Stars	A) Results acceptable	Continue monitoring to determine whether implementation of the Forest Plan is having the predicted results regarding timber harvest.

*These databases have been discontinued and replaced by the TIM and FACTS databases.

The Forest sold approximately 12.7 million board feet (MMBF) of timber in FY 2007, mostly harvested from the Forgotten Thin Plus Timber Sale. Like most of the sales sold since the implementation of the Northwest Forest Plan in 1994, the FY 2007 timber harvest program was almost entirely commercial thinning, with a small amount of personal use firewood and other special forest products. The average volume sold over the past five years is 6.6 MMBF.

The size of harvest units sold in FY 2009 ranged from approximately two acres to 49 acres. The total area of harvest units was 379 acres. Of that total, approximately 371 acres were within Forest Plan Management Area 2B Scenic Viewshed—Middleground, and the remaining eight acres were within Management Area 6 Skagit Wild & Scenic River. Timber harvest is an allowed activity in both of those management areas. All harvest units are within the matrix land allocation as described in the Northwest Forest Plan.

No planting or other reforestation activities took place in 2007 because the thinning treatments that were implemented did not create openings that required reforestation, and there were no fires or other large scale disturbances that would cause a reforestation need.

Wildlife

Table 10. Wildlife monitoring

Monitoring Question	Monitoring Activity	Summary of Monitoring Results	Recommendation for Future Monitoring
14. What is the status of old-growth ecosystems?	Identify acres and distribution through time	B) No new results	Discontinue. Barring a large catastrophic disturbance, the LSR Assessment will continue to provide a good representation of the acres & distribution of old-growth habitat.
15. Wildlife: What are population trends and habitat capability for T&E species?	Review WDW, USFWS, and other T & E species census sources and habitat data.	A) Results acceptable: Spotted owl and grizzly bear C) No monitoring done: gray wolf and marbled murrelet	Continue. The Rainier DSA will document the expected continued decline of spotted owl occurrence on the Forest. Monitoring acres contributed or removed from grizzly core habitat are needed for management consideration.
16. Wildlife: What are population trends for old-growth and snag dependent species?	Monitor population levels in SOHAs, survey MR old-growth acres for suitability, WDW data and other agency data	C) No monitoring done	Discontinue. As a result of major changes in how spotted owls, pileated woodpeckers, and marten are managed under the NWFP, substantial changes are recommended to this monitoring section during Forest Plan revision.
17. Wildlife: What are population trends for deer, elk, and mountain goat?	Survey assigned big game habitat for continued suitability	A) Results acceptable for mountain goat C) No monitoring done for deer or elk	Continue to determine if mountain goat populations in the Forest will continue to increase towards historic levels activity. Discontinue monitoring suitability of deer and elk habitat until a habitat model reflecting current science is developed.
18. Wildlife: What is the status of habitat improvement efforts?	Field observation of habitat utilization	C) No monitoring done	Continue to acquire information on species utilization of habitat to answer if enhancement is effective.
20. Riparian: What is the terrestrial diversity, abundance, and habitat capability of wildlife species?	Conduct population transects, measure ground conditions in selected areas.	C) No monitoring done.	Discontinue. Upon adoption of the NWFP and its practice of managing for Riparian Reserves, this habitat is well-protected, and concern should be minimal for sustainability of species requiring this habitat.

In 2001, the Forest assessed old-growth habitat within Late Successional Reserves (LSR) and some adjacent areas. For old-growth habitat only, 12 of 16 LSR areas contain the desired level of 50% or greater old-growth habitat. The remaining four LSR areas have 31, 39, 47, and 49% old-growth habitat.

The bald eagle, peregrine falcon, gray wolf, and grizzly bear were wildlife species federally listed as threatened or endangered at the time the Forest Plan was adopted. Federal listing of the northern spotted owl, marbled murrelet, and Canada lynx occurred after the Plan was completed. In recent years, the bald eagle and peregrine falcon were de-listed, and the Forest is no longer considered within the range of the lynx. As of fiscal year 2007, there are four wildlife species federally listed as threatened or endangered: northern spotted owl, marbled murrelet, gray wolf, and grizzly bear. No monitoring has occurred for the marbled murrelet or gray wolf on the Forest in FY 2007.

Bald Eagle

Monitoring of bald eagles on the Skagit River and tributaries has been conducted primarily through funding from Seattle City Light and The Nature Conservancy. Eagle numbers have remained steady on the Skagit River. Habitat capability for bald eagles has been enhanced with land purchases of slough areas and removal of rock rip rap on the Sauk River.

Northern Spotted Owl

2007 was the 15th year of the monitoring and banding of spotted owls on the Rainier Northern Spotted Owl Demography Study Area (Rainier DSA). Based on the annual report, of 60 spotted owl sites monitored, 27 were active (meaning they contained at least one owl). Of the active sites, 15 were pairs, with only one pair attempting nesting. Recent years have indicated a pattern of site abandonment by spotted owls on the Rainier DSA. Of 32 historic spotted owl sites vacant in 2007, 26 have had barred owl detections near them in recent years. Barred owls are known to increasingly displace spotted owls in the Pacific Northwest. Current threats for spotted owls appear to be residual effects on habitat from past timber harvest and competition from barred owls (Courtney et al. 2004).

Grizzly Bear

In 2001 the North Cascades Recovery Area Technical Team completed an assessment of grizzly bear habitat within the recovery area. Overall core area and the area for preferred seasonal habitats within core area are factors to identify the likelihood of a grizzly bear with a low risk of mortality. Of the 21 Bear Management Units (BMU) on the Forest, five have low amounts of overall core area in the early season. In the late season, nine BMUs have a low amount of core area.

Deer and Elk

Regionally, the consensus among elk biologists in Oregon and Washington is that Forest Service and Bureau of Land Management Elk management plans developed during the past couple decades, such as the 1990 MBS Forest Plan, are based on science that is outdated (Wisdom et al. 2007). Substantial research since 1990 has suggested that elk are limited by the nutritional adequacy of the habitat, including forage area, forage biomass and quality, and the effects of human disturbance on forage availability. Available forage quality and quantity are also thought to limit black-tailed deer populations in western Washington (Washington Department of Fish and Wildlife [WDFW] 2008). The development of an updated elk habitat model reflecting current science has been proposed by a group of elk researchers.

With the cessation of large-scale clear-cutting in the NWFP, forage quality and populations have declined on the Forest for both deer and elk. Based on hunter statistics and annual census counts by WDFW, population trends of black-tailed deer appear to be declining. The availability of forage appears to be a contributing factor. As the forest matures, the availability of high quality forage often declines. In addition, overstocked managed stands have reduced understory forage.

The Muckleshoot Tribe has contributed efforts to increase the population of the North Rainier Elk Herd in the Green River and White River drainages. The Forest has supported the Tribe on the study and management of elk within its Tribal hunting grounds. This work will make significant contributions towards the management of elk in the Green River and White River drainages. The Forest is a current partner in management of elk with numerous federal and State government agencies, the MIT, and private organizations as part of the White River Elk Herd Interagency Technical Committee.

The Snoqualmie Ranger District of the MBS has analyzed the creation of 172 acres of permanent forage areas in the White River drainage to help meet the nutritional needs of elk and deer. The Forest expects to analyze up to 300 more acres in the next year. The Huckleberry Land Exchange Record of Decision (2001) specified that this project be facilitated in cooperation with federal, State, and Tribal biologists. The Muckleshoot Indian Tribe is an important cooperator and partner of this project.

The Sauk-Suiattle, Upper Skagit, and Tulalip Tribes have contributed efforts in augmenting elk populations in the Upper Skagit (Nooksack Herd). However, concerns with elk in agricultural fields on the Sauk Prairie have been raised by local landowners.

Mountain Goat

Mountain goat populations in western Washington declined for many decades despite reductions, or cessation, of hunting (WDFW, 1998). The Washington Department of Fish and Wildlife suggests that habitat changes resulting from fire suppression and disturbance of goats by recreationists may be important factors limiting population growth because the decline has been long and gradual (WDFW, 1998). However, unsustainable hunting could also cause long-term gradual decline in the mountain goat population. As the species is a Management Indicator Species for the Mount Baker-Snoqualmie National Forest, it is important to identify the cause of the population decline and, if possible, implement management actions that will reverse the decline.

The population on Mt. Baker appears to be responding to the lack of hunting mortality, and is near historic levels. Another population, on Goat Mountain, appears to be recovering at a slower pace. This delayed response may be due to its very small size that required a unique set of circumstances to begin to expand (several mild winters, low mortality, and likely an older age structure of females that produce more kids). Other populations on the Forest do not appear to be recovering as quickly as these two. The Forest expects to continue collaboration with the WDFW and tribes to develop a long-term management plan and ensure sustainable mountain goat populations in the North Cascades.

Wildlife Habitat

Field observation of wildlife habitat use before and after implementation of habitat improvement projects can provide insight as to whether wildlife use has changed. Projects involving vegetative treatment often create forage for species such as deer and elk. For example, approximately 25 acres of wildlife openings were created in the Forgotten Thin project. Decommissioning and closure of roads is a common occurrence on the Forest that benefits wildlife through decreased human use.

Riparian Habitat

Protection given through the NWFP for riparian and wetlands areas is maintaining the quality and diversity of these areas beyond the Forests' original expectations.

Social and Economic Services

Heritage

Table 11. Heritage and cultural resources monitoring

Monitoring Question	Monitoring Activity	Summary of Monitoring Results	Recommendation for Future Monitoring
34. What is the nature and quality of documentation of cultural resource protection?	Review data components in Cultural Resource Reconnaissance Reports, site inventory records, monitoring reports, evaluation reports, Cultural Resource Management Plans, cost figures from field units	D) Other.	Continue to assess documentation to determine if the Forest is meeting its responsibilities to manage cultural resources. Certain cost figures are reported in the USFS Accounting System database (INFRA).
35. What is the status of protection of cultural resources?	Inspection visits	D) Other.	Continue. This is a USFS national measure of accomplishment for management of cultural resources (FSH 6509.11k).

The documentation standard is intended to monitor the Forest's ability to meet responsibilities under the National Historic Preservation Act and other Historic Preservation statutes, regulations, Executive Orders, and policies.

Project Documentation and Status of Cultural Resources

Thirty-three projects or project actions were reviewed under the terms of the Programmatic Agreement Regarding Cultural Resources Management on National Forests in the State of Washington. Among the Forest Service, the Advisory Council on Historic Preservation, and the Washington State Historic Preservation Officer (1997) in 2007. In addition, facility maintenance projects that meet the Secretary of the Interior's Standards for Preservation Projects preserve the historic qualities of the Forest's Depression-era administrative buildings and do not require case-by-case review under the programmatic agreement. None of these projects were determined to have an adverse effect on cultural resources eligible for or listed on the National Register of Historic Places (NRHP). Ten were documented as having "no adverse effect."

The Forest implemented some projects for which documentation of cultural resource compliance is lacking; or were implemented without adhering to mitigation measures or management requirements. However, there no adverse effects to cultural resources reported or documented as a result.

The Anderson-Bourne Cabin, located on the Mt. Baker Ranger District, was destroyed by fire in early February, 2007. The cabin was built in the 1920s, and was eligible for listing on the NRHP. Although efforts had been made to secure funding for needed restoration and maintenance, preserving the cabin in its original setting had become increasingly challenging. The fire was believed to have been the result of vandalism; however, no arrests have been made.

No cultural resource management plans were completed in fiscal year 2007, but three plans were in progress for management of cultural resources associated with the Crystal Mountain Ski Area Master Plan, the Baker River Hydroelectric Project, and the Darrington Ranger Station Conveyance project. The Regional Forester and the Washington State Historic Preservation Officer signed the Recreation

Residence Programmatic Agreement to address recurring maintenance projects for recreation residence permit holders, and the Forest began implementing projects under that agreement.

The Forest Service has identified an Agency standard for completing condition assessments (monitoring site visits) of cultural resources at least every five years: “Priority Heritage Assets (PHA) are managed to standard if there is no deferred maintenance, and if the asset is monitored every 5 years.” PHAs are those heritage resources that meet certain criteria regarding their significance and management priority (FSH 6509). The Forest’s Heritage Site Inventory database listed 34 PHAs, and the Forest reported 11 as managed to standard as of the end of fiscal year 2007. This included one pre-contact site which was stabilized by an erosion abatement project completed primarily with partnership funding.

In addition to PHAs, historical resources may also include historic buildings that serve a governmental function (for example, Ranger Station buildings), artifact and history collections, and other cultural resources that do not meet the criteria for PHAs. The Forest has responsibilities for managing and preserving these resources as well, and while some are addressed by other functions such as Facility Maintenance (engineering), the condition of others is currently not documented, and monitoring site visits are limited by staff and resource funding.

In response to a need to manage the Forest’s artifact collection to meet federal standards (36 CFR 79), the Forest entered into an agreement with the Burke Museum for curatorial services. However, as of the end of fiscal year 2007, no collections had actually been transferred to the museum. The Forest’s history collection is currently stored at Forest-owned facilities

Lands

Table 12. Lands monitoring

Monitoring Question	Monitoring Activity	Summary of Monitoring Results	Recommendation for Future Monitoring
44. Lands: What are the effects of N.F. management on lands, resources and communities adjacent to NFS lands?	Meet with cost share cooperators, city and county officials. Conduct staff management review.	A) Results acceptable 1. Sale of Darrington residences 2. Suiattle ATM plan 3. Mountain Loop Hwy reopening	Continue project specific monitoring, through public scoping and various partnerships.
45. Lands: What is the status of adjacent land management by other government agencies?	Meetings with Federal, State and local land management agencies	D) Other: 1. Project coordination with State and County government and highway departments 2. Adjacent landowners to timber sales	Continue project specific monitoring and environmental analysis (if needed) as the MBS is notified by adjacent land owners, counties, and highway departments of their activities.
46. Lands: What are the effects of NFS management of utility corridors on transmission needs and other resource values?	Review existing capacity and plans for upgrade with utility officials. Management review of effects.	B) No new results 1. Vegetation management plans are implemented.	Continue monitoring activity as specified in utility corridor vegetation management plans.

Selling 10 Darrington residences to the Sauk-Suiattle Tribe resulted in direct benefits to the local community by providing housing and office space to the Tribe, while reducing the Forest Service’s building maintenance burden, and without affecting the District’s management capabilities.

During the Suiattle Access and Travel Management (ATM) environmental assessment (EA) process, local landowners were contacted to determine their access needs in the Suiattle road network, which helped the project interdisciplinary team determine which roads to keep open and maintain, and which roads could be put in storage or decommissioned.

No monitoring of other entities' adjacent land management activities is done formally, other than when Forest staff are notified of their projects. Typically the Forest Service is notified when the State DNR or a private timber company plans a timber sale and requires access to their land, either for hauling timber or aggregate to market via the existing Forest road system, or when they have a need to construct or reconstruct an access road(s) across NF land.

On-the-ground monitoring of the Forest boundary has generally not been done in recent years, given the lack of staff, so the MBS does not have a good indication of any trespass occurring, other than when an incident is brought to its attention. The MBS continues to have a backlog of minor encroachments by residential lot owners.

The Forest recently entered into a challenge cost share agreement with the DNR for a cooperative boundary survey.

The Forest has developed good working relationships with the WA State Department of Transportation and County highway departments on several highway improvement projects that traverse National Forest land, to ensure that National Forest resources are protected and environmental and Forest Plan standards are met. The Forest is entering into a road maintenance agreement with Snohomish County for the County to directly contribute to maintaining the Beckler River Road 65 and Sauk River Road 22 for providing safe access to private recreational in holdings.

Vegetation management plans are established with Puget Sound Energy and the Bonneville Power Administration for managing native vegetation and controlling noxious weeds under their major transmission corridors, which cross the Snoqualmie and Skykomish Ranger Districts. Vegetation management is compatible with the utilities' transmission needs and Forest Plan resource objectives.

Recreation

Table 13. Recreation uses monitoring

Monitoring Question	Monitoring Activity	Summary of Monitoring Results	Recommendation for Future Monitoring
36. Scenery: What is the visual quality level?	Monitor visual conditions through use of photo points	C) No monitoring done	Discontinue monitoring activity.
37. Recreation: What are recreation outputs by ROS class?	Monitor recreation use by type and location of activity	C) No monitoring done	Discontinue monitoring activity.

Scenery

The Visual Quality Levels of the Forest have not been re-assessed in years. Photo points were last used on the Forest in the Mather Memorial Highway planning effort of the mid-1990s. Visual Quality levels should not be deteriorating because the Forest has stopped the large scale vegetation manipulation associated with the high timber harvest levels of the 1980s.

It appears that the Forest is not following Standards and Guidelines relative to facilities development. In several projects recently reviewed, the requirement for the use of Cascadian Architecture was not apparent.

Recreation Opportunity Spectrum (ROS)

Monitoring recreation use by the Recreation Opportunity Spectrum (ROS) class has not been occurring because ROS is an out-dated system and is no longer used by the Agency. Recreation use is currently monitored through the National Visitor Use Monitoring program (NVUM). NVUM is repeated every four years on all of the Forests across the nation. The monitoring on the MBS occurred in 2001 and 2005. As of 2006, results from 2005 monitoring were not available. Data collected in 2001 showed 5.2 million visitors recreating on the Forest. The primary activities were alpine skiing, driving for pleasure, developed camping, and trail based activities.

Social and Economic Condition of Surrounding Communities**Table 14 Socio-economic monitoring**

Monitoring Question	Monitoring Activity	Summary of Monitoring Results	Recommendation for Future Monitoring
26. What is the status of receipts returned to counties?	Revenue and 25% fund records	A) Results acceptable. \$846,300 total received in Title II funds	Amend monitoring element to reflect current legislation.
27. Can the costs and values identified in the Forest Plan be validated?	Timber sale appraisals, PAMARS and contracts	C) No monitoring done	Revise monitoring element for more specificity.
28. What are the changes in local income?	Bureau of Labor Statistics	A) Results acceptable	Continue monitoring activity. Provides insight into community lifestyles which may affect use of National Forests.
29. What are changes in local populations?	Washington State Office of Financial Management, US Census Bureau	D) Other. Population data needs updating	Continue monitoring activity.
30. What are changes in local employment patterns?	Washington State Office of Financial Management	D) Other. Employment data needs updating	Continue monitoring activity, but clarify what indicators are necessary.
31. What are changes in local lifestyles, beliefs and values?	US Census, State publications, local agency reports	C) No monitoring done. New social assessment needed for Plan Revision	Continue monitoring activity, but clarify indicators.
32. What are changes in Forest contribution to area forest products industries?	Track raw material flow to mills; industry mix	D) Other. The MBS contributed a negligible volume of sawtimber to local mills.	Continue monitoring activity, but expand to 5-year average of NF timber in western WA, not just annual MBS output.

In an effort to assess the relationship between the Mount Baker-Snoqualmie National Forest and its surrounding social and economic environment, the Forest Plan requires regular monitoring of specific socioeconomic indicators. These indicators are measured within King, Pierce, Skagit, Snohomish, and Whatcom counties, which each contain National Forest System lands.

Annual Income

The average annual per capita income among the five counties for 2007 was \$42,000, as compared with \$39,900 in 2006. A breakdown of annual income per county, compared to the 1987 Forest Plan baseline, is as follows:

Table 15. Average annual income per county, 2006-2007*

	King	Pierce	Skagit	Snohomish	Whatcom
1987	19,511	14,008	14,301	15,511	13,595
2006	53,500	37,700	32,900	42,900	32,600
2007	56,200	39,600	34,600	45,500	34,200

Source: [http://data.bls.gov/PDQ/servlet/SurveyOutputServlet;jsessionid=f0302b0ed700\\$40\\$3F\\$3;](http://data.bls.gov/PDQ/servlet/SurveyOutputServlet;jsessionid=f0302b0ed700$40$3F$3;) 1990 MBS Forest Plan

*Figures rounded to the nearest \$100

Population

The 1990 Forest Plan (FEIS Appendix B) estimated the five-county population at over 2.6 million people, and projected growth to 3,100,000 by 2000, and to over 5.4 million in the State. The U.S. Census data indicate in 2007, 3,644,700 people lived in the five counties, and approximately 6.4 million people in Washington State. The five county population levels are as follows:

Table 16. Washington State population by County

	King	Pierce	Skagit	Snohomish	Whatcom	Total
1980						2,600,000
2006	1,826,700	766,900	115,700	669,900	186,000	3,565,200
2007	1,864,300	790,500	115,300	686,300	188,300	3,644,700
% Change	+ 1.02	+ 1.03	- 0.01	+ 1.02	+ 1.01	+ 1.02

Source: <http://www.ofm.wa.gov/databook/default.asp>; 1990 MBS Forest Plan

Employment

The Washington State Office of Financial Management reports that between 2001 and 2006, wage and salary employment grew by 6.0 percent, which is nearly twice the national average for the same time period. Further, Washington State experienced its historic low unemployment rate in April, 2007 with 4.4 percent unemployment; the current rate is approximately 5.7 percent.

Table 17. Number of individuals employed by County*

	King	Pierce	Skagit	Snohomish	Whatcom
2006	1,150,000	266,000	48,000	233,000	80,000
2007	1,170,000	275,000	49,000	253,000	83,000

Source: [http://data.bls.gov/PDQ/servlet/SurveyOutputServlet;jsessionid=f03014dd56ac\\$3F\\$3F\\$7](http://data.bls.gov/PDQ/servlet/SurveyOutputServlet;jsessionid=f03014dd56ac$3F$3F$7)

*Figures rounded to the nearest 1,000

Clearly, the decades-old income and population statistics and projections used in the 1990 Forest Plan have been eclipsed by rapid growth in Puget Sound populations and income. The Forest supports a substantially larger regional population base. Current demographic, employment, and economic statistics will be needed in the upcoming Forest Plan Revision process.

Timber Production

The 1990 Forest Plan projected an annual sawtimber production of 108 million board feet from this Forest. In the 18 years since then, the social, political, and economic landscapes of the Pacific Northwest have changed significantly, as exemplified by the Northwest Forest Plan of 1994. As a result, the Forest's output has declined to less than one-tenth of that projection. Compared to the timber produced from State and private lands in western Washington, the MBS now contributes a negligible volume of sawtimber at a regional scale, although the annual volume sold is important to local mills.

Table 18. Timber production by ownership

Timber Production (Million board feet)	MBS 2007	Western Washington ¹ All Ownerships (2002)	MBS Average (2003–2007)	State of Washington ² All Ownerships Average (2002–2006)
Sold	12.7	---	6.6	---
Harvested	2.5	2,704	1.2	3,656

Timber volumes harvested fluctuate from year to year due to multiple variables including the timber market and national economy. Future monitoring would be more appropriately focused on the average timber produced over a 5-year average from the three National Forests in western Washington combined-- Gifford-Pinchot, Olympic, and Mt. Baker-Snoqualmie.

Trails

Table 19. Trails monitoring

Monitoring Question	Monitoring Activity	Summary of Monitoring Results	Recommendation for Future Monitoring
38. Trails: How many miles of trail are in trail inventory? What is their condition?	RIM Trails database	A) Results acceptable	Discontinue RIM Trails database. Continue updating monitoring activities on INFRA

The condition of trails on the MBS varies from excellent to needing total reconstruction. Currently there are 1512 miles in the trail inventory of which 650 miles received maintenance in 2006. Major repair work is still needed for the trails damaged or obliterated during the flood events of 2003 and 2006. An estimated \$3.5 million dollars maintenance backlog resulted from these two events.

The Recreation Information Management database is no longer the system of record for trails, as Infra Trails is now the database system for all trail reporting. In 2006, the Forest had a target to accomplish condition surveys on four trails and report the results in Infra Trails. This target was accomplished. It is the Forest's intent to continue with trail condition surveys.

Tribal Consultation

Table 20. Tribal coordination monitoring

Monitoring Question	Monitoring Activity	Summary of Monitoring Results	Recommendation for Future Monitoring
33. What is the status of American Indian Government to Government coordination?	Review meeting notes, project files documenting consultation with Tribes	A) Results acceptable	Continue monitoring to ensure Tribal consultation meets mutual needs and adapts as needed

This monitoring item addresses the consistency of Forest programs and activities with regulations and policies regarding American Indian Tribal Government relations. Regulations and policies have broadened and expanded since the development of the Forest Plan, and are now integrated into a number of Forest programs (FSM 1563).

¹ Warren, Debra D. 2008. *Production, prices, employment, and trade in Northwest forest industries, all quarters of 2007*. Resource. Bull. PNW-RB-256. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 163 p.

² http://www.dnr.wa.gov/Publications/obe_econ_rpts_timharv_2002.pdf

The Forest regularly consults with western Washington federally recognized Tribes: legal successors to the Tribes and bands that were signatory to the Treaties of Medicine Creek (10 Stat. 1132) and Point Elliott (12 Stat. 927), and Tribes recognized by Executive Order or by the Department of the Interior's acknowledgement process. In addition, the Forest involves and consults with Yakama Indian Tribe and the Colville Confederated Tribes when project proposals may affect Tribal usual and accustomed fishing places adjudicated in U.S. v. Washington, or may have effects east of the Cascade Crest. For example, The Summit at Snoqualmie Ski Area is located in Kittitas County, but the Ski Area Special Use Permit is administered by the Mt. Baker-Snoqualmie National Forest.

Figure 3. Sauk-Suiattle Indian Tribal Chair at ribbon cutting celebration, November 19, 2008



Project Records and Consultation

NEPA project records developed for projects include documentation of Government-to-Government consultation for projects undergoing NEPA analysis. The MBS holds annual Government-to-Government meetings with many Tribes to review the Forest's proposed actions, as well as address and discuss Tribal interests. Examples include the exercise of Treaty Rights on National Forest System lands, road management and access, cultural and sacred sites, and availability of plant materials. For example, several meetings were held in FY 2007 to discuss the development of a

Memorandum of Agreement (MOA) with the Tulalip Tribes. The MOA was finalized and signed by the Forest Supervisor and the Tribal Chairman in November of 2007. Additionally, phone calls, meetings, and field visits with Forest Service and Tribal technical specialists were on-going to facilitate regular communication.

In addition to scheduled activities in FY 2007, the Puget Sound Energy diesel fuel spill below Crystal Mountain Ski Area in November of 2006 prompted consultation with the Muckleshoot Indian Tribe and the Washington State Department of Archaeology and Historic Preservation (DAHP) regarding protection of potential cultural resources during emergency clean-up activities. The Forest Service facilitated a visit to the clean-up site by a professional archaeologist, and submitted a report to the Tribe and DAHP addressing their concerns.

Throughout FY 2007, the Forest Supervisor and District Ranger were engaged in Government to Government consultation with the Sauk-Suiattle Indian Tribal Council regarding the conveyance of several Forest Service-owned houses south of the Forest Ranger Station office in Darrington, Washington. Through the efforts of many, the Sauk-Suiattle Tribe was able to acquire the property for Tribal housing in early FY 2008.

Wild and Scenic Rivers

Table 21. Wild and Scenic Rivers monitoring

Monitoring Question	Monitoring Activity	Summary of Monitoring Results	Recommendation for Future Monitoring
40. Wild and Scenic Rivers and Characteristic Retention: Are characteristics of eligible rivers being retained?	Assure attributes are maintained through project reviews	C) No monitoring done	Discontinue monitoring activity due to lack of funding and priority
41. Wild and Scenic Rivers: What is the status of the Skagit River Plan?	Regional and Forest level activity reviews	C) No monitoring done	Discontinue monitoring activity. Management is reported thru INFRA, and the new Active Management component should capture relevant activities

The Forest has one designated Wild and Scenic River (WSR) system and it is managed to standard according to the Statutory Requirements dated January 2005 and reported in INFRA.

The Forest's rivers recommended for wild and scenic status are not monitored. If a project is planned for one of the rivers, a Forest Service rivers specialist reviews the project to insure consistency with management requirements.

The Skagit WSR Plan is outdated and is utilized by MBS management with this awareness. The focus of the Forest's Skagit WSR program is to protect and enhance the rivers values and provide for recreation in a manner that does not degrade those values.

Wilderness

Table 22. Wilderness use and condition monitoring

Monitoring Question	Monitoring Activity	Summary of Monitoring Results	Recommendation for Future Monitoring
39. Wilderness: What is the condition of wilderness resources?	Measure visitor registration, ranger surveys, photoelectric counts	B) No new results	Discontinue monitoring activity. Plan methods have become obsolete, and new methods are still in testing phase

Wilderness comprises approximately 48% of the MBS. The flood events of 2003 and 2006 cut off access to hundreds of thousands of acres of wilderness across the Forest. National monitoring efforts confirm local anecdotal data that suggest the average length of overnight wilderness trips is shorter and the number of day users has increased.

Quantitative Observations

Quantitative wilderness monitoring and research activities have declined since the mid-1990s. Wilderness trailhead register information is collected and stored but are rarely analyzed or interpreted. There is increasing question over the specific causal relationships between wilderness user numbers and adverse wilderness impacts.

Qualitative Observations

Qualitative observations indicate that wilderness use on the MBS is increasing in day-hike areas. Overnight use peaked in the early 1980's and has been in slow decline for many years. Population growth in the Puget Sound basin has caused this trend to reverse in recent years with backpacking use leveling off

or increasing slowly. Certain remote "hot spots" have seen large increases in use. A marked increase in pet dogs accompanying hikers is in contrast to a marked decrease in horse use. Part of the reason for declining overnight uses is the substantial damage to wilderness access roads and trailheads caused by the 2003 and 2006 storms. The Forest Service law enforcement and wilderness ranger presence in wilderness has dwindled to minimal levels. As a result, complaints received about wilderness overcrowding, and other issues, have actually decreased substantially.

Visitor registration data, ranger surveys, and photoelectric counts are no longer practical methods given minimal budgets and workforce. The Forest Plan monitoring protocol for wilderness is therefore not being implemented and is not currently relevant. A new monitoring system for wilderness called "Wilderness Character Monitoring" is being tested nationally. The lack of wilderness rangers on staff, associated with continuing budget constraints in wilderness and recreation, is hampering any monitoring efforts. However, the Forest is continuing its efforts to seek non-profit and volunteer organizations to assist in wilderness monitoring.

Other Research

The diversity of vegetation, fauna, geology, human use, and climate found within the wildernesses on the Forest has attracted many different researchers to the area. The Forest Service conducts limited survey and monitoring within wilderness as well as outside, including:

- Clearwater Wilderness air and water quality, Lake Dorothy, Summit, and Foehn Lakes, Alpine Lakes Wilderness, Forest Service R-6 Regional Office
- MBS Ecology Program Eco-Plots
- Forest Inventory and Analysis, the Forest Service's national permanent vegetation plot system

Other agencies and organizations continue to conduct more extensive research in MBS wildernesses. Examples include:

- Fish population surveys, Washington Department of Fish and Wildlife
- Mountain Goat surveys, Boulder River, Glacier Peak, and Mt. Baker Wildernesses, Washington Department of Fish and Wildlife
- Long-term mass balance monitoring of South Cascade Glacier, Glacier Peak Wilderness, USGS
- Cascade Volcano Observatory seismograph network, Glacier Peak and Mt. Baker Wildernesses. USGS
- North Cascades Glacier Climate Project, Nichols College, Mt. Baker, Glacier Peak, Henry Jackson, and Alpine Lakes Wildernesses
- Twin Sisters Dunite, University of Wisconsin, Mt. Baker Wilderness

Implementation Monitoring

Standards and Guidelines

Table 23. Meeting standards and guidelines monitoring

Monitoring Question	Monitoring Activity	Summary of Monitoring Results	Recommendation for Future Monitoring
49. Are standards and guidelines being applied appropriately?	Sample review of NEPA documents for proposals on each unit and various management areas.	A) Results acceptable	Continue monitoring activity. Necessary first step to assess plan compliance at project level.
50. What are the results of standards and guidelines?	Sample review of completed projects, covering all units and various management areas.	A) Results acceptable	Continue field reviews to include several per year in conjunction with Forest Leadership team's periodic monitoring and BMP monitoring. FY 2007 project field review indicates compliance with standards and guidelines, supporting underlying Plan objectives.
51. Is the Forest able to acquire needed information?	Review data generated in response to Information Needs section of Forest Plan Chapter 2	D) Other: Much of the needed information listed in 1990 Plan is outdated. Therefore, need to complete separate analysis.	Continue tracking the Forest's acquisition of needed information, but in addition, update the list annually to identify and remove old and outdated items.

As standard operating procedure, the Forest Environmental Coordinator reviews each NEPA analysis and decision document before Forest Supervisor approval. Each has a section for Forest Plan consistency which requires documentation of compliance with the Forest Plan, as amended. No project required a Forest Plan amendment in FY 2007, and each documented consistency with Forest Plan (as amended by NWFP) standards and guidelines.

Initial effort to monitor a sample of Forest projects began with the Mountain Loop Highway field review of August 27, 2008. Mountain Loop Highway repair was a major ERFO project conducted primarily in FY 2007 and monitored regularly by project engineers and with repeat photographs that were later reviewed by resource specialists. Monitoring results were favorable, as Forest Plan standards and guidelines for each resource represented were evaluated and reported to have been met.

Much of the needed information listed in the 1990 Forest Plan, Chapter 2, is outdated and no longer needed. In the near future a detailed analysis is needed, titled "Monitoring and Evaluation of Acquisition of New Information as Specified in Information Needs, Chapter 2, Forest Plan." This is an additional ID Team survey task that this monitoring element requires. As time was not available in FY 2008, it is recommended that the Forest ID Team conduct this exercise in FY 2009 when adequate time is available.

Field Review Findings: The Mountain Loop Highway

On August 27, 2008 the ID Team conducted a monitoring field trip in cooperation with the Forest Leadership Team (FLT) of the Mountain Loop Highway ERFO repair projects

Background

October 2003 storms extensively damaged the Mountain Loop Highway. After completing an Environmental Analysis (EA) in 2006, the Forest Service began contract work in late summer of 2006. However, the project was halted in November, 2006 due to heavy rain followed by snow. The incomplete road work was put in storage for the winter, to be finished in 2007. During the winter of 2006-2007, additional storm events resulted in massive damage to road and trail systems across the National Forest and National Park lands of the Pacific Northwest. High water in the South Fork of the Sauk River encroached upon or affected portions of the Mountain Loop Highway with slides, washouts, and partial undermining of one footing of the Bedal Creek Bridge. There were also additional 2006-2007 storm impacts to the Mountain Loop Highway within the project area. The Forest Service analyzed these in the 2007 Supplemental Information Report (SIR).

Despite these challenges, the contractor completed Mountain Loop Highway repairs in spring 2008, and the road was re-opened to public vehicle traffic in June, 2008.

Monitoring Strategy

The ID Team selected four sites for monitoring on the Mountain Loop Highway: Mile posts 33.1, 33.3, 33.6 and 35.6. These sites were chosen to allow for monitoring in as many resource areas as possible on this one project.

During the field trip, ID Team members considered five monitoring questions:

1. How well did the project meet its purpose and need?
2. Were the project design and mitigation measures implemented?
3. Were the design and mitigation measures effective in meeting their objectives?
4. Were the project environmental effects as disclosed in the EA and SIR?
5. Were the project environmental effects in compliance with the Forest Plan as amended

In addition, the Forest coordinates with other agencies in their monitoring efforts. For example, the Darrington Ranger District is hosting the Washington Department of Fish and Wildlife in their October 2008 monitoring tour of area projects including the Mountain Loop Highway ERFO repairs.

Monitoring Findings

Upon reviewing the project sites, the ID Team agreed that the Mountain Loop Highway repairs met the purpose and need of the EA well. Vehicle access was restored, repairs were consistent with Wild and Scenic Rivers requirements, and the project was completed within the ERFO timeframe and budget.

While the design of mitigation measures met their intent, the implementation of these measures revealed hydrological concerns with silt fences, river turbidity and on-site erosion mitigation efforts. Further, the ID Team highlighted concerns that fish spawning may have been disturbed by streambank trees falling

into the river and by some of the project work that occurred during spawning periods. However, the Forest has already taken steps to address these concerns by providing Forest engineers with training on erosion prevention and mitigation methodology, and dialogue with State and Federal biologists is ongoing.

Because the EA did not anticipate the level of active rainfall events that occurred during project implementation, it is possible that the cumulative environmental effects associated with the project were slightly underestimated. However, the ID Team found that the environmental effects of the project were within the parameters outlined in the EA and SIR.

Overall, the ID Team found that good-faith and effective efforts were made to ensure that the Mountain Loop Highway repairs followed all Forest Plan standards and guidelines.

Conclusions

- Better communication among resource specialists and project engineers and CORs during project design and implementation is desirable on future projects.
- Communication among project leads, CORs and specialists is key to determining if conditions change that require additional coordination with regulatory and State agencies.
- The EA did not incorporate specific dates for performing work from the BAs, which may have caused detrimental effects to fish spawning.
- When developing a project timeframe, planners and specialists must be realistic about how much time it takes to get project work done.
- For future projects, specialists and project CORs must be diligent about insuring proper sequencing and implementation of mitigation measures before work begins and continuing through implementation.
- Specialists are encouraged to analyze projects for their complexity and level of risk, and allocate their time and attention accordingly.
- Specialists would like clarification of FLT expectations for monitoring during planning and implementation of projects.
- Project planners tend to minimize the scope and scale of impacts in order to facilitate effects disclosure and consultation. In the future, projects may be more successful if planners are more realistic about what a project will involve in terms of time and environmental impact.
- Ideally, the budget process, regional targets, and leadership priorities should work together smoothly.

Evaluation and Recommendations

Given the results of this year's monitoring efforts, the ID Team offers the following evaluations and recommendations:

Evaluations

- A number of monitoring items from the 1990 Forest Plan are obsolete.
- Better communication is desirable between planners, implementers and specialists during all phases of project implementation.
- Adequate monitoring of all resource areas in any given year is not possible under current funding and staffing levels. Monitoring may have to be on a 2-5 year cycle rather than annually.

Recommendations

Update and refine the Forest Plan monitoring approach in the upcoming Plan revision.

- Analyze each project for its level of complexity and risk, and allocate time and resources accordingly.
- Develop a "Monitoring and Evaluation of Acquisition of New Information as Specified in Information Needs, Chapter 2, Forest Plan." It is recommended that the Forest ID Team conduct this exercise in FY 2009 when adequate time is available.
- Bring Forest Plan monitoring into its rightful place within the Program of Work (POW). Monitoring is a Forest-scale activity and responsibility, not that of a specific staff area. As part of the final approved POW, identify those projects that will be monitored for the annual report and establish the team and process for monitoring. Build in time and responsibilities for implementation and effectiveness monitoring. Some effectiveness monitoring may be on projects conducted in previous years.
- Take extra efforts to communicate with key internal and external parties on particularly complex or risky projects.
- Begin monitoring of the previous FY's projects as soon as possible after project completion or when project effects become apparent.

Figure 4. Mountain Loop monitoring review



Accomplishments FY 2007

Payments to Counties

- Number of Resource Advisory Committees: 3
- 2007 Title II Funds Distributed To Counties Within The MBS National Forest:
 - Snohomish (2007): \$117,750
 - Skagit / Whatcom (2007): \$639,854
 - King/Pierce (2007): \$88,759.51

Forest Management 2007

- Total Volume Harvested including timber, posts, and poles (Hundred Cubic Feet=CCF; Million Board Feet=MBF): 22,722 CCF/ 12,711 MBF
- Personal Use Firewood Permits Sold: 537 Cords
- Christmas Tree Permits Sold: 6,636 Permits
- Permits for ferns, boughs, bark, etc.: 45 permits
- Mushrooms: 15 Pounds
- Seed Cones: 400 Bushels
- Fence Post and Poles: 259 Total

Fires

- Number of Wildfires (2007): 23
- 2007 Area Burned In Wildfires: 6.2 Acre

Wildlife, Threatened, And Endangered Species

- Wildlife Habitat Improvement: 4,627 Acres
- Wildlife Structures: 1

Fisheries

- Stream Enhancement: 4 Miles
- Habitat opened through barrier (culvert) removal/replacement: Little Beaver Creek, 1.3 Miles
- Stream Inventory: 30 Miles
- Stream Protection Through Coordination: 100 Stream Miles
- A Salmon acclimation pond was completed in the Greenwater River watershed.
- The Salmon story-telling tent and costumes were used at Issaquah Salmon Days and the Skagit Bald Eagle Festival, and were loaned to Snohomish County and the City of Bellingham for a Native American Celebration and a children's educational event.
- The Forest's watershed model was used at Issaquah Salmon Days, the Edmonds Watershed Fun Fair, and loaned to the

Stillaguamish Tribe for the Festival of the River celebration.

- Nooksack and White River Stewards contacted over 2500 persons through one-on-one contacts along the rivers, formal programs, and festivals where information about stewardship of natural resources, and especially aquatic organisms, was shared.

Botany

- Noxious Weed Treatment: 76 Acres
- Natural Research Area Stewardship Program: 120 hours of volunteer staffing
- King County Native Plant Stewardship (a program of the Washington native plant society): 2,500 hours of volunteer staffing
- Environmental Education (Celebrating Wildflowers): 30 teachers with 30 per classroom = 600 schoolchildren reached
- Site Restoration: (Skagit Fisheries Enhancement Group volunteers) approximately 64 hours work crew time + 40 hours middle school volunteers
- Rare Plant Monitoring: (University of Washington's Rare Care program) 80 hours skilled volunteer (eight 10-hour days) + 3 days (32 hours) UW staff time
- Symposiums: First Annual Big Huckleberry Summit (80 participants - collaboration of agencies, NGOs, harvesters, researchers, and Tribes)
- Publications: Native Plant Notebook (Potash and Aubry 2007)
- Noxious Weed Management: 5 active Cooperative Weed Management Areas (strategic collaboration with other agencies and adjacent landowners)
- Invasive Plant Treatment: 67 Acres

Soil and Water

- Watershed Rehabilitation: 10 Projects
- Watershed Rehabilitation: 85 Acres

Partnerships

- \$2.8 million in grants received sponsored approximately 53 projects on the Forest with State and Federal partners

Forest Quick Facts

Acres of National Forest System Lands

- Gross Acres of NF System Lands: 1,724,229 Acres
- Wilderness: 727,104 Total Acres
- Mt. Baker Wilderness: 117,848 Acres
- Noisy Diobsud Wilderness: 14,133 Acres
- Glacier Peak Wilderness: 570,973 Total Acres, shared With Wenatchee-Okanogan NF/MBS portion is 286,627 Acres
- Boulder River Wilderness: 48,674 Acres
- Henry M. Jackson Wilderness: 100,867 Total Acres, Shared with Okanogan-Wenatchee / MBS Portion is 75,551 Acres
- Alpine Lakes Wilderness: 364,230 Total Acres, Shared With Wenatchee-Okanogan NF/MBS Portion is 117,899 Acres
- Norse Peak Wilderness: 52,180 Acres
- Clearwater Wilderness: 14,192 Acres
- Wild Sky Wilderness: 106,577 Acres
- Mt. Baker National Recreation Area: 8,473 Acres
- Wild & Scenic River (Skagit system): 37,844 Acres

Special Use Permits

- Total Permits: 681
- Ski Areas: 4
- Recreation Permits: 292
- Outfitter Guide Permits:

Recreation Facilities

- Fee Campgrounds (Reservations Only): 27
- Free Campgrounds (First-Come-First-Served): 5
- Group Campsites (Reservation Only): 14
- Picnic Sites: 24
- Rental Lodging (1 Cabin, 1 Lookout): 2
- Historic Fire Lookouts: 13
- Mt. Baker Scenic Byway - 24 miles long, Mt. Loop Highway - 50 miles long. 74 Miles Total

Special Interest Areas

- Mather Memorial Parkway: 75 Miles
- Mt. Index Scenic Area: 13,179 Acres
- Stevens Pass Historic District: 13,000 Acres
- Mt. Baker National Recreation Area: 8,600 Acres
- Late Successional Reserve (LSR): 642,133 Acres
- Late Successional Old-growth (LSOG): 39,019 Acres
- Matrix: 36,863 Acres
- Adaptive Management Area (AMA): 21,174 Acres
- Riparian Reserve: 625,373 NF Acres
- Administratively Withdrawn: 122,215 Acres
- Skagit Wild and Scenic River: 158 Miles, and 38,939 Acres (this includes land outside of the NF boundary). Acres within the boundary are: 19,725

Trails

- Total Miles of Trails: 1505.7
- Wilderness Trails: 585.8 Trail Miles
- Non-Wilderness Trails: 919.9 Trail Miles
- Mt. Baker Ranger District: 412.1 Total Trail Miles
- Darrington Ranger District: 367.2 Total Trail Miles
- Skykomish Ranger District: 218.9 Total Trail Miles
- Snoqualmie Ranger District (North Bend Area): 178.3 Total Trail Miles
- Snoqualmie Ranger District (White River Area): 329.2 Total Trail Miles
- Cross-Country Ski Trails: 119 Trail Miles
- Snowmobile Trails: 168 Trail Miles