

Biennial Monitoring Evaluation Report for the Gifford Pinchot National Forest **1994-2017**



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Why Monitoring Matters

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

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

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

Monitoring of certain resources is required by law, regulation, or directive (see box below for the required nine monitoring topics). Other monitoring occurs depending on specific needs of the national forest or grassland. Every 2 years, each forest or grassland compiles and evaluates the monitoring results and drafts a report like this one. Decision makers, such as forest and grassland supervisors, use these biennial monitoring evaluation reports (BMERs) to update their knowledge and assess progress toward the desired conditions in the forest or grassland plan. The public use these BMERs to understand what’s happening on the land that they depend upon and enjoy.

The Northwest Forest Plan and Monitoring

In 1994 the [Northwest Forest Plan](#) (NWFP) amended the planning documents of nineteen national forests and seven Bureau of Land Management districts. It includes extensive standards and guideline that comprise a comprehensive ecosystem management strategy.

After the Northwest Forest Plan was signed into law, the Gifford Pinchot National Forest created the Land and Resources Management Amendment, which tried to merge direction from both the NWFP and the already existing [Gifford Pinchot forest plan](#).

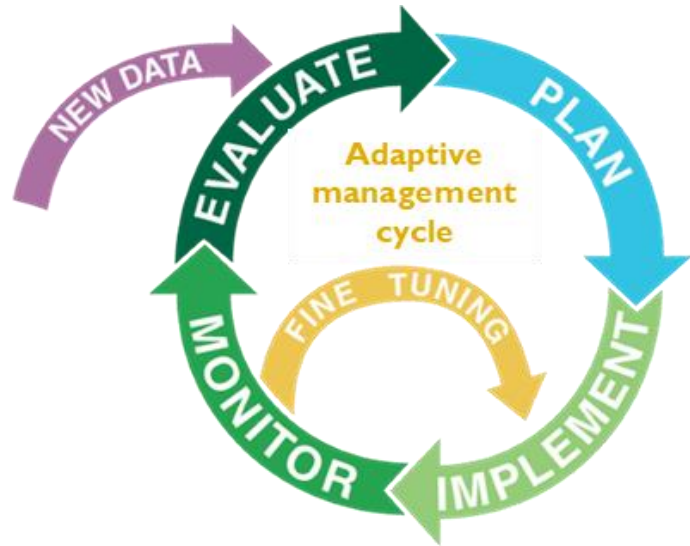
Monitoring efforts to verify whether land management plans were achieving the desired results have been a successful key element of the NWFP. In 2018, a comprehensive report including both monitoring data and research ([Synthesis of Science to Inform Land Management Within the Northwest Forest Plan Area](#)), provided an up-to-date review of scientific literature about the national forests and grasslands within the NWFP area.

Monitoring helps us to evaluate the effectiveness of the NWFP in achieving its management objectives on federal lands.

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

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

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



Summary of this Report

This 2022 biennial monitoring evaluation report for the Gifford Pinchot National Forest documents monitoring activities that occurred during fiscal years 1994 through 2017. During those years, we collected monitoring data on 27 of the 44 monitoring questions in our [monitoring plan](#). The results and recommendations from these 27 monitoring questions are described in this report. For the remaining 17 questions, we did not have enough data to report anything, but will include them in future biennial monitoring evaluation reports.

Our preliminary review of the monitoring results contained in this report does not indicate a need to amend the forest plan. Management recommendations include continued work with cooperators and volunteers, a need for improved funding, and a recommendation for an administrative change to correct monitoring question MQ19.

While improvements and change don't necessarily happen at desirable rates, it's important to note the work that is occurring, and to recognize the contributions of our cooperators, contractors, non-profit organizations, and volunteers.

Forest Service monitoring programs include questions and indicators that address the nine topics listed below. In this BMER, you will find specific monitoring questions and results for topics 1,2,5,6,7, and 8. The highlighted topics (3,4 and 9) will be covered in a future BMER.

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

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

	Yes	Uncertain	No
Forest plan direction met	25	0	2
Change to forest plan recommended	0	0	27
Change to management activities recommended	8	0	19
Change to plan monitoring program recommended	1	0	26
Assessment recommended	0	0	27

Table 1. Summary of recommendations for all 27 monitoring questions.



Forest Supervisor's Certification

This report documents the results of monitoring activities that occurred through fiscal year 2017 on the Gifford Pinchot National Forest. Monitoring in some areas is long-term and evaluation of that data will occur later in time.

I have evaluated the monitoring and evaluation results presented in this report and endorse them. I find that there are no recommended changes to the 1990 Land and Resource Management Plan, as amended at this time. I therefore consider it sufficient to continue to guide land and resource management of the Gifford National Forest for the near future and plan a deeper examination of the recommended changes through engagement with resource specialists and the public. Information about public engagement sessions will be posted on our [planning webpage](#).

JOHANNA KOVARIK

Date

Forest Supervisor



Status of Select Watershed Conditions

Watersheds are an important part of life in the Pacific Northwest, shaping and supporting diverse cultures and ecosystems. Among the glaciers and snowy mountaintops of the Gifford Pinchot National Forest, streams, spectacular rivers, waterfalls, and lakes provide clean water, recreational opportunities, and spiritual values for many.



Streams and rivers are complicated systems crucial to the long-term environmental health of adjacent riparian forests as well as fish and other aquatic organisms. The abundant rain and snowfall in the western Cascades feed an extensive river system within the forest. Portions of the headwaters of 12 significant rivers lie within the Gifford Pinchot National Forest boundary, including the Nisqually, Cowlitz, Cispus, Green, Toutle, Kalama, Muddy, Lewis, East Fork Lewis, Wind, Little White Salmon, and White Salmon rivers. At least eight smaller rivers also begin within the forest. Beginning in 1983, all rivers on the forest were studied for possible inclusion in the National Wild and Scenic Rivers System. The White Salmon River was officially designated a Wild and Scenic River, and we have recommended four additional river segments (113 miles) be added. Until Congress acts on the decisions, we will continue to protect the remarkable characteristics that make them eligible for designation, such as free flow, scenic quality, and water quality.

Monitoring questions

- MQ1. Are we protecting the future eligibility/suitability and potential classification of our study rivers?
- MQ2. Has vegetation management negatively affected riparian reserve stand conditions?

Key results

- The mitigation measures we applied during forest management projects, such as timber sales, trail maintenance, and road decommissioning, successfully protected the scenic quality of the Upper White Salmon, Cispus, and Clear Fork Cowlitz rivers.
- For upslope/riparian conditions, broad moderate positive changes were seen. In fact, the positive rate of change on the GPNF was four times greater than the rest of the region covered under the [Northwest Forest Plan](#).

Recommendations

- We do not recommend any changes to our forest plan, monitoring plan, or management activities, and a new assessment is not needed.



Status of Select Ecological Conditions Including Terrestrial and Aquatic Ecosystems

Aquatic Habitat

The Gifford Pinchot National Forest has more than 20 species of fish in 1,360 miles of streams and more than 100 lakes. Three threatened species of anadromous¹ fish (chinook and Coho salmon, and steelhead trout) and several species of resident salmonids (rainbow trout, kokanee salmon, brown trout, and cutthroat trout), including two species of char (bull trout and eastern brook trout) are found on the forest.



More than 90 percent of the streams on the forest have a self-sustaining resident fishery. Fish populations are supplemented with hatchery fish in some forest lakes and streams. Anadromous fish are limited to the Green River, East Fork of the Lewis River, and the Wind River. Record-size steelhead are produced in the East Fork Lewis River. Dams outside the forest halt anadromous runs on most of the other streams.

Fish habitat improvement is necessary as past management activities, such as stream clean outs, timber harvesting, and road building, have decreased habitat availability and diversity. Our objectives for both resident trout and migrating species are to maintain current habitat while also increasing fish habitat capability through mitigation or enhancement. We actively restore degraded stream channels to increase spawning and rearing habitat through engineered log jams, bank stabilization, invasive weed removal and tree planting. Our projects create instream habitat diversity and replace or restore large conifers in the riparian zone, which are expected to increase trout populations.

Monitoring Questions

- MQ3. Are we improving fish habitat?
- MQ4. What is the status of aquatic habitat, specifically in terms of habitat fragmentation?
- MQ5. Are we decreasing the effects of our road system on the aquatic ecosystem?

Key Results

- We are successfully improving fish habitat. From 2014-2017, we replaced four fish-barrier culverts, opening up 2.2 miles of fish habitat. We improved more than 8 miles of fish habitat through 15 projects that either reconstructed a channel or increased the large wood in a stream. These treatments occurred along Cispus River, Yellowjacket Creek, Muddy Fork of the Cowlitz River, Woods Creek, Muddy River, and Trout Creek at the Hemlock Dam removal area.

¹ Anadromous species migrate up rivers from the sea to spawn.



- Floodplain areas of certain stream reaches (maximum of 12 miles) were treated across multiple years.
- Between 2014 and 2015, 7.5 road miles were decommissioned, and 12.1 miles of road were stabilized and put into storage, which reduced habitat fragmentation.

Recommendations

- We do not recommend any changes to the forest plan. However, the pace of fish barrier culvert replacements should increase with additional funding available from stewardship or retained receipts and continuation of the Legacy Roads and Trails Program.
- Currently, we are entering road decommission data in two databases (INFRA and WIT), which is inefficient and not consistent. Joining databases to avoid double entry requirements is recommended.

Visual Condition of Viewshed Corridors

The Gifford Pinchot National Forest spreads across a mountainous region of southwest Washington, noted for its complex terrain and volcanic geology. Straddling the crest of the Cascade Mountains, the area includes high mountain meadows, old growth forests, and several glaciers – coalescing into a kaleidoscope of scenic beauty that draws visitors to the area each year. In recognition of this, we strive to provide a visually natural landscape as viewed from a travel route or use area. Our forest plan delineates 37 viewshed corridors across the forest, 21 of which have management objectives requiring maintaining or improving scenic values. In these viewsheds, management activities are to be compatible with scenic quality objectives.



We also strive to preserve the opportunities for solitude, challenge, and inspiration offered by our wilderness areas. The Gifford Pinchot National Forest has seven designated wilderness areas, which we manage so that it retains its primeval character without permanent alteration or evidence of human intrusion.

Monitoring Question

- MQ7. Are we meeting the visual quality objectives established in the forest plan?

Key Results

- As of 2012, our monitoring indicated that mitigation measures applied during projects implemented within scenic viewshed corridors are meeting the standards and guidelines. Management activities are compatible with scenic quality objectives.

Recommendations

No changes are recommended to our forest plan, monitoring plan, or management activities and a new assessment is not needed.



Visitor Use, Satisfaction, and Progress on Recreation Objectives

Recreation visitor spending is the largest single source of economic activity associated with forest management in the Pacific Northwest. Population growth in Oregon and Washington is expected to increase demand for outdoor recreation on public land, making this a key issue for national forests in the region. The Gifford Pinchot National Forest has more than 200 developed recreation sites, not including visitor centers, ranging from interpretive sites, campgrounds, horse camps, trailheads, boating sites, sno-parks, and more. Much of the forest is also open to dispersed (undeveloped) recreation opportunities, including dispersed camping.



There are almost 1,500 miles of trails on the forest. Each trail is assigned a trail management level, with associated standards and guidelines for management, including guidelines for the level of scenic impacts permitted along a trail corridor. Our goal is to provide a range of dispersed recreational, interpretive, and educational opportunities, as well as a full range of trail experiences and difficulty levels, for a broad diversity of users.

The budget for this work is considerably less than is needed to reconstruct a deteriorating trail system and create new opportunities. Districts are increasingly engaging volunteers to increase trail maintenance capacity, with good results. Partners such as the Washington Trails Association, Backcountry Horsemen, Northwest Trails Alliance, Mount St. Helens Institute, and more have contributed significant peoplepower and leadership on a number of trail construction and reconstruction projects and will continue to do so in the future.

Monitoring Questions

- MQ15. Is dispersed recreation use causing significant modification to forest setting?
- MQ17. Are we focusing managerial resources on the highest quality of recreation opportunity? Are we providing safe conditions at developed facilities? Is there any evidence of resource degradation? Is management activity addressing resource degradation? Are we providing trail experience in alignment with visitor demands (i.e., mountain biking, OHV, pack/saddle)?
- MQ18. Are we providing the type of opportunities, facilities and trails the public wants consistent with our niche (front country, backcountry, and Wilderness)? Are we aligning the developed recreation program delivery with our niche and emerging public expectations? Do the majority, >50% of trails meet minimum condition standards for safety and maintenance?



Key Results

- As of 2012, the only projects conducted in semi-primitive areas were routine trail maintenance. Monitoring revealed that our trail maintenance work did not impact the semi-primitive character of those areas and improved safety on the trails.
- User conflicts were reported on fewer than 10 percent of the system trails and thus do not trigger planning action. We received a small number of complaints (as reported in 2012): visitors reported bikes on Dry Creek Trail, and off-highway vehicle activity on Silver Star Trail. In a separate complaint, visitors requested bikes be allowed on Dry Creek Trail.
- With volunteers and partners performing more than half of the 2012 trail maintenance, good progress was being made towards building our capacity to maintain our trail system. However, we face challenges in maintaining and replacing failing trail bridges. Efforts will continue to be made to build and strengthen relationships with volunteer organizations and other partners.

Recommendations

- No changes are recommended to our forest plan or management activities and a new assessment is not needed.



Climate Change and Other Stressors

Climate change is an agency-wide priority for the U.S. Forest Service, and monitoring is a valuable source of information that can help us understand its ongoing effects. Projected changes in climate will have far-reaching effects on aquatic and terrestrial systems, especially as the frequency of extreme climatic events such as drought or low snowpack increase.



Climate change is projected to have especially significant implications for freshwater resource and is already causing a transition from snow dominance to rain dominance at low to mid elevations in the Cascade Range, resulting in diminished snowpack and altered streamflow.

Decreased summer streamflows and warmer water temperatures could reduce habitat quality and extent for coldwater-dependent fish species, and anadromous fish (which migrate from the ocean to spawn in rivers) will be susceptible to higher heat stress during their summer upstream migrations.

We monitored stream temperatures from the summers of 1997-2017 for streams in the Cispus River System along with Davis Creek and Johnson Creek of the Upper Cowlitz River Watershed. We also monitor annual snowpack for Cispus and Upper Cowlitz systems on April 1 at the Lone Pine Snotel Station (3,390 feet elevation). Measuring snowpack provides data on baseflow (the foundational portion of streamflow that is not generated from excess rainfall during a storm event). Large snowpacks provide higher baseflows in the summer resulting in deeper and cooler streams.

Monitoring question

- MQ19. How have changes to air temperature (including type of precipitation and timing) affected summer stream temperatures?

Key results

- The average April 1 snowpack was 36.5 inches for the years 1981 to 2010. There was no statistically significant trend in annual April 1 snowpack at Lone Pine Snotel from 1979-2018).
- Stream temperatures at eight of the ten creeks are correlated to April 1 snowpack. Stream temperatures in Johnson Creek were the most tightly correlated to snowpack of the ten streams analyzed. Davis Creek and Woods Creek were not correlated to the April 1 snowpack, perhaps because they have less area where snowpacks persist through April 1.
- None of the creeks we monitored had a statistically significant upward or downward trend in their average temperature from 1997-2017.
- Overall, there is a measurable relationship between snowpack and stream temperature, but it's noisy: the annual amount of snowpack explains roughly half the variation in stream



temperature. In other words, the amount of snowpack is a notable influence, but there are other forces or circumstances—of almost equal weight—that also act on stream temperature.

Recommendations

- No change is warranted to our forest plan or management activities nor is a new assessment needed based on this monitoring question.
- We recommend rewording the monitoring question through an administrative change to the monitoring plan, to “How have changes to late winter snowpacks affected summer stream temperatures?” as this question is answerable with the data that is being collected and available.



Progress Toward Meeting Desired Conditions and Objectives, Including Multiple Use Opportunities

Cultural Resources

For more than 6,000 years, people have played a part in the ecology of what is now the Gifford Pinchot National Forest. Locations showing evidence of past human activity are considered heritage resources. We manage an active heritage program to protect these resources and share them with the American people. We also strive to maintain a diversity of cultural resource sites and provide for the integration of native American activities authorized by treaties.



To date, 1,596 heritage resource sites have been documented on the Gifford Pinchot National Forest. Examples include prehistoric archaeological sites such as Layser Cave, historic Native American sites such as the Big Tire Peeled Cedars, and historic structures such as the House Rock Shelter. When we implement a management project, such as a timber sale or streambank stabilization, we make sure protect significant sites.

Monitoring Questions

- MQ20. Are sufficient cultural resource inventories being conducted where required?
- MQ21. Are known heritage sites being protected/preserved?

Key Results

- Some of the heritage resource sites identified through inventories are significant and qualify for inclusion in the National Register of Historic Places; other sites and resources were evaluated and found not eligible. The significant historic properties include the Gotchen Creek Guard Station, La Wis Wis Guard Station, and Mid-Century resources at Wind River Administrative Site.
- In fiscal year 2018, we completed seven projects that were associated with heritage resource sites:
 - Wind River Section 111 Lease, Mt. Adams Ranger District
 - Compound Vegetation Management, Mt. Adams Ranger District
 - Middle Wind Veg Management, Mt. Adams Ranger District
 - GMS Dam Removal, Mt. Adams Ranger District
 - Gotchen Meadow Restoration, Mt. Adams, Ranger District
 - Pine Creek Structure Decommissioning, Mount St. Helens National Volcanic Monument
 - La Wis Wis Guard Station Restoration, Cowlitz Valley Ranger District

Avoidance measures were prescribed for all projects to protect significant heritage resources. In the case of the historic buildings, potential hazard trees and excess fuels were removed from the



immediate area. In the case of the prehistoric sites, protective measures included avoidance of the sites. A non-activity buffer zone was prescribed.

Protective measures were successful in all projects.

Recommendations

No changes are recommended to the forest plan, the monitoring plan, or management activities, and a new assessment is not needed.

Silviculture

Silviculture is the art and science of cultivating, growing, and managing trees. Reforestation, either through natural regeneration or tree planting, is at the heart of our silviculture efforts. Prompt reforestation after a disturbance (such as wildfire or timber harvest) helps accelerate the development of forest characteristics that provide wildlife habitat, clean water, and recreation opportunities, while also preventing negative impacts like soil erosion. Our goal is to replant any areas where trees were cut within 5 years after final harvest. We do not allow conversion of forest to non-forest ecosystems (such as meadow). We also track and manage the size of openings created by timber harvest.

Monitoring Questions

- MQ23. Have all sites where the tree cover has been reduced below 10% through management practices or a regeneration cut has been performed, been adequately reforested within 5 years of the removal cut?
- MQ24. Have any final harvest unit sizes exceeded approved limits as identified in the LMRP or other decision documents?

Key Results

- For final harvests, there are sites where reforestation did not occur within 5 years of the removal cut (see table 2). Individual site plans are being generated to determine why the reforestation effort failed, and to schedule treatments to bring these sites up to minimum stocking levels as described in the [forest plan](#).

Certification year	Final harvest areas		Percentage acres certified reforested
	Sites	Acres	
2017	3	4	0
2015	5	30	0
2014	7	127	28
2013	1	22	0
2011	7	126	66
2010	4	56	0
2009	2	18	0
2008	1	67	0
2007	4	330	0
2001	6	147	19
Totals	24	744	15

Table 2. Final harvest areas and the percentage of acres certified as reforested, 2001-2011.



- We did not make any requests for size exceptions on any sites harvested in fiscal year 2017. No openings, temporary or permanent, were created contiguous to natural openings.

Recommendations

- We recommend developing individual site plans for harvest sites where reforestation efforts failed. Doing so will help us determine what should be done to ensure that the site will be reforested to minimum stocking levels within the expected timeline.
- Relying on cuff records and memory to ensure that all treatments and surveys comply with the 5-year reforestation certification requirement does not appear to be working. To facilitate better tracking, we recommend that all sequential potential treatments and surveys be scheduled in the corporate database (Natural Resource Manager, Forest Activity Tracking System [NRM-FACTS](#)) at the time the final harvest is scheduled; e.g., harvest, planting, stocking surveys, survival surveys, and the certification.

Dispersed Recreation and Unmanaged Recreation

We strive to provide a diverse range of dispersed recreational, interpretive, and educational opportunities. Our goal is to ensure that both developed and dispersed recreation sites be located at least 100 feet from the edges of lakes, streams, ponds, wet meadows, marshes, and spring. Any dispersed recreational activities that degrade the quality of riparian areas should be regulated or eliminated.

Monitoring Questions

- MQ25. Are we managing dispersed recreation adequately enough to protect resource conditions?
- MQ26. What is the impact of dispersed occupancy on the physical resources?

Key Results

- Some user conflicts were reported in 2012 regarding dispersed camping in the Kalama Horse Camp area. In response, patrols and signage in order to increase user compliance were increased in this area.
- Districts have also reported concerns related to resource impacts in the Council Lake, Midway Meadows, Chambers Lake, and Goose Lake areas. Unmanaged dispersed camping is encroaching on the lakeshores and meadow leaving visible impacts. Patrols, signage, and volunteer support and stewardship continue to address areas where dispersed use is making a visible impact.

Recommendations

- No changes are recommended to our forest plan or management activities and a new assessment is not needed.



Research Natural Areas

Research natural areas (RNA) are permanently protected federally designated reserves where long-term studies are encouraged. We have seven research natural areas, which represent important ecosystems that we manage to conserve biodiversity. Our goal is to maintain the natural state of RNAs for research and education, such that human activities are not evident. Prohibited activities include livestock grazing, timber and forest product harvesting, recreation development or use, road construction, and mining. Our monitoring helps us evaluate whether the natural conditions of the research natural areas have been modified.

Monitoring Questions

- MQ27. Is there a change to the natural area? Has human presence altered the natural area or what percentage of change has resulted from human activity?

Key Results

- Monitoring of research natural areas in 2003, 2008, and 2012 indicated that we are meeting standards and guidelines in the [forest plan](#).
- Monitoring in 2012 resulted in concerns about adequate signage and encroachment by invasive species at some sites. Additional findings from 2012 include:

- **Sisters Rock RNA.** Evidence of use of the RNA by recreationists is limited to hikers using the Observation Peak Trail and an occasional hunter. Evidence of beargrass picking was found along the north edge of the RNA, though no damage was noted at the time. Signs saying “No Special Forest Product Removal” were placed on the south side of the 58 road. No RNA signs were found marking the boundaries of the RNA.
- **Steamboat Mountain RNA.** Recreational use is mostly hunters occupying dispersed camping sites around the edges of the RNA and in the gravel pits. There is no evidence of damage from these hunters currently. Hikers use the trail (#14) to the top of Steamboat Mountain, causing some compaction and bare ground in spots where there are good views. People also use the rock/gravel pits for shooting. This does not appear to impact the RNA though it might cause the mountain goat that has been sighted on the cliffs of Steamboat to vacate the area.

Invasive plant species in the clear-cuts and along the roads in or adjacent to Steamboat Mountain RNA seem to be declining due to tree re-generation shading out the weeds. There appears to be balsam woolly adelgid damage to the high elevation true firs within the RNA, as well as quite a bit of white pine blister rust found in adjacent younger stands, mostly in plantations.

- **Cedar Flats RNA.** Management activities adjacent to the RNA consist of a new clear-cut on private land on the south/southwestern edge. This large clear cut now hosts massive amounts of invasive plants. Thistles were found inside the RNA, especially along the boundary with the clear cut, and adjacent to and within wet areas frequented by elk. There are several other recently logged clear cuts on private land within the RNA elk range that are heavily infested with thistles.

There is compaction and bare areas around most of the forest giants on the small loop trail that runs through the northeast portion of the RNA due to visitation. Along the west side of the 25-road cut-bank there is a small amount of erosion.



Border of Cedar Flats Research Natural Area adjacent to the 2010 clear cut on private land, as reported in 2012.



Evidence of compaction and vegetation loss due to foot traffic at base of large trees at Cedar Flats Research Natural Area, as reported in 2012.

Recommendations

No changes are recommended to the forest plan, the monitoring plan, or management activities, and a new assessment is not needed.

Invasive Plants

Our management goal is healthy, diverse, resilient native plant communities. We work to ensure that high-quality habitat, such as meadows, elk forage, or pale blue-eyed grass, is not jeopardized by invasive plants. Our management of non-native plants adjusts annually depending on the species found on the forest. There are several highly invasive fast-spreading plants that can change the landscape and plant communities in less than 3 years. Therefore, monitoring for new infestations of invasive plants and tracking the effectiveness of our treatments is critical. We monitor half of the sites we treat for effectiveness annually. We have been successful at reducing treated non-native plan population sites by 80 percent on average in the first year. It takes 3-5 years of treatment to eliminate an invasive plant from a site depending on the seed viability and other factors such as wind, wildlife, and recreation travel (four-wheeling, hiking, biking, and horse use).

Monitoring Questions

- MQ28. Are non-native plant species increasing? Are new non-native plant species being introduced?

Key Results

- There are new invasive species being detected, along with the expansion of existing invasive plants; these existing populations are being treated through early detection and rapid response to prevent the establishment of new invasive species or new populations of existing invasive plants on the forest.



Recommendations

- No changes are recommended to the forest plan or the monitoring plan, and a new assessment is not needed.
- We recommend an increase in the number of treated acres, which have declined during the last 10 years, to control existing and new populations of invasive species through early detection and rapid response.

Deer and Elk Habitat

Updated monitoring results will be included in future reports.

Mountain Goat Habitat

Mountain goats were present on the Mount St. Helens National Volcanic Monument before the 1980 eruption. The Cowlitz Tribe gathered mountain goat wool in this area for a variety of products. Since then, Washington Department of Fish and Wildlife has been monitoring their return with aerial surveys. We seek to improve mountain goat habitat by limiting timber harvesting, restricting access in their winter range, and minimizing disturbances in kidding areas during the breeding season. Most of the mountain goat habitat is within the Goat Rocks Wilderness, Mt. Margaret back country, and Mount St Helens National Volcanic Monument.

Monitoring Questions

- MQ31. Is there a conflict between recreational users and mountain goat habitat?
- MQ32. Are we managing mountain goat habitat for forage and cover?

Key Results

- There have not been any interactions between recreational users and mountain goats on the forest.
- Mountain goat herds on the forest are increasing. Vegetation has changed from a forested landscape to open landscape with an increase in forbs and brush on Mount St. Helens National Volcanic Monument since the eruption, which has been very beneficial for the goats. Individual goats or goats with kids have also been observed on the Mt. Adams Ranger District.
- We have met the forest plan objective through the combined herds in Mount St. Helens National Volcanic Monument and the Goat Rocks Wilderness. However, as the conifers increase on the landscape, the quality of the goat habitat will decline. We are currently not actively managing mountain goat habitat for forage.

Recommendations

- No changes are recommended to the forest plan or the monitoring plan, and a new assessment is not necessary.
- In the future it might be necessary to consider limiting recreational activity in mountain goat habitat to prevent disturbance to the goats in a specific area such as Mount St. Helens.
- We also recommend accomplishing a 5- to 10-year review of mountain goat habitat forage quality and carrying capacity.



- We also recommend extending mountain goat ground surveys to include the Mt. Adams Ranger District with the help of citizen science, completing non-native plant surveys in mountain goat habitat, and adding a recreational goat interaction survey for the high country.

Habitat for Late-successional Species

Updated monitoring results will be included in future reports.

Resource Outputs

One of the goals of the [Northwest Forest Plan](#) is a sustainable consistent output of timber products. Perfect implementation of the forest plan would be a consistent sale of 65 million board feet each year. Reaching this goal has been complicated because resources are highly interrelated. Emphasis on one resource often comes at the expense of others, and to achieve the highest net public benefit, no single issue can be resolved to everyone's satisfaction. Our goal is to provide balanced management. As a result, we are still offering and awarding less than the volume of forest products outlined in the forest plan.

Given the high rates of unemployment in the area, we monitor our influence on the local economy. In all four counties in the vicinity of Gifford Pinchot National Forest, median household incomes were highest in 1980 after adjusting for inflation. In all but Klickitat County, median household incomes in 2016 were the lowest in 36 years. Likely factors in explaining the general decline include more low-income and one-adult households in 2016; loss of high-wage, skilled labor jobs and increases in low-wage, unskilled service-sector employment; and aging of the population (resulting in more households with income from social security and retirement sources rather than wages or salary).

Monitoring Questions

- MQ35. Does the forest's decadal award exceed the current decadal Probable Sale Quantity?
- MQ36. Are resource outputs specified by the forest plan being met? Are there changes in the projected supply or demand of forest goods and services used in economic evaluation or in sensitive issues response?
- MQ37. How is employment in Skamania, Lewis, Yakima and Cowlitz affected by actions implementing the forest plan?

Key Results

- We are still offering and awarding less than the volume of forest products outlined in the forest plan. The summary of the annual awarded 10-year (decadal) timber program in the last 10 years is shown in figure 1. The chart shows the comparison between the 10-year probable sale quantity (PSQ), and previous 10-year awarded sale quantities.
- There was a drop in awarded timber volume in fiscal year 17 that contrasted with the overall upward trend in awarded volumes for the last 10 years. This drop in awarded timber volume (due to a reduced offered volume) is a likely result of budgetary constraints and is an anomaly, not a shift in trends.

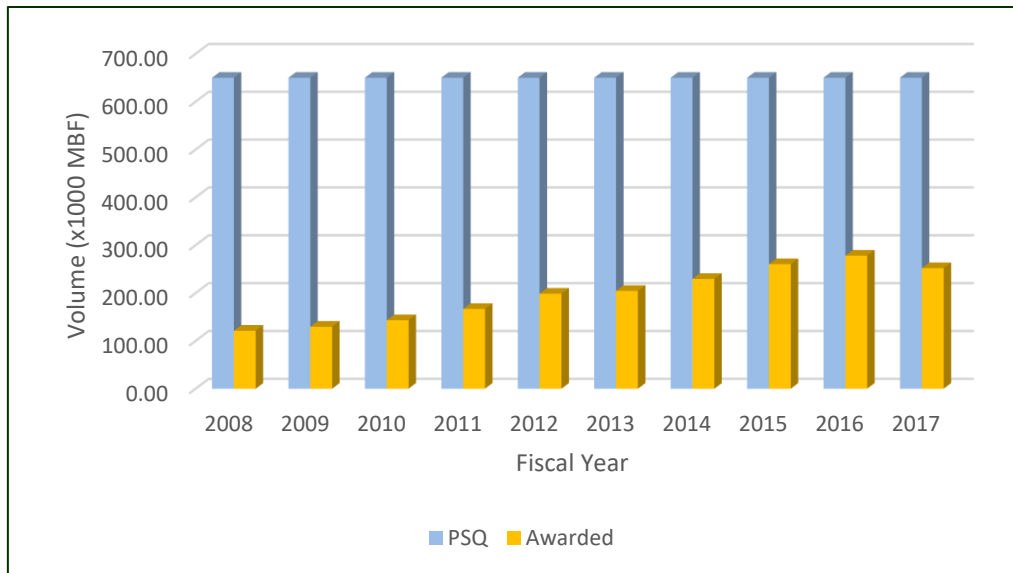


Figure 1. Annual awarded decadal volumes

- No changes to the timber program are recommended. There is still room for expansion of the vegetative restoration program of the forest. We are taking advantage of opportunities to continue expanding the forest products program. Barring fiscal constraints, we will continue to increase volume awards of wood products.
- Unemployment was strikingly high in Skamania and Klickitat counties in 1980 and fell dramatically in the ensuing 36 years (figure 2). This is partly explained by the sharp rise in labor force nonparticipation beginning in 2000 – a combination of older adults entering retirement and some younger adults who gave up looking for work due after experiencing chronic unemployment. Lewis and Cowlitz counties, with much larger workforces and more diverse employment sectors, have much more modest changes.

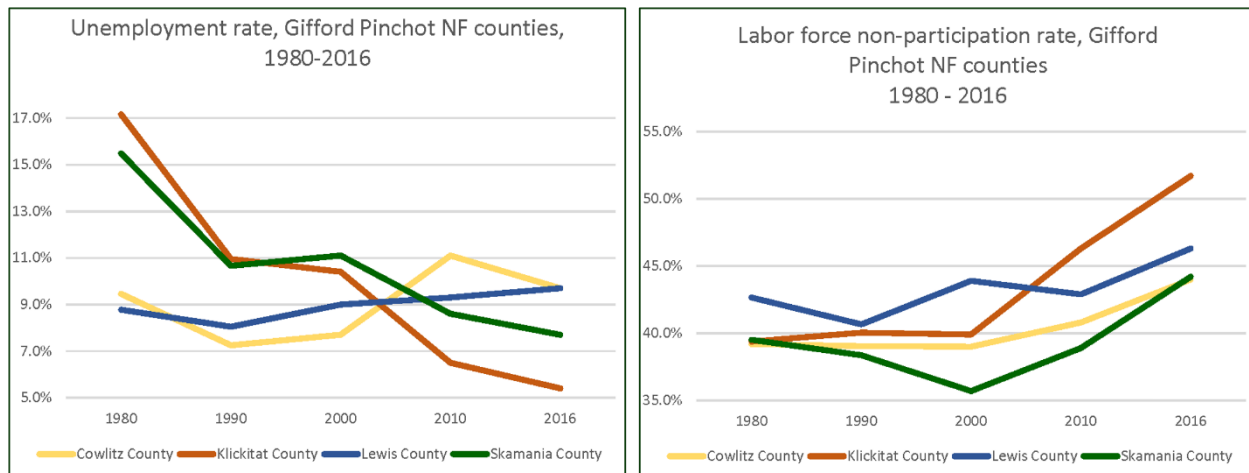


Figure 2. Unemployment and labor force non-participation rates, 1980-2016

Recommendations

No changes are recommended to the forest plan, the monitoring plan, or management activities, and a new assessment is not necessary.



Transportation and Road Maintenance

We manage roads to reduce maintenance costs, protect soil and water resources, avoid wildlife harassment, and provide quality hunting and dispersed recreation opportunities. The need to define an affordable road system that meets safety requirements in line with declining budgets is a high priority. When roads are no longer needed, we decommission them and remove them from the road system. We conduct management activities on decommissioned roads to return them to a more natural state and block access to them.

Monitoring Questions

- MQ38. Are the road management objectives for particular forest roads still valid (future maintenance level)? Are there opportunities to close roads not required for resource use, protection or other demonstrated need?
- MQ39. Are road closures being implemented as planned and are the closures effective?

Key Results

- Funding for road maintenance declined in fiscal year 2013. Current budget allocations are not adequate to meet all our road maintenance needs. Our present road system has 393 miles of road that are subject to the Highway Safety Act, which require a level of maintenance greater than our budget allows and leave few dollars to accomplish maintenance on 3,005 miles of lower-standard level 2 roads. However, we have been able to benefit from other funding that has allowed us to accomplish more road maintenance and road improvements beyond the limits of our normal maintenance budget.
- The need to develop an affordable road system that meets safety requirements for the traveling public in line with declining budgets is a high priority. The 2015 Travel Analysis Report was created in response and to guide future actions. We conducted a study to reaffirm the results of two previous minimum roads studies and also to identify additional road that should be closed, stabilized in place, or decommissioned.
- The road closure target for the Gifford Pinchot National Forest is 1,230 miles of road in seasonal or permanent closure. There are currently 1,299 miles prescribed for closure and an estimated 985 miles of road closed by effective year-round closures, or seasonally. This puts us at 80 percent of our goal. In addition, 374 miles of road have been decommissioned since 1994, which includes 143 miles in key watersheds.

Recommendations

- No changes are recommended to the forest plan or the monitoring plan, and a new assessment is not required.
- Given declining budgets, we recommend considering revisions to the road system to address the high priority of meeting safety requirements for the traveling public.

Minerals

Updated monitoring results will be provided in a future report.



Effects of Management Systems on Productivity of the Land

For forests to be healthy, maintenance of soil quality is essential. In fact, maintaining soil productivity is so important that it is mandated by Congress. Our forest plan requires a minimum of 80 percent of an activity area to have unimpaired soil productivity. We are also required to adopt best management practices to prevent soil erosion and adverse effects to water quality; avoid wetlands, springs, seasonally wet meadows, and montane meadows; and avoid soils that are unstable and highly erodible when connected to streams. We monitor the effectiveness of our best management practices for implemented projects on long-term soil productivity annually.

Monitoring Questions

- MQ43. Is long-term soil productivity of forest land being maintained?
- MQ44. Are Best Management Practices employed and effective to protect water, aquatic, and riparian resources applied to ground-based skidding, cable or aerial yarding and harvesting?

Key Results

- As of 2012, detrimental soil compaction and soil displacement were found in two areas (Units 1 and 10), based on the area occupied by landings and temporary roads. The forest plan allows for 20 percent disturbance. Subsoiling to restore soil compaction improved soil infiltration on temporary roads for a few hundred feet beginning from the intersection.
- In 2012, LaRoux Unit was logged with a helicopter logging system design, resulting in minimal amount of detrimental soil conditions. Less than a handful of narrow skyline corridors were created, soil appeared in good condition and contributed a negligible percentage of soil disturbance.
- During 2011 and 2012, eight road and recreation projects were monitoring using best management practice monitoring protocols. Monitoring indicated that only minor adjustments are needed to improve best management practice implementation. Detection of project-related sediment occurred, but only in minor quantities that were commensurate with areas of disturbance.

Recommendations

- No changes are recommended to the forest plan or the monitoring plan, and a new assessment is not needed.
- We recommend that road project monitoring is the focus of next year's best management practices monitoring.



The Importance of Public Participation

The overall mission of the Forest Service is to sustain the health, diversity, and productivity of the Nation's forests and grasslands to meet the needs of present and future generations. That's why YOU also play an important role in this process. The "how" of forest management is science-driven; the "why" of forest management is more subjective, and driven by the landowners, the American people. Every perspective is valuable and helps us to better focus our management activities to produce the varied goods and services, whether outdoor recreation, range, timber, watershed, or wildlife and fish purposes.

We will inform the public of this report on our [planning website](#) and post the report with signature from Johanna Kovarik, Forest Supervisor. Comments on this plan may be emailed to SM.FS.R6commentGP@usda.gov or mailed to:

Gifford Pinchot National Forest
Attn: Environmental Coordinator
987 McClellan Rd.
Vancouver, WA 98661

By providing monitoring reports on a biennial basis, we inform the public of the progress we're making towards the goals and objectives of the current [forest plan](#), and evaluate how well our projects are moving us towards desired conditions. This report provides a glimpse into land management planning and implementation and will help us as we continue to collaborate with the interested public.

Our monitoring program requires a coordinated effort of many people, from the people who collect the data, to the people outside the Forest Service who provide feedback and assistance, to the decision maker.



Summary of Findings.

Table 3 – Gifford Pinchot National Forest plan monitoring questions and evaluation addressed in this report. Possible types of changes recommended include changes to the land management plan, changes in management activities or the monitoring program, or recommendations for a new assessment. See the [Gifford Pinchot National Forest monitoring plan](#) for monitoring questions not addressed in this report.

Monitoring question	Progress toward desired future conditions	Changes recommended
MQ1. Are we protecting the future eligibility/ suitability and potential classification of our study rivers?	Mitigation measures successfully protected the scenic quality of the Upper White Salmon, Cispus, and Clear Fork Cowlitz rivers	None
MQ2. Has vegetation management negatively affected riparian reserve stand conditions?	Broad moderate positive changes were seen.	None
MQ3. Are we improving fish habitat?	We replaced four fish barrier culverts from 2014-2017, and improved >8 miles of fish habitat through fifteen projects.	Increase the pace of fish barrier culvert replacements
MQ4. What is the status of aquatic habitat, specifically in terms of habitat fragmentation?	The pace of fish habitat improvement is sustainable with current forest skill sets.	Increase the pace of fish barrier culvert replacements
MQ5. Are we decreasing the effects of our road system on the aquatic ecosystem?	Between 2014 and 2015, 7.5 road miles were decommissioned and 12.1 miles of road were stabilized and put into storage	Join databases (INFRA and WIT) to avoid double entry requirements
MQ7. Are we meeting the visual quality objectives established in the forest plan?	Management activities are compatible with scenic quality objectives.	None
MQ15. Is dispersed recreation use causing significant modification to forest setting?	Unmanaged dispersed camping is encroaching on the lakeshores and meadow leaving visible impacts.	None
MQ17. Are we focusing managerial resources on the highest quality of recreation opportunity? Are we providing safe conditions at developed facilities? Is there any evidence of resource degradation? Is management activity addressing resource degradation? Are we providing trail experience in alignment with visitor demands (i.e., mountain biking, OHV, pack/saddle)?	Our trail maintenance work did not impact the semi-primitive character of those areas and improved safety on the trails.	Reword the monitoring question.



Monitoring question	Progress toward desired future conditions	Changes recommended
<p>MQ18. Are we providing the type of opportunities, facilities and trails the public wants consistent with our niche (front country, backcountry, and Wilderness)? Are we aligning the developed recreation program delivery with our niche and emerging public expectations? Do the majority, >50% of trails meet minimum condition standards for safety and maintenance?</p>	<p>With volunteers and partners performing greater than half of the 2012 trail maintenance, good progress was being made towards building our capacity to maintain our trail system. However, we face challenges in maintaining and replacing failing trail bridges forest-wide.</p>	<p>Reword the monitoring question.</p>
<p>MQ19. How have changes to air temperature (including type of precipitation and timing) affected summer stream temperatures?</p>	<p>None of the creeks monitored had a significant upward or downward trend in their average temperature from 1997-2017. There is a measurable relationship between snowpack and stream temperature, but other factors are at play.</p>	<p>Reword this monitoring question to “How have changes to late winter snowpacks affected summer stream temperatures?” so that it can be answered with the data available.</p>
<p>MQ20. Are sufficient cultural resource inventories being conducted where required?</p>	<p>Some heritage resource sites identified were found to qualify for inclusion in the National Register of Historic Places; others were found not eligible</p>	<p>None</p>
<p>MQ21. Are known heritage sites being protected/preserved?</p>	<p>Avoidance measures were prescribed for all projects to protect significant heritage resources.</p>	<p>None</p>
<p>MQ23. Have all sites where the tree cover has been reduced below 10% through management practices or a regeneration cut has been performed, been adequately reforested within 5 years of the removal cut?</p>	<p>For final harvests completed prior to 2012, there may be sites where the reforestation effort was inadequate for certification within the 5-year timeline.</p>	<p>Develop individual site plans for harvest sites where reforestation efforts failed so that we can determine what will be done to ensure the site will be reforested to minimum stocking levels.</p> <p>We also recommend that all treatments be scheduled in the corporate database (NRM-FACTS) at the time the final harvest is scheduled.</p>
<p>MQ24. Have any final harvest unit sizes exceeded approved limits as identified in the LMRP or other decision documents?</p>	<p>We did not make any requests for size exceptions on any sites harvested.</p>	<p>None</p>
<p>MQ25. Are we managing dispersed recreation adequately</p>	<p>Some user conflicts were reported in 2012 regarding</p>	<p>None</p>



Monitoring question	Progress toward desired future conditions	Changes recommended
enough to protect resource conditions?	dispersed camping in the Kalama Horse Camp area.	
MQ26. What is the impact of dispersed occupancy on the physical resources?	Unmanaged dispersed camping is encroaching on the lakeshores and meadow leaving visible impacts.	None
MQ27. Is there a change to the natural area? Has human presence altered the natural area or what percentage of change has resulted from human activity?	Monitoring in 2003, 2008, and 2012 indicated that we are meeting standards and guidelines. There are concerns about adequate signage and encroachment by invasive species at some sites.	None
MQ28. Are non-native plant species increasing? Are new non-native plant species being introduced?	New invasive species are being detected, along with the expansion of an existing invasive plants. The number of treated acres has declined in the last 10 years.	Increase the number of treated acres, which have declined during the last 10 years, to control existing and new populations of invasive species through early detection and rapid response.
MQ31. Is there a conflict between recreational users and mountain goat habitat?	There have not been any interactions between recreational users and mountain goats.	it may be necessary to reconsider recreational activity in mountain goat habitat to prevent disturbance to the goats in a specific area such as Mount St. Helens. Additional considerations: add a recreational goat interaction survey for the high country, extend mountain goat ground surveys to include the Mt. Adams Ranger District with the help of citizen science.
MQ32. Are we managing mountain goat habitat for forage and cover?	We are currently not actively managing mountain goat habitat for forage.	Consider a 5- 10 year review of mountain goat habitat forage quality and carrying capacity, and completing non-native plant surveys in mountain goat habitat.
MQ35. Does the forest's decadal award exceed the current decadal Probable Sale Quantity?	No. We are still offering and awarding less than the volume of forest products outlined in the forest plan.	None
MQ36. Are resource outputs specified by the forest plan being met? Are there changes in the projected supply or demand of forest goods and services used in economic evaluation or in sensitive issues response?	No. There was a drop in awarded timber volume in fiscal year 2017 that contrasted with the overall upward trend in awarded volumes for the last 10 years.	None
MQ37. How is employment in Skamania, Lewis, Yakima and	Unemployment was strikingly high in 1980 and fell dramatically in the ensuing 36	None



Monitoring question	Progress toward desired future conditions	Changes recommended
Cowlitz affected by actions implementing the forest plan?	years. This is partly explained by the sharp rise in labor force nonparticipation beginning in 2000.	
MQ38. Are the road management objectives for particular forest roads still valid (future maintenance level)? Are there opportunities to close roads not required for resource use, protection or other demonstrated need?	Current budget allocations are not adequate to meet all our road maintenance needs.	Given declining budgets, we recommend considering revisions to the road system to address the high priority of meeting safety requirements for the traveling public.
MQ39. Are road closures being implemented as planned and are the closures effective?	The road closure target is 1,230 miles of road in seasonal or permanent closure. We are at 80 percent of this goal.	Given declining budgets, we recommend considering revisions to the road system to address the high priority of meeting safety requirements for the traveling public.
MQ43. Is long-term soil productivity of forest land being maintained?	As of 2012, detrimental soil compaction and soil displacement were found in approximately 2 to 2.7 percent of Units 1 and 10.	None
MQ44. Are Best Management Practices employed and effective to protect water, aquatic, and riparian resources applied to ground-based skidding, cable or aerial yarding and harvesting?	In 2012, LaRoux Unit 1 was logged with a helicopter logging system design, resulting in minimal amount of detrimental soil conditions.	We recommend that road project monitoring is the focus of next year's best management practices monitoring.