

**1998**

**M**onitoring and **E**valuation  
**R**eport

**G**ifford **P**inchot **N**ational **F**orest

Dear Forest User,

This is our eighth consecutive year of reporting the results of our monitoring Forest Plan standards and guidelines. If you have been following this series of annual reports you have seen some reoccurring themes in the monitoring results, many of which continue in our 1998 report.

With reductions in timber harvest since 1990, scenic quality, particularly within our identified scenic viewsheds, is improving. For more details see page 4.

As in previous years, this report shows that dispersed and wilderness recreation is having localized adverse impacts to fragile aquatic and terrestrial ecosystems. This finding led to the recently completed Forest Plan amendment to more carefully manage our wilderness areas. We believe this provides cause for optimism that we will succeed reversing the trend toward a decline in wilderness condition from overuse of certain areas. See page 5.

The Forest hosted over 5 million recreation visitor-days in 1998. Meeting demand for a developed camping experience during peak periods continues to be a challenge. Although the recently enacted fee demo program and use of campground concessionaires have enabled many improvements to recreation facilities, our budgets do not allow us to maintain campgrounds to the standard the public desires. See page 7.

As we have placed more emphasis on watershed restoration and habitat management for late-successional species, timber production has declined. Although the objectives have changed, harvest continues to be controversial. The listing of the steelhead and bull trout as "threatened," Endangered Species Act consultation processes, and NEPA appeals and litigation resulted in delays which reduced timber sales to about half of our expectations for the year. Results of our timber program monitoring begins on page 16.

The trend of fewer harvest activities in deer and elk winter range continued in 1998. This will lead to less forage production and projected declines in deer and elk populations on the Forest. See page 10.

*Results-at-a-Glance*, beginning on page 2 of this report, provides a brief summary of these and other results for the 31 items monitored in FY 1998. The full reports follow.

Beginning on page 37 is a report of the third year of an interagency effort to involve our Province Advisory Committee in monitoring our implementation of the standards and guidelines of the Northwest Forest Plan.

A brief description of the many monitoring activities conducted on the Forest which are not directly related to Forest Plan implementation begins on page 41.

To make this information more accessible to the public, it is posted along with three previous years' reports and many other items of public interest on our Internet site (<http://www.fs.fed.us/gpnf>).

I want to learn your views on this report. Send me a letter (or an e-mail to [gpinchot/r6pnw\\_gp@fs.fed.us](mailto:gpinchot/r6pnw_gp@fs.fed.us)) and let us know what you think.

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# 1998 Monitoring and Evaluation Report

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# Monitoring and Evaluation Report

## Gifford Pinchot National Forest

Fiscal Year 1998

### A. Introduction

This document reports Forest activities and accomplishments of 1998 and compares them to the Amended Forest Plan direction, and projected outputs and effects. Monitoring and evaluation are important elements in the implementation of the Forest Plan. They are key to making the Plan a dynamic and responsive tool for managing a complex set of natural resources and values in a climate of social and economic change. This document reflects the eighth year of implementing the Gifford Pinchot National Forest Plan which was approved on June 1, 1990.

The Plan was amended by the Northwest Forest Plan Record of Decision to incorporate new standards and guidelines to ensure protection of late-successional and aquatic ecosystems in April 1994.

### Monitoring and Evaluation

There are three types of monitoring:

- **Implementation Monitoring:** determines if goals, objectives, standards and guidelines are implemented as described in the Plan. The question being asked is, "Did we do what we said we would?"
- **Effectiveness Monitoring:** determines if management practices as designed and implemented are effective in meeting the Plan goals and desired future conditions. The concern here is, "Did the management practice accomplish what we intended?"
- **Validation Monitoring:** determines if data, assumptions, and coefficients are accurate. Here, the important question is, "Is there a better way to meet the Plan goals and objectives?"

Our 1998 monitoring effort emphasizes implementation monitoring, although several

items contain elements of both implementation and effectiveness monitoring.

**Evaluation** is the analysis and interpretation of monitoring results. Essentially, the question being asked in evaluation is, "Are changes needed?" These changes may involve amending or revising the Plan or changing the way activities are implemented.

The following outline briefly describes each section of this report:

- A. Introduction - This brief overview of what monitoring is about.
- B. Monitoring Results - At a Glance - summarizes monitoring results described in detail in Section C.
- C. Monitoring Item Results displays the individual results, evaluations and recommended follow-up actions for all items monitored in 1998.
- D. Accomplishments show trends in program accomplishments over FYs 1991-1998 and compares 1998 accomplishments to our assigned targets (page 33).
- E. Expenditures - Compares expenditures over the last 8 years and the composition of FY 1998 expenditures (page 35).
- F. Forest Plan Amendments - Lists all Forest Plan amendments, and briefly describes the content of each, and when it was approved (page 36).
- G. Northwest Forest Plan Monitoring - Included is the report from our third year of implementation monitoring conducted on the Gifford Pinchot as part of an owl region-wide monitoring program (page 37).

**Glossary of Terms** - Definitions of the technical terms used in this document (page 43).

## B. Monitoring Results - At A Glance

The following table briefly summarizes monitoring results by resource area. Detailed information for each monitoring item can be found on the page referenced in Section C, beginning on page 4.

Monitoring items preceded with an asterisk in the table below are all or part effectiveness monitoring, others are primarily implementation monitoring. Refer to the Glossary for meanings of technical terms used in this report.

### Monitoring Results - At A Glance

<b>RECREATION</b>	☺	* <b>Wild/Scenic Rivers</b> (page 4) - Activities in compliance, character of potential Wild and Scenic River corridors was preserved.
	☺	* <b>Semi-Primitive Recreation</b> (page 4) - The project monitored met semi-primitive motorized standards and guidelines.
	☺	* <b>Scenic Quality</b> (page 4) - Scenic standards were met on all projects. Viewshed conditions have improved somewhat.
	☹	* <b>Wilderness Use and Condition</b> (page 5) - The majority of the sites monitored show evidence of continued degradation from recreation use.
	☺	* <b>Trail Inventory, Setting and Condition, ORV</b> (page 6) - Trail standards and guidelines are being met. Trail construction and reconstruction exceed the Forest Plan projection in 1998.
	☹	* <b>Recreation Use and Facility Condition</b> (page 7) - Four major maintenance or reconstruction projects were completed on Forest campgrounds in 1998. Numerous dispersed camping sites, accessible by vehicle, are continuing to show evidence of overuse.
<b>HERITAGE RESOURCES</b>	☺	* <b>Heritage Resource Protection</b> (page 8) - Thirty-five heritage resource properties associated with projects implemented in Fiscal Year 1997. Protective measures were successful in all but one case.
<b>WILDLIFE</b>	☺	<b>Forage Production</b> (page 9) - Forage production objectives were met on the project monitored.
	☺	<b>Optimal Cover</b> (page 10) There were no harvest units in optimal cover among the projects monitored in FY 1998.
	☺	<b>Raptor Habitat</b> (page 10). None of the projects monitored in 1998 impacted raptor or heron nesting or wintering habitat.
	☹	<b>Legacy Features</b> (page 11) Snag requirements were met on all sales monitored. Retention trees were met five of six sales monitored. The Plan intent for down wood requirements was met on all projects monitored.
	☺	* <b>Snag Effectiveness</b> (page 11) Monitoring shows that created snags over 5 years old are being used as habitat.
	 ☺	<b>Survey and Manage</b> (page 12) During FY 98, 8,500 acres was surveyed for salamanders and 6,300 acres for plants.
*All or part effectiveness monitoring.		

- ☺ Standard and guideline met, or no activities to monitor.
- ☹ Mixed results or mitigating circumstances.
- ☹ Need for improvement.
- ⓘ Information item, not a standard and guideline.

## Monitoring Results - At A Glance (Continued)

<b>GRAZING</b> ☺	* <b>Grazing Practices</b> (page 13) Cattle and sheep grazing practices conform to standards and guidelines.
<b>BOTANICAL</b> ☺ ☺	* <b>Research Natural Areas</b> (page 14) - Standards and guidelines and management objectives are being met in the RNA that was monitored.
	* <b>Botanical Special Interest Areas</b> (page 14) - Three BSIA's were monitored in 1997, no unacceptable impacts were discovered.
<b>TIMBER</b> ☺ ⓘ ☺ ⓘ ⓘ ☺	<b>Adequate Reforestation</b> (page 16) - Three years after harvest, 100 percent of the harvested area was adequately stocked.
	<b>Timber Harvest Methods</b> (page 16) - Harvest activity was approximately 26 percent of the amended Plan projection.
	<b>Regeneration Harvest Units Size</b> (page 16) - The intent of standard and guidelines pertaining to the size and spacing of created openings were met. The forty acre opening limit was relaxed on two harvest units to reduce fragmentation.
	<b>Volume Sold</b> (page 17) - In 1998 the Forest advertised 31.8 million board feet. The goal for 1998 was 63 million board feet.
	<b>Timber Revenue and Expenses</b> (page 17) - The timber program earned \$3 million in 1998.
	<b>Silvicultural Prescriptions</b> (page 18) - All prescriptions reviewed were consistent with the NEPA analysis and meet the applicable standards and guidelines.
<b>SOIL AND WATER</b> ☺ ☺	<b>Soil Productivity</b> (page 19) - The soil productivity standard was met on eight of nine harvest units monitored.
	<b>Best Management Practices</b> (page 19) - Required Best Management Practices were accomplished on the four timber sales monitored with two exceptions.
<b>FISHERIES</b> ☺ ☺ ⓘ ☹	<b>Fish/Riparian S&amp;G Implementation</b> (page 19) - All projects were implemented in compliance with fish/riparian standards and guidelines.
	* <b>Effectiveness of Riparian S&amp;Gs</b> (page 19) - Riparian standards and guidelines appear to be effective in maintaining stream channel stability and shading.
	* <b>Steelhead and Bull Trout Populations</b> (page 25) - The Wind River and East Fork Lewis River steelhead populations have shown a marked decline for the second consecutive year. The bull trout population appears to be increasing.
	* <b>Effectiveness of In-Channel habitat Improvement Structures</b> (page 28) - Seventy-two percent of the structures evaluated are fully meeting intended objectives; 20 percent partially; and 8 percent do not meet intended objectives.
<b>ROADS</b> ☺	<b>Road Closures</b> (page 29)- Forty-seven miles of system roads were decommissioned during 1997. There has been a net reduction of roads in key watersheds.
<b>COMMUNITIES</b> ⓘ	<b>Community Effects - Payments to Counties</b> (page 31) - The U.S. Treasury returned \$10 million dollars to the six counties with lands within the Forest administrative boundary. The Forest administered \$482 thousand in community assistance grants.
<b>MINING</b> ☺	<b>Mining Operating Plans</b> (page 32) - Two plans of operation were monitored in 1998. No cases of noncompliance were identified or reported
*All or part effectiveness monitoring.	

### C. Monitoring Item Results

#### Wild and Scenic Rivers <sub>1</sub> 😊

**Introduction:** On the Gifford Pinchot National Forest there are no Congressionally designated Wild, Scenic or Recreational Rivers; however, the Forest Plan recommended the Lewis River, Cispus River, and the Muddy Fork and Clear Fork of the Cowlitz River be designated as Wild and Scenic Rivers. In addition, twelve other rivers were recommended for further study.

The values for which these corridors were either recommended or deemed eligible for recommendation are being protected until Congress takes action on the Forest’s recommendation or further studies are completed. The Forest monitors activities in each of these corridors to ensure they are not jeopardizing a future Wild and Scenic River designation.

**Results:** All projects within potential Wild and Scenic River corridors were monitored. The results are displayed in Table 1.

**Table 1 - Project Monitoring in Potential Wild and Scenic River Corridors**

Corridor	Project	Stds. Met
Cispus River	2035 Timber Sale	Yes
Cispus River	Relocation of Valley Trail	Yes
Yellowjacket	Kirk Timber Sale	Yes
Yellowjacket	Replace Toilet at Yellowjacket Ponds	Yes

**Evaluation:** After reviewing the activities shown in Table 1, all of the projects were found to be in compliance with the Plan standards and guidelines. The character of the wild and scenic corridors was preserved.

**Recommended Action to be Taken:** No corrective action required -- monitoring to continue.

#### Semi-Primitive Recreation <sub>2</sub> 😊

**Introduction:** The Forest Plan provides a framework for managing different classes of outdoor recreation settings, activities and opportunities. This framework is a continuum comprised of seven classes: Primitive, Semi-primitive Non-motorized, Semi-primitive Motorized, Roaded Modified, Roaded Natural, Rural and Urban. This monitoring item focuses on maintaining the character of the two semi-primitive classes. The emphasis in these areas is to maintain a predominantly natural or natural appearing environment. Motorized recreation use is not permitted in the semi-primitive non-motorized category.

**Results:** The Lakes Basin Toilet Construction was reviewed for compliance with standards and guidelines.

**Evaluation:** The project reviewed was in compliance with Forest Plan standards and guidelines.

**Recommended Action to be Taken:** No corrective action required -- monitoring to continue.

#### Scenic Quality <sub>3</sub> 😊

**Introduction:** The Forest Plan delineated 37 viewshed corridors across the Forest. Lands within view of 21 of these viewshed corridors have management objectives requiring maintaining or improving scenic values. In these viewsheds, management activities are to be compatible with scenic quality objectives.

**Results:** Seven projects were monitored for compliance with scenic quality standards in 1998. The project reviews determined that standards and guidelines for scenic quality, as specified in the Forest Plan, were met.

**Table 2 - Scenic Quality Project Monitoring Summary**

Project	Viewshed	Standards Met
Cispus Flats Timber Sale	Johnson Creek	Yes
Cispus Hazard Tree Removal	Cispus River	Yes
East Timber Sale	82 Road	Yes
Kirk Timber Sale	Yellowjacket Creek Area	Yes
Silver Watch Timber Sale	Highway 12	Yes
Upper Iron Timber Sale	Pine Creek - Randle	Yes
Willame Timber Sale	Highway 12	Yes

Landscape-scale viewshed condition monitoring was conducted for four viewsheds in 1998, results are shown in Table 3. Each viewshed is monitored every 5 years to determine if changes in the condition have occurred.

**Table 3 - 1998 Viewshed Monitoring Results**

Viewshed	Road or Trail	1985 Rating	1998 Rating
Cispus River	Forest Road 23	Slightly Altered	Slightly Altered
Lewis River	Forest Road 90	Slightly Altered	Slightly Altered
Wind River	Forest Road 51	Moderately Altered	Moderately Altered
Langfield Falls	Forest Road 88	Moderately Altered	Moderately Altered

**Evaluation:** The projects met the standards and guidelines for scenic quality. Although it is not reflected in Table 4, conditions of the viewsheds monitored have improved somewhat under the Forest Plan.

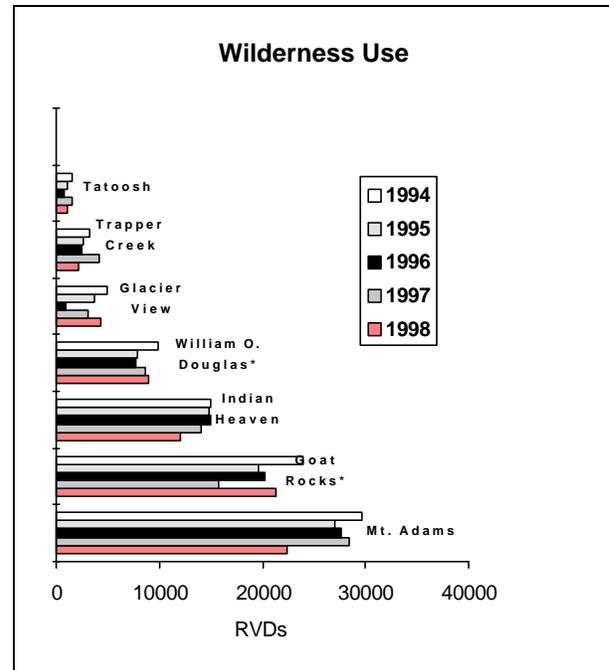
**Recommended Action to be Taken:** No corrective action required -- monitoring to continue.

**Wilderness Use and Condition 4 ☺**

**Introduction:** The Forest currently has about 180,000 acres in seven wildernesses. Each wilderness is partitioned according to the nature of recreation opportunity. The range of these opportunities is called the Wilderness Recreation Opportunity Spectrum. Each category has a set of standards describing the desired recreation experience. This monitoring determines if standards for the experience in

each category have been met. It measures wilderness use and impacts of recreation use on wilderness character.

**Figure 1 - Wilderness Use 1994 - 1998**



**Results:**

A. Wilderness Use - Table 4 and Figure 1 compares the 1995 through 1998 wilderness use:

**Table 4 - Wilderness Use**

Wilderness	Recreation Visitor Days				
	1995	1996	1997	1998	97-98 % Change
Mt. Adams	26,060	27,630	28,410	22,400	-21%
Goat Rocks *	19,590	20,300	15,750	21,250	+35%
Indian Heaven	14,770	14,960	14,030	12,000	-14%
William O. Douglas *	7,900	7,780	8,700	8,920	+3%
Glacier View	3,640	890	3,100	4,300	+39%
Trapper Creek	2,590	2,520	4,230	2,200	-48%
Tatoosh	1,010	730	1,500	1,100	-27%
<b>TOTAL</b>	<b>75,560</b>	<b>74,810</b>	<b>75,720</b>	<b>72,170</b>	<b>-5%</b>

\* Gifford Pinchot National Forest portion only.

B. Limits of Acceptable Change (LAC). Limits of Acceptable Change is a measure of impacts associated with recreation use such as trampled area, vegetation loss at camp sites, and mineral

soil exposed. Table 5, page 6, summarizes field-monitoring results for Limits of Acceptable Change.

**Table 5 - Wilderness Sites Monitored - 1998**

Wilderness	Site Changes from Baseline
William O. Douglas	3 areas monitored. When compared with the baseline inventory --50% of the sites are degraded. --13% of the sites did not change --37% of the sites are improved
Mt. Adams	--20 % of the sites exceed the baseline inventory
Indian Heaven	--10% of the sites exceed the baseline inventory
Trapper Creek	--No Change

**Evaluation:**

A. Wilderness Use

None of the Wildernesses currently exceed the 120 percent use/capacity threshold-of-concern. The localized use patterns and impacts indicate that some sites and trails are being overused. Based on recent permit data, the capacity figures calculated for the Forest Plan appear to be an overestimate.

B. Limits of Acceptable Change

The information gathered in the LAC field studies indicates a majority of the sites show evidence of continued degradation from recreation use. Examples include establishment of new, and expansion of existing campsites, and recreation related impacts to riparian areas.

**Recommended Actions to be Taken:** In the sampled wildernesses, resource conditions that are degrading rather than improving are a clear indication of the needs for corrective action. Recent monitoring on other wildernesses on the Forest has yielded similar results. Measures, such as rehabilitation, education, and attempts to confine damages to areas already impacted have worked to some degree to reduce impacts; however, it has become clear that these are not always effective, and that further actions are necessary to protect wilderness resources. Consequently, the Forest, in cooperation with users and other interested parties, is evaluating alternatives for increased protection in a Forest-wide wilderness management

environmental assessments scheduled for completion in 1999.

**Trail Inventory and Condition **

**Introduction:** On the Forest there are 1,490 miles of trails, including 317 miles within Wilderness. These trails are managed to maintain a diverse array of travel opportunities. Difficulty, mode of travel, and distance are factors affecting the mix of travel opportunities. Each Forest trail is assigned a trail management level, with associated standards and guidelines for management of adjacent lands. These management levels offer a range of protection from roading and timber harvest impacts. We also monitor the amount of trail construction, maintenance, use, and management.

**Results:**

A. Trail Construction and Maintenance --

Table 6 compares the amount of trails constructed or reconstructed in 1998 with the amount projected in the Forest Plan.

**Table 6 - Trail Construction and Maintenance**

Trail Activity	Miles from Forest Plan	1998 Miles Accomplished	Percent of Plan Level
Construction or Reconstruction	34 <sup>1/2</sup>	66	194
Maintenance	1490	832	56

<sup>1/2</sup> Trail mileage average based on projects listed in Appendix A of the Forest Plan.

Reconstruction occurred on 22.2 miles of the 227.9 miles of trails designated for motorcycle use.

Approximately 832 miles (56 percent) of the 1,490 miles of the existing summer and winter use trails in the Forest Trail System were maintained to full Meaningful Measures Standards (see Glossary, page 44).

B. **Trail Setting** - The following table shows trails that were reviewed either in the planning phase (through the review of planning documents) or on the ground.

**Table 7 - Trail Setting**

Trail Reviewed Name and No.	Planned Mgt. Level	Meets Management Level in Plan	Existing Trail Meets Standards
High Lakes #116	I	Yes	Yes
PCNST #2000	I	Yes	Yes
Boundary #1	I	Yes	Yes
June Lake #216B	I	Yes	Yes
McClellan # 157	III	Yes	Yes
#152A	II	Yes	Yes

C. **Trail Use** - We responded to public comments concerning use conflicts on several trails across the Forest. There were complaints by hikers about motorized use on the Juniper Ridge Trail #261, Langille Ridge Trail #259, and Craggy Peak Trail #3. On Ape Canyon Trail #234 complaints about mountain bike use by hikers continue. There were more reports of motorcycle use on the Truman Trail #207, a hiker only trail. Horse damage to tread and riparian areas was reported on the Killen Trail #113.

**Evaluation:** Twice the annual average trail construction/reconstruction estimated in the Forest Plan was accomplished. Some of this was work associated with flood damage repair projects.

Trail mileage maintained increased by 34 percent from last year.

User conflicts were reported on fewer than 10 percent of the system trails and thus do not exceed the threshold of concern for complaints.

The Cispus OHV assessment is currently underway to provide information about the use of the trails in the Langille/Juniper and related areas. This should lead to further resolution of the ongoing conflict between the motorized and non-motorized users.

**Recommended Action to be Taken:** The 1999 trail maintenance budget has increased from last year. In addition, revenues from Trail Park user fees will be available for the first time for maintaining Trail Parks and the trails they serve. The expected result is a significant increase in the trails that will be maintained. Leveraging funds, such as supporting volunteer trail maintenance efforts, will continue to be a major emphasis of the Forest trail system maintenance strategy.

Trail operation and maintenance, and capital improvement costs will be reassessed during 1999. This updated information will be used as a basis for future budget requests beginning in year 2000.

No additional corrective actions are required at this time. Monitoring to continue.

Developed and Dispersed Recreation Use and Facility Condition 

**Introduction:** The Forest has about 120 developed recreation sites, not including visitor centers, with a combined capacity of 16,650 persons-at-one-time (PAOT). We have experienced increasing demand for recreation opportunities from the fast growing populations of the Portland metropolitan area and the international notoriety of Mount St. Helens and the Columbia Gorge. Accompanying the growth in demand has been a decline in recreation budgets. The Forest has pursued some innovative measures to close the gap between demand for services and the recreation budget through partnerships, volunteers, user fees and use of campground concessionaires. Despite these measures, the condition of many recreation facilities continues to deteriorate.

All of the Forest fee campgrounds and some day-use sites are operated by concessionaires. This helps ensure that these sites are managed to standard since sites are operated and maintained according to the concessionaires' operating plans approved by the Forest Service. In addition, most of the revenues generated from camping fees go toward operation and maintenance.

However, camping outside of campgrounds (dispersed camping) continues to be popular

and is increasing. There are currently few restrictions on where visitors may camp. Since the preference is to be near water, this is where the majority of use of this type occurs. As a result, fragile riparian areas often are impacted.

**Results:** A total of 4 major maintenance or reconstruction projects were completed on Forest campgrounds in 1998. However, the majority of all developed sites are still in need of repair or upgrading to meet new standards such as those for handicap accessibility.

Monitoring of recreation use outside of campgrounds indicates numerous dispersed camping sites, accessible by vehicle, are continuing to show evidence of overuse. In addition, we believe the number of such sites may be increasing due to increased demand resulting from the closure of adjacent private timber lands to recreation use and higher fees for Forest campgrounds. Concerns include inadequate sanitation; resource damage; tree removal; trash; user conflicts; and user-defined sites located too close to streams, lakes, and scenic highways.

**Evaluation:** Many developed recreation facilities are continuing to show the need for reconstruction or heavy maintenance. Deferring routine maintenance of these facilities has resulted in a devaluation of the capital investment and increased maintenance costs.

Condition surveys of developed recreation sites indicate that a majority do not meet accessibility or sanitation standards.

Monitoring of dispersed recreation camping sites indicates that many of these sites do not meet standards and are impacting riparian areas.

**Recommended Actions to be Taken:** The Forest will continue to evaluate the ability to meet existing and future developed recreation needs, while providing facilities that meet operation, maintenance, and accessibility standards identified in Meaningful Measures.

The Forest will conduct a Forest-wide campground review that will result in a strategic action plan recommending sites to

retain, close, expand or reduce in size; new sites to be constructed; priorities for construction and reconstruction, fee status, and concessionaire operation.

In 1998, the Forest implemented measures to reduce the impacts of dispersed camping. These included; moving sites away from rivers and restricting access, installing toilets at areas of dispersed concentrated use, developing an educational brochure of dispersed camping guidelines.

These measures are beginning to make a difference and should be continued. In addition, a comprehensive dispersed recreation strategy should be developed for the Forest. It should identify actions and priorities, as well as further study needed. The dispersed site inventory begun last year should continue and be completed as a basis for the strategy development. Monitoring of dispersed sites should continue.

## Heritage Resource Protection <sup>11</sup>

**Introduction:** Heritage Resources identified in the project survey and inventory process are evaluated to determine their significance. The level of significance is measured by the criteria of the National Register of Historic Places. Projects are usually designed to protect significant sites through avoidance. In rare cases, effects are mitigated through archaeological data recovery methods, including scientific excavation and analysis. In the case of historic structures, mitigation may take the form of detailed architectural documentation.

Typical heritage site protection strategies involve the maintenance of non-activity buffer zones. Monitoring ensures that prescribed protective measures were properly implemented in the field. Monitoring also provides an opportunity to evaluate the effectiveness of various protective strategies.

**Results:** There were 35 heritage resource sites associated with projects implemented during Fiscal Year 1998. The projects included one

commercial timber sale on the Mount Adams Ranger District, two commercial timber sales on the Mount St. Helens National Volcanic Monument, two road repair projects on the Mount Adams District, a stream restoration project on the Mount Adams District, and a trail relocation project on the Cowlitz Valley Ranger District.

Twenty-six of the heritage resource sites were determined significant. Avoidance measures were prescribed for 25 of these sites, and generally involved the modification of timber sale cutting unit boundaries.

The largest single category of heritage resource sites was peeled cedar trees. The trees exhibit scars that are the result of historic cedar bark collection by Native Americans, primarily for the manufacture of folded bark baskets. A total of 16 peeled cedar sites were associated with three timber sales awarded in 1998. Fourteen of these sites were placed in “preservation” management status; two in “harvest after mitigation” status. Management of peeled cedars is governed by a 1987 Programmatic Memorandum of Agreement between the Forest, The Washington State Office of Archaeology and Historic Preservation, and the Advisory Council on Historic Preservation. A management plan update prepared in 1997 identified a total of 5,975 peeled cedars in 338 sites on the Forest. A total of 46 percent of the known peeled cedars are currently managed in preservation status.

Data recovery efforts associated with the peeled cedars in “harvest after mitigation” status are ongoing as specific cutting units under contract are harvested. Results will be summarized in a later comprehensive report.

Other types of heritage resources found in association with 1997 projects include prehistoric lithic scatter sites, an isolated lithic artifact, a huckleberry processing site, a cairn, a culturally modified pine tree, a water tank, an historic refuse dump, and an historic cabin site.

Avoidance measures were effective in all cases.

**Evaluation:** Protective measures were successful.

**Recommended Action to be Taken:**

Recommended action from 1996, and again in 1997, pertaining to two prehistoric sites damaged by trail construction has still not been taken. The location is on the Mount St. Helens National Volcanic Monument. Damage assessment is required by law, and should be accomplished as early as possible in 1999. Documentation will include determination of the spatial extent of both sites, calculation of percent of disturbance, and significance evaluation.

Forage Production <sup>31</sup> 

**Introduction:** The Forest has an objective of maintaining populations of deer and elk (Forest Plan, page IV-25). That objective is pursued by providing cover and forage in the proportions needed to support the populations (see Optimal Cover, below). Timber harvest is the primary means of creating new forage on the Forest. The Forest has a goal of producing 550 pounds of forage per acre after harvest of timber, compared to the approximately 300 pounds per acre which would be produced under unmanaged conditions. The harvest level proposed by the 1990 Forest Plan was not expected to provide adequate forage to meet population goals without enhancing forage production by seeding and fertilizing. Subsequent reductions in harvest brought by the Northwest Forest Plan in 1994 cast further doubt on the Forest’s ability to support existing populations of deer and elk. In the future, forage seeding and fertilization will play an increasingly important role in supporting deer and elk populations.

**Results:** One timber sale harvest unit was monitored which produced above 550 pounds per acre.

**Evaluation:** The standard and guideline was met in the unit monitored.

**Recommended Action to be Taken:**

Continue to enhance forage production by seeding and fertilizing.

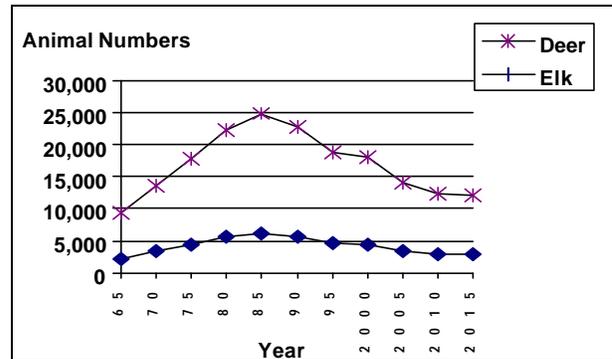
Optimal Cover <sup>32</sup> 😊

**Introduction:** The Forest seeks to maintain populations of deer and elk by providing cover and forage in the proportions needed to support the populations (see Forage Production, above). Part of that strategy involves maintaining 44 percent of the winter range in a vegetative condition characterized by four vegetation layers from trees larger than 21 inches in diameter in the overstory to an herbaceous layer providing forage. Ideally, the overstory will intercept and hold a substantial amount of snow, yet have dispersed, small (less than 1/8 acre) openings. These conditions are generally achieved when the dominant trees average 21 inches dbh or greater, have 70 percent or greater crown closure, and are in the large tree or old growth stand structure condition. This *optimal cover* supports deer and elk by providing thermal cover, hiding cover and forage. Where the winter range in a watershed is below 44 percent optimal cover, regeneration harvest should be deferred from Management Area Category E (Deer and Elk Winter Range) in the same watershed.

Under the Northwest Forest Plan, the amount of optimal cover will, in time, exceed 80 percent of the biological winter range. This addition, beyond the 44 percent goal, will not offset the reduction in open forage. The present population of deer and elk will not be supported on National Forest System lands. Our review of the forage/cover ratio by the year 2015 indicates a potential habitat reduction of about 35 percent of the potential deer and elk population.

Figure 2 projects deer and elk populations under current management direction.

**Figure 2 - Projected Deer and Elk Populations**



**Results:** There were no harvest units in optimal cover within the pool of projects which were candidates for monitoring in FY 1998.

**Recommended Action:** Pursue thinning opportunities to restore and enhance habitat in watersheds that are deficient in optimal cover.

Habitat for Osprey, Swainson's Hawk, Goshawk, Ferruginous Hawk and Great Blue Heron <sup>35b</sup> 😊

**Introduction:** The Forest Plan (page 2-75) provides standards and guidelines aimed at minimizing the disruption of habitat during critical nesting periods. Direction is also provided to minimize disturbance of key winter habitat. Species protected include: Bald Eagle, Peregrine Falcon, Golden Eagle, Osprey, Swainson's Hawk, Goshawk, and Great-Blue Heron.

**Results:** None of the projects within the pool of monitoring candidates in 1998 impacted raptor or heron nesting or wintering habitat. One unit on one timber sale had a seasonal logging restriction for the protection of osprey.

**Recommended Action to be Taken:** No action required; continue monitoring.

Legacy Features <sup>40</sup> 😊

**Introduction:** Dead and partially dead trees referred to as "snags" are important to certain wildlife species. To provide suitable habitat, a snag needs to be at least 17 inches in diameter

and 40 feet high. They serve as breeding areas, shelter, and a host to insects which provide food for birds. Species dependent on snags include the pileated woodpecker and several other woodpecker species, red-breasted sapsucker, red-breasted nuthatch, and northern flicker.

Ecological studies are expanding our understanding of the role of down woody material in forest ecosystems. Down logs are important because of their role in mineral cycling, nutrient mobilization, and moisture retention. In addition, down logs provide structure and habitat suitable to many wildlife species.

**Results:** The Northwest Forest Plan directs that existing coarse woody debris be protected during logging and that 240 linear feet per acre of decay class I and II logs be left after harvest. In Lama and Middle Fork sales, preharvest sampling counted hard, class III logs as contributing toward the down wood requirement. The primary difference between a hard class III log and a class II log is the presence of bark on the class II logs. Post sale monitoring counted only class I and II logs and found the amount of down wood deficient.

The Northwest Forest Plan directs that a number of trees equivalent to 4.5 percent of the unit area be dispersed throughout the unit. Both units monitored on the Middle Fork sale were deficient of dispersed leave trees. While the Middle Fork sale met Forest Plan standards for snags, one of the two units fell short of an objective set in the EA to provide additional snags to mitigate for snag deficiencies in adjacent harvested areas.

The unit monitored on Davis-Skyo was a phellinus root rot infected area. Because of the phellinus infestation there were few healthy phellinus resistant trees to leave as retention trees and most snags had fallen from the effect of the root rot. Snag creation had begun but the snag goal had not been met. Although the amount of down wood was not monitored, there is little doubt that the 240 foot requirement was

met, given the mortality and windthrow related to the root rot.

Table 8 provides the summary of the monitoring results for the six sales monitored.

**Table 8 - Projects Monitored for Retention Trees, Snags, and Downed Log**

Timber Sale Projects	Standards Met? (Yes or No)		
	Green Tree	Snag	Down Woods Debris
Lama	Y	Y	N**
Middle Fork	N	Y**	N**
Rock	Y	Y	Y
Hardtime	Y	Y	*
Mama Bare	Y	Y	Y
Davis-Skyo	Y**	N**	Y**

\* Not monitored.  
\*\* See qualification in text.

**Evaluation:** The district biologist believes the hard class III logs on the Lama and Middle Fork sales are providing the ecological function intended of the class 1 and 2 logs and that the spirit of the standard was met.

Retention tree and snag goals were met in the Mama Bare and Hard Time sales. Down wood was met in the Mama Bare sale but was not monitored on the Hard Time sale. The evidence from the Middle Fork sale indicates that the standard was not met for green tree retention; and although the standard was met, the EA objective for snag retention was not met. Records indicate that leave trees may have been left along the boundary of the sale but could not be identified by those conducting the monitoring. Leave trees which can not be distinguished from the adjacent stand do not meet the Plan's intent that they be protected.

**Recommended Action to be Taken:**

The Forest is developing a standard protocol describing procedures to be used in designating retention trees and down logs. A draft of the retention tree protocol is being circulated for review.



**Introduction:** The Forest Plan standards and guidelines (Amendment 11, pages 6-4 to 6-6) call for the retention of snags and green trees in timber sale areas. To determine whether retention of snags and green trees is effective in providing habitat for cavity excavators, six sites were monitored. The areas monitored were those where snags were created at least five years previous.

**Results:**

A total of forty-six snags were monitored at six sites. The twenty-six snags created in 1993 ranged from 17 to 24 inches in diameter at breast height (dbh), and were created by girdling. A total of twenty snags were created in 1989 ranging from 19 to 36 inches dbh in size. Blasting created nine snags and girdling created eleven. Three of the girdled trees were still alive.

**Table 9 - Snag Effectiveness**

Date Created	Method	Number Treated	Percent Use
1993	Girdling	26	19%
1989	Blasting	11	85%
	Girdling	9	

We can draw three conclusions from this data, first that snags less than five years of old have limited value as cavity excavator habitat; second, that older snags are being used; and third, that blasting is a more effective method of quickly killing the trees.

**Recommended Action to be Taken:** When creating snags by girdling, take precautions to ensure the cambium layer is effectively severed.



**Introduction:** The Northwest Forest Plan provides for surveys for over 300 rare plant and animal species known or suspected to exist on the Gifford Pinchot. These species are grouped in four categories:

1. Manage Known Sites,
2. Survey prior to ground disturbing activities,
3. Extensive Surveys,
4. General Regional Surveys.

Surveys for Larch Mountain and Van Dyke's salamanders were required prior to ground disturbing project decisions beginning in 1997; surveys for other category 2 species were required beginning in 1999.

**Results:** Surveying for the Larch Mountain and Van Dyke's salamanders began according to the Northwest Forest Plan in fiscal year 1996. Over the last three years 18,192 acres were surveyed. During FY 98, 8,500 acres were surveyed. Twenty Larch Mountain salamanders sites have been located, all on proposed timber sale areas. Three Van Dyke's salamander sites have been located. One site was found on a proposed timber sale area, one site was found on a trail project, and one was site was found on a watershed restoration project.

Table 10 portrays the results of Survey and Manage plant surveys. Plant surveys become mandatory for 1999 decisions and approximately 6,300 acres were surveyed Forestwide in 1998.

**Table 10 - 1998 Plant Survey Results**

Species	Life Form	Number of Sites*		
		MTA	CV	MSH
<i>Allotropa virgata</i>	vascular plant	5	3	15
<i>Buxbaumia viridis</i>	bryophyte	0	18	0
<i>Cantharellus formosus</i>	fungi	0	0	3
<i>Corydalis aquaegeidae</i>	vascular plant	4	0	0
<i>Dendriscoaulon intricatum</i>	lichen	0	1	0
<i>Dermatocarpon luridum</i>	lichen	0	0	3
<i>Helvella elastica</i>	fungus	0	3	0
<i>Hydrothyria venosa</i>	lichen	3	7	15
<i>Leptogium rivale</i>	lichen	0	0	9
<i>Lobaria hallii</i>	lichen	4	9	0
<i>Lobaria oregana</i>	lichen	3	0	0
<i>Lobaria pulmonaria</i>	lichen	9	0	0
<i>Pseudocyphellaria anomala</i>	lichen	5	0	0
<i>Pseudocyphellaria rainierensis</i>	lichen	9	6	0
<i>Tetraphis geniculata</i>	bryophyte	0	1	0
<i>Ulota megalospora</i>	bryophyte	2	23	0
<i>Usnea longissima</i>	lichen	2	0	1

\* MTA - Mt Adams Ranger District  
 CV - Cowlitz Valley Ranger District  
 MSH - Mount St. Helens Ranger District

Grazing Practices <sup>45</sup> 

**Introduction:** The grazing of cattle, horses, and sheep are among the “multiple-use” activities on national forest system lands. Included within the grazing program is range administration and noxious weed management.

Noxious weeds are a problem because they can be toxic to wildlife, domestic livestock, and humans and they displace desirable plant communities. Toxicity to flora and fauna is the primary concern because they are rarely ingested by people. Ecosystem changes produced by noxious weeds can be dramatic and have highly adverse impacts to plant and animal environments. These types of changes impact all resources.

The allotment management plans for these allotments are current and periodic evaluations of the allotment sites are performed. For cattle, the allotment management plan is reviewed and reissued every ten years, with the same happening for sheep every five years. Every year an annual operating plan is developed between the permittees and the Forest Service. Through our evaluations, we ensure that the Forest Plan standards are met. This is achieved through inspections of the sites prior to dispersal of livestock, and monitoring of the livestock while on-site to ensure proper utilization of resources, distribution of livestock, and maintenance of ecosystem health. Range improvement such as maintenance of fences, cattle guards, and water-line maintenance have been performed by the permittees.

Our monitoring utilizes photo monitoring plots of vegetation which aids in determining the condition and trends within certain plant communities over time. When grazing in or near riparian zones we ensure that the objectives for the Aquatic Conservation Strategy are fulfilled, including but not limited to water quality, stability of streams and ponds, riparian vegetation and fish and wildlife habitat. In the past, post-grazing levels of vegetation were reviewed by Regional and Forest personnel and our current post-grazing vegetation levels fall within their guidelines. Grazing is not permitted in research natural areas or botanical special areas.

**Results:** The monitoring of range allotments is summarized in Table 11.

**Table 11 - 1998 Grazing Monitoring**

Allotment	Activity	Standards Met?
Twin Buttes	Inspected*	***
	Monitored**	Yes
Mt. Adams	Inspected	Yes
	Monitored	Yes
Ice Caves	Inspected	Yes
	Monitored	Yes
Cave Creek	Inspected	Yes
	Monitored	Yes
Noxious Weeds	Inspected	Yes
	Monitored	Yes

\* Inspection: detailed site evaluation with the permittee.  
 \*\* Monitored: site evaluation performed by FS employee using one or more of the following methods: Photo plots, weekly site-specific ocular survey, roadless monitoring by horseback and collateral to other project work.  
 \*\*\* Twin Buttes Sheep and Goat Allotment was vacant this season.

There are three active allotments on the Gifford Pinchot National Forest. These allotments are on transitional rangeland. They are located on the Mt. Adams District and eastern portion of the Mt. Saint Helens District in the areas of Twin Buttes, Mt. Adams and Ice Caves. Permitted livestock use for the season totaled 1,736 head months (HMs) for the Forest, a 37 percent reduction from 1997.

**Noxious Weeds**

In the Cave Creek drainage and other past treatment areas, there was a total of 300 acres monitored. We hand pulled nine targeted noxious weed species on 12 sites. These 12 sites are conservatively estimated to represent infestations of 150 acres. Included in the 12 treatment sites are the Mt. Adams Ranger Station, Wind River Work Center, Wind River Nursery and the Willard Work Center Equipment yard.

**Evaluation:** All grazing allotments reviewed were in compliance with the amended Gifford Pinchot Forest Plan standards and guidelines.

**Recommended Action To Be Taken:** No corrective action required - monitoring and current management practices are to be continued

Continue to emphasize prevention and coordinate monitoring activities with botany, wildlife, fish and hydrology specialists to ensure resource protection.

Continue the comprehensive inventory of noxious weed infestations.

**Research Natural Areas (RNA) **

**Introduction:** The Forest Plan requires that no activity occur within an RNA that would adversely affect the natural values of an RNA for which it was established. Prohibited activities include livestock grazing; timber and miscellaneous forest products harvest; recreation development and use; road construction; temporary facility installation; unlawful mining or mining of common variety materials; establishment of exotic plant, animal, or insect species; and establishment of non-endemic levels of insects, pathogens, or disease.

The six areas designated as RNAs through the planning process are listed in the table below. These areas provide representative examples of biologically important ecosystems and are managed to conserve their biological diversity. They serve as undisturbed controls for comparison with managed areas and are valuable for studying natural processes. Research Natural Areas are permanently protected federally designated reserves where long-term studies that contribute to our knowledge of the ecosystem is encouraged. The standards and guidelines for Research Natural Areas focus on maintaining their natural state for research and education. Monitoring serves to evaluate whether the natural conditions of the Research Natural Area have been modified, and prescribes corrective actions if necessary.

**Table 12 - Research Natural Area Monitoring**

Research Natural Area	Last Monitored	Standards & Guidelines Met?
Butter Creek	1991	yes
Goat Marsh	1993	no
Sisters Rock	1998	yes
Steamboat Mountain	1998	yes
Cedar Flats	1996	yes
Thornton T. Munger	1998	yes

**Results:**

In 1998:

- a Management Plan for Goat Marsh Research Natural Area was prepared and signed,
- Steamboat Mountain addition EA was prepared,
- T.T. Munger, Steamboat Mountain, and Sister Rocks RNA were monitored,
- inventories for fungi at Sisters Rock and for lichens and vascular plants at Butter Creek and Steamboat were completed
- Smith Butte and Weigle Hill EAs were drafted
- noxious weeds threatening to encroach the T.T. Munger RNA were eradicated.
- trails were upgraded or maintained within Sisters Rock and T.T. Munger RNAs
- potential impacts to Steamboat Mountain RNA from nearby planned timber sales Swell, Skeeter, and Two Peaks were addressed in the EAs for these sales

In 1997, concern was expressed for reoccurring unauthorized camping and in 1998, some of the elk camp structure was removed.

Considerable research was conducted within T.T. Munger RNA:

- a 50-year tree mortality remeasurement involved many researchers
- seven thousand trees were rated for dwarf mistletoe infection
- The Wind River Canopy Crane increased the size of their research plot from 4 to 12 hectares.

For information about the Wind River Canopy

Crane in T.T. Munger Research Natural Area and the research conducted there, visit the website at <http://depts.washington.edu/wrcrcrf/>.

A project is underway on the Gifford Pinchot National Forest that will create a Natural Areas Website on the Internet with information relating to rare plant, community, and animal information, with research needs and opportunities highlighted. This site will target researchers, students, scientists, natural resource managers, and others, with the goal of stimulating interest to conduct scientific research within Natural Areas, leading to a better understanding of the communities and the organisms inhabiting them.

Other ongoing Research Natural Area activities include an establishment record for Smith Butte proposed RNA (located in Gotchen LSR).

**Evaluation:** Standards and guidelines and management objectives were met at T.T. Munger, Steamboat Mountain, and Sister Rocks RNA and significant progress in the Gifford Pinchot Natural Areas program was made in 1998.

**Recommended Action to be taken:**

- continue compiling species lists to determine plant and animal diversity
- promote additional research opportunities with Research Natural Areas
- followup monitoring and additional signing, if necessary, of Steamboat Mountain to address unauthorized camping
- continue ongoing noxious weed control, as necessary.

**Botanical Special Interest Areas** 35d 

**Introduction:** Thirty botanical special interest areas (botanical areas) have been designated on the Gifford Pinchot National Forest. These areas often contain plant species or communities that are significant because of the occurrence of threatened, endangered, or sensitive plant species; are floristically unique; or have noteworthy specimens, such as record-sized tree specimens. They range in size from one to over 2,000 acres, though most are 20 acres or less. Some of these areas are popular

destinations and warrant monitoring to ensure that recreational impacts do not compromise the integrity of the sites. Other botanical areas serve as baselines for monitoring trends of sensitive species. Botanical areas are selected for monitoring each year, based on level of risk to resources and vulnerability to change.

**Results:** Field visits were made to three botanical special interest areas in 1998. These areas are:

- Grassy Knoll
- South Prairie Bog
- Trout Lake Big Tree

Monitoring continued at South Prairie Bog to evaluate a population of pale blue-eyed grass (*Sisyrichium sarmentosum*) within and outside a cattle grazing enclosure.

**Evaluation:** No unacceptable impacts were discovered in the three sites monitored. Pale blue-eyed grass was grazed heavily outside the enclosure at South Prairie Bog.

**Action to be taken:**

- Continue monitoring pale-blue grass at South Prairie Bog to evaluate impact of cattle grazing.
- Implement new monitoring plan for Botanical Special Interest Areas.
- Control noxious weeds at Grassy Knoll.

**Vegetation Management**

In 1994 the Gifford Pinchot National Forest began implementing the standards and guidelines of the Northwest Forest Plan. In 1996 we began comparing accomplishments to the projections made for the 1994 Northwest Forest Plan. In past years, we compared accomplishments to our 1990 Forest Plan projections.

Adequate Reforestation <sup>50</sup> 

**Table 13 - Adequate Reforestation**

Plantation Acres Surveyed	Adequately Stocked	% Adequate Stocking
1,328	1,328	100%

Standards and guidelines regarding plantation stocking were met. The standard varies by site, depending on elevation, exposure, soil and other factors. Adequate stocking can vary from 125 to 400 trees per acre.

Timber Harvest Methods <sup>51</sup> 

Table 14 shows acres harvested by category of harvest method.

**Table 14 - Timber Harvest Methods**

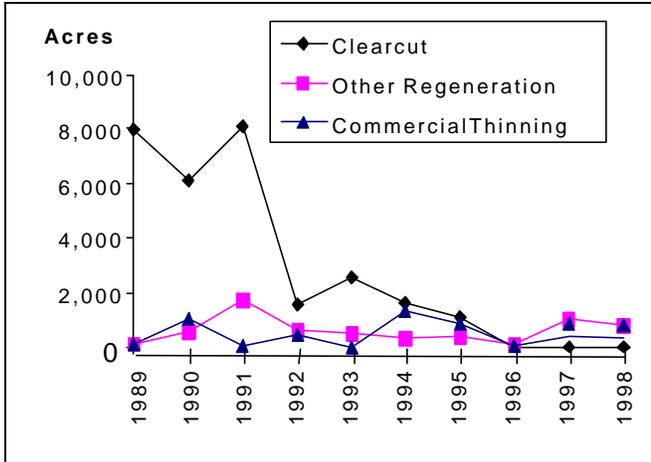
Silvicultural Practice	1998 Acres Harvested	NW Forest Plan Projection
Clearcut Harvest	1	0
Other Regen Harvest <sup>1</sup>	687	1839
Commercial Thinning	340	2309
Salvage	64	N/A
<b>Totals</b>	<b>1092</b>	<b>4148 acres</b>

Under the NWFP clearcutting would only be proposed under exceptional circumstances. One acre was clearcut in 1998 for development and construction of a trail on Mount St. Helens Ranger District. Overall, an acreage about 26 percent of the Northwest Forest Plan projection was harvested in 1998.

Harvest activity by silvicultural prescription category is displayed over the past 10 years in Figure 3.

<sup>1</sup> Includes shelterwoods, light, medium and high forest retention but not clearcuts.

**Figure 3 - Historical Harvest by Method**



**Regeneration Harvest Units Size <sup>52</sup> 😊**

Fifty-five harvest units were sampled to see if they met Forest Plan standards for size and separation. Two harvest units exceeded the 40 acre limit on size of openings. The combined opening area for the two units was 65 acres. The openings exceeded the 40-acre size limit in an effort to reduce habitat fragmentation associated with timber harvest. By enlarging an existing opening, further fragmentation of late-successional stands was postponed. The resulting larger opening is within the range of the scale of natural disturbance patterns in the project area.

In accordance with direction, the project was reviewed and approved by the Regional Forester and subjected to 60-day public notice prior to signing the decision.

**Volume Advertised to be Sold <sup>54</sup> ⓘ**

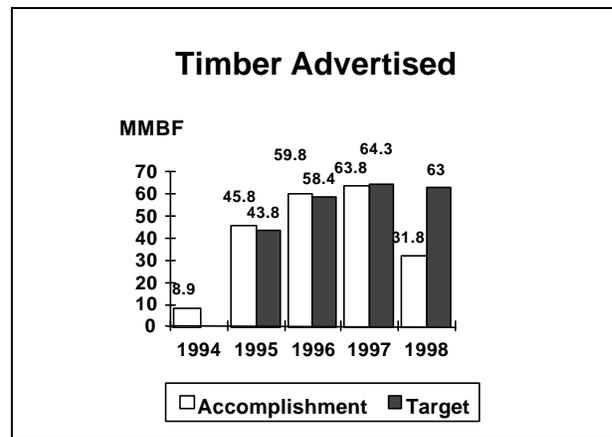
The Forest fell short of achieving the 1998 advertisement goal of 63 million board feet (MMBF). Actual volume offered for sale in 1998 was 31.8 MMBF. A combination of factors accounted for the reduced sale offerings including consultation requirements associated with the listing of steelhead and bull trout under the Endangered Species Act, a lawsuit concerning implementation of NWFP Survey and Manage requirements and delays brought by

appeals in the NEPA process. In 1998 18 MMBF was offered for sale but received no bids. Of the 31.8 MMBF, 18.8 MMBF was sales prepared in 1997.

**Table 15 - Volume Advertised to be Sold**

Volume Advertise d MMBF	Volume Goal MMBF	Volume Advertised MMCF <sup>1</sup>	Volume Goal MMCF	% of Volume Goal
31.8	63	6.0	12.38	51%

**Figure 4 - Target Accomplishment**



**Timber Revenue and Expenses <sup>55</sup> ⓘ**

Table 16, page 18, shows timber harvest and timber program related financial transactions over the past five years. The primary factors which determine the financial status of the timber program are volume harvested and the value of the timber harvested. Before payments to counties, the timber program revenues exceeded costs by \$2.5 million.

<sup>1</sup> Based on an average of 5.26 board feet per cubic foot or 0.19 cubic foot per board foot.

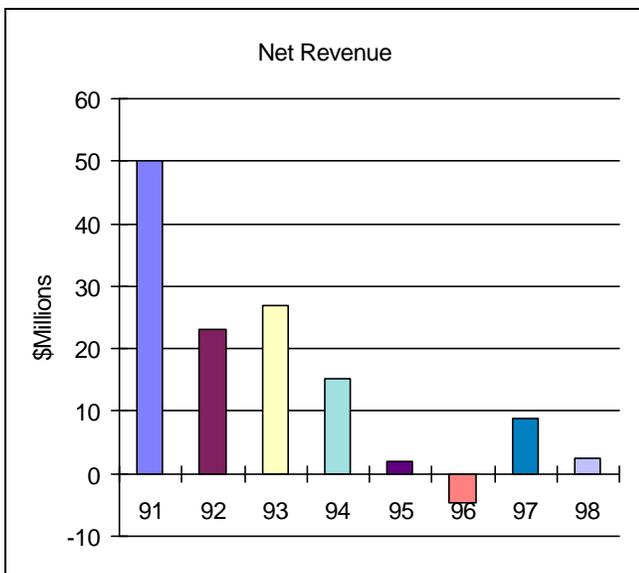
**Table 16 - Timber Revenue and Expenses**

Timber Harvest and Monetary Outlays	1994	1995	1996	1997 <sup>1</sup>	1998 <sup>2</sup>
Timber Revenues	\$30,894,000	\$16,501,000	\$3,296,000	\$13,993,000	\$11,319,000
Timber Expenses	\$15,745,000	\$14,474,000	\$7,961,000	\$6,701,000	\$8,772,000
Net Revenue Before Payments to Counties	\$15,149,000	\$2,027,000	-\$4,665,000	\$7,292,000	\$2,547,000
Payments to Counties	\$11,701,000	\$11,287,000	\$10,874,642	\$10,465,537	10,052,424
Volume harvested (MMBF)	96	59	11.3	41	32
Volume under contract (MMBF)	83	34	63	78	77
Volume advertised (MMBF)	8.9	45.8	59.8	63.8	31.8
Volume sold (MMBF)	5.8	45.8	48.8	57.5	48.8
Total Acres Harvested	3,459	2,229	643	1,359	1,092

<sup>1</sup> Corrected from 1997 Monitoring Report.

<sup>2</sup> Based on preliminary 1998 TSPIRS data.

**Figure 5 - Timber Program Net Revenue**



Silvicultural Prescriptions <sup>56</sup> 😊

**Introduction:** The silviculture prescription is the result of examining forest stands and diagnosing treatment needs. It prescribes the methods and timing of silvicultural activities. These determinations take into account numerous factors involving silvics of the trees and the local site conditions but also other resource objectives and Forest Plan direction. The process consists of preparing a general prescription and having an interdisciplinary

team establish limits and objectives to be achieved based on Forest Plan goals and objectives and standards and guidelines. The purpose of this item is to ensure that silviculturists are considering other resource objectives and the prescriptions are developed through an interdisciplinary process.

**Results:** Silvicultural prescriptions for fourteen timber projects from across the Forest were reviewed for compliance with the Forest Plan and to determine if the actions implemented through the silvicultural prescription would achieve the intent of the environmental analysis conducted for the project.

Seven regeneration units, one commercial thinning area, five precommercial thinning unit and three pruning projects were reviewed. Two of the precommercial thinning units were also pruned.

The seven regeneration units were monitored for retention, regeneration potential and legacy features. The thinning units were evaluated for stocking level, structural diversity and species composition and legacy features.

Monitoring results show that objectives described in the silvicultural prescription and environmental analysis were met and were

consistent with Forest Plan standards and guidelines.

The 1998 monitoring activity surfaced a concern relating to understory growth in stands where over 40 percent of the overstory is retained after harvest. Long-term management of the understory is an ongoing concern, especially where an investment in planting has been made. Additional overstory harvest and precommercial thinning treatments may be required to maintain adequate understory growth.

**Evaluation:** All prescriptions reviewed were consistent with the NEPA analysis and meet the applicable standards and guidelines.

**Action to be Taken:** Monitor the development of understory vegetation under high retention harvest prescriptions.

Soil Productivity <sup>60</sup> 😊
Implementation of Best Management Practices (BMPs) <sup>61</sup> 😊
Fish/Riparian S&G Implementation <sup>62a</sup> 😊
Effectiveness of Riparian Standards and Guidelines <sup>62b</sup> 😊

### **Introduction**

In 1998, five timber sales (Rock, Paradise Hills-Demo, Galahad AMA, Davis Skyo, and Mama Bare) were reviewed and evaluated: two on both the Cowlitz Valley Ranger District and Mount St. Helens National Monument and one on the Mt. Adams Ranger District. These five timber sales were evaluated on these four separate, but related, monitoring items:

- Soil Productivity
- Implementation of Best Management Practices (BMPs)
- Fish/Riparian Standard and Guideline Implementation

- Effectiveness of Riparian Standards and Guidelines

**Soil Productivity** -- Maintenance of soil productivity is essential to sustaining ecosystems and is mandated by every act of Congress directing national forest management. Region 6 (FSM 2550.3-1, R6 Supplement #50) and the Gifford Pinchot NF Plan require a minimum of 80 percent of an activity area to have unimpaired soil productivity. Since associated roads average 5 percent of the unit area, this translates to a ceiling of 75 percent of the harvest unit away from the roads.

Units sampled are stratified by disturbance class and a subset of each class is evaluated for the degree and extent of soil productivity impairing conditions including compaction, displacement, erosion and severe burning.

**Implementation of BMPs** -- BMPs are the primary mechanism to ensure water quality standards are met during project implementation. BMPs are selected and tailored for site-specific conditions to provide project level protection of water quality. The 1976 National Forest Management Act directs us to protect streams, streambanks, shorelines, lakes, wetlands, and other bodies of water from detrimental changes in water temperatures, blockages of water courses, and deposits of sediment, where activities have the potential to seriously and adversely affect water conditions or fish habitat.

**Fish/Riparian S&G Implementation** -- The Forest Plan outlines specific standards and guidelines to ensure protection of fish and riparian resources. The emphasis on this monitoring item is to determine whether fish and riparian standards and guidelines are implemented through project planning and implementation. Specific questions addressed here are:

- 1) What riparian mitigation was planned for the project?
- 2) Was planned mitigation consistent with standards and guidelines?

- 3) Was the project contract written to include provisions to meet standards and guidelines?
- 4) Was the project implemented in compliance with standards and guidelines?

**Effectiveness of Riparian S&Gs** -- The intent of this monitoring item is to determine if planned mitigations are effectively meeting Forest Plan management objectives for protection of riparian, fish, and water resources. Three specific questions are asked here:

- 1) Is channel stability maintained?
- 2) Is stream shading maintained?
- 3) Are sediments originating from management activities reaching the stream course?

**Table 17 - Compliance with Standards and Guidelines**

Unit	Soil Productivity	BMPs	Riparian Implement	Riparian Effectiveness
Rock Unit 1	Yes	Yes*	Yes	Yes
Rock Unit 2	No	Yes*	Yes	Yes
Demo Unit 4	Yes	**	Yes*	Yes
Galahad Unit 7	Yes	Yes*	Yes	Yes
Galahad Unit 8	Yes	Yes	Yes	Yes
Davis Skyo Unit 9	Yes	Yes	N/A	N/A
Bare Unit 14	Yes	Yes	Yes	Yes
Bare Unit 15	Yes	Yes	Yes	Yes
Bare Unit 19	Yes	Yes	Yes	Yes
*See text for qualifications. ** Not monitored N/A No riparian areas within or adjacent to the harvest unit.				

## Results

### **Rock Timber Sale Units 1 and 2** Mount St. Helens National Volcanic Monument

#### **Soil Productivity**

Units 1 and 2 were yarded using a logger loader. Unit 1 met the standard (less than 20 percent unimpaired soils) with only 10 percent soil damage, most of which was in the main skid trails and adjacent to where slash was piled.

Unit 2 had approximately 10 percent of the treated area in skid trails. Portions of these trails were scarified with a loader grapple which was not effective in mitigating compaction due to infrequent treatment of the area and undesirable mixing of the soil layers. Approximately 10 percent of the area outside of skid trails had moderate levels of compaction and displacement. Approximately 2 percent of the unit was severely burned where piled slash was burned. A main skid trail was located on a slope steeper than 30 percent for approximately 150 feet. Total amount of soil damage in this unit was greater than 20 percent which does not meet the soil productivity standard.

#### **Implementation of BMPs**

One of the twenty-two BMPs related to timber management was not accomplished. The BMP, *Use of sale area map for designating water quality protection needs*, was not accomplished on this sale. A riparian reserve for a Class IV stream was omitted from the Sale Area Map. No activities occurred within the riparian reserve so the physical and biological integrity of the riparian area remained intact.

The BMP, *Erosion prevention and control measures during Timber Sale Operations*, was accomplished but was ineffective on one access road. Water bars were inadequate due to infrequent water bar spacing which resulted in water concentration on the road.

### ***Fish/Riparian S&G Implementation***

Riparian reserves were planned for these timber sale units in the Environmental Assessment. Planned mitigation was consistent with fish/riparian standards and guidelines in the Forest Plan. The timber sale contract was written in a manner that included provisions necessary to meet fish/riparian standards and guidelines, with the one exception noted above where a Class IV stream was not designated on the Sale Area Map. Field inspections conclude this project was implemented in compliance with fish/riparian standards and guidelines.

### ***Effectiveness of Riparian S&Gs***

Riparian buffers either met or exceeded those widths specified in the environmental assessment. Stream channel stability was maintained in all cases as was stream shading. No evidence of sediments originating from management activities within either unit was detected during field inspections.

<p><b><i>Paradise Hills-Demo Timber Sale Unit 4</i></b> <b>Mount St. Helens National Volcanic Monument</b></p>
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### ***Soil Productivity***

Unit 4 had a major skid trail running through the axis of the harvested portion. The lower 1/4 of this skid trail was scarified with a trackhoe and covered with slash. The remaining parts of the skid trail were heavily compacted; this along with off-skid-trail equipment impacts constituted impaired soils in approximately 18 percent of the treated part of the unit and would not meet the standard. If the untreated aggregate patches are considered part of the unit (activity area) the total impact would be less than 15 percent. Either way, the level of impact is below the 20 percent threshold and considered to have met the standard.

### ***Implementation of BMPs***

BMP's were not monitored for this timber sale.

### ***Fish/Riparian S&G Implementation***

Riparian reserves were planned for this project in the Paradise Hills Timber Sale Environmental Assessment. Mitigations included erosion control requirements, directional felling, and use of roads during dry periods. Given that this project was planned and assessed as a demonstration research project, some mitigation measures are believed to be inconsistent with fish/riparian standard and guidelines. The timber sale contract was written to meet the requirements of the environmental assessment. A stream to the north of Unit 4 was incorrectly classed as a Class II, fish-bearing stream in the environmental assessment, and thus was given twice a riparian reserve twice the required width. According the Fisheries Report for this project, there are no fish-bearing streams within or adjacent to this unit. However, during field inspections it was found that 40 feet of the riparian reserve was harvested along the northern corner of this unit. This was found to be consistent with the Forest Plan provision to allow exemptions from standards and guidelines in the interest of research. Since the stream required only a one site-tree buffer and a two-site-tree buffer was intended by the EA, the Forest Plan requirement for this stream was not violated.

### ***Effectiveness of Riparian S&Gs***

Field inspections revealed that stream channel stability and stream shading are both maintained for the stream that flows along the northern unit boundary. No evidence of sediment production or transport from related management activities within this unit were noted during the field review.

***Galahad AMA Timber Sale Units 7&8***  
Cowlitz Valley Ranger District

***Soil Productivity***

Both units were well within the standard. Both units were accessed by a temporary road which was scarified with a loader grapple and covered with slash. The scarification was marginally acceptable in mitigating compacted soil due to infrequent treatment of the area although no erosion was occurring on the roads.

Most of Unit 7 was skyline logged and that portion had only about 5 percent topsoil displacement by log dragging. A short skid trail accessed a small part of the unit which resulted in an additional 1 percent soil damage. Unit 8 was harvested by cable which resulted in less than 5 percent soil disturbance. This disturbance was limited to minor topsoil displacement by dragging logs.

***Implementation of BMPs***

One of the twenty-two BMPs related to timber management was not accomplished on this sale. A BMP, specified as, *All tractor skid trails will be scarified, waterbarred, seeded, and fertilized after the timber sale activities are complete*, was not accomplished in one unit, Unit 7. The decision to leave these skid trails untreated was made without the benefit of soil or hydrology expertise.

The skid trails in this unit were short (less than 150 feet) but compacted. The skid trails within this unit were located on flat ground and/or in locations that sediments would be filtered out of the water. The skid trail did not flow into beneficial use streams. For these reasons, the intent of the best management practice, *erosion control on skid trails to avoid direct drainage from exposed or compacted soils into streams*, was accomplished without any remedial measures.

***Fish/Riparian S&G Implementation***

Standard riparian reserve widths were planned for Units 7 and 8. Planned mitigation was found to be consistent with fish/riparian standards and guidelines. However, it was found during a post-treatment review that a

riparian reserve width was provided in excess of what is required under the Forest Plan. Contract provisions were made to meet these standards and guidelines. The project was implemented in compliance with fish/riparian standards and guidelines. A unique feature was identified during sale layout and was mapped as a Class IV stream on the sale area map. While it was later determined by the District Hydrologist that this unique feature is not a Class IV stream, it was afforded special protection as a precautionary measure.

***Effectiveness of Riparian S&Gs***

Stream channel stability and stream shading were maintained along all streams throughout the project area. The existing riparian reserve and erosion control measures on a temporary road constructed for this project are effectively controlling sediment production and delivery. While it is apparent that some sediment was delivered to a nearby ephemeral stream during road construction and use, additional sediments are not being produced nor delivered to the aquatic system.

***Davis Skyo Timber Sale Unit 9***  
Cowlitz Valley Ranger District

***Soil Productivity***

The unit was harvested by helicopter. Less than 5 percent of the unit had minor topsoil disturbance, which is well within the standard.

***Implementation of BMPs***

All BMPs were accomplished in this timber sale.

***Fish/Riparian S&G Implementation***

Not applicable because there were no streams in Unit 9.

***Effectiveness of Riparian S&Gs***

Not applicable because there were no streams in Unit 9.

**Mama Bear Timber Sale Units 14, 15, and 19**  
Mt. Adams Ranger District

***Soil Productivity***

Units 14, 15, and 19 were harvested with a loader logger. Generally, all the units met the standard with less than 15 percent impaired soils.

Unit 15 met the standard with only 10 percent impaired soils from a major skid trail (3 percent), off skid trail soil displacement (2 percent) and a temporary road that was not scarified (5 percent).

Units 14 and 19 were harvested with loader loggers and met the standard with less than 15 percent soil damage.

***Implementation of BMPs***

All BMPs were accomplished in this timber sale. Scarification accomplished with a grapple in Unit 15 was marginally effective. Grappling as a scarification tool will be discouraged from future projects.

Scarification techniques were reviewed during the FY98 JITW Effectiveness Monitoring. The Forest cultivator tended to leave furrows where water concentrated and channeled if treatment area had a slope. The tilled material tended to settled compactly also. The excavator and bucket technique was effective where the complete area was treated. These techniques and others will be further reviewed and recommendations of effective techniques will be made.

***Fish/Riparian S&G Implementation***

Riparian reserve buffers were planned for this project. Intermittent streams are present in each unit, along with a small seep and pond present in Unit 15. The small seep and pond in Unit 15 were discovered after the timber sale was cruised and advertised. The area was reviewed by the District Hydrologist and the riparian reserve was extended to this area to provide necessary protection of riparian and hydrologic functions. Planned mitigations were found to be consistent with fish/riparian standards and guidelines. The contract was

written with appropriate provisions to meet these standards and guidelines. Overall, the project was implemented in compliance with fish/riparian standards and guidelines.

***Effectiveness of Riparian S&Gs***

Stream channel stability and stream shading were maintained along all streams throughout the project area. There was no evidence of sediment transport to the aquatic system from those management activities taking place within the project area.

**Evaluation**

***Soil Productivity***

The soil productivity standard was met on all units monitored except one unit of the Rock Timber Sale. In this case, the apparent cause of the excessive soil damage was loader operations where slash and litter were insufficient to cushion the machine, resulting in compaction. Both Rock units had slopes near or exceeding 30 percent which make loader operations difficult to avoid soil compaction and displacement. Inadequate or non-existent scarification of major loader trails also contributed to not meeting the standard. In the loader logged and piled units that met or exceeded the standard, the loader was operated on top of sufficiently thick litter and slash most of the time which avoided excessive soil damage.

Scarification with a loader grapple in the Mama Bear Timber Sale resulted in incomplete mitigation of soil compaction due to the scarcity of treatment within an area and the undesirable mixing of soil layers. Grappling as a scarification tool will be discouraged in future projects. Scarification techniques are being reviewed and effective techniques will be recommended for Forest-wide use or for site specific conditions.

### ***Recommended Actions:***

Minimize loader logging on slopes greater than 30 percent and/or where slash and litter layers are shallow.

Grappling as a scarification tool should be discouraged in future projects.

Continue review of treatment effectiveness to update knowledge on scarification treatment techniques and site specific needs.

### ***Implementation of BMPs***

Implementation of the planned Best Management Practices were accomplished on all four timber sales monitored with two exceptions. In one case, the riparian reserve boundaries to a Class IV stream adjacent to one unit was omitted from the Sale Area Map. No activity occurred within the riparian reserve area. In another case, the planned BMP, scarification of all skid trails was not implemented. The need for active remedial measures on these skid trails was low due to site conditions so resource degradation did not occur. Decisions relating to altering or omitting BMPs should have coordination with appropriate resource people to assure optimal decisions are made.

### ***Recommended Actions:***

In preparing Sale Area Maps, all riparian reserves adjacent to proposed units or needed roads are to be included while maintaining map clarity.

Emphasize the need to include specialist when altering or forgoing BMP implementation. State specific BMPs with contingency clause added. Example - Unless specified otherwise by a watershed specialist, scarify all skid trails.

Implementation of planned BMPs were ineffective in one case. Rock Timber Sale's access road waterbars were not effective erosion control measures due to the waterbars spaced too far apart. General waterbar spacing requirements should be specified in the BMPs designs with site

specific refinements to the general spacing requirements recommended by specialists after activities are complete when necessary. Specify general guidelines for treatments and allow refinements by specialists, when necessary.

### ***Fish/Riparian S&G Implementation***

Riparian mitigations were planned for all projects where streams occurred within or adjacent to timber sale units. These protections were found to be consistent with fish/riparian standards and guidelines identified in the Forest Plan. Generally, timber sale contracts were prepared with appropriate provisions to meet these standards and guidelines. Some difficulties remain, as noted above and in last year's Monitoring Report, when accurately classifying stream channels and mapping them accordingly on sale area maps. Close coordination between sale layout crews and district hydrology or fisheries staff is imperative for proper streamcourse designation and stream class identification. All projects were implemented in compliance with fish/riparian standards and guidelines.

***Recommended Actions:*** Continue monitoring.

### ***Effectiveness of Riparian S&Gs***

Riparian standards and guidelines appear to be effective in *maintaining* stream channel stability and shading. Additionally, these standards and guidelines are effective in preventing sediments originating from management activities from reaching nearby stream courses.

***Recommended Actions:*** Continue monitoring.

### ***General Recommendations***

Over the years, the monitoring of soil productivity standards, implementation of BMP's, fish and riparian standards and guidelines, and effectiveness of riparian standards and guidelines have concentrated on timber management projects. Other types of projects, such as watershed restoration or

recreation projects have not been monitored for these resource concerns. In order to assess the adequacy of project implementation on a sample of all the types of forest projects, future efforts of these monitoring items will be directed not only toward timber sale projects but other types of projects as well.

**Steelhead and Bull Trout Populations** 62c 

**Steelhead**

**Introduction:** Steelhead (*Oncorhynchus mykiss*) is an anadromous form of rainbow trout inhabiting several rivers and streams throughout the Forest. Adult steelhead spawn in rivers and streams by laying their eggs in depressions in the gravel called "redds." Fry emerge from the gravel and rear for one to three years in freshwater before migrating to the ocean as smolts where they grow to adults. The number of fish present may serve as an indicator of stream health. However, many factors other than habitat quality influence the population size and structure of anadromous fish: angling, hydroelectric facilities, ocean conditions, avian and marine mammal predation, and hatchery introductions.

Steelhead were listed as threatened under the Endangered Species Act by the National Marine Fisheries Service in 1998. This year's monitoring efforts continue emphasis on adult steelhead counts for the Wind and East Fork Lewis rivers. Additionally, a smolt population estimate was made for the Wind River. While data provided here are insufficient to determine population viability, these data do provide useful information on population trends.

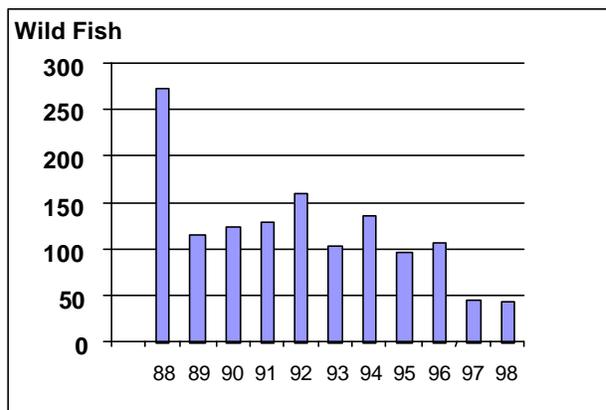
**Results:**

**Wind River**

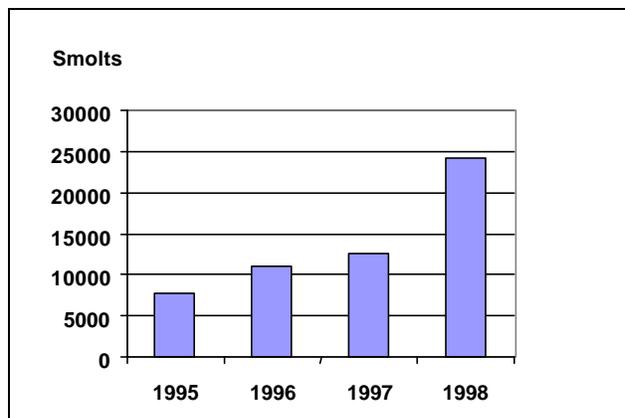
Adult steelhead counts are made on the Wind River by snorkel surveys conducted in partnership with the Washington Department of Fish and Wildlife and the Clark/Skamania Flyfishers. Multiple surveyors make a basin-wide count on 26 miles of mainstem and tributaries in mid-summer. This year's count of 43 adult wild steelhead marks a record low for

the Wind River, similar to last year's low count of 44 (see Figure 6). As a result, the Washington Department of Fish and Wildlife issued an emergency sport angling closure for steelhead on the Wind River for the second consecutive year. displays the total number of steelhead smolts estimated leaving the mouth of the Wind River. This year's smolt population estimate is the highest (24,366) since smolt production estimates began in 1995.

**Figure 6 - Wind River Adult Steelhead Counts**



**Figure 7 - Wind River Steelhead Smolt Population Estimates**



### East Fork Lewis River

Snorkel counts on the East Fork Lewis River are conducted in partnership with the Washington Department of Fish and Wildlife, and the Clark/Skamania flyfishers.

Snorkel counts are made in mid-summer on approximately 30 miles of mainstem and tributaries. Stock status of each fish are determined as wild (no marks) or hatchery (fin clipped). A record low of 150 total adult steelhead were observed in the East Fork Lewis River system in 1998 (Figure 8). As in the Wind River, this marks the second consecutive year of record low returns to the East Fork Lewis River.

### **Evaluation: Population Viability and Influencing Factors**

#### Wind River

Many factors in addition to habitat are known to affect anadromous fish populations. Global weather patterns, specifically the drought years from the late 1980s through 1993, have exacerbated the effect of declining habitat conditions. Sport and commercial fishing have also taken their toll. Continued harvest of depressed stocks further contributes to their decline. The Wind River steelhead population has declined by half in the last two years of survey, compared to the previous nine years on record. See Figure 6. Past losses of riparian vegetation and altered stream flow and sediment regimes have reduced the watershed's ability to support aquatic life. Impacts are manifested in increased water temperatures, reduced pool quality and abundance, reduced woody debris in streams, and increased stream width-to-depth ratios (*Wind River Watershed Analysis*, 1996). The impact of Hemlock Dam on Trout Creek and Bonneville Dam on the Columbia River have not been quantified to an acceptable level of confidence. According to state officials, Bonneville Dam accounts for 10-15 percent mortality of out-migrating smolts on the Columbia River.

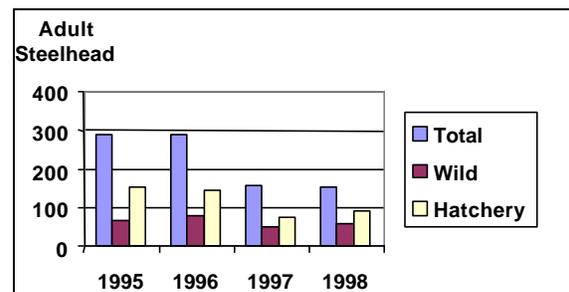
The Forest Service is currently undertaking an extensive effort to restore watershed and habitat conditions in the Wind River system. Major

restoration efforts have already been made in Trout Creek, a primary spawning and rearing tributary. Efforts include road decommissioning, riparian vegetation improvement, and fish habitat enhancement. Initial habitat restoration work was completed along the mainstem Wind River in 1997. Further efforts are planned for 1999 and beyond. In addition, the Forest Service is an active participant in a multi-agency, multi-partner approach to building a basin-wide recovery effort for wild steelhead in the Wind River. We have taken a system-wide approach to determining steelhead recovery needs.

### East Fork Lewis River

The East Fork Lewis River steelhead population has also shown a marked decline for the second consecutive year. Very few wild adult steelhead have been observed over the three-year survey period. Major factors influencing population levels are habitat loss, reduction in habitat quality, harvest, illegal take, disease and predation, and poor ocean conditions. The Forest Service is currently pursuing an aggressive watershed and habitat restoration effort in the East Fork Lewis River system upstream of Sunset Falls. Implementation of restoration activities is scheduled for 1999 and beyond.

**Figure 8 - East Fork Lewis River Snorkel Counts**



**Recommended Action to be Taken:** The following actions are recommended:

- Continue watershed restoration efforts aimed at fish habitat recovery.
- Promote the development of a similar partnership recovery approach for steelhead in the East Fork Lewis River. Implement planned watershed and habitat restoration. Monitor results.

### **Bull Trout**

**Introduction:** Bull trout (*Salvelinus confluentus*) were listed as threatened under the Endangered Species Act in 1998 by the US Fish and Wildlife Service. The only verified population on the Forest exists in the North Fork Lewis River system above Swift Dam. The population is considered adfluvial. Adults spend the majority of their life cycle in Swift Reservoir, ascending its tributaries each year to spawn. Since juvenile bull trout require exceptionally cool, clean water, they are considered a good management indicator of watershed condition and aquatic ecosystem health.

Bull trout population monitoring has been conducted in partnership with the Washington Department of Fish and Wildlife and PacifiCorp since the early 1990s. Early monitoring efforts focused on determining population size and viability through collection of catch per unit effort data. Beginning in 1994, population estimates were derived using a sophisticated mark-visual observation method. Adults are captured in the reservoir in the spring, uniquely marked, then released. In the late summer and early fall, repeated snorkel surveys are used on a weekly basis to observe the ratio of marked to unmarked adults active on the spawning grounds. Using a Joint Hypergeometric Maximum Likelihood Estimator (JHE), a population estimate is calculated along with a 95% confidence limit.

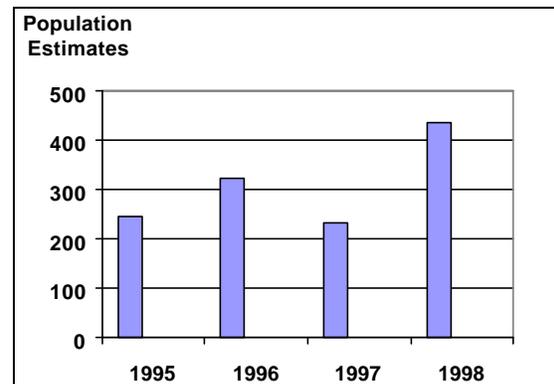
Two conditions are modeled in deriving the JHE:

1. A 10 percent of reservoir marked adults do not leave the reservoir to spawn, and

2. A 10 percent tag loss.

**Results:** The estimated population size for bull trout in the North Fork Lewis River system upstream of Swift Dam is 437 (Figure 9). This is the highest number of adult bull trout estimated in the population since the mark-visual observation method was first employed in 1994.

**Figure 9 - Bull Trout Population Estimates Above Swift Dam**



### **Evaluation: Population Trend and Influencing Factors**

The population trend appears to be increasing. Reliability of the 1996 population estimate was hindered by the major flood in February 1996. Reliability of the 1997 and 1998 population estimates is much better.

Factors affecting the bull trout population above Swift Dam are habitat quality, illegal harvest, and the hydroelectric facility. Certain tributaries to Swift Reservoir, such as the Muddy River, contain sub-optimal habitat for bull trout. Despite restrictive angling regulations on Swift Reservoir and its tributaries, illegal take of bull trout still occurs on occasion. Lack of fish passage facilities at Swift Dam isolate the Swift Reservoir population from mixing and reestablishing with the isolated population of a Yale Lake tributary.

**Recommended Actions to be Taken:** The following actions are recommended:

- a) Continue supporting education and law enforcement efforts to curb illegal take of bull trout.
- b) Install adult traps in partnership with Trout Unlimited and the Washington Department of Fish and Wildlife to obtain actual spawner escapement counts.
- c) Participate in FERC relicensing efforts on the North Fork Lewis River system to address bull trout needs in relationship to existing hydroelectric facilities.
- d) Conduct presence/absence surveys for bull trout in areas believed to contain suitable habitat.

Effectiveness of In-Channel Habitat Improvement Structures <sup>62d</sup> 😊

**Introduction:** Stream habitat restoration activities have been implemented on the Forest since the early 1980s. Activities focus on improving habitat availability and quality. The majority of restoration efforts have focused on improving habitat for anadromous species, primarily steelhead. Monitoring provides important feedback for improving in-channel habitat structure designs and applications for future efforts.

Monitoring was conducted on three streams in 1998; all three streams are located on the Mt. Adams Ranger District Table 18. Fish biologists surveyed the entire length of project area on each stream, evaluating the function and performance of individual habitat improvement structures. Specific data were collected to provide insight on structure durability and performance.

**Table 18 - In-channel Habitat Improvement Projects Evaluated in 1997.**

Ranger District	Stream	Project Area (RM <sup>1</sup> )	Distance Surveyed	Year Implemented
Mt. Adams	Wind River	RM 17.0 to 18.6	1.6 mi	1997
Mt. Adams	Trout Creek	RM 8.2 to 8.8	0.6 mi	1996
Mt. Adams	Layout Creek	RM 0.0 to 1.9	1.9 mi	1994 1996 1997

<sup>1</sup> RM = river mile.

**Results:** A total of 96 structures were evaluated. Seventy-two percent of the structures evaluated are fully meeting intended objectives; 20 percent partially; and 8 percent not meeting intended objectives. Eighty-seven percent of the structures evaluated are currently in place as designed; six percent have shifted on-site; and seven percent dislodged and transported downstream.

**Evaluation:**

**Trout Creek**

Overall project objectives for stream restoration projects are to:

1. Increase bank stability.
2. Increase amount of in-stream large woody debris.
3. Restore natural channel geometry characteristics.
4. Reduce width-to-depth ratio.
5. Increase stream shade.
6. Reduce maximum water temperatures.

**Table 19 - Summary of In-channel Habitat Improvement Structure Performance.**

Stream	Number of Structures Evaluated	Meeting Objectives			Current Location		
		Fully	Partially	Not	In Place	Shift On Site	Left Site
Wind River	24	16	3	5	17	2	5
Trout Creek	24	20	4		23	1	
Layout Creek	48	33	12	3	43	3	2
Total	96	69	19	8	83	6	7
Percent		72%	20%	8%	87%	6%	7%

The primary project treatments included reconfiguration of channel geometry, bank stabilization, gravel bar development, and riparian planting. Three separate treatments

occurred within the project area evaluated on Layout Creek -- 1994, 1996, and 1997. Applied treatments effectively accomplished each of the first four project objectives. Objectives 5 and 6 were accomplished on Trout Creek by reactivating 0.7 miles of old-growth channel, thus increasing stream shade and decreasing solar warming. Increased shade and decreased water temperatures throughout the remainder of the projects are long term objectives that are dependent on the growth rate of riparian vegetation. Full project benefits are anticipated within 10-15 years after implementation.

These three projects incorporated structural designs not represented in the adopted Regional monitoring protocol. For example, bar retaining structure type codes and associated structure type objectives are not available in the Regional protocol. District personnel conducted this monitoring effort using an expanded protocol to fit the unique structural designs and treatment applications. Adoption of an expanded Regional protocol is needed. Important monitoring data may be obscured or information lost with the limitations of the existing Regional protocol.

The timing of survey during low flow makes it difficult to recognize all processes influencing the success or failure of individual treatment sites. For example, one structure that appeared to fully meet design objectives at low flow was later found to only partially meet objectives at high flow.

**Recommended Actions to be Taken:** The following actions are recommended:

Continue to emphasize interdisciplinary involvement during project initiation and design. Assure the following are considered and addressed during project planning and design:

- An understanding of fluvial geomorphic processes.
- An understanding of hydraulic processes and relationships.
- An understanding of life cycles and ecology of fishes present in project area.

- Develop an expanded protocol for monitoring the performance and durability of structures.

## Road Closures <sup>70</sup> 😊

**Introduction:** Several factors lead to road closures across the Forest.

- The Northwest Forest Plan calls for no net increase in roads in key watersheds; some roads have been identified as sources of sediment in streams.
- Road use can lead to harassment of wildlife.
- We are closing roads because in an era of declining budgets and reduced support from our timber program we can no longer afford to maintain them properly.
- The storms of 1996 provided opportunities to close roads damaged by floods.

Road closures include permanent, and seasonal closures and decommissioning. Permanent closures are year-round closures created by berms, rock barricades, or by allowing vegetative growth to obscure the road. Seasonal closures are effected by gates or other barriers that allow the road to remain open during non-critical periods. Decommissioning involves permanent removal of the road from the system by removing drainage structures, restoring the natural grade and ripping and revegetating the roadbed.

**Results:** Road closures are one of the means of reducing wildlife harassment in deer and elk winter range. The Forest Plan established a goal of reducing open road density to 1.7 mile of open road per square mile within the biological winter range. Currently the density within biological winter range is 2.2 miles of open road per square mile. This average is the same as that of last year, even though actual open miles of road increased from 742 to 759 miles.

The projected miles of road closure from the Forest Plan are 1,230 miles of road in seasonal

or permanent closure. With 986 miles closed year-round or seasonally, and 179 miles of road decommissioned to date, the Forest is at 95 percent of the projected goal, ten percent ahead of last year.

Table 20 compares current road mileage in the 10 key watersheds on the Forest with mileage at the time the Northwest Forest Plan was implemented. The Forest is required to maintain or decrease the road density in each key watershed. As can be seen from Table 20, this objective has been achieved; there are now 6.7 percent fewer miles of roads in key watersheds on the Forest than there were in 1994.

**Table 20 - Roads in Key Watersheds**

KEY WATERSHED	1994 Road Miles	Miles Decommissioned	Miles Constr.	1998 Road Miles	Net Change Road Miles
Clear Fork Cowlitz	110	0	0	110	0
E.Fork Lewis	79	0	0	79	0
Lewis River	737	42	0	695	-42
Little White Salmon	133	9	1	125	-8
N. Fork Cispus	102	0	0	102	0
Packwood Lake	23	0	0	23	0
Siouxon Creek	69	0	0	69	0
Upper Cispus	70	5	0	65	-5
White Salmon	129	17	1	113	-16
Wind River	433	56	0	377	-56
Totals	1,885	129	2	1,758	-127

**Evaluation:**

**Closures For Biological Winter Range (BWR)**

Road closure failures are up slightly in BWR range this year, and there may be several reasons: Many areas of the Gifford Pinchot NF are still closed to normal traffic due to flood damage from the 1996 and 1997 floods. This puts additional pressure on other areas of the Forest, and more illegal use of roads is occurring in BWR. If all the roads in BWR that are prescribed for closure were effectively closed, we would have achieved a road density

of 1.2 mile per square mile of BWR, much better than the 1.7 mile goal.

The 2.2 mile figure probably does not accurately represent actual closures, since during the years that BWR is needed by elk and deer populations, many more roads are closed to vehicle traffic by snow. When snow is less than about one foot deep in BWR, the areas are not as important to deer and elk, since they are not forced to retreat to these lower elevations, but can stay dispersed at higher elevations.

**General Road Closures**

**Table 21 - Road Closures and Density**

Road Density in Deer & Elk Winter Range	
Miles of open road	759
Land Area (sq. mi.)	339
Road Density	2.2 mi./mi. <sup>2</sup>

If all roads planned for closure on the Gifford Pinchot NF were effectively closed and stayed that way, there would be more miles closed than the 1,230 mile projection envisioned by the Forest Plan. However, monitoring surveys of those roads show that as many as 38 percent of closures have been illegally breached by Forest users (Down from about 42% last year). The estimate of effectively closed system road miles is, therefore, only 986 miles this year.

The goal of 1,230 miles of closed road was intended to include roads no longer used for vehicular traffic, so this should not only include roads permanently barricaded or seasonally close by means of gates, but also those roads we have decommissioned and taken permanently out of service. Since the Plan took effect, 179 miles of system roads have been decommissioned, (47 miles in 1998) bringing the total of roads closed permanently or at least part of every year to 1,165 this year, which is 95 percent of the goal. Another factor to consider is that many roads are closed yearly by snow, or have been closed by flood damage. Another 60 to 80 miles of these roads are expected to be converted to trails or

decommissioned in FY99. The need to mitigate the effects of storm-damaged roads on streams has resulted in funds to decommission many roads now that would otherwise have waited years to receive decommissioning funds. This will result in a major reduction in the number of roads and their impacts on wildlife habitat and water quality.

**Recommended Action to be Taken:** Continue to check for the effectiveness of road closures, repair road closure devices that are breached or ineffective, and continue to close unneeded roads. It would also help to use more effective types of road closures, though this is more expensive. The Mt. Adams District kept records this year showing the breakdown of closure effectiveness, and found that while 89% of gate and rail closures were effective this year in preventing vehicular traffic from using the roads, berms were only 67% effective and "brush and other" methods were only 53% effective. It was also noted that no traffic occurred on the decommissioned roads that were monitored.

Community Effects - Payments to Counties 

**Introduction:** By an act of Congress in 1908, 25 percent of revenues are paid to the counties in proportion to the amount of national forest system land in each county. The act stipulates that the money generated is to be spent on public schools and roads.

County receipts on the Gifford Pinchot National Forest are generated primarily by timber harvest. Collections from recreation, mining, grazing, and administrative uses account for less than 5 percent of the total receipts

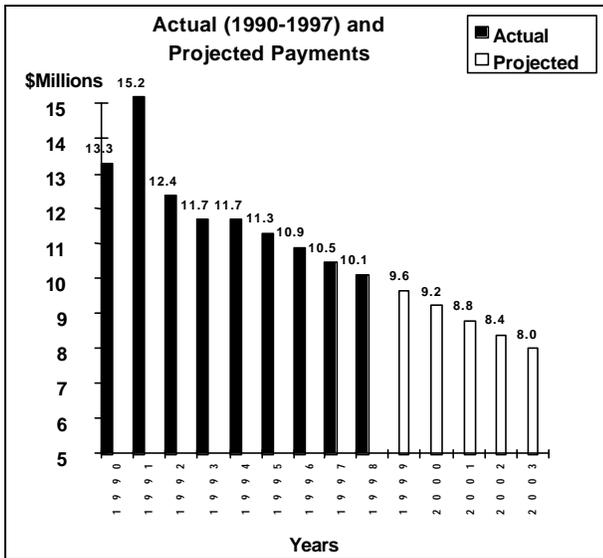
**Results:** Over \$10 million was returned to the six counties with lands in the Forest boundary. If payments were based on actual receipts from timber harvested, less than \$2 million would be returned to the counties. Instead, payments were computed under a provision of the Interior and Related Agencies 1993 Appropriations Act which provided for 1994 payments to counties

of not less than 85 percent of the five-year average payments for fiscal years 1986-90 for those National Forests affected by decisions on the northern spotted owl. Beyond 1994, guaranteed payments are reduced 3 percent per year until 2003. Under the law, payments for 1998 were computed as 73 percent of the 1986 to 1990 average. Next year the receipts will be 70 percent of the same average. These funds are distributed to the counties based on the proportion of the total National Forest in each county. In 1998, \$7.64 was returned to the counties for each acre of the Gifford Pinchot National Forest within each county. The current distribution among counties within the Forest boundary is displayed in, Table 22, page 31.

**Table 22 - Community Effects--Payments to Counties**

County	Percent Total Distribution	1998 Distribution
Clark	0.1	9,017
Cowlitz	2.6	261,545
Klickitat	1.1	111,282
Lewis	28.3	2,849,589
Skamania	65.1	6,537,987
Yakima	2.8	283,003
Total	100%	\$10,052,424

**Figure 10 - Historical and Projected Payments**



An important Forest Service goal in recent years has focused on helping rural communities adjust to changing federal land management practices and policies. The Forest Service has developed a program designed to provide both financial and technical assistance to natural resource-based communities and rural development organizations striving to diversify and revitalize local economies. In 1998, the program, called Rural Community Assistance, invested \$482 thousand in the infrastructure of communities surrounding the Forest. Grants by county in the past three years are tabulated in Table 23.

**Table 23 - Rural Community Assistance Grants**

County	1996	1997	1998
Cowlitz	400,200	90,538	2,500
Klickitat	302,832	227,600	178,700
Lewis	417,754	223,691	32,000
Wahkiakum	48,200	28,000	105,000
Clark	23,426	0	0
Skamania	118,560	192,050	164,000
Pierce	7,314	15,000	0
<b>Total</b>	<b>1,318,286</b>	<b>\$776,879</b>	<b>\$482,200</b>

1996 and 1997 figures contain corrections to previous reports.

**Introduction:** The Forest Service has been charged with making minerals available to the economy, while at the same time, minimizing the adverse impacts of mining activities on other resources. Mining is unlike other “multiple use” activities on federal lands in that the General Mining Law of 1872 grants the federal land management agencies far less authority over mining activities than over timber harvest, recreation, grazing and other activities. The Forest Service minerals regulations, 36 CFR 228, require that where feasible, mining operations be conducted to minimize environmental impacts. These regulations require that a notice of intent be submitted to the Forest Service district ranger on the district where the mining is proposed. The operator is required to submit a plan of operations if the district ranger determines “that such operations will likely cause significant disturbance of surface resources.”

**Results:** On the Mt. Adams District two Plans of Operation were monitored for compliance.

On the Cowlitz Valley Ranger District eighteen notices of intent were received. No plans of operation were submitted in 1998.

On the Mt. St. Helens National Volcanic Monument three Notices of Intent were received; no plan of operations were submitted.

No cases of noncompliance were identified or reported.

No reclamation activities were required and none were accomplished.

**Evaluation:** Standards and guidelines are being met.

## D. Accomplishments

The following table compares program accomplishments for FY's 91-98:

**Table 24 - Program Accomplishments**

Output	Units	Outputs								1998
		1991	1992	1993	1994	1995	1996	1997	1998	Target
Developed and Dispersed Recreation Use	Recreation Visitor Days	NA	NA	NA	NA	7,740	3,981	5,600	5,518	*
Wilderness Use	(thousand)	NA	69.5	75.8	88.4	76.5	74.8	76.1	72.2	*
Trail Const/Recon.	Miles	64	32.2	20	54	55.3	46.7	10.9	66	*
Trails Maintained	Miles	955	988	1015	712	903	256	627.3	832	*
<b>Wildlife Habitat Improvement:</b>										
Structural	Structures	2,727	2,881	1,720	592	1,919	1,253	28	19	19
Nonstructural	Acres	8,245	600	39,046	120	46	433	199	250	250
<b>Wildlife Indicator Species:</b>										
Deer	Habitat Capability	21,745	20,960	20,170	19,385	18,600	18,450	18,300	18,150	*
Elk	animals	5,435	5,240	5,040	4,845	4,650	4,610	4,570	4,530	*
Mountain Goat	animals	240	250	260	275	290	290	290	290	*
Net Sell Volume	MMCF	2.4	3.8	2.9	1.0	8.3	11.3	12.0	9.4	*
Volume Harvested	MMBF	11.7	19.8	14.8	5.8	43.6	57.8	61.9	48.8	*
	MMBF	286.4	160.3	154.9	96.1	58.7	11.3	41.0	34	*
	Acres	8,843	5,703	6,104	5,622	3109	1,801	3,888	1,342	1,008
Fuel Wood	MCF	847	469	511	509	560	328	295	141	
Precommercial Thin	Acres	3,340	3,091	1,861	3,089	3113	3,123	2,643	2,087	*
Release	Acres	158	0	0	0	100	0	257	438	*
Fertilization	Acres	2,018	3,100	3,166	971	100	0	74	0	*
Grazing	HMs	2,430	2,193	1,732	1,732	1,732	1,732	2,756	1,736	*
Watershed Improvement	Acres	34	168	18.6	24	155	50	72.3	53	66
Air Quality	Particulate/ Tons	NA	NA	584	43	74	41	30.2	16.8	*
Fuel Treatment	Acres	7,897	6,684	4,002	4,143	2,183	1,279	316	0	0

\*There are no Regional targets for these items.

**D. Accomplishments (continued)**

Output	Units	Output								1998 Target
		1991	1992	1993	1994	1995	1996	1997	1998	
<b>Timber Purchaser Roads:</b>										
• Construction	Miles	32.7	7.5	7.8	2.3	2.9	2.9	0	0	*
• Reconstruction	Miles	17.0	5.4	1.3	6.5	4.9	15.1	41.5	14.3	*
<b>Allocated Funding (Roads):</b>										
• Construction	Miles	0.5	0.1	0.3	3.1	0	0	6	0	*
• Reconstruction	Miles	10.7	10.7	0.9	16.1	14.4	10.8	31.4	0	*
<b>TOTAL ROAD ACTIVITY</b>	Miles	60.9	23.7	1.2	28.0	22.2	28.5	73.9	14.3	*
<b>Roads Open to:</b>										
• Passenger Cars	Miles	1,247	997	998	811	828	808	828	822	*
• High Clearance	Miles	2,488	2,428	2,295	2,091	2,424	2,402	2388	2,352	*
<b>Roads Closed</b>	Miles	773	897	1,035	1,416	1,019	1,017	1009	1,004	*
<b>TOTAL ROAD SYSTEM</b>	Miles	4,508	4,322	4,328	4,318	4,284	4,261	4225	4,178	*
Returns to Govt.	\$ Million	62.4	34.3	31.3	32.8	11.3	2.7	6.1	6.8	*
Payments to Counties	\$ Million	15.6	12.4	11.7	11.7	11.3	10.9	10.4	10.0	*
Potential Timber Related Jobs Source: TSPIRS Reports	Jobs	4,200	2,362	2,219	1,425	864	147	533	499	*
<b>Landlines:</b>										
• Located	Annual Mi.	18	28	19	10	10	6	4	3.8	4
• Maintained	Annual Mi.	20	0	5	2	6	6	7	7	*
Congressionally Designated Boundaries	Miles	21	10	10	5	5	6.5	2.5	4.3	*
Total Expenditures	\$ Million	63	48	42	39	28	32	35	36	*
*There are no Regional targets for these items.										

## E. Expenditures

The budget for the Gifford Pinchot National Forest is an outcome of the annual congressional appropriations process. Congress allocates an annual budget for the Forest Service which is subsequently disaggregated to the nine Forest Service Regions. Forest Service Regional Offices then allocate the Regional budget among Forests in each Region. Budgets are not directly related to receipts from timber sales or other activities on the Forest. With few exceptions, receipts collected on the Forest are returned to the US Treasury. In FY 1997, the Forest began collecting user fees on the Mount St. Helens National Volcanic Monument. Eighty percent of the \$2 million collected in 1997 will be kept on the Forest for use in maintaining recreation facilities.

The chart below display expenditures on the Gifford Pinchot National Forest over the seven years we have implemented the Forest Plan.

Forest budgets have been buoyed the past three years by funds to repair damage from the 1996 floods. Flood repair accounts for most of the expenditures labeled Transportation expenditures in Figure 12.

**Figure 11 - Total Expenditures 1991-1998**

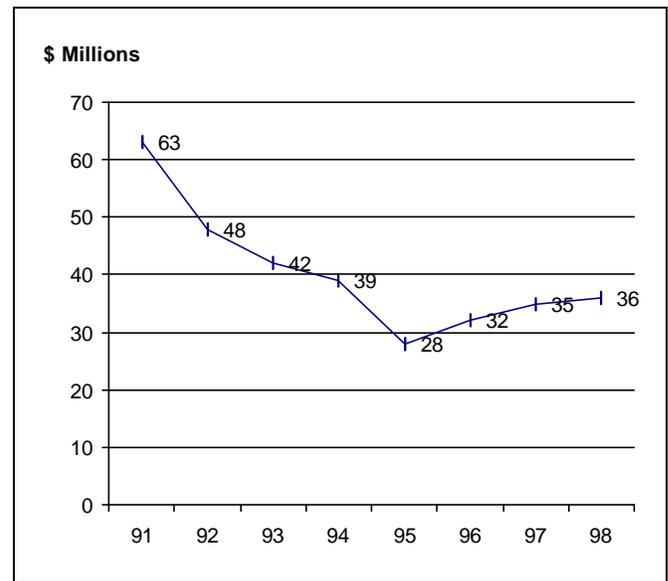
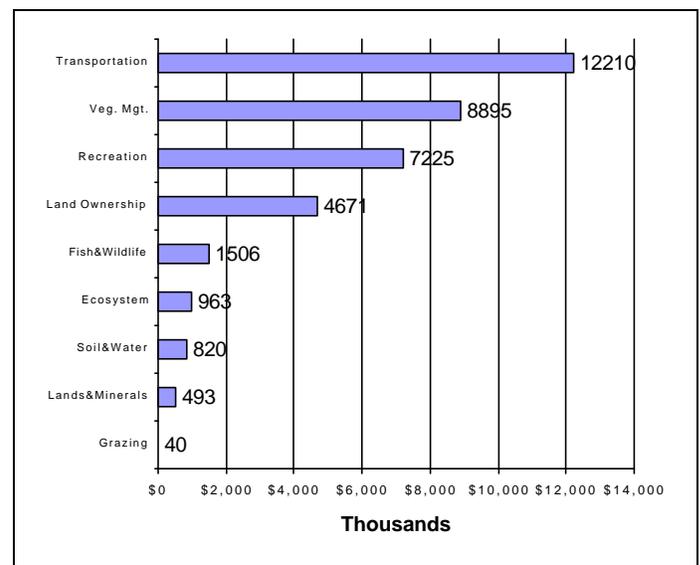


Figure 12 shows the composition of 1996 expenditures by program area.

**Figure 12 - Expenditures by Program Area**



## **F. Forest Plan Amendments**

The following is a list of amendments to the Forest Plan that have been approved to date:

**Table 25 - List of Forest Plan Amendments**

<b>Amendment No.</b>	<b>Approved</b>	<b>Description</b>
1	5/1/91	Decision Memo - Adds Pacific Yew to the list of Acceptable Species in all working groups.
2	9/24/91	Decision Memo - Provides additional direction for visual resource management and mineral claims and leases in Wild River corridors.
3	9/24/91	Decision Memo - Clarified the lower terminus of the Cispus River Wild and Scenic River recommendation in the Forest Plan documents so that it coincided with the Federal Energy Regulatory Commission license boundary of the Cowlitz Falls Hydroelectric Project.
4	9/24/91	Decision Memo - Adds Bigleaf Maple as an Acceptable Species in the Western Hemlock Working Group.
5	9/24/91	Decision Memo - Includes monitoring criteria for the goldeneye and wood duck.
6	8/12/92	Decision Memo - Adds a section on Managing Noxious Weeds and Unwanted Vegetation to the Forest Plan.
7	11/24/92	Decision Notice - Opens Blue Horse Trail 237 to winter motorized use (snowmobiles).
8	3/3/93	Decision Memo - Modifies boundaries of the Forest Plan Map of Record.
9	12/13/93	Decision Notice - Allows grazing in enclosure area of the Cave Creek Wildlife Special Area.
10	7/08/94	Decision Memo - Allows grazing in the Grand Wildlife Special Area, a great blue heron rookery.
11	4/13/94	Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl. Subsequent documentation reconciles Forest-wide and Management Area Standards and Guidelines and the Forest Plan Map with the Record of Decision for the President's Plan. Replaces Forest Plan pages IV-45 through IV-150.
12	5/29/98	Decision Notice – Established the Monte Cristo RNA
13	9/30/98	Record of Decision - White Pass Ski Area Expansion Amends the GP Forest Plan and Northwest Forest Plan to authorize construction of approximately 0.25 miles of road across gentle terrain to access the base area of Chair 5 within a Tier 2 Key Watershed in an Inventoried Roadless Area. It also corrects the Gifford Pinchot FEIS Appendix C map for the White Pass Roadless Area to move the southeast line to the Forest Boundary, as displayed on the original maps for the White Pass Inventoried Roadless Area.

**G. Northwest Forest Plan  
Implementation Monitoring**

Monitoring is a key component of the Northwest Forest Plan. A Region wide implementation monitoring program was initiated in FY 1996 to monitor our implementation of the Northwest Forest Plan standards and guidelines. Two sales on the Gifford Pinchot were drawn in a 10 percent random sample from a pool of sales among the national forests and BLM districts in the range of the northern spotted owl. Monitoring was conducted by field trips to both sales and by completing a 131 question survey relating to compliance with the standards and guidelines from the Northwest Forest Plan. Below is an excerpt from the monitoring report filed by the Gifford Pinchot and Southwest Washington Province.

**Northwest Forest Plan  
Implementation Monitoring  
Southwest Washington Province  
August 4-5, 1998**

The SW Washington Province conducted the 1998 implementation monitoring on August 4<sup>th</sup> and 5<sup>th</sup>, 1998 on the McToo Timber Sale of the Mt. Adams Ranger District.

The monitoring team was comprised of members of the Province Advisory Committee Monitoring Subcommittee.

Participating on the team from the subcommittee were:

Name	Affiliation
Mark Shaw	BPA
Gary Ahlstrand	Rainier National Park
Ron Lee	EPA
Roy Burns	PAC Member
Kim Burkland	C.C. Alliance (For Jay Letto)
Pam Repp	USFWS (For Kate Benkert)
Philo Greg	PAC Member
Lee Carlson	Yakama Indian Nation
Paul Ward	Yakama Indian Nation

The monitoring team was supported by Forest Service staff who had been involved in the Planning and administration of the projects:

Greg Cox	District Ranger
Dennis Siedman	Sale Planner
Cathy Flick	Wildlife Biologist
Jim Hall	Sale Administrator

Also participating from the Forest Service were:

John Roland	Monitoring Coordinator
Earl Ford	Ecosystems Staff Officer
Tom Knappenberger	Public Affairs Officer

Fay Shon, a member of the Regional Implementation Monitoring Team was on-hand to clarify questions on the process and standards and guidelines.

**Monitoring Process**

The team discussed the monitoring questions in the afternoon of August 4<sup>th</sup> and visited four of the ten units in the sale on the following day. District staff involved in the planning and execution of the timber sale accompanied the team for the field portion. At each stop they explained how NWFP standards and guidelines were implemented in each unit. The monitoring team relied on this testimony to establish compliance with NWFP standards and guidelines, no quantitative data was collected during the course of the visit.

## Project Description

McToo Timber Sale lies in the Mac planning area, just west of Indian Heaven Wilderness. The purpose of the sale was to contribute to Northwest Forest Plan goal of producing a predictable and sustainable level of timber sales and nontimber resources that would not degrade the environment.

The planning area was intended to be treated through the Mac Timber Sale in 1992. Portions of the Mac planning area were subject to the 1992 Dwyer injunction which halted sales in suitable owl habitat. The injunction remained in effect until the release of the Northwest Forest Plan in 1994. The McToo sale was prepared in 1995/6 within the suitable owl habitat portion of the Mac planning area. It was sold in November 1996. The primary issues addressed in the EA were cumulative watershed effects, and the effect of timber harvest on deer and elk habitat.

The sale treats about 209 acres in 10 harvest units and produces about 4 million board feet. Eight of the 10 units employed a light forest retention silvicultural prescription. One unit was a small group selection and the other a commercial thin. At the time of our visit, all but the commercial thin unit, had been logged, though slash piling, coarse woody debris tree felling, and erosion control remained to be completed in several units.

Light forest retention prescriptions harvest down to NWFP standards for green tree retention and down wood and snag recruitment. For example, Unit 16 comprised 13 acres outside riparian reserves. NWFP standards required 1.4 acres be retained in aggregate patches for refugia, 50 trees (the equivalent of 0.6 acres) be left as scattered biological legacy trees, 40 trees left for snag recruitment, and 23 trees left to be felled after logging to provide down wood.

Road construction was limited to about a third of a mile of road reconstruction and a quarter mile of temporary road. About 6 miles of system roads were closed by the sale.

McToo sold for enough value to cover reforestation and still provide a KV fund balance sufficient to pay for required mitigation specified in the EA.

**Unit 16** is a typical 13 acre regeneration unit employing light overstory retention. The unit contained 2 refugia patches and about 110 designated retention trees. The designated retention trees meet the NWFP requirements for biological legacy, snag recruitment and down wood recruitment.

Trees marked to provide coarse woody debris will be felled by the timber purchaser. Slash had not yet been treated. Dennis explained that slash would be piled away from down wood and reserve trees to avoid any damage when the piles were burned.

Someone asked how the down wood would be protected from fire wood cutters. The district firewood policy restricts cutting to designated areas. Furthermore, access to the unit is prevented by closure of the road 60-300-797 by earthen berms and gating of the 60-300 road. It was noted that the berms on the 797 road functioned well to prevent access but were poorly designed to function as waterbars. Greg said he would have them reshaped when the purchaser returned to the unit with equipment to pile the slash.

It was evident that few snags were retained after harvest. The loss of existing snags will be compensated by conversion of snag recruitment trees to snags by girdling or topping as prescribed by the NWFP. Because snag recruitment trees require several years to provide habitat equivalent to the snags they replace, it would be preferable to find ways to retain snags while providing a safe working environment. Through a discussion of the difficulties of attempting to save existing snags during harvest, the team encouraged the Forest Service to search for creative ways to provide a safe work environment and retain more existing snags.

**Unit 15** is another light overstory retention unit comprising about 16 acres. The unit is located adjacent to the heavily traveled 65 Road. The

unit is divided by a non-fishbearing riparian reserve about 156 feet wide on each side of the stream. To provide hiding cover for deer and elk which are expected to browse the unit, the aggregate clumps were left in 50 foot wide strips adjacent to the road. About 170 trees were designated as retention trees to meet the NWFP requirements for biological legacy, snag recruitment and down wood recruitment.

The unit was logged over the snow in the spring of 1997. Showing good judgement and concern for the resource, the purchaser notified the sale administrator of a concern that the specified landing location appeared to be in a wet area. They agreed to relocate the landing to higher ground in the unit adjacent to the 65 Road. Unknown to both parties was a road drainage ditch relief culvert hidden under the snow above the new landing location. After logging began at the new landing location, the relief culvert began to flow water, charged by spring runoff from the Indian Heaven area. It gave the appearance that the landing had been located in a riparian reserve. A member of an environmental organization photographed the area and made a presentation at the July, 1997 PAC meeting charging the Forest Service had located the log landing in a riparian reserve. The team examined the landing location and found no evidence of a defined stream channel or annual scour and deposition which would have indicated the area may have warranted a riparian reserve. Neither was there evidence of any resource damage at the site of the landing.

**Unit 13** was not on the original itinerary for the field trip but discussion during the review of the questions surfaced some concern for how wetland riparian reserves were established. Unit 13 is adjacent to a pond near the southwest corner of the unit. We visited the unit and continued the discussion of the Forest's approach to designating riparian reserves. Much of the discussion focused on the Forest's interpretation of the interim riparian reserve requirements for wetlands less than one acre. Question 31 suggests the requirement is a one site-tree-height wide buffer. The Forest interprets the direction (NWFP p. C-31) as

requiring an interim riparian reserve on small wetlands of a width established by the extent of riparian vegetation. The monitoring team suggested the Forest elevate the question of interpretation to the Regional Ecosystem Office for resolution.

**Unit 3** was the last stop on the field trip. Unit 3 is a 26-acre stand which was managed by creating 9 small openings (group selection) ranging in size from ½ to 2 acres. Combined there are of about 8 acres in the 9 small openings.

Access to Unit 3 required crossing the McClellan Trail. This trail is eligible for the National Registry of Historic Places and is identified for protection by the Gifford Pinchot Forest Plan. A temporary "bridge" was placed over the trail by laying logs (corduroy) over the trail for log trucks to drive over, thereby minimizing the impact to the trail surface. The team found no evidence of impacts to the trail from logging traffic.

Within the 8 treated acres 26 trees were designated for snag recruitment and 16 trees were designated to provide coarse woody debris. No scattered biological legacy trees were designated within the small openings. The district silviculturist believed them to be unnecessary since the created openings were so small and three-quarters of the stand would remain untreated.

The team questioned whether the intent of the NWFP for scattered trees was met in the small groups of Unit 3. The Regional Silviculturist was consulted following the field trip. He concurred with the monitoring team that in the absence of specific documentation in the silvicultural prescription directing retention of additional trees in future entries into the stand, the standard and guideline had not been met in this unit. About 8 trees per acre were needed to meet the NWFP requirement for scattered trees. There is an opportunity to provide adequate scattered trees by leaving additional retention trees in successive entries in untreated portions of the stand.

The team did not visit **Unit 19**, the thinning unit, but the description of the silvicultural prescription for the unit raised questions regarding the rationale for thinning within the riparian reserves, in terms of benefits to Aquatic Conservation Strategy objectives. There was a question as to how well the residual stand would respond to the thinning. There was also a question about whether down wood in the riparian reserve was sufficient to allow removal of harvested trees.

Unit 19 is a relatively dense 100 year old natural stand of fire origin situated on the west side of Pete Gulch. The objective of the thinning is to enhance the structural diversity of the stand and capture imminent mortality. It is also expected to accelerate growth of residual trees through the remainder of the rotation, about 20 years.

Thinning was extended into the riparian reserve though no harvest occurred in the inner gorge of Pete Gulch Creek. The inner gorge ranges from 50 to 200 feet in width. The Wind River Basin Watershed Analysis identified Pete Gulch as "Very Low" in large woody debris concentration and a priority for enhancing large wood debris. It also identified the same subwatershed as an opportunity area to accelerate stand development by thinning. Trees designated for harvest in the riparian reserve were marked by the district fishery biologist. Thinning in the riparian reserve is beneficial to Aquatic Conservation Strategy objectives because it will provide larger and longer lasting down wood for delivery to streams.

Since Unit 19 is a previously untreated stand of natural origin, existing levels of down wood are believed to be consistent with its position in the stand development cycle. The thinning activity is expected to increase the amount of down wood. The unit will be reviewed after logging to determine if downed wood is adequate or should be augmented by felling green trees using K-V funds.

There was a question concerning the effect of riparian reserve treatment on wildlife travel

corridors and connectivity through the planning area. While thinning in Unit 19 is not expected to adversely effect connectivity, preliminary Units 14 and 20 were dropped to provide late-successional forest connectivity because several adjacent riparian reserves were still in early successional stage and consequently fragmented dispersal across a portion of the Matrix. Leaving Units 14 and 20 uncut maintains connectivity in the landscape until the adjacent riparian reserves develop late-successional forest characteristics.

### Summary Findings

The Forest appears to have done a good job of implementing the standards and guidelines of the Northwest Forest Plan in the McToo Timber Sale. The only apparent departure from NWFP direction was the failure to retain scattered leave trees in the small openings created in Unit 3. The openings in Unit 3 comprise 8 acres of 173 acres (5%) of regeneration harvest on the sale. The silvicultural prescription will be amended to direct compensation for the deficiency by retaining extra scattered leave trees in future entries into the stand.

After review and discussion with the monitoring team and District staff, none of the monitoring questions were marked "Exceeded," "Not Capable," or "Not Met." All questions were marked either "Meets" or "N/A."

## Recommendations for Future Monitoring

Several members of the team expressed an interest in participating in the data collection aspect of the monitoring, e.g. inventorying down wood, measuring riparian reserve widths, etc. It was suggested that we add a third day to the agenda dedicated to data collection.

The team would prefer selecting areas to visit on the ground after completing the questionnaire rather than following a prearranged itinerary.

Question 5, concerning restriction of tribal treaty rights, should be expanded to three questions. See attached memorandum from Yakama Indian Nation PAC member, Lee Carlson.

The two questions in #27 concerning use of watershed analyses should be separated.

Question #31 needs to be clarified as to the expectation for riparian reserves widths on wetlands less than 1 acre in size.

Consider expanding question 60 to make it more responsive to the final RIEC implementation procedures for maintenance of 15 percent LS habitat in each 5<sup>th</sup> field watershed.

## Cost to Government

The estimated cost to government is about \$6,200. About 90 percent of the total is Gifford Pinchot employee salary cost.

## **H. Other Forest Monitoring Activities**

The Forest routinely conducts a wide range of monitoring activities which are not directly linked to the Forest Plan. Examples of these monitoring activities, which we conduct to evaluate the effectiveness of resource program management and trends in the resources, are briefly described in this section.

### **Recreation**

- Campsite facilities monitoring.
- Activity reviews.
- Review and inspection of special-use permittees at visitor centers.

### **Research Natural Areas (RNAs)**

- Monitoring for compliance with RNA management plans. Long-term structure monitoring every three to four years.

### **Wildlife**

- Monitoring of northern spotted owl nests not connected to timber sales.
- Effectiveness monitoring for K-V projects.
- Periodic monitoring (throughout the year) of raptor (osprey/goshawk) nests.
- Nest box monitoring (ducks, etc.).
- Annual surveys for harlequin ducks.
- Annual breeding bird surveys.
- Monitor restoration projects.
- Verification of wildlife sitings.
- Status checks on various habitats (e.g., heron rookeries).
- Monitoring for challenge cost-share projects (e.g. amphibian project).

### **Botany**

- Informal monitoring of sensitive species sites.
- Monitoring of specific species across the Forest in partnership with Partners for Plants.
- Tracking of population trends of rare plant species (such as the fringed pinesap, which has nine sites across the Forest).
- Pine broomrape monitoring study.
- Pale blue-eyed grass monitoring study on grazing impacts.

**Fisheries**

- Annual stream surveys.
- Annual steelhead snorkel surveys.
- Bull trout monitoring in the Lewis River.

**Hydrology/Watershed**

- Implementation and effectiveness monitoring of restoration projects including erosion control, culvert removal, and riparian fencing.
- Monitoring of restoration projects within the Adaptive Management Area (in collaboration with PNW Research).
- Yearly utilization monitoring for grazing allotments.
- Informal observation/monitoring of watershed/soils condition when FH personnel out in the field.
- Monitoring of mass movement through the watershed analysis process.
- Baseline stations monitoring water temperature (25 stations across the Forest).

**Air Quality**

- Air quality monitoring (Packwood Lake) in collaboration with EPA and WA State Ecology Department, June through September.
- Lichen surveys, one quarter of the Forest each summer.

**Timber**

- Surveys for down and dead woody material, and standing wildlife trees during sale administration.
- Random sale inspections documented with Inspection Reports.
- Monitoring of roads, landings, mitigation, riparian areas, wildlife trees, and down woody material.
- Forest Headquarters sale area visits.
- Contracting Officer Review of performance/techniques of individuals administering timber sales.
- Official sale inspections.
- Genetics program monitoring.
- K-V reforestation surveys (1st and 3rd year).
- Informal slash monitoring.

**Engineering/Roads**

- Maintaining status of roads gated and decommissioned (necessitated by p. C-7 of ROD, which requires no net increase in roads).
- Inventory of number and mileage of temporary roads.
- Monitor road maintenance activities (ours and purchasers) for compliance with Road Management Objectives and Road Management Specifications.
- Monitor road and trail bridges for safety.
- Monitor public drinking water stations.
- Monitor traffic signing program (monitoring of uniform traffic control devices).
- Quarterly groundwater monitoring at Chelatchie Prairie.
- Year-round traffic counts across the Forest.
- Weather conditions, especially rain-on-snow events for flood forecasting.

**Fire**

- Effectiveness monitoring in units after prescribed burning.
- Annual preparedness monitoring.
- Periodic NIFMAS monitoring.
- Pre/post-prescribed burn fuel inventories.

# Glossary

## A

**Anadromous fish** - Those species of fish that mature in the sea and migrate into streams to spawn. Salmon, steelhead, and searun cutthroat trout are examples.

## B

**Big game** - Large mammals hunted for sport. On the National Forest these include animals such as deer, elk, antelope, and bear.

**Big game winter range** - A range, usually at lower elevation, used by migratory deer and elk during the winter months; usually more clearly defined and smaller than summer ranges.

## C

**Cavity** - The hollow excavated in trees by birds or other natural phenomena; used for roosting, food storage, and reproduction by many birds and mammals.

**Ceded lands** - Lands surrendered to the federal government by treaty.

**CF (cubic foot)** - The amount of timber equivalent to a piece of wood one foot by one foot by one foot.

**Creel** - A wicker basket used by anglers to carry fish.

**Cultural resource** - The remains of sites, structures, or objects used by humans in the past-historic or prehistoric.

**Cumulative effects** - Those effects on the environment that result from the incremental effect of the action when added to the past, present, and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other action. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.

## D

**Diameter at breast height (d.b.h.)** - The diameter of a tree measured 4 feet 6 inches above the ground.

**Dispersed recreation** - A general term referring to recreation use outside developed recreation sites; this includes activities such as scenic driving, hiking, backpacking, hunting, fishing, snowmobiling, horseback riding, cross-country skiing, and recreation in primitive environments.

## E

**Endangered species** - Any species of animal or plant that is in danger of extinction throughout all or a significant portion of its range. Plant or animal species identified by the Secretary of the Interior as endangered in accordance with the 1973 Endangered Species Act.

## F

**Forage** - All browse and nonwoody plants that are available to livestock or game animals and used for grazing or harvested for feeding.

**Fringed pinesap** - A sensitive plant species.

## K

**Knutson-Vandenberg (K-V)** - Legislation authorizing the collection of money from timber sales receipts for reforestation, stand improvement or mitigation projects on timber sale areas.

## M

**Management Area** - Provides direction and practices for specific portions of the Forest. Each Management Area identifies a goal, or management emphasis, and the desired future condition of the land. Each MAC includes one or more Management Prescriptions.

**Management indicator species** - A species selected because its welfare is presumed to be an indicator of the welfare of other species using the same habitat. A species whose condition can be used to assess the impacts of management actions on a particular area.

**Mass movement** - A general term for any of the variety of processes by which large masses of earth material are moved downslope by gravitational forces - either slowly or quickly.

**Meaningful Measures** - A recreation management process to better guide recreation management activities at the project and site level intended to provide quality service to recreation visitors. It includes standards of quality, as well as prioritization for work to be accomplished based on documented expectations, needs, visitor preference and resource condition. Examples of standards for trail maintenance include: trees removed, tread maintained and brush cleared to predetermined widths.

**MMBF** - Million board feet

**MMCF** - Million cubic feet

**MRVDs (Thousand recreation visitor day)** -

A measure of recreation use, in which one RVD equals twelve visitor hours, which may be aggregated continuously, intermittently, or simultaneously by one or more persons.

## N

**National Environmental Policy Act of 1969**

**(NEPA)** - An Act to declare a National policy which will encourage productive and enjoyable harmony between humankind and the environment, to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of humanity, to enrich the understanding of the ecological systems and natural resources important to the nation, and to establish a Council on Environmental Quality. (The Principle Laws Relating to Forest Service Activities, Agriculture Handbook No. 453, USDA, Forest Service, 359 pp.)

**Northwest Forest Plan (NWFP)** -An amendment to westside Forest Plans intended to ensure viability of the spotted owl and other late-successional dependent species, and maintenance and restoration of healthy riparian ecosystems.

## O

**Optimal cover** - For elk, cover used to hide from predators and avoid disturbances, including humans. It consists of a forest stand with four layers and an overstory canopy that can intercept and hold a substantial amount of snow, yet has dispersed, small openings. It is generally achieved when the dominant trees average 21 inches diameter at breast height or greater and have 70 percent or greater crown closure.

**ORV** - Off Road Vehicle. A category of recreational vehicles which includes four-wheel-drive vehicles and trail bikes.

**Owl Region** - National Forests and BLM districts within the range of the northern spotted owl.

## P

**Partial Retention** - Management activities remain visually subordinate to the characteristic landscape.

**PC (Precommercial) thinning** - The practice of removing some of the trees less than marketable size from a stand so that the remaining trees will grow faster.

## R

**Raptor** - Predatory birds, such as falcons, hawks, eagles, and owls.

**Redd** - Depressions in gravel in streams where salmon, steelhead, and trout lay their eggs.

**Riparian** - Pertaining to areas of land directly influenced by water. Riparian areas usually have visible vegetative or physical characteristics reflecting this water influence. Streambanks, lake borders, or marshes are typical riparian areas.

## S

**Selection** - The annual or periodic removal of trees (particularly mature trees), individually or in small groups, from an uneven-aged forest, to realize the yield and establish a new crop of irregular constitution.

**Semiprimitive motorized** - A classification of the Recreation Opportunity Spectrum, characterized by a predominantly unmodified natural environment in a location that provides good to moderate isolation from sights and sounds of people, except for those facilities/travel routes sufficient to support motorized recreational travel opportunities which present at least moderate challenge, risk, and a high degree of skill testing.

**Semi-primitive non-motorized** - A classification of the Recreation Opportunity Spectrum, characterized by a predominately unmodified natural environment of a size and location that provides a good to moderate opportunity for isolation from sights and sounds of people. The area is large enough to permit overnight foot travel within the area, and presents opportunity for interaction with the natural environment with moderate challenge, risk, and use of a high degree of outdoor skills.

**Sensitive species** - Plant or animal species which are susceptible or vulnerable to activity impacts or habitat alterations. Those species that have appeared in the Federal Register as proposed for classification or are under consideration for official listing as endangered or threatened species, that are on an official State list, or that are recognized by the Regional Forester as needing special management to prevent placement on Federal or State lists.

**Seral** - Transitory stage in an ecological succession.

**Shelterwood** - A regeneration method under an even-aged silvicultural system. A portion of the mature stand is retained as a source of seed and/or protection during the period of regeneration. The mature stand is removed in two or more cuttings.

**Silviculture** - The art and science of controlling the establishment, composition, and growth of forests.

**Snag** - A standing dead tree.

**Soil productivity** - The capacity of a soil to produce a specific crop such as fiber or forage under defined levels of management. Productivity is generally dependent on available soil moisture and nutrients, and length of growing season.

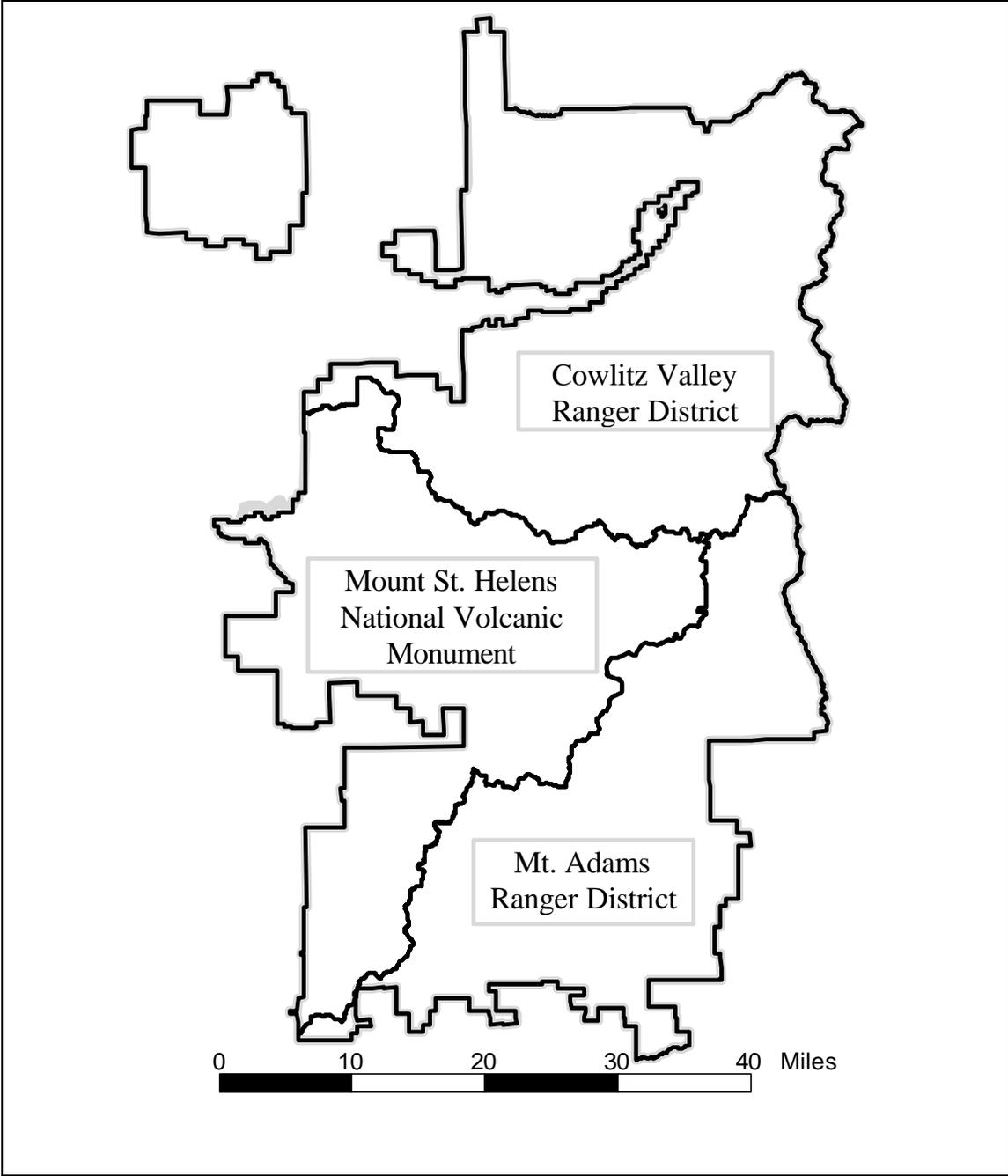
**Special Interest Areas** - Areas managed to make recreation opportunities available for the understanding of the earth and its geological, historical, archeological, botanical, and memorial features.

## T

**TE&S** - Threatened, endangered and sensitive species.

**Threshold of Concern** - Degree of departure from a standard and guideline which would trigger an analysis to determine if a change in practices or plan adjustment is needed.

**Threatened species** - Those plant or animal species likely to become endangered species throughout all or a significant portion of their range within the foreseeable future. (See also Endangered species.)



## PREPARERS

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