

Siskiyou National Forest

Grants Pass, Oregon

United States Department of Agriculture

Forest Service

Pacific Northwest Region

Fiscal Year 1998 Monitoring Report

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Dear Reader:

This year's monitoring report displays the diversity of resources which the Siskiyou National Forest manages and monitors. From fish habitat to fire effects and Northwest Forest Plan implementation, the Siskiyou National Forest is involved in the business of looking at the resources around us and learning from what we do.

We have learned by checking on the outcomes of our activities, by observing the Forest which we manage, and by referencing other scientific efforts for detecting trends on the National Forests.

We continue to complete watershed analyses, an important part of the Northwest Forest Plan. The watershed analyses completed this past year, Hunter Creek, Elk River, and Indigo Creek, provide more detailed insight for trends in resource conditions on the Forest.

This past year, we took an intensive look at how well we are doing at implementing the Northwest Forest Plan standards and guidelines associated with the sale of timber products. Overall, I am pleased with the results, although minor adjustments can be made in some areas. This feedback is important to our refining management practices and making needed changes to further protect the people and resources.

Forest Service employees are working hard to provide a National Forest with tremendous resources and reasonable resource outputs commensurate with conservative forest management.

Thank you for your interest and active involvement in the Siskiyou National Forest. Please call, write, or drop in to see me or my Staff and District Rangers.

Sincerely,

J. MICHAEL LUNN
Forest Supervisor

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A MYRIAD OF MONITORING

Monitoring of natural resources and natural resource management activities requires a wide array of monitoring techniques to provide a response to the many questions which need to be answered. Some questions are best answered at a very large scale, such as a province or river basin. Therefore, one form of monitoring is based on plots being established at a nation-wide or region-wide scale to sample and measure various characteristics of the forest. The Siskiyou National Forest participates in the gathering of this information and receives the results of any analysis that is completed using the data. Information from these plot measurements are really meaningful only at the scale for which they are designed.

There are also questions that deal with site specific effects of our project activities in a given site, stream or wildlife habitat. A large portion of the effort spent on monitoring on the Siskiyou National Forest is geared towards implementation monitoring of the Forest Plan and specific projects. Implementation monitoring is the primary type of monitoring accomplished on the Siskiyou NF and answers the question "did we do what we said we would do?"

A second type of monitoring is effectiveness monitoring. This type of monitoring answers the question "to what extent are the goals and objectives of the Forest Plan being achieved?" or "do our activities work or accomplish the desired objective?" This monitoring requires a broader view and longer time frame to determine. In November of 1997, the Regional Effectiveness Monitoring Team released its strategy and design for effectiveness monitoring of priority resources in the Northwest Forest Plan (1998). The report provides the scientific basis for the effectiveness monitoring program on late-successional and old-growth forests, northern spotted owl, marbled murrelet, aquatic and riparian ecosystems, and survey-and-manage species.

Descriptions of templates for potential future modules on socio-economic trends and tribal relations are included. The report recognizes that the task of developing a monitoring system to detect and recognize significant change is complex because natural systems are inherently dynamic and spatially heterogenous. Monitoring of all biotic components, plant and animal, of managed ecosystems is clearly impossible. The assessment strategy is to measure the pattern and dynamics of habitat structure across the landscape, which in turn will tell us indirectly the overall health of biological processes and components.

Another type of monitoring is validation monitoring, which answers the question "are the underlying assumptions guiding our management correct?" or "are we monitoring the right things?" This type of monitoring is largely left to the research branch of the Forest Service. The research subgroup of the Research and Monitoring Committee released a draft Strategic Research Plan (Benson, 1998), which describes high priority research needs. The report also aims to stimulate involvement of resource managers and stakeholders in research planning and promote rapid dissemination of research results to a broad audience. It is essential for researchers, stakeholders, and field personnel to work closely together to answer the questions most needed to be answered. Two examples of this type of monitoring are the study of prescribed fire effects at a burn in Cedar Log Creek and the Long Term Ecosystem Productivity project near Brookings, Oregon.

CEDAR LOG PRESCRIBED FIRE EFFECTS

This study was set up in cooperation with The Nature Conservancy of Oregon to study the effects of prescribed burning on plant communities on serpentine soils. Two years of preliminary surveys of plant abundance and frequency were completed prior to the prescribed burn, which took place in September of 1997. Post-burn monitoring took place in 1998.

The Cedar Log Flat Research Natural Area (RNA) is a 441 acre site within Slate Creek drainage of the Applegate River. This area is part of the Applegate Adaptive Management Area. Cedar Log Creek flows through the RNA, providing some riparian habitat. There are also *Darlingtonia* fens, Jeffrey pine savannah, and a mixed Jeffrey pine-incense cedar forest type. Several sensitive and rare plants are found in the area due to the serpentine derived soils, which are high in magnesium and other heavy metals which are limiting to many plants.

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The preliminary results of the study (Borgias, 1999) indicate that the following goals of the prescribed burn were attained:

- reducing thatch in the understory by 75-100%
- reducing the cover of *Festuca idahoensis* by 10-30%
- increase abundance of *Epilobium oreganum* in the fen
- increase the abundance of *Microseris howellii*
- perennial plants in fens and savanna regenerate rapidly
- some woody plant encroachment was set back, primarily *Rhamnus californica*
- sensitive plants in the fens and savanna survive and persist following fire

The following goals were not achieved in the short term:

- increase the amount of *Senecio hesperius* in the Savanna

Additional monitoring is planned in the future.

LONG-TERM ECOSYSTEM PRODUCTIVITY STUDY

The Siskiyou National Forest is a partner in a cooperative effort among the National Forests in Region 6, Pacific Northwest Research Station, Oregon State University, University of Oregon, Western Washington University, and Olympic Experimental Forest of the Washington Department of Natural Resources to look at processes affecting long-term ecosystem productivity (LTEP) across a variety of ecosystems. The LTEP study looks at the relationship between species composition, soil properties and organic matter over time on the stand level and features some of the largest measurement plots available in the world (1.5 hectares, or about 4 acres). This study provides effectiveness monitoring for soil productivity standards in the Forest Plan, and also provides validation monitoring for woody debris standards.

The Siskiyou National Forest has one of four active installations of an LTEP Integrated Research Site. The planning and pre-harvest data collection on this site began in 1992. Logging to begin the treatment installation occurred in 1997. Post-harvest data collection is now underway.

The Siskiyou site is located in an area of 70-100 year old forests. There are three replications of four treatments that evaluate a range of ecological conditions. These conditions differ in species composition and abundance, which uniquely influence soil and aerial environments and thus ecosystem function and productivity. Treatments will represent promotion or retention of (1) early seral species, (2) mid-seral species, (3) late seral species and structure, and (4) no harvest, allowing natural succession to occur. Each of the first three treatments is split into a HIGH and a LOW organic matter sub-treatment to examine the effects of organic matter inputs on soil properties, nutrient cycling, and subsequent ecosystem productivity. In addition to this main study, the Siskiyou site is the only site that has a small study on the effect of underburning on the late seral vegetation treatment. We hope that burning conditions will be right to burn in the fall of 1999.

In addition to standard data collection on the plants, soils and organic matter in the different treatments, the Siskiyou LTEP site has also had data collected on scenic perception, fungi, breeding birds, insects and diseases, and small mammals and herpetofauna. The pre-harvest surveys uncovered an unparalleled diversity of mycorrhizal types and the presence of at least 15 Survey and Manage species of fungi, vascular plants, small mammals, and herpetofauna. We will have the opportunity to study the effects of harvesting on some of these species.

Post-harvest data collection and treatment installation (planting, vegetation removal) is underway and there should be visually obvious differences among the treatments within five years.

TIMBER SALE MONITORING

The Siskiyou National Forest conducted timber sale implementation monitoring on a sample of various types of sales that had been designed and analyzed following guidelines identified in NEPA, and implemented using the standards and guidelines in the NORTHWEST FOREST PLAN (NWFP) of 1994. The objective was to determine if we were implementing these sales according to the requirements of the Siskiyou National Forest Plan as amended by the NWFP. The Siskiyou National Forest completed implementation monitoring of 19 timber sales (7 large sales and 12 small sales). This monitoring reviewed 33% of the small sale and 70% of the large timber sales that have had environmental analyses completed and implemented since the approval of the Northwest Forest Plan in 1994. In addition, we looked at some "Best Management Practices" and resource management quality objectives.

The variety of sale types sampled included small and large green sales, salvage sales, green firewood sales, and sales in various land management allocations. Sampling was designed to evaluate whether these activities had been implemented according to direction.

We installed permanent plots in some of the surveyed units in order to accomplish effectiveness monitoring of these same areas in the future. Revisiting the same plots will help us gauge the magnitude and nature of changes that take place over time. Many facets of natural resource impacts do not become evident until years after an activity. Increases in tree blowdown, changes in vegetation, changes in soil stability or water drainage, or accomplishment of the desired tree component are all examples of changes which cannot always be gauged soon after a timber sale is completed.

Our monitoring found that the Siskiyou National Forest timber sale program was doing an excellent job at achieving most of the resource management goals, standards and guidelines, and mitigations. The following resources and activities were of note:

- minimizing soil disturbance
- leaving down, large, coarse woody debris
- obliterating temporary roads
- leaving adequate size green tree retention clumps
- leaving adequate numbers of scattered green trees within regeneration harvest units
- meeting visual quality objectives
- treating activity fuels with broadcast burning and also protecting the soil duff layer
- retaining adequate amounts of snags within harvest units
- protecting sensitive plant populations
- completing all applicable analysis and documentation
- achieving stand level silvicultural prescriptions.

Some standards and guidelines or resource management goals were inconsistently accomplished or need improvement. Areas identified as deficient or needing improvement in at least one timber sale or sale unit included:

- documenting and accomplishing road management objectives
- leaving adequate widths of riparian buffers
- leaving adequate size trees within green tree retention clumps and as scattered green trees within harvest units
- providing effective, long term drainage control with waterbars
- avoiding excessive mechanical damage in thinnings
- reducing or preventing bull thistle encroachment within disturbed areas
- improving reforestation success
- elimination of trash from project areas
- completing all documentation for small projects

All of the identified deficiencies were minor occurrences with little measurable or visible impact to the natural resources. The purpose of doing the monitoring is to identify areas where improvement may be needed. These are areas where we can become more consistent. Overall, Forest personnel are doing an excellent and consistent job in achieving a large majority of applicable standards and guidelines.

The Regional Implementation Monitoring Team released a report during the summer of 1998 summarizing findings from their monitoring of timber sales, road activities, and restoration projects. Their review showed a high level of compliance with ROD Standards and Guidelines for timber sales (95%), roads (99%), and restoration projects (98%). Adverse biological effects associated with instances of noncompliance appeared to be minimal at the regional scale. Where non-compliance occurred, the local biological effects were judged to be generally low to moderate.

WATERSHED ANALYSES AND WATERSHED HEALTH

Forest specialists continue to systematically characterize the aquatic, riparian, and terrestrial features of National Forest watersheds. Teams studied the Indigo and Hunter Creek watersheds, and reevaluated the Elk River watershed. This monitoring report incorporates, by reference, these analyses. Please refer to the specific watershed analysis for more detailed information than that provided below.

Indigo Creek

This is a Key watershed under the Northwest Forest Plan (NWFP). This 49,064 acre watershed is almost entirely National Forest and flows into the Illinois River four miles above its confluence with the Rogue River. Management direction of Late-Successional Reserve covers 84% of the watershed. A recently completed Wild and Scenic River study concluded that Indigo Creek is eligible for Wild status, with an Outstanding Remarkable Value for anadromous fish. Key findings of the watershed analysis include:

- Indigo Creek contributes 10-20% of the total Illinois River flow and is a major contributor to water quality in the Wild and Scenic Illinois River, particularly during low flow periods.
- This watershed has some of the steepest terrain on the Forest. The inner gorges, where slopes are extremely steep adjacent to stream channels, are among the longest on the Forest.
- Landslides dominate the sediment delivery processes, with inner gorges being the most common location for debris slides. The 1964 storm was the trigger for most of the landslide sediment delivery over the past 50 years.
- Some deep and very productive soils have developed from extremely large ancient landslides.
- Roads contribute a minor portion of the landslide sediment to stream channels in this watershed. Many of these roads were not present in 1964. However, much of the system roads are located in the upper third of the slope, many being along ridgetops.
- The macro-invertebrate population, an indicator of water quality, is in good to excellent condition.
- With local exceptions, management activities - including timber harvest and road construction - have had little effect on the stream channel. Large natural disturbances have played a major role in forming the channel and its present condition.
- Summer water temperatures are warmer than optimum for fish survival and success on the lower mainstem of Indigo Creek.
- Although it is not known what the historic quantity of large wood is in this watershed, current levels are often lower than levels documented as healthy by old growth standards.
- Development of late successional habitat can be accelerated through treatment of managed and natural stands in Late-Successional Reserves, Riparian Reserves, and other land allocations.
- The highest priority for stand treatment are areas adjacent to or within existing late-successional habitat or where stands are very dense (high number of trees per acre).
- Several managed stands within the Silver Fire area are severely limited by brush competition and would benefit from stand treatment.
- White oak/black oak meadow habitat is being lost due to encroachment from conifer trees and exclusion of fire.

The watershed analysis contains a long list of recommended actions to maintain or restore habitat and landscape conditions. These include inventories, road management, stand treatments, fire management, identification of potential landslide area, and riparian improvement.

Hunter Creek

Hunter Creek is a 28,404 acre basin that drains directly into the Pacific Ocean south of the town of Gold Beach. A majority of the lands within the drainage are private industrial forest lands (52%). The Forest Service manages approximately 25% of the acres within the drainage. Matrix and Late-Successional Reserve are the predominant land allocations on the Federal lands. Some of the resource condition findings from this analysis include:

- Logging has replaced fire and large scale windthrow as the predominant disturbance factor. Timber harvest has been intensive since the 1940's.
- Late-successional forest habitat is highly fragmented in the watershed. Mean patch size of old-growth habitat has been reduced 95%, total number of patches has declined 71%, and distance between patches has increased over the past 50 years.
- Optimal elk cover is relatively scarce and poorly distributed.
- Snags and decayed live trees are scarce on private lands due to past harvesting. This lack of availability of cavities in large trees is expected to persist on the private lands for 20-40 years.
- Hunter Creek has the highest incidence of Port-Orford-cedar root disease on the District.
- Surface erosion from road cuts and fill slopes is occurring throughout the drainage. Roads are the primary mechanism for channeling and gully formation, with some roads functioning as drainages into upper Hunter Creek.
- Stream velocities have increased in the upper and lower sections of Hunter Creek due to wood removal and channel containment, resulting in bed and bank scour in the lower reaches.
- The count of spawning adult Chinook salmon has been increasing since 1991.

The watershed analysis contains a long list of recommended actions to maintain or restore habitat and landscape conditions. These include silviculture treatments, wildlife enhancement, road closures and obliteration, information gathering, noxious weed control, riparian habitat improvements, and many others.

Elk River

The Elk River watershed drains approximately 58,388 acres from the Siskiyou Mountains down to its mouth just south of Cape Blanco. Approximately 77% of this land is within the Siskiyou National Forest. The predominate land allocations of the Northwest Forest Plan are Late-Successional Reserve (49%), Congressionally Reserved Areas (34% - Wilderness and Wild River), and Matrix (11%).

The Elk River, designated as a National Wild and Scenic River in 1989, has anadromous fisheries and water quality as Outstanding Remarkable Values. For a watershed of its size, the Elk River is recognized as one of the highest producers of Chinook salmon in the Pacific Northwest. Some of the main findings in the watershed analysis include:

- Timber production, agriculture, commercial and sport fishing, and recreation will provide the greatest employment and income to the local economy based on the resources in this watershed.
- Scenic quality is a "significant value" within the Wild and Scenic section of the river.
- Recreational campgrounds are in need of maintenance and improvement. Dispersed camping is limited by geographical features of the canyon.
- The disturbance interval in the watershed has decreased from 300-400 years to 100-200 years due to native American activities, early European settlement, and timber harvesting. The current land allocations should increase the disturbance interval to 400-500 years.
- Between 1952 and 1986, road and harvest related landslides delivered 2.2 times more sediment volume than naturally occurring landslides.
- With road practices improving after 1974, the number of landslides per mile of road decreased considerably. However, 93% of the roads were constructed prior to 1974.
- Water clarity in Elk River is exceptional, and clears quickly after storms.

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- Major storm events in 1955 and 1964 caused the loss of shade trees and channel changes, resulting in increased summer stream temperatures.
- Long-term monitoring of maximum stream temperature in the mainstem of Elk River shows stream temperature to be declining.
- Below the National Forest boundary, comparison of aerial photos of the Elk River from 1940-1986 show increased numbers and sizes of gravel bars (77% increase), loss of riparian forest, and increased width of active channel bars.
- With the exception of declining Coho salmon numbers, salmonid populations appear to be stable.
- Sediment from natural and management-related activities have decreased pool depths. Longer term sediment trends, however, should improve due to the change in land allocations and watershed restoration efforts.
- Increased sediment appears to favor steelhead production over Coho and Chinook salmon.
- Panther Creek subwatershed, having the highest percentage of riparian vegetation impacted by past timber harvest, has observed a maximum stream temperature decrease of 4 °F since 1980.

NEOTROPICAL MIGRATORY BIRD MONITORING

The Forest Service continues to monitor populations of migrating songbirds in different areas of the forest. The Forest has four stations for Monitoring Avian Productivity and Survivorship (MAPS). This data is collected locally and analyzed nationally. The last summary of findings was released in 1994. Another summary is expected and will be available this coming year. In addition, there are four Breeding Bird Survey (BBS) routes that are sampled each spring, two of which are official national survey routes as part of overall national monitoring program. There has been no analysis of the local data to date. The information has been forwarded to the national level for analysis.

A cooperative agreement with the Audubon Society has helped give us a stronger idea of population trends for many species of birds. The 62 land points visited covered a total of 153 acres. Numbers and species of birds fluctuate tremendously with time of survey, local weather conditions, weather conditions along migratory routes, and numerous other factors. Therefore, it is very difficult to determine the causes of fluctuations in numbers. Only through a commitment to monitor these stations long term (200 years) will any significant trends in populations be revealed.

An additional study is being conducted in the Cedar Log Burn RNA looking at effects of prescribed burning on neotropical bird populations. Preliminary data indicates that the breeding bird population did change following the prescribed burn at Cedar Log Flat RNA, even though the estimates of relative abundance changed little between years. Black throated gray warbler and spotted towhee detections decreased greatly, both in overall number of individuals and birds per hectare following treatment. The purple finch, a species not detected by pre-burn censuses, moved to number 1 following treatment. Dark eyed juncos and western wood peewee move up in rankings following treatment due to increased detections. Yellow-rumped warbler detections increased following treatment. Nashville warbler detections decreased following treatment.

Some species, such as red breasted nuthatch, appear to be unaffected by treatment. Townsend's solitaire was not detected in pre-burn censuses. Species not detected the year following treatment include: Cassin's vireo, Bewick's wren, western bluebird, and Lazuli bunting. Many other species were detected in small numbers both before and after treatment; no conclusions or speculations are offered.

Hermit thrush and MacGillivray's warbler were generally associated with Slate Creek riparian habitat, which was not in the treatment area. Common raven and pileated woodpecker were generally detected as flyovers, or from habitat outside the treatment area.

Your observations of unusual bird sightings are important. Please report any unusual sightings, including the size, colors, bill shape, location, habitat, and photographs to the Siskiyou National Forest, 200 NE Greenfield Road, PO Box 440, Grants Pass, Oregon 97526-0242 (541 471-6500).

FOREST PLAN MONITORING

Each element of the existing Siskiyou National Forest Monitoring Plan is listed below and discussed.

RESOURCE ELEMENT: ALL ELEMENTS

Monitoring Questions

1. Ensure that applicable S&G's are incorporated into project level planning and implementation.
2. Ensure that unavoidable deviations from S&G's, along with appropriate measures, are identified in project-level NEPA planning, and that these measures are carried through to implementation.

Forest Service personnel conducted a formal monitoring of planning and implementation of timber sale projects on the Siskiyou National Forest during August, 1998. The conclusions of that monitoring effort are described in detail on page 2 and 3. The overall conclusion of that monitoring was that Standards and Guidelines are being followed. A Provincial Advisory Committee review of timber sale implementation was conducted on Waters Thin Timber Sale on Galice Ranger District in September. The findings of this review were that standards and guidelines were incorporated into the project and implemented. The only recommendation for improvement was to improve documentation of future sources of large woody debris. (Steve Tanner, personal communication).

Implementation monitoring took place on the 164 Salvage Timber Sale on Powers Ranger District. Findings from that review included:

- Volume was grossly overestimated in the sale due to hidden defects and cruise calculation error.
- All green trees were left standing. All but three snags were left standing; these three had to be felled for safety concerns (OSHA).
- Cable systems were adjusted to protect all other existing snags and green trees. Negligible rub and barking was seen.
- Retention of large woody material exceeded the amounts required by the Forest Plan.
- Retention of snags exceeded the amounts required by the Forest Plan.
- Erosion control on skid trails was completed in a timely manner prior to the onset of fall rains.

Overall, the review concluded that the Decision Memo and Timber Sale Contract were implemented appropriately and that the district had pioneered a first in LSR management, a first in REO review, and a first for having a muffler on the yarder for noise protection for marbled murrelets.

Planners and implementing personnel have appropriately used the Standards and Guides of the Forest Plan, as amended by the Northwest Forest Plan. The Province, Districts and Forest have reviewed several projects and programs. All activities have complied with Forest Standard and Guidelines except where variations are planned in the NEPA documents. Objectives for the 15 Management Areas and 6 land allocations, and Key watersheds were successfully implemented across the Forest.

RESOURCE ELEMENT: ALL ELEMENTS (Forest Programs and Budgets)

Monitoring Questions

1. Is the management of the Forest achieving planned outputs?
2. Are funding levels for capital investments adequate to achieve projected improvements?
3. Are the major variable costs used in the analysis consistent with actual implementation costs?

TABLE 1 provides a summary of Forest outputs and activity for 1991 through 1998. In general, the Forest met or exceeded the amount of work scheduled for 1998 by the budget allocated from Congress. There are discrepancies between Forest Plan level identified in the table and accomplishments listed. Reduced timber harvest levels and changes in types of harvest treatments is resulting in less reforestation, fuels treatment, and timber stand improvement needs. Natural fuels treatments are not meeting the desired levels. Activity fuels, which is the treatment of fuels created by timber sale projects, has dropped tremendously. Other programs are experiencing

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changes as well. Many wildlife structures and improvements funded through the timber sale KV program are no longer needed or the money is no longer available through the KV program. Recreation trail construction has averaged more than the Forest Plan predicted amount. Road construction and maintenance dropped tremendously during this time period, although maintenance dollars did receive an increase in funding over the past two years.

Recreational trail maintenance and construction, wildlife improvement projects, timber stand improvement, reforestation, fuels treatments, and road construction will not meet the levels described in the Siskiyou Forest Plan. These programs need to be re-evaluated in light of the current standards and guidelines, and significant changes in activity levels as a result of the Northwest Forest Plan.

Capital investments vary tremendously from year to year. Variable costs for some activities have increased beyond that predicted in the Siskiyou LRMP; however, some costs have realized savings over what was predicted. Budget allocations fail to closely track with the Forest Plan estimates.

TABLE 1. Projected Forest Plan Outputs and Actual Accomplishment 1991-1998.

Output	Units	Forest Plan	1991	1992	1993	1994	1995	1996	1997	1998
RECREATION										
Trail Construction	Miles	22.8	0.3	2.0	7.9	1.8	1.0	18.9	1.8	25.5
Trails Maintained	Miles	250								33.5
WILDLIFE & FISH										
Wildlife Structures	#	328	10	271	436	477	776	710	665	305
Wildlife Improvements	Acres	1614	0	200	1327	537	208	904	349	1276
Fish Structures	#	480	271	218	328	42				
Fish Habitat	Acres	60	12	20	252	600				2.5
	Miles						7	40	45.6	12
T&E/SENSITIVE SPECIES										
Structures	#	16	2	13	42	60	54	23	7	7
Non-structures	Acres	1160	2	180	11	60	20	47	353	86
RANGE										
Range Resource Operations	AUM's	3000	1001	1001	1001	996	996	714	714	694
Noxious Weed Control	Acres	50	36	101	51	79	266	391	473	306
TIMBER										
Sale Volume Offered	MMBF	24	1.9	1.7	5.0	9.9	16.6	28.4	24.4	24.6
Sawtimber (green)	MMBF	24	1.5	1.1	3.4	6.6	11.0	18.9	18.1	22.4
Salvage (dead)	MMBF		0.45	0.6	0.6	1.6	3.3	9.5	6.3	2.2
Reforestation	Acres	6222	6080	3664	2049	822	866	963	827	1229
Timber Stand Improvement	Acres	5357	14800	13367	10605	5468	5252	3363	3410	3138
SOIL & WATER										
Watershed Improvements	Acres	479	178	184	326	224	231	340	565	641
MINERALS										
Proposals/Leases/Applications	Cases	335	541	937	886	771	239	121	249	290
TRANSPORTATION										
Road Construction	Miles	21.7						7.1	5.4	3.4
Road Reconstruction	Miles	134.6	122	1.2	0.8	2.8	29.7	128	191.3	47.0
Road Maintenance	Miles	2753							2741	2827
Roads Decommissioned	Miles					65.9	37.1	21.6	29.7	13.5
FIRE MANAGEMENT										
Natural Fuels Treatment	Acres	400	0	0	0	0	300	0	200	268
Activity Fuels Treatment	Acres	3539	2348	1740	1055	957	430	604	1000	1739

RESOURCE ELEMENT: AN121(a) Recreation (Undeveloped)

Monitoring Questions

1. Are the setting indicators of access, non-recreation management, impacts, social encounters, facilities, and visitor management maintained at levels sufficient to provide Primitive and Semi-primitive (Motorized and Non-motorized) recreation opportunities?
2. Is resource degradation occurring as the result of sanctioned Off-road vehicle (ORV) use?

There is little or no variance from LRMP objectives for Primitive and Semi-primitive Non-motorized recreation opportunities in Backcountry Recreation Management Areas.

No visible degradation to soil, water, or vegetation resources on trails or in other areas open for ORV use has been detected. The amount of ORV use is decreasing as roads are closed by natural and administrative actions.

RESOURCE ELEMENT: AN121(b) Wild and Scenic Rivers

Monitoring Questions

1. Is the protection and management of the five Wild and Scenic Rivers consistent with the Wild and Scenic Rivers Act and the management objectives identified in the River Management Plans?
2. Are the facilities and improvements scheduled in the LRMP being accomplished?
3. Do management activities within the Rogue River corridor meet inventoried or allocated VQO's?
4. Does Partial Retention in middleground distance zones satisfy the user demand for scenic quality within the Rogue River corridor?

Monitoring of daily party launches on the Wild Section of the Illinois River continued. 1998 was a very wet spring with high water flows. There were several days when the objectives of two parties launching per day were exceeded.

A Fee Demonstration Project was implemented in coordination with the BLM on the Wild Section of the Rogue River. Also, an Environmental Assessment was completed allowing limited commercial jet boat use by the 4 private lodges in the Rogue River Wild Section.

No permanent visible degradation of the setting on National Forest lands within or adjacent to the Wild River corridors due to human disturbance has been detected.

The scheduled facilities and improvements are being accomplished, although at a reduced rate. The Rogue River Fee Demonstration Project should accelerate accomplishment and help reduce the backlog of needed work through time.

RESOURCE ELEMENT: AV121 Visual

Monitoring Questions

1. Are planned or programmed management activities implemented within the constraints identified for the Retention and Partial Retention VQO's?
2. Are the allocated VQO's being achieved?

There is no increase over recommended levels of activity in Retention or Partial Retention areas. The major decrease in timber sale activity has contributed to Visual Quality Objectives being achieved or exceeded. Considerable visual rehabilitation is occurring in many viewsheds with regrowth in older harvest units and along roads.

RESOURCE ELEMENT: AW121 Wilderness

Monitoring Questions

1. Are the physical/biological, social, and managerial settings of each Wilderness Recreation Spectrum (WRS) class maintained?

Less than 5% of Wilderness acres are a lower WRS class than Semi-primitive condition. Annual use is much less than 80% of estimated capacity for WRS classes. Some illegal access has occurred within the Kalmiopsis Wilderness. Enforcement efforts are ongoing.

RESOURCE ELEMENT: CF121 Fish Habitat

Monitoring Questions

1. What are the cumulative effects on fish habitat capability?
2. Is fish habitat and smolt production being maintained or improved as predicted?
3. Is the quantity and quality of rearing pools being maintained?
4. Is the fish population changing in terms of numbers, species composition, or age structure?
5. Is large woody material being retained in the stream channel for fish habitat?
6. Is stream temperature being maintained or decreased as predicted by the LRMP FEIS?
7. Is sediment affecting stream habitat?
8. What are the effects of fish habitat improvement structures on stream channel configuration, large woody material, and fish populations?
9. What is the life-span of stream habitat improvement structures?

No adverse cumulative effects on fish habitat due to Forest activities implemented after 1989 have been detected. Stream surveys and watershed analyses provide a baseline for comparison with future monitoring results. Fish habitat is being maintained and improved through restoration efforts and natural recovery. An amendment to the Forest Plan, the Aquatic Conservation Strategy, has changed riparian area management for fish habitat. More detailed discussions are found in the Northwest Forest Plan and FEMAT report, the Late-Successional Reserve Assessment, and various watershed analyses.

Stream Structures

No projects have removed any woody material naturally found in the stream channel. In addition, we have placed some large woody structures in many streams to improve fish habitat.

During the summer of 1995, the Powers Ranger District added 93 pieces of wood into the upper South Fork Coquille River and 9 pieces into Purple Mountain Creek, a tributary to Elk River. All structures placed were woody material of various lengths, diameters and species. Fifty-one structure elements were marked with tags after the project was completed and prior to winter rains to monitor retention of these structures. During the summer of 1996, all 51 structures were accounted for, though some shifting occurred. The November storm of 1996 was estimated to have a return interval of 75 years. This flood moved many of the structure elements into several jams. Sampling during the summer of 1997 indicated three pieces completely moved outside of the project area. These structures were considerably smaller in length and diameter, and all three lacked rootwads. One structure moved over 700 feet and caught in the control reach. Numerous new pieces (estimated at 24 pieces) accumulated during the course of two years. The most stable structure elements were the green standing trees that were lined directly into the stream. These pieces had substantial length/diameter, and the rootwads were anchored into the soil. The least stable were less than 50 feet in length with no rootwads attached. Data on cutthroat abundance from 1995 and 1996 was gathered to determine if any impact of the wood structures was evident. General observations include a preference for the woody debris complexes, and an overall increase in fish size and populations below the treatment area. Individuals within the treatment area seem more robust. Many variables influence this data. These changes are not great enough to imply any cause and effect relationship. Continued monitoring may provide inferences as to trends.

Stream Temperatures

Stream temperatures are not increasing due to harvest activities near streams on National Forest lands. There has been little harvest in any riparian areas. Riparian vegetation regrowth is ongoing. Off-forest stream temperatures may be decreasing or increasing in the various watersheds depending on private land activities (timber harvest, water withdrawals, and development). Watershed analyses contain specific references to particular streams. The Siskiyou NF has been collecting stream temperature information in several streams. Information from dozens of collection points in the Rogue River basin are shared and compiled for a yearly report put out by the Rogue National Forest. Other streams which are monitored for temperature include the South Fork Coquille, Elk, Sixes, Pistol, Chetco, and Winchuck rivers and Hunter Creek. The maximum average temperature has varied in the different rivers and streams from year to year due to air temperature, stream flows, snow pack, timing of snow melt, cloud cover, and condition of riparian shade among other things. Riparian vegetation was heavily impacted in many areas due to the winter 1996-1997 flooding.

Riparian Tree Planting

A project to plant five riparian areas with conifers was undertaken in 1995. After three summers, survival averaged 35% for all areas. Worst survival was 10%; this area having compacted soils with heavy grass competition. All monitored sites suffered browse damage. Additional mortality resulted from elk pull, beaver kill, gophers and mechanical damage from an instream fisheries structure project. The Forest Service force account crew achieved a 57% survival rate while the contract crew achieved a 20% rate through 1997. However, if the harsh site were omitted, survival would have been 35% for the contract crew. Growth was measured on the surviving trees. Average growth was 2.5 inches for the contract crew and 8.3 inches for the force account crew from 1996 to 1997. The force account crew was also considerably cheaper than the contract crew. Browse damage was significant on surviving conifers and caused mortality on others. Subsequent plantings should be monitored to continually improve survival and growth.

Recommendations for riparian tree planting from this monitoring include:

- Plant with Vexar tubing for future years to minimize browse damage.
- Continue release on existing conifers to reduce competition and accelerate growth.
- Continue to monitor for growth and mortality.
- Utilize force account crews for quality production.

Sediment

Sediment is always affecting stream habitat and is part of the natural and accelerated watershed processes. Recovery in areas previously harvested and in areas damaged by the flooding of 1996-1997 is ongoing. Additional damage from storm events did occur in 1998, although not to the extent of earlier storm damage. Continued heavy rain in the winter and spring of 1997-1998 probably slowed the recovery of some flood damaged areas. Many of the slides created by the storms of 1996-1997 will continue to contribute sediment for some time. Stream surveys will continue to provide additional information. Other types of monitoring of stream channels and sedimentation include evaluating productive flats.

Photo Points

Photo points are useful to visually detect changes over time. Prior to 1994, no designated aquatic photo points on the Powers Ranger District were taken. Preliminary results indicate noticeable increases in sediments of all sizes (especially fines). Some of the pools have visibly decreased depth, gravel bars have grown in size and some channel shifting has occurred. Several photos show impacts to the riparian vegetation. Some of the alder adjacent to the channel was leveled by the flood, although not nearly to the extent that was expected. Another photo indicates a car-sized boulder moved approximately 50 feet during the flood and was nearly buried by smaller sediments. These photo points will be useful (when combined with other monitoring) to determine riparian recovery rates, sediment trends and channel shifts. These photo points should be revisited every 5 to 10 years, or after a significant channel altering event.

Productive Flats

Productive flats are low gradient stream reaches that are sensitive to variations in sediment supply, fish productivity, large woody material, and temperature. They are considered barometers for watershed health. Upstream management activities can alter the productivity of these flats. Watershed Analysis of the South Fork Coquille River identified the Sand Rock productive flat as an optimum site for monitoring aquatic effects of upstream management activities.

Significant change from 1995 to 1997 is mostly attributed to the November 18th flood of 1996. This flood was calculated to have a return interval of 75 years. Maximum pool depth decreased by an average of 2.2 feet. This decrease is significant when flow is considered. Stream flow during data collection in 1997 was 75% greater than flow in 1995. The decrease in pool volume and habitat area negatively correlate with densities of salmonids. Dive data indicated a 25% decrease in virtually all age classes. However, the young of the year steelhead appear to be of larger size and, therefore, more apt to survive the winter flows. Increases in the size of gravel bars and side channel formation was noted. The abundance of sediments increased the size of the original flat by approximately 1/2 mile. Photo points indicate one large piece of woody material (over 50 feet length and over 36 inches DBH) completely left the monitoring section. Another enormous rootwad moved downstream two pools (a distance of approximately 700 feet). Continued monitoring of the productive flat will be conducted.

Culvert Replacement

The South Fork Coquille River Watershed Analysis identified several management caused fish barriers that blocked historical habitat. Subsequent field visits identified two culverts on tributaries to Rock Creek that blocked a total of 1.25 miles of quality salmonid habitat.

During the summer of 1996, Lake Creek culvert was replaced by an oversized baffled culvert to aid fish passage. The outlet pool was modified to facilitate salmonid passage. This culvert blocked nearly 1/2 mile of historical habitat. Pre-project surveys indicated no fish utilization above the culvert. Manganese Creek culvert was retrofitted with baffles to aid fish passage, and several jump pools at the outlet were constructed. The culvert blocked approximately 3/4 mile of historical habitat. Pre-project surveys indicated no fish utilizing habitat above the culvert.

Post-project monitoring in the summer of 1997 indicated a young-of-the-year steelhead population of approximately one to two juveniles per pool above the Lake Creek culvert, and five to seven juveniles above the Manganese Creek culvert. This data indicates the culvert replacement does pass fish and historical spawning and rearing habitat are being utilized. From this data, we feel that populations of salmonids within Rock Creek have increased.

Spawning Surveys

Spawning surveys provide information on adult returns (escapement) and help quantify estimated smolt production. Sand Rock productive flat and Rock Creek were identified as long term spawning survey sites for the South Fork Coquille River. The Oregon Department of Fish and Wildlife conduct yearly surveys of approximately 18 miles on the Elk River, so our focus is upon the South Fork Coquille River. Results of the survey are listed in the below. Yearly variations in water clarity can greatly influence peak counts. Steelhead are extremely hard to count. They spook easily and can often spawn and leave in a matter of days. These counts through time will be useful in verifying whether restoration activities targeting sensitive species (specifically Coho salmon) are increasing returns. **Spawning survey counts of salmonids within SF Coquille River watershed.**

<u>Location</u>	<u>94-95</u>	<u>95-96</u>	<u>96-97</u>
	<u>COHO</u>		
Sand Rock Flat	No Data	2	4
Rock Creek	No Data	2	2
	<u>STEELHEAD</u>		
Sand Rock Flat	4	4	5

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Rock Creek	10	18	29
		<u>CHINOOK</u>	
Sand Rock Flat	No Data	34	39
Rock Creek	No Data	0	0

Miles of stream surveys are conducted each year along with spawning surveys and macroinvertebrate surveys. These surveys tend to show the natural variation in the numbers of fish in a particular stream reach from year to year. Distribution of fish within a stream system can shift with stream conditions.

RESOURCE ELEMENT: CT121(a) Endangered, Threatened, Sensitive, and Unique Species

Monitoring Questions

PEREGRINE FALCON

1. Are existing nest sites producing young as anticipated?
2. Are surveys being completed to locate new or previously unknown nest and roost sites?
3. Are potential sites being protected?

The peregrines at Agness Cliff site were allowed to nest unaided by human intervention in 1998. The peregrines were productive during the breeding season in 1998. Three chicks were banded.

Marial nest site was visited twice in 1998, and apparently failed again. Marial nest site has passed the threshold of concern/variability. Monitoring has not documented young in this eyrie since 1988. It failed in 1989, 1991, 1992, and 1998, and the historical eyrie was vacant in 1995 and 1996. Monitoring this site is important in 1999.

One survey was conducted in the Quosatana Creek watershed. No falcons were observed. Peregrine falcon surveys on several potential sites in timber sale area vicinities need to be reinitiated.

No impacts to potential peregrine falcon habitat occurred during FY 1998.

OTHER SPECIES

4. Are habitat inventories and surveys being completed as scheduled?

We conducted surveys for great gray owls on over 8,640 acres on Chetco Ranger District with no response. We monitored two pygmy owl sites on Chetco Ranger District and found occupancy in both sites. In a cooperative partnership survey with the Redwood Sciences Laboratory, 360 station visits of tracking plates on Chetco and Gold Beach Ranger Districts detected one fisher, two martens, and other species as well. In partnership with Hawkwatch, the Illinois Valley and Galice Ranger Districts surveyed over 3000 acres for northern goshawks.

A camera survey for furbearers on the Powers Ranger District was conducted from November 1997 through April 1998. American marten were detected at four of the 17 camera stations. Other mammals and avian species were detected, and included spotted skunks, bobcats, northern flying squirrels, etc. However, fisher were not detected.

Marbled Murrelets

We conducted 491 survey visits for marbled murrelets covering 14,730 acres. From these visits, we detected both nesting and visiting murrelets at many sites. Many of the survey visits, though none of the detections, were outside the known range of murrelets. The Forest is pursuing a change to the survey protocol for marbled murrelets which would redefine the range where monitoring is required. Numerous surveys covering several years are verifying that the current range is too far inland.

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Since January of 1998, monitoring of equipment noise levels associated with construction and renovation of the Ludlum House Recreation Area was conducted to record changes in noise levels by power equipment above ambient noise levels. Stations were set up at 0.1, 0.2, and 0.3 mile intervals away from Ludlum House (one station at 0.25 mile along Wheeler Creek), with an initial start reading at Ludlum House. Decibel meter readings were conducted for a minimum of two minutes at each station; ambient conditions, such as wind, rain, etc. were recorded.

Seasonal restrictions were placed on construction activities to minimize noise disturbance impacts. These measures were taken due to presence of both northern spotted owls and marbled murrelets within 1/4 mile of the site. Changes to seasonal restriction were approved to allow for construction activities to operate using the daily murrelet restriction, but allowing for operations prior to the June 15 owl restriction. Monitoring continued throughout the breeding season. Conclusions reached by this study:

- Ambient noise levels appeared higher during winter months. Factors which raised the noise level in the winter included:
 1. A heavy rain raised noise levels as much as 10 decibels on 1/23.
 2. Noise associated with higher water flow in Winchuck and Wheeler Creeks added 5-10 decibels to those stations in proximity to water.
 3. Foliage in the area did not dampen noise from equipment or water. Most vegetation in the area is deciduous and the leaves are not present to intercept or buffer noise.
- During summer months, foliage dampened equipment and water noise levels. Noise levels remained almost constant at distances of 0.2 mile from Ludlum House regardless of equipment working or not.
- Equipment operations did not appear to raise noise levels more than 10-15 decibels above ambient levels.
- Most equipment operation at Ludlum House (0.0 mile) could not be heard above ambient noise levels at 0.1 mile or further.
- Equipment operating in the campground (0.0 to 0.1 mile) could not be heard above ambient noise levels past 0.1 mile from source.

Del Norte Salamanders

Many populations of Del Norte salamanders were found during surveys conducted on 1100 acres, 1400 acres, and over 800 acres on the Illinois Valley, Galice, and Chetco Ranger Districts, respectively.

Monitoring has been ongoing at Gold Beach District to determine the adequate size of buffer required by this species. Four timber harvest units were visited in November of 1997 to search for Del Norte salamanders. One unit is a 13-year old clearcut where a clump of trees was left standing on a rock outcrop. 33 salamanders were found, including juveniles and sub-adults. The site appears to have a viable and reproducing population of salamanders. Extrapolating the results of this survey to other harvest areas may not be appropriate due to specific site conditions being favorable at this location.

Two timber harvest units proposed for commercial thinning have been monitored prior to harvest activities. Capture rates of salamanders was 2.9 and 3.6 per hour at these locations. The hypothesis on these sites is that the retention of at least 40% crown cover following the thinning will allow impact to the salamander population to be minimal and post-harvest sampling will reveal similar capture rates. An additional site where salvage of dead Port-Orford-cedar trees has been proposed is expected to have similar results. Recommendations include that monitoring needs to look at the whole range of the salamander, and how populations change with distance away from talus areas adjacent to clearcuts or other harvest activities.

RESOURCE ELEMENT: CT121(b) Bald Eagle

Monitoring Questions

1. Are existing nest sites producing young as anticipated?
2. Are potential sites being protected?
1. Are surveys being completed to locate new or previously unknown nest and roost sites?

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Watson Creek sites were active this year.

No occupied sites on Gold Beach Ranger District have been impacted. Two additional sites with eagles (Copper Canyon downriver of Agness and Quosatana Creek) have not been impacted.

Limited surveys were conducted in Quosatana Creek and along the entire length of the Rogue River from Jet Boats. No new nests were located.

In summary, no thresholds of concern or variability were exceeded.

RESOURCE ELEMENT: CT121(c) Northern Spotted Owl

Monitoring Questions

Determine pair occupancy and, where possible, reproductive status of spotted owls within HCA-1s.

1. Are HCA's occupied by the required pairs (20) of reproductively successful spotted owls in any given year?
2. What are trends in pair occupancy, breeding status, and reproductive success of HCA's through time?
3. How correct are the assumptions and expected outcomes of implementing the S&G's detailed in the Habitat Conservation Strategy for northern spotted owls?
4. What are the general population trends of the northern spotted owl in the Forest Matrix?
5. Are HCAs being managed as required by S&G's?
6. Is potential habitat being surveyed for northern spotted owls?

The northern spotted owl network established by the Forest Plan (1989) was amended by the Northwest Forest Plan. Due to the establishment of Late-Successional Reserves, monitoring of this original network is no longer needed. Northern spotted owls occupy and reproduce in the late-successional habitat.

Through a Regional effort, the Northern spotted owl population is being monitored at selected sites throughout their range. In 1998, existing spotted owl activity centers were surveyed on the Powers Ranger District

RESOURCE ELEMENT: CT121(d) Sensitive Plants

Monitoring Questions

1. Are sensitive plant populations being maintained?

Yes. Surveys were conducted for all ground disturbing activities on all Ranger Districts. We compiled all known sites for sensitive plants which were discovered during the year. Due to the 1994 Forest Plan amendment, evaluating the need for monitoring all Management Indicator Species should occur.

Monitoring took place following hazard tree removal in Daphne Grove Campground on Powers Ranger District. This campground contains a viable population of *Tritelea hendersonii*, a Region 6 sensitive plant. Two conifers were removed within the middle of the known population. An interdisciplinary team process identified concerns and issues regarding this population. A list of 7 recommendations was sent to the Sale Administrator and filed in the process records for this sale. Implementation of the seven recommendations did occur and all standards and guidelines were followed.

RESOURCE ELEMENT: CW121(a) Pileated Woodpecker

Monitoring Questions

1. Are the areas suitable habitat for pileated woodpeckers?
2. Is there evidence of pileated woodpeckers (diggings, cavities, birds)?

3. Are the number of areas identified in the plan being maintained?
4. Are the areas occupied and productive?

The pileated woodpecker network established by the Forest Plan (1989) has been amended by the Northwest Forest Plan. The monitoring of this original network is no longer needed. Late Successional Reserves set up by the Northwest Forest Plan are being maintained. Pileated woodpeckers occupy and reproduce in the late-successional habitat.

RESOURCE ELEMENT: CW121(b) Pine Marten

Monitoring Questions

1. Are the areas suitable habitat for pine martens?
2. Is there evidence of pine marten (scat, tracks, animals)?
3. Are the number of areas identified in the plan being maintained?

The pine marten network established by the Forest Plan (1989) has been amended by the Northwest Forest Plan. The monitoring of this original network is no longer needed. The Late-Successional Reserves set up in the Northwest Forest Plan are being maintained.

RESOURCE ELEMENT: CW121(c) Osprey

Monitoring Questions

1. Are existing nest sites occupied?
2. Are surveys being completed to locate new or previously unknown nest and roost sites?
3. Are potential habitat sites being maintained, as specifically described in the S&G's?

The population, productivity, and breeding success of ospreys in the lower reaches of the Rogue River has been continuously monitored since 1992 on the Gold Beach Ranger District .

To display the trend in osprey presence in Oregon, a literature search revealed that Marshall (1969) made a quantitative attempt to determine the population size of ospreys in Oregon. Marshall reported 56 confirmed active nests and seven non-confirmed nests.

A 1972 Rogue River osprey population estimated by Roberts and Lind mentioned 42 nest sites along the Rogue drainage and its environs. This population also included the headwater, lakes, and reservoirs. There were 16 active nests in 1971, and 17 in 1972.

A 1976 Rogue River osprey survey by Henny et al (1978) documented 33 pairs of osprey along the entire length of Rogue River. Our estimates are for the lower 43 miles, which is approximately 1/3 of the Roberts and Hind (1972) and Henny et al. (1978) survey area.

Nests were monitored by boat-based and/or vehicle-based surveys depending on the accessibility of the particular stretch of river or land concerned. Observations were made by using binoculars and spotting scopes from locations providing better vantage point. New territories were also included for studies during each breeding season.

Active Territories

Active territory or active nest has been determined if one or more ospreys were observed perched on or adjacent to a nest. Territories were also deemed to *be Active* if the nest appeared to be in good condition and osprey(s) were seen in the vicinity exhibiting behaviors that indicated nest occupancy. The number of active territories in the study area gradually increased from 33 in 1992 to 43 in 1998 (TABLE 2).

TABLE 2. Account of Osprey Territories and Percent Active Territories by Year.

	1992	1993	1994	1995	1996	1997	1998
Total no. of territories	44	60	59	62	64	66	60
Active territories	33	34	33	39	42	44	43
% active territories	75	52	56	63	66	67	72

Reproductive Success

TABLE 3 illustrates yearly account of active territories, number of territories failed due to environmental hazards, and mean clutch size derived on the basis of nests and chicks with complete data.

TABLE 3. Productivity Data of Rogue River Ospreys During the Study Period (1992-1998).

	1992	1993	1994	1995	1996	1997	1998
Active Territories	33	34	33	39	42	44	43
Number of nests activity unknown	0	2	7	1	1	2	3
Number of territories known to fail	0	2	2	5	6	5	6
Minimum no. of chicks produced	33	15	48	40	32	53	48
Territories with complete chick data	7	8	18	19	16	22	26
Number of chicks where data complete	13	13	42	35	28	48	44
Mean clutch size (where data complete)	1.86	1.62	2.33	1.84	1.75	2.18	1.69

Osprey Summary

The Rogue River osprey population had increased between 1972 and 1992, and continued to increase through the 1998 field season. On the basis of recoveries of ospreys banded in New York and New Jersey, Henny and Wight (1969) calculated that each breeding pair in the population would have to produce an average of 0.95-1.30 per year in order to maintain population stability. In another study done by French and Koplin (1972), the average production of ospreys in Northern California fell between 1.18 and 1.20 fledgling per active nest. The average production of Rogue River ospreys is 1.89 fledgling per active nest. If ospreys in southern Oregon are subject to the same mortality schedules as ospreys in New York and New Jersey, then the Rogue River osprey population is likely to continue to increase.

RESOURCE ELEMENT: CW121(d) Woodpeckers

Monitoring Questions

1. Are snags and replacement trees being left in the right numbers, sizes, and distribution on lands available for timber removal?
2. Are snags and replacement trees being maintained as planned on all other lands?

Wildlife trees are being left in the appropriate numbers on sales. The green tree retention and snag standards and guidelines in the Northwest Forest Plan apply to new sales being prepared. In addition, 65 trees were topped or girdled in four timber sale units.

RESOURCE ELEMENT: CW121(e) Deer and Elk

Monitoring Questions

1. Are ODFW trend count data showing a non-predicted change in habitat capability?

2. Are the S&G's being followed as required to meet established habitat capability goals?

Monitoring for trend count needs to continue for a longer period to detect trends in habitat capability. However, the State goals for deer and elk need to be reevaluated in light of the 1994 Forest Plan amendment. With far fewer acres allocated to activity acres, habitat capability will measurably decline.

Six radio-collared elk were tracked by radio telemetry to monitor their movement in the Eden Valley Elk Project on the Powers Ranger District.

RESOURCE ELEMENT: DN121 Range

Monitoring Questions

1. Is vegetation condition and trend being maintained or improved? Have areas in unsatisfactory condition improved?

Yes. Vegetation condition is maintained or improving. Grazing animal numbers have been reduced in some allotments. Other allotments that have not been used for a decade or more have been closed. Only a few (six), small allotments remain. The need to continue "grazing" as a Forest Plan output and accomplishment item is questioned.

Known noxious weed populations are being monitored on the Galice Ranger District. Where treatments have been implemented, numbers of weeds on the sites have been counted. Areas of weeds that were hand pulled have shown a significant decrease in numbers of yellow starthistle from 1996 to 1998. TABLE 4 below lists some locations where noxious weed populations are being removed.

It is apparent we can be successful at removing noxious weeds if the population is identified early. Unfortunately, 6 new sites were found on Galice Ranger District alone in 1998. If you identify a few noxious weeds on one of your visits to the National Forest, please let personnel at your local Ranger District office know of the location.

TABLE 4. Noxious Weed Population Changes by Location for Years 1996-1998.

Weeds	Location	# in 1996	# in 1997	# in 1998
Yellow star thistle	Bald Mountain	143	7	0
Scotch broom	Brown's Gulch	200	no data	176
Scotch broom	Burned Timber Ridge	246	11	187
Yellow star thistle	Burned Timber Unit 9	2000+	1000	brush overtop
Scotch broom	Elkhorn Mine	120	161	19
Yellow star thistle	Hayes Hill	754	47	20
Dyers woad	Highway 199	425	370	250
Yellow star thistle	Highway 199	no data	2000+	1000+
Yellow star thistle	Hobson Horn	23	13	11
Yellow star thistle	Horse Creek Mdws.	954	240	14
Yellow star thistle	Lost Flat Road 2402	no data	2000+	2000+
Yellow star thistle	Shasta Costa	149	54	8
Yellow star thistle	decommissioned rds.	no data	5	2

RESOURCE ELEMENT: ET121(a) Port-Orford-cedar

Monitoring Questions

1. Is the rate of spread of the disease increasing or decreasing?
2. Have sale activities been monitored where management strategies have been prepared?
3. Are the strategies effective?
4. Is the disease spreading along road systems?

During 1998, a program to monitor the effectiveness of POC roadside sanitation treatments was initiated. The objective of the monitoring is to determine whether roadside sanitation is actually an effective technique and to be able to share the results internally and with the public.

We began to analyze whether:

- inoculum dies out as POC roots decay after roadside sanitation
- inoculum is introduced and/or re-introduced from roads
- inoculum is traveling through sanitized area to adjacent stands

We planted POC seedlings along roadsides and in ditchlines to determine if inoculum was present that would kill the seedlings. Some very early preliminary results include that we can detect inoculum and the probable source. We found most of the inoculum along roadsides, in ditches and below culverts. We found very little at outer edges of transects, near edges of adjacent stands. It appears that inoculum does decrease beginning 4 years after removal of host material. We need to continue with a lot of transects and follow for a number of years to refine techniques. It is important to track characteristics of the location of each seedling to determine source of inoculum. It is important to repeat transects over time to detect persistence and/or re-introduction of inoculum. The timing of the test is important. We didn't get good results when transects were installed in February (soil and water too cold), and by end of June soil was getting too dry for planting.

In future years, we would like to re-sample transects in road segments sampled in 1997 and 1998 and add new transects. We would like to install more transects on road segments that are going to be sanitized and repeat after sanitization. We hope to continue sampling for at least 5 years in an operational monitoring program.

Monitoring Effectiveness of Disease Spread Mitigation

Since 1992, dozens of resource management projects have been monitored for implementation and effectiveness of mitigation measures aimed at preventing the spread of *Phytophthora lateralis* root disease. The monitoring was accomplished on a variety of projects, including road construction, timber sales, POC bough collection, roadside sanitation, road maintenance, mining operations, fire suppression, slash burning, trail construction, and others.

The monitoring included separate ratings on implementation and effectiveness of various control measures. The intent of providing this summary is to try and deduce what has been effective over the past several years and share the amount of work and information collection that has been ongoing on the Siskiyou National Forest. A couple of key things to note while interpreting the monitoring information:

1. The ratings given to any particular control measure are based on a subjective evaluation by the person giving the rating. We may not be able to duplicate the results.
2. The definition of "fully successful" in the effectiveness ratings is not completely described. For example, it is not clear whether a rating of fully successful can be assumed to mean "no new disease spread was found in the affected project area." The rating of effectiveness also does not necessarily relate directly to whether or not the root disease was spread to new areas as a result of management activities. However, additional information found in narrative summaries of project monitoring indicate that very little disease spread occurs as the result of programmed management activities.

Implementation of a mitigation measure was rated on a scale of 1-5, with 1 meaning the control measure was not implemented and 5 meaning all aspects of the control measure were fully implemented. We have been fairly successful at implementing the following mitigation measures. Average ratings of 4.0 or higher is assumed to mean that the mitigation measure was implemented a majority of the time it was prescribed.

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<u>Mitigative Measure</u>	<u>Avg. Rating</u>	<u>Number of Observations</u>
.. Avoid roads above uninfected areas	5.0	2
.. Control measures in service contracts.	5.0	2
.. Post activity monitoring.	5.0	1
.. Directing road drainage into existing streams.	5.0	7
.. Coordinate with private landowners	5.0	1
.. Equipment wash before entering project area	4.9	35
.. Equipment wash before leaving project area	4.9	39
.. Sanitize roadsides.	4.7	30
.. Locating roads on ridges and out of stream bottoms.	4.6	5
.. Controlling access routes into and through POC areas	4.6	30
.. CFR closures for seasonal road closures.	4.6	17
.. Identifying and using Phytophthora-free water for fire suppression.	4.6	16
.. Dry season road construction	4.5	73
.. Operating activities in priority order (uninfected first, infected last).	4.4	31
.. Closing Roads.	4.4	77
.. Dry season timber sale operations.	4.3	70
.. Operating activities in priority order (timber operations)	4.1	16

We recognize that a more scientifically reproducible method of monitoring these activities needs to be developed. Sampling in the field with clearly defined criteria for success or failure will aid in determining usefulness of these mitigations. Nonetheless, this information that has been collected for the past several years is valuable.

The mitigation measures may be effective at controlling the spread of the disease, but either through implementation of the mitigation measure or lack of complete control of access routes, these measures failed in some areas. Again, this does not mean new disease infections were introduced by the project. For instance, closing roads and controlling access during wet weather received lower effectiveness ratings because in some locations a gate was destroyed or barriers were driven around. While the mitigation measure may not have been rated as wholly effective, it is noted that the disease was also not necessarily introduced.

Other control measures which received lower ratings were not implemented as consistently. This does not mean that control measure would not be effective. It means that given our contracting regulations, budget, and operational structure, we were not able to implement the desired activity consistently. Difficulties implementing the strategy could lie within any of these areas.

The control measures which appear to be the **most effective** include (rated on a scale of 1-3, with 1 being not effective and 3 being fully effective):

<u>Mitigative Measure</u>	<u>Rating</u>
.. Controlling direction of haul and access to an area.	2.9
.. Operating activities in a priority order (uninfected first, infected last).	2.9
.. Dry season road construction and timber sale operations.	2.9
.. Equipment wash before entering project area.	2.9
.. Equipment wash before leaving infected area.	2.9
.. Sanitizing roadsides.	2.9
.. CFR closures.	2.9
.. Identifying and using disease free water for fire suppression.	2.9

The control measures which appear to be **partially effective** include:

.. Control of road access during wet weather	2.7
.. Closing roads to protect uninfected areas	2.5
.. Dry weather road surfacing	2.5

RESOURCE ELEMENT: ET121(b) Destructive Insects and Diseases

Monitoring Questions

1. Are there significant damage and growth reductions due to insects and disease?

There are no large scale significant damage or growth reductions due to insects and disease. There is localized mortality of pine and fir due to stocking densities/drought/age/water competition. Affected trees are generally scattered concentrations, tend to be large trees, and occur in locations where moisture is limiting for growth and survival. Direct cause of mortality in pine appears to be bark beetles aggravated by moisture stress. The amount of mortality appears to be increasing on the eastside of the Forest.

RESOURCE ELEMENT: ET121(c) Land Suitability

Monitoring Questions

1. Are there changes in the land base that could have implications for adjusting levels of activities or outputs? (Forest Plan has a threshold of 10,000 acres change in suitability classification the first 10 years.)

There are no changes beyond the threshold. The Northwest Forest Plan substantially reduced the land base for programmed timber harvest. It also adjusted the level of timber harvest.

RESOURCE ELEMENT: ET121(d) Acres and Timber Volume Harvested

Monitoring Question

1. Are timber outputs comparable to those in the Forest Plan?

Timber outputs met what was projected under the Forest Plan as amended by the Northwest Forest Plan.

RESOURCE ELEMENT: ET121(e) Harvest Unit Size

Monitoring Question

1. Is the Forest exceeding the 60-acre size limit?

All even-aged regeneration harvest units are less than 60 acres. Due to the 1994 Forest Plan amendment and current practices, the need to track this item is questionable.

RESOURCE ELEMENT: ET121(f) Reforestation and Intensified Forest Management Practices

First year survival of planted seedlings averaged 79% in 1998. Third year survival averaged 91%.

Monitoring Thresholds

These thresholds relate to regeneration of harvest areas within 5 years, plantation tree stocking, growth, and yields.

1. 10% or more of the acres having reforestation lag time greater than five years:

None of the acres have a reforestation lag time greater than five years.

2. 10% or more of the acres being certified as stocked with less than the recommended stocking level:

With the addition of natural seedlings, none of the certified acres are below the recommended stocking level. It is estimated that 98% of acres meet minimum stocking levels with planted seedlings.

3. 30% or more of the acres prescribed for precommercial thinning (PCT) in site-specific silvicultural treatment prescriptions do not receive treatment in the year planned; or 10% or more do not receive treatment when prescribed needs are accumulated over a three-year period (Forest Plan projected a yearly average of 2397 acres of precommercial thinning during the first decade):

In 1998, 1,202 acres received a precommercial thinning treatment. This represented more than the maximum of 30% which did not receive treatment. Over the three-year period, more than 50% of the acres with a precommercial thinning prescription did not receive treatment. Many of these acres are plantations located within the Late-Successional Reserves, lands not programmed for timber harvest. These acres will not reach their desired condition as quickly as planned (per Forest Plan) either for timber production or wildlife habitat.

4. 30% or more of the acres prescribed for release in site-specific silvicultural treatment prescriptions do not receive treatment in the year planned; or 10% or more do not receive treatment when prescribed needs are accumulated over a three-year period (a yearly average of 4469 acres of release projected during first decade):

We did exceed these thresholds in 1998. More than 40% percent of the lands with this silvicultural precommercial prescription have not received treatment. Only 1,577 acres received treatment in 1998. Over the three-year period, more than 30% of the acres have not received treatment. Most of these acres are plantations located within the Late-Successional Reserves, lands not programmed for timber harvest. These acres will not reach their desired condition as soon as if they were treated.

5. 50% or more of the acres prescribed for fertilization in site-specific silvicultural treatment prescriptions do not receive treatment in the year planned; or 10% or more do not receive treatment when prescribed needs are accumulated over a five-year period (Modeled outputs were calculated based on fertilizing 5,770 acres during the first decade of the Forest Plan.):

Less than 20% of areas prescribed for fertilization were completed in 1998. The 282 acres accomplished is well below the 50% threshold. Less than 45% of prescribed fertilization projects have been treated in the last five years. In general, the number of acres fertilized is not meeting the prescribed treatment due to a large percentage of the acres falling within Late-Successional Reserves.

RESOURCE ELEMENT: ET121(g) Biological Diversity

Monitoring Question

1. What is the present distribution and proportion of seral stages by plant association (FEIS, Ch III, Table III-37)?
 - How do they compare to past distributions?
 - What distribution and proportion is expected in the future?
 - What are the trends?
 - Does the distribution, proportion, and absolute amount provide viable habitat for management indicator species, rare species, and biological diversity?
2. Has habitat capability changed?
3. What is the present status of sensitive species?
 - What are the population numbers?
 - What is the distribution of known sites?
 - Is there a trend in population density?
4. What are the trends in overall species diversity on the Forest?
 - Are there trends in species richness?
 - Are there relationships to management practices and direction?
 - Are there relationships with natural processes or events?
5. Can species/habitat relationships be established from present data?

The Southwest Oregon Ecological Assessment Team has published some general data needed for monitoring of biological diversity (PNW Region, June 1993). The Late-Successional Reserve Assessment also addresses these questions. However, the best source for more site-specific information is found in the analysis of the terrestrial landscape in the individual watershed analyses.

Trends in the distribution and proportion of seral stages is dependent on the location and management which have occurred in any particular area. For instance, in southwest Oregon, expected frequency of late seral stage forest is 40-75% of the landscape. The current level in Hunter Creek is less than 4% for the entire watershed, while Indigo Creek has 28% and Elk River has 23% currently in late seral stage. Much of the Hunter Creek watershed is in private industrial ownership, however, and a large increase in late seral forest is not likely to occur in the future. Even by 1940, prior to the onset of timber harvesting, human-caused fires had reduced late seral forest in Hunter Creek to 37%.

It is estimated that in 1890, late seral forest in Elk River was about 39% of the watershed. It is estimated that late seral forest in Indigo Creek was about 49% of the watershed in 1947. Indigo Creek is a more remote location with less human disturbance historically. The fire return interval is also shorter overall at 25-90 years, depending on the plant association. Fire interval in the two coastal streams (Elk River and Hunter Creek) is estimated to be 100-150 years, therefore we would reasonably expect a higher level of late seral forest in these watersheds. The fact that the late seral forest was actually lower at the turn of the century in the two coastal watersheds than Indigo Creek is due to human influences. The current trend on National Forest lands of continued fire suppression and lack of timber harvest will result in a paucity of pioneer stages in the short term.

The trends of vegetative structure influences the mix of wildlife, plant, and other biotic species. On Federal lands, the trend will be an increase in species dependent on late seral forest structures and a decrease in species associated with pioneer and early forest structures. Private industrial lands will likely remain in pioneer or early seral stages. For more detailed information regarding all of these monitoring questions, refer to individual watershed analyses.

RESOURCE ELEMENT: ET121(h) Social and Economic Setting

Monitoring Questions

1. What is the average yearly unemployment rate for Josephine, Jackson, Coos, and Curry Counties?
2. What is the demand for timber?
3. What is the demand for recreation?
4. What are the social and economic trends in local communities?

The average yearly unemployment rate and per capita income for the four county area from 1991 to 1998 is available from the Oregon State Employment Office Economist in Medford, Oregon (541 776-6060).

The demand for timber is high, though the log prices have fluctuated due to market conditions. There were not enough sales sold from the Siskiyou National Forest to accurately determine the bid price ratio.

There is less than 80% use of the carrying capacity in primitive and developed recreation campgrounds. In Wilderness areas, last year's use was less than 20% of the carrying capacity. However, limits of acceptable change are being examined on two sites popular with local residents.

Shifts in local communities' beliefs and values continue as stated in the Siskiyou National Forest FEIS and the Northwest Forest Plan. Immigration into the area continues.

Supplemental Forest receipts with Federal funds were implemented to maintain the level of payments to counties, commensurate with the amount of collections. The threshold of a 25% annual reduction in the payments to counties has occurred. The Northwest Forest Plan is the area to address this issue.

RESOURCE ELEMENT: FA121 Suspended Particulates

Monitoring Question

1. Does Total Suspended Particulate produced from planned ignitions exceed 7300 tons Forest-wide annually?

There were 672 acres of planned ignitions and 641 tons of suspended particulates emitted from these burns. This is far below the threshold of 7,300 tons. This monitoring item will need to be adjusted to the current level of timber harvest and planned ignitions for activity fuels abatement. In addition, planned ignitions for fuel reduction not related to timber sale activities needs to be factored in as well.

RESOURCE ELEMENT: FW121(a) Water Resources - Best Management Practices

Monitoring Questions

1. Are water resource-related BMP's being implemented?
2. Are water resource-related S&G's and BMP's effective for:
 - Maintaining or enhancing water quality and the beneficial uses of water?
 - Allowing compliance with State water quality requirements

The water resource-related BMP's are being implemented. The Forest Plan Standards and Guides and associated BMP's are effective for maintaining and enhancing the water quality and beneficial uses of water. The Forest has been in compliance with State water quality requirements. Field reviews of road rehabilitation and decommission projects evaluated drainage, infiltration, erosion and revegetation following one and more years after decommissioning. Pullback and waterbars produced stable erosion-proof surfaces capable of supporting plant growth. The ripped roads remained stable following the next period of rainfall. Our observations indicated little or no surface erosion, or reestablishment of drainage patterns, and we noted some success in revegetation.

RESOURCE ELEMENT: FW121(b) Soil Productivity

Monitoring Questions

1. Are soil and site organic matter and nutrient levels being maintained following timber harvest and site preparation?
2. Are soil physical properties being maintained following timber harvest and site preparation?
3. Is growth of trees being maintained at satisfactory rates?

The timber sale monitoring accomplished in 1998 shows that new units exceed Northwest Forest Plan standards for large woody material (LWM).

The timber sale monitoring showed that mineral soil exposure and subsequent erosion is well below the respective 15 to 40 percent sliding scale limits for S&G 7-4 for a large majority of units reviewed. Detrimental soil conditions, i.e., compaction, puddling, displacement and/or severely burned criteria of S&G 7-2, were met. Bulk density, porosity, aeration and infiltration of water are maintained following yarding and slash burning. We assume that where no disturbance of the forest floor and soil occurs, the soil bulk density, porosity and water infiltration rates will be unaffected.

Current surveys contain validation of satisfactory growth rates.

RESOURCE ELEMENT: FW121(c) Water Resource - Activity Constraints

Monitoring Question

1. Are the timber harvest basin constraints for scheduling timber harvest in the Planning Basins and Watershed Analysis Areas (WAA's): Being applied according to the S&G's? (WAA's only). Adequate for minimizing the potential for adverse cumulative effects (on/off Forest) on (1) Stream channels, and (2) water quality and the beneficial uses of the water? (Some examples of adverse cumulative effects are channel aggradation, loss of riparian vegetation and stream bank stability, etc.)
2. Are the effects within the range predicted in the FEIS?

Timber harvest basin constraints are well below analyzed levels predicted in the Forest Plan. The Aquatic Conservation Strategy adopted by the Northwest Forest Plan is being followed, which provides a high degree of protection for water quality and stream channel conditions. The range of effects are within the range predicted in the Forest Plan FEIS, as amended by the Northwest Forest Plan.

RESOURCE ELEMENT: FW121(d) Water Quality

Monitoring Question

1. What are the landslide statistics on managed versus unmanaged lands?

The assessment report for the storms of November and December of 1996 was released this past year. The findings indicate that landslides varied considerably from watershed to watershed, and that storm intensity, snowpack/elevation, and susceptibility to landslides (soil type) were the main factors affecting landslide density. Major storms displayed a cellular nature, which caused wide variation in the amount of precipitation from one area to another. Field surveys conducted for this assessment indicated that streamside landslides triggered by scouring and undercutting of passing debris flows are larger and more numerous in areas that have been harvested. Another key finding from the assessment is that increased numbers and volumes of streamside landslides were caused by inadequate drainage of roads, road fill material diverting stream flow into stream banks, and debris flows initiated by roads. Hillslopes in natural settings, i.e., areas undisturbed by human activity, were also found to have a higher amount of scouring and undercutting than we would have anticipated.

RESOURCE ELEMENT: FW121(e) Acres Burned

Monitoring Question

1. Do acres burned by fire size class per decade exceed the frequency and size distribution as presented in the Fire Management Action Plan?

With the current trend towards closure of roads, reduced personnel, and reduced forest stand management will come a potential for increase in the average size of fires. Prescribed natural and planned ignition fires may be able to offset this potential, however, accomplishment thus far in this program has not met anticipated levels. This monitoring item needs to be evaluated further and a good look taken at the tradeoffs between prescribed fire, wildfire, anticipated budgets, and forest access. The estimations for frequency and size distribution of wildfires in the Forest Plan may be out of date.

RESOURCE ELEMENT: GM121 Minerals

Monitoring Questions

1. Are the Standards and Guidelines for mineral operations reasonable and effective?
2. Are the rehabilitation Standards and Guidelines reasonable and effective?

The Standards and Guidelines provide reasonable and effective management of impacts from mining. The impacts of mining, on a watershed scale, is but a fraction of the natural sedimentation and erosion rates. Generally, mining entails short-duration, small recreational suction dredge operations having an average production rate approximating one-half cubic yard per hour of dredge running time. Observed impacts have been minuscule when compared to natural processes. No declines in surface resources and environmental quality for fish habitat, wilderness, wildlife, and soil have been observed. Rehabilitation as prescribed in the Standards and Guidelines is directed in approved Plans of Operations.

Minerals monitoring involves site visits for on the ground observations of activities, photographs, documentation of material moved to corroborate with operators intentions, and aerial surveys of mining sites.

SUMMARY TABLES OF MONITORING RECOMMENDATIONS

TABLE 5 Summary of Recommendations for Forest Plan Standards & Guidelines Monitoring.

Monitoring Item	Continue to Monitor	Change Practice	Evaluate further	Propose Adjustment
All Elements - S&Gs Used	X		X	
Forest Outputs & Budget	X		X	
AN121(a) Recreation (Undevelop)	X			
AN121(b) Wild & Scenic Rivers	X		X	
AV121 Visual	X			
AW121 Wilderness	X			
CF121 Fish Habitat	X			
CT121(a) T&E, Sensitive, & Unique Species Peregrine Falcon Other species	X X X			
CT121(b) Bald Eagle	X			
CT121(c) Spotted Owl	X		X	X
CT121(d) Sensitive Plants	X			X
CW121(a) Pileated Woodpecker	X		X	X
CW121(b) Pine Marten	X		X	X
CW121(c) Osprey	X			
CW121(d) Woodpeckers	X			
CW121(3) Deer & Elk	X			X
DN121 Range Condition	X			X
ET121(a) Port-Orford-cedar	X			
ET121(b) Destructive Insects & Diseases	X			
ET121(c) Land Suitability	X		X	X
ET121(d) Timber Harvested	X			
ET121(e) Harvest Unit Size	X			X
ET121(f) Reforestation & Intensive Forest Mgt. Practices	X		X	X
ET121(g) Biological Diversity	X			
ET121(h) Socio-economic Setting	X			
ET121(i) Economics	X			
FA121 Suspended Particulates	X		X	X
FW121(a) Best Mgt. Practices	X			
FW121(b) Soil Productivity	X			
FW121(c) Water Resources	X			
FW121(d) Water Quality	X			
FW121(e) Acres Burned	X		X	X
GM121 Minerals	X			

NORTHWEST FOREST PLAN MONITORING ITEMS

TABLES 6 through 9 display the required monitoring items identified in the Northwest Forest Plan Record of Decision. For the most part, monitoring of implementation of the Northwest Forest Plan is being carried out at the Regional and Provincial levels. Projects that have been reviewed on the Siskiyou National Forest have not had any problems identified with implementation of these items. The watershed analyses and Late-Successional Reserve Assessment provide baseline conditions for future effectiveness and validation monitoring, and identification of any special monitoring needs.

TABLE 6 Northwest Forest Plan Implementation Monitoring (Page E-4 of ROD).

Monitoring Item	Continue to Monitor	Change Practice	Evaluate further	Propose Adjustment
Late-Successional Reserves	X			
Riparian Reserves	X			
Matrix	X			
Adaptive Mgt. Areas	X			
Key Watersheds	X			
Watershed Analysis	X			
Participation	X			

TABLE 7 Northwest Forest Plan Effectiveness Monitoring (Page E-6 of ROD).

Monitoring Item	Continue to Monitor	Change Practice	Evaluate further	Propose Adjustment
Aquatic Ecosystems	X			
Biological Diversity	X			
Use Levels	X			
Rural Economies	X			
American Indians	X			

TABLE 8 Northwest Forest Plan Validation Monitoring (Page E-10 of ROD).

Monitoring Item	Continue to Monitor	Change Practice	Evaluate further	Propose Adjustment
Northern Spotted Owls	X			
Marbled Murrelets	X		X	X
Fish species or stocks listed as T&E, sensitive or at risk	X			
Rare Species	X			
Mgt. and Health of LSR's	X			

The range where surveys for marbled murrelet are required prior to any ground disturbing activity is larger than the known range where marbled murrelets have been detected. The additional monitoring being done is expensive. No additional murrelets are being discovered in the areas outside of the known range of occupancy over the last several years. We are recommending that required surveys be limited to the documented range of habitat.

TABLE 9 Northwest Forest Plan Effectiveness Monitoring (Page E-10 of ROD)

Monitoring Item	Continue to Monitor	Change Practice	Evaluate further	Propose Adjustment
Environmental Stressors	X			
Rare & Declining Species - Del Norte Salamander	X X		X	X

FOREST PLAN AMENDMENTS

There were no amendments to the Siskiyou National Forest Land & Resource Management Plan in 1998. The Summary Table identified several items which should be reevaluated. Future amendments to the Forest Plan are likely, with selected monitoring criteria being adjusted, deleted, or significantly changed. TABLE 10 lists all the amendments to the Forest Plan which have occurred since May, 1989.

TABLE 10 Siskiyou Forest Plan Amendments

Amendment	Date	Nature of Amendment
1	Aug 1991	Changed the wording for reforestation requirements
2	Dec 1991	Establishment of Long Term Site Productivity Research area (Pistol River)
3	Apr 1992	Adjustment of Project Implementation Schedules
4	July 1992	Land Exchange on Gold Beach and Powers Ranger Districts
5	Aug 1992	Emerald Canyon Unique Interest Management Area addition
6	July 1993	Chetco Wild & Scenic River Management Plan
6a	July 1993	Modified treatment for POC disease control on Chetco Ranger District
7	Sep 1994	Elk Wild and Scenic River Management Plan
8	Apr 1996	Amended Direction for Mining in Riparian Reserves. Corrected incongruity between Mining Direction in Forest Plan, as amended by the Northwest Forest Plan, and the mining regulations of 36 CFR 228.

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