FOREST PLAN

Monitoring and Evaluation Report

Fiscal Year 1999

Lassen National Forest

September 2000

Introduction

When the Lassen Land and Resource Management Plan (Forest Plan) was approved in January 1993, it charted a course of action for the management of the Lassen for a 10 – 15 year period. This report summarizes the results of the Forest Plan monitoring and evaluation conducted during the period from October 1, 1998 through September 30, 1999. Monitoring is defined as the observation, collection, and recording of the results of both natural processes and actions permitted by the Forest Plan. Evaluation is the analysis and interpretation of how those results meet Forest Plan direction, and the identification of measures needed to keep the Plan viable.

This report meets the monitoring requirements of 36 CFR 219, which sets forth the direction for the monitoring, and evaluation of Forest Plans. Direction for the Lassen National Forest is contained in Chapter 5 of the Forest Plan and in the Response to Comments.

It is important to note that this report is not about individual project monitoring, which is an ongoing Forest activity. However, some of the results of individual projects have been considered and aggregated in the preparation of this report.

This report is the resource-by-resource description of Forest Plan monitoring accomplishments and findings compared against goals and objectives. Fore ease of cross-referencing, the format parallels that found in Chapter 5 of the Forest Plan. This section also contains a discussion on why, for some resources, actual outputs differ from projected Forest Plan outputs.

Relationship to Budgets

Annual programs of work to implement, monitor, and evaluate the Forest Plan are influenced by factors that can vary from year to year. Budgets can and do fluctuate as Congress uses the funding process to indicate to the Forest Service those areas it would like to see with more (or less), emphasis. Furthermore, internally within the Forest Service, there can be a change in management priorities. While annual programs can be tied to budget levels, Forest management direction and land allocations are budget-independent; they will be adhered to no matter what budget level is appropriated.

Format of the Monitoring Report

The monitoring and evaluation report is organized as follows:

Forest Supervisor's Certification

Contained in the cover letter attached to this report is the Forest Supervisor's finding on whether plan amendments are needed based on monitoring and evaluation results.

1.Monitoring Activities

Forest Goals and Objectives

Forest Plan goal statements are provided for each resource area, and are taken directly from the information provided in Chapter 4 of the Forest Plan. The goal statements describe, in broad and general terms, a desired condition to be achieved and/or maintained sometime in the future.

Objectives were developed in response to the established goals, and differ in that they are usually quantifiable or measurable results that have scheduled accomplishment dates. While most of the objectives are described as average annual outputs, it is the total output over the ten-year planning period that determines whether a given objective has been achieved. Thus, year-to-year variation is anticipated. Not every resource area has assigned objectives; objectives are described only where applicable.

Program Strategies

Program strategies are described for each resource area. The strategy statement described for each resource area. The strategy statement describes the overall approach and emphasis that is being taken to measure our movement toward desired resource conditions, through Forest Plan implementation. The Forest Plan implementation process establishes the framework for translating management direction (including goals) into specific on-the-ground projects. Program strategies can be modified as new and better approaches to achieving Forest Plan direction are identified such as fuels reduction.

Monitoring Actions

As described in Chapter 5 of the Forest Plan, monitoring actions have been assigned to most resource areas to determine whether the Lassen's programs are effective in meeting the goals of the Forest Plan. Monitoring can also help determine how closely Forest-wide Standards and Guidelines are being met. Information collected for all of the Ranger Districts has been aggregated at the Forest level. Not every resource has assigned monitoring actions.

Accomplishment/Findings

The accomplishments and findings for each resource area describe:

- Reviews and other administrative activities undertaken in fiscal year 1999 as part of the Forest's monitoring and evaluation program.

- Monitoring activities specified in the Forest Plan that were conducted in fiscal year 1999.

2.Evaluation of monitoring results and conclusions.

This section presents the conclusions drawn from the monitoring data collected and evaluated by an interdisciplinary team and the Forest Management Team.

3.Action Plan

Based on the evaluation and conclusions, this section describes what additional monitoring activity is needed (or no longer needed) and/or what plan amendments or revisions are proposed.

4.Status of previous years recommendations

Additional monitoring or amendment/revision activity conducted as a result of prior years' monitoring and evaluations conclusions.

5.Update of research needs

Summary of significant research findings during the years related to Forest Plan monitoring, evaluation and implementation. The research needs section of the Forest Plan (Appendix B) was reviewed to identify research that have been completed of if additions/deletions to our list are recommended.

6.List of Preparers

This section describes the names/disciplines of report preparers/contributors.

7.Location of supporting documentation for monitoring activities

This section provides the location of files and databases where monitoring information may be found.

8.Public participation/disclosure

Describes how the public is going to be informed of the report and its conclusions.

For More Information

For additional information on the programs of the Lassen National Forest, please contact the Lassen National Forest Supervisors Office at:

Land Management Planning
2550 Riverside Drive
Susanville, CA 96130
530-257-2151

1.Monitoring Activities

A. General: Implementation Cost

Forest Goals and Objectives

Provide the maximum fiscal support to all authorized programs, including advice on methods of handling new and unusual situations within available authorities. Conduct financial management and accounting work in an efficient, acceptable, and businesslike manner.

Program Strategy

Use budget allocations in an efficient manner to help move the Lassen National Forest toward its desired future condition.

Monitoring Technique

Compare actual against projected costs of implementing the Forest Plan. Record projected costs versus actual costs from Forest Accounts.

Accomplishments/Findings

BUDGET ACCOMPLISHMENTS

Year	Actual Budget (MM$)	Plan Objective (MM$)*
1993	18.368	24.2
1994	19.687	24.6
1995	19.724	25.1
1996	20.040	25.6
1997	27.778	26.2
1998	22.444	23.6
1999	20.825	22.4

* expressed in nominal dollars

As shown in the above table, the total Forest budget has consistently been below Forest Plan objectives. In addition, the allocation of the total budget to individual program areas has been uneven. Some programs, such as lands and minerals, have traditionally been funded at low levels, while programs such as timber have been funded sufficiently to achieve objectives. As noted throughout the document, some resource areas have had difficulty meeting established objectives because funding levels have been substantially less than the amount needed to fully implement the Forest Plan.

Complicating the problem is overhead costs. These costs have risen at a pace commensurate with other costs, but resource and general administrative allocations have not. Therefore, an increased percentage of resource dollars must be tapped to cover these fixed coats, resulting in less funding for on-the-ground work.

In 1996, the administrative functions on the Modoc, Plumas, and Lassen National Forests were combined into a "Province" team structure. Under this structure, the team provides services to all three Forests and not just one unit. Since this reorganization, there is increasing concern over both the overhead expense and the efficiency of the Province team. Formal monitoring and evaluation of the new structure to enhance customer service and reduce overhead costs occurred in Spring 2000. The results from this review are now available. Recommendations for change to increase efficiency and service are pending at this time.

The forest has aggressively sought cooperative funding with the State of California in resource areas such as recreation; strengthened our partnership efforts where possible; placed campgrounds under

B. General: Project Planning and Implementation

Forest Goals and Objectives

The objective of planning is to provide a sound basis for decision-making in developing and managing Forest Service programs. This is accomplished by:

Fully integrating National Environmental Policy Act (NEPA) requirements into planning and decision- making.

Fully considering the impacts of proposed actions on the physical, biological, social, and economic aspects of the human environment.

Involving interested and affected agencies, state and local governments, organizations, and individuals in our planning and decision-making.

Conducting and documenting environmental analyses and subsequent decisions appropriately, efficiently, and cost effectively.

Program Strategy

Assess compliance of environmental documents with the NEPA requirements and Forest Plan direction. Assess compliance of project implementation with environmental documents.

Monitoring Actions

1. Line officer environmental assessment (EA) review and approval process.
2. Interdisciplinary team (IDT) field review of projects during/after completion.

Accomplishments/Findings

The Forest Service continues to build the skill level of all employees working on environmental analyses. In 1999, on-Forest and Regional Office assistance was provided in the form of employee workshops, document reviews, and consultation with interdisciplinary teams preparing environmental assessments or landscape or watershed analyses.

There were many more appeals of Forest decisions in 1999 than in previous years. Decisions on projects (such as thinnings or other timber harvest, fuels reduction, insect or disease salvage, wind-thrown timber salvage, hazard tree removal, etc.), range management, and various administrative decisions (for example, recreation residences, grazing permits) were appealed. These appeals reflect the public's interest over management decisions that may personally affect them or affect their values on how National Forest lands should be managed. Because of this interest, the Forest Service has placed increased emphasis on community collaboration prior to making decisions. There has been strong growth in this arena as employees attempt to resolve public issues and concerns during the analysis of proposed projects. Public comment is always welcome.

In August 1999, the Forest Supervisors for the Lassen, Plumas, and Tahoe National Forests signed a Record of Decision to implement the 1998 Herger-Feinstein Quincy Library Group Recovery Act. The Act called for forest plan amendments to initiate a five-year pilot program that would test and demonstrated the effectiveness of resource management activities designed to meet ecologic, economic,

and fuel reduction objectives on the Lassen, Plumas, and Sierraville Ranger District of the Tahoe National Forests. The Record of Decision imposed mitigation measures for California spotted owls that restrict harvesting within suitable owl habitat pending completion of the environmental impact statement for the Sierra Nevada Framework Project (mentioned below) within 18 months. Continuing public concern has been expressed regarding the agency's commitment to fully implement the pilot as defined in the Act. Several projects are currently being implemented or planned for the future, but at lower treatment levels than envisioned under the pilot program due to compliance with other environmental laws and regulations.

Since 1999, many forest employees have been involved with the Sierra Nevada Framework Project to prepare an environmental impact statement (EIS) that will amend 11 national forest plans in the Sierra Nevada region. The EIS will display the environmental effects of several proposals for future management of the Modoc, Lassen, Plumas, Tahoe, Eldorado, Stanislaus, Sierra, Inyo and Sequoia National Forests (NF), the Lake Tahoe Basin Management Unit and the portion of the Humboldt-Toiyabe NF in the Sierra Nevada. The EIS is designed to specifically address five national forest problem areas identified during scientific review and public comment as needing urgent attention. The five problem areas are old forests and habitat for associated species; aquatic, riparian and meadow ecosystems, fire and fuel management; noxious weeds; and lower westside hardwood ecosystems. The draft EIS was released for a 90-day public comment period on May 11, 2000. Completion of the EIS is targeted for January 2001, and is coordinated by the Regional Forester for the Pacific Southwest Region.

In 1999, forest employees also provided data to support two national initiatives: the roadless environmental impact statement and the roads analysis. The final environmental impact statements for the roadless initiative and the final roads policy are expected by December 2000. The Chief of the Forest Service at the agency's Washington, DC office is coordinating both of these of projects.

C. General: Economic and Social Effects

Forest Goals and Objectives

Utilize Forest Service programs and authorities to provide more jobs and income opportunities, to improve rural living conditions, to enrich the cultural life of rural areas, and to maintain and protect the environment and natural resources of rural areas.

Program Strategy

Work in partnership with local communities to increase economic diversity and employment through improved and expanded recreational facilities and rural development opportunities. Actively participate in planning and implementing community-based rural development activities. Provide a sustained flow of forest products to support local industry.

Monitoring Actions

1. Compare actual against projected changes in tourism trends, and service sector and timber industry employment. Review records of actual employment and compare with projected levels.

2. Encourage and implement programs that increase economic diversity and employment in the local area, where such opportunities do not conflict with Forest Plan Direction. Cooperate with individuals and groups for compatible Forest uses, such as the Ronald McDonald Camp for special needs children.

Accomplishments/Findings

The promotion of year-round tourism remains the primary focus of the Forest's Rural Community Assistance Program. In 1999, the Forest has awarded or secured the following grants with various partners to enhance economic diversification in our area:

Recipient	***Project***	***Grant/Agreement Amount***
Chester/Lake Almanor Chamber of Commerce	Trade Show Marketing	$ 2,000
Lassen County Chamber	Trade Show Marketing	$11,000
of Commerce	Visitor's Guide, WEB Site	$ 2,000
Chico Research Foundation	Trade Show Marketing	$ 2,000
Lassen Land and Trails Trust	Susanville Depot Operations	$ 7,000

In addition to the above projects in 1999, the Forest Service assisted the National Park Service with the design and construction of an interagency visitor center at the north entrance to Lassen Volcanic National Park (intersection of State Highways 44/89). Construction was completed in 2000, and the site was dedicated on August 5, 2000. The Lassen Park Foundation contributed half of the funding for this project ($400,00), which is called the Lassen Crossroads Pavilion. The Pavilion will be fully operational in 2001.

In 1998, the Forest Service began constructing a new rest area/interpretive site along the Hat Creek Rim on State Highway 44 with funds from the Transportation Enhancement Activities Program. The wayside was completed in 1999, and offers spectacular views of Mt. Shasta to the north and Lassen Peak to the south. It became fully operational in summer 2000. Another interpretive site was constructed in 1998 above the southeast shore of Eagle Lake. Called the "Osprey Lookout", this vista point offers exceptional views of the lake and a nearby osprey nest. A 360 degree mural on the water tank at the site was completed in 1999.

Planning continues on development of a public/private venture at the Forest Service's Lake Almanor Complex. Under this concept, private capital investment will be matched with federal funds to reconstruct this popular recreation area. The Complex will be concession-operated. A decision on the project is expected in 2001.

Planning also continues for the Lassen County Trails Master Plan. This interagency plan involves the Bureau of Land Management, Lassen County, City of Susanville, Lassen Land and Trails Trust, Chico Research Foundation, and the Forest Service. Due to other agency priorities, completion of the plan has been delayed until 2001.

Since 1991, tourism-related jobs and transient occupancy taxes (TOT) have steadily increased within the Sierra-Cascade region of the Lassen National Forest. This is reflected in the following tables.

The Importance of Tourism and Travel in the Sierra-Cascade Subregion.

Transient Occupancy Tax Revenue: One indicator of the importance of travel, tourism, and recreation is tax revenue from transient lodging, including hotels, motels, and bed-and-breakfast inns. Amounts of revenue differ because counties and incorporated cities in the Sierra-Cascade Subregion charge different tax rates, ranging from four to twelve percent. Large increases from year-to-year in the amount of revenue for a county or city signal an increase in the tax rate for lodging or an increase in public demand for lodging. Table 1 presents the transient occupancy tax revenues received for counties lying within the Lassen National Forest.

Counties differ widely in the proportion of county revenues that come from transient lodging taxes. Plumas County is the only county with more than five percent of their total county tax revenue from transient lodging.

Table 1: Combined transient occupancy tax revenues to cities and counties from guest lodging, arranged by counties located within the Lassen National Forest, FY 1990/91 to FY 1997/98, in thousands of current year dollars. (Source: Runyon Associates, 1996, 1999, 2000)

Fiscal Year:	90/91	91/92	92/93	93/94	94/95	95/96	96/97	97/98	% Of County Tax Revenues as Lodging Tax in FY 97/98
Sierra-Cascade Subregion									
Butte	769	793	624	980	1,070	1,180	1,220	1,274	5%
Lassen	205	224	251	282	320	330	290	292	8%
Plumas	365	621	630	638	670	730	680	676	8%
Shasta	2,241	2,572	2,520	2,525	2,670	2,580	2,750	2,647	15%
Siskiyou	801	895	887	940	970	1,040	1,100	1,162	14%
Tehama	347	356	439	463	510	540	520	538	6%
Subregional Total	4,728	5,461	5,351	5,828	6,210	6,400	6,560	6,589	

Campground Facilities: The Forest Service maintains many public campgrounds in the Lassen National Forest. Expenditures in local communities of the Sierra Nevada Region by visitors camping in public campgrounds account for slightly less than forty percent of spending in California by all people camping at public campgrounds. As displayed in Table 2, the Sierra-Cascade Sub region shows a slight increase in camper expenditures, expressed in 1995 dollars. Butte and Plumas Counties have experienced increases in camper expenditures greater than forty percent between 1991 and 1998.

Table 2: Expenditures by campers in public campgrounds in counties within the Lassen National Forest, 1991-1998, in thousands of 1995 dollars. (Source: Dean Runyon Associates, 1996, 1999, 2000)

	1991	1992	1993	1994	1995	1996	1997	1998	Percent Change 1991-1998
Sierra-Cascade Subregion									
Butte	1,900	2,204	3,100	2,977	2,830	3,259	3,270	3,650	92%
Lassen	6,507	6,236	5,656	5,606	5,450	5,369	5,396	6,012	-8%
Plumas	7,832	10,203	11,438	11,202	11,080	11,229	11,263	12,562	60.4%
Shasta	21,951	24,147	20,970	20,788	28,460	32,234	33,144	22,548	2.7%
Siskiyou	7,368	10,063	8,474	8,481	8,510	8,294	8,329	9,341	26.8%
Tehama	5,479	5,354	5,059	5,084	4,850	4,918	4,934	5,475	-.1%
Subregional Total	51,037	58,207	54,697	54,138	61,180	65,303	66,336	59,588	16.8%

Recreation Employment: Recreation in the National Forests in the Sierra-Cascade Subregion generates jobs for people who live in rural communities. In the Sierra-Cascade Subregion, the rate of increase is lower than the statewide rate at nearly fifty percent for the same period. Plumas County has seen the greatest increase in recreation-related employment.

Table 3: Recreation-based jobs by county for counties within the Lassen National Forest, 1991-1998, in number of jobs. (Source: Dean Runyon Associates, 1996, 1999, 2000)

	1991	1992	1993	1994	1995	1996	1997	1998	% Change 1991-1998
Sierra-Cascade Subregion									
Butte	590	620	620	770	780	780	750	700	18.6%
Lassen	170	180	210	210	220	230	220	210	23.5%
Plumas	350	420	470	480	490	500	500	480	37.1%
Shasta	870	950	990	1,070	1,080	1,040	1,040	960	10.3%
Siskiyou	370	420	460	460	480	480	470	450	21.6%
Tehama	250	260	270	310	310	310	300	290	16.0%
Subregional Total	2,600	2850	3020	3,300	3,360	3,340	3,280	3,090	18.8%

Recreation Expenditures: California National Forests supply visitors and nearby residents with recreation opportunities and experiences. A side benefit to nearby communities is "destination" spending from visiting recreationists. Spending by recreationists has increased faster in the Sierra-Cascade Subregion than in California as a whole. Plumas County, in particular, has benefited from increases in recreation expenditures greater than 80 percent between 1991 and 1998, as shown in Table 4.

Table 4: Total expenditures by recreationists in counties within the Lassen National Forest, 1991-1998, in thousands of 1995 dollars. (Source: Dean Runyon Associates, 1996, 2000)

	1991	1992	1993	1994	1995	1996	1997	1998	% Change 1991-1998
Sierra-Cascade Subregion									
Butte	24,613	24,613	25,516	32,133	33,080	34,345	24,500	39,512	60.5%
Lassen	7,158	7,837	8,631	8,931	9,230	9,963	10,051	11,596	62.0%
Plumas	14,461	18,029	19,263	19,980	20,830	22,154	22,737	26,950	86.4%
Shasta	36,555	40,897	40,892	44,696	45,910	45,966	47,600	53,792	47.2%
Siskiyou	15,543	18,040	18,739	19,325	20,330	21,270	21,718	25,447	63.7%
Tehama	10,230	10,998	11,250	12,890	13,300	13,801	13,869	16,105	57.4%
Subregional Total	108,560	120,414	124,291	137,955	142,680	147,499	140,475	173,402	59.7%
All CA	4,949,083	5,138,978	5,174,390	5,534,581	5,690,000	5,938,423	6,347,997	7,945,3	

Forest Service Appropriations for Recreation on the Lassen National Forest: Appropriations for recreation management reached a peak in 1991 and have declined since then. In fiscal year 1998, appropriations for the Lassen were only 67.8 percent of peak year appropriations, displayed in Table 5. The Forest Service's ability to provide quality recreation services and maintain recreation facilities is severely compromised by inadequate funding levels. Constrained budgets cannot effectively support tourism goals on National Forest lands.

Table 5: Appropriations for recreation management and maintenance for the Lassen National Forest, 1988-1999, in thousands of 1995 dollars.

Fiscal Year	Allocation	Fiscal Year	Allocation
1988	934	1994	1,081
1989	1,043	1995	946
1990	1,142	1996	867
1991	1,449	1997	906
1992	858	1998	939
1993	864	1999	983

Note: Included line items are NFRN (1988-1991, 1999) and NFRM (1992-1999)

Since Fiscal Year 1994, construction of recreation facilities has fallen off markedly for California National Forests, including the Lassen.

Table 6: Appropriations construction recreation facilities for the Lassen National Forest, 1988-1999, in thousands of 1995 dollars.

Fiscal Year	Allocation	Fiscal Year	Allocation
1988	169	1994	395.7
1989	659	1995	0.3
1990	711	1996	71.9
1991	0	1997	540
1992	0	1998	400
1993	0	1999	369.8

Note: Included line items are CNRF (construction recreation facilities 1988-1998) and PAFC (public asset facility construction,1999).

Table 7: Appropriations for trail construction on the Lassen National Forest, 1988-1999, in thousands of 1995 dollars.

Fiscal Year	Allocation	Fiscal Year	Allocation
1988	247	1994	201.5
1989	70	1995	205.7
1990	0	1996	334.0
1991	0	1997	217.0
1992	59.3	1998	61.7
1993	276.3	1999	176.0

Note: This table includes line item CNTR (trail construction, 1988-1998) and PATC (public asset trail construction, 1999)

Table 8: Appropriations for recreation road construction on the Lassen National Forest, 1988-1999, in thousands of 1995 dollars.

Fiscal Year	Allocation	Fiscal Year	Allocation
1988	Not available	1994	76.8
1989	Not available	1995	60.0
1990	Not available	1996	0
1991	Not available	1997	0
1992	0	1998	65.0
1993	8	1999	1,029.9 1/

Note: This table includes line item CNRN (recreation roads)
1/ Roads was line item CNRD in 1999

D. General: Incomplete/Unavailable Information

Forest Goal and Objective

Incorporate new information into the Forest Plan and project planning as it becomes available.

Program Strategy

1. Review scientific literature for evolving definition of old growth timber stands, for new or improved vegetative diversity guidelines, and for habitat needed to maintain viable populations of dependent plant and animal species.

2. Monitor group selection harvesting for cost and resources needed to implement that method. Measure success in reestablishing desired species and growth rates.

Monitoring Actions

1. Review literature and guidelines: incorporate new information into the Forest Plan.

2. Compile Forest and Regional data for review and possible changes to the Forest Plan.

Accomplishments/Findings

As mentioned in Section B: Project Planning and Implementation, developments in the fall of 1998 initiated several changes for the Lassen National Forest. The 1999 Appropriations Bill included passage of the Herger-Feinstein Quincy Library Group Forest Recovery Act. Under the Act, the Forest Service was directed to prepare an Environmental Impact Statement (EIS) to consider amending Forest Plans on the Lassen and Plumas National Forests, and Sierraville District of the Tahoe National Forests. The EIS was completed in August 1999.

In fall 1998, the Forest Service also announced the preparation of an Environmental Impact Statement to address five key problem areas in the Sierra Nevada region. These five problem areas were addressed in the Sierra Nevada Ecosystem Report (SNEP) and included: old forest ecosystems, aquatic, riparian and meadow ecosystems, hardwood ecosystems, fire and fuels, and noxious weeds. This analysis encompasses 11 National Forests in two states in the Sierra Nevada region, including the Lassen National Forest. The final EIS is expected to be completed in January 2001. Both of the above efforts are in response to new information and scientific findings. As research and monitoring of project implementation continues, further changes in management direction on the Lassen can be expected.

The roadless area final Environmental Impact Statement will also amend the Lassen's Forest Plan when it is released in fall 2000. The EIS is considering new research regarding the impact of roads on other forest resources and the agency's ability to adequately maintain our current road network. Other changes in management direction can be expected as a result of the Forest Service's revised road policy, which will be issued in fall 2000. The draft policy (released in late winter 2000) called for the preparation of roads analyses to assess the costs and benefits of Forest Service roads, and to determine the need for any change in current road uses. The public will be involved in proposals that could affect roaded access on the Lassen National Forest.

1. Air Quality

Forest Goals and Objectives

Manage National Forest System lands to maintain air quality that meets or exceeds all applicable regulations and is compatible with the attainment of State and Federal air quality objectives. Minimize encroachment of smoke from prescribed fires on population centers.

Program Strategy

Comply with the Federal Clean Air Act, as amended, and state and local air quality regulations. Minimize encroachment of smoke from prescribed fires into the Sacramento Valley, Lake Almanor basin, Fall River Valley, Eagle Lake basin, Burney basin, and Honey Lake Valley. Cooperate with local Air Pollution Control Districts during burning activities to minimize total emissions at any one time.

Monitoring Actions

A. Within Class I airsheds (Caribou and Thousand Lakes Wilderness), establish background data and trends in air quality.

B. Assure that Forest Service activities that could create air pollution (road construction, use, development under special use permit, mining and prescribed burning) comply with all regulations and permit requirements of local air quality regulatory agencies. Evaluate compliance with State and Federal air quality standards through ambient air sampling as described in the Regional Air Quality Plan. Review environmental documents and prescribed burn plans and conduct field inspections.

Accomplishments/Findings

No baseline air quality monitoring occurred in FY 1999. The automated camera system has been discontinued. Lichen monitoring is done every two to three years and was last done in the Caribou Wilderness in September 1998. At the same time, lichen collections were made for chemical analysis of particulate and chemical deposits. These results are not yet available.

Lichen monitoring has been occurring in Thousand Lakes and Caribou Wildernesses since 1990. The Region 5 Draft Lichen Monitoring Protocol (October 1988) has been used to monitor established transects. Transects were read in 1990, 1993, 1994, and 1996. Information collected so far constitutes baseline data, since lichen grow very slowly and show only long-term changes.

Air quality was monitored in relation to prescribed burning by monitoring weather conditions and wind direction, and visually noting any smoke encroachment into population centers. Plumas County monitors PM10 in Chester, and informs the Forest if standards are exceeded (see also the Fire and Fuels section).

2.Biomass

Forest Goals and Objective

Provide for the use of biomass that is surplus to ecological, silvicultural and personal firewood gathering needs. Sell biomass from thinnings in plantations and wild stands to offset the cost of timber stand improvement programs.

BIOMASS OBJECTIVE

Resource Elements	Forest Plan Annual Objective
Biomass Available (M.O.D. tons) 1/	165 tons

1/Thousand Oven Dry Tons

Program Strategy

For biomass, the Forest Goal and Program Strategy are the same.

Monitoring Actions

Monitor and evaluate effects of biomass program on wildlife, soils, and other resource values. Review records of biomass and firewood sold. Compare with monitoring results of wildlife and soil resources where a potential conflict exists.

Accomplishments/Findings

During planning of individual projects, mitigation measures are incorporated into the project design to meet Forest Standards and Guidelines. Projects are planned and approved through the interdisciplinary analysis and decision-making processes.

During implementation of individual projects, contract inspectors (timber sale and service contract) provide quality control to assure compliance with environmental decisions. The Districts schedule post project evaluations to assess the results. There is no formal reporting or scheduling system for post-project evaluations. Forest Plan objectives for snag levels, canopy closures, fawning and bedding areas, soil disturbance, etc. are being met.

Biomass Accomplishments

Year	Tons Sold (M.O.D. tons)	Acres Treated
1993	60	8,683
1994	82	5,762
1995	120	7,694
1996	114	14,893
1997	65	13,893
1998	75	10,998
1999	65	12,217

3. Cultural (Heritage) Resources

Note: Since approval of the Lassen Forest Plan, Cultural Resources are now called Heritage Resources.

Forest Goals and Objectives

Protect, preserve, and complete the inventory of cultural properties on the Forest in the first decade. This shall be accomplished by a combination of general inventories and those required for resource-use projects. Determine the eligibility of 20 percent of the properties for inclusion in the National Register of Historic Places (NHRP) per decade. Insure that Forest actions are not detrimental to traditional Native American religious rights and practices. Provide information about heritage resources for public education and enjoyment.

Program Strategy

Develop and implement agreements with the State Historic Preservation Officer and the Advisory Council on Historic Preservation for the management of cultural properties eligible for inclusion in the NRHP. Protect cultural properties listed or eligible for the National Register from deterioration or destruction. Identify areas used in the practice of traditional Native American religion and insure the Forest actions do not restrict traditional Native American religious practices.

Monitoring Actions

A. **Management of Heritage Resources.** Ensure that heritage resources are protected during Forest management activities, and that Forest actions do not restrict traditional Native American religious practices. Review heritage resource inventories and the condition of heritage resources following the completion of projects. Prescribe measures for protection of heritage resources in project implementation plans.

B. **Inventory and Evaluation of Heritage Resources.** Assess the adequacy of the Forest heritage resource inventory and determine if heritage resource inventories and evaluations will be completed by the first decade. Assess of 20 percent of all heritage properties will be evaluated for eligibility to the National Register of Historic Places by the first decade. Compare results of heritage resource inventories to locational models. Review heritage resource accomplishment report.

C. **Effect of Forest Visitors and Natural Factors on Heritage Resources.** Determine the effects of Forest visitors and natural factors on heritage resources in the forms of looting, vandalism, collection, erosion, and decay. Field review the condition of heritage resources.

D. **Interpretation of Heritage Resources.** Determine the effectiveness of efforts to promote public education and enjoyment of heritage resources. Review facilities and information sources that interpret heritage resources to the public and that provide information to the scientific community.

Accomplishments/Findings

A. Management of Heritage Resources. Measures are identified and implemented to protect heritage resources during Forest management actions. Most commonly, heritage resources are included in no-entry zones within project areas. However, the effectiveness of that and other measures to protect heritage resources during project activities have not been consistently monitored or formally documented. Periodic post-implementation monitoring is conducted on a sampling of projects.

B. Inventory and Evaluation of Heritage Resources. Program goals of conducting inventories and evaluations of heritage resources were not met. Inventories and evaluations were largely done in support of specific projects, primarily timber sales, hydrology and roads. There are a total of 2,891 recorded heritage sites, 5.2 percent of which have been evaluated for National Register of Historic Places (NRHP) eligibility. This leaves a backlog of 2,335 sites that have not been evaluated. The goal of determining the NRHP eligibility of 20 percent of the estimated 5, 000 sites on the Forest in the first decade of the Plan requires the evaluation of nearly 80 sites per year; only 340 sites (an average of 49 per year) have been evaluated since the Forest Plan was implemented. The goal of completing the Forest-wide inventory in the first decade requires the survey of 45,000 acres per year. As shown in the table below, 221,400 acres (an average of 31,629 acres per year) were inventoried. Failure to meet the goals is due, in large part, to a significant reduction in the funding of the Forest timber program.

C. Effect of Forest Visitors and Natural Factors on Heritage Resources. The condition of heritage resources vulnerable to damage from looters or natural factors is regularly monitored, as reported below. Looting, although still a significant problem has lessened in response to the Forest's active enforcement of laws protecting archaeological sites. Significant damage from natural factors is relatively uncommon.

D. Interpretation of Heritage Resources. The Forest has many significant accomplishments interpreting heritage resources to the public, primarily through presentation, exhibits, brochures, films, site restorations, and involving the public in historic preservation projects. However, the effectiveness of those efforts has not been formally reviewed. Spontaneous public response at exhibitions, project restorations or presentations has been very favorable. In FY 1999, Forest interpretation efforts included 13 heritage site tours, four special events, one exhibit, and 20 presentations on archaeological or historical topics. The public participated in three historic preservation and research projects through the Passport-in-Time Program.

HERITAGE RESOURCE ACCOMPLISHMENTS

Year	Under-takings	Acres Inventoried	Sites Inventoried	Sites Evaluated	Sites Monitored
1993	116	50,500	165	12	128
1994	112	91,000	220	20	225
1995	136	30,900	110	35	274
1996	124	22,500	279	163	186
1997	156	6,900	161	76	202
1998	208	12,550	72	12	234
1999	240	7,050	82	22	241
Total	**1,092**	**221,400**	**1,089**	**340**	**1,490**

4. Facilities

Forest Goals and Objectives

A stable and cost-efficient system of roads, trails, and administrative sites and other facilities are in place and maintained through appropriate construction, reconstruction, and maintenance for planned uses and the protection of resources. Cooperate with Federal and State agencies, counties and private entities to obtain needed modifications of roads under their jurisdiction.

FACILITIES OBJECTIVES

Resource Elements	Forest Plan Annual Objective
Road and trails	
Trail Construction/Reconstruction	3.5 miles
Road Construction	16.0 miles
Road Reconstruction	50.0 miles
Road Maintenance	3,627.0 miles
Dams and Reservoirs	
Forest Service	10 dams
Other Federal	0 dams
State/Local	7 dams
Private	2 dams
Administrative Sites	
Forest Owned	11 sites
Forest Service Leased	1 site

Program Strategy

Maintain all roads and related structures to: a) protect resources of adjacent areas; b) meet contractual and legal obligations; and c) provide an efficient transportation system. Modify or obliterate portions of the Forest Development Road System as needed to meet changing traffic demands. Review location and design specifications for roads built under permit or license, and require protection of all resources.

Maintain all trails and related structures to: a) protect the recreation amenities of adjacent areas; b) provide reasonable access; c) be an efficient system; d) provide various experience levels. Complete management plans for the Pacific Crest Scenic Trails, Spencer Meadows National Recreation Trail, Lassen Emigrant Trail, and Noble's Emigrant Trail.

Maintain administrative sites, buildings, dams, and reservoirs to function efficiently for their design period. Remove those buildings and related facilities no longer needed.

Monitoring Actions

A. Determine if Forest Plan Objectives for the trail system are being achieved by recording the number of miles of trails constructed, reconstructed, and maintained.

B. Determine appropriate trail maintenance levels for resource management needs. Field review of trails conditions and traffic on 5% of the trail system each year.

C. Determine appropriate road maintenance levels for resource management needs. Field review traffic, roadbed condition, and maintenance practice on 2% of the inventoried road system each year. Traffic counters will be used where maintenance levels appear too high.

Accomplishment/Findings

Monitoring has been conducted to Forest Standards for road construction, reconstruction and maintenance, and miles of road closures and obliterations.

The road construction program has been much smaller than planned. This is partly due to a reduced timber program and commensurately reduced funding. Some areas of the Forest have a more complete timber road base than other areas, with some areas still requiring some road construction to access ground previously not roaded. As a result, miles of new road construction are well below the threshold in the Forest Plan. New timber roads are still being planned, and construction may increase slightly as chip van access for biomass thinnings continues to be needed. Gentler grades are required for chip bans versus standard log trucks, therefore many existing roads cannot be used for that purpose.

The drop in allowable sale quantity and funding has also affected the amount of road reconstruction on the Forest. The amount of road reconstruction has also been much smaller than planned, due in part to more salvage and thinning projects than expected. Salvage and thinning sales usually require very little, if any, reconstruction due to the borderline economic viability of these sales. Road reconstruction on the Forest should increase due to environmental concerns requiring upgrading of existing roads.

Road maintenance was completed on approximately 1,500 miles of road in 1999. The National emphasis on road maintenance is reflected in the stability of road maintenance funding on the Lassen.

Refer to the Recreation section of this report for information on the Off Highway Vehicle program.

ROADS ACCOMPLISHMENTS

Year	Construction	Reconstruction	Maintenance*	Obliterate
1993	1.3 miles	34.0 miles	1,233 miles	13.0 miles
1994	0 miles	26.1 miles	1,276 miles	42.0 miles
1995	3.1 miles	49.9 miles	1,121 miles	16.0 miles
1996	4.0 miles	12.6 miles	1,427 miles	5.4 miles
1997	4.3 miles	10.3 miles	1,450 miles	.0 miles
1998	2.3 miles	14.8 miles	1,475 miles	15.0 miles
1999	1.3 miles	43.1 miles	1,500 miles	11.4 miles
Total	**16.3 miles**	**190.8 miles**	**9,482 miles**	**102.8 miles**

*Total reflects the sum of annual maintenance of the road system each year.

Annually, the majority of the trails, especially those where we know damage may have occurred (i.e. flooding, windthrow), are hiked by Forest Service personnel and maintenance needs are documented. Some trails are hiked by volunteers, and others by the general public who inform us of the trail condition. This information is critical to developing annual trails maintenance project lists. Hiking the trails early in the year is the most effective way of determining annual maintenance needs.

Being dependent on the Capital Investment Program, trail construction has fluctuated considerably. Trail maintenance has remained relatively stable (see table below). Trail monitoring is in full compliance with the Forest Plan.

TRAILS ACCOMPLISHMENTS

Year	Construction/Reconstruction	Maintenance
1993	3.5 miles	602.0 miles
1994	3.0 miles	444.3 miles
1995	0.5 miles	535.9 miles
1996	9.7 miles	228.7 miles
1997	0 miles	474.0 miles
1998	0 miles	446.0 miles
1999	0.2 miles	410.3 miles

5. Fire and Fuels

Forest Goals and Objectives

Minimize resource losses from wildfire through fuel reduction and an effective fire protection organization. Promote fire prevention commensurate with resource values at risk. Reduce fuels by prescribed fire and biomass utilization while maintaining soil and water quality.

FIRE AND FUELS OBJECTIVES

Resource Elements	Forest Plan Annual Objective
Fuel Treatment	
Fire Related	1,150 Acres
Timber Related	3,600 Acres
Range/Wildlife Related	1,300 Acres
Fuel Treatment (total)	6,050 Acres

Program Strategy

Use all appropriate wildfire suppression strategies (confinement, containment, and control) as specified in the applicable management prescription and management area direction. Design prevention efforts to minimize human-caused wildfires.

Use prescribed fire (both management ignited fire and prescribed natural fire) as a management tool when its use is determined to accomplish ecosystem management objectives.

Monitoring Actions

A. Assure that fire suppression actions are consistent with Forest Plan Standards and Guidelines. Field review escaped fire situations, including the situation analysis, the operational shift plan, and the actual results.

B. Compare the actual and predicted extent of wildfire acres. Review fire reports and compare actual to predicted wildfire actual to predicted wildfire acreages for each Management Area.

C. Review prescribed burns and furl treatments to determine if project objectives and Forest Standards and Guidelines were met. Review prescribed burn and annual fuel treatment plans, and perform field inspections to verify implementation.

Accomplishments/Findings

The Lassen National Forest Fire Management Plan (FMP) was completed and signed on August 31, 1998 and is currently being reviewed and revised to coincide with the new Wildland Fires Policy.

The Caribou Wilderness Fire Management Plan covering natural, Wildland fire use for resource benefit and prescribed fire is in the process of being revised to meet the new Wildland Fire Policy.

Prescribed burns and fuel treatments were reviewed to determine if project objectives and Forest Plan Standards and Guidelines were met. Prescribed burns and annual fuel treatment plans were reviewed and field inspections performed to verify implementation. Projects were reviewed for conformance with objectives stated in the prescribed burn and fuel treatment plans. A minimum of 10% of projects completed on each District is monitored annually. Districts Fuels Management Specialists document proscribed burn and fuel treatment results as compared to the objectives established for the project. This documentation is place in the project file. Best Management Practices on prescribed burns are monitored annually by Forest Hydrologists.

Expected (base year (1999) wildfire acres in LMP:		*Actual* wildfire acres in 1998:	
Fire Intensity Level 1	1,104 acres	Fire Intensity Level 1	6.58 acres
Fire Intensity Level 2	276 acres	Fire Intensity Level 2	0.57 acres
Fire Intensity Level 3	34,273 acres	Fire Intensity Level 3	0.15 acres

FIRE AND FUELS ACCOMPLISHMENTS

Resource Objectives	**1993 (acres)**	**1994 (acres)**	**1995 (acres)**	**1996 (acres)**	**1997 (acres)**	**1998 (acres)**	**1999 (acres)**
Fuel Treatment							
Natural Fuels	233	846	550	819	3,700	10,616	14,360
Timber Related (activity fuels)	4,700	5,955	4,380	7,400	4,947	3,336	2,738
Range Related	0	0	0	0	0	0	0
Wildlife Related	100	400	700	600	1,100	750	400
Thinning (for fuels reduction)	100	150	10	100	500	2,160	700
Totals	5,133	7,351	5,640	8,919	10,247	16,862	18,198

6. Firewood

Forest Goals and Objectives

The Forest goal is to provide a sustained supply of firewood, giving priority to personal use.

FIREWOOD OBJECTIVE

Resource Elements	Forest Plan Annual Objective*
Firewood	69,000 cords

*The firewood objective reflects the available supply: it is not intended the Forest sell this quantity each year.

Program Strategy

Emphasize personal use over commercial use of firewood. Designate woodcutting areas as free use, limited use, or closed to firewood cutting a appropriate to meet overall Forest goals and resource objectives.

Monitoring Actions

A. Determine if the Forest is making available an adequate supply of firewood for personal use to meet demand. Maintain records of both personal use and commercial use permits. Conduct surveys to determine amount of firewood available.

B. Determine if adequate snags and fallen logs are available for wildlife in areas of heavy firewood cutting. Conduct surveys to determine the number of snags and down logs per acre in firewood source areas.

Accomplishments/Findings

Although no formal inventories of available firewood have taken place, personal use firewood cutting is not restricted by available supply; each household applying for a permit is allowed up to 10 cords. All applicants are granted this privilege as long as they purchase a permit. Both personal and commercial use permits have established record keeping systems. Drought induced mortality has been significant since implementation of the Forest Plan.

An extensive, forest-wide inventory of vegetation/snag/down woody material was last completed in 1995. This information has not been analyzed for firewood volume and most likely would not provide additional insight for management. The inventory is intended to be used for the next round of Forest planning.

FIREWOOD ACCOMPLISHMENTS

Year	Firewood Output
1993	10,800 cords
1994	11,128 cords
1995	21,432 cords
1996	16,180 cords
1997	17,000 cords
1998	19,745 cords
1999	21,779 cords

7. Fish

Forest Goals and Objectives

Forest management direction for fish and riparian areas differ across the Forest. Management direction for aquatic and riparian areas within the range of the northern spotted owl is contained in the Aquatic Conservation Strategy (ACS) from the Record or Decision for the Northwest Forest Plan. Management direction for aquatic and riparian areas in anadromous fish producing watershed not included under the direction of the Northwest Forest Plan is contained in the interim Aquatic Conservation Strategy known as PACFISH. Both strategies amend the Forest Plan in areas where they apply and add new riparian goals; Riparian Habitat Conservation Areas riparian management objectives; Standards and Guidelines; and direction for restoration and monitoring. All other aquatic and riparian areas outside the areas covered by the two aquatic conservation strategies follow direction contained in the Forest Plan, as amended by the Record of Decision (August 1999) for the Herger-Feinstein Quincy Library Group Final Environmental Impact Statement. This amendment provides minimum protection riparian buffer widths prescribed by the Scientific Analysis Team as well as specific guidelines to meet resource management objectives.

Program Strategy

Aquatic and riparian ecosystem health and function is maintained or restored to promote conservation of all components of the aquatic communities. Application of the Aquatic Conservation Strategy is aimed at maintaining and restoring ecosystem health at the watershed and landscape scales to protect habitat for fish and other riparian-dependent species and resources.

Development of a long-term strategy for the protection and maintenance of anadromous fish habitat is directed under PACFISH. Information generated from the analyses for Deer, Mill, and Antelope Creek has been used in the development of a long-term strategy, currently proposed in the Sierra Nevada Conservation Framework. Specific strategy elements contained in the Lassen LRMP are as follows: 1) maintain or improve riparian-dependent resources, including water quality and fish habitat; 2) provide high-quality habitat for Chinook salmon, steelhead, and rainbow trout in areas where these species can occur; 3) coordinate with the California Department of Fish and Game for updating the state-wide California Fish and Wildlife Management Plan, and fish stocking in desired wildernesses and other lakes.

Monitoring Actions

Determine habitat status and trend in relation to management activities for resident and anadromous fish. Conduct population surveys in conjunction with California Department of Fish and Game using direct counting of anadromous fish and habitat surveys.

Accomplishment/Findings

A. **Habitat Evaluations.** Habitat evaluations were conducted in 1999 to inventory and evaluate habitat conditions at the watershed level for the purpose of describing existing conditions. Surveys followed a Stream Condition Inventory Field Extensive method developed specifically for the Lassen National Forest in 1996. Five stream reaches were inventoried, for a total of 3 miles. Data is currently being used to describe existing aquatic resource conditions for project level planning (e.g., landscape analysis and allotment management planning).

The Stream Condition Inventory (SCI) method was used to assess 14 stream reaches (7 miles). A modified SCI method was used on an additional 11 reaches (20 miles). Objectives of these efforts were: 1) to evaluate project design (e.g., timber sales, watershed restoration projects) effectiveness; 2) to continue to follow the monitoring plan developed with PACFISH direction; 3) monitor effects of the Gun 2 fire.

Other monitoring conducted in 1998 included recording water and air temperatures at 33 stream sites; establishing transects (using a greenline method) at three sites within range allotments; and evaluating Range Management Best Management Practice (BMP) implementation and effectiveness at one site.

Long-term channel condition monitoring at six of fifteen survey sites continued in FY99. Surveying covered vegetative condition, bank angles, bank stability, and bank alteration (comparing three methods in the Rangeland Analysis Planning Guide). Thermographs were placed in eight locations along Pine Creek to continue monitoring water temperature.

As part of a regional study, one stream on the Lassen was assessed to coordinate livestock use with re-colonization of stream bars/banks. Results from this one should be available in FY 2001

B. **Aquatic Species Evaluation**: Aquatic species inventories were conducted as part of the Field Extensive method discussed above, primarily for the purpose of evaluating the relative distribution and abundance of aquatic species. Surveys for two sensitive frog species (Cascades and Foothill Yellow Legged frogs) continued. Three streams were surveyed for Cascades frogs with no new populations observed. Forty-five miles of streams were surveyed for Foothill Yellow Legged frogs, new populations were found in 3 creeks tributary to Deer and/or Mill Creek watersheds.

In FY 99, five Forest Service sensitive species of aquatic mollusk were written up in a status summary to be used in further planning efforts on the Forest. A search of all literature was complied into this document to describe life history, habitat, and current and future concerns for their populations. Additionally, cursory inventories at six sites were conducted to evaluate potential distribution of the five aquatic mollusk species.

Note: The following work described occurred in FY99 and not in FY98, as reported in last years report (continued telemetry studies/monitoring will be reported next year in the FY00 report).

Ten Eagle Lake rainbow trout were fitted with radio transmitters and released upstream of the lake into Pine reek. Movements of the fish were followed for approximately two months.

This release of fish was an attempt to evaluate whether or not Eagle Lake trout can now successfully navigate upstream, since habitat restoration efforts have been implemented. Equipment problems were encountered, which prevented continual tracking during this pilot test; not all fish and their transmitters could be followed or retrieved. One fish did travel back into Eagle Lake and was caught by a fisherman at the south end. This work will continue into 2001, and further, depending on future funding.

The annual monitoring of adult spring-run Chinook salmon during the summer “holding” period, and annual spawning surveys for spring-run Chinook continued in Deer, Mill and Antelope Creeks. A total of 45 miles of salmon habitat was surveyed during the “holding” period and 35 miles during the spawning period. Population estimates for 1999 are reported

with prior years data in Table 1. Increased run size in Deer Creek over the last few years remains promising, however, continued annual monitoring is needed to fully assess trend of this Federal listed species.

Table 1: Spring-run Chinook salmon population estimates on Mill Creek, Deer Creek, and Antelope Creek, Tehama County, for years 1986 – 1999.

POPULATION ESTIMATES (# of adults)

Year	Mill Creek	Deer Creek	Antelope Creek
1986	291	534	
1987	89	200	
1988	572	371	
1989	561	84	
1990	844	496	
1991	319	479	
1992	61	206	
1993	723	259	
1994	320	485	
1995	252	1,295	
1996	253	614	
1997	202	466	
1998	424	1,879	154
1999	560	1,591	40

Informal spawning surveys for adult winter-run steelhead (a Federally listed species) were also conducted along portions of Deer Creek, but no steelhead were observed in the areas surveyed. A potential steelhead read was observed in March 1999 down stream of Polk Springs.

Aquatic macro-invertebrates were sampled from 27 sites. This information will be used to evaluate invertebrate richness and diversity with similar streams on other forests within the California region.

8. Forest Health

Note: Since implementation of the Lassen Forest Plan, the term "Forest Health" has taken a much larger meaning, i.e. the general health of and vitality of ecosystems or eco-regions. Within the context of the Forest Plan, "Forest Health" is limited to the impact of forest pests such as fungi, insects, and rodents on Forest resources, particularly timber.

Forest Goals and Objectives

Reduce impacts of forest pests on all resources to acceptable levels through integrated pest management.

Program Strategy

The Forest will use an integrated pest management approach to manage pests during the planning and implementation of all activities that influence vegetation. Coordinate actions to control significant animal damage with the California Department of Fish and Game, the U.S. Fish and Wildlife Service and other agencies and cooperators. Perform direct rodent control within or adjacent to developed recreation sites when needed to protect public health.

Monitoring Actions

Detect and evaluate pest-related problems and damage through the Forest pest detection reporting process. Through observation, timber inventory, and project planning, evaluate to determine if conifer-stocking levels are compromising Forest resource objectives. Conduct timber stand or area-wide examinations by ground and aerial surveys in conjunction with pest detection reports.

Accomplishments/Findings

Forest Pest Management Staff coordinate yearly aerial surveys for current tree mortality.

Forest pest management staff as requested by Forest personnel conducts biological evaluations on specific projects or stands.

During 1994 and 1995, the Forest conducted an extensive survey of root disease, which was also coordinated with individual stand exams. The information is to be used for the nest round of planning and to be used to calibrate pest-modeling software. No data analysis is available at this time.

Vegetation surveys are done on thousands of acres a year for the purposes of project environmental analyses. Forest pest assessment is an important part of this effort.

Plantation monitoring records mortality and provides insight into pest related problems. This program is on-going yearly and required by Regional procedure.

PLANTATION SURVIVAL

Year	First Year Survival (%)	Third Year Survival (%)
1993	67%	61%
1994	56%	61%
1995	61%	66%
1996	83%	54%
1997	83%	59%
1998	76%	70%
1999	75%	73%

Note: Because of anticipated high mortality of planted seedlings
During the first three years, plantations are commonly planted with nearly double the number of seedlings normally needed for a plantation to be considered fully stocked. Thus, the table on page 47 indicates very high percentages of adequately stocked plantations at the fifth year.

9. Lands

Goals and Objective

The Forest has land management goals designed to enhance Forest resources through: land ownership adjustment, property boundary survey, rights-of-way management, mineral withdrawals, special use administration, utility corridor management, and electronic site management.

LANDS OBJECTIVE

Resource Elements	Forest Plan Annual Objective
Land Acquired	2000 acres

Program Strategy

Acquire lands, if they become available, to facilitate Forest management. Survey, mark and post property boundaries adjacent to private lands, wilderness and wild and scenic rivers. Acquire rights-of-way to efficiently manage Forest resources and provide public access. Pursue mineral withdrawals when needed to protect Forest improvements. Issue special use permits if a net public benefit will result. Resolve all unauthorized occupancies on National Forest lands. Designate West Prospect as a multi-user electronic site. Complete communication site plans for West Prospect, Colby Mountain, Morgan Mountain and Keddie Ridge.

Monitoring Actions

A. Determine if documents authorizing land use occupancy and use are consistent with the Forest Plan by reviewing authorizing instruments.

B. Ensure land adjustments are consistent with the Forest Land Adjustment Plan. Review proposed land adjustments.

Accomplishments/Findings

A. Land use occupancy has been minimally funded ever since the Forest Plan was implemented. Inadequate funding for special use administration has resulted in an increase in the number of expired permits; there is a total of 700 special use permits on the Forest.

The required NEPA documentation is gradually being completed on all expired permits. In some cases, unacceptable resource impacts are occurring for lack of oversight or effective environmental analysis to identify appropriate mitigation measures. In other cases, unauthorized, new uses have been found and are considered trespasses on

National Forest System lands. Trespasses are being identified during landline location.

Although some trespasses have been removed, new cases continue to be found, and complex cases are taking an extended time to resolve; there is an increasing backlog of trespass cases. The Old Station Small Tracts Act case involving 19 landowners in the Old Station subdivision was completed in December 1999.

Inspections of permits are also backlogged and inadequately documented. The Forest Special Use Data System (SUDS) is used to track these. Ranger District staff are periodically informed of the status of their inspections. This is an emphasis item that is recognized and is slowly being worked on. Approximately 75% of the special use permits need to be inspected. Inspections are generally limited to those permitted activities that have a higher potential for resource impacts. Lack of funding is the biggest barrier to having an effective special uses program that protects the public's interests.

Annual use fees are being brought up to current rates. The recreation residence appraisal process began in 1996 for a new 20 year base price for implementation in 1999. The final 6 recreation residence tracts were issued their fee implementation letter for their 2000 bill. A second appraisal was contracted by the Forest Service in FY 97 and approved in FY 98 with no contested action by the permittees. The bulk of our permits are the 400 recreation residences; the others are mostly linear uses. Fees for most special use permits are updated annually with the Implicit Price Deflator (IPD).

The forest issues approximately 50 annual permits each year. Outfitter/guide permits requested for the wildernesses are being issued on a limited basis when they meet Forest Plan direction. A continued use determination is being made on several expired permits.

B. Land adjustments are consistent with the Forest Land Adjustment Plan. However, the Forest Land Adjustment Plan is dated 1965. This document is still current with the guidelines of consolidating private inholdings and disposing of isolated parcels. General areas are categorized for disposing and acquiring, which can be updated. A new plan was started in 1994; lack of funding and personnel has prevented this plan from being completed. The public is still interested in pursuing land exchanges with the Forest Service; discussions are continuing on five potential land exchanges.

LANDS ACCOMPLISHMENTS

Year	Land Acquired
1993	1,060 acres (Keeler Exchange)
1994	0 acres
1995	40 Acres (Brokeoff Meadows Exchange)
1996	142 acres (Cowless Purchase)
1997	0 acres
1998	0 acres
1999	0 acres
Totals	**1,242 acres**

10. Minerals

Goal and Objectives

Provide for mineral exploration and development while protecting surface resources.

MINERALS OBJECTIVES

Resource Elements	**Forest Plan Annual Objective**
Locatable Mineral	6 plans approved
Mineral Materials	46 permits
Leasable Minerals	0

Program Strategy

Facilitate the orderly development of mineral (including geothermal) resources. In areas with known mineral reserves, undertake only those Forest activities that are compatible with mineral activity unless unique resource values are present. In plans of operation, require reclamation of mined sites compatible with Management Area direction.

Monitoring Actions

Review plans of operation for consistency with the Forest Plan.

Accomplishments/Findings

Mineral Materials - The forest supplies mineral materials, mostly cinders, for roads during the winter. In 1999, 46,244.1 tons were supplied. One aggregate pit was registered under the Surface Mining and Reclamation Act (SMARA) – Rock Creek Pit.

The reclamation of Rocky Jewel Cinder Pit is continuing. This site was abandoned, the buildings have been removed, and native seed was collected and grown in 1999. This year, 5,000 native plants were planted on Cone #4 with plants such as redbud, mountain mahogany, penstemon, buckwheat, bitter cherry, coffee berry and squaw current.

Locatable Minerals - Mining activity is mainly on the Almanor District. The Forest has continuing problems with occupancy where no Special Use Permits, Notices of Intent or Plans of Operation are on file. The Almanor District is working with mining claimants; letters have been sent out and patrols are in the area to educate the local miners. These actions will help resolve these problems.

MINERALS ACCOMPLISHMENTS

Year	Leasable Minerals (permits)	Locatable Minerals (Cases)	Mineral Materials (Contracts/Tons)
1993	0	not reported	54/53,617
1994	0	not reported	21/27,474
1995	0	17	24/57,000
1996	0	17	24/33,000
1997	0	4	36/41,950
1998	0	3	34/23,525
1999	0	0	27/46,244

11. Range

Goals and Objective

Provide for long-term rangeland productivity for fisheries, wildlife, soil, water, timber, and livestock forage values. Revise allotment management plans (AMPs), as necessary, to meet vegetative management goals; establish standards for vegetative utilization; and manage riparian areas to reach natural or achievable site potential and desired ecological conditions.

RANGE OBJECTIVE

Resource Elements	Forest Plan Annual Objective
Grazing	48,500 AUMs*

* AUM is animal unit month; an AUM is 1000 pounds of forage needed to support a mature cow one month.

Program Strategy

Manage grazing to achieve satisfactory or better ecological conditions with stable or upward trends on all rangelands. Rangeland condition is to be maintained or enhanced through forage improvements, livestock management and coordination with other resource uses. Forage utilization standards will be based on vegetative type and condition, and will be incorporated into allotment management plans. Investment in range improvements will be moderate to high. Prescribed fire will be used to increase the amount of palatable forage.

Monitoring Actions

A. Range Utilization Studies. Review Ranger District programs to determine appropriate livestock grazing levels to maintain proper vegetative conditions. Monitor progress by:

1. Conducting utilization studies during and after the grazing season.

2. Establishing utilization plots to evaluate forage production.

3. Reviewing grazing reports to determine total animal months produced.

4. Establishing and maintaining range condition and trend monitoring programs.

B. Rangeland Condition and Trend. Determine if all rangelands are maintaining productivity, are in satisfactory or better condition, and have a static or improving trend in range conditions. Monitor by:

1. Documenting range condition based on review of Ranger District condition and trend surveys that apply current and approved range analysis methods.

2. Reviewing range condition assessments in District environmental analyses of projects that manipulate vegetation.

C. Updating of Allotment Management Plans. Determine if allotment management planning meets the time frames identified in the Forest Plan and meets the standards for AMP development in Regional

direction. Accomplish by reviewing Ranger District progress in developing allotment management plans.

Accomplishments/Findings

A. Range Utilization. The Standards and Guidelines identified in Chapter 4 of the Forest Plan were incorporated into every term grazing permit on the Lassen in 1994. Part 3 of the permit holds permittees accountable in meeting these Standards and Guidelines.

Allotment specific and site specific utilization standards are provided in annual operating instructions that are developed by interdisciplinary teams, with input from the permittee, based on monitoring and analysis of the previous season's grazing. Each permittee is provided with annual operating instructions every year that are designed to fine-tune management for that particular grazing season. This type of management is enabling us to achieve objectives that move us closer to desired rangeland conditions across the entire Forest. This is a dynamic type of management that accommodates change and allows flexibility.

All site-specific management standards are developed to achieve desired rangeland and ecosystem conditions. To further this, the Forest has cooperated with the Plumas and Modoc National Forests to develop consistent management Standards and Guidelines. Along with this, we have developed monitoring guides to standardize allotment monitoring, and a uniform action guide for permit administration. The three Forests also share range personnel. Term grazing permittees have all been offered the opportunity to attend training so that they too can understand the monitoring process. This enables them to better meet Forest Plan standards and guidelines.

B. Range Condition and Trend. The Forest is reading the historic condition and trend (C&T) plots as budgets and time allow. Current funding for the Forest's range program makes it difficult to accomplish any more than basic term grazing permit administration and annual allotment monitoring.

C. Updating of Allotment Management Plans (AMPs). The time frames identified in the Forest Plan to complete updating of allotment management plans were modified by the 1995 Recision Bill. This bill mandated a 15 year schedule for NEPA revision of AMPs. To date, the Forest has completed the NEPA analysis on seven grazing allotments. These include the Bainbridge, Procter, Bald Mountain, Upper Pine Creek, Bridge Creek, Duck Lake, and Poison Lake. In addition, environmental analyses are currently in progress on the South Eagle Lake, Fredonyer, Clovis Valley, Silver Lake, Robbers Creek, Grays Valley and Benner Creek allotments. The Forest is currently on schedule with these revisions, however it will be difficult to remain on schedule because of reduced funding.

12. Recreation

Forest Goals and Objectives

Provide a wide range of outdoor recreation opportunities to meet public demand. Opportunities include developed and dispersed camping, trails, interpretive services and facilities, diverse off-highway vehicle (OHV) recreation, and winter sports. Recreation residences are managed as components of the overall National Forest recreation program.

RECREATION OBJECTIVES

Resource Elements	Forest Plan Annual Objectives
Developed Public	629,000 RVDs 1/
Developed Private	190,000 RVDs
Dispersed	402,000 RVDs
Open Usable OHV Areas (summer)	763,000 acres
Open Usable OHV Areas (winter)	763,000 acres
Roads and trails open to OHV use (summer)	2,301 miles
Roads and Trails Open to OHV use (winter)	3,132 miles

1/ Recreation Visitor Day

Program Strategy

Provide a choice of developed recreation opportunities ranging from remote and primitive to accessible and highly developed. Improve access for persons with disabilities at recreation sites. Provide adequate off-road parking at trailheads to accommodate acceptable levels of use. Provide odor-free, cost effective toilet facilities where demand warrants placement. When railroad lines are scheduled for abandonment, assess the need for their use as multi-purpose recreation trails. Promote public awareness by providing information on forest management practices, natural resource information, maps and other publications. Cooperate in the planning, design, construction and maintenance of a joint Lassen National Forest and Lassen Volcanic National Park Interpretive Pavilion. Inventory and recommend qualifying roads in the Forest for the Scenic Byways programs. In consultation with local and State-wide user groups, plan and provide OHV facilities using State OHV monies to help finance design, construction, and maintenance of OHV facilities. Issue 20-year permits for recreation residences and review permits every 10 years for alternative public use.

Continue to operate the developed campgrounds through the use of concessionaires where the quality of public service can be sustained or improved.

Monitoring Actions

A. Developed Recreation sites. Determine condition of recreational facilities and need for repair or replacement. Sample and inventory recreation facilities condition.

B. Recreation Opportunity Spectrum (ROS) Classes. Determine conformance with ROS class objectives. Review projects, plans, and EAs for ROS class conformance. Review physical, social, and managerial setting of ROS classes.

C. Recreation Use. Determine actual use as compared with projected use. Improve accuracy of use reporting through use sampling.

D. Off Highway Vehicle (OHV) Effects. Determine effects of OHVs on critical soil, vegetation, cultural, wildlife, and visual resources. Determine level of conflict between OHV users and other recreationists. Update OHV plans.

Accomplishments/Findings

A. Developed Recreation Sites. Due to decreasing funding levels, most recreation facilities on the Forest are operated by concessionaires who maintain them at a full service level. Although the permits have a heavy maintenance requirement, little progress is being made to correct the backlog of facilities needing upgrades or replacement. In the future, private capital investment will be sought to reconstruct existing campgrounds in return for a 20 to 30 year permit to operate them. A public/private venture is currently being evaluated for the Lake Almanor Recreation Area. The Hat Creek Group Campground was reconstructed following the flooding that occurred in January 1997. Public dissatisfaction with the design of roads and camping space in the group camping area led to its re-design and modification in 1998 to better meet the public's needs.

B. ROS Classes. Other than recreation projects, most activities are not reviewed for ROS class conformance.

C. Recreation Use. Recreation use in our developed facilities is monitored through annual user surveys. The Forest Service originally conducted these counts, but the responsibility shifted to the concessionaires when they were permitted to run the campgrounds. This information is valuable for tracking trends in recreation use in our developed campgrounds. The trends during the reporting period have fluctuated both up and down. The data shows that weather is a major factor influencing use. Visitation at the Old Station visitor information center increased from 14,377 in 1998 to 16,000 in 1999. The Bogard Visitor Information Center was open for 104 days in 1998 and received 5,650 visits. In 1999 Bogard was open for 75 days and had an estimated 4,050 visits. Recreation use on the Almanor Ranger District increased around 5% from 1998. Dispersed recreation use is only monitored by simple observation and the Forest has seen a steady increase in dispersed recreation on the Forest.

D. Off Highway Vehicle (OHV) Effects. The Forest uses road counters, trail counters, and simple observation to monitor OHV use. Road counters installed at eight locations Forest-wide to determine winter OHV use indicate stable levels of use. District recreation personnel review OHV activities for impacts to Forest resources. The number of groomed snowmobile trails has expanded significantly across the Forest in the past 5 years to a system that now totals 457 miles.

Recreation use by the various activity groups is described below. These activities occur at both developed and dispersed sites, with the developed sites provided by both the Forest Service and private

concessionaires. Wilderness use is included in these figures and discussed in more detail in the wilderness section.

RECREATION ACCOMPLISHMENTS (M Recreation Visitor Days)

Activity Group	1993	1994	1995	1996	1997	1998	1999

Forest Goals and Objectives

Maintain habitat and viable populations to contribute to eventual de-listing of sensitive plants that are found on the Forest. Manage sensitive plants to insure that species do not become Threatened or Endangered because of Forest Service actions.

Program Strategy

Develop species management guides for sensitive plants that identify population goals and compatible management activities. Evaluate all proposed projects for potential sensitive plant habitat. Conduct surveys at the correct time of the year for species identification if potential habitat exists in a project area. If sensitive plants are found in a proposed project area, modify the project or take mitigative action as necessary to protect the habitat.

Monitoring Actions

A. Gather ecological and biological data and document populations and habitat trends from field surveys via photo points or quadrant sampling, as described in sensitive species management guides. Conduct field surveys for environmental analyses of proposed projects during the season when sensitive plants can be accurately identified.

Accomplishments/Findings

Numerical monitoring, as called for in the species management guide, was set up on one occurrence of *Orcuttia tenuis* to compare grazed and ungrazed parts of the occurrence.

Visual monitoring was conducted of 28 previously known occurrences of Threatened, Endangered, and Sensitive plant species. In most cases, plant numbers appear more or less stable (within normal year-to-year variation). In addition to monitoring previously known occurrences, 34 new occurrences of Threatened, Endangered, Sensitive and 33 new occurrences of Special Interest plant species were discovered and recorded.

Pre-project surveys for rare plants were conducted on 46 projects across the Forest in the 1999 field season, for a total of 98 person-days in project-related inventory, resulting in numerous new occurrence discoveries (see above). NEPA or landscape analysis input (including Biological Evaluations (BE's) or Biological Assessments (BA's) when applicable) was provided for all projects.

An Errata Sheet needs to be prepared to update Forest Threatened and Endangered plant information, since the Lassen now has two Federally listed plants; both are grasses that occupy vernal pools: *Orcuttia tenuis* and *Tuctoria greenei*.

Region 5 revised the Sensitive plant list in 1998, resulting in significant changes to the Lassen's Sensitive and Special Interest plants lists. An amendment to the LRMP to address Special Interest Plant Species management is recommended.

14. Soils

Forest Goals and Objectives

Irreversible losses of soil productivity are prevented and all substantial areas of significantly degraded soil are restored.

Program Strategy

Prevent irreversible losses of soil productivity. Maintain soil cover of sufficient depth and extent to prevent the rate of accelerated soil erosion from exceeding the rate of soil formation. Plan for restoration where soil porosity or bulk density exceeds 10 percent of pre-disturbance conditions. Retain organic matter on site to prevent significant short or long-term nutrient cycle deficits.

Monitoring Actions

A. Organic Matter and Ground Cover. Prevent irreversible loss of soil productivity by using erosion hazard information and by assessing the effects of management prescriptions and Forest projects on soil properties. Assess key soil properties, (i.e. puddling, erosion, mass movements, organic matter, and evidence of severe burning) to determine if any losses in soil productivity are likely to occur. Sample projects on each District to determine if erosion hazard ratings were made and considered in project design.

B. Soil Compaction. Determine soil compaction from timber harvesting, biomass removal, site preparation, rangeland use, recreational activities, and other soil disturbing activities. Use findings to develop more stringent mitigation measures where needed and to suggest areas requiring special site preparation measures to remedy past compaction. Monitoring changes in soil density will be conducted with the nuclear gauge, air permeameter, penetrometer, or other equipment. If possible, monitor selected sites before and after disturbance; otherwise, compare the disturbed site to an undisturbed site with the same soil.

Accomplishments/Findings

A. Organic Matter and Ground Cover. Because the Forest has been without a soil scientist since 1995, soil productivity monitoring was not done.

B. Soil Compaction. The Forest acquired a recording penetrometer in 1998 that measures soil strength (i.e. resistance to penetration) in 15 mm depth increments during a number of penetrations along sampling transects. Its first practical use will be to assess soil compaction effects of a variety of treatments and follow-up site preparation and subsoiling activities, as part of a black stain study. That study is being conducted in conjunction with the Swains Hole Timber Sale, by assessing before and after effects to 20 surveyed, five-acre plots.

Informal soils monitoring was done on some Almanor Ranger District projects in 1998 by the District Hydrologist, but no formal protocols were observed in that monitoring. Other sales and biomass operations continue to be monitored by project personnel during the wet season using the visual indicators developed by the former soil scientist to avoid soil compaction. Operations are curtailed as needed to prevent soil compaction.

15. Special Areas

Forest Goal and Objectives

Areas of outstanding scientific, scenic, botanical, or geologic value are protected as Research Natural Areas (RNAs) or Special Interest Areas (SIAs).

SPECIAL AREA OBJECTIVES

Resource Elements	Forest Plan Annual Objective (Number of areas/M acres)
RNAs	8/14.3
SIAs	7/2.3

Program Strategy

Establish RNAs for baseline ecological study, protection of gene pools, and habitat preservation for Forest-listed sensitive plant species. Recommend to the Chief of the Forest Service RNA designation for the following areas: Green Island Lake; Indian Creek; Soda Ridge; Timbered Crater; Mayfield; and Graham Pinery.

Upon approval of the Lassen Forest Plan, the following were classified as Special Interest Areas: Black Rock Geological Area; Crater Lake Geological Area; Deep Hole Geologic Area; Homer/Deerheart Scenic Area; Montgomery Creek Grove Botanical Area; Murken Botanical Area; and Willow Lake Bog Botanical Area.

Monitoring Actions

Monitor any change in the features for which a RNA or SIA was established. Conduct field inspections according to the plan for each special area.

Accomplishments/Findings

Two established Research Natural Areas and six candidate RNAs (cRNAs) exist on the Lassen National Forest. The Timbered Crater cRNA and Willow Lake botanical SIA were visited in 1998 and informally monitored. They appear stable.

Blacks Mountain RNA is being monitored as part of a larger eastside pine study conducted by the Pacific Southwest Research Station. A Forest Plan amendment is needed to replace Graham Pinery cRNA with the proposed Iron Mountain cRNA.

An amendment is also recommended to refine management direction and defer preparation of SIA plans, except for the Willow Lake SIA plan; include a monitoring strategy for SIAs in the absence of SIA plans.

16. Timber

Forest Goals and Objectives

The timber resource is managed to provide a sustained quantity of forest products by selecting silvicultural practices from the full range available on an individual stand basis with consideration of biological requirement, economic efficiency and Forest goals for other resources.

TIMBER OBJECTIVES

Resource Element	Forest Plan Annual Objective
Allowable Sale Quantity	96 MMBF
Long-term Sustained Yield	139 MMBF
Reforestation	3,600 acres
Timber Stand Improvement	4,700 acres

Program Strategy

Timber harvesting shall occur on all lands classified as suitable for timber production. Apply both even-aged and uneven-aged timber management for timber production. The landscape will be managed to provide a mosaic of even-aged and uneven-aged timber stands. Uneven-aged timber management will be emphasized in the Eagle, Lost, and Feather River Management Areas. Clearcutting will only be used when it is the optimum silvicultural method and supported by site-specific analysis. Harvested lands will be regenerated to achieve minimum stocking standards within five years of final harvest. Where vegetative competition will substantially inhibit tree survival and growth, analyze a full range of available vegetative management techniques. Permit personal-use Christmas tree cutting. Harvest salvage/sanitation trees while meeting Standards and Guidelines for snag levels.

Quincy Library Group

On August 20, the Record of Decision (ROD) for the Herger-Feinstein Quincy Library Group Forest Recovery Act, Final Environmental Impact Statement was signed. The ROD established a pilot project that encompasses most of the Lassen National Forest lands. Alternative 2 with additional mitigations was chosen as a course of action as a result the Lassen Land and Resource Management Plan was amended to reflect the actions of Alternative 2, for the duration of the pilot project (5 years). The ROD was signed late in FY99 and this had minimal impact on the direction and outputs. Starting in FY00, most of the Lassen National Forest land base will adhere to the direction of the ROD.

Monitoring Actions

A. **Timber Sale Volume.** Evaluate timber sale volume for the Plan period in relation to the allowable sale quantity. Determine the total volume sold each year during the Plan period from Management Attainment Reports (MAR).

B. **Regeneration Acreages.** Determine acreage of Forest's regeneration timber harvest in relation to Forest Plan objectives. Obtain the information from timber sale reports or other sources.

C. **Plantation Stocking Level.** Determine if tree stocking in plantations meets minimum Regional standards and will assure regeneration of the forest within five years. Field review five percent of the plantation exams to assure compliance with Region 5 standards.

D. **Land Suitability and Timber Production.** Determine if a change is needed in the allowable sale quantity (ASQ) due to new forest growth and utilization information; land base reductions due to land exchange; RNA, wilderness, wildlife habitat, and semi-primitive designations; or changes in management intensity. Determine the change in timber acreage and volume due to new information and as a result of each Forest action. Compare the new land base and inventory values to those listed in the Plan.

E. **Maximum Clearcut Size Limits.** Determine whether size limits for clearcut areas should be continued or revised. Evaluate maximum size clearcut areas for their productivity and capability to achieve resource objectives, based on requirements for watershed, wildlife habitat, scenery, biodiversity, soils, and other resource protection needs.

Accomplishments/Findings

A. Timber Sale Volume. The Forest Plan ASQ is 96 MMBF for the first decade. In 1993 the ASQ was amended by the California Spotted Owl Sierra Province Interim Guidelines decision to 80 MMBF. The ASQ volumes in the Forest Plan and owl direction reflect sawtimber only.

TIMBER SALE VOLUME

Year	Sawtimber Offer (MMBF)	Biomass	Offer (MMBF)Total (MMBF)	Plan ASQ (MMBF)	Cal Owl Amendment (MMBF)
1993	80	30	110	96	80
1994	78	37	115	96	80
1995	46	58	104	96	80
1996	43	54	97	96	80
1997	63	27	90	96	80
1998	32	30	62	96	80
1999	19	27	46	96	80

REGENERATION ACRES

Year	Regeneration Cut (acres)	Overstory Removal (acres)	Total (acres)	Reforestation (acres planted)
1993	826	5,141	5,967	2,601
1994	59	5,658	5,680	3,425
1995	239	3,724	3,763	2,016
1996	107	356	1,680	1,455
1997	487*	0	487	2,269
1998	869	0	869	2,410
1999	0	0	0	2,410

*The result of windthrow and salvage.

Note: Reforestation accomplishments do not match the regeneration acres. Delays between timber harvest and site preparation for planting, fires, and other catastrophic events result in acres planted not matching acres harvested in any specific year. Overstory removal cuts usually do not create reforestation needs.

B. Regeneration Acres. Records show regeneration for overstory removal cuts as well as for other harvesting where follow-up reforestation is needed. These two categories are displayed in the preceding table.

C. Plantation Stocking Level. Every year, the Forest prepares a "Status of Reforestation" report for review by the Regional Forester and the Chief. This report assesses the stocking status of all reforested lands five years after harvest. The most recent year analyzed was 1993. The first year the report was submitted was 1988. The table below presents the results of these five years. This report was discontinued in Fiscal Year 1999.

PLANTATION STOCKING LEVEL

Year Cut	Harvest Acres	Percent Adequately Stocked
1988	3,043	100
1989	3,552	100
1990	3,821	100
1991	3,365	94
1992	1,955	100
1993	1,444	93

D. Land Suitability and Timber Production. On August 20, 1999, the Record of Decision (ROD) for the Final Environmental Impact Statement required by the Herger-Feinstein Quincy Library Group Forest Recovery Act was signed. The ROD establishes a pilot period and emphasizes silvicultural treatments as per the Act. The Act also establishes a land base where silvicultural treatments can occur. Timber outputs were thus modeled within the pilot project area. The effect of this action was minimal in Fiscal Year 1999. The effect will be fully realized starting in Fiscal Year 2000.

The Sierra Nevada Conservation Framework and associated Forest Plan amendments and Record of Decision may affect silvicultural prescriptions, land suitability, etc.

E. Maximum Clearcut Size Limits. No analysis concerning this issue has been completed. Interim California spotted owl direction has resulted in no clearcutting since 1993.

17. Vegetation and Diversity

Forest Goals and Objectives

Provide vegetative diversity to maintain scenic quality, to maintain viable populations of plants and wildlife, and to minimize loss from wildfire.

Program Strategy

Provide at least five percent of the acreage of each vegetation type that occurs in a management area in each seral stage. The vegetation types are mixed conifer, eastside pine, red fir, hardwoods, and chaparral. Where the five percent of each type is not available, plan to correct the deficit. For each management area, determine the arrangement of vegetation types and seral stages needed to maintain viability of all wildlife species, based on accepted habitat capability models.

For each management area, determine the arrangement of vegetation types and seral stages needed to maintain viability of all wildlife species based on accepted habitat capability models and other information.

Maintain late seral stage acreage in old growth retention areas designated in each management area. Limited timber management may take place in old growth retention areas where necessary to enhance the desirable characteristics of old growth stands.

The Northern Spotted Owl EIS (Northwest Forest Plan) amended the Forest Plan to provide for the management of late successional and old growth dependent species by establishing late successional reserves (LSRs). In addition, the EIS established riparian reserves for the management of riparian dependent species.

A network of 40 California spotted owl habitat areas (SOHAs) have been established. In addition, the California Spotted Owl Sierran Province Interim Guidelines (Interim Guidelines) amended the Forest Plan and directed the establishment of protected activity centers (PACs) of 300 acres each for each known spotted owl site. In addition, the Interim Guidelines limited activities that could occur in selected and other strata preferred for nesting by spotted owls.

The Forest Plan also established a system of 19 habitat management areas (HMAs) for the marten and 5 HMAs for the fisher, plus corridors of suitable habitat linking the HMAs to each other and to HMAs on the Forests to the north and south of the Lassen. No scheduled timber harvest is allowed within these areas (thinnings or salvage harvesting may occur if determined to be compatible with the management of these species).

Refer to the sections on Special Areas, Wilderness, and Wildlife for elaboration on vegetative diversity.

Monitoring Actions

A. Vegetation Seral Stages Including Old Growth. Ensure that the minimum required acreage and distribution of all seral stages of the existing vegetation types, including old growth forests, are provided within each management area. Survey old growth habitat and vegetative diversity in conjunction with timber inventory, compartment and stand exams, project environmental analyses, and timber sale reviews. Include old growth inventory in the next Forest-wide timber inventory. Evaluate impacts of harvesting in goshawk and old growth areas within two years of harvest completion. Inventory sites to compare stand characteristics with the habitat capability model for goshawks.

B. Woodpeckers, Snags and Down Logs. Ensure that the amount, distribution, and characteristics of snags and down logs in each management area are consistent with the needs of woodpeckers as specified in Habitat Capability Models. Survey snags, and down logs and compare results with standards established for woodpeckers.

C. Maintenance of Old Growth Component. Evaluate impacts of current insect mortality and salvage harvesting in all designated habitat management areas within two years. Inventory areas to compare stand characteristics with habitat capability models, standards and guidelines.

Accomplishments/Findings

A. Vegetation Seral Stages Including Old Growth. *The Sierra Nevada Ecosystem Project* (SNEP) identified important findings, including information about late successional and old growth forests. Human activities, particularly timber harvest and fire suppression, have drastically reduced the extent of late successional forests through the removal of large trees and woody debris. Vegetation management and fire suppression have led to a dense in growth of shade-tolerant tree species, resulting in greater stand uniformity over large areas with a subsequent loss of landscape diversity. A likely outcome of the current Sierra Nevada Conservation Framework (SNCF) initiative will be a comprehensive Sierra-wide strategy for the enhancement of late successional and old growth Forests. This high profile effort may result in a significant amendment of the Forest Plan by January 2001. The amendment will address and amend current management direction for fire and fuels management, old-forest ecosystems, aquatic, riparian, and meadow ecosystems, oak woodland ecosystems, noxious weeds, and roads.

On the Lassen, seral stage diversity is generally monitored at the management area or watershed level for project-level (particularly timber sale) planning to determine current and projected seral stage distributions. All three Ranger Districts are also doing some monitoring and management to maintain or enhance aspen, and improve vegetative diversity.

B. Woodpeckers, Snags and Down Logs. Snags and downed logs are inventoried and standards are incorporated into project-level planning. No formal monitoring is done. Informal monitoring may occur on an incidental basis to ensure the appropriate number of snags and downed logs are being left as a project is being prepared and/or after project implementation.

C. Maintenance of Old Growth Component. The impacts of insect mortality and salvage harvesting in all designated HMAs has not been evaluated. Inventory and comparison of stand characteristics to habitat capability models standards and guidelines have not been done.

18. Visual Resources

Forest Goals and Objective

Throughout the Forest, maintain visual quality commensurate with other resource needs. Where past management activities do not meet adopted visual quality objectives, use visual rehabilitation to return visual quality to an acceptable level.

VISUAL OBJECTIVES

Resource Element	Forest Plan Annual Objective
Visual Quality Index	56

Note: Visual Quality Index was designed to clearly and simply display effects of alternatives and differences between alternatives regarding visual quality. It is never used in project planning.

Program Strategy

Meet or exceed Visual Quality Objectives (VQOs) identified on the "Adopted Visual Quality Objective Map," Prescriptions, or Management Area Direction. Keep VQOs compatible with Recreation Opportunity Spectrum classes. Vegetative treatments should be designed to blend as much as possible with the characteristic landscape. Buildings on National Forest System land should be shaped and colored to blend with the natural landscape.

Monitoring Actions

Determine compliance with VQOs. Review effects of selected projects in areas having VQOs of retention and partial retention. Occasionally review projects in areas that have a VQO of modification.

Accomplishments/Findings

The forest Landscape Architect is responsible for visual resource monitoring. During planning of individual projects, visual resource mitigation measures are incorporated into the project design to meet Forest Standards and Guidelines. All Forest projects have been planned to meet Adopted Visual Quality Objectives (AVQOs). Informal post-project monitoring has been accomplished since the Forest Plan was implemented in 1993 to determine is AVQOs have been successfully met after project completion. In most instances, the Forest is meeting the AVQOs.

19. Water and Riparian Areas

Forest Goals and Objectives

National Forest management activities are conducted to provide a sufficient quantity and quality of water to meet current needs; limit impacts on water quality from individual projects; comply with Federal, State, regional, and local water quality regulations; and maintain or improve riparian-dependent resources.

WATERSHED OBJECTIVE

Resource Elements	**Resource Elements**
Quality (M acre-feet at standards)	1,304
Quantity (M acre-feet)	1,304
Increased Quantity	-4
Improvement (acres)	75
Riparian Area Improvement (acres)	20

Program Strategy

Implement Best Management Practices (BMPs) to meet water quality objectives and maintain and improve the quality of surface waters on the Forest. Provide water for Forest use, wildlife or fish by filing for and maintaining all water rights needed for such uses.

Consider third-order watershed areas when analyzing proposed project effects. Conduct formal cumulative watershed effects analysis and use a quantitative method to assess project effects, consistent with the Regional BMP Handbook to mitigate cumulative effects.

Comply with discharge requirements of the Clean Water Act, State drinking water and sanitary regulations and State and Regional Water Quality Control Board basin plans and rulings. Take immediate remedial action if activities under Forest Service management violate water quality standards. Plan and administer all projects in the Eagle Lake Basin to protect the water quality of the lake.

Where uses conflict, favor protection of riparian-dependent resources (water, fish vegetation, wildlife, and aesthetics) over other resources. Apply the Riparian/Fish Prescription to all areas bordering perennial, intermittent, and ephemeral streams, lakes, wetlands, seeps, springs, and wet meadows.

Monitoring Actions

A. Water Quality Management. Assess compliance with and effectiveness of BMPs for all management activities in a given watershed. Review project environmental analysis documents, contract provisions, field activities, water quality analysis, and field observations.

B. Significant Changes in Watershed Condition. Identify damaged watersheds or sub-basins and needed improvements. Review water resources project reports, watershed surveys, Management Attainment Report (MAR) accomplishments, and the Watershed Improvement Needs inventory (WIN). Compare with requirements of BMPs.

C. Eagle Lake Water Quality. Detect any decreases in water quality compared to long-term average quality, particularly any adverse effects from National Forest System lands. Subject to availability of funds, continue participation in a Challenge Cost-Share project with California Department of Water Resources to sample at nine established stations on the lake.

D. Cumulative Watersheds Effects. Identify cumulative impacts of proposed land-disturbing activities in specific watersheds and impacted sub-basins. Recommend appropriate Thresholds of Concern to management to keep disturbance below levels that could create adverse water quality effects. Review project environmental documents and conduct watershed surveys. Inspect completed projects to check for any adverse watershed impacts that might occur due to cumulative effects.

E. Riparian Habitat.

1. Intensive Monitoring of Sampling Points. Assess riparian values, condition, and trend. Quantify riparian values, condition, and trend by measuring riparian parameters on permanent riparian plots. Establish plots with an interdisciplinary team comprised of soils, biology, hydrology, and range. The technique will include at least periodic photo-point documentaries, channel condition ratings, and vegetation condition ratings on permanent plots.

2. Extensive Monitoring of Major Riparian Zone Types. Assess current, general condition of riparian zone resources. Use riparian assessments from range condition reports, including photos and professional narratives where available. Establish additional photo-points as needed to determine the overall condition of key indicator riparian zones not reviewed as part of the range management program. Persons taking the photos should prepare brief, accompanying narratives after consultation with Ranger District and Forest staff.

Accomplishments/Findings

The Forest Plan, as modified by the Response to Comments, requires six monitoring components for these resources: (1) Water quality management (use and application of approved BMPs for water quality protection); (2) Assessment of potentially significant changes in watershed conditions, based on a sampling of two sub-basins per year per District; (3) Eagle Lake water quality monitoring; (4) Cumulative watershed effects assessment; (5) Riparian habitat (intensive monitoring), based on a set of permanent plots; and (6) Riparian habitat (extensive monitoring), based on photo-points and range condition surveys.

A. Water quality management. BMPs continue to be monitored using the Pacific Southwest Region's BMPEP (Best Management Practices Evaluation Program) protocols, with evaluation quotas established for all Forests in California. The Forest met its 1998 BMPEP targets by conducting 47 onsite evaluations, most of which were randomly selected from project lists developed in accordance with BMPEP protocols. Evaluations were entered into the Regional database, increasing the number of evaluations conducted on the Lassen since 1993 to 315 evaluations.

B. Significant changes in watershed condition. This monitoring element was originally intended to affirm that appropriate restoration measures were implemented on heavily impacted watersheds, mainly after wildfire or clearcutting. With the recent declines in timber harvesting, this monitoring would be worthwhile only after wildfires burned most of one or more subwatersheds (sub-basins). None have been done since 1993. Watershed analyses have been completed for the Deer, Mill, and Antelope Creek watershed area on Almanor Ranger District and for the Rock Creek watershed on Hat Creek Ranger District.

C. Eagle Lake water quality. The Lassen National Forest has been working with the California Department of Water Resources to monitor water quality in Eagle Lake since 1968. The monitoring protocols for the long-term monitoring at Eagle Lake were modified in 1997, reducing the number of sampling stations from nine to seven, including a new station at the deepest point in the southern basin. Sampling continued in 1998, and the water quality of Eagle Lake is generally good, except for typical, seasonal deep water anoxia during the stratified summer period. Lake levels dramatically recovered after the unusually wet winters of 1996-97 and 1997-98. Many water quality parameters benefited from that dilution. For example, pH declined from 9.3 to 9.0-9.1, and electrical conductivity decreased. Water quality measurements show no unusual trends or conditions.

In view of heavy use periods by boaters in the summer and the operation of a jet ski rental concession at Gallatin marina, several samples were taken to determine if MTBE contamination was occurring in Eagle Lake. Two 1998 samples were positive, one barely detectable, and one taken just outside the marina measured 1.8 parts per billion (compared to a taste threshold of 5 ppb). Recent MTBE studies by U.C. Davis have noted the dissipation of MTBE from affected surface layers of Donner Lake after the boating season, so it does tend to diminish over time, rather than concentrating, if loading does not continue. In view of the Governor's recent decision to discontinue use of MTBE in California over the next few years, it is not expected to be of future concern at Eagle Lake, but the Forest will measure MTBE again in 1999, to be sure the problem has not worsened...once after July 4th weekend, and once in the fall. Increased MTBE concentrations could require changes in the Forest Special Use Permit that governs Gallatin Marina operations if taste (5 ppb) or public health thresholds (14 ppb) were exceeded.

The Lassen National Forest has been an active participant in hydroelectric relicensing for the Pit 3, 4, 5 project, which requires that the Forest Service assess the overall effect of those hydroelectric diversions and dams on the Pit River ecosystem and the potential effects of alternative release schedules before developing Section 4(e) conditions for regulating diversions under the new license. Stage I consultation with Pacific Gas & Electric (P.G. & E.) and other interested agencies and groups was started in 1998 and continues into 1999. Proposed studies would develop some innovative, baseline monitoring information, including a geomorphologic inventory; actual flow release studies of recreational, temperature, and river stage effects; and the acquisition of large scale, geo-referenced digital color infrared photography of the river corridor in Arc-Info (a geographic information system, or GIS) compatible format.

Extensive planning for watershed improvement projects was accomplished in 1998, to reduce long-term sediment sources from road system features in the Deer, Mill, and Antelope Creek watersheds. Refer to the CALFED discussion at the end of this section.

D. Cumulative watershed effects. Cumulative watershed effects continue to be estimated for projects impacting subwatersheds containing or directly tributary to Class I streams. Projects analyzed in 1998 included proposed timber sales and fuel reduction projects on Almanor, Eagle Lake, and Hat Creek Ranger Districts. The monitoring of one third- or fourth-order watershed per year for post-project assessments and validating of cumulative impact estimates has not happened. Most of our projects would create effects well below their subwatersheds' threshold of concern, and no presently available monitoring techniques can separate project effects from the impacts of the local year-to-year climate variations on the watersheds. For example, the rain on snow event in January, 1997 created massive washouts and sediment transport in some subwatersheds, most notably Yellow Creek and Butte Creek.

The Pacific Southwest Region is working with the Pacific Southwest Forest and Range Experiment Station to develop in-channel monitoring methods that will assess the cumulative effects of our land management practices and the effectiveness of BMPs used with those activities. The Lassen National

Forest has not conducted any formal in-channel evaluations to date, because of the limited scope and subwatershed dispersal of our recent projects and because no standard protocols have been developed to measure those effects (informal in-channel evaluations have been conducted in four portions of the Deer, Mill, and Antelope Creeks' watersheds; see Item E1 and E2 below).

E1 and E2. Intensive sampling of selected riparian monitoring points and extensive monitoring of major forest riparian zone types. None of the envisioned photo-point records have been established, because of higher priority work, including watershed analysis of the anadromous fishery watersheds on Almanor Ranger District and the Forest's participation in development of Region-wide and National Stream Condition Inventory (SCI) protocols. In addition to temperature monitoring in Mill Creek, SCI's have been done on Butt Creek, Bailey Creek, and Philbrook Creek. In 1998, SCI's were done on Gurnsey Creek (tributary to Deer Creek), Colby Creek, and Upper Mill Creek. Riparian zone conditions have been assessed along Colby Creek and Upper Mill Creek.

Riparian zone conditions were assessed in the Pit 3 and Pit 4 reaches of the Pit River in 1999 and 2000, as part of the P.G.&E. relicensing studies needed to analyze the effects of hydroelectric flow diversions in the Pit River. Those studies will also provide baseline information for long-term monitoring of diversion effects during the new license period (up to 50 years).

The Forest Service will be developing monitoring protocols in 2000 for the projects mandated by the Herger-Feinstein Quincy Library Group Forest Recovery Act. Monitoring of those projects will necessarily include BMPEP onsite evaluations and other soil and water quality monitoring.

Channel condition and riparian zone monitoring continue at several long-term photo-points and cross-sectional stations along Pine Creek, in conjunction with ongoing Coordinated Resource Management Planning (CRMP) and stream corridor restoration activities. Monitoring frequency there has been decreased, from every two years to every three or four years, because changes there are so gradual. Channel conditions have notably improved in many reaches of Pine Creek since the CRMP process started in 1987, particularly in Pine Creek Valley and behind the grade control structure downstream from Logan Springs (``Bradford Crossing'').

Riparian zones in grazing allotments are assessed as part of range utilization and condition/trend monitoring. Long-term trends in range condition are stable or positive on the Forest's allotments. The preferred alternative identified an average annual output of 75 acres per year in watershed improvements. The following table presents accomplishments during the FY 1993 - FY 1999 period. Additional acres accomplished were due to improved inventories of problem sites and increased regional and national priority funding for this type of work in the year it was accomplished.

WATERSHED IMPROVEMENT

Year	Total Acres	KV funded (acres)	NF funded (acres)
1993	170	150	20
1994	30	0	30
1995	172	96	76
1996	61	5	56
1997	105	0	105
1998	36	0	36
1999	130	80	50

Note: Most of these accomplishments were in riparian zones, and the years with larger acreages include areas with exclosure fencing.

With limited direct funding to accomplish watershed improvement work, the Forest has sought funding from alternative sources to accomplish numerous sediment-reduction projects in five anadromous fisheries on the Almanor Ranger District and for ongoing stream corridor improvement work along Pine Creek on Eagle Lake Ranger District. In 1997, the Lassen National Forest applied for a CALFED grant to perform inventory, design, and environmental analysis of solutions to road-related sediment sources on National Forest System lands in Deer, Mill, and Antelope Creek watersheds. Some demonstration projects were included in that proposal. Deliverables included an updated road problem inventory and assessment, NEPA documents, new Arc-Info coverages of site locations, and a long-term road management plan for the area. The Forest received the grant, and funds were made available in March 1998, to begin a three-year process to develop long-term solutions for road problems in those drainages. The Forest is on schedule with that planning and design work. Over 250 sites have been identified for improvement.

Another CALFED grant proposal was submitted in April 1999, to expand previous planning work into the adjoining Butte Creek and Battle Creek watersheds and to implement 150 of the highest priority projects developed from the first CALFED grant.

In June 1999, the Forest submitted two proposals for Washington Office consideration. The first would supply promised Forest Service cost-share funding for the second CALFED grant or accomplish some of the highest priority projects if we do not get the second CALFED grant. The second proposal was for limited funding for five years, to support ongoing CRMP efforts to restore the Eagle Lake trout fishery in Pine Creek. This work in Pine Creek will be ongoing--although at a much lower accomplishment rate for a longer period--if solely funded from normal range betterment and watershed improvement budgets.

20. Wild and Scenic Rivers

Forest Goals and Objectives

Recommend eligible, suitable river for Federal Wild and Scenic designation. Protect and enhance outstandingly remarkable values and the free-flowing condition of recommended and designed Wild and Scenic Rivers.

WILD AND SCENIC RIVER OBJECTIVE

Resource Elements	Base Year Output (1982)	Forest Plan Annual Objective
Wild	0	48.5 miles
Scenic	0	10.0 miles
Recreational	0	17.5 miles

Program Strategy

Recommend Antelope, Deer, and Mill Creeks for Wild and Scenic River designation. Administer river corridors commensurate with their proposed Wild and Scenic River designations.

Monitoring Actions

A. No degradation of wild, scenic, or recreational values for which each river corridor has been designated or recommended for designation. Field inspect proposed and/or designated wild and scenic river corridors.

Accomplishments/Findings

Monitoring of Wild and Scenic Rivers reflects that outstandingly remarkable values of the three proposed Wild and Scenic Rivers are being maintained. However, anadromous population levels are still low and a cause for concern. As a result, Central Valley steelhead have been listed as "threatened" and spring-run chinook salmon have been proposed as "endangered" under the Endangered Species Act. In order to reduce impacts and increase the populations of salmon and steelhead in Deer and Mill Creeks, special fishing regulations were developed and implemented by the California Department of Fish and Game in 1994. Habitat monitoring of steelhead and chinook salmon runs occurs on an annual basis (refer to the Fish section of this report for more information).

21. Wilderness

Goals and Objectives

Classified wilderness is managed to protect and perpetuate the wilderness character of the area; to provide opportunities for primitive recreation; to protect scenic and watershed values; and to maintain or enhance the quality of wilderness experiences.

WILDERNESS OBJECTIVE

Resource Elements	Forest Plan Annual Objective
Wilderness Acres	99,644
Wilderness Units	7
Wilderness Use (M RVD)	37.4

Program Strategy

Recommend the following Further Planning Areas for wilderness designation: Heart Lake and portions of Mill Creek, Trail Lake B, and Wild Cattle Mountain.

Define and implement Limits of Acceptable Change for each wilderness and incorporate into the wilderness plans.

Monitoring Actions

Determine if wilderness values are being maintained in each wilderness and recommended wilderness. Inspect trails, camping areas, trailheads, and use data for heavy use areas. Review activities adjacent to Further Planning Areas. Prepare annual wilderness reports.

Accomplishments/Findings

Limits of acceptable change (LAC) monitoring was established at historically used campsites around all named lakes in the Caribou Wilderness in 1991 using the Campsite Impacts Worksheet. In 1995, LAC data was again collected and information was documented on a Campsite Condition Evaluation Form. This documentation showed changes from the 1991 data and corrective action was taken to remove excess fire rings, social trails, and to note areas for revegetation. During the 1998 season, additional rehabilitation of impacted sites was completed.

In the summer of 1993, a campsite condition survey was completed in the Thousand Lakes Wilderness. In 1995, the Lassen National Forest entered into a Challenge Cost-Share agreement with California State University, Chico, to monitor campsite conditions and LAC in the Ishi Wilderness.

All wilderness trails are monitored every year; problems are documented, and maintenance crews have completed the work. Additionally, campsite condition surveys were completed with the campsites being continually monitored throughout the recreation season of approximately June - September. Results of

this monitoring are used for daily maintenance decisions, decisions on where to implement restoration projects, and to determine if degradation is severe enough to result in campsite closure.

In the Thousand Lakes Wilderness, the Cypress Trail was completely rehabilitated in 1998, repairing damage caused by the flood of January 1, 1997. All interior trails were brought up to standard during the summer of 1998. Other monitoring in the Thousand Lakes Wilderness is the annual snow course which measures the depth and water content of the snow for water runoff determinations by the State.

The Districts complete the Regional wilderness report annually.

From 1995 to present, a Forest Interdisciplinary Team has been working on a wilderness landscape analysis to further define Limits of Acceptable Change and desired wilderness conditions. A Forest Plan amendment will be prepared to analyze outfitter/guide use in the Forest's three wildernesses. Research will also continue to assess the effects of fish stocking on aquatic species in the Caribou and Thousand Lakes Wildernesses.

The following table shows measured wilderness use since 1993. Actual use averaged 24,213 recreation visitor days (RVDs) per year, below the Plan annual objective of 37,400 RVDs. Visitor use trends in the Lassen wildernesses have been relatively stable over the past four years with most use occurring on the weekends.

WILDERNESS ACCOMPLISHMENTS

Year	**Wilderness Recreation**
1993	26,400 RVDs 1/
1994	24,400 RVDs
1995	26,500 RVDs
1996	26,500 RVDs
1997	22,500 RVDs
1998	20,300 RVDs
1999	22,889 RVDs

1/ Recreation Visitor Day

22. Wildlife

Goals and Objectives

Wildlife habitat is managed to assist recovery efforts for Threatened and Endangered species; to provide for viable populations of spotted owls, goshawks, marten, and fisher; and provide sufficient habitat for species dependent on snags, nest cavities, and dead and down wood. Forage and cover for deer will be created through habitat size, shape, and distribution. Species diversity will be maintained by enhancing ecotones and other special habitat elements. Sensitive species habitat will be managed to ensure that these species do not become Threatened or Endangered. Wildlife habitat for all species will be improved through cooperation with Federal, State, and local agencies.

WILDLIFE OBJECTIVES

Resource Elements	Forest Plan Annual Objective	Current Status
T & E Species		
Bald Eagle (pairs)	16	20 (N.F.), 8+ (pvt)
Northern Spotted Owl	1	no pairs, 2 res. singles, 5
Peregrine Falcon (pairs)	3	active
Other Wildlife		
Deer (animals)	45,600	reduced 60% since 1992
California Spotted Owls (habitat areas)	40	40
Goshawk Management Areas	113	111
Wildlife User Days (WFUD's)*	58,100	no data
Direct Habitat Improvement (WFUD's)		
Deer	540	no data
Small Game and Non-game	800	no data
Wildlife Habitat Improvement (acres)		
Deer	1,300	no data
Small game and Non-game	80	no data

* WFUD = wildlife and fish user day

Program Strategy

A. Threatened and Endangered species. Provide suitable habitat for all nesting pairs of bald eagles and peregrine falcons. Conduct activities in northern spotted owl habitat consistent with the Interagency Scientific Committee recommendations. Manage and inventory suitable habitat for the Shasta crayfish.

B. Spotted owl and goshawks. Establish and maintain a network of 40 spotted owl habitat areas (SOHAs). In each spotted owl habitat area maintain a minimum of 1,000 acres of suitable base habitat and 650 acres of replacement habitat.

Establish and maintain a habitat network of 113 goshawk nesting territories. In each goshawk territory, provide at least 50 acres of suitable mature tree nesting habitat, including a primary and alternate nest stand. Provide 75 acres as a secondary management zone.

C. Marten and fisher. Establish and maintain 19 habitat management areas (HMAs) for marten and 5 HMAs for fisher. In each marten HMA, maintain 2,100 acres of suitable habitat. In each fisher HMA, maintain approximately 9,800 acres of suitable habitat. Provide corridors linking marten and fisher HMAs. New management activities will not be permitted in HMAs unless supported by a biological evaluation.

D. Deer. Maintain summer range to provide at least 20 percent forage and 20 percent thermal cover in 500 to 1,000 acre blocks.

E. Snags, nest cavities and dead and down wood. Maintain an average of at least 1.5 snags per acre on forested land units comprised of 1,000 to 5,000 acres each. Provide snags in groups along meadow edges, in brush fields, near streams and lakes, and in riparian areas. Provide downed logs as follows:

DOWNED LOGS OBJECTIVES

Vegetation Type	Density (logs/acre)
oak woodland, eastside pine	1.5
mixed conifer, lodgepole pine	3.0
true fir, mountain hemlock	4.0

F. Species diversity. Perpetuate and improve existing hardwood components. Regenerate deteriorating stands to maintain existing aspen and cottonwood vegetation.

G. Sensitive wildlife species. Management activities within habitat occupied by sensitive species will not be permitted unless supported by a biological evaluation.

Monitoring Actions

A. Bald Eagle Habitat.

1.Determine trends of the breeding population. Survey use and productivity of existing and potentially suitable nesting sites.

2. Evaluate trends in habitat capability for both nesting and wintering birds. Evaluate habitat conditions within nesting and wintering habitat using the variables defined in Habitat Capability Models.

3.Conduct bald eagle counts in cooperation with other agencies.

B. Northern Spotted Owls.

1.Evaluate trends in habitat capability. Follow Regional protocols to determine population and reproductive success.

2.Monitor the Late Successional Reserve (LSR) for habitat integrity.

C. Peregrine Falcons.

Monitor and survey historical and potential nest sites in cooperation with other agencies.

D. California Spotted Owl.

1. Ensure compliance of Forest projects with Regional spotted owl direction. Review project plans and implementation to assess impacts on spotted owl habitat area's (SOHAs) and non-network spotted owls.

2. Determine population and habitat condition trends in network SOHAs. Quantify habitat characteristics and conduct direct counts of breeding pairs and fledgling success in a sample of network SOHAs according to protocols in the Spotted Owl Monitoring Handbook.

3.Validate Regional direction for maintaining populations of spotted owls through direct counts of breeding pairs and fledgling success. Sample sites having a variety of habitat conditions.

E. Goshawks.

Determine population and habitat trends within designated goshawk habitat. Identify and document habitat conditions in goshawk management areas (GMAs). Survey designated habitat and determine occupancy and reproductive success in 10 percent of GMAs.

F. Marten and Fisher.

1. Field verify the suitability of designated marten and fisher HMAs. Identify which areas are not currently suitable and plan for reaching suitability. Compare verified habitat components to the current literature and habitat capability model.

2.Review scientific literature for evolving definition of suitable habitat. Change and refine HMAs as appropriate.

3.Verify occupancy and use by designated species in each HMA. Conduct population sampling studies in selected HMAs as methods are developed.

G. Black Bear.

Assess changes in habitat capability and population trends resulting from management activities. Analyze habitat capability in management areas where emphasized. Conduct post treatment reviews of projects involving mitigation measures.

H. Deer and Antelope.

Determine population trends in relation to management activities. Ensure that desired levels of habitat are provided. Compare habitat capability with current population estimates from the California Department of Fish and Game. Assess habitat conditions following vegetation management projects.

I. Western Gray Squirrel.

Determine population and habitat trends. Determine trends of selected habitat components especially hardwoods. Sample habitat to determine capability for squirrels. On a Management Area basis, summarize acreages, species composition, and existing basal area. Determine desired basal area based on habitat capability models (basal area is the area of the cross section at breast height of a single tree or of all the trees in a stand, usually expressed in square feet).

J. Hairy and Pileated Woodpeckers.

Determine population and habitat trends of these two species. Conduct habitat or snag transects and population surveys on selected sites.

K. Ospreys.

Insure that ospreys are successfully reproducing and that adequate nesting habitat exists for osprey around Eagle Lake, Lake Almanor, Lake Britton, and other major water bodies. Conduct population and productivity surveys and habitat transects near major bodies of water.

L. Waterfowl (mallard and bufflehead).

Determine trends in nesting populations of waterfowl. Make direct counts of nests, adults, and young on selected sites.

Accomplishments/Findings

A. Bald Eagles. In 1999, Forest wildlife biologists documented 18 active nests on National Forest lands. In general, bald eagles have increased in number and reproductive presence on the Forest since implementation of the Forest Plan. Current concern regarding management of this species centers on the cumulative impacts resulting from development of private lands primarily within the Almanor basin. At present, the Lassen is planning to develop basin-wide management plans to address some of these concerns and to guide management of the National Forest lands within these basins.

Each winter, Forest personnel participate in a statewide winter bald eagle survey to census wintering populations of this species. For example, the winter survey at Eagle Lake documented 175 individuals, the fifth year in a row that the count has been well over 100. In addition, all active nests are located (to the extent possible) and protection measures implemented to facilitate reproductive success.

B. Northern Spotted Owls. The Forest has established two activity centers, each with a resident single northern spotted owl. Reproduction has not been confirmed within these centers since the Forest Plan was implemented. Annual monitoring continues each year to document the status of the northern spotted owls in these areas. In 1999, one of these activity centers had presence documented. The other did not confirm any status during the breeding season.

C. Peregrine Falcons. The Almanor Ranger District has documented five known nesting sites during past years. In 1999, active monitoring was not completed for this species. One eyrie was found to be confirmed nesting; the rest are presumed active, but the extreme difficulty of reaching the sites has prevented formal observations. Considering all sites as active exceeds the recovery goal of three active sites.

D. California Spotted Owl. The Forest continues to pursue an active monitoring and management program to provide for California spotted owls. We are currently in the eleventh season of data collection for a demography study for the owls centered in the Almanor Basin.

Current management direction for the California spotted owls is still provided by the California Spotted Owl Sierran Province Interim Guidelines, as well as the Herger Feinstein Quincy Library Group Forest Protection Act Record of Decision, both of which amended the Forest Plan. These amendments furnish specific management direction, including maintaining existing spotted owl habitat areas (SOHAs) and establishing protected activity centers (PACs), as well as guidelines for management activities for selected and other habitat. Another strategy for management of California spotted owls is currently being analyzed in the Sierra Nevada Framework for Conservation and Collaboration EIS. When finalized, this strategy will amend 11 National Forest Plans in the Sierra Nevada Mountains.

E. Northern Goshawks. 111 Goshawk Management Areas (GMAs) have been established. Goshawks are actively monitored on a project-by-project basis. At present, Forest wildlife biologists can document about 65-70 territories that are active and reproductive success varies from year to year.

The Forest Plan standards were designed to provide for viable goshawk populations across the Forest. The concept provided for 113 GMAs each containing at least 50 acres of suitable nesting habitat (primary zone) plus 75 acres to be managed as a secondary zone, which is to have a limited operating period based on site-specific information. In addition, the GMA network was presumed to have an occupancy rate of 90% to provide for a viable population.

Current literature indicates that goshawks are much more successful in territories that contain at least 200 acres of high quality habitat. Further, we know that our territories do not have a 90% occupancy rate. The Eagle Lake Ranger District reported an occupancy rate of about 49%, for example.

In order to maintain a viable population of northern goshawks on the Lassen, the Forest should consider adopting a strategy similar to that of the Klamath and Mendocino National Forests in which our GMAs are based on known active territories (where possible), then maintain 200 plus acres of high quality habitat around a nest core, and manage habitat to provide for a 500 acre post-fledgling area around the GMA. This subject is sure to be in the spotlight in the future as it has in other parts of the goshawk's range such as in the Southwestern United States.

F. Marten and Fisher. The American marten and Pacific fisher are interesting challenges on the Lassen. The Forest has established management networks for both species that include HMAs (habitat management areas) large enough to function as reproductive areas and connective corridors between these areas that link up with National Forests to the north and south.

Wildlife biologists on the Forest have made an effort to document presence of these species, as well as other elusive mammals such as Sierra Nevada red fox and wolverine. Techniques such as track plates, tracking, remote infrared photos over bait stations, etc., have all been used with varying degrees of success.

Marten have been documented as occurring in many areas of the Forest since these efforts began, including within the HMA network. Fisher have not been documented as present on the Forest. The HMA network for fisher should be re-evaluated. The current network is located at higher elevations (generally above 6,000 feet elevation) and primarily on the east side of the Forest. A review of the literature indicates that the best fisher habitat contains hardwood/mixed conifer forest types. Generally, this habitat is located below 3,500 ft. elevation on the west side of the Forest. Ideally, a network of HMAs for fisher, including travel corridors that connect them, would be located so that all of the National Forests in the Sierra Nevada mountains would have suitable, connected habitat.

G. Black Bear. The California Department of Fish and Game (CDF&G) monitors black bear populations and manages hunting seasons for them. This species is, of course, a habitat generalist and we do not specifically manage for them. Black bears are commonly observed on the Forest and they are actively pursued by hunters, particularly those who hunt with hounds. Since implementation of the Forest Plan in 1993, local CDF&G biologists feel black bear populations have increased slightly. Exact population numbers are not available, but the population is estimated to have increased about 20 percent.

H. Deer and Antelope. Both deer and antelope populations are monitored by the CDF&G, which also regulates hunting seasons for both species.

Deer and antelope populations have experienced a significant decline in populations in the past decade. Several years of drought; increasing mortality from predation; road kills; encroachment of habitat by human development; and, maybe most importantly, a very severe winter in 1992-1993, have interacted to reduce herd levels to fractions of their former numbers.

The migratory deer herds that winter in the Great Basin and the pronghorn antelope have been most severely affected by these drought conditions and harsh winters. Current populations for both species are felt to be about 25 percent of their populations in the mid-1980's. Since the winter of 1992-1993, some recovery has taken place. Remote video cameras are used to monitor deer herd migration; spotlight surveys monitor populations trends and help to gather sex and age ratios.

Forest management practices of the past few decades have, to a large extent, been detrimental to deer. Early seral stage brush habitats, riparian areas, and aspen habitat, all important components of quality deer habitat have diminished in abundance and quality. Timber practices that encourage a more extensive canopy cover and thick conifer reproduction; the removal of the natural fire cycle (intensity and frequency); an extensive road system; and livestock grazing practices, have cumulatively interacted to create habitat that cannot support historic numbers of deer. Management activities that emphasize qualities such as "old growth attributes" and "continuous forest cover" do little to improve habitat conditions for deer on the Lassen. As the Forest implements an ecosystem management strategy, it will strive to put fire back as a functional component of the ecosystem. As this practice is implemented, conditions should improve for deer, primarily because they are an early seral stage species. The dilemma is that literally thousands of acres need to be treated annually to have the desired effect. Current funding and conflicting management direction may limit our ability to implement this activity on that scale.

Both of these species are actively managed for by the Lassen whenever the opportunity presents itself on a project-by-project basis. Forest biologists cooperate with the CDF&G in both summer and winter deer

census. Declining populations of deer and antelope on the Forest call for increased collaboration the CDF&G and other partners to develop a regional habitat management strategy that would accelerate their recovery to more historic levels. The loss of revenue from fall hunters is another concern to local businesses. The hunting experience enjoyed by sportsmen is an important economic consideration for rural communities in northeastern California.

I. Western Gray Squirrel. An unfortunate choice as an MIS (management indicator species) for the Lassen. This species is a hardwood/mixed conifer endemic that is common across much of the Forest. We do not monitor its population levels. The State regulates hunting of this species.

J. Hairy and Pileated Woodpeckers. The Forest does not actively manage for these species with the exception of protection of nest trees for pileated woodpeckers when they are found. They were chosen as MIS because they represent a guild of species that rely on an abundance of snags for food and as a medium for constructing nest cavities. Our snag management guidelines are designed to provide habitat for these species. No monitoring has been done.

K. Ospreys. The Forest has discontinued monitoring osprey populations. This species was once listed as sensitive in Region 5. Population levels have increased, and it is no longer listed as sensitive. Management activities designed to provide habitat for bald eagles such as habitat closures, often benefit ospreys.

L. Waterfowl (mallard and bufflehead). These species are informally monitored on the Lassen. The number and size of broods is directly correlated to the abundance of water in forest wetlands. This in turn is directly related to climatic conditions.

Mallards are common nesters on the Lassen. In good years, numerous broods can be observed across the Forest. An aggressive wetland enhancement and development program has greatly increased nesting opportunity and reproductive success for mallards on the Lassen.

Buffleheads are relatively common nesters on many of our shallow lakes on the Forest. It appears that one important factor that limits nest success for this species may be the lack of large cavities for nesting near water suitable for brood habitat.

The Lassen has placed nest boxes for buffleheads and wood ducks to help mitigate this factor, and restricts firewood cutting in these areas. The boxes have been successful although maintenance is a continuing problem. In 1999, Bufflehead nest success appeared to be less than previous years based on reduced brood counts in Hog Flat and McCoy Reservoir which are the most important breeding habitat for this species on the Lassen.

2. Evaluation of Monitoring Results and Conclusions

The following table summarizes the results and conclusions drawn from monitoring data collected since the Forest Plan was implemented. The "results" column reflects the degree to which monitoring has been done. The "conclusions" column is a determination of how well the Forest is implementing Forest Plan management direction and, where appropriate, provides a recommendation to improve the effectiveness of monitoring.

MONITORING RESULTS AND CONCLUSIONS

Resource	Results	Conclusions/Recommendations
General A. Implementation Cost B. Project Planning and Implementation C. Economic and Social Effects D. Incomplete and Unavailable Information	Monitoring meets Forest Plan standards: A, B, C, D	No corrective action needed, continue current monitoring: A, B, C, D.
1. Air Quality A. Condition in Class 1 Areas B. Compliance with Regulations	No monitoring was done in 1998 Monitoring meets Forest Plan standards.	Conduct monitoring as prescribed in the Forest Plan. No corrective action needed, continue current monitoring.
2. Biomass	Monitoring meets Forest Plan standards.	No corrective action needed, continue current monitoring.

Resource	Results	Conclusions and Recommendations
3. Cultural Resources		
A. Management of Heritage Resources	Intermittent monitoring occurred in 1998.	Conduct monitoring as prescribed in the Forest Plan.
B. Inventory and Evaluation	Forest inventories and determination of eligibility for the NRHP are below Forest Plan expectations.	Will do as much as possible with available funding.
C. Effect of Forest Visitors and Natural Factors.	Monitoring meets Forest Plan standards.	No corrective action needed, continue current monitoring.
D. Interpretation	Monitoring meets Forest Plan standards	Continue current actions.
4. Facilities		
A. Trails B. Trail Maintenance C. Road Maintenance	Monitoring meets Forest Plan standards: A, B, C	No corrective action needed, continue current monitoring: A, B, C.
5. Fire and Fuels		
A. Wildland Fire Suppression	Monitoring meets Forest Plan standards: A, B, C	Fire Management Plan was signed 8/98: A, B.
B. Burned Acreages		No corrective action needed, continue current monitoring.
C. Fuel Treatment and Prescribed Fire		Evaluate current fuel strategy incorporating new information (ongoing).
6. Firewood		
A. Firewood Supply	Monitoring meets Forest Plan standards	No corrective action needed, continue current monitoring and present level of firewood offerings.
B. Snags and Down Logs	No monitoring has been done since the Forest Plan was implemented in firewood cutting areas	Amend Forest Plan to discontinue monitoring; monitoring will continue under 17B.

Resource	Results	Conclusions and Recommendations
7. Fish A. Anadromous and Resident Fish	Monitoring meets Forest Plan standards	Too early to draw conclusions from habitat trend data; continue to use the best available tools (i.e. SCI methodology) for monitoring. Anadromous population numbers remain low overall. Good numbers of fish estimated in Deer Creek in 1999. Continue to monitor population trend.
8. Forest Health Pest Conditions	Monitoring meets Forest Plan standards	No corrective action needed, continue current monitoring.
9. Lands		
A. Land Occupancy Authorization	Limited monitoring has been done.	Without increased funding, our ability to reissue and inspect permits as prescribed in the Forest Plan will not improve.
B. Land Adjustments	Monitoring meets Forest Plan standards	No corrective action needed, continue current monitoring. However, an updated Forest Land Adjustment Plan is needed.
10. Minerals A. Plans of Operation	Monitoring meets Forest Plan standards	Unauthorized use/occupancies need to be resolved as they become known.

Resource	Results	Conclusions and Recommendations
11. Range		
A. Range Utilization Studies	Monitoring meets Forest Plan standards	No corrective action needed, continue current monitoring.
B. Rangeland Condition and Trend	Limited monitoring	Amend Forest Plan to modify level of monitoring (continue monitoring at selected locations as funding allows).
C. Updating of Allotment Management Plans	Updates meet Forest Plan schedule	Update AMPs according to the Forest Plan schedule as amended by the Recision Act; future funding may affect scheduled updates of AMPs.
12. Recreation		
A. Developed Recreation Sites	Monitoring meets Forest Plan standards	Forest Plan management direction is not being met; facilities need upgrading.
B. ROS Classes	Limited monitoring has been done.	Amend Forest Plan to discontinue monitoring.
C. Recreation Use	Monitoring meets Forest Plan standards: C, D	No corrective action needed, continue current monitoring: C, D.
D. OHV Effects		
13. Sensitive Plants Populations	Monitoring meets Forest Plan standards	No corrective action needed, continue current monitoring. Amend Forest Plan to reflect two Federally listed species and to address special interest plant species.
14. Soil		
A. Soil Productivity	No monitoring has been done since the Forest Plan was implemented.	Revise monitoring strategy in a Forest Plan amendment.
B. Soil Compaction	Informal monitoring has been done with limited documentation	Insufficient data to draw conclusions; revise monitoring strategy in a Forest Plan amendment.

Resource	Results	Conclusions and Recommendations
15. Special Areas A. RNAs and SIAs	The Monitoring Plan calls for SIA plans to determine monitoring levels; no SIA plans have been developed	Amend Forest Plan to defer preparation of SIA plans for all areas except Willow Lake; establish a monitoring strategy in the absence of plans. Drop Graham Pinery cRNA and replace with Iron Mountain cRNA.
16. Timber A. Timber Sale Volume B. Regeneration Acreages C. Plantation Stocking Levels	Monitoring meets Forest Plan standards: A, B, C	No corrective action needed, continue current monitoring: A, B, C.
D. Suitability for Timber Production	Monitoring frequency is every 10 years or whenever the Forest Plan is revised	The QLG Forest Recovery Act/EIS or the Sierra Nevada Conservation Framework EIS may amend current land suitability and ASQ.
E. Clear-cut Size Limits	No monitoring has been conducted since the Forest Plan was implemented in 1993	Amend Forest Plan to discontinue monitoring; interim spotted owl direction has resulted in no clear-cutting since 1993.
17. Vegetation and Diversity		
A. Seral Stages Including Old Growth	Monitoring meets Forest Plan standards	Assess new information re: an old growth strategy.
B. Woodpeckers, Snags, and Down Logs	Snag and down log monitoring has been done	Conduct snag and down log monitoring at the project level; drop woodpecker monitoring (see 22 J. also) .
C. Old Growth Management for Goshawk Monitoring	Monitoring has been done on the Eagle Lake District.	Conduct monitoring as prescribed in the Forest Plan: C.

Resource	Results	Conclusions and Recommendations
18. Visual Resources		
A. Visual Condition	Informal monitoring has been done since the Forest Plan was implemented in 1993	Improve monitoring as prescribed in the Forest Plan.
19. Water and Riparian Areas		
A. Water Quality Management	Monitoring meets Forest Plan standards	Implemented most (79%) of the time and effective when they are applied (87%).
B. Changes in Watershed Condition	No monitoring has been conducted since the Forest Plan was implemented in 1993	Amend Forest Plan to modify existing monitoring strategy; monitor after wildfires have burned most of one or more sub-basins. No corrective action needed, continue current monitoring.
C. Eagle Lake Water Quality	Monitoring meets Forest Plan standards	Project planning fully meets the requirements of the Monitoring Plan. Post-project monitoring has not occurred; unable to draw conclusions. Amend Forest Plan to modify existing monitoring strategy.
D. Cumulative watershed effects	Limited monitoring has been done.	
E. Riparian Habitat 1. Intensive sampling	No monitoring was conducted in 1998.	None of the photo point records have been established. Emphasis is on the SCI methodology. SCIs have been done on three creeks on the Forest.
2. Extensive monitoring	Some monitoring has been done on grazing allotments.	Monitoring has occurred on all allotments. None of the photo points have been established. Improve monitoring.

Resource	Results	Conclusions and Recommendations
20. Wild and Scenic Rivers A. Values of Wild and Scenic Rivers	Some monitoring has been done	No effect on outstandingly remarkable values; continue monitoring.
21. Wilderness and Further Planning Areas A. Use	Monitoring meets Forest Plan standards	Continue current monitoring; possibly amend Forest Plan for outfitter/guide use.
22. Wildlife A. Bald Eagle Habitat B. Northern Spotted Owl C. Peregrine Falcon	Monitoring meets Forest Plan standards: A,B,C,D, E,F	No corrective action needed, continue current monitoring: A,B,C
D. California Spotted Owl	Forest monitoring of adaptive management strategy has not occurred. Long-term monitoring of owl demographics is being done by PSW	Assess reasons for declining owl populations at Lake Almanor. Develop a protocol for effectiveness of adaptive mgmt. strategies
E. Goshawks		Forest Plan management direction is being met, however a different habitat mgmt. strategy is recommended.
F. Marten & Fisher		Forest Plan mgmt. direction is being met. Relocation of the fisher HMA network needs to be evaluated.
G. Black Bear	Monitoring has been conducted by CA.Dept. of Fish & Game (CDF&G) G,H, I	Amend monitoring plan for these species to reflect that CDF&G is the lead agency: G,H,I.
H. Deer & Antelope	Significantly low populations are noted for these 2 species	Cooperate w/ CDF&G on a habitat mgmt. strategy to recover population levels.

Resource	Results	Conclusions and Recommendations
I. Western Gray Squirrel	No monitoring has been conducted since the Forest Plan was implemented in 1993.	Drop as management indicator species (MIS).
J. Hairy and Pileated Woodpeckers and K. Osprey	No monitoring has been conducted since the Forest Plan was implemented in 1993.	Amend Forest Plan to drop these species as management indicator species (MIS) and discontinue monitoring: J, K.
L. Mallard and Bufflehead	Increased monitoring has been done	Retain as MIS and continue monitoring

3. Action Plan

Based on the Evaluation of Monitoring Results and Conclusions, the following items are recommended for action. Full implementation depends on adequate funding, Forest Supervisor approval, and completion of Regional direction for the California spotted owl. The identifying numbers and letters correspond to the monitoring items in Chapter 5 of the Forest Plan.

1. Improve Forest Plan Implementation

Monitoring conducted to Forest Plan standards has revealed that Forest Plan management direction is not being fully implemented in the following areas:

12 A. Maintenance of Developed Recreation Sites

22 D. Develop a monitoring protocol for the California spotted owl adaptive management strategies

2. Conduct Monitoring

Initiate monitoring as prescribed in the Forest Plan where none was conducted or reported in 1999:

17 D. Maintenance of the level of the old growth component

19 E1. Intensive Monitoring of Riparian Sampling Points

3. Improve Current Monitoring

Current monitoring is not to Forest Plan specified levels and we were unable to draw conclusions from the data on the following items:

3 A. Management of Cultural Resources

9 A. Land Occupancy Authorizations

17 C. Old Growth Management for goshawk monitoring

19 E2. Extensive Monitoring of Major Riparian Zone Types

22 L. Mallard and Bufflehead

4. Amend Forest Plan to Modify or Discontinue Monitoring

Modify or discontinue monitoring the following resources that have either not been monitored or have been monitored on a limited basis since the Forest Plan was implemented:

6 B. Firewood: Snags and Down Logs. Discontinue monitoring snags and down logs in heavy firewood cutting areas. Firewood gathering has been less than expected and woodcutting generally occurs immediately adjacent to roads.

11 B. Rangeland Condition and Trend. Modify current monitoring intensity; continue monitoring at selected locations as funding allows.

12 B. ROS classes. Discontinue monitoring. The information will be acquired through recreation planning and environmental analysis.

14 A. Soil Productivity. Modify monitoring strategy.

14 B. Soil Compaction. Modify monitoring strategy.

16 E. Maximum Clear-cut Size Limits. Discontinue monitoring.

17 B. Woodpeckers, Snags, and Down Logs. Discontinue monitoring woodpeckers; continue to monitor snags and down logs at the project level.

19 B. Changes in Watershed Condition. Modify monitoring prescribed in the Forest Plan to monitor after wildfires have burned most of one or more subbasins.

19 D. Cumulative Watershed Effects. Amend Forest Plan to modify the current monitoring strategy, protocols for revised resource indicators, and assessing potential adverse cumulative watershed effects.

22 G. Black Bear. Modify monitoring strategy to reflect CDF&G is the lead agency. The CDF&G monitors black bear populations and manages hunting seasons.

22 H. Deer and Antelope. Modify monitoring strategy to reflect CDF&G is the lead agency. The CDF&G monitors deer and antelope populations and manages hunting seasons. The Lassen manages for these species when the opportunity exists.

22 I. Western Gray Squirrel. Modify monitoring strategy to reflect CDF&G as the lead agency and drop this species as a Management Indicator Species (MIS). Common across much of the Forest, the Lassen does not monitor gray squirrel population levels

22 J. Hairy and Pileated Woodpeckers. Discontinue monitoring and drop as a MIS. The Forest does not manage for these species except for the protection of nest trees. Snag monitoring (see 17 B) will substitute and provide the desired information.

22 K. Osprey. Discontinue monitoring and drop as a MIS. Once listed as sensitive in the Pacific Southwest Region, populations have rebounded and the Forest does not monitor osprey populations.

5. Amend Forest Plan to Monitor Additional Resources

None identified.

6. Amend the Forest Plan Goals and/or Standards and Guidelines

The following management direction needs updating because of changes in funding, legislation, Forest Service policy, or as a result of new research information:

Assess the need to amend the Forest Plan and current fuel treatment strategy in light of new information and landscape analyses (5 C).

Amend the Forest Plan to provide long-term direction for the anadromous watersheds in conjunction with the Sierra Nevada Forest Plan Amendment.

Amend the Forest Plan to reflect new Federally listed aquatic species (7 A).

Prepare an errata sheet to update the Forest's Sensitive species information. As of June 1998, the Forest now has 3 sensitive amphibian species, five sensitive aquatic mollusc species and one sensitive inland fish species.

Prepare an errata sheet to update the Forest's aquatic species information since the California red-legged frog, steelhead (Central Valley Evolutionarily Significant Unit (ESU)), and spring-run chinook salmon (Central Valley ESW) are now Federally listed as Threatened species. Critical habitat for the anadromous species has also been designated and includes watersheds on the Lassen.

Amend the Forest Plan to reflect two Federally listed plant species (13A).

Amend the Forest Plan to refine management direction and defer the preparation of Special Interest Area Plans, except the Willow Lake SIA Plan; include a monitoring strategy for SIAs in the absence of SIA plans (15 A).

Amend the Forest Plan to drop the Graham Pinery candidate Research Natural Area (cRNA) following successive wildfires and replace it with the proposed Iron Mountain cRNA (15 A).

Amend the Forest Plan to establish wilderness direction for outfitter/guide activities and possibly other wilderness direction (21A).

Prepare an errata sheet to delete the preparation of management plans for the Pacific Crest National Scenic Trail and Spencer Meadows National Recreation Trail (LRMP Goal page A-2); any PCT management plan should be done Region-wide rather than by individual Forest.

7. Amend the Forest Plan Schedule of Outputs

Delete the fisheries outputs (M pounds) described in Table 4-1 of the Forest Plan; these outputs cannot be validated.

Delete Wildlife and Fish User Days (WFUD's) described in Table 4-1 of the Forest Plan; WFUD's cannot be validated.

8. Management Direction Needed

A revised Forest Land Adjustment Plan to guide Forest land acquisitions.

An Access and Travel Management Plan for the closure/obliteration of roads and trails on the Forest.

A SIA Plan for the Willow Lake SIA.

Cooperate with CDF&G in the preparation of interagency regional deer/antelope habitat management strategies.

Fire Management Plans for Ishi and Thousand Lakes Wilderness Areas.

4. Status of Previous Years Recommendations

Overall, monitoring has increased in 1999. The Record of Decision for the Herger-Feinstein Quincy Library Group (HFQLG) Forest Recovery Act Library Group Forest Recovery Act EIS amends the Lassen Resource Management Plan. The Lassen will begin a Forest Plan amendment in Fiscal Year 2001 to provide long term management direction relative to the HFQLG Act. The Sierra Nevada Framework for Conservation and Collaboration will also amend the Lassen Plan and a decision for the Framework is expected by January 2001. Many Forest personnel have been diverted to these planning efforts. Project level planning continues to reflect new information from the SNEP Report, QLG Forest Recovery Act, and the Sierra Nevada Framework, often utilizing ecosystem or landscape analysis to verify gaps between current and desired future conditions.

5. Update of Research Needs

Appendix B of the Forest Plan identified the following research needs:

Biomass

A. Determine soil, plant, and wildlife needs for biomass retention (not started).

Cultural Resources

A. Develop and implement suitable criteria for allocation of cultural properties to preservation, conservation, public use, or no management (not started).

Fire and Fuels

Determine appropriate use of prescribed fire in true fir and mixed conifer types of the northern Sierra and southern Cascades including:

1. Short and long-term impacts on stands in relation to stand size, tree sizes, season and intensity of burn, and existing fuels;

2. Cost effectiveness; and

3. Suitability as a treatment prior to harvest (on-going).

Fish

A. Develop a scientifically valid method to predict cumulative effects of land management activities on aquatic ecosystems (on-going).

B. Validate habitat inventory procedures as a predictive model to determine production capabilities of ecosystems (drop).

C. Define winter habitat critical to the overwintering of trout and salmon (done).

Soils, Water and Riparian Areas

A. Establish and validate a Region-wide standard for estimating cumulative disturbance effects (done, with a review and update in progress at PSW).

B. Define thresholds for unacceptable cumulative disturbances in sensitive watersheds (done).

C. Develop a riparian area condition rating system (in progress).

D. Define thresholds for unacceptable soil compaction (done per "visual indicators" letter).

Timber

A. Develop improved site preparation methods for natural regeneration of true fir on slopes over 30 percent (on going nationally).

B. Develop the full range of alternative methods for brush control in plantations (on-going).

C. Evaluate the effects of individual tree and group selection harvesting (on-going at Blodgett).

Vegetation and Diversity

A. Develop an old growth evaluation system, including a definition for minimum and optimum stand characteristics for old growth (on-going regionally).

B. Determine specific stand characteristics required by late seral dependent plant and animal species (on-going regionally).

C. In old growth retention areas, develop management tools for enhancing decadent conditions in younger stands that do not meet specified old growth characteristics (on-going nationally).

D. Develop management strategies for minimizing wildfire loss while maintaining desired old growth stand characteristics (on-going).

Wildlife

A. Continue the California spotted owl demographic study to determine distribution, reproduction, and juvenile dispersion of spotted owls throughout the Forest (on-going).

B. Monitor spotted owls in SOHAs and the HCA to determine reproductive success in designated habitat areas (on-going).

C. Continue the prey base study to determine abundance and habitat needs of the primary prey species found in spotted owl territories in the range of the California spotted owl. Determine whether prey is a limiting factor in population density (on-going regionally).

D. Determine HMA occupancy and status for fisher, marten, and goshawk. Monitor populations to determine reproductive success and dispersion of juveniles (on-going).

E. Design and develop studies to evaluate effects of various silvicultural and fuels management options on species that are dependent on old growth habitat (including, but not limited to spotted owls, marten, fisher, goshawk, and pileated, and hairy woodpeckers) (on-going).

The following research needs were identified during the preparation of this Monitoring and Evaluation Report:

*Determination of the historical importance and research value of heritage resources.

*Determine the effects of cattle grazing on archaeological sites.

*Determine whether soil compaction in the valley bottoms of the Pine Creek watershed is affecting the hydrologic function of the watershed.

*Determine the effects of extensive thinning, biomass, and prescribed burning on long term soil productivity.

*As part of the SNCF, evaluate the old growth strategy in the Forest Plan based on new information. Determine if a new strategy warrants a Forest Plan amendment.

Research Findings

Recently completed research projects, with findings applicable to the Lassen National Forest are:

The Lassen National Forest completed fire history studies in the Caribou Wilderness and the Thousand Lakes Wilderness in 1994 and 1995, and in Cub Creek RNA in 1997.

The Forest has identified the historical, archaeological and cultural importance of several hundred heritage resources.

A paleoecological investigation of the effects of climate and vegetative changes in the Pine Creek watershed was completed in 1995.

Conclusions from the Sierra Nevada Ecosystem Project (SNEP) that may affect management of the Lassen National Forest include:

Climate: Recent climate is much wetter, warmer, and more stable than climates of the past 2,000 years. Successful ecosystem evaluations should factor climate changes into analyses.

People and Resources: Between 1970 and 1990, the population doubled in the Sierra. The 1990 population of 650,000 will triple by 2040. Population growth and its accompanying effects are causing significant impact on resources.

Fire and Fuels: Fire is a natural force, influencing biodiversity, plant reproduction, vegetation development, insect outbreak and disease cycles, wildlife habitat relationships, soil functions and nutrient cycling, gene flow, selection, and, ultimately sustainability. Fire suppression in concert with changing land-use practices dramatically changed the fire regimes of the Sierra, altering ecological structures and functions in Sierra plant communities.

Plants and Wildlife: About 50% of California's 7,000 vascular plant species, occur in the Sierra. More than 400 plants grow only in the Sierra and 200 are rare. About 300 terrestrial vertebrate species (mammals, birds, reptiles, and amphibians) use the Sierra as a significant part of their range.

Late Successional and Old Growth Forest: Mid-elevation, late successional old growth forests constitute 7%-30% of the forest cover, depending on forest type. On average, national forests contain 25% of the old growth contained in national parks, which is an approximate benchmark for pre-contact forest conditions.

Rangelands and Grazing: Historic unregulated grazing, which ended in the early 1900s, created widespread ecological impacts. Current livestock grazing practices continue to exert reduced, but significant impacts on the biodiversity and ecological processes even though properly managed grazing can be compatible with sustainable ecological functions.

Watersheds and Aquatic Organisms: Aquatic and riparian systems are the most altered and impaired habitats of the Sierra.

Air Quality: Some of the cleanest air in the nation is found in the Northern Sierra and in most remote Sierra areas during the winter. Central valley sources cause some of the nation's poorest air quality in the Westside Southern Sierra.

Current and Ongoing Research

An assessment of the reasons for the decline of the California spotted owl population in the Almanor Basin (PSW).

Identification of the research potential of archaeological sites.
An operational risk assessment and risk mitigation strategy in support of prescribed fire treatments. A determination of escape thresholds and identification of high risk factors that trigger or contribute to escaped prescribed fires is included.

An analysis of vegetation profiles on the Forest. In the absence of periodic, low-intensity surface fire, fire adapted ecosystems undergo relatively rapid changes in species composition and structure which often lead to epidemic insect and disease outbreak, severe stand replacing wildfires, more costly and difficult to control fires, and increasing danger to firefighters. The outcome of this effort is to develop sound strategies to sustain ecosystems, develop a landscape view of fire history, fire regimes and, fire effects information.

The Pacific Southwest Region Research Station is conducting the Blacks Mountain Ecosystem Research Project. This is a 50-year research project analyzing all components of the ecosystem and how these components interact between each other and their environment.

6. List of Preparers

Jess Bengoa. B.S. Civil Engineering, M.S. Civil Engineering, 9 years Civil Engineer design and contract administration of recreation, water and sewer, buildings, bridges, etc., 8 years Facility engineer, 5 years Assistant Forest Engineer.

Lois Charlton. Four years college coursework. Seven years as realty specialist and six years as Forest Lands Officer with the Forest Service.

Carrie Christman. B.S. Resource Management, M.S. Forestry. Forest Service experience of 16 years includes Silviculture, Recreation, Geographic Information Systems and Forest Planning work.

Beth Corbin. B.S. Botany, M.S. Botany/Plant Ecology. Forest Service experience as fuels technician and forestry technician. Forest Botanist for eleven years.

Elaine Courtright. Three years of college coursework with an Associate of Arts Degree. Fourteen years of experience in private industry in business administration and accounting. Twenty years experience with the Forest Service, which includes Administrative Officer, Budget and Finance experience, and eight years as a Forest Financial Officer.

Larry Hood. A.S. Forestry, 23 years in Wildland Fire Management with the Forest Service. Larry currently is the Forest Fuels Specialist for the Lassen.

Jim Johnston. B.A. & M.A. Anthropology. One year university teaching assistant (anthropology), one year archaeological consultant, three years archaeologist, and 21 years Forest Archaeologist and Heritage Program Manager.

Melanie McFarland. B.S. Fisheries Management. Various seasonal fisheries experience with private organizations/consultants and the California Department of Fish and Game. Three years fisheries biologist with the U.S. Fish and Wildlife Service, 12 years Forest Fisheries Biologist.

Elizabeth Norton. B.A. Spanish/Anthropology, M.S. Forest Management. Four years sale preparation forester, six years recreation specialist, three years congressional liaison, three years land management specialist, seven years Assistant Forest Supervisor for Public Services.

David Reis. B.S. Landscape Architecture. Two years recreation site design, two years timber visual resource specialist, five years Forest Landscape Architect serving Sierra-Cascade Province.

Tom Simonson. B.S. Forest Resources Management. Three years tree improvement forester, two years reforestation and timber stand improvement forester, six years District Silviculturist, three years District Timber Management Officer, 12 years Forest Silviculturist.

Gary Smith. B.S. Wildlife Management. Twelve years District Range Conservationist and Wildlife Biologist. 12 years Forest Range Conservationist and Wildlife Biologist.

Stephen Young. B.S. Forest Management, M.S. Watershed Management. Two years sale preparation forester, two years zone hydrologist, four and one-half years District Resource Officer, and 16 years Forest Hydrologist.

7. Location of Supporting Documentation

Supporting documentation for this monitoring report is on file at:

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Chester, CA 96020
(530) 258-2141 (voice/TTY)

Eagle Lake Ranger District
477-050 Eagle Lake Road
Susanville, CA 96130
(530) 257-4188

Hat Creek Ranger District
P.O. Box 220
43225 East Highway 299
Fall River Mills, CA 96028
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8. Public Participation/Disclosure

The Lassen National Forest will inform the public of the availability of this report by:

News Release

Comments received on this report will be considered in preparing future reports. Please submit comments to:

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