# LAND AND RESOURCE MANAGEMENT PLAN

## SIX RIVERS NATIONAL FOREST
## 1995

*Located within*
*Del Norte, Humboldt, Siskiyou, and Trinity Counties, California*


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This Land and Resource Management Plan was developed for the Six Rivers National Forest for the next ten to fifteen years, after which it must be revised. If the need arises, it will be revised or amended sooner.

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# INTRODUCTION TO THE FOREST PLAN

## PURPOSE OF THE FOREST PLAN

The Land and Resource Management Plan (LRMP or the Forest Plan) directs the management of the Six Rivers National Forest for the next decade. It does not apply to any State, private or other Federal land within the Forest boundaries. The Plan's purpose is to guide the integrated protection and use of the Forest's resources, meet requirements of legislation, and address local, regional and national issues. To accomplish this, the Forest Plan:

Sets the Forest goals and objectives for the next 10-15 years (the planning period),

Sets the standards and guidelines, and the approximate timing and location of practices necessary to achieve these goals and objectives, and

Sets the requirements for monitoring and evaluation needed to insure that management direction is implemented and its objectives are met, and to trigger changes in that direction, if needed.

The preparation of Forest Plans is required by the Forest and Rangeland Renewable Resources Planning Act of 1974 (RPA), as amended by the National Forest Management Act of 1976 (NFMA), and the implementing regulations found in the Code of Federal Regulations (36 CFR 219, issued September 30, 1982).

Provisions of the National Environmental Policy Act of 1969 (NEPA) require analysis of a Forest Plan's environmental impacts. The accompanying Final Environmental Impact Statement (FEIS) describes the management alternatives considered for the Six Rivers National Forest and the environmental effects of each. The preferred alternative is identified and then developed into this Forest Plan. The Plan and the FEIS are to be considered as a whole, rather than as separate documents.

## RELATIONSHIP OF THE FOREST PLAN TO OTHER DOCUMENTS

This comprehensive, integrated Plan applies to all areas and resources of the forest. Therefore, it either supersedes existing plans or incorporates them by reference. Where existing plans are incorporated by reference, they must be consistent with Forest goals and objectives and other management direction herein. As necessary, these plans will be amended to be consistent with the Forest Plan, once it is approved.

Upon approval of this Plan by the Regional Forester, all land and resource management activities and all budget proposals will be based on the Plan. As soon as practicable after approval, all permits, contracts, cooperative agreements, and other instruments for use and occupancy of the Forest's lands will be brought into conformance with the Plan, subject to existing rights. Note that previous contracts for timber or other commodities not yet harvested may preclude bringing such activities into full conformance with this Plan.

### REGIONAL GUIDE

The Regional Guide provides general goals, standards and guidelines to be followed by the Forests in Region 5. The Regional Guide also allocates resource output objectives to individual Forests. The output targets allocated to the Forest were evaluated during the planning process to determine the feasibility and suitability of the Forest's land and resources.

### FINAL ENVIRONMENTAL IMPACT STATEMENT

This Forest Plan sets forth the preferred alternative for managing the land and resources of the Six Rivers National Forest. The Plan results from extensive analysis and considerations addressed in the accompanying FEIS. The planning process and the analysis procedures used to develop this Plan are described or referred to in the FEIS. The FEIS also describes other alternatives considered in the planning process. Environmental analysis of projects will be tiered to the FEIS accompanying this Forest Plan.

### THE SMITH RIVER NATIONAL RECREATION ACT

The revised document entitled "Smith River National Recreation Area Management Plan" (referenced in Section 9 of the Smith River National Recreation Area Act of November, 1990) will guide management of the Recreation Area and will be incorporated in its entirety into the Forest Plan. This incorporation is not a revision or amendment to the Forest Plan for purposes of Section 6 of the Forest and Rangeland Renewable Resources Planning Act of 1974. The Secretary of Agriculture will make such further revisions to the management plan as are necessary in order to include more specific development and use plans of the recreation areas. Such revisions will be made no later than five years after the enactment of this Act.

### PLANS SUPERSEDED BY THE FOREST PLAN

Existing plans superseded by this Forest Plan include the following:

1969 District Multiple Use Plans
1969 Land Adjustment Plan
1971 Timber Management Plan
1974 Fox Unit Plan
1974 Fox Monitoring Plan
1975 Eightmile/Blue Creek Unit Plan
1978 Sierra Club Settlement Agreement
1979 Off-Road Vehicle Plan
Ruth Lake Bald Eagle Territory Management Plan

## PLAN IMPLEMENTATION

The Forest Plan will be carried out by the District Rangers and their staffs. Each of the Six Rivers' four districts covers 10 to 17 "management areas". The Plan is comprised of a set of forest goals and objectives, and standards and guidelines for the Forest and for each management area. These reflect the capability and suitability of the land to support various activities. The District Rangers' staffs will plan and conduct resource projects that meet this direction. Projects will continue to be planned and evaluated through the interdisciplinary process. District and Forest staffs will conduct environmental analyses and document them in the appropriate environmental documents (such as Environmental Assessments) which will be tiered to the Forest Plan EIS (40 CFR 1508.28).

If a proposed project on National Forest land is determined to be incompatible with the direction of the Plan, the project will be revised or not permitted. Conflicts that recur will result in a review of the relevant management direction in the Plan, according to its monitoring and evaluation process (Chapter 5), and may lead to Plan amendment or revision.

By the time the Forest Plan is implemented in 1995, budget proposals for 1995 through 1997 will have been submitted to Congress based on current planning. These budgets may or may not meet the budget requirements of the approved Forest Plan. Moreover, Congressional appropriations and allocations of the Chief and Regional Forester during any future period may or may not meet the budget requirements of the approved Forest Plan. In these situations, the Forest Supervisor will change the proposed Plan implementation schedules to reflect differences between proposed Plan budgets and actual appropriated funds (36 CFR 219.10e).

## MONITORING AND EVALUATION

The Forest will monitor Forest Plan implementation to determine if it is being implemented as designed (implementation monitoring), if implementation is effective in meeting the Plan's objectives (effectiveness monitoring), and if the Plan's initial assumptions are correct (validation monitoring). Specific monitoring requirement are listed in Chapter 5 of this Plan. The Forest will collect and evaluate the monitoring results regularly to determine the need for

changes in the Plan. An annual monitoring report will be prepared to inform the public on the progress in implementing the Plan.

## REVISIONS, AMENDMENTS

As directed by NFMA, the Forest Plan will be revised at least every 15 years and ordinarily every 10 years. It may also be revised whenever the Forest Supervisor determines that conditions or demands have changed sufficiently to affect goals or uses for the entire Forest. Under a schedule approved by the Chief of the Forest Service, the Forest Supervisor prepares and the Regional Forester approves Forest Plan revisions. For the purpose of a possible revision, the Forest Supervisor will review conditions of the lands covered by this Plan at least every five years.

Between revisions, the Plan can be amended to reflect changing conditions. The Forest Supervisor can prepare and approve an amendment if the change is not significant; such changes can be expected annually to adjust some of the Plan's details. If the change is significant, the Forest Supervisor prepares the amendment for Regional Forester approval. Public notification and adherence to NEPA procedures are required in either case.

Clarifications to the Plan may be made in the form of an addendum. Addendums are not intended to change management direction or emphasis, but merely to clarify the intent of the existing information. Addendums will be used as they become necessary.

## PLAN ORGANIZATION

This Forest Plan is composed of five chapters, a glossary, and appendices.

Chapter I, Introduction, describes the purpose of the Forest Plan, summarizes the content, describes the Forest's geographic location, and discusses the Plan's relationship to other documents.

Chapter II, Public Issues and Forest Management Concerns, summarizes the supply and demand conditions for significant market and nonmarket goods and services associated with the planning area.

Chapter III, Summary of the Analysis of the Management Situation, summarizes the affected environment. It describes the management situation, supply and demand, and resources uses and opportunities.

Chapter IV, Management Direction, is the heart of the plan. It presents the management goals, objectives, standards and guidelines that constitute direction for resource management covered by the Plan.

Chapter V, Forest Plan Implementation, Monitoring, Evaluation, and Amendment, incorporates direction in three sections under the headings of "Implementation," "Monitoring and Evaluation" and "Amendment and Revision." Collectively, these sections explain methods of implementing management direction, monitoring and evaluating implementation activities, and of keeping the Plan current during changing conditions or discovery of other findings.

The planning records for this Forest Plan are available for review at the Six Rivers National Forest Supervisor's Office in Eureka, California. The planning records are incorporated by this reference into the Forest Plan.

## PUBLIC REVIEW AND APPEAL RIGHTS

A Proposed Forest Plan and Draft EIS were published in September 1993. The public was invited to submit comments during a 90-day review period that closed in January 1994. This Forest Plan and the accompanying Final EIS were developed in response to the comments received during the 90-day review period.

The Forest Plan and Final EIS will be sent to the Regional Forester for approval. An administrative appeal of the Regional Forester's decision to approve the Forest Plan and EIS can be filed according to the

Code of Federal Regulations (36 CFR Part 217). Decisions made during the planning process, before the Regional Forester approves the Forest Plan through a record of decision, are not subject to appeal.

## FOREST DESCRIPTION

Six Rivers National Forest lies just east of the redwood belt of northwestern California, from the Oregon border south nearly to Mendocino County. The administrative boundary of the Forest encompasses approximately 1,092,170 acres. Of this total, 958,470 acres are National Forest System land; the remainder (133,700 acres) is in other ownership, mostly private. For the National Forest System land, 43 percent of the Forest is in Del Norte County, 35 percent in Humboldt County, 21 percent in Trinity County and 1 percent in Siskiyou County.

The Forest is bisected by four east/west routes, Highways 199, 299, 96, and 36, which connect Highway 101 to the Interstate 5 corridor and the central valleys of Oregon and Northern California. These highways follow rivers for most of their length within the Forest's boundaries, enhancing visitor access to a scenic area with many recreation opportunities. Principal communities within the influence of the Six Rivers National Forest include: Crescent City, Hiouchi, Gasquet, Orleans, Willow Creek, the greater Humboldt Bay area, and Garberville. The largest city is Eureka, with a population of 27,025 in 1990, which is the site of the Forest Supervisor's office.

To facilitate management, the Forest lands are divided into four Ranger Districts: Gasquet, Orleans, Lower Trinity and Mad River (see FEIS maps for Ranger District headquarter location). The Smith River National Recreation Area comprises a major portion of the Gasquet District. The Forest also manages the 212-acre Humboldt Nursery in McKinleyville, California. The Yurok Experimental Forest, comprising approximately 1,000 acres, is included in the total acreage of the Six Rivers National Forest, but is administered by the Pacific Southwest Forest and Range Experiment Station.

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# PUBLIC ISSUES AND MANAGEMENT CONCERNS

In 1979 and 1980, the Forest identified issues and concerns through scoping and Forest staff suggestions. Additional issues and concerns were raised in late 1990 and early 1991 following the withdrawal of the 1987 Draft Land and Resource Management Plan. The issues used in the 1993 DEIS and Draft Plan were reviewed and added to in response to public comments. These public issues and management concerns fall under the general term "issues". The process of seeking, receiving, and developing these issues is described in Appendix A of the FEIS. How each of the 38 issues is answered in each of the management alternatives is shown is Table II-12 of the FEIS. This Chapter summarizes how the 38 issues are answered by this Plan (the preferred alternative from the FEIS).

## DRIVING ISSUES

**Issue 1**. In its broadest sense this issue asks "How will the Forest maintain biodiversity or viable populations of all native and desirable non-native plant and animal species?" How the Forest will manage habitat to maintain viable populations of northern spotted owls, marbled murrelets and other threatened, endangered, candidate or sensitive wildlife species dependent on mature and old-growth forests provides the focal point for this issue. Issues 3, 7, 8, 9, 10, 11, 12, 13, 14, 22, 32, and 34 are all components of this same issue.

**Resolution:** The Forest has responded to this issue through the following strategies:

(1) The Forest will be managed to maintain ecosystem components, structure and processes. Both reserved and matrix areas perform an important role in maintaining biodiversity. Forests in the matrix function as connectivity between reserved areas and provide habitat for a variety of organisms associated with both late-successional and younger forests. Matrix lands will be managed to simulate natural disturbance regimes, and to provide for important ecological functions such as dispersal of organisms, carryover of some species from one stand to the next, and retention of late-successional and old-growth ecosystem components. The matrix will also add ecological diversity by providing early successional habitat.

(2) To ensure that late-successional and old-growth vegetation is retained in stands large enough to provide functional habitat and in a well distributed pattern across the landscape, two management areas have been designated; the Managed Habitat and Special Habitat Management Areas. These areas are connected by riparian reserves that provide dispersal habitat for species.

(3) New standards and guidelines have been created to ensure that management direction is implemented to achieve the Plan's goals for maintaining viable populations of plants and animals. For example, standards and guidelines for vegetation management now provide explicit implementation standards for retaining a combination of live green trees, hardwoods, snags and down woody material at regeneration to contribute to future habitat and ecosystem function. Standards and guidelines to survey and manage for a number of species will improve our understanding of the lesser-known species and

their niche in forest ecosystems. See Chapter 4 of this Plan for specific standards and guidelines.

**Issue 2**. What level of annual timber harvest will the Forest make available to help provide for the economic base of local communities?

**Resolution:** The annual level is determined by two factors; the amount of productive land available for timber management and how these acres are subsequently managed. During the past forty years, timber harvesting has been designed to extract the highest value timber at the lowest overall cost while maintaining water quality and soil productivity. Techniques and effectiveness in achieving these goals have steadily improved over time. It was believed that the large areas not available for timber management would provide all the mature and old-growth habitat necessary to maintain dependent wildlife and plant species. As more was learned, however, large areas of the Forest were shifted to a habitat emphasis and out of their previous timber emphasis. This occurred because by relying primarily on economic criteria to extract timber, harvesting has greatly reduced the amount and size of stands of mature and old-growth timber. This process has resulted in a threat to maintaining viable populations of mature and old-growth dependent species.

This Plan seeks provide a sustainable, predictable long-term timber supply for local economies. The proposed allowable sale quantity from matrix lands and the Hayfork Adaptive Management Area is 15.5 MMBF for the first decade, and could increase to 16.5 MMBF by the fifth decade.

The first decade level of harvest (15.5 MMBF) will directly and indirectly provide 174 timber jobs annually. In addition, timber harvest will return $1.4 million to counties for roads and schools and an estimated $159,800 in yield tax to the state on an annual basis.

**Issue 3**. How will the Forest manage riparian zones to help reverse the apparent decline in the yield of anadromous fisheries, and to maintain or restore the ecological processes and functions of riparian ecosystems?

**Resolution:** The Forest management strategy includes a four-part aquatic conservation strategy that designates riparian reserves along streams and waterbodies, establishes ten key watersheds within five of the six major river systems on the Forest, requires a watershed analysis prior to management in specific watersheds, and targets watershed restoration to restore watershed health and aquatic ecosystems. This four-part strategy is designed to maintain and restore the productivity and resiliency of riparian and aquatic ecosystems.

Interim riparian reserve widths are designated for streams, and waterbodies; final reserve width will be designated after a watershed analysis is complete and project-level analysis are performed. The interim riparian reserve widths are based on the height of site potential trees, and vary from two site-potential tree heights (or 300 feet slope distance) per side for fish-bearing streams and around lakes and ponds to one site-potential tree height (or 150 foot slope distance) per side for intermittent streams and around constructed ponds, reservoirs, and wetlands greater than one acre. There will be no regulated timber harvest within riparian reserves, and there are a number of other standards and guidelines for management within these reserves. See Chapter 4 of this Plan for more information riparian reserves.

Approximately 70 percent of the Forest, will be within nine designated key watersheds for anadromous fisheries. The purpose of these key watersheds is to provide habitat essential to the health of identified fish stocks, to aid in the recovery of at-risk fish stocks, and to maintain or restore the aquatic biodiversity of the riparian ecosystem.

# PHYSICAL ENVIRONMENT

## GEOLOGY

**Issue 4**. Will management activities accelerate geologic instability, and thereby degrade water quality?

**Resolution:** Ninety percent of unstable areas occur adjacent to streams. All unstable areas adjacent to streams and Riparian Reserves along perennial and intermittent streams have been withdrawn from

regulated timber harvest. Outside of Riparian Reserves, proposed activities will be designed to ensure water quality maintenance. This may include avoidance of unstable areas, or implementation of site-specific mitigation measures which effectively reduce risk to an acceptable level.

### SOILS

**Issue 5**. How will soil productivity be maintained on logged areas?

**Resolution:** The Forest has implemented soil quality standards, which address prevention of soil compaction, soil erosion, maintenance of organic matter and monitoring the soil resource, to ensure maintenance of soil productivity. These standards are applied site specifically through the interdisciplinary process used during project design.

### WATER

**Issue 6**. How will adverse cumulative effects on water quality be prevented?

**Resolution:** Standards and guidelines relating to soils, water, riparian reserves and fisheries as well as management activities such as timber harvesting and fuels management will mitigate the effects on watersheds. Watershed restoration programs will also mitigate effects. Regional cumulative effects methodologies will be utilized in conjunction with landscape level and site-specific analyses to design projects that prevent off-site effects.

## BIOLOGICAL ENVIRONMENT

### BIOLOGICAL DIVERSITY

**Issue 7**. How will vegetative diversity be maintained Forest-wide?

**Resolution:** Forest standards and guidelines require adequate vegetation and ecological diversity conditions to support wildlife, scenic quality and other needs. Matrix lands will be managed to maintain a distribution of vegetation types and seral stages that is within a subset of the historical range of variability and to provide high levels of diversity elements such as snags, hardwoods and downed woody material. Significant examples of major vegetation types will be maintained in Research Natural Areas.

**Issue 8**. How will "old-growth" be preserved?

**Resolution:** Approximately 91 percent of the Forest will be allocated to uses that exclude most land disturbance and timber management activities. Old-growth forests in these areas will remain undisturbed and will continue their current trends and rates of successional change. The remaining 9 percent of the landbase will be managed for both timber and other commodities and will also provide some habitat for mature and old-growth dependent wildlife species.

### SENSITIVE PLANT SPECIES

**Issue 9**. How will sensitive plant populations be managed?

**Resolution:** Site-specific analysis and a biological evaluation will be completed on all land-disturbing activities to ensure sensitive plant populations are not jeopardized. Avoidance will be the most common mitigation. In uncommon situations where maximum protection through avoidance is not an option, measures to reduce adverse impacts will be employed or, if the mitigations are not believed to be effective, the project will be discontinued.

### WILDLIFE

**Issue 10**. How will Forest Plan land allocations and their respective management prescriptions affect wildlife?

**Resolution:** The Forest has established a network of designated habitat areas, with specific direction, to protect essential habitat of selected threatened, endangered and sensitive species. The Forest has developed special silvicultural prescriptions and standards and guidelines that are intended to maintain specific habitat components, both in Managed Habitat Areas and the General Forest, and contribute to viable population maintenance. The Forest has identified 33 management indicator species that will be monitored

to determine the effectiveness of habitat area direction and the standards and guidelines. Research will be conducted on selected wildlife species to assess response to different management activities and intensities and to ensure mitigation measures are adequate.

**Issue 11**. How should wildlife habitats on the Forest be managed?

**Resolution:** The Forest has developed management area direction and associated standards and guidelines to protect or maintain special wildlife habitat components and mitigate adverse effects on essential habitat. The Forest will validate species-specific habitat capability models, which characterize essential components of habitat quality, quantity and spatial distribution. The Forest will monitor project implementation and determine the effectiveness of the existing direction, and standards and guidelines. Research will be conducted on selected wildlife species to determine their life requirements in managed forests.

**Issue 12**. How has the ecological corridor concept been treated on the Forest?

**Resolution:** Riparian Reserves will provide the core for travel and ecological corridors throughout the Forest. The need for additional corridors would be assessed as part of the landscape analysis process. If needed, additional corridors would be identified and would be managed using silvicultural strategy 5. See the Managed Habitat Management Area direction for more information.

### RIPARIAN AREAS

See Issue 3 under "Driving Issues."

### FISHERIES

**Issue 13**. How will the Forest maintain or improve the quality and quantity of spawning and rearing habitat?

**Resolution:** Spawning and rearing habitat will be maintained and restored through the attainment of the aquatic conservation strategy objectives. The designation of riparian reserves and key watersheds, as well as the requirement for watershed restoration, will contribute to achieving those objectives. See Issue 3 for more information.

## SOCIAL AND ECONOMIC ENVIRONMENT

### SOCIAL ENVIRONMENT

See Issues 1 and 2 under "Driving Issues," Issue 17 under "Heritage Resource Management," and Issue 36 under "Special Forest Products Management."

### ECONOMIC ENVIRONMENT

See Issue 2 under "Driving Issues."

## RESOURCE MANAGEMENT PROGRAMS

### RESEARCH NATURAL AREAS

**Issue 14**. What areas will be recommended for establishment as Research Natural Areas?

**Resolution:** There are eight Research Natural Areas allocated in the Forest Plan; these areas are described in Chapter 3 of the FEIS. These areas are withdrawn from the regulated timber base, and will be managed for the maintenance of unmodified conditions and natural ecological processes.

### SPECIAL INTEREST AREAS

**Issue 15**. How will special interest areas be protected?

**Resolution:** The Forest has identified a total of seven botanical, ecological, cultural, and geological special interest areas. These areas are withdrawn from the regulated timber land base, and will be managed to maintain their unique values.

### LAW ENFORCEMENT

**Issue 16**. How will the Forest reduce the hazard to forest users created by the illegal use of Forest land for marijuana cultivation?

**Resolution:** Forest law enforcement officials will continue to cooperate with the various State and County law enforcement agencies to prevent and eradicate illegal use of National Forest lands.

## HERITAGE RESOURCE MANAGEMENT

**Issue 17**. What constitutes reasonable protection of Indian cultural activities and values?

**Resolution:** All proposed activities require an assessment of potential impacts to cultural resources, including contemporary use. For project-related activities, important heritage resource properties will be identified, evaluated, and protected. Inventories will be conducted to meet the requirements of the National Historic Preservation Act. The local Indian population will be contacted to assist in developing measures to avoid or mitigate any potential adverse effects to cultural values and traditional uses.

## TRANSPORTATION AND FACILITIES MANAGEMENT

**Issue 18**. Has the Forest considered stopping new road construction and/or decommissioning existing roads?

**Resolution:** The Forest will construct some new roads (2.5 miles annually) during the next two decades; however, most new roads and some existing roads are planned to be closed. In addition, the Forest will decommission approximately 25 miles of road annually through watershed restoration and other programs. Overall, the miles of open road on the Forest will be reduced.

**Issue 19**. Has the Forest designated existing and future utility corridors?

**Resolution:** Three existing utility corridors identified in the Western Regional Corridor Study (1992) are designated as utility corridors in this Plan.

## FIRE AND FUELS MANAGEMENT

**Issue 20**. How should the Forest manage fire to protect and improve resources?

**Resolution:** Aggressive suppression of wildfires will continue on the Forest. The most effective fuels management program will be used to achieve hazard reduction and resource management objectives. Fuels treatment may be appropriate in areas where natural fuels buildup poses a threat to human safety or capital investments. Low intensity prescribed burning and treatment alternatives which leave more woody debris for wildlife habitat will be emphasized. Fuels treatment will be used in parts of the forest where fire is a natural part of the ecosystem. Opportunities to improve other resources (wildlife habitat, Native American gathering areas) through the use of fire will be explored. The use of fuel treatment and the methods permitted will vary by management area.

## MINERALS MANAGEMENT

**Issue 21**. How will the effects of mining be managed?

**Resolution:** Wilderness, the Smith River National Recreation Area, and Wild River Management Areas are currently legislatively withdrawn from future mineral entry and development, subject to valid existing rights. Additional management areas may be recommended for administratuve withdrawal from mineral entry. Mineral development and exploration may occur elsewhere on the Forest, subject to approved operating plans, which include requirements for reclamation, and protection of the surface resources.

## RANGE MANAGEMENT

**Issue 22**. How should the Forest manage the range resource?

**Resolution:** Management direction includes the improvement of the ecological condition of the range resource while providing for existing grazing use. It is expected that the demand for Forest rangelands will remain at current levels.

## RECREATION

**Issue 23**. How much of the Forest will be opened to off-highway vehicles?

**Resolution:** There are no areas of the Forest that are proposed for unrestricted OHV use. All OHV use will be on designated routes.

**Issue 24**. How many miles of trails will be constructed and maintained on the Forest?

**Resolution:** Approximately 16 miles of trails would be constructed or reconstructed on the Forest over the next decade to bring the total on the Forest to 284 miles of trails. Maintenance will occur on the newly constructed trails and on the existing trails at a rate of 95 miles a year; trails would be maintained every three years.

**Issue 25**. How will more recreational opportunities be provided?

**Resolution:** Major facility construction would occur within the Smith River National Recreation Area, as indicated in the NRA Management Plan. Minor site construction would occur elsewhere on the Forest. Trails management would expand to include consideration for equestrian and mountain bike use.

## ROADLESS AND WILDERNESS AREAS

**Issue 26**. How should released Roadless areas (RARE II) be managed?

**Resolution:** The 1984 California Wilderness Act allowed for non-wilderness, multiple-use management of roadless areas. The ten remaining identified roadless areas on the Forest have been allocated to various non-wilderness management areas; approximately 95 percent of these areas would be within management areas that would retain or only slightly alter their wilderness attributes. Those roadless areas in key watersheds would have no new road construction. Refer to Chapter 4 of the FEIS for the specific allocation of each roadless area.

**Issue 27**. How will wilderness be managed?

**Resolution:** Wilderness areas will be managed to maintain and protect wilderness qualities. The Shasta-Trinity National Forest is presently developing a wilderness plan for the Trinity Alps Wilderness, which should be available in the spring of 1995. Programmatic direction for the Siskiyou, North Fork, and Yolla Bolly-Middle Eel Wilderness areas is included in Chapter 4 of this Plan. This direction will be supplemented by wilderness implementation schedules for these individual wildernesses.

**Issue 28**. Should the Forest establish additional areas for wilderness management?

**Resolution:** Current and projected wilderness use on the Forest is below maximum projected demand. In order to better meet multiple-use objectives and provide a spectrum of recreational opportunities on the Forest, no additional areas are recommended for wilderness management. Approximately 95 percent of the remaining roadless areas will be managed in a manner that would retain or only slightly alter their wilderness attributes.

## WILD AND SCENIC RIVERS

**Issue 29**. Will other rivers be assessed for inclusion in the national Wild and Scenic Rivers System?

**Resolution:** The Forest performed a Forest-wide eligibility study between the Draft and Final Plans; Appendix D of the FEIS contains the information from the study. The study concludes that of Forest's rivers, Blue Creek, Red Mountain Creek, and Redwood Creek were determined to have potential outstandingly remarkable values. Suitability studies for these river segments will be performed. The potential outstandingly remarkable values of these segments will be protected until the suitability studies are complete.

**Issue 30**. What will be the boundaries for the rivers in the Wild and Scenic Rivers System?

**Resolution:** Corridor widths for the wild and scenic rivers in the Smith River NRA were designated in the Smith River NRA Act. Corridor widths for the South Fork of the Trinity were designated in the South Fork of the Trinity Wild and Scenic River Management Plan. Recreational and scenic river corridors on the Klamath and Trinity Rivers follow the Riparian Reserve Management Area boundary, with adjustments for private lands and Small Tracts Act parcels. The wild river boundary for the North Fork

Eel is based on visual considerations, with exceptions for private land and wilderness.

## TIMBER

**Issue 31**. How will hardwoods be utilized?

**Resolution:** Hardwoods will be managed as a desired component of the Forest ecosystem. Commercial and personal use of hardwoods removed to meet resource objectives will be encouraged.

## TREES WITH SPECIAL MANAGEMENT CONSIDERATION

**Issue 32**. How will the Forest protect redwood trees?

**Resolution:** As specified in the National Recreation Area Management Plan, redwood stands, and individual redwood trees visible from scenic outlooks, will be protected. Isolated trees occurring in areas available for timber management could be harvested. Redwoods do not occur outside of the NRA on the Six Rivers National Forest (except in the Yurok Experimental Forest).

**Issue 33**. What plan does the Forest have to ensure the maintenance of Pacific yew?

**Resolution:** The demand for yew bark, which contains a chemical that is being used in cancer research, has increased dramatically. At the National level, the Department of Agriculture, the Office of General Counsel, and the National Cancer Institute are developing appropriate procedures to make the most effective use of available supplies of yew bark. When these procedures and guidelines are completed, they will be implemented. The harvest of products from individual yew trees is allowed, after site-specific analysis determines there would be no adverse effects to other resources, or to the continuance of yew as a local species.

**Issue 34**. Has the Forest developed a plan to control *Phytophthora lateralis* and to maintain Port-Orford-cedar?

**Resolution:** Strategies for reducing the risk of infection or spread of the disease will be integrated into all levels of planning and analysis for all areas that contain Port-Orford-cedar. A risk analysis will be completed for all projects in watersheds containing Port-Orford-cedar. The Forest is utilizing disease control strategies identified in the Region 5/Region 6 Port-Orford-cedar Action Plan, developed in 1988 to coordinate efforts to control the spread of Port-Orford-cedar root disease. The main areas of concern covered in the plan are 1) inventory and monitoring, 2) research, 3) public involvement and education, and 4) management policy. The plan is updated as new information is developed.

## SPECIAL FOREST PRODUCTS

**Issue 35**. How will the Forest ensure the sustainability of special forest products while providing a source of income for local communities?

**Resolution:** The Forest has developed a set of standards and guidelines to ensure that special forest products are collected in a sustainable manner. See the Special Forest Products section of Chapter 4 for more information.

**Issue 36**. How will the Forest balance the utilization of special forest products among culturally diverse publics?

**Resolution:** Certain areas will be reserved for personal and traditional collection, and will be off-limits to commercial collection.

## PESTS

**Issue 37**. Under what conditions should pesticides (herbicides) be used as a Forest management tool?

**Resolution:** The application of herbicides would be limited to situations where their use is essential to achieve the assigned land management objectives, and would be limited to hand application methods. All potential uses would be evaluated in a site-specific environmental analysis.

## VISUAL QUALITY

**Issue 38**. How much Forest scenery will appear undisturbed?

**Resolution:** Visual quality objectives have been assigned to all Forest landscapes. Over time, the forest should appear less disturbed as the use of uneven-aged management replaces clearcutting.

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# SUMMARY OF THE ANALYSIS OF THE MANAGEMENT SITUATION

## INTRODUCTION

This chapter summarizes the existing situation for each resource area of the Six Rivers National Forest (Forest). It also identifies projected demands and opportunities, where possible. Chapter 3, Affected Environment, of the accompanying Environmental Impact Statement describes each resource in detail.

## PHYSICAL ENVIRONMENT

### GEOLOGY

The Forest lies within two physiographic provinces: the Klamath Mountains and the Coast Range. The Forest contains landslide and earthquake hazards but no volcanic hazards. Geologic resources on the Forest include minerals (see Resource Management Programs: Minerals), construction materials, and areas of unique geological value (see Resource Management Programs: Special Interest Areas).

**Landslide Hazards:** Landsliding is a natural process which is also influenced by routine forest management activities such as road construction and timber harvest. Landslides constitute the most significant of the geologic hazards on the Forest. About 19 percent of the Forest is susceptible to high or extreme landslide hazards.

**Earthquake Hazards**: Major active faults west of the Forest and one possible active fault in the southwestern section of the Forest generate earthquakes that have minimal effects on the Forest.

**Groundwater**: The potential for development of large groundwater supplies on the Forest is low, although moderate groundwater supplies could probably be developed in some of the relatively thick, more uniform sand and gravel deposits along parts of the Trinity and Mad rivers.

**Earth Construction Materials**: The Forest contains adequate materials to meet its needs for road construction and some landscaping and decorative materials.

### SOILS

Soils on the Forest are variable due to differences in parent material, topography, climate, biology, and age. Older soils include some of the most productive lands on the Forest. About 84 percent of the Forest's soils are rated as capable of growing trees for industrial wood.

The deep red lateritic soils in the North Fork of Smith River watershed are very old and are unique to the continental United States.

**Erosion Hazard:** About 20 percent of the Forest's soils have a very high erosion hazard rating if the vegetation and duff are removed, particularly soils derived from dioritic rock and South Fork Mountain schist. High rates of surface erosion (rilling and gullying) do not usually occur on this Forest because the surface soil structure is resistant to breakdown by raindrop impact; water infiltration rates are high; duff, litter, slash, and surface rock fragments provide residual soil cover; and vegetation regrows rapidly after disturbance.

### Projected Demands and Opportunities

Soil quality standards will be applied on a site specific basis to protect this non-renewable resource.

### WATER

The Forest generates high amounts of water, mostly in the form of rainfall. The water is used for municipal and domestic supply, fisheries, agriculture, industry, recreation, hydropower, and maintaining riparian ecosystems. There are 24 municipal-class watersheds on the Forest; there are no formal municipal watershed

agreements. There are no major floodplains on the Forest and no flood control structures.

Past disturbances from management activities, on public and private lands, have contributed to soil erosion and stream sedimentation. The 1964 flood had a major influence on Forest streams. These effects tend to be cumulative. Watershed analysis, as required by the FSEIS-ROD, will provide most of the data on which to base cumulative effects analyses.

Restoration work has been accomplished throughout the Forest at a rate of about 150 acres per year.

### Projected Demands and Opportunities

Some additional restoration needs have been identified. There will be opportunities to identify needs and accomplish more restoration work and to monitor the cumulative effects of restoration on water quality.

### AIR

Almost all of the Forest is within the State's North Coast Air Basin. Air quality on the Forest is very good, with all Federal standards consistently achieved (including those for ozone, carbon monoxide, particulate matter, and nitrogen dioxide). The Forest Service is responsible for protecting values and resources affected by air quality in Class I areas, designated under the Clean Air Act. The Yolla Bolly-Middle Eel Wilderness is the only Class I area on the Forest, although the Marble Mountain Wilderness could be affected by Forest activities. The rest of the Forest, including the other wildernesses, are Class II areas.

The Forest uses prescribed burning for fuels management on about 2,000 acres per year. Effects of smoke from prescribed burning can be annoying, but tend to be of short duration and low intensity.

### Projected Demands and Opportunities

Monitoring air quality will provide insights into the air quality situation and provide a basis for measuring trends. Maintaining air quality may require application of new techniques and prescriptions for fuels treatment.

## BIOLOGICAL ENVIRONMENT

### BIODIVERSITY

Biological diversity is the variety of living things in an area and the ecological processes in which they function as a system. Most landscapes within the Forest contain complex vegetation patterns and an unusually rich and varied flora. To date, 163 plant associations and 52 sub-series have been identified within 13 vegetation series. Some of the factors contributing to this diversity are climate, underlying geology, and natural and human-caused disturbances.

Northwest California has the most predictable and wettest climate in California. The Forest climate varies from cooler and wetter in the north to hotter and drier in the south. The Forest was divided into three zones for landscape analysis. The north zone includes the Smith River NRA and the portion of the Orleans District northwest of the Klamath river. The central zone includes the southeast side of the Orleans District and the Lower Trinity District. These two zones are within the Klamath Mountains Section. The south zone, which comprises the Mad River District, is entirely within the North Coast Mountains Section. The closed canopy conifer stands in the Klamath Mountains Section give way to a mosaic of conifer forests and their seral stages, intermixed with oak woodlands and grasslands, in the North Coast Mountains Section.

Parent rock differs between Sections. The Klamath Mountains Section is generally composed of fine textured metamorphics, while the North Coast Mountains Section is generally composed of coarse textured sandstones, which add to the drier conditions in the south zone and contribute to the higher frequency of stand replacing wildfires.

Disturbance has had the greatest impact on vegetation patterns within the Forest. Natural disturbances such as fire, floods, landslides, windthrow, and insect epidemics tend to shape vegetation patterns on a short-term scale. Fire has resulted in the pattern of seral stages spread across the Forest. Burning by Native Americans prior to European settlement influenced the

composition and patterns of vegetation. Large scale stand-replacing wildfires which occurred between 1870 and 1920 are responsible for the dominance of vegetation in the early and mid mature seral stages, much of which is found in the ridgetop and upper one-third slope positions. Ridgetop and upper one-third slopes burn with much higher frequency than lower one-third slopes. As recently as 1987, a fire in the upper one-third slope in the south zone converted over 5,000 acres of mid mature coniferous forest to the shrub/forb seral stage.

Other disturbances, including Forest management activities such as prescribed fire, fire suppression, logging, and road construction, have affected vegetation at the stand and landscape levels. Timber management was a selective agent of succession; late seral and old growth stands were selected for regeneration harvests, further emphasizing the landscape dominance of younger seral stages. Cattle grazing also plays its part in disturbance. Cattle act as selective agents of succession, eating palatable species and leave behind non-palatable ones, which may eventually dominate a site.

**Seral stages:** the relative abundance of various seral stages, the developmental stages of a plant community in an ecological progression, is a measure of the diversity of the forest. Seral stages vary in horizontal and vertical structure, providing a diversity of habitats for plant and animal species. The percent of the Forest and the structural and species diversity found in each seral stage on the Forest are summarized below.

**Shrub/forb harvested:** 5 percent; structural diversity very low; species diversity can be the highest of all seral stages, but is made up of species that are found in all seral stages.

**Shrub/forb natural:** 5 percent; diversity similar to shrub/forb harvested.

**Pole harvested:** 6 percent; shrub and herb layers lacking; can have lowest species diversity.

**Pole natural:** 6 percent; shrub and herb layers lacking.

**Early mature:** 30 percent; shrub and herb layers lacking; snag density low, less than 18" dbh; vertical and horizontal diversity is lacking, species diversity second lowest of all seral stages.

**Mid mature:** 26 percent; shrub and herb layers of low cover; snags over 20" dbh occur; vertical and horizontal diversity low.

**Late mature:** 7 percent; shrub and herb layers begin to increase in cover; more snags, large snags a standard component; vertical and horizontal structure diversity begin to appear; species diversity is increasing.

**Old-growth:** 16 percent; shrub and herb layers apparent, vertical and horizontal diversity high; density of snags and logs high; species diversity second to shrub/forb seral stage; many species restricted to this stage.

Forest vegetation is found in three major categories: the forest series, oak woodlands, and grasslands. All seral stages found on the Forest are best represented in the conifer forest category. The old-growth seral stage is represented best in the moist north zone (25 percent of the conifer vegetation), less in the central zone (17 percent), and least in the south zone (8 percent). The mature seral stages show a reversal of this trend, increasing in frequency from north to south. The oak woodland category is found primarily in the early mature and mid mature seral stages except in the south zone, where it is found in most seral stages. All of the vegetation in the grassland category (2 percent Forest-wide) is contained in the shrub/forb natural seral stage.

**Historic Range of Variability:** An historic range of variability (HRV) for forest vegetation was calculated for the period from 1790 to 1990. Analysis of the HRV showed several trends in the Forest.

1. Narrower ranges of variability occur in the old-growth seral stage within the north zone as elevation increases, pointing to the higher frequency of stand replacing wildfires on high elevation sites than on low elevation sites.

2. A high frequency of tanoak vegetation occurs in the shrub/forb and pole seral stages, primarily related to past intensive forest management.

3. The existing condition within the old-growth seral stage of the tanoak series is lower than the historic range of variability.

4. The tanoak series appears to be the only series whose existing condition falls outside the historic range of variability.

5. The historic range of variability begins to drop as we move south into drier areas.

6. The greatest degree of change occurs in the south zone.

7. The amount of vegetation associated with the mature seral stages shifts in relation to the amount of old-growth.

### Projected Demands and Opportunities

The Forest is currently conducting three activities to assist in managing for biological diversity. The ecological classification program describes plant associations along with their physiographic features (elevation, aspect, slope, soils, parent rock, for example) in units called ecological types. The vegetation mapping project will complete a vegetation map layer for the Forest which includes vegetation series and sub-series, seral stage, overstory size class, and canopy closure. The ecological unit inventory maps ecological types, existing vegetation, soils, and geology and integrates this data into ecological units. The areas selected for ecological unit inventory are those that require this site specific information to address management concerns or needs, such as watershed assessments. These ecological types, when described and mapped, will provide the future vegetation management units for the Forest and will allows for tracking the elements of vegetative diversity (species, community, ecosystem, landscape) throughout the Forest.

## GENETICS

The Forest's diverse climate and topography contribute to the diversity in its animal and plant life, contributing to considerable genetic variability. The Forest contributes to genetic diversity best in places largely undisturbed by man's activities. Genetic diversity can also be conserved through propagation of seedlings at the Humboldt Nursery.

### Projected Demands and Opportunities

The Forest has opportunities to conserve genetic diversity by cooperating with the Research arm's Center of Conservation of Genetic Diversity in research projects and by considering genetic diversity in site specific projects.

## RIPARIAN ZONES

Riparian ecosystems are the interface between the aquatic and terrestrial ecosystems. Riparian communities occur around streams, lakes, ponds, wet meadows, springs, and wetlands throughout the Forest. Approximately 159,000 acres of riparian areas occur throughout the Forest, including 65 wet meadows and 90 ponds and lakes.

Riparian areas provide habitat for a greater number of wildlife species than do other habitat types. At least 250 wildlife species use riparian areas for breeding, feeding, and resting and as travel lanes and connectors between habitat types. Riparian vegetation is important to fish habitat. Riparian areas are attractive to livestock and are also the focus of water-related recreation uses.

Riparian systems on the Forest have been altered extensively over the past 150 years by natural events and man's activities. Standards and guidelines developed since the late 1960s have provided for greater protection of streamside areas that in earlier eras.

Management direction for wetlands and riparian areas is to insure high quality aquatic habitat and functioning riparian ecosystems now and in the future.

### Projected Demands and Opportunities

Standards and guidelines in this Plan require management that will balance the range of resource uses with the goal of ecological sustainability in order to maintain the long term productivity of riparian areas.

## SENSITIVE PLANT SPECIES

Federally listed endangered plants are protected under the provisions of the Endangered Species Act (ESA) of 1973, as amended. The Del Norte population of McDonald's rock-cress is under consideration for Federal listing. Pnding a taxonomic treatment of McDonald's rock-cress, which is now underway, the USFWS will determine whether the Del Norte population warrants Federal listing.

There are 30 plants on the Forest sensitive plant list; 19 are known to occur on the Forest and suitable habitat exists on the Forest for the other nine species. About 80 percent of the sensitive species are found on dry, rocky serpentine sites with soils which are nutrient poor and even toxic to most species. The rest are associated with non-serpentine outcrops and ultramafic parent material, oak woodland/grasslands, and wet meadows/bogs. Many of the species are located within Botanical Areas (see Resource Management Programs: Special Interest Areas).

## Projected Demands and Opportunities

The Forest will develop species management guides and monitoring plans for sensitive species, species groups, and habitats in cooperation with other agencies where possible. Data gathered on the Forest will be available for transfer to the California Natural Diversity Database, and cooperative efforts may be conducted with varied interest groups and organizations.

## WILDLIFE

The Forest is home to 298 known species of terrestrial wildlife, including 76 mammals, 185 birds, and 37 reptiles and amphibians. Forty-eight of these are game animals or furbearers. Chapter 3 of the EIS provides detailed information on the following species.

**Threatened and Endangered Species**: Four Federally-listed threatened andendangered species are found on the Forest: bald eagle, peregrine falcon, northern spotted owl, and marbled murrelet.

Bald eagle and peregrine falcon are classified as Endangered and are managed in accordance with their recovery plans. There are four known bald eagle territories, several suspected nest territories, and a small wintering population on the Forest. The Forest has 22 sites with potentially suitable peregrine falcon habitat and is thought to have nine pairs of nesting peregrine falcons.

The northern spotted owl and marbled murrelet are classified as Threatened. Neither the owl nor the murrelet has an approved recovery plan; until they do, management for these species will be guided by the Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old-Growth Forest Related Species within the Range of the Northern Spotted Owl (FSEIS) and the associated Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl (ROD). The Forest has 232 known pairs of spotted owls, 46 territorial singles, and a floating population of over 56 single owls. Murrelets were observed at seven locations on the Gasquet Ranger District in 1988 and 1989; three sightings were confirmed in 1992 surveys of selected sale areas using the regionally approved protocol.

**Candidates for Federal Listing**: Candidate species are species under consideration for possible listing as endangered or threatened. They have no protection under the ESA. Candidate species known or suspected to occur on the Forest are the California red-legged frog, Del Norte salamander, foothill yellow-legged frog, northwestern pond turtle, northern goshawk, California wolverine, Pacific fisher, Pacific western big-eared bat, white-footed vole, Karok Indian snail, Siskiyou and Trinity Alps ground beetles, and the Klamath bumble bee.

**Forest Service Sensitive Species**: These animal species were identified by the Regional Forester due to concerns for the viability of their populations, as evidenced by significant current or predicted downward trends in population numbers, density, and/or habitat quantity and quality. The Region 5 sensitive species known or suspected to occur on the Forest are American marten, Pacific fisher, northern goshawk, great gray owl, willow flycatcher, northwestern pond turtle, summer steelhead trout, and spring chinook salmon.

**State Listed Species and Species of Special Concern**: The Forest also recognizes species listed as threatened or sndangered within the state and state "species of special concern," a designation assigned by CDF&G to species with populations considered to be declining or in jeopardy of extinction. Species of special concern known or having the potential to occur on the Forest include the osprey, sharp-shinned hawk, long-eared owl, merlin, purple martin, yellow warbler, yellow-breasted chat, prairie falcon, golden eagle, great blue heron, American badger, and red tree vole (Williams, 1986).

**Harvest species and hunting**: Harvest species are those animals traditionally hunted or trapped. Commonly hunted species that inhabit the Forest include black bear, black-tailed deer, gray squirrel, mountain quail, California quail, blue grouse, ruffed grouse, turkey, band-tailed pigeon, wood duck, and mallard. Furbearing mammals which are trapped include mink, gray fox, raccoon, bobcat, and coyote.

**Management Indicator Species:** Six individual MIS species and seven multi-species assemblages were selected to gauge the effects for each alternative proposed in this EIS and to monitor the effects of plan implementation. Each species within the multi-species assemblages is likely to respond somewhat differently to various management activities that may occur. Monitoring several similar species will provide a better reflection of the range of responses expected from all wildlife species associated with a given habitat or habitat element.

**Northern spotted owl:** Spotted owls are expected to be sensitive to changes in habitat quality because they are fairly habitat specific, and they represent the habitat needs of other wildlife species that use mature and late-successional forest habitat for all or part of their life cycle.

**Pileated woodpecker:** The pileated woodpecker is expected to be a good indicator species because it is habitat specific, it requires large snags and logs as do many other species of wildlife, and it is still fairly common and well distributed.

**Black bear:** Black bear was selected as an indicator species because of its habitat association with mid- and late-successional stages of all forest vegetation types and unique meadow types and its large down log requirements.

**American marten:** Marten is a good indicator of habitat quality because it appears to be uniquely associated with true fir vegetation types, it is habitat specific, and it requires large logs or deadfalls for resting and denning.

**Pacific fisher:** Fisher is a good indicator of habitat quality because it is habitat specific, and it represents the habitat needs of other wildlife species which utilize mid-elevation mature and late-successional Mixed Evergreen forests on the Forest as well as wildlife species which use large cavities and concentrations of downed woody debris for denning or nesting.

**Black-tailed deer:** Black-tailed deer was selected as an indicator species because of its association with early- and mid-successional stages of all forest vegetation types and unique meadow and hardwood types.

**Bog/seep/spring/wet meadow/talus wildlife assemblage:** Two species which are dependent on these densely vegetated wet areas to meet life requirements represent this habitat type.

**Marsh/lake/pond assemblage:** Three species which are sensitive to water chemistry, large woody debris, adjacent forested habitats, and disturbance were chosen to represent this habitat type.

**River, stream, and creek wildlife assemblage:** Eight species which are sensitive to water quality (chemistry and temperature), snags and large woody debris, adjacent forested habitats, and disturbance were chosen to represent this habitat type.

**Snag assemblage:** Ten species which are dependent on snags for all or part of their life cycle were chosen to represent this habitat type.

**Downed woody material assemblage:** Five species which are dependent on downed woody material for some aspect of their life were chosen to represent this habitat type.

**Black oak/white oak assemblage:** Four species with a variety of needs and uses for oaks were chosen to represent this habitat type.

**Tanoak and Pacific madrone assemblage:** Three species were chosen to represent this habitat type.

### Projected Demands and Opportunities

Public lands offer opportunities for the public to hunt, view, and photograph wildlife otherwise unavailable to many. Conservation strategies will be developed and implemented to assist Threatened and Endangered species through recovery and to prevent listing of other sensitive species under the Endangered Species Act.

## FISHERIES

### Current Situation

The Forest supports both anadromous and resident fish populations including salmon, steelhead, trout, sturgeon, bluegill, crappie, and bass.

**Anadromous Fish Resource:** The primary fishery resource on the Forest is anadromous fish production, particularly in the Klamath, Trinity, and Smith river watersheds. Steelhead, which are harvested only by

sports anglers in freshwater, make a substantial contribution to the economies of communities near the rivers. The Forest provides habitat for steelhead in the Klamath and Smith river systems and the headwaters of the Eel, Mad, and Van Duzen rivers. Locally important fisheries include resident trout, green sturgeon and American shad in the Klamath River, and warm water fish in Ruth Reservoir.

**Klamath-Trinity River System:** Current population levels of chinook salmon in the Klamath and Trinity rivers are so low that there is little economic yield from the remnant fisheries. The Forest contains about 15 percent of the total Klamath-Trinity River watershed, including several important spawning tributaries for salmon and steelhead. Steelhead provide the major sport fishery in this river system. Angler success has been very low in the past several years. The steelhead fishery is primarily supported by the "half-pounder," which is found in only three rivers in the world; the Klamath and Eel are two of those rivers.

Approximately 10 percent of the Trinity River watershed is on the Forest. It is estimated that, since 1950, the lower river steelhead population has declined by 80 percent. Natural chinook salmon populations have also had major declines, although the Trinity River Hatchery has mitigated some of this loss.

Indian Tribal fisheries, both commercial and subsistence, focus primarily on fall chinook salmon, which occurs primarily downstream of the Forest on the Yurok and Hoopa reservations. A small subsistence fishery occurs upstream of the Forest, near Ukonom, carried out by the Karok Tribe. There is also a small tribal fishery for steelhead and green sturgeon.

**Smith River System:** Approximately 85 percent of the Smith River watershed is within the Forest. Habitat quality and quantity in the Smith River system are superior to the Klamath River, although the 1964 flood caused a drastic decline in the quality of the fish habitat, which has not fully recovered. Chinook salmon and steelhead are the dominant anadromous fish, and their large size has given the river national prominence among sport fishers. Coho salmon and coastal cutthroat trout are widely distributed in the basin in generally low numbers.

**Sensitive species:** The coho salmon, which occurs on the Forest in very low numbers in the Klamath and Smith river watersheds, is currently being evaluated for protection under the Threatened and Endangered Species Act. The green sturgeon, which occurs in the Klamath River, is currently listed by the U. S. Fish and Wildlife Service as a candidate for listing under the Threatened and Endangered Species Act. The summer steelhead, which occurs on the Forest, is classified by the Forest Service in Region 5 as a Sensitive Species; this designation requires that habitat for the species be maintained or enhanced.

**Resident Fish Resource:** Resident trout are found in many areas throughout the Forest, providing ample opportunity for anglers who seek small, native trout in remote streams. The most significant warmwater fishery occurs in Ruth Reservoir, where 15,000 trout of catchable size are released annually. The largest sport fishing use of a natural lake is at 28-acre Fish Lake where 10,000 catchable rainbow are released annually. Other species are sought at both locations as well as at 12 other natural lakes on the Forest.

**Fish habitat improvement:** The Forest anadromous fish habitat improvement program focuses on improving the quality and quantity of spawning habitat for adult salmon and steelhead, and rearing habitat for juveniles. The Forest cooperates in a small-scale hatchery program that seeks to rebuild stream populations of native chinook salmon in tributaries within the Klamath-Trinity River basin. The Forest has initiated a modest program of experimental habitat improvement for bass in Ruth Reservoir in cooperation with CDF&G and Humboldt Bay Municipal Water District. The Forest also cooperates in two major restoration programs for anadromous fish in the Klamath-Trinity river basin.

### Projected Demands and Opportunities

Habitat management and small scale hatcheries on the Forest provide opportunities for depleted anadromous fish stocks to recover during inland spawning and rearing. Success in recovery will provide more opportunities for sport, commercial, and Indian fish catches.

## SOCIAL AND ECONOMIC ENVIRONMENT

### SOCIAL

### Current Situation

The three main issues that define the social climate are protection of the environment, economic stability, and protection of Indian cultural activities and values. The

Forest's primary zone of influence is Del Norte, Humboldt, and Trinity counties; the secondary zone of influence takes in Curry County, Oregon, and Siskiyou County, California.

Diverse lifestyles and values exist in these zones of influence (see the section on Social Categories), yet they have one thing in common: their lifestyles are intrinsically linked to the land and natural resources.

**Population Composition:** The Forest's zones of influence are racially homogeneous; roughly 86 percent of the population is caucasian. Most Native Americans, who comprise roughly six percent of the region's population, are indigenous to the area. African Americans, Hispanics, and Asians have made population gains over the last decade.

**Social Groups and Lifestyles:** A wide range of social groups live in the Forest's zone of influence. Four major groups (described in EIS Chapter 3) have been identified within the social structure: amenity emphasis, environmental priority, Native Americans, and commodity dependent residents. These four groups are not mutually exclusive; many people have interests in more than one group at a time.

**Trends Affecting Social Conditions:** The following trends affect conditions in the primary zone of influence and the interaction of the social groups: "reverse migration," represented by the notable increase of retirees and immigrants from urban areas; continued and/or increased environmental concern; increased political awareness and organization of Native American groups; and continuing and increasing participation in grass roots movements.

## Projected Demands and Opportunities

The public is demanding an ever-increasing say in Forest planning and policy-making. There will be varied opportunities for the public to participate in these activities, especially at the project planning level. Partnerships will provide opportunities for other government agencies, groups, and individuals to participate in Forest management activities.

## ECONOMICS

The Forest directly influences the economy of Humboldt, Del Norte, and Trinity counties and, to a lesser degree, portions of Siskiyou and Josephine counties. These counties are predominantly rural and depend to some extent on the Forest's natural resources. Population density in these counties is less than 20 percent of the State average. Sixty-two percent of the population lives in rural areas or in small communities of 3,000 or less; 38 percent lives in the major population centers along the coast near Humboldt Bay and Crescent City. Population growth in the region was about half that of the State generally during the 1980s, with much of this growth from retirees, urban flight, and expanding government and educational services.

**Local employment:** Government employment, wholesale and retail trade, services, and manufacturing comprise 75 percent of the area's employment. Employment in the first three areas increased steadily since 1972. Employment in manufacturing, which has been primarily related to timber, declined more than 50 percent since 1972, continuing a trend that started in 1960. Lower harvest levels on private lands, consolidation of small businesses into a few large holdings, and automation all contributed to declining employment levels. Harvest levels on the North Coast have stabilized since 1987 at an average of 1.1 billion board feet per year. This harvest level is predicted to be maintained over the next 10 to 15 years, although increasing restrictions on the timber land base due to other resource concerns may affect the actual supply of timber.

Per capita income within the primary zone of influence is about 30 percent below the State average, due in part to lifestyles that include more self-sufficiency and employment in seasonal industries. Unemployment in the zone averaged 73 percent above the State level in 1989.

**Forest contribution to the local economy:** The Forest contributes to the local economy in three ways: resource outputs, Forest employment and expenditures, and payments to counties.

> **Forest outputs:** Various Forest outputs contribute to the health of the local economy: timber, recreation, fisheries and wildlife, range, and miscellaneous Forest products. The economic value of Forest outputs such as timber, commercial fisheries, and range can be quantified using market values or Forest usage fees. Other uses, such as sport fisheries, hunting, and many other recreation uses cannot be so easily measured.
>
> **Forest Employment and Expenditures:** The administration of the Forest impacts the local

economy, especially in the small towns where the Ranger Districts are located (Gasquet, Orleans, Willow Creek, Mad River/Dinsmore). The Forest pays salaries to full time, seasonal and temporary employees who live in local communities. It purchases goods and services for a variety of activities and supports human resource programs that provide local employment and on-the-job training in resource management.

**Payments to Counties:** Twenty-five percent of gross Forest receipts are returned to the counties, prorated on the basis of the acreage contained in each county. These funds are earmarked for school districts and county roads and were $7.8 million in 1989. Counties also receive payments in lieu of taxes for each acre of Federal land in the county; these payments can be used for any governmental purpose. The State tax on harvested timber also is returned to the counties.

### Projected Demands and Opportunities

Commodity outputs and associated Forest investments in maintaining and improving those outputs generate public and private sector employment. Employment incomes circulate through the local economy, generating indirect/induced employment and income in other sectors.

Forest investment in recreation, fisheries, and wildlife present opportunities to increase contributions to the local economy from these non-commodity outputs such as increased recreation, commercial and sport fishing, hunting and non-consumptive wildlife uses.

New programs are being developed to assist rural communities in diversifying their economies in order to help compensate for economic losses due to decreasing timber outputs. The Forest is helping rural communities tap into sources of funding, such as assistance for water and waste disposal facilities, loans to develop community facilities for public use, and business and industrial guaranteed loans in rural communities.

## RESOURCE MANAGEMENT PROGRAMS

### RESEARCH NATURAL AREAS

Research Natural Areas (RNAs) are part of a National network of reserved public lands, representing a diversity of ecosystems, that provide opportunities for research and ecological study.

A Regional program has identified major types of forest vegetation that should be represented in the National RNA network. The Yurok RNA has been established within the Yurok Experimental Forest to study old growth redwood; it is managed by the Pacific Southwest Forest and Range Experiment Station. Six areas, representing various elements, were evaluated as candidates and dropped from consideration for RNA status. Horse Linto has been nominated for further consideration; six other areas are being considered for two more nominations. Eight areas are recommended in this Plan for establishment as RNAs: Adorni, Craigs Creek, North Trinity Mountain, Ruth, L.E. Horton, Soldier, Hennessy Ridge, and Upper Goose Creek.

### Projected Demands and Opportunities

Opportunities and demands for restoration and research will be identified in the management assessment developed for each RNA.

### SPECIAL INTEREST AREAS

**Special Interest Areas:** Special Interest Areas (SIAs) are established to protect areas on the Forest with unique characteristics. The goal is to interpret the surroundings for public enjoyment and increased understanding of natural resources.

SIAs can be established to highlight areas with botanical, ecological, cultural, geological or other special values. Botanical areas contain outstanding examples of some part of the Forest flora. Ecological areas contain a variety of plant communities. Geological areas are sites with unique or outstanding features that demonstrate the earth's development and processes. The following areas have been identified as SIAs: Bear Basin Butte North Fork Smith River, and Horse Mountain (botanical areas), Myrtle Creek (botanical and cultural), the Lassics (botanical and geological), Broken Rib Mountain (ecological), and Bluff Creek (geological).

There are other areas on the Forest that are of special interest. Some are geologic features such as the surface trace of the Coast Range fault, giant landslide features, elevated stream terraces, and exposures of distinctive geologic materials. National Park Service

candidates for designation as National Natural Landmarks include the Siskiyou Mountains, Trinity Alps, Yolla Bolly Mountains, the Lassics, Stony Creek Bog, and Bear Basin Butte. Significant Natural Areas of California, identified by the California Department of Fish and Game, are also included.

### Projected Demands and Opportunities

Designated SIAs and other areas of special interest provide opportunities for interpretation and public education as well as cooperation with various organizations for studies and monitoring.

## HUMBOLDT NURSERY

Humboldt Nursery is located near the coast about 15 miles north of Eureka. The Nursery produces tree seedlings for reforesting National Forest System and Bureau of Land Management lands in California, Oregon, and Washington, as well as for the Bureau of Indian Affairs, Redwood National Park, and state agencies. The Nursery produces the following commercial species: Douglas-fir, the largest component of its crop, redwood, and several species each of true fir, cedar, spruce, pine, and hemlock. The Nursery, in recent years, has begun to cultivate non-commercial species: red and white alder, digger pine, big leaf maple, tanoak, Brewer oak, and Oregon white oak; woody shrubs such as California redbud, coast coffeeberry, buckbrush ceanothus, and blue blossom (wild lilac); and experimental plots of Pacific yew, cottonwood, and various willows grown from cuttings.

### Projected Demands and Opportunities

The Nursery will continue to produce seedlings of more varied species, offer public interpretive opportunities, and foster partnership with local agencies.

## LAW ENFORCEMENT

The number of law enforcement incidents on the Forest is rising steadily in relation to increases in numbers of Forest visitors and pressures from and uses by adjacent landowners.

The Forest cooperates with law enforcement agencies in local counties and with other State and Federal agencies. All law enforcement resources are overstretched, and delayed response by enforcement agencies with Forest jurisdiction do occur.

### Projected Demands and Opportunities

The trend for law enforcement needs, case complexity, and potential hazards for Forest employees, visitors, and permit holders are expected to continue as will the demand for additional employees to be trained and equipped to function in a full law enforcement capacity.

## HERITAGE RESOURCE MANAGEMENT

Heritage resources on the Forest are varied and complex, ranging from 6,000- to 8,000-year-old prehistoric sites to historic mining ditches and cabins and administrative structures built by the Civilian Conservation Corps. Contemporary local Indians continue to use Forest sites for ceremonial and religious purposes and to obtain a variety of natural resources for daily use.

The Forest uses heritage resource inventories, usually associated with proposed projects, to record and conserve traces of the prehistoric and historic records and to identify and respond to cultural concerns relating to the contemporary values of Forest users. The Forest consults the State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation for all proposed undertakings.

About 15 percent of the Forest has been inventoried and 980 heritage resource sites identified. One cultural district and one property have been formally listed on the National Register of Historic Places; four more districts have been determined to be eligible for listing. Eleven areas have been designated Native American Cultural Use Areas (NACUAs) in recognition of American Indian spiritual values associated with them.

Local Indians have a variety of concerns about Forest management as related to their cultural activities. The Forest uses the Coordinated Resource Management concept to promote Indian involvement in resource management activities to address their concerns. Heritage resource management also enables the development of resource management projects that are co-sponsored by Indian tribes, the Forest Service, and other public agencies.

### Projected Demands and Opportunities

Evaluation of heritage resource properties will continue in the future in response to Forest projects.

As more projects are proposed in river corridors, inventories will be completed to fill the knowledge gap for these areas. The recent trend to high priority for enhancement and interpretation will continue and is likely to contribute to increased visitor use. Research opportunities will continue to be available, and cooperation between the Forest and the archaeological program at Humboldt State is likely to expand.

## FIRE AND FUELS MANAGEMENT

**Fire Management:** The Forest averages 64 fires burning an average of 805 acres per year. Most are caused by human activity and have light to moderate effects on the Forest environment. Heavy lightning storms, which may start over 100 fires, occur every 7 to 8 years. Less than 10 percent of fires burn more than 400 acres; the largest recent fire burned over 12,000 acres in 1987. Fires in wilderness are currently controlled.

The Forest funds a relatively small initial attack organization; if a fire escapes initial action, cooperating agencies and the "militia" (non-fire Forest Service employees) are called into action. The size of the militia has shrunk in recent years; consequently, initial reinforcement may be delayed and some fires are likely to require more suppression than might have been needed in the past.

The Forest coordinates fire management activities with other agencies, such as the California Department of Forestry and Fire Protection, the Hoopa Indian Tribe, and the Bureau of Indian Affairs.

**Fuels Management:** Most fuels management activities have been prescribed burning, such as timber sale slash, to remove logging residue and prepare sites for reforestation and to lower fire hazard. There is a current shift taking place towards larger area understory fuel treatments to counteract the unnatural fuel buildups that have resulted from several decades of aggressive suppression.

### Projected Demands and Opportunities

Suppression actions should strive to protect the specific attributes of the various land allocations. Prescribed burning will provide the opportunity for ecosystem process restoration, habitat improvement and maintenance, and hazard reduction. More expensive fuel treatment methods such as handpiling and/or rearrangement of fuels may also be used.

Growing populations will increasingly demand smoke management and other public health and safety considerations.

Comprehensive fire management action plans that consider alternatives other than control will be completed for wilderness areas.

## ENERGY RESOURCES MANAGEMENT

**Energy production:** The Forest currently provides energy from biomass (dead or living trees) and small amounts from water and sun.

Firewood is gathered by individuals or commercial dealers. Demand from individuals has fallen off in the last decade since the Forest Service began charging for permits. Cull logs, hardwood chip logs, and sawmill "by-products" are also used for commercial power generation in both Humboldt and Del Norte counties when economical, but Forest products have seldom been harvested primarily for power production.

Two hydroelectric plants on the Forest produce and sell power to Pacific Gas and Electric Company; both are on the Mad River district. Otherwise, electricity is transmitted from Oregon and California's Central Valley to the Forest and coastal areas.

Solar-powered facilities are used at communications sites and other remote locations. The potential to generate wind power on the Forest is untapped.

**Energy conservation:** Energy conservation efforts have reduced Forest Service fleet fuel usage and improved the energy efficiency of Forest Service facilities.

### Projected Demands and Opportunities

Biomass for firewood and commercial power generation will generally be less available from the Forest than in the past as less timber is harvested and dead and down wood will be left in place to protect the habitat of plant and animal species dependent on its existence. Conflicts may be expected to develop among various user groups. The demand for firewood will depend not only on its availability, but also on its costs compared to costs of alternate energy sources, restrictions on wood stove or fireplace emissions, and local population increases.

Neither of the utility companies anticipates the need for additional transmission lines in the next 10 to 20 years.

## LANDS PROGRAM MANAGEMENT

The Forest manages about 960,000 acres of NFS land. There are about 134,000 acres of land scattered within the Forest boundaries that are in other ownership. The private lands were generally acquired, before the National Forest was established, under various laws intended to encourage settlement and resource production.

Landownership adjustment involves changes in ownership to make management easier and to reduce administrative costs. Historically, large holdings of cutover private timber lands were exchanged for federal forested lands. A relatively recent trend, which is expected to continue, is for smaller exchanges to acquire lands with other resource values, such as wilderness and habitat for threatened or endangered wildlife and plants.

The Forest boundary location program supports the resource programs and landownership adjustment program. About 30 percent of the roughly 1,300 miles of boundary line between public and private land are unsurveyed or inadequately surveyed. Boundary location and marking identifies encroachments, some of which can be resolved under the Small Tracts Act (STA). The Forest has completed about 25 STA cases; 60 or more encroachments with potential for resolution under STA authority are waiting establishment of Wild and Scenic River corridor widths.

Special use authorizations allow others to use approximately 3,800 acres of National Forest System land for a wide variety of uses. Powerlines occupy 3 utility corridors crossing the Forest. Three of the four communications sites that serve a variety of communications uses will be designated multi-user communications sites.

The Forest acquires easements across private property, when needed, to access NFS land for management activities.

### Projected Demands and Opportunities

The land adjustment program will continue to shift from being primarily driven by timber needs to providing for other resource and management needs. Most of the surveyed boundary line between Government and private land are planned to be surveyed, marked, and posted to standards by the year 2010, identifying additional encroachments that may be resolved under STA authority. Opportunities to find alternative ways to manage lands under special use authorization and/or meet public needs for these uses will be explored. The demand for new rights-of-way will shift toward providing access for public recreation activities. Negotiations with private land owners will take more time and sensitivity than in the past.

## MINERALS MANAGEMENT

Mineral commodities are classified by law as either locatable, leasable, or common variety mineral materials. The Forest contains a variety of locatable and common variety minerals. There are no known leasable minerals, such as gas and oil.

**Locatable minerals:** These minerals may be acquired through compliance with the General Mining Laws of 1872, as amended. They include gold, chromite, mercury, nickel, cobalt, manganese, and copper. The Forest does not generally produce large quantities of any locatable minerals, compared to production statewide. There are 4,398 acres of outstanding mineral rights on the Forest.

The number of claims on the Forest has dropped by at least half since 1990, due to designation of the NRA in 1990 and institution of a BLM claim maintenance fee in 1993. The number of plans and notices submitted for proposed operations, primarily for suction dredging, dropped correspondingly. Proposed operations are evaluated under NEPA; operators must comply with requirements for protecting resources, such as Threatened and Endangered plant and animal species, and for reclamation to a second productive use where appropriate.

Forty percent of the Forest lands have been withdrawn from mineral entry, subject to valid existing rights under wilderness, Wild and Scenic Rivers, and NRA designations. Less than 1 percent of the Forest lands are withdrawn for recreation and administrative purposes, and these withdrawals have been recommended for termination.

**Common variety minerals:** Common variety minerals that occur on the Forest include various earth construction materials. Most sand and gravel deposits are located along streams and are replenished periodically by natural deposition. Rock aggregate for road surfacing material is a non-renewable resource. All known rock sources have been inventoried and mapped; these deposits are distributed throughout the Forest. Historically, the demand for common variety

mineral materials was primarily for use on Forest roads and facilities, with relatively small amounts used by private parties.

### Projected Demand and Opportunities

Sixty-five percent of the forest is considered to have less than moderate potential for mineral development during the planning horizon; 25 percent is considered to have moderate potential. Demand is difficult to predict, as it depends on market value, world supply, and the cost of extraction and reclamation. Research Natural Areas and Native American Cultural Use Areas that are not already withdrawn from mineral entry will be considered for recommendation for withdrawal.

## RANGE MANAGEMENT

The Forest currently makes available 15,897 AUMs (animal-unit-months) for approximately 1,987 cattle between April and October each year. Range management includes using fencing and water developments to distribute livestock in a way that minimizes the impacts on other Forest resources.

About 25 percent of the 297,000 acres of NFS land in allotments is suitable rangeland. These suitable lands could support up to 28,809 AUMs. The suitable range is primarily annual grassland, oak woodland, browse, and transitory range. Most transitory range, which supports grazing for about 20 years, is the result of timber management activities that open up the forest, allowing grasses, forbs, and browse to flourish until trees once again dominate. Reductions in timber harvest levels and changes in silvicultural systems will result in fewer acres of transitory range, and the number of AUMs available will be less over time.

Grazing is authorized on 18 allotments on 2 districts: 12 on Mad River district and 6 on Lower Trinity district. Three of the active allotments include wilderness lands. Seven permittees on Mad River allotments utilize about 90 percent of the AUMs permitted on the forest; 12 permittees on Lower Trinity allotments utilize the other 10 percent.

The ecological condition of the rangelands on the Forest is not known at this time. Current management intent is to complete ecological classification of rangelands and to determine condition and trend, where applicable. Problems associated with livestock use include grazing within riparian areas and construction of roads that cause range allotment management problems such as a need to install fences, gates, and cattleguards.

### Projected Demands and Opportunities

The demand for Forest rangelands is expected to remain at current levels over the next decade. There is an opportunity to improve vegetative conditions and damaged riparian areas by improved management practices. The Pacific Southwest Region has initiated a project to provide an ecological classification of all forest plant communities that will facilitate identification and interpretation of vegetation-soil communities at project level planning.

## RECREATION PROGRAM MANAGEMENT

The Forest provides a diverse array of recreation opportunities in a variety of settings. Forest attractions include numerous rivers, streams, and lakes, steep mountains to gentler oak woodlands, four wildernesses, the Smith River National Recreation Area, and a road system that makes much of the Forest available to the motoring public.

The most popular recreational activities are camping, picnicking, swimming, fishing, hiking, horseback riding, boating, and motorized uses such as viewing scenery and off-highway vehicle travel.

Some recreation occurs at permanent sites developed specifically for recreation purposes. The Forest has 15 developed campgrounds, 2 developed camping areas, 10 camping areas with no potable water, a boat ramp, and some trailheads. Several of the Forest's older campgrounds are functionally obsolete; those in the Smith River NRA are being upgraded first to provide more "modern" and accessible facilities.

Dispersed recreation is outdoor recreation that involves relatively low density use and occurs over broad expanses of land or water. Dispersed recreation, which generally occurs during summer and fall, accounts for much of the recreation use on the Forest, especially along its rivers and streams.

The network of Forest roads and the 230 miles of trails provide access for dispersed recreation activities. Two nationally designated Scenic Byways cross the Forest.

Redwood National Park, the State's redwood parks, and three National Forests are in close proximity to the Forest and provide similar recreational opportunities. Outfitter/guide operations, resorts, and special events under special use permit provide a variety of recreation experiences on the Forest.

### Projected Demands and Opportunities

The Forest provides a supply of potential outdoor recreation opportunities that is estimated to be three to four times the existing dispersed use without changing the character of the setting, although the available supply of water-based recreation is limited. Chapter 3 of the EIS describes the inventoried recreational opportunity spectrum (ROS) acres, capacity, and use.

There are opportunities to improve the facilities at existing developed campgrounds to meet the demands of today's campers, including facilities for recreational vehicles and physically challenged users. There are also opportunities to provide more day-use areas and increase the number of outfitter/guide and recreation special event permits without significantly impairing the recreation experience.

## ROADLESS AND WILDERNESS AREA MANAGEMENT

Some of the Roadless areas "released" in 1984 have been roaded; all have been managed for multiple-use other than wilderness. None are recommended to be managed to protect wilderness potential in this Plan.

Wilderness areas on the Forest include portions of the Yolla-Bolly Middle Eel Wilderness (11,100 acres), Trinity Alps Wilderness (27,600 acres), Siskiyou Wilderness (74,000 acres), and all of the North Fork Eel Wilderness (8,260 acres). Their total area (121,000 acres) represents about 13 percent of the Forest's land base.

These wilderness areas encompass a variety of special features, including national recreation trails, wild rivers, unique plant communities, portions of the Helkau Cultural Resource District, and good winter deer range.

### Projected Demands and Opportunities

Wilderness use is expected to be about 25,000 visitor days per year in the first decade, increasing at about the rate of population increase.

## WILD AND SCENIC RIVERS MANAGEMENT

The California Wild and Scenic River system incorporates 366 miles of the Smith, Klamath, Trinity, and North Fork of the Eel River which are within the Forest; these were designated by the Secretary of Interior as part of the national system in 1981. Wild, scenic, and recreational classifications are all represented. These streams are 35 percent of the wild and scenic rivers on NFS lands in California. The primary reason for the designation of these streams was their outstanding anadromous fisheries value; the North Fork of the Smith was also valued for its whitewater boating. The Smith River and its tributaries were redesignated by Congress in 1990 under the Smith River NRA Act.

The boundaries of the South Fork of the Trinity River and management direction for it were established in its River Management Plan in 1992. The boundaries of the remaining streams are established in this Plan. Management direction for the Smith River and its tributaries is included in the Smith River Management Plan (Appendix A). Implementation schedules will be developed for the remaining designated segments of the Trinity, Klamath, and North Fork of the Eel rivers.

Portions of the Van Duzen and the North Fork Eel rivers and Redwood Creek were listed in the Nationwide River Inventory but not designated under the National Wild and Scenic Rivers Act. The Van Duzen and North Fork Eel portions were determined to be ineligible for wild, scenic, or recreational status. Detailed analyses are in Appendix D of the EIS. Redwood Creek has potential outstanding values; the approximately one-half mile on NFS lands will be maintained in a condition that will not diminish its potential for wild and scenic designation.

### Projected Demands and Opportunities

Six streams were identified through public scoping as potential wild and scenic rivers; only Blue Creek was determined to have values that would make it eligible for designation. Additional stream segments have been found to have values that would make them eligible for designation. Detailed analyses of these stream segments are in Appendix D of the EIS.

## TIMBER MANAGEMENT

The amount of timber sold and harvested from the Forest has varied considerably in the last 40 years,

more than doubling from the mid 1950s and then declining as timbered lands were removed from the available land base by various Congressional and Executive Branch actions. Harvest and sale levels declined rapidly from the late 1980s to the present; establishment of the Smith River NRA and protection of Threatened and Endangered wildlife species contributed significantly to this decrease.

**Forest Land Classification:** The National Forest Management Act of 1976 (NFMA) requires an assessment of National Forest lands to determine those acres which are capable, available, and tentatively suitable for timber production.

**Capable** lands are those where growth potential is at least 20 cubic feet per acre, per year. **Available** lands are those which have not been legislatively or administratively withdrawn from timber management. Wilderness areas, late seral reserves, and riparian reserves are examples of lands which are unavailable. **Tentatively suitable** acres are those lands which can be reforested within five years and where timber harvest would not cause irreversible damage to soil productivity or watershed conditions.

Only lands determined to be capable, available, and suitable are managed for timber outputs and contribute to the calculation of allowable sale quantity (ASQ). Approximately 28 percent of the Forest's 958,470 acres are available, capable, and tentatively suitable for timber production.

**Products:** Sawtimber is the most important commercial commodity produced on the Forest. It is estimated that the Forest has approximately 12 billion board feet of standing timber on lands classified as tentatively suitable for timber production. The primary species harvested is Douglas-fir. Other conifers and small amounts of black oak are also harvested.

Nearly all of the timber from the Forest is processed in Oregon and northwestern California. Some local mills depend heavily on timber from the forest, and bidding on most sales is highly competitive.

The long term price trend from below $50 per thousand board feet (mbf) in the early 1970s to over $350 per mbf in fiscal year 1992 reflects the increasing scarcity of timber supply in relation to demand.

Hardwoods are present in the Forest and dominate sites at various stages in the revegetation cycle; fire, logging, reforestation, and site conditions affect the presence of hardwood. Individuals purchase fuelwood from the forest, most often collecting it from recently logged areas. Less logging means that fuelwood is less available and usually further from home. Some commercial operators purchase fuelwood sales, which tend not to be highly profitable. Hardwood is also is used to produce paper pulp, generate electric power, and for lumber.

**Harvest Methods:** Harvest methods used on the Forest include ground skidding, cable yarding, and aerial yarding. Skidding is appropriate on a small fraction of the Forest's tentatively suitable land base. Cable yarding is the most frequently used method. Aerial yarding by helicopters has been rare on the Forest but is increasing. This trend is expected to continue as helicopters are used to harvest otherwise inaccessible areas or to mitigate specific resource concerns; costs of helicopter logging and subsequent entries into an area without road access for regeneration, timber stand improvement treatments, and monitoring will be higher with this method.

**Silvicultural Systems:** Various silvicultural practices are used to influence vegetation development. Forest stands on the Six Rivers are managed by one of two silvicultural systems: even-aged or uneven-aged. Silvicultural principles and systems are described in detail in Appendix K of the EIS.

Even-aged management has been the primary silvicultural system for the Forest, and was selected as the preferred method in the 1971 Timber Management Plan. Until recently, clearcutting has been the primary method used to regenerate stands under that plan. The shelterwood method has also been used, and intermediate harvesting has occurred, primarily as thinnings and salvage cutting.

Some uneven-aged management has occurred on the Forest in areas with specific resource objectives such as maintenance of a continuous forest cover.

Traditional even-age systems have been modified in the last few years to provide increased diversity in forest stands. Regeneration with legacy is a method used to retain various levels of large live conifers and hardwoods, snags, large logs, and patches of understory conifer seedlings and saplings. Low levels of legacy retention provide important habitat niches for various wildlife species, but may appear similar to

a clearcut. High levels of legacy retention subdue the visual effects of harvesting and move a site toward a multi-story stand structure considered important to some species associated with late successional forests.

The historical emphasis of National Forest timber management has been to optimize tree growth for timber production. The new emphasis is to maintaining the health of the ecosystem and all its component parts. Tree growth will continue to be optimized when it does not conflict with ecosystem health.

**Reforestation:** National Forest Management Act (NFMA) regulations specify that trees can only be harvested from lands that can be adequately reforested within 5 years after harvest. Reforestation is achieved by either natural or artificial methods. Artificial regeneration by planting is the most commonly used method on the Forest, using mostly Douglas-fir, ponderosa pine, and Jeffrey pine. Natural regeneration is most often used to establish shade tolerant species. Stock is usually planted at 2 to 3 times the recommended stocking standards to allow for seedling mortality and removal of inferior trees in 10 to 15 years, leaving the "superior performers" in the stand. The seedling survival rate is generally 70 to 80 percent, resulting in a high percentage of the Forest's plantations meeting reforestation standards within 5 years after harvest.

Release and precommercial thinning treatments are used to suppress vegetation which is competing with desired seedlings for light, moisture, and nutrients, and to thin dense stands of older seedlings and saplings to provide adequate growing space for selected trees. Release and thinning can be accomplished by manual, mechanical, or chemical methods, depending on site conditions, costs, other resource concerns, and public opinion. About 23,500 acres currently need some treatment. Release of Forest plantations was accomplished primarily by herbicide applications until 1984 and have been done by manual or mechanical methods since then.

### Projected Demands and Opportunities

Knutson-Vandenberg (KV) funds generated from timber sale receipts will continue to finance sale area improvement projects including reforestation, stand protection and improvement, slope stabilization, wildlife and fisheries habitat improvement, and recreation development.

Opportunities exist to manage the forest to produce timber and forest products and provide for other resources, including wildlife; to help accelerate the development of desirable structural components; and to maintain or enhance species diversity within stands and across broader landscape areas. A variety of timber harvest systems can be used as a tools in this management. The relationship between disturbance, including timber harvest, and other biological, physical, and social aspects of the ecosystem are not fully understood. Timber management practices need to be monitored and evaluated in the upcoming years, and adjustments made as new information becomes available.

## TREES WITH SPECIAL MANAGEMENT CONSIDERATION

Three tree species found in small groups, or as individuals, on the Forest are of concern to the public and Forest managers: redwood, Pacific yew, and Port-Orford-cedar.

Redwood is found in small areas in the Smith River NRA and within the Yurok Redwood Experimental Forest. There are approximately 2,600 acres where redwood is a component of the stand. All groves of redwood are protected from harvest on the Forest.

Pacific yew is near the southern extent of its range on this Forest. It has many special uses and is important culturally to Native Americans for use in bows and other products. There were no commercial collections of yew bark on the Forest during the period 1991-1993, when it was being collected in the Pacific northwest for research on the cancer treatment properties of taxol.

Port-Orford-cedar is a valuable conifer, found in some areas on the Forest, that may be legally exported as raw logs. The species has been infected in some areas by a root disease, and special measures are needed to prevent the disease from spreading to uninfected areas.

### Potential Demands and Opportunities

The Pacific Southwest Forest and Range Experiment Station, Redwood Sciences Lab conducts wildlife and

watershed related studies of redwoods which occur within the Yurok Experimental Forest.

Port-Orford-cedar will be managed according to the Forest Plan Standards and Guidelines that should provide an opportunity to prevent spread of the root disease. Opportunities may occur to reestablish Port-Orford-cedar in plant associations which have been altered by root disease.

## SPECIAL FOREST PRODUCTS

Special forest products are defined as non-timber, renewable vegetative natural resources, such as berries, floral greenery, cones and seeds, mushrooms, and dyeing materials. Many rural residents rely on plant material from the Forest for food, medicinals, and other uses. The act of collecting has cultural and spiritual significance to Native Americans.

The trend in rural communities is to rely more heavily on a broader range of forest products; new markets have been developed for them.

The Forest sells special forest products under permit or contract; no permits are required for personal collection. Demand for special forest products has risen faster than the Forest can meet it. The potential for social conflict rises as more people with different values demand similar products.

### Projected Demands and Opportunities

Demand for special forest products is expected to increase and must be managed sustainably. Research, monitoring, education, real market value pricing, public participation, habitat enhancement projects, and assisting in developing the infrastructure and markets to support a special forest products economy are among the opportunities that will be explored during this planning period.

## PEST MANAGEMENT

The primary groups of forest pests likely to interfere with some management objectives are: competing vegetation, diseases, insects, and vertebrates. Some of the pests found on the Forest are dwarf mistletoes, white pine blister rust, root diseases, black-tailed deer, black bears, and various rodents. Many of these pests can be treated to minimize their effects.

The Forest Service implements an integrated pest management (IPM) approach to dealing with forest pests: prevention, detection, evaluation, suppression, and monitoring. Pest management goals are directed toward reducing pest-related losses to levels that maintain a healthy forest environment.

### Projected Demands and Opportunities

Preventive measures can be included in management prescriptions, especially for activities or areas which pose a high risk for introduction of pests.

## VISUAL RESOURCE MANAGEMENT

The Forest has a diverse landscape with many areas of high scenic quality such as rivers, steep river canyons, and forested peaks. There are two different types of landscapes. The northern portion of the Forest has very steep slopes and sharp ridges; the southern portion has gentler, moderately steep slopes with more rounded landforms. The scenic qualities of the Forest have changed over the last 100 years, from an undisturbed appearing landscape to one modified by human activities such as timber harvest and road construction.

The Forest Service has adopted the visual management system defined in the USDA Handbook #462, which includes the inventory of three elements that represent the natural and social setting. Variety class identifies the diversity of landscape features and the appeal of the scenery as distinctive, common, or minimal. Sensitivity level indicates the public's level of concern

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# PREFACE

Substantial portions of the management direction for the Forest were directed by the Record of Decision (ROD) for the Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old Growth Forest Related Species within the Range of the Northern Spotted Owl (FSEIS). The FSEIS ROD with its attached standards and guidelines provides additional direction in the form of land allocations and associated goals, standards, and guidelines.

Direction from the FSEIS ROD has been integrated with other Forest Plan management direction for the Six Rivers National Forest in this Chapter. Direction obtained from the FSEIS ROD is identified with an asterisk (*) and the FSEIS ROD page number. Additional background and descriptive information useful for understanding direction from the FSEIS ROD can be found in the ROD, with its attached standards and guidelines, which is a document in the planning records for this Forest Plan.

The land allocations from the FSEIS ROD have been incorporated into a number of management areas, while the direction applying to all land allocations has been integrated into the Forest-wide standards and guidelines. This preamble provides a discussion of how the FSEIS ROD land allocations and management direction have been integrated into this chapter.

The entire Forest is allocated to one of the following six designated areas or to matrix. The management areas that fall within each allocation are listed. The acres in each of the land allocations are listed in Table IV-1. The FSEIS ROD standards and guidelines pertaining to all land allocations can be found in the Forest-wide standards and guidelines section of this chapter.

**Congressionally Reserved Areas:** These correspond to the following management areas: wilderness, wild river, and the dedicated portions of the Smith River National Recreation Area; and to other federal lands not administered by the Forest Service.

Management of congressionally reserved areas follows direction written in the applicable legislation or plans.

Direction from the FSEIS ROD also applies where it is more restrictive or provides greater benefits to late-successional forest related species, unless the application of the FSEIS ROD standards and guidelines would be contrary to legislative or regulatory language or intent. *(FSEIS ROD page C-8)

**Late-Successional Reserves:** Late-Successional Reserves are identified with an objective to protect and enhance conditions of late-successional and old-growth forest ecosystems, which serve as habitat for late-successional and old-growth forest related species including the northern spotted owl. These correspond to the Special Habitat Management Area; direction from the FSEIS ROD for Late-Successional Reserves can be found in the Special Habitat Management Area direction in this chapter.

**Adaptive Management Areas:** Part of the Hayfork Adaptive Management Area is located on the Forest. The objective of the area is to develop and test new management approaches to integrate and achieve ecological and economic health, and other social objectives. The AMA overlays a number of management areas, including wild, scenic and recreational river segments on the South Fork of the Trinity as well as the managed wildlife habitat, special regeneration, partial retention, research natural area, special interest area, and general forest management areas. The standards and guidelines for these management areas are a starting point within the Hayfork AMA; they need to be considered during the planning and implementation of activities, and they may be modified in the Hayfork Adaptive Management Area Plan based on further analysis. Overall direction from the FSEIS ROD for the Hayfork Adaptive Management Area can be found in the Hayfork Adaptive Management Area section of this chapter.

**Managed Late-Successional Areas:** Managed Late-Successional Areas result from the application of protection buffers for the Del Norte salamander and the sarcosoma mexicana (fungus). These correspond with the Managed Habitat Management Area. Direction for Managed Late-Successional Areas can be found in the Managed Habitat Management Area

section of this chapter. Managed Late-Successional Areas are not mapped.

**Administratively Withdrawn Areas:** Administratively Withdrawn Areas are those areas identified in the Forest Plan where management emphasis precludes scheduled timber harvest. These correspond to the NACUA, research natural area, experimental forest, special regeneration, and special interest area management areas. Also included are the portions of the special habitat management area designated for bald eagle and peregrine falcon nest protection and winter roost areas.

Administratively Withdrawn Areas and all other standards and guidelines of this Forest Plan apply where they are more restrictive or provide greater benefits to late-successional and old-growth forest related species than other provisions of the FSEIS ROD standards and guidelines. *(FSEIS ROD page C-29)

While it is recognized that changes in administrative withdrawals may happen during future plan amendments, many assumptions within the FSEIS standards and guidelines are based in part on existing administrative withdrawals. Plan amendments that propose to significantly reduce protection for late-successional or old-growth forest related species, or reduce protection for aquatic ecosystems, are subject to review by the Regional Ecosystem Office to determine if the objectives of these standards and guidelines would be significantly adversely affected. *(FSEIS ROD page C-29)

**Riparian Reserves:** As a key element of the aquatic conservation strategy, the Riparian Reserves provide an area along all streams, wetlands, ponds, lakes, and unstable and potentially unstable areas where riparian-dependent resources receive primary emphasis. Riparian Reserves are important to the terrestrial ecosystem as well, serving, for example, as dispersal habitat for certain terrestrial species. Direction from the FSEIS ROD for Riparian Reserves can be found in the Riparian Reserves Management Area section of this chapter. Other management direction pertaining to the aquatic conservation strategy can be found in the Forest-wide standards and guidelines under "Aquatic and Riparian Ecosystems."

**Matrix:** The matrix consists of those federal lands outside the six categories of designated areas listed above. Management areas included in the matrix include the retention, scenic river, managed portions of the Smith River NRA, partial retention, recreational river, and general forest management areas. Matrix vegetation management direction from the FSEIS ROD can be found in the Forest-wide standards and guidelines under "Vegetation Management." Matrix wildlife direction can be found in the Forest-wide standards and guidelines under "Wildlife Resource Management."

## Key Watersheds

There are nine key watersheds on the Forest. These key watersheds overlay portions of all six categories of designated areas and matrix, and place additional management requirements or emphasis on activities in those areas. Direction from the FSEIS ROD regarding key watersheds can be found in the Forest-wide standards and guidelines under "Aquatic and Riparian Ecosystems."

## Land Allocation Hierarchy

There is considerable overlap between some designated areas. For example, there are 46,440 acres of Administratively Withdrawn Areas identified in this plan. A substantial portion of this, however, is included within Late-Successional Reserves. Similarly, Late-Successional Reserves contain streams, and thus Riparian Reserves. For consistency and acreage display purposes, such overlaps are displayed in only one category according to the following hierarchy.

(1) Congressionally Reserved Areas, (2) Late-Successional Reserves, (3) Adaptive Management Areas, (4) Managed Late-Successional Areas, (5) Administratively Withdrawn Areas, (6) Riparian Reserves, and (7) Matrix.

Note that as a result of this hierarchy there are land allocation categories that are not completely represented by acreage figures listed in these standards and guidelines. For example, Administratively Withdrawn Areas within Late-Successional Reserves are shown only in the Late-Successional Reserve category. The calculation of Riparian Reserves is done after all other designated areas; therefore, acres shown for Riparian Reserves only reflect those Riparian Reserves that are interspersed throughout the matrix. In practice, where overlaps of Riparian Reserves with other allocations occur, the standards and guidelines of both allocations apply. For example, where Riparian Reserves occur within Late-Successional Reserves, the standards and guidelines of both designations apply.

Note also that Key and non-Key Watersheds are not part of this hierarchy, because their designations overlap, and do not preclude, all of the above categories. Key Watershed designations may overlay any of the allocations (Congressionally Reserved Areas, Late-Successional Reserves, Managed Late-Successional Areas, Adaptive Management Areas, Administratively Withdrawn Areas, or the matrix). In this case, the standards and guidelines for the

# FOREST MANAGEMENT DIRECTION

## INTRODUCTION

This chapter presents the specific direction on how the Forest will be managed under this Land and Resource Management Plan. It discusses the distribution of the Forest's land base to management areas and the management direction that determines their goals, implementation direction, and standards and guidelines.

This chapter is divided into three sections. The first includes a list of the Forest's goals, a description of the desired future condition of the Forest, and the outputs and activities necessary to achieve those goals. The second contains the **management areas and their specific standards and guidelines** which describe the management practices or prescriptions that will be applied to specific management areas. Last is the Forest-wide management requirements (**Forest-wide standards and guidelines**) which describe how Forest-wide direction will be implemented.

## FOREST MANAGEMENT GOALS

The Forest Plan is designed to achieve goals. The overall management philosophy is embodied in the Forest management goals, which provide general management direction. There are three categories of complementary goals that should be viewed holistically. The Forest will work as a single entity to implement these long-term goals through the Forest Plan.

### BIODIVERSITY AND ECOSYSTEM HEALTH

Create a healthy forest environment that maintains vegetative and biologic diversity by developing a landscape ecosystem management strategy.

Maintain sufficient well distributed late-successional and old-growth habitat that ensure the viability of the Forest's threatened, endangered and sensitive species.

Maintain functional riparian and aquatic ecosystems to provide high quality habitat for riparian-dependent species and contribute to the recovery of at-risk fish stocks.

Protect unique landscapes and habitats for future generations.

### CUSTOMER SERVICE

Provide a sustainable, stable supply of outputs and services that will contribute to local, regional and national social and economic needs on a long-term basis.

Provide satisfactory customer service through a variety of methods to meet the needs of our internal and external customers.

Promote the use of human resource programs through employment and provide equitable access to programs, services and facilities to youth, senior citizens, Indian Tribes, minorities and persons with disabilities.

Offer a wide range of recreation opportunities by providing recreational settings, access, facilities, and information necessary to meet public demand.

Maintain a healthy, diversified and visually pleasing forest setting that enhances local tourism and provides an attractive visual backdrop to surrounding communities.

Provide administrative sites and facilities that effectively and safely serve the public and accommodate the workforce.

### PARTICIPATIVE MANAGEMENT

Actively collaborate with Federal, State and local agencies, governments, and Indian Tribes, particularly on issues that extend beyond Forest boundaries.

Seek active public participation in the land management process.

Provide assistance to diversify local economies and improve land management in the area.

Promote public understanding of management issues and activities; encourage awareness and responsible use of all Forest resources through interpretive services and public affairs programs.

Management goals for each resource are listed within the Forest-wide standards and guidelines portion of this chapter.

## DESIRED FUTURE CONDITION OF THE FOREST

The present condition of the Forest is detailed in Chapter 3 of the FEIS. As the Forest Plan is implemented, the condition of the Forest will change over time. This section summarizes the physical changes which are anticipated to occur from carrying out planned management practices.

### THE FOREST IN 10 YEARS

At the end of the first decade, the change in the overall character of the landscape within the Forest boundary will not be much different than the present. In areas designated for timber management, transition to new silvicultural prescriptions and harvest practices using the adaptive management process will begin to be reflected in the landscape: a greater retention of snags, woody debris, and green trees in new harvest units; a smaller total acreage of regeneration harvest; and a reduction in the miles of open roads. Areas with programmed timber harvest will have new units harvested in a deliberate pattern to mimic natural openings and minimize fragmentation. Existing harvest units and plantations will continue to develop through sapling and pole stages.

Management areas reserved from timber harvesting, such as Wilderness, Research Natural Areas, and Special Interest Areas will remain essentially unchanged, primarily influenced by natural processes.

A broad spectrum of recreation opportunities, ranging from primitive to developed, will be available and information about them will be easily obtained through regional and local tourism organizations as well as from forest offices and visitor centers. The Smith River National Recreation Area will be a destination site. The Forest will be noted for its unique river recreation opportunities. Recreational capacity will keep pace with demand as some sites are expanded. The National Recreation Strategy will be fully implemented, and the Forest will actively seek partnerships to accomplish a variety of recreation projects. Interpretive and visitor services will be used to inform and educate visitors about resource values as well as recreation opportunities. Access to wilderness areas will be enhanced by the improvement of trailheads and maintenance of access trails.

Native American values and contemporary gathering activities will continue to influence Forest management decisions. The relationship between the Forest Service and Federally recognized tribes whose ancestral lands were once the Six Rivers National Forest will strengthen as a partnership in decision making develops. Contemporary activities, such as gathering basket weaving material and food items, will have increased as Indian people revive and expand their cultural awareness.

Habitat to support threatened and endangered species will remain protected in accordance with recovery plans while the habitat needs of sensitive species will be addressed at the landscape and project proposal level through the environmental analysis process. Successional stages of terrestrial and aquatic plant associations will be provided in a distribution to maintain native plant and animal species and communities. Distribution of species favored by early successional stages will have begun to decline as the forest moves towards an older forest condition. New harvest units will continue to provide high quality forage for deer. Riparian ecosystems near harvest areas will have been maintained.

Habitat for species utilizing dead or down trees will be provided throughout the Forest. Snags and trees for replacement snags will be left in areas where timber harvest is occurring as a routine component of the overstory. Logs will be left on the ground for species utilizing such material as habitat and to provide woody material for nutrient cycling.

Salmonid rearing, spawning, and migration habitat capability will improve Forest-wide. The designation of riparian reserves will maintain riparian and aquatic communities and protect beneficial uses of water. Habitat and watershed restoration projects will increase habitat diversity and maintain or improve stream channel stability. Forest soil productivity and

water quality will have been maintained. Water yield will not have been substantially altered.

Mineral development on the Forest in 10 years may have changed, but this will be dependent on the value of locatable minerals. The most active mining activity will probably continue to be for gold, although interest in chromite, nickel, and cobalt areas may rise again if the nation chooses to be less dependent on foreign sources of these minerals.

Most of the isolated parcels of National Forest System land outside of the main Forest boundaries that are not occupied by habitat for Threatened, Endangered or sensitive plant and animal species will have been exchanged. Land exchanges, purchases and donations will have resulted in acquisition of 80-200 acres of land partially surrounded by existing wilderness and 600-700 acres of lands within the NRA, along river corridors, or primarily suitable for enhancing biodiversity. Many of the encroachments on National Forest System land caused by erroneous surveys will have been resolved through sales and interchanges under the Small Tracts Act (STA) or removal of the encroachments.

The principal access roads to the Forest will be readily identifiable. They have paved or gravel surfaces and will be suitable for passenger car use. Signs will assist travelers in finding their destination. Some roads will appear less inviting for use. These roads will look rough or primitive, but most will be passable to the more experienced traveler in vehicles with high ground clearances. Most new roads built during this period will have been closed once their intended use has been served. Roads no longer needed for administrative or recreation purposes or public access will be closed.

## THE FOREST IN 50 YEARS

By the end of the fifth decade, there will be a very apparent change in the overall character of the landscape within the Forest boundary when compared to that which existed at the beginning of the first decade of the plan. We can expect that all roads needed for resource management will have been constructed. The landscape in parts of the Forest managed for commodity production will be trending towards a mature forest appearance. Sensitive viewsheds will have a natural or near natural appearance.

At 50 years, some stands will have been thinned to provide the desired stand structure without regeneration cutting, while other stands that exhibit the structure naturally have been maintained. Regeneration of stands will have occurred in some matrix areas of the Forest.

Areas with no scheduled timber harvest, which comprise approximately 92 percent of the Forest, such as Wilderness, Research Natural Areas, Riparian Reserves, Special Habitat Areas and Special Interest Areas would still remain essentially unchanged except for the effects of catastrophic events to the landscape caused by fire, flood, insects, or disease, and the process of natural succession.

Some timber stands will have become mature successional stage in management areas with programmed timber harvest. Contiguous, non-fragmented late-successional and old-growth stands will occur in Wilderness, Research Natural Areas, Special Interest Areas, Native American Contemporary Use Areas, Wild River and Scenic River corridors, Riparian Reserves, and Special Habitat Areas, as well as some parts of the matrix. The overall quantity and quality of old-growth habitat will be well distributed over the landscape in amounts equal to or greater than the amount of suitable habitat set aside in areas with no scheduled timber harvest. Habitat for species favoring early successional stages will decline as more of the Forest is converted to a later-successional condition.

Riparian reserve areas will have maintained the integrity of riparian and aquatic ecosystems, providing a diverse vegetative condition for the variety of wildlife utilizing riparian habitat. Salmonid rearing, spawning, and migration habitat capability will be maintained at a fairly constant level after the second decade. Watershed restoration work will be done to upgrade roads, maintain high-quality riparian and upland vegetation, and to maintain the gains achieved in earlier decades. Levels of large woody debris will be approaching levels consistent with an unmanaged ecosystem. Forest soil productivity and water quality will have been maintained. Water yield will not have been substantially altered.

Habitat for species utilizing dead or down trees will be provided throughout the Forest. Snags and trees for replacement snags will be left in areas where timber harvesting has occurred. Logs will be found on the ground in various stages of decay providing habitat for

species utilizing such material. Woody debris for nutrient cycling will be available.

Recreation facilities will be well maintained and are sufficient to handle the increased demand and changing needs of recreationists. Wilderness, semi-primitive, Wild and Scenic Rivers, Special Interest Areas, and other special areas will be managed to provide generally primitive recreation experiences while maintaining healthy, natural ecosystems. Motorized recreation opportunities will continue through a network of routes of varying experience levels.

Native American spiritual association with the land will still be a factor in land management decisions made on the Forest. Native American Contemporary Use Areas will continue to be protected.

All of the isolated parcels of National Forest System land outside of the main Forest boundaries that are not occupied by habitat for threatened, endangered, or sensitive plant and animal species will have been exchanged. National Forest System lands in and around rural communities that are now encumbered by commercial and community special uses and encroachments and have lost their National Forest character will have been transferred into local government ownership under the Townsite Act, or exchanged for lands that are more suitable for National Forest purposes. Land exchanges, purchases, and donations will have resulted in acquisition of much of the remaining private lands partially surrounded by existing wilderness, 2,000 to 3,000 acres of land within the NRA and along river corridors, and additional lands to enhance biodiversity. All of the encroachments on National Forest System land caused by erroneous surveys will have been resolved through sales and interchanges under the STA or removal of the encroachments.

By the end of the fifth decade, the Forest road system will be in place and providing for efficient travel into and through the Forest. All of the arterial and collector road system will be completed, while some temporary roads or reconstruction of low maintenance roads will be needed during project implementation. These temporary and low maintenance roads will be closed after the project is completed. Improvements to roads in areas where resource development activities are planned will undoubtedly be needed. During periods of no administrative activity, a portion of the road system will be closed and managed in a self-maintaining state with no vehicle traffic allowed. OHV use will be restricted to designated routes.

# FOREST MANAGEMENT OBJECTIVES

## PROPOSED OUTPUTS

This section projects the expected future outputs by resource activities needed to meet the desired future conditions.

The projected Forest outputs in Table IV-2 are average values for a year's activities. Actual outputs for individual years may vary from the projected outputs due to fluctuations in conditions, funding, personnel, and priorities. Activity codes refer to the predefined (National Activities Structure Handbook, FSH 1309.16) resource management practices which produce outputs. These codes also link the planned activities and outputs to the budgeting process.

## OPERATIONAL PLANS

Operational plans will delineate site-specific management direction for individual resources or areas, based on the general direction provided in the Forest-wide standards and guidelines and management area direction for these resources (see Chapter 5).

## LMP DATA MANAGEMENT AND UPDATE

The Forest database will be the primary data source for Forest-wide and District planning as well as for the Forest monitoring plan (Chapter 5). The current database is inadequate for complete implementation of the Forest Plan. Therefore, within 5 years, the database will be updated with greater resolution and definition of resource attributes. The annual Forest-wide update of this system will be the responsibility of each District and resource staff group, with coordination from Land Management Planning.

Boundary adjustments to refine mapping lines will be documented in the project records and maintained in the Ranger District resource inventory, as well as the LMP data records. Where changes in classification are indicated, the analysis and rationale for the needed change will be documented and retained at the Ranger District as an interim record until monitoring, as defined in the Monitoring Plan, indicates the need to consider adjustment at the Forest level.

# MANAGEMENT AREAS

## INTRODUCTION

Management areas and the direction for their administration are discussed below. The National Forest land within the Six Rivers National Forest has been divided into 17 management areas, each with unique prescriptions, different management goals, desired conditions, resource potential and limitations.

A management area represents lands that will be managed in a uniform manner, through a set of management area prescriptions unique to that area. Management areas, with their associated management goals, are listed in Table IV-3 (in the order of most to least restrictive areas.) When two or more management areas overlap, acres are accounted for in the management area with the most restrictive designation overall. In some cases, specific direction from the less-restrictive management area applies where it is more restrictive or better meets the goals of this Plan. For example, Wilderness is listed as the most restrictive management area in terms of overall direction. However, dams are allowed in wilderness in some cases, while they are prohibited in the Wild River management area. Therefore, the more restrictive management direction regarding dams from the Wild River management area would apply to a dam proposed for a wild river in wilderness. Management direction for the Smith River National Recreation Area (Management Area 7) has already been established for

this planning period by the founding legislation (November, 1990) for that designated land area.

Acreage of each management area and acreage identified as suitable for timber management within each area are displayed in Table IV-4. Locations of these management areas are shown on Map B (PRF).

The monitoring prescribed in Chapter 5 will be required to assure that the standards and guidelines are followed and that the anticipated results for the management areas are achieved.

**Table IV-3.**

**Six Rivers National Forest**
**Management Areas**

| Management Area | Goal |
|---|---|
| 1 - Wilderness | Maintain the natural wilderness character and provide opportunities for solitude and recreation. |
| 2 - Wild River | Maintain the natural, free-flowing, and primitive character of segments of the river corridor designated as “wild” for anadromous fisheries as well as recreation opportunities. |
| 3 - Experimental Forest | Provide research opportunities for studying production of commodity and non-commodity outputs of a redwood forest. |
| 4 - Humboldt Nursery | Grow tree seedlings in quantities required and of a quality necessary to survive and grow on harvested federal lands. |
| 5 - Research Natural Area | Provide opportunities for research, observation and study of undisturbed, natural ecosystems. |
| 6 - Native American Contemporary Use Area | Protect the solitude sought by Native Americans in areas with highly significant spiritual values. |
| 7 - Smith River NRA | Protect the unique beauty, water clarity, fisheries, and free-flowing character of the Smith River, and emphasize recreational and scenic values where they are exceptional. |
| 8 - Special Habitat | Provide mature and old-growth habitat for plants and animals associated with mature and old-growth forests. |
| 9 - Riparian | Established by the Forest Service to give special management considerations to and protect integrity of ecosystems bordering bodies of water and wetlands for, riparian and aquatic-dependent resources. |
| 10 - Special Interest Area | Provide for natural occurrences of plant groups and communities with exceptional botanical and ecological value. |
| 11 - Special Regeneration | Manage the timber resource on lands suitable and capable of growing trees but where extreme care and high cost will be involved. |
| 12- Scenic River | Provide river-oriented recreation in an area of high quality scenery and largely undeveloped shoreline of segments of the river corridor designated as “scenic”. |
| 13 - Retention VQO | Protect scenic landscapes while providing “retention” multiple-use development opportunities that are not visually evident to the casual Forest visitor. |

| | |
|---|---|
| 14 - Managed Habitat | Maintain habitat to provide connectivity and protection buffers for species that may not receive adequate protection through reserved areas. |
| 15- Recreational River | Provide a wide variety of river-oriented recreation opportunities on segments of the river corridor designated as "recreational". |
| 16 - Partial Retention<br>VQO | Protect scenic landscapes while providing "partial retention" multiple-use development opportunities that are not visually evident to the casual Forest visitor. |
| 17 - General Forest | Provide multiple-use development opportunities and a sustained yield of timber in a manner which preserves ecosystem function, biodiversity, and landscape integrity. |

## MANAGEMENT AREA PRESCRIPTIONS:

### Goals, Desired Condition, and Specific Standards and Guidelines

Forest-wide standards and guidelines (beginning on page IV-70) apply to all management areas unless specifically excepted in a management area prescription. Management area prescriptions embody further specific standards and guidelines, together with goals and desired conditions, to formulate the intent and direction of each management area and guide the implementation of that direction, which in summation for the Forest's 17 management areas comprises the key working components of Forest LMP direction and implementation. This section describes the intent and prescriptions for each of the Forest's 17 management areas. Application of a given set of management area prescriptions will not vary within that management area. Prescriptions for each management area include the goals for the management area, the direction and standards and guidelines for their administration (listed in alphabetical order by resource area), and desired conditions.

## MANAGEMENT AREA 1 - WILDERNESS

This management area includes lands that have been designated by Congress as wilderness. Wildernesses are managed according to the Wilderness Act of 1964, the California Wilderness Act of 1984, and regulations pursuant to those acts and the Forest Service Manual.

### Goals

The Forest's wildernesses will be managed to preserve the integrity of the wilderness resource to meet the purposes described in the Wilderness Act: to protect and preserve natural conditions so that the wilderness (1) generally appears to have been affected primarily by the forces of nature, with the imprint of mans' work substantially unnoticeable, and (2) has outstanding opportunities for solitude or primitive and unconfined recreation.

This direction also addresses 36 CFR 219.18(a) which directs the Forest Service to "provide for limiting and distributing visitor use of specific portions in accord with periodic estimates of the maximum levels of use that allow natural processes to operate freely and that

do not impair the values for which wilderness were created."

The minimum tool principle will be applied to the management of all resources within the wildernesses. The minimum management actions necessary to correct a given problem will be identified. These will be implemented using the methods and equipment which accomplish the objective with the least impact on the physical, biological, and social characteristics of wilderness.

The first part of this section applies to all wildernesses on the Forest. Specific direction for the Siskiyou, North Fork, and Yolla Bolly wildernesses follows the Forest-wide direction. Management direction for the Trinity Alps Wilderness will be provided in the management plan for this area, which is presently being developed by the Shasta-Trinity National Forest.

### Desired Condition

Wilderness will be managed to minimize human impacts and their technology upon the wilderness resource. People will be temporary visitors who leave no permanent imprint of their use. Manipulation of flora, fauna, or the surface of the land will be allowed only to the extent necessary to meet conditions of the Wilderness Act. Management will seek to preserve spontaneity of use and as much freedom from regimentation as possible while preserving naturalness of the wilderness resource. To the extent the wilderness resource is not impaired, wilderness will be managed to provide opportunities for primitive recreation featuring solitude and physical and mental challenges. Personal risk and challenge associated with adverse weather conditions, isolation, physical hazards, and lack of rapid communication are features of the wilderness setting. Users will find a natural landscape accessible by trails or cross-country travel. The natural processes of the ecosystem, with minimal impacts from humans, will be evident.

### Limits of Acceptable Change

Areas within the wildernesses are, or will be, classified into different opportunity classes, or zones. By allocating different opportunity classes, overall degradation of the wilderness resource can be minimized, while simultaneously establishing objectives for those areas that receive more use and, consequently, more impacts. However, each area will be managed to meet the limit of acceptable change prescribed for its designated opportunity class.

The opportunity class descriptions provide managers with a framework for managing towards the desired future condition of the wilderness by outlining the desired resource, social, and managerial settings.

## Standards and Guidelines - All Wildernesses

### Air Quality

1. Monitor and establish baselines for air quality standards. Maintain wilderness air quality to meet state Class II air quality standards at a minimum.

### Administration

1. Wilderness Implementation Schedules shall be prepared and updated as needed for each individual wilderness. These plans shall state specific actions prioritized pending budget allocations.

2. Where wilderness management is shared by two or more units, evaluate the need to restructure administrative unit boundaries or consolidate administration.

### Fire/Fuels Management

1. Until approval of the Forest Fire Management Action Plan and the individual Wilderness Fire Management Strategies, use "contain" and/or "control" strategies for all wilderness fires.

2. Favor indirect attack by using natural barriers, topography or water courses, and low-impact suppression techniques. Use direct attack only when necessary to protect life and property in adjoining areas. Use "light hand" techniques such as natural barriers and water for fire suppression.

3. Wherever feasible, helispots, staging areas, and spike camps will be located (a) outside wilderness, or (b) so as to have the least impact to wilderness values. Additional helispots will not be constructed unless needed for emergencies, and then only after District Ranger approval. Special approval for the use of portable pumps also comes from the District Ranger.

4. Motorized equipment may be used where necessary to accomplish fire suppression. Use bulldozers for fire suppression only with Regional Forester approval. Forest Supervisor approval is required for other motorized activities for fire suppression.

5. For fuels project work the Regional Forester must approve the use of chainsaws or the building of helispots within wilderness areas.

6. Use prescribed fire to meet at least one of the following objectives: (1) to permit lightning fires to play their natural ecological role as nearly as possible: or (2) to reduce to an acceptable level the risks and consequences of wildfire within wilderness or escaping from wilderness.

7. Permit emergency burned area rehabilitation only if necessary to prevent an unnatural loss of the wilderness resource or to protect life, property, and other resource values outside wilderness.

## Fisheries Management

1. Maintain fish species indigenous to the wilderness with emphasis on preserving threatened, endangered and sensitive species.

2. Where artificial stocking is allowed, do not interfere with the viability of indigenous species. Give preference to native species and do not plant any exotic species. Fish stocking will be consistent with USFS Regional and National Direction or will require special approval from the Regional Forester. Ongoing cooperative management of the fisheries resources will be consistent with the Final Memorandum of Understanding currently being developed by the Forest Service and the Department of Fish and Game (CDF&G), which is expected to be signed in the near future.

3. Stocking shall normally be done by primitive means; however, Regional Foresters may permit dropping of fish from aircraft for those waters where this practice was established before the area was designated a wilderness. Landing of aircraft for fish stocking is prohibited.

4. A record of fish stocking shall be developed and maintained, including an inventory of stocking dates, species and methods used.

5. Fish stocking may be reduced or stopped as one of a series of management steps to bring use within limits of acceptable change.

6. Consult with CDF&G to insure that quality fishing opportunities are available and that viable populations of native species are maintained.

7. Coordinate with CDF&G to reduce or eliminate adverse impacts to anadromous fish from over-fishing and poaching.

8. Address fish stocking when developing or revising wilderness management direction. Allow stocking to continue provided it does not interfere with peak recreation use.

## Heritage Resources

1. Inventory, research, and evaluate historic cabins and structures. Consult with the State Historic Preservation Officer to determine if any structures meet criteria for nomination to the National Register of Historic Places. Structures not qualifying will be allowed to deteriorate naturally or will be removed. Structures nominated to the National Register will be subject to compliance with the National Historic Preservation Act. Such structures will be evaluated for removal, continued maintenance, or to allow natural deterioration.

2. Provide for traditional Native American rights and practices, to the extent possible.

3. Ensure that known cultural sites are protected from planned ground disturbing activities. Survey uninventoried sites before implementing projects with potential for adverse effects and protect any eligible heritage resources that are located.

4. Do not sign any cultural sites for interpretation, and discourage visitor concentration in areas of heritage resource values.

## Lands

1. Pursue exchange of private lands; after three years pursue other means of acquisition but only with concurrence of the private land owner.

2. Terminate existing permits that are not compatible with wilderness values. Issue new permits only for compatible uses.

3. Take prompt and appropriate action to resolve all known cases of unauthorized occupancy and use.

## Minerals

1. Verify existing rights prior to authorizing any significant surface disturbance activities using a FS mineral examiner. Requiring annual operating plans which specify a restoration plan and adequate performance bond prior to approval of activities.

## Other Governmental Agency Use of Motorized Equipment

1. Requests for use of motorized equipment by other governmental agencies will be required in writing. Approval or denial will be based on criteria found under FSM 2326.

## Pest Management

1. Allow indigenous insect and plant diseases to play, as nearly as possible, their natural ecological role within the wilderness unless it is necessary to prevent unacceptable damage to resources on adjacent lands or an unnatural loss to the wilderness resource due to exotic pests.

2. Attempt to control exotic insects and diseases outside the wilderness. Use chemicals or motorized equipment only with Regional Forester approval if control is not possible by low impact control methods.

3. In order to reduce the spread of Port-Orford-cedar root disease, a risk analysis will be completed for all projects (see 20-7) in watersheds containing Port-Orford-cedar.

4. Educate wilderness users about giardia and cryptosporidium in the water.

## Range Management

1. Use the Range Project Decision process to coordinate with permittees in identifying potential livestock impacts and in mitigating those effects. Prepare Range Project Decisions (RPDs) for each allotment.

2. Where approved project decisions exist at the time an area is designated wilderness, review it in context with the Congressional guidelines and policy. Document necessary modifications in the project decisions.

3. Permit grazing only within established allotments as long as that use preserves and does not damage other wilderness values. Adjust grazing management as necessary to protect wilderness values through Range Project Decisions and Annual Operating Plans.

4. **Range Improvements.** Improvements will be constructed to blend with the natural setting. Conduct an environmental analysis for range improvement construction and/or maintenance and the use of motor vehicles, motorized equipment and mechanical transport. List all range improvements in the Range Project Decision along with the maintenance schedule.

5. **Maintenance.** Allow permittees to continue to maintain existing necessary range improvements. On a schedule agreed to by the permittee, phase out and remove those improvements deemed to be unnecessary. Review existing use and requests for new use of motor vehicles, motorized equipment, or other forms of mechanical transport, including emergency use, and apply Congressional grazing guidelines. Permit the occasional use of motor vehicles, motorized equipment, or mechanical transport where practical alternatives are not available. Circumstances for such use will be specified in the Range Project Decision.

6. **Structural Range Improvements.** New range structural improvements may be approved if they are necessary for resource protection (range and/or wilderness) and for the effective management of these resources. Do not approve construction solely to accommodate increased carrying capacity.

7. **Nonstructural Range Improvements.** Nonstructural range improvement practices may be approved in cases where they were part of the management of the area at the time the wilderness was established and where continued use is

necessary to maintain livestock grazing operations.

## Recreation

1. The establishment of permanent outfitter/guide caches or camps will not be allowed. Eliminate unlicensed or unauthorized outfitter/guide use.

2. Allow only one fire ring per camp; encourage the use of portable stoves.

3. Where the terrain permits, discourage the use of areas within 100 feet of surface water for camping, sanitation purposes, or holding livestock.

4. Manage trails to protect the wilderness resource and the objectives of the wilderness opportunity classes.

5. Trails shall be managed to maintain a balanced spectrum of travel opportunities according to difficulty, mode of travel, distance, and type of destination.

6. Trails should be constructed, rerouted or eliminated as needed to protect the wilderness resource and meet the objectives of the wilderness opportunity class.

7. Bridges and footlogs may be provided only when no other route or crossing is reasonably available for essential user safety. Bridges should not be installed for user convenience or installed to extend use season unless necessary to meet wilderness management objectives.

8. Where possible through-trails should be routed away from areas of concentrated use, such as lakes and popular campsites, to avoid unnecessary visitor contacts and resource damage.

9. Provide for dispersed recreation at levels meeting projected demand and within physical limits.

10. Discourage heavy concentrations of users and minimize impacts on natural systems.

11. Consider the following when developing or revising wilderness management direction:

    a. requiring visitor permits to monitor demographics, travel patterns, and use levels;
    b. banning or limiting wood fires if resource damage occurs;
    c. analyzing the effect of domestic pets and recreation stock on ecosystem processes and social quality; and
    d. establishing maximum levels of use, including party size, length of stay, and number of stock, in order to allow natural processes to continue and to retain social wilderness values.

12. Use the ROS system to determine the number and type of facilities appropriate to the experience level as defined in the FSM.

13. Locate campsites to take advantage of vegetative screening and topography. Maintain healthy, native vegetation around campsites.

14. Remove improvements such as developed campsites, and other features such as trash deposits, where possible and appropriate after heritage resource and other necessary assessments.

15. Permit recreational stock use as long as impacts remain within acceptable limits.

16. **Recreation pack and saddle stock.** Permanent corrals will not be allowed for either public or commercial livestock. Hitch rails, ropes, and hobbles are the recommended methods of controlling such livestock. Encourage the use of weed-free hay, grain or other livestock feed.

17. Develop publications that inform visitors of regulations, explain ground cover protection, no-trace camping, dispersion, control of dogs, use of firearms, and protection of wilderness values.

18. Limit use of dead and down vegetation to amounts that can be replaced annually through natural accumulations. Standing vegetation (green or dead) may not be used.

19. Emphasize maintaining natural ecosystems while providing opportunities for wilderness recreation.

## Research and Scientific Study

1. Research projects must be conducted to preserve the natural conditions of the wilderness and leave the imprint of mans' work substantially unnoticed. All research projects must be approved by the Forest Supervisor.

2. Only those applications for research that are wilderness dependent and compatible with the goals and objectives of that wilderness shall be recommended for approval. Research activities that adversely affect the wilderness resource, experience of the users, or conflict with other wilderness objectives will not be recommended.

3. Ground reference marking that is needed for research, scientific study, or monitoring limits of acceptable change should be as unobtrusive as possible.

## Search and Rescue

1. The use of motorized equipment in emergency search and rescue operations that involve health and safety or serious crime and fugitive pursuit situations may be authorized by the Forest Supervisor on a case by case basis. Low level aircraft/helicopter overflights or landings may be approved by the Forest Supervisor for emergency search and rescue operations.

## Signing

1. Provide signs only where necessary to protect the wilderness resource and for basic wilderness protection and orientation. The objective is to install and maintain the **least** possible number of signs.

2. All existing signs shall be individually evaluated to determine if they meet the sign management objective. Signs that are needed to meet management objectives, but are not of the current standards should be replaced. The need for signs should be minimized by developing accurate maps, brochures, and other user information tools.

3. Mileages and place names should not be placed on signs within the wilderness.

4. Signs will primarily be used at system trail junctions and at area or trail closures.

5. Wilderness boundary signs should be placed at sufficient locations and distances so that outside activities will not encroach upon the wilderness.

6. Signs should not be provided for on-site cultural, historic, or prehistoric interpretation within the wilderness.

## Visual Resources

1. Wildernesses will be managed to meet the visual quality objective of preservation. Changes in the landscape will be ecological changes.

## Visitor Information and Education

1. Public education will continue to be emphasized by wilderness managers as the primary means of correcting visitor violations, developing cooperative attitudes, and fostering understanding of natural processes which occur in the wilderness.

2. Education programs will be designed to teach methods and skills necessary for low impact use of wilderness.

## Water

1. Do not alter or manipulate watersheds to increase water quantity, water quality or timing of discharge, except as provided for in section 4(d)(4) of the Wilderness Act.

2. Discourage the use of soap or detergent for bathing and laundering in streams, lakes or other surface waters. Use the visitor education program to educate the public about the adverse effects of using soap and detergent in wilderness lakes and streams.

## Wild, Scenic, or Recreational River Segments

1. Posting or signing river corridor boundaries will not occur within the wilderness.

## Wildlife Management

1. Maintain wildlife species indigenous to the wilderness, with emphasis on maintaining threatened, endangered and sensitive species. Allow natural ecological dynamics of wildlife populations to occur.

2. Comply with species management plans when planning and implementing management activities.

3. Reintroduce species only if the species was once indigenous to an area, was extirpated by human-induced events and will not cause conflict with another threatened or endangered species.

4. Transplants (removal, reintroduction, or supplemental introduction) of terrestrial wildlife species in wilderness may be permitted if necessary:

   a. To perpetuate or recover a threatened or endangered species.

   b. To restore the population of an indigenous species eliminated or reduced by human influence.

5. The objective of all wildlife habitat manipulation projects must be to perpetuate the wilderness resource. Projects must be necessary to sustain a primary value of a given wilderness or to perpetuate a federally listed threatened and endangered species. To qualify for approval by the Chief, habitat manipulation projects must satisfy the following criteria:

   a. The condition needing change is a result of abnormal human influence.

   b. The project can be accomplished with assurance that there will be no serious or lasting damage to wilderness values.

## DIRECTION SPECIFIC TO THE SISKIYOU WILDERNESS

### Desired Condition

The Siskiyou Wilderness will continue to provide isolation, solitude and challenge to visitors within a primitive environment. Some trails will remain in a primitive condition, receiving light use and requiring a high degree of skill to negotiate. Other trails will accommodate light to moderate levels of use, and will be easily negotiated. Ecological processes, including fire, will have shaped the vegetative patterns and condition.

Areas within the wilderness are classified into different opportunity classes, or zones. By allocating different opportunity classes, overall degradation of the wilderness resource can be prevented, while simultaneously establishing objectives for those areas that receive more use, and consequently more impacts. However, each area will be managed to meet the limit of acceptable change prescribed for its designated opportunity class. See Table IV-5 for the limits of acceptable change for each opportunity class.

The opportunity class descriptions provide managers with a framework for managing towards the desired future condition of the wilderness, by outlining the desired resource, social, and managerial settings. See Figure IV-1 for locations of each opportunity class.

### Table IV-5.

**Indicators of Resource and Social Concerns**
**Siskiyou Wilderness**

| Factor | Indicator | Standard |
|---|---|---|

| | Opportunity Class 1 | |
|---|---|---|
| 2 | 3 | 4 |
| **Social:** | | |
| Solitude while 80% probability Traveling. of no more than 2 encounters/day. | Number of trail 80% probability encounters per/ of no more than day. 3 encounters/day. | 90% probability 80% probability of no more than 1 encounter/day. 6 encounters/day. |
| Campsite 80% probability Solitude. of no more than 2 other parties camped within sight or sound. | Number of 80% probability other parties of no more than camped within 3 other parties sight or sound camped within of each other. sight or sound. | 90% probability 80% probability of no more than 1 other party 4 other parties camped within sight or sound. sight or sound. |
| **Environmental:** | | |
| *Human impacted No more than site conditions. 2 noticeable human impacted sites per 640 acre area. | Number of human No more than impacted sites 4 noticeable per 640 acre area. human impacted sites per 640 acre area. | No more than .25 noticeable 6 noticeable human impacted sites per 640 acre area. |
| Less than 10% of vegetation damaged by uses impacted impacted sites. | Vegetation Less than 20% damaged by of vegetation users at damaged by uses human impacted at human impacted at human impacted sites sites. | Less than 5% Less than 40% of vegetation of vegetation damaged by uses damaged by uses at human at human sites. sites. |

* Does not includ access trails.

## Opportunity Class 1 - Pristine

### Resource Setting

This area is characterized by an unmodified natural environment without system trails. Ecological and natural processes are not measurably affected by the action of wilderness users. Environmental impacts are minimal and usually restricted to temporary loss of vegetation where camping occurs. These areas typically recover on an annual basis, while impacts are not apparent to most visitors.

### Social Setting

This area provides an opportunity for isolation and solitude free from the evidence of human activities, and extremely rare encounters with other users. The user has outstanding opportunities to travel cross-country utilizing a maximum degree of outdoors skills. This environment often offers opportunities for a high degree of challenge and self-reliance. Interparty contacts will be extremely rare while traveling, and rare to nonexistent at the camp site.

### Managerial Setting

Management strongly emphasizes sustaining the natural ecosystem. Direct onsite management of visitors will seldom occur. Necessary rules, regulations, and minimum impact information will be communicated to visitors outside the area, such as at trailheads or boundary portals. Visitor contact by Forest Service personnel will be either by invitation or to correct potential problems. Formal regulations, orders and/or permits will be considered only when less restrictive regulations or programs consistently fail to achieve desired goals and objectives. Monitoring and scientific research will be performed in a manner to avoid impacting user's pursuit of isolation, and will have little or no impact to the physical and biological resource. Research projects will be performed on similar areas outside the wilderness whenever a suitable alternative exists. Unacceptable user impacts can be either stabilized or restored, but only in a substantially unnoticeable manner. Travel routes will retain a primitive condition requiring a high degree of skill.

## Opportunity Class 2 - Primitive

### Resource Setting

This area is characterized by an unmodified natural environment with system trails. Ecological and natural processes on some sites are slightly affected by the action of users. Environmental impacts are restricted to minor loss of vegetation where camping occurs and along most travel routes. Impacts in a few areas persist from year to year, and are noticeable to a few visitors.

### Social Setting

This area provides a high opportunity for isolation and solitude free from evidence of human activities, and very infrequent encounters with other users. The user has a good opportunity to travel cross-country and on primitive trails utilizing a high degree of outdoor skills. This environment often offers opportunities for a high degree of challenge and self-reliance. Interparty contacts will be very few while traveling, and very low at the campsites.

### Managerial Setting

Management strongly emphasizes sustaining the natural ecosystem. Visitor contact by Forest Service personnel will be either by invitation, or to correct potential problems. Formal regulations, orders and/or permits will be considered only when less restrictive regulations or programs consistently fail to achieve desired goals and objectives. Patrols and monitoring of conditions by agency personnel will be conducted only as necessary to achieve management objectives. Monitoring and scientific research will be performed in a manner to avoid impacting users' pursuit of isolation, and will have little or no impact to the physical and biological resource. Signing at trail junctions will be the minimum necessary to meet regional and national standards. Other signs may be present for resource protection only. The trail maintenance level will retain a primitive condition requiring a high degree of skill and challenge to travel. No permanent structures will be used as a resource protection method. Temporary structures will be allowed for resource protection, but only as a last resort after other methods have been tried unsuccessfully. Temporary structures will be dismantled and completely removed when not in use, or if the resource problem is corrected.

## Opportunity Class 3 - Semi-Primitive

### Resource Setting

This area is characterized by an essentially unmodified natural environment with system trails. In a few cases ecological and natural processes are moderately affected by the action of users. Environmental impacts are moderate, with most areas along travel routes and near human impacted sites showing moderate losses of vegetation. Impacts in some areas often persist from year to year and are apparent to a moderate number of visitors.

### Social Setting

Moderate opportunities for exploring and experiencing isolation from the sights and sounds of man, with the probability of encountering other users, is low to moderate. The user has moderate opportunities for experiencing independence, closeness to nature, tranquility and self-reliance through the application of primitive recreation skills. These opportunities occur in a natural environment that normally offers a moderate degree of challenge and risk. Contact with other visitors both on the trail and while camped could be moderately frequent.

### Managerial Setting

Management strongly emphasizes sustaining the natural ecosystem. Visitor contact by Forest Service personnel will be either by invitation, or to correct potential problems. Formal regulations, orders and/or permits will be considered only when less restrictive regulations or programs consistently fail to achieve desired goals and objectives. Patrols and monitoring

of conditions by agency personnel will be conducted only as necessary to achieve management objectives. Monitoring and scientific research will be performed in a manner to avoid impacting users' pursuit of isolation, and will have little or no impact to the physical and biological resource. Trail signs will be permitted within the area and other signs will provide only the minimum information necessary to protect the wilderness resource. Trails will normally be constructed and maintained to accommodate light to moderate levels of use for the majority of the use season. Temporary structures will be allowed for resource protection, and will be dismantled and removed when not in use or if the resource problem is corrected.

## Opportunity Class 4 - Transition

### Resource Setting

Opportunity Class 4 is characterized by a predominantly unmodified environment with system trails. Natural conditions in many locations may be substantially affected by the action of users. Environmental impacts are relatively high in areas along travel routes, lake shores, and near major entry points. Impacts often persist from year to year, and there may be moderate vegetation loss and disturbance at some sites. Impacts are readily apparent to most visitors.

### Social Setting

Opportunities for exploring and experiencing isolation from the sights and sounds of humans are moderate to low. The user has the opportunity for a high degree of interaction with the natural environment, often with low or moderate challenge. Much of the time. Contacts with other users will be relatively high on the trail, and moderately frequent at campsites.

### Managerial setting

Management strongly emphasizes sustaining the natural ecosystem. Visitor contact by Forest Service personnel will be either by invitation, or to correct potential problems. Formal rules and regulations may be necessary to achieve management goals and objectives. Permits may be considered only when lighthanded and less restrictive measures have failed to achieve desired goals and objectives. Closure orders and enforcement actions will be initiated when necessary. Signs within the wilderness will be placed to aid in distributing and dispersing use.

## Standards and Guidelines

### Administration

1. To emphasize wilderness values better, this area will be managed as an integrated resource.

2. The use of motorized equipment and mechanical transport of materials and personnel will be minimized. The administrative use of motorized equipment, such as chain saws and rock drills, may be continued, after reasonable alternatives have been reviewed to determine if other options are available. Traditional uses, with valid existing rights (such as mechanized equipment) and mining operations would be exceptions. Carefully analyze the need for motorized equipment and obtain prior documented approval. Schedule such work to avoid disturbance to the public.

3. Wilderness values will predominate if resource conflicts are identified.

4. Wilderness management will not affect adjacent management areas.

5. Analyze uses and activities inconsistent with wilderness designation that are not otherwise provided for by the establishing wilderness legislation. Make provisions for discontinuing these uses and activities in an environmentally sensitive and socially acceptable manner.

### Air Quality

1. Manage smoke from prescribed natural fires as a component of the wilderness. Manage prescribed natural fires and prescribed burns (ignited by humans) to reduce future smoke emissions. Coordinate with the proper State and local agencies to meet Air Quality Regulations (see Forest-wide Standards and Guidelines for Air Quality, Fire and Fuels).

### Range Management

1. There are no livestock allotments within the Siskiyou Wilderness.

## DIRECTION SPECIFIC TO THE NORTH FORK WILDERNESS

### Desired Condition

The North Fork Wilderness, at 8,330 acres, will continue to allow isolation, solitude and challenge to visitors within a primarily trailless, primitive natural environment. Management of the wilderness will emphasize sustaining and enhancing the natural ecosystem. Direct on-site management of visitors will be minimal.

### Opportunity Class 2 - Primitive

### Resource Setting

The area is characterized primarily by an unmodified natural environment. Ecological processes are not measurably affected by the actions of users. Environmental impacts are minimal and occur as temporary loss of vegetation and ground disturbance associated with non-system foot trails, and natural travelways utilized by livestock. One existing trail, approximately three miles long from the northeast corner of the wilderness down to the Eel River, will be added to the Forest trail system.

### Social Setting

The area provides an outstanding opportunity for isolation and solitude. There is very little evidence of human activity and very infrequent encounters with users. The user has a good opportunity for experiencing independence, closeness to nature, tranquility, and self-reliance through the application of primitive recreation skills. This setting offers a moderately high degree of challenge and risk.

### Managerial Setting

Management will emphasize sustaining and enhancing the natural ecosystem. Direct on-site management of visitors will be seldom. Necessary rules and regulations will be communicated to visitors outside the area, such as at boundary portals. Infrequent patrols and or monitoring of conditions will be conducted as required to achieve management objectives. Historically, grazing by livestock has occurred in the area and will continue subject to Range Project Decisions. Proper grazing use may require the existence of structural range improvements. Non-system trails within the area are not maintained. Maintenance of the system trail may occur to keep it locatable and identifiable to users.

Table IV-6 below displays the limits of acceptable change for the North Fork wilderness area.

**Table IV-6.**

**Limits of Acceptable Change**
**North Fork Wilderness**

| Resource | Indicator | Standard |
|---|---|---|
| Social setting | # of campsites per square mile. | 2 |
| Social (traveling) | Probability of 0 encounters with others. | 80% |
| Social (camping) | Prob. of encountering no people camped within sight or continuous sound. | 80% |
| Physical | # of heritage resource sites disturbed per year. | 0 |
| Physical/ Social | Occurrences of litter per 2 miles of river bank. | 1 |

### Standards and Guidelines

### Access

1. Develop year around vehicular access to the northeast wilderness boundary by reconstructing existing jeep road off FS road 3S34. Provide other facilities at trailhead as needed.

2. Develop year around vehicular access and/or needed facilities to accommodate wilderness users at Salt Creek and/or Hoaglin Access point.

### Heritage Resources

1. Conduct cultural resource inventories to identify and record sites located within the wilderness area.

2. Evaluate sites for National Register of Historic Places eligibility which might be affected by visitor use.

3. Sign trailheads and other locations adjacent to the wilderness indicating the prohibition on collecting artifacts.

4. Provide information on cultural resource properties and the history and prehistory of the area when a wilderness map or pamphlet is developed.

## Lands

1. Verification of boundaries will be conducted to determine if any encroachments have occurred.

## Range Management

1. If feasible, existing range-related improvements will be reconstructed to eliminate features inconsistent with wilderness objectives.

2. New range-related improvements, if constructed, will be designed and located consistent with wilderness objectives.

3. Establishment of utilization cages, permanent transects and photo points for monitoring of vegetation will be designed and located consistent with wilderness objectives.

## Research

1. Marking of inventory and monitoring locations and vegetative transects will be as unobtrusive as possible, painted markings will not be used.

## Signs

1. No interior directional, information or trail signs will be provided within the wilderness.

2. Some user placed rock cairns will be allowed to remain.

3. Wilderness boundaries will be signed (sign 27-6A) primarily at locations where opportunities for illegal vehicle entry exist, or at locations where users would be likely to encounter the wilderness boundary.

4. Wilderness Area Entrance (WP-1,2) signs will occur at major trailheads. Other wilderness related signing and information may occur at these trailheads and or access points.

## Trails

1. No interior trail maintenance will occur on non-system trails.

2. Brushing of system trail (Packwood Flat Trail) may occur if necessary to keep trail locatable and identifiable to users.

## Unauthorized Use

1. No nonconforming facilities or activities will be allowed within the wilderness area.

2. All locations where vehicle access occurs will be permanently blocked..

### Wild River

1. Posting of river corridor boundaries will not occur within the wilderness.

2. Provide maximum isolation from the sights and sounds of other users within the river corridors.

## DIRECTION SPECIFIC TO THE YOLLA BOLLY-MIDDLE EEL WILDERNESS

### Air Quality

1. Meet or exceed air quality standards for a Class I airshed.

### Fire and Fuels

1. Develop a fire management plan to meet the following objectives:

    a. to restore and maintain natural conditions and processes;
    b. to reduce unnatural accumulations of fuels permitting fire to resume its natural role in the ecosystem;
    c. to reduce the risks and consequences of wildfire within the wilderness or escaping from the wilderness.

2. Consider using planned and unplanned ignitions when developing the fire management plan. When implementing this plan, maintaining air quality is an overriding consideration.

3. Break up large areas of continuous fuels.

4. Conduct fire protection activities to minimize suppression activity impacts and permit re-introduction of natural fire regimes.

5. Remove the lookout and related improvements from Black Rock Peak after mitigating adverse effects to historic values.

### Lands

1. Pursue acquisition of appropriate portions of BLM lands as proposed in the Record of Decision for the Arcata Resource Management Plan, 1992. Manage those portions acquired within the Yolla Bolly-Middle Eel Wilderness following the direction in this Land and Resource Management Plan.

2. Pursue land exchange opportunities to reduce in-holdings. If, after three years, the landowner does not agree to an exchange, pursue purchasing the land.

### Pest Management

1. Control native, indigenous, and exotic pest epidemics within the Wilderness only if there is a threat to significant resources outside the Wilderness or if significant unnatural loss of wilderness resources is occurring.

### Recreation

1. Mitigate effects of human use which exceed standards and guidelines for wilderness management using the following sequence of actions:

    a. First level action-public information and site restoration;
    b. Second level action-Use of regulations;
    c. Third level action-restrict number of users;
    d. Fourth level action-close area to all users.

2. Set campsites back 100 to 300 feet from ponds, lakes, and streams, and at least 100 feet from trails and other interest features where terrain permits.

3. Manage opportunities for solitude within the YBME:

    a. Analyze potential impacts on opportunities for solitude whenever improvements to or increases in access are proposed.

    b. Develop alternative primitive and semi-primitive non-motorized recreation opportunities outside of the YBME. Provide information about alternative areas at trailheads and other locations of recreation and wilderness information.

c. Investigate complaints regarding the number of encounters, crowding, and impacts of visitors by conducting an inventory of areas specified in the complaints and sampling other areas to confirm and define the solitude condition. Include a determination of whether it is a continual problem or whether it is the result of occasional peak usage. When the impact has been validated and needs correction, implement the appropriate first and second level actions to resolve impacts.

d. Utilize the following techniques, listed in order of preference, if steps a, b, and c do not improve conditions of solitude:

1) Disperse use over a larger area to reduce numbers of encounters;

2) Implement the third level action of restricting the number of visitors;

3) Implement the fourth level action of closing the area to all users.

14. Confine stock at least 200 feet from ponds, lakes, streams, springs, trails, camps, and other high interest features.

5. Evaluate public demand for outfitter/guide services. Develop a regulated outfitter/guide program consistent with wilderness management objectives or resource protection, functioning ecosystems, and solitude opportunities. Consider and regulate routes, wilderness education, party sizes, number of trips per year, destinations, time spent in one area, and potential monopoly of the "best" sites.

## Research Natural Areas

1. Evaluate the potential for establishing a Red Fir Research Natural Area within the Wilderness.

2. Permit unobtrusive ground reference marking only if absolutely required for research, study, or monitoring levels of acceptable change.

## Trails

1. Defer new trail construction during this planning period.

2. Inventory and analyze trail related erosion problems. Develop a strategy and schedule for correcting identified problems.

3. Provide for reconstruction and maintenance of trails, and ensure that design standards accommodate designated user traffic. Maintain the narrowest trail width consistent with FSM/FSH direction for wilderness.

## Transportation and Facilities

1. Inventory old roads and evaluate the feasibility of and the need for obliterating the road or rehabilitating the road to acceptable trail standards.

## Vegetation Management

1. Revegetate areas when present or historic use patterns have caused a loss of vegetation, and in areas that can be protected until the new vegetation is re-established. Use only native species.

2. Conduct a botanical survey of ultramafic areas and upper elevation areas.

### Visual Resources

1. Manipulate vegetation (e.g. pruning) only when it will appear to be natural within one year.

### Wilderness Resource

1. Prepare a Wilderness Implementation Schedule (WIS), in coordination between the three administering National Forests, stating specific actions prioritized pending budget allocations. Update the WIS annually or as needed.

2. Develop a search and rescue plan.

3. Design education programs to teach methods and skills for low impact use of the Wilderness.

4. Emphasize uses which are dependent on the wilderness environment and cannot be reasonably accommodated elsewhere.

5. Do not post mileages or place names within wilderness.

6. Eliminate the need for signs with accurate maps and informational brochures. Install and maintain the least possible number of signs. Inventory and evaluate existing signs and bring them up to current standards.

7. Post boundaries and establish physical controls where needed to prevent unauthorized motorized entry.

### Wild and Scenic Rivers

1. Complete preparation of wild & scenic river management plans consistent with the Wilderness and Wild & Scenic River Acts. In the interim, manage the upper reaches of the Middle Fork of the Eel River, Balm of Gilead, and a segment of the South Fork of the Trinity River consistent with wild river and wilderness direction.

2. Provide for recreational use of the wild & scenic rivers consistent with protection of wild river values (e.g. anadromous fisheries).

### Wildlife Management

1. Protect the potential peregrine nest site.

2. Maintain fish and wildlife species indigenous to the Wilderness with emphasis on preserving threatened, endangered, and sensitive species. Where incompatible with maintaining wilderness values, the requirements for maintenance of wilderness values take precedence.

3. Assess the opportunity to re-introduce Roosevelt elk within its natural range.

## MANAGEMENT AREA 2 - WILD RIVER

This management area is applicable to those “wild” segments of the Smith, Trinity, and Eel Rivers which were petitioned by the Governor of California and added under Secretary Andrus’ signature under Section 2 (a)(ii) of the Wild and Scenic Rivers Act and those rivers designated under the Smith River National Recreation Area.

Refer to Map B (PRF) for locations of “wild” segments of these rivers. The corridors for the North Fork Eel have been delineated based on visual considerations and encompass approximately 320 acres per stream mile, but exclude small parcels of National Forest System land that contain encroachments that may qualify for sale, interchange, or exchange under the Small Tracts Act and implementing regulations. Wild segments of the Trinity will be managed under direction provided in the Lower South Fork Trinity Wild and Scenic River Management Plan. Wild rivers within the SRNRA will be managed under direction provided by the founding legislation and management plan.

### Goals

The goals are to protect the wild river qualities in a free-flowing condition, and to manage the rivers and their immediate environments for the benefit and enjoyment of present and future generations, to protect and enhance the outstandingly remarkable values for which the rivers were designated, and to maintain the river environment in a natural state for anadromous fisheries while providing for recreation opportunities, such as white water rafting and kayaking, that do not adversely impact or degrade the values for which the segments were nominated. Although the rivers are designated "wild," the character of each is significantly unique and, consequently, management objectives for each river may differ. The wild designation was reserved for those rivers that are free-flowing and generally inaccessible except by trail. The natural state of the wild rivers within the Forest boundary will be maintained. Impacts due to river-related recreation will be monitored, and any restrictions on use will be defined in individual river management plans.

Newly identified encroached areas within this management area will be evaluated concurrently for exclusion from the management area and Small Tracts Act conveyance. Evaluation will include a consideration of the history of the area's use and management, the values for which the designated wild river was established and is managed, and the effects on those values of conveying the lands out of federal ownership. The Plan may be amended to exclude encroached parcels and mineral fractions from the management area when conveying them out of federal ownership would not adversely affect the integrity of the management area. Private lands within the management area that are offered in exchange or interchange, under the STA, for federal lands within the Wild and Scenic Rivers System will be evaluated for inclusion in the management area. The Plan may be amended to include within the management area parcels of private land offered in exchange or interchange for encroached parcels when such parcels would maintain or enhance the integrity of the area.

## Desired Condition

Wild river segments will be free-flowing and undammed, with their unique character maintained. The river area will appear essentially primitive, with little or no evidence of human activity. Shorelines and watersheds that can be seen from the rivers shall be essentially free of structures, including buildings, pipelines, powerlines, pumps, generators, dams, diversion works, rip-rap, and other modifications of the waterway or adjacent land within the river corridor. Opportunities for quality whitewater recreation, angling, birding and other activities that do not adversely impact or degrade the river values will be available.

The river ecosystem will function in a natural condition and provide high quality habitat for fish, aquatic invertebrates, reptiles, amphibians, and aquatic and riparian plants. The processes of debris and sediment routing will be evident in wild river segments. The surrounding corridor will also appear in a natural condition, and terrestrial processes will function at normal rates and regimes.

## Standards and Guidelines

## Pest Management

1. In order to reduce the spread of Port-Orford-cedar root disease, a risk analysis will be completed for

all projects (see 20-7) in watersheds containing Port-Orford-cedar.

## Range Management

1. Grazing schedules and intensities will be consistent with respective river management plans.

## Recreation Management

1. Manage primarily for ROS class semi-primitive non-motorized. Simple comfort and convenience facilities, such as fireplaces, may be provided as necessary within the river area.

2. Motorized travel on water could be permitted, but would require site-specific project analyses. Examples for such use include search and rescue or fire-fighting efforts.

3. Motorized travel on land will occur only on existing routes; no new routes will be constructed.

4. Major public use areas such as campgrounds or interpretive centers will be located outside wild river corridors. Simple facilities, such as campfire or primitive toilets, may be provided as necessary within the river corridor. These improvements should harmonize with the surroundings.

## Timber Management

1. Timber harvest is prohibited. Tree removal is limited to that needed to protect public safety and construction and maintenance of trails.

## Transportation and Facilities Management

1. Flood control dams, levees or other works will not be developed. Minor bank work may be allowed if it does not adversely affect fish habitat and the natural appearance of the river area.

2. New or future utility corridors will be excluded from this management area.

3. No new roads or facilities for motorized travel will be constructed. Minor existing structures may be allowed if compatible with the essentially primitive and natural values of the viewshed.

4. New structures will not be constructed except those essential to achieve management objectives, such as fisheries enhancement structures.

5. No development of hydroelectric power facilities will be permitted.

## Visual Resources

1. Activities within wild river corridors will meet preservation VQOs.

2. Middleground views from the wild river segments of the river should be managed to meet a retention VQO. Background views from the rivers should be managed to meet partial retention VQOs.

## MANAGEMENT AREA 3 - YUROK EXPERIMENTAL FOREST

This area is managed by the Pacific Southwest Forest and Range Experiment Station. The Yurok Experimental Forest is composed of a pure redwood stand that has been partially converted to second growth. Within the Experimental Forest is the 180 acre Yurok Research Natural Area, which has been reserved to study old-growth redwood. This management area occurs within a Late-Successional Reserve and was designated as "critical habitat" for the northern spotted owl and proposed as critical habitat for the marbled murrelet by the U.S. Fish and Wildlife Service (USFWS). This mature and old-growth redwood forest also provides habitat for the marbled murrelet, which has been federally listed as a threatened species, and is currently under review by the USFWS. This area will be managed to provide mature and old-growth redwood forest that contributes to the habitat needs of threatened wildlife species that occur in the redwood forest type.

### Goals

The primary goal of this management area is to provide for the study of structure and function in the redwood forest ecosystem. The Pacific Southwest Forest and Range Experiment Station staff will write a study plan for all projects and will prepare the appropriate NEPA documentation with supporting biological evaluations for all future logging activities involving old-growth redwood.

All environmental laws and regulations that apply to the Forest also apply to management of the Experimental Forest.

### Desired Condition

The Yurok Experimental Forest will function as a typical redwood forested sub-basin in the lower Klamath River basin. Manipulative management will provide Forest Service researchers with baseline ecological information on how redwood forest ecosystems and their components function. Existing plantations will develop into mature stands, and will maintain late-successional and old-growth characteristics.

### Standards and Guidelines

### Minerals Management

1. Exclude all mineral entry and development.

### Pest Management

1. In order to reduce the spread of Port-Orford-cedar root disease, a risk analysis will be completed for all projects (see 20-7) in watersheds containing Port-Orford-cedar.

### Recreation

1. Maintain a ROS class of roaded natural.

## MANAGEMENT AREA 4 - HUMBOLDT NURSERY

The Humboldt Nursery is an administrative subunit of the Forest, composed of 210 acres of Forest Service land located north of McKinleyville, Humboldt County, California. The Nursery is on purchased lands which are closed to mineral entry. Established in 1964, it has a capacity to produce 20,000,000 seedlings annually, with actual production levels depending on demand. Douglas-fir comprises 95 percent of the species grown, with the remaining percent being ponderosa pine, Jeffrey pine, red and white fir, noble fir, grand fir, western hemlock, Sitka spruce, western red-cedar, incense cedar, alder, redwood and a growing number of native plants and grasses. Nursery operations involve seed preparation, sowing, culturing, genetics, harvesting, grading, packing, tree storage, and shipping. Integrated in these activities are soil management, pest management and administrative studies of effectiveness of nursery practices and cultural methods.

### Goals

The mission of Humboldt Nursery is to grow tree seedlings which will be used to reforest Federal and State lands in northern California and southern Oregon. The following is a list of management goals for the Nursery:

a. All management activities will comply with regulations imposed by the North Coast Water Quality Control Board for surface and groundwater.

b. The Nursery will be managed to maintain soil quality with fertilization enhancement.

c. The Forest should encourage public visiting and provide interpretive services.

d. Management activities will comply with all provisions of the Nursery Management EIS including biological evaluation in the use, application, and storage of all herbicides and pesticides. Forest-wide Standards and Guidelines do not apply.

e. Implement Nursery Wildlife Plan.

### Desired Condition

The Humboldt Nursery will provide for the needs of Federal and State reforestation in northern California and southern Oregon. Productivity of the lands at the Nursery will be high. Actual Nursery operations and production levels will be responsive to demand.

### Standards and Guidelines

### Recreation

1. Maintain a ROS class of rural.

### Visual Resources

1. The Nursery will meet maximum modification VQOs.

## MANAGEMENT AREA 5 - RESEARCH NATURAL AREA

Research Natural Areas (RNAs) are part of a national network of field ecological areas designated for non-manipulative research, observation, and to study and maintain biological diversity on National Forest System lands. The objectives of establishing RNAs are: (1) to preserve a wide spectrum of pristine, representative areas that typify target vegetation types and/or types considered of scientific interest; (2) to serve as control areas for comparing landscapes manipulated by humans; (3) to serve as baseline areas for measuring long-term ecological change; and (4) to preserve and maintain genetic diversity and to provide a laboratory for the study of ecological succession. RNAs may serve as education and research sites on plant and animal communities, and may also help to implement provisions of special acts, such as the Endangered Species Act and the monitoring provisions of the National Forest Management Act. Research should be limited to non-consumptive, non-destructive, and essentially observational activities. Collecting soil, plants, or animal specimens (with California state collecting permits) may be permitted on a case-by-case basis.

Although the Yurok RNA has been established on the Forest (within the Experimental Forest), it is not included in this Management Area because it is managed by the Pacific Southwest Forest and Range Experiment Station. All research proposals will be approved by the PSW Station Director.

## Goals

Manage RNAs for the maintenance of unmodified conditions and natural ecological processes. Preclude impacts from human activities that would modify the value of the RNA. Maintain the area's value as a significant contribution of the Forest's biological and physical diversity and also as a gene pool for plant and animal species. Promote and use RNAs for non-manipulative research and as baseline or control sites for Forest management comparisons. Form partnerships with research and university communities and other interested partners.

## Desired Condition

RNAs will be examples of functioning native ecological communities. Ecological processes will influence the biological and physical elements within each RNA. Non-manipulative research, monitoring, and educational activities will be ongoing; knowledge gained from these activities will serve as baseline information and will be incorporated into Forest management. Human activities and manipulations will be minimal, and will further the management goals of the area.

## Standards and Guidelines

### General

1. This Forest Plan and FSM 4063 shall provide management direction for RNAs. Project-level direction for each RNA shall be documented in the establishment record and in the individual RNA implementation schedule. The intent of additional management direction shall be to maintain the values for which the RNA has been established. Individual RNA implementation schedules should be completed no later than four fiscal years after the official establishment of the RNA. Post RNA boundaries as soon after establishment as possible.

### Fire/Fuels Management

1. Prescribed fire can be employed as a management tool to control noxious weeds and/or to maintain the target element for which the RNA was established.

2. Fires determined to endanger RNA attributes shall be extinguished with minimum ground and vegetative disturbance. Bulldozers and other machinery will be used only when authorized by the Forest Supervisor. Incident bases shall be located outside the RNA boundary.

3. Allow wildfires to burn only within a prescription designed to accomplish the objectives of the specific RNA.

4. If fire rehabilitation is deemed necessary, plans shall consider: (a) reliance on germination of seed stored in the soil surface layer (the seed bank) instead of active revegetation; and (b) the use of non-vegetative means of erosion control or non-persistent, non-native seed until local plant material can be collected and propagated.

### Geology, Soils and Watershed Management

1. Soil, fish, wildlife and watershed resource projects shall be developed in cooperation with the PSW Research Station. Projects considered are those which serve to restore and/or enhance the features for which the area was established.

2. Noxious weeds shall be controlled to maintain the diversity of the area. Activities which are likely to increase the potential of introducing non-native seed are not compatible with RNA management direction.

3. Any revegetation deemed necessary for erosion control and/or to restore degraded sites must use locally collected, native plants grown from seeds or cuttings. Revegetation plans should utilize the ecological classification of the Klamath Province (Jimerson 1993) for a list of species occurring within the plant association of interest.

4. The introduction of non-indigenous animal species is prohibited. Reintroduction of former native species may be permitted if consistent with RNA management area direction.

### Lands

1. All new special uses will be denied except for research permits approved by the PSW Experiment Station.

2. Noncompatible existing special uses will be terminated, except rights-of-way authorizations existing before RNA establishment. Upgrading that would compromise the objectives of the RNA will be discouraged.

3. The Forest Service should recommend against FERC licenses or permits that compromise the objectives of the RNA.

## Minerals Management

1. RNAs will be considered for recommendation to withdraw from mineral entry, subject to valid existing rights. If surface-disturbing activities are permitted, all undue or unnecessary degradation of RNA characteristics will be avoided. Existing rights will be verified by a Forest Service mineral examiner prior to authorizing any significant surface-disturbing mineral activities.

## Pest Management

1. No action shall be taken against endemic insects or pathogens unless such action in necessary to protect the features for which the area was established.

2. In order to reduce the spread of Port-Orford-cedar root disease, a risk analysis will be completed for all projects (see 20-7) in watersheds containing Port-Orford-cedar.

3. Access and/or projects proposed in uninfected watersheds which have potential risk for infection shall have a risk analysis performed.

## Range

1. Grazing may be permitted if it is determined that such an activity will achieve certain RNA management objectives.

2. Where it is determined that grazing is not compatible with the maintenance of RNA features, the Regional Forester and Station Director shall establish a level of incidental livestock use that can be tolerated and is consistent with RNA management objectives.

## Recreation

1. Recreation activities and uses within an RNA will be discouraged if they threaten the values for which the RNA is established. If other recreation uses threaten research or education values, closures or permits should be instituted.

2. Existing trails may be allowed to remain as long as the RNA objectives are not compromised.

3. Recreational access shall be addressed on an area-by-area basis. To prevent the spread of Port-Orford-cedar root fungus disease, existing routes and trails shall be assessed and managed according to standard and guideline 2 in the Pest Management section above.

4. Maintain a ROS class of primitive.

5. High-intensity recreational development is inconsistent with the management area direction for these areas.

### Timber and other Forest Products

1. Cutting and removing vegetation, including firewood and Christmas tree cutting, will be prohibited, except as part of an approved scientific investigation.

2. Collection of plant material as a special forest product for personal or commercial use is not compatible with the management direction for RNAs.

3. Plants collected for scientific purposes as a component of a research project proposal require a collection permit from the Supervisor's Office.

### Transportation and Facilities Management

1. New facilities will not be built except on or to access valid existing mining claims with approved operating plans, or as required by an authorized study. New roads, trails, fences, or signs will not be permitted on RNAs unless they contribute to the objectives or protection of the area.

2. Existing roads or trails identified as contributing to resource damage shall be repaired to mitigate the problem, closed on a seasonal or year-round basis, or decommissioned. The course of action will depend on the severity of the resource problem and the potential for continued damage.

### Visual Resources

1. RNAs should meet preservation VQOs, except in limited areas containing existing roads and trails.

## MANAGEMENT AREA 6 - NATIVE AMERICAN CONTEMPORARY USE AREA (NACUA)

The need for the designation of NACUAs was identified specifically on the Forest for eleven cultural sites as a result of the Blue Creek Unit Plan administrative review decision by Forest Service Chief Max Peterson (11-17-81). The sites have been included in the Helkau District which is eligible for the National Register of Historic Places. Established is a one-half mile radius protective zone to minimize potential for conflicts between recreation and Native American spiritual uses around each of the following cultural sites: (1) Dr. Rock #1, (2) Peak 8, (3) Bad Place, (4) Chimney Rock, (5) South Red Mountain #1, (6) South Red Mountain #2, (7) Dr. Rock #2, (8) Meadow Seat, (9) Classic Prayer Seat, and (10) Turtle Rock. Also, a one-quarter mile wide protective zone was established along the Golden Stairs Trail from the Forest boundary to Road 15N01. Other dispersed recreation uses of the areas are not prohibited, and will undoubtedly occur, but this use will be secondary to the intent for the establishment of this management area.

### Goals

These NACUA sites will be preserved and protected for the solitude and privacy of Native American users. Provide protection of the ceremonial values that exist in these areas.

### Desired Condition

NACUAs will be influenced primarily by ecological processes. Native American spiritual use will be the most frequent activity in these areas, and other types of visitation will be rare. Signs of management activity will not be readily apparent. The integrity of the areas will be maintained in a manner consistent with Indian Tribes' customs and culture.

### Standards and Guidelines

### Fire/Fuels Management

1. Aerial retardants that have short lived dye qualities should be used, if available, when suppressing fires.

2. Hand tools will be used to construct fire lines unless otherwise approved by the Forest

Supervisor. The development or use of helicopter landing sites should not occur.

## Lands

1. Commercial uses or activities are inappropriate and will not be permitted.

## Minerals

1. These lands will be considered for recommendation to withdraw them from mineral entry, subject to valid existing rights.
2. Authorized activities will preclude undue and unnecessary degradation of the NACUA characteristics if surface-disturbing activities are permitted by valid existing rights. All claimed valid existing rights will be verified by a Forest Service mineral examiner prior to authorizing any surface-disturbing mineral activities or access development.

## Native American Trust Responsibility

1. If management activities are contemplated, contemporary American Indian users will be consulted and their concerns addressed. Additional protective measures should be designated as necessary. As contemporary users come forth with additional information regarding NACUAs, Forest staff should evaluate and give consideration to the issues raised. Resolution could include relocating the protective zones, adopting additional protective measures, or revising existing protective measures.

## Pest Management

1. In order to reduce the spread of Port-Orford-cedar root disease, a risk analysis will be completed for all projects (see 20-7) in watersheds containing Port-Orford-cedar.

## Plant Management

1. Any projects needed to meet the objectives of recovery plans for endangered or threatened species, or management plans for sensitive species, will be coordinated with Native American groups.

## Recreation

1. Recreational use will not be encouraged because of the solitude and privacy desired by the American Indian users. Additional recreational developments should not be undertaken unless needed to protect cultural values. The placement of protective improvements is consistent with the management goals.

2. Maintain a semi-primitive non-motorized ROS class where existing conditions allow.

### Timber

1. There will be no regulated timber harvest from the NACUAs.

### Transportation and Facilities Management

1. Existing facilities will be allowed to remain. New roads and trails should not be built.

### Visual Resources

1. Visual management will meet preservation VQOs.

### Wildlife Resource Management

1. When salvage occurs, maintain the retention legacy as described in the vegetation section of the standards and guidelines in this chapter.

## MANAGEMENT AREA 7 - SMITH RIVER NATIONAL RECREATION AREA

The Smith River National Recreation Area (SRNRA) was established in November of 1990, by SB 2566/HB 4309. The SRNRA is managed under direction provided by eight management areas. The primary goals are to emphasize, protect, and enhance the unique biological diversity; anadromous fisheries; and the wild, scenic, and recreational potential of the Smith River while providing sustained yields of forest products. See Smith River NRA Plan (attached as Appendix A) for additional information.

## MANAGEMENT AREA 8 - SPECIAL HABITAT

This management area is intended to provide a core of relatively natural, undisturbed habitat for plants and animals associated with mature and old-growth forests. This management area includes protection for nest site protection zones and winter roosts for bald eagle and peregrine falcon as well as Late-Successional Reserves for a number of species, including the northern spotted owl and the marbled murrelet.

Characteristics of individual areas will vary somewhat according to the species for which they are managed. Although individual mature and old-growth stands may survive for many decades, these habitat areas will not provide suitable conditions indefinitely, and may require management towards an uneven-aged condition, or finding substitute areas in other parts of the Forest. There may be vegetative manipulation to enhance the value of the stands to wildlife or plant species.

### Goals : Late-Successional Reserves

Late-Successional Reserves have been designated based on five elements: (1) areas mapped as part of an interacting reserve system; (2) LS/OG 1 and 2 areas within Marbled Murrelet Zone 1, and certain owl additions, mapped by the Scientific Panel on Late-Successional Forest Ecosystems (1991); (3) sites occupied by marbled murrelets; (4) known spotted owl activity centers; and (5) Protection Buffers for specific endemic species identified by the Scientific Analysis Team (SAT)(1993). Additional areas are protected under the Survey and Manage section of the Forest-wide standards and guidelines. *(FSEIS ROD page C-9)

Late-Successional Reserves are to be managed to protect and enhance conditions of late-successional and old-growth forest ecosystems, which serve as habitat for late-successional and old-growth related species including the northern spotted owl. These reserves are designed to maintain a functional, interacting, late-successional and old-growth forest ecosystem. *(FSEIS ROD page C-11)

Exceptions: Research Natural Areas and activities required by recovery plans for listed threatened and endangered species take precedence over Late-Successional Reserve standards and guidelines. *(FSEIS ROD page C-11)

Late-Successional Reserves are designed to serve a number of purposes. First, they provide a distribution, quantity, and quality of old-growth forest habitat sufficient to avoid foreclosure of future management options. Second, they provide habitat for populations of species that are associated with late-successional forests. Third, they will help ensure that late-successional species diversity will be conserved. *(FSEIS ROD page B-4)

Desired late-successional and old-growth characteristics that will be created as younger stands change through successional development include: (1) multispecies and multilayered assemblages of trees, (2) moderate-to-high accumulations of large logs and snags, (3) moderate-to-high canopy closure, (4) moderate-to-high numbers of trees with physical imperfections such as cavities, broken tops, and large deformed limbs, and (5) moderate-to-high accumulations of fungi, lichens, and bryophytes. Although they may not be duplicates of existing old-growth forests, these stands could provide adequate habitat for many species in the long term. *(FSEIS ROD pages B-4 to B-5)

Silvicultural systems proposed for Late-Successional Reserves have two principal objectives: (1) development of old-growth forest characteristics including snags, logs on the forest floor, large trees, and canopy gaps that enable establishment of multiple tree layers and diverse species composition; and (2) prevention of large-scale disturbances by fire, wind, insects, and diseases that would destroy or limit the ability of the reserves to sustain viable forest species populations. Small-scale disturbances by these agents are natural processes, and will be allowed to continue. *(FSEIS ROD Page B-5)

Stand management in Late-Successional Reserves should focus on stands that have been regenerated following timber harvest or stands that have been thinned. These include stands that will acquire late-successional characteristics more rapidly with treatment, or are prone to fire, insects, diseases, wind, or other disturbances that would jeopardize the reserve. Depending on stand conditions, treatments could include, but should not be limited to: (1) thinning or managing the overstory to produce large trees; release advanced regeneration of conifers, hardwoods, or other plants; or reduce risk from fire, insects, diseases, or other environmental variables; (2) underplanting and limiting understory vegetation control to begin development of multistory stands; (3) killing trees to make snags and coarse woody debris; (4) reforestation; and (5) use of prescribed fire. Thinning prescriptions should encourage development of diverse stands with large trees and a variety of species in the overstory and understory. Prescriptions should vary within and among stands. *(FSEIS ROD page B-6)

Protection Buffers are additional standards and guidelines from the Scientific Analysis Team Report for specific rare and locally endemic species, and other specific species in the upland forest matrix. The listed rare and locally endemic species are likely to be assured viability if they occur within reserves. However, there might be occupied locations outside these areas that will be important to protect as well. Established protocols will be used to ensure a high likelihood of locating these occupied sites, and such surveys will be conducted prior to ground-disturbing activities within the known or suspected ranges and within the habitat types or vegetation communities occupied by these species, according to the implementation schedule for Survey and Manage components 1 and 2 described under the survey and manage section of the Forest-wide standards and guidelines in this chapter. When located, the occupied sites need to be protected as described in this section. *(FSEIS ROD page C-19)

## Desired Condition: Late-Successional Reserves

Late-successional reserves will contain multi-storied diverse assemblages of plant and animal species with moderate to high accumulations of down logs, snags, and tree cavities, as well as fungi, lichens, and bryophytes. Natural processes will occur, including fire. Populations of late-successional and old-growth related species will contribute to viability throughout their range. Materials for Native American uses will be available as directed under treaty rights. Fire and other disturbance regimes will resemble the natural rates under which the forest ecosystem evolved.

## Goals: Bald Eagle and Peregrine Falcon Areas

Nesting and roosting habitat for bald eagles and peregrine falcons would be managed to achieve the population levels that each species is capable of achieving. The desired number of nesting territories are intended to provide sufficient habitat to contribute to recovery plan population goals for breeding pairs, and accounts for expected variations in annual

occupancy and reproduction at protected sites. Six bald eagle areas (territories) are managed to achieve the Forest's contribution to meeting the recovery goal of four breeding pairs and two winter roosts. Fourteen falcon areas (territories) are managed to achieve the Forest's contribution to meeting the recovery goal of seven breeding pairs. Unoccupied habitat is expected to become occupied as bald eagle or peregrine numbers increase in the local area. Increases in successful reproduction and fledgling survival are also expected.

Nesting habitat for bald eagles and peregrine falcons will be managed through the zone concept. Each territory is divided into three zones; a nest site protection zone, a primary disturbance zone, and a feeding zone. The nest site protection zone is included in this management area; disturbance and feeding zones are managed through Forest-wide standards and guidelines.

The bald eagle and peregrine falcon zones that are in this management area are described below:

(a) The **Nest Site Protection Zone** contains the nest tree or cliff and habitat which directly influences nest site conditions. Management activities within this zone are intended to protect the biological and physical integrity of the nest site and minimize human disturbance and are included in the Dedicated Wildlife Management Area.

(b) **Winter Roosts** of bald eagle are areas frequented by bald eagles for communal roosting during the winter. Maintain essential habitat characteristics within 5-10 acres of roost trees.

## Desired Condition: Bald Eagle and Peregrine Falcon Areas

Bald eagle winter roost areas: these areas will be fairly dense stands of mature and old-growth conifers. Large snags and live conifers with open crowns and stout lateral limbs for perching will be common. The vegetative features of the stands will provide protection from weather. These sites will be isolated from areas of excessive human activity.

Bald eagle nest areas: these areas will be mature conifers; nest trees and alternate nest trees within the stand will be tall and large in diameter. They will provide a good view of the surrounding landscape. The stands will contain thrifty mature and immature trees that will be available for future nesting use.

Peregrine falcon nest areas: these areas will be on high cliffs across the Forest. Adjacent habitat areas, especially riparian zones, will provide the nesting birds with an adequate supply of prey species. Human disturbance during the breeding season will be infrequent.

## Standards and Guidelines: Late-Successional Reserves

### Management Assessments

A management assessment should be prepared for each large Late-Successional Reserve (or group of smaller Late-Successional Reserves) before habitat manipulation activities are designed and implemented. Land management agencies may choose to develop these assessments as components of legally-mandated plans (e.g., Forest or District Plans), as part of province-level planning, or as stand-alone assessments. If developed to stand alone, the assessments should be closely coordinated with subsequent watershed analysis and province-level planning. Standards and guidelines should be refined at the province level, prior to development of Late-Successional Reserve assessments. Late-Successional Reserve assessments should generally include: (1) a history and inventory of overall vegetative conditions within the reserve, (2) a list of identified late-successional associated species known to exist within the Late-Successional Reserve and information on their locations, (3) a history and description of current land uses within the reserve, (4) a fire management plan, (5) criteria for developing appropriate treatments, (6) identification of specific areas that could be treated under those criteria, (7) a proposed implementation schedule tiered to higher order (i.e., larger scale) plans, and (8) proposed monitoring and evaluation components to help evaluate if future activities are carried out as intended and achieve desired results. Only in unusual circumstances would silvicultural treatments, including prescribed fire, precede preparation of this management assessment. Late-Successional Reserve assessments are subject to review by the Regional Ecosystem Office. Until Late-Successional Reserve assessments are completed, fire suppression activities should be guided by land allocation objectives in coordination with local

resource management specialists. *(FSEIS ROD page C-11)

Projects and activities within Late-Successional Reserves (including restoration, recreation, projects for public safety, thinning and salvage) may proceed in fiscal years 1995-96 using initial Late-Successional Reserve assessments done at a level of detail sufficient to assess whether the activities are consistent with the objectives of the Late-Successional Reserves. *(FSEIS ROD Page A-7)

## Occupied Marbled Murrelet Sites

Timber harvest is prohibited within occupied marbled murrelet habitat at least until completion of the Marbled Murrelet Recovery Plan. Silvicultural treatments in non-habitat within the 0.5-mile circle must protect or enhance the suitable or replacement habitat. When objectives of the Marbled Murrelet Recovery Plan have been identified, direction will be amended or revised as appropriate. *(FSEIS ROD page C-12)

## Silviculture

This direction was taken from the FSEIS ROD pages C-12 to C-13.

Thinning or other silvicultural treatments inside reserves are subject to review by the Regional Ecosystem Office to ensure that the treatments are beneficial to the creation of late-successional forest conditions. The Regional Ecosystem Office may develop criteria that would exempt some activities from review. Stand and vegetation management of any kind, including prescribed burning, is considered a silvicultural treatment. Excepted from review are reforestation activities legally required by, and planned as part of, existing sold timber sales, where the reforestation prescription has been modified as appropriate to meet the objectives of the Late-Successional Reserve.

Activities permitted in the California Coast Range and California Klamath Provinces are described separately below. Salvage of dead trees is described separately below, and is limited to stand-replacing disturbance events exceeding 10 acres.

California Coast Range: There is no harvest allowed in stands over 80 years old. Thinning (precommercial and commercial) may occur in stands up to 80 years old regardless of the origin of the stands (e.g., plantations planted after logging or stands naturally regenerated after fire or blowdown). The purpose of these silvicultural treatments is to benefit the creation and maintenance of late-successional forest conditions. Examples of silvicultural treatments that may be considered beneficial include thinnings in existing even-age stands and prescribed burning. For example, some areas within Late-Successional Reserves are actually young single-species stands. Thinning these stands can open up the canopy, thereby increasing diversity of plants and animals and hastening transition to a forest with mature characteristics.

California Klamath Province: Given the increased risk of fire in these areas due to lower moisture conditions and the rapid accumulation of fuels in the aftermath of insect outbreaks and drought, additional management activities are allowed in Late-Successional Reserves. Guidelines to reduce risks of large-scale disturbance are as follows:

Large-scale disturbances are natural events, such as fire, that can eliminate spotted owl habitat on hundreds or thousands of acres. Certain risk management activities, if properly planned and implemented, may reduce the probability of these major stand-replacing events. Elevated risk levels are attributed to changes in the characteristics and distribution of the mixed-conifer forests resulting from past fire protection. These forests occur in drier environments, have had repeated insect infestations, and are susceptible to major fires. Risk reduction efforts are encouraged where they are consistent with the overall recommendations in these guidelines.

Silvicultural activities aimed at reducing risk shall focus on younger stands in Late-Successional Reserves. The objective will be to accelerate development of late-successional conditions while making the future stand less susceptible to natural disturbances. Salvage activities should focus on the reduction of catastrophic insect, disease, and fire threats. Treatments should be designed to provide effective fuel breaks wherever possible. However, the scale of salvage and other treatments should not generally result in degeneration of currently suitable owl habitat or other late-successional conditions.

In some Late-Successional Reserves in this province, management that goes beyond these guidelines may be considered. Levels of risk in those Late-Successional

Reserves are particularly high and may require additional measures. Consequently, management activities designed to reduce risk levels are encouraged in those Late-Successional Reserves even if a portion of the activities must take place in currently late-successional habitat. While risk-reduction efforts should generally be focused on young stands, activities in older stands may be appropriate if: (1) the proposed management activities will clearly result in greater assurance of long-term maintenance of habitat, (2) the activities are clearly needed to reduce risks, and (3) the activities will not prevent the Late-Successional Reserves from playing an effective role in the objectives for which they were established.

Such activities in older stands may also be undertaken in Late-Successional Reserves in other provinces if levels of fire risk are particularly high.

## Salvage

This direction was taken from the FSEIS ROD pages C-13 to C-16.

Salvage of dead trees is based on the following standards and guidelines, and is subject to review by the Regional Ecosystem Office. The Regional Ecosystem Office may develop criteria that would exempt some activities from review. Salvage of dead trees is not generally considered a silvicultural treatment within the context of these standards and guidelines.

Salvage is defined as the removal of trees from an area following a stand-replacing event such as those caused by wind, fires, insect infestations, volcanic eruptions, or diseases. Salvage guidelines are intended to prevent negative effects on late-successional habitat, while permitting some commercial wood volume removal. In some cases, salvage operations may actually facilitate habitat recovery. For example, excessive amounts of coarse woody debris may interfere with stand regeneration activities following some disturbances. In other cases, salvage may help reduce the risk of future stand-replacing disturbances. While priority should be given to salvage in areas where it will have a positive effect on late-successional forest habitat, salvage operations should not diminish habitat suitability now or in the future.

Tree mortality is a natural process in a forest ecosystem. Diseased and damaged trees are key structural components of late-successional forests. Accordingly, management planning for Late-Successional Reserves must acknowledge the considerable value of retaining dead and dying trees in the forest as well as the benefits from salvage activities.

In all cases, planning for salvage should focus on long-range objectives, which are based on desired future condition of the forest. Because Late-Successional Reserves have been established to provide high quality habitat for species associated with late-successional forest conditions, management following a stand-replacing event should be designed to accelerate or not impede the development of those conditions. The rate of development of this habitat will vary among provinces and forest types and will be influenced by a complex interaction of stand-level factors that include site productivity, population dynamics of live trees and snags, and decay rates of coarse woody debris. Because there is much to learn about the development of species associated with these forests and their habitat, it seems prudent to only allow removal of conservative quantities of salvage material from Late-Successional Reserves and retain management opportunities until the process is better understood.

The following guidelines are general. Specific guidelines should be developed for each physiographic province, and possibly for different forest types within provinces.

1. The potential for benefit to species associated with late-successional forest conditions from salvage is greatest when stand-replacing events are involved. Salvage in disturbed sites of less than 10 acres is not appropriate because small forest openings are an important component of old-growth forests. In addition, salvage should occur only in stands where disturbance has reduced canopy closure to less than 40 percent, because stands with more closure are likely to provide some value for species associated with these forests.

2. Surviving trees will provide a significant residual of larger trees in the developing stand. In addition, defects caused by fire in residual trees may accelerate development of structural characteristics suitable for associated species. Also, those damaged trees that eventually die will provide additional snags. Consequently, all standing live trees should be retained, including those injured (e.g., scorched) but likely to survive. Inspection of the cambium layer can provide an indication of potential tree mortality.

3. Snags provide a variety of habitat benefits for a variety of wildlife species associated with late-successional forests. Accordingly, following stand-replacing disturbance, management should focus on retaining snags that are likely to persist until late-successional conditions have developed and the new stand is again producing large snags. Late-successional conditions are not associated with stands less than 80 years old.

4. Following a stand-replacing disturbance, management should retain adequate coarse woody debris quantities in the new stand so that in the future it will still contain amounts similar to naturally regenerated stands. The analysis that determines the amount of coarse woody debris to leave must account for the full period of time before the new stand begins to contribute coarse woody debris. As in the case of snags, province-level specifications must be provided for this guideline. Because coarse woody debris decay rates, forest dynamics, and site productivity undoubtedly will vary among provinces and forest types, the specifications also will vary.

   Province-level plans will establish appropriate levels of coarse woody debris and decay rates to be used. Levels will be "typical" and will not require retention of all material where it is highly concentrated, or too small to contribute to coarse woody debris over the long time frames discussed. This standard and guideline represents one item to be considered and may indeed result in no salvage following windthrow in low density stands. As for other management activities, it is expected that salvage standards and guidelines will be refined through the implementation and adaptive management processes.

5. Some salvage that does not meet the preceding guidelines will be allowed when salvage is essential to reduce the future risk of fire or insect damage to late-successional forest conditions. This circumstance is most likely to occur in the eastern Oregon Cascades, eastern Washington Cascades, and California Cascades Provinces, and somewhat less likely to occur in the Oregon Klamath and California Klamath Provinces. It is important to understand that some risk associated with fire and insects is acceptable because they are natural forces influencing late-successional forest development. Consequently, salvage to reduce such risks should focus only on those areas where there is high risk of large-scale disturbance.

6. Removal of snags and logs may be necessary to reduce hazards to humans along roads and trails, and in or adjacent to campgrounds. Where materials must be removed from the site, as in a campground or on a road, a salvage sale is appropriate. In other areas, such as along roads, leaving material on site should be considered. Also, material will be left where available coarse woody debris is inadequate.

7. Where green trees, snags, and logs are present following disturbance, the green-tree and snag guidelines will be applied first, and completely satisfied where possible. The biomass left in snags can be credited toward the amount of coarse woody debris biomass needed to achieve management objectives.

8. These basic guidelines may not be applicable after disturbances in younger stands because remnant coarse woody debris may be relatively small. In these cases, diameter and biomass retention guidelines should be developed consistent with the intention of achieving late-successional forest conditions.

9. Logs present on the forest floor before a disturbance event provide habitat benefits that are likely to continue. It seldom will be appropriate to remove them. Where these logs are in an advanced state of decay, they will not be credited toward objectives for coarse woody debris retention developed after a disturbance event. Advanced state of decay should be defined as logs not expected to persist to the time when the new stand begins producing coarse woody debris.

10. The coarse woody debris retained should approximate the species composition of the original stand to help replicate preexisting suitable habitat conditions.

11. Some deviation from these general guidelines may be allowed to provide reasonable access to salvage sites and feasible logging operations. Such deviation should occur on as small a portion of the area as possible, and should not result in violation of the basic intent that late-successional forest habitat or the development of such habitat in the future should not be impaired throughout the area. While exceptions to the guidelines may be allowed to provide access and operability, some salvage opportunities will undoubtedly be

foregone because of access, feasibility, and safety concerns.

## Standards and Guidelines for Multiple-Use Activities Other Than Silviculture

This direction was taken from the FSEIS ROD pages C-16 to C-19.

The following standards and guidelines apply to Late-Successional Reserves and Managed Late-Successional Areas.

As a general guideline, nonsilvicultural activities located inside Late-Successional Reserves that are neutral or beneficial to the creation and maintenance of late-successional habitat are allowed.

While most existing uses and development are envisioned to remain, it may be necessary to modify or eliminate some current activities in Late-Successional Reserves that pose adverse impacts. This may require the revision of management guidelines, procedures, or regulations governing these multiple-use activities. Adjustments in standards and guidelines must be reviewed by the Regional Ecosystem Office.

### Road Construction and Maintenance

Road construction in Late-Successional Reserves for silvicultural, salvage, and other activities generally is not recommended unless potential benefits exceed the costs of habitat impairment. If new roads are necessary to implement a practice that is otherwise in accordance with these guidelines, they will be kept to a minimum, be routed through non-late-successional habitat where possible, and be designed to minimize adverse impacts. Alternative access methods, such as aerial logging, should be considered to provide access for activities in reserves.

Road maintenance may include felling hazard trees along rights-of-way. Leaving material on site should be considered if available coarse woody debris is inadequate. Topping trees should be considered as an alternative to felling.

### Fuelwood Gathering

Fuelwood gathering will be permitted only in existing cull decks, where green trees are marked by silviculturists to thin (consistent with standards and guidelines), to remove blowdown blocking roads, and in recently harvested timber sale units where down material will impede scheduled post-sale activities or pose an unacceptable risk of future large-scale disturbances. In all cases these activities should comply with the standards and guidelines for salvage and silvicultural activities.

### American Indian Uses

The exercise of tribal treaty rights will not be restricted by these standards and guidelines unless the Regional Interagency Executive Committee determines that the restriction is (1) reasonable and necessary for preservation of the species at issue, (2) the conservation purpose of the restriction cannot be achieved solely by regulation of non-Indian activities, (3) the restriction is the least restrictive available to achieve the required conservation purpose, (4) the restriction does not discriminate against Indian activities either as stated or as applied, and (5) voluntary tribal conservation measures are not adequate to achieve the necessary conservation purpose.

### Mining

The impacts of ongoing and proposed mining actions will be assessed, and mineral activity permits will include appropriate stipulations (e.g., seasonal or other restrictions) related to all phases of mineral activity. The guiding principle will be to design mitigation measures that minimize detrimental effects to late-successional habitat.

### Developments

Development of new facilities that may adversely affect Late-Successional Reserves should not be permitted. New development proposals that address public needs or provide significant public benefits, such as powerlines, pipelines, reservoirs, recreation sites, or other public works projects will be reviewed on a case-by-case basis and may be approved when adverse effects can be minimized and mitigated. These will be planned to have the least possible adverse impacts on Late-Successional Reserves. Developments

will be located to avoid degradation of habitat and adverse effects on identified late-successional species. Existing developments in Late-Successional Reserves such as campgrounds, recreation residences, ski areas, utility corridors, and electronic sites are considered existing uses with respect to Late-Successional Reserve objectives, and may remain, consistent with other standards and guidelines. Routine maintenance of existing facilities is expected to have less effect on current old-growth conditions than development of new facilities. Maintenance activities may include felling hazard trees along utility rights-of-way, trails, and other developed areas.

## Land Exchanges

Land exchanges involving Late-Successional Reserves will be considered if they provide benefits equal to or better than current conditions. Consider land exchanges especially to improve area, distribution, and quality (e.g., connectivity, shape, contribution to biodiversity) of Late-Successional Reserves, especially where public and private lands are intermingled (e.g., checkerboard ownership).

## Habitat Improvement Projects

Projects designed to improve conditions for fish, wildlife, or watersheds should be considered if they provide late-successional habitat benefits or if their effect on late-successional associated species is negligible. Projects required for recovery of threatened or endangered species should be considered even if they result in some reduction of habitat quality for other late-successional species. For example, watershed rehabilitation projects, such as felling trees along streams, will be coordinated with a wildlife biologist and may include seasonal restrictions. Design and implement watershed restoration projects in a manner that is consistent with Late-Successional Reserve objectives.

## Range Management

Range-related management that does not adversely affect late-successional habitat will be developed in coordination with wildlife and fisheries biologists. Adjust or eliminate grazing practices that retard or prevent attainment of reserve objectives. Evaluate effects of existing and proposed livestock management and handling facilities in reserves to determine if reserve objectives are met. Where objectives cannot be met, relocate livestock management and/or handling facilities.

## Fire Suppression and Prevention

Each Late-Successional Reserve will be included in fire management planning as part of watershed analysis. Fuels management in Late-Successional Reserves will utilize minimum impact suppression methods in accordance with guidelines for reducing risks of large-scale disturbances. Plans for wildfire suppression will emphasize maintaining late-successional habitat. During actual fire suppression activities fire managers will consult with resource specialists (e.g., botanists, fisheries and wildlife biologists, hydrologists) familiar with the area, these standards and guidelines, and their objectives, to assure that habitat damage is minimized. Until a fire management plan is completed for Late-Successional Reserves, suppress wildfire to avoid loss of habitat in order to maintain future management options.

In Late-Successional Reserves a specific fire management plan will be prepared prior to any habitat manipulation activities. This plan, prepared during watershed analysis or as an element of province-level planning or a Late-Successional Reserve assessment, should specify how hazard reduction and other prescribed fire applications will meet the objectives of the Late-Successional Reserve. Until the plan is approved, proposed activities will be subject to review by the Regional Ecosystem Office. The Regional Ecosystem Office may develop additional guidelines that would exempt some activities from review. In all Late-Successional Reserves watershed analysis will provide information to determine the amount of coarse woody debris to be retained when applying prescribed fire.

In Riparian and Late-Successional Reserves the goal of wildfire suppression is to limit the size of all fires. When watershed analysis, province-level planning, or a Late-Successional Reserve assessment are completed, some natural fires may be allowed to burn under prescribed conditions. Rapidly extinguishing smoldering coarse woody debris and duff should be considered to preserve these ecosystem elements.

## Special Forest Products

Special forest products include but are not limited to posts, poles, rails, landscape transplants, yew bark,

shakes, seed cones, Christmas trees, boughs, mushrooms, fruits, berries, hardwoods, forest greens (e.g., ferns, huckleberry, salal, beargrass, Oregon grape, and mosses), and medicinal forest products. In all cases, evaluate whether activities have adverse effects on Late-Successional Reserve objectives. Sales will ensure resource sustainability and protection of other resource values such as special status plant or animal species. Where these activities are extensive (e.g., collection of Pacific yew bark or fungi), it will be appropriate to evaluate whether they have significant effects on late-successional habitat. Restrictions may be appropriate in some cases.

### Recreational Uses

Dispersed recreational uses, including hunting and fishing, generally are consistent with the objectives of Late-Successional Reserves. Use adjustment measures such as education, use limitations, traffic control devices, or increased maintenance when dispersed and developed recreation practices retard or prevent attainment of Late-Successional Reserve objectives.

### Research

A variety of wildlife and other research activities may be ongoing and proposed in late-successional habitat. These activities must be assessed to determine if they are consistent with Late-Successional Reserve objectives. Some activities (including those within experimental forests) not otherwise consistent with the objectives may be appropriate, particularly if the activities will test critical assumptions of these standards and guidelines, will produce results important for habitat development, or if the activities represent continuation of long-term research. These activities should only be considered if there are no equivalent opportunities outside Late-Successional Reserves.

### Rights-of-Way, Contracted Rights, Easements, and Special Use Permits

Access to nonfederal lands through Late-Successional Reserves will be considered and existing right-of-way agreements, contracted rights, easements, and special use permits in Late-Successional Reserves will be recognized as valid uses. New access proposals may require mitigation measures to reduce adverse effects on Late-Successional Reserves. In these cases, alternate routes that avoid late-successional habitat should be considered. If roads must be routed through a reserve, they will be designed and located to have the least impact on late-successional habitat. Review all special use permits and when objectives of Late-Successional Reserves are not being met, reduce impacts through either modification of existing permits or education.

### Nonnative Species

In general nonnative species (plant and animal) should not be introduced into Late-Successional Reserves. If an introduction of nonnative species is proposed, complete an assessment of impacts and avoid any introduction that would retard or prevent achievement of Late-Successional Reserve objectives. Evaluate impacts of nonnative species (plant and animal) currently existing within reserves, and develop plans and recommendations for eliminating or controlling nonnative species that are inconsistent with Late-Successional Reserve objectives. These will include an analysis of the effects of implementing such programs to other species or habitats within Late-Successional Reserves.

### Other

Other activities should be evaluated by local interdisciplinary teams and appropriate guidelines should be written and documented. Activities deemed to have potentially adverse effects on Late-Successional Reserve objectives are subject to review of the Regional Ecosystem Office. The Regional Ecosystem Office may develop additional criteria for exempting some additional activities from review.

## Standards and Guidelines for Protection Buffers

This direction was taken from FSEIS ROD pages C-20 to C-21.

### Nonvascular Plants

*Ptilidium californicum* (Liverwort): This species is rare and has a very limited distribution in old white fir forests with fallen trees. It occurs on trunks of trees at about 5000-feet elevation. Mitigation options include finding locations and maintaining stands of overmature white fir at about 5000-feet elevation for inoculum and dispersal along corridors; and studying specific distribution patterns. Protect known occupied locations if distribution patterns are disjunct and highly localized by deferring timber harvest and avoiding removal of fallen trees and logs.

*Ulota meglospora* (Moss): This species occurs in northern California and southwest Oregon. It is best developed (locally abundant) in very old stands of tanoak, Douglas-fir, and other conifer species further north, but is generally scarce throughout its range. The species is poorly known ecologically. Mitigation activities include conducting basic ecological studies, and surveying for presence, particularly in Oregon. Protect known occupied sites if distribution patterns are disjunct and highly localized. Defer timber harvest or other activities which would not maintain desired habitat characteristics and population levels.

*Otidea leporina*, *O. onotica*, and *O. smithii* (Fungi): These mushrooms occur in conifer duff, and are widespread in distribution but uncommon. They are dependent on older-age forests. Specific mitigation options include protecting older forests from ground disturbance where the species are located.

For the plants listed above, it is recommended that Regional or State office-level ecologists or botanists should: (1) maintain a spatially explicit data base of all known sites in National Forests and BLM Districts, and (2) develop species or area management plans, to be implemented under the guidance of regional botany programs.

### Birds

Great Gray Owl: Within the range of the northern spotted owl, the great gray owl is most common in lodgepole pine forests adjacent to meadows. However, it is also found in other coniferous forest types. In some locations, such as on the Willamette National Forest west of the crest of the Cascade Range, at least some shelterwood harvesting seems to be beneficial for the species by opening up otherwise closed canopy cover for foraging. In doing so, consequences to species such as northern goshawk and American marten must be evaluated. Specific mitigation measures for the great gray owl, within the range of the northern spotted owl, include the following: provide a no-harvest buffer of 300 feet around meadows and natural openings and establish 1/4-mile protection zones around known nest sites. Within one year of the signing of the Record of Decision for these standards and guidelines, survey for nest locations using the established protocol. Protect all future discovered nest sites as previously described.

## Standards and Guidelines for Bald Eagle and Peregrine Falcon

### Fire/Fuels Management

1. Contingency plans to protect these areas during wildfire suppression activities should be developed and available to fire management personnel. Particularly critical are essential nesting and foraging habitat areas designated for threatened and endangered species.

### Minerals Management

1. Operating plans for mining activities which have the potential to adversely affect habitat (including streams and rivers) or species occupying these areas will not be approved without appropriate mitigation measures.

### Pest Management

1. In order to reduce the spread of Port-Orford-cedar root disease, a risk analysis will be completed for all projects (see 20-7) in watersheds containing Port-Orford-cedar.

### Recreation

1. Restrictions on noise generating activities (frequent vehicle or boat traffic, popular motorized recreation routes, large groups of people, etc.) are listed under wildlife resource management standards and guidelines. All motorized vehicle use will be prohibited or restricted within bald eagle and peregrine falcon nest site protection zones during the breeding season. Activities such as hiking, rock climbing, photography, bird watching, skiing, horseback riding, rafting, mountain biking and snowshoeing

should also be restricted when they have the potential to adversely affect breeding activities.

2. In areas managed as ROS class semi-primitive non-motorized, semi-primitive recreation opportunities would be provided, facilities for the convenience of the user would not be provided, use levels would be low.

3. Motor vehicle use would be restricted to designated routes. Road and trail density would be at low to moderate levels. High standard roads would generally not occur. Traffic service level 1 or 2 roads would occur.

### Timber Management

1. Timber harvest will not be scheduled, but may occur if it is required to maintain habitat quality, ecosystem health, or if it is crucial to improve the quality of habitat within an area. Restrictions on noise generating activities (timber harvest, hauling, heavy equipment, etc.) are described in the standards and guidelines.

### Transportation and Facilities Management

1. Minimize the mileage of open roads. Road or trail construction should not occur closer than 1,000 feet from known nest sites and should be designed to minimize impacts on threatened and endangered wildlife.

2. Roads not providing a primary travel access should be closed, if possible, as soon after use as practicable. Existing roads not serving as a main system access route should be closed (gated or barricaded) to nonessential traffic.

3. Noise generating activities (e.g., road construction and reconstruction, blasting, hauling, etc.) should be restricted during the breeding season in accordance with the locations and dates listed under wildlife resource management standards and guidelines. The predicted frequency of use of both trails and roads, and their proximity to known den and nest sites will be considered in the need for restrictions on their use.

4. Permanent structures and recreational facilities that would be occupied during breeding periods will not be constructed within peregrine falcon and bald eagle nest site protection zones, or eagle winter roosts.

5. Power line structures that are regularly used by bald eagles or peregrine falcons should be identified. The Forest should coordinate with appropriate agencies and follow accepted guidelines to prevent raptor electrocutions at regularly used use sites.

6. Proposed power lines will not be constructed within one mile of bald eagle winter roosts or peregrine falcon nest sites.

### Visual Quality Management

1. Manage for a VQO of retention, with small amounts of partial retention.

## MANAGEMENT AREA 9 - RIPARIAN RESERVES

The prescribed widths of Riparian Reserves apply to all watersheds until watershed analysis is completed, a site-specific analysis is conducted and described, and the rationale for final Riparian Reserve boundaries is presented through the appropriate NEPA decision-making process. (FSEIS ROD page B-13)

### Riparian Reserve Widths

This direction was taken from the FSEIS ROD pages C-30 to C-31.

Riparian Reserves are specified for five categories of streams or waterbodies as follows:

Fish-bearing streams - Riparian Reserves consist of the stream and the area on each side of the stream extending from the edges of the active stream channel to the top of the inner gorge, or to the outer edges of the 100-year floodplain, or to the outer edges of riparian vegetation, or to a distance equal to the height of two site-potential trees, or 300 feet slope distance (600 feet total, including both sides of the stream channel), whichever is greatest.

Permanently flowing nonfish-bearing streams - Riparian Reserves consist of the stream and the area on each side of the stream extending from the edges of the active stream channel to the top of the inner gorge, or to the outer edges of the 100-year floodplain, or to

the outer edges of riparian vegetation, or to a distance equal to the height of one site-potential tree, or 150 feet slope distance (300 feet total, including both sides of the stream channel), whichever is greatest.

Constructed ponds and reservoirs, and wetlands greater than 1 acre - Riparian Reserves consist of the body of water or wetland and: the area to the outer edges of the riparian vegetation, or to the extent of seasonally saturated soil, or the extent of unstable and potentially unstable areas, or to a distance equal to the height of one site-potential tree, or 150 feet slope distance from the edge of the wetland greater than 1 acre or the maximum pool elevation of constructed ponds and reservoirs, whichever is greatest.

Lakes and natural ponds - Riparian Reserves consist of the body of water and: the area to the outer edges of the riparian vegetation, or to the extent of seasonally saturated soil, or to the extent of unstable and potentially unstable areas, or to a distance equal to the height of two site-potential trees, or 300 feet slope distance, whichever is greatest.

Seasonally flowing or intermittent streams, wetlands less than 1 acre, and unstable and potentially unstable areas - This category applies to features with high variability in size and site-specific characteristics. At a minimum, the Riparian Reserves must include:

The extent of unstable and potentially unstable areas (including earthflows),

The stream channel and extend to the top of the inner gorge,

The stream channel or wetland and the area from the edges of the stream channel or wetland to the outer edges of the riparian vegetation, and

Extension from the edges of the stream channel to a distance equal to the height of one site-potential tree, or 100 feet slope distance, whichever is greatest.

A site-potential tree height is the average maximum height of the tallest dominant trees (200 years or older) for a given site class.

Intermittent streams are defined as any nonpermanent flowing drainage feature having a definable channel and evidence of annual scour or deposition. This includes what are sometimes referred to as ephemeral streams if they meet these two physical criteria.

## Goals

Under the Aquatic Conservation Strategy, Riparian Reserves are used to maintain and restore riparian structures and functions of intermittent streams, confer benefits to riparian-dependent and associated species other than fish, enhance habitat conservation for organisms that are dependent on the transition zone between upslope and riparian areas, improve travel and dispersal corridors for many terrestrial animals and plants, and provide for greater connectivity of the watershed. The Riparian Reserves will also serve as connectivity corridors among the Late-Successional Reserves.

Interim widths for Riparian Reserves necessary to meet Aquatic Conservation Strategy objectives for different waterbodies are established based on ecologic and geomorphic factors. These widths are designed to provide a high level of fish habitat and riparian protection until watershed and site analysis can be completed. Watershed analysis will identify critical hillslope, riparian, and channel processes that must be evaluated in order to delineate Riparian Reserves that assure protection of riparian and aquatic functions. Riparian Reserves are delineated during implementation of site-specific projects based on analysis of the critical hillslope, riparian, and channel processes and features. Although Riparian Reserve boundaries may be adjusted on permanently-flowing streams, the prescribed widths are considered to approximate those necessary for attaining Aquatic Conservation Strategy objectives. Post-watershed analysis Riparian Reserve boundaries for permanently-flowing streams should approximate the boundaries prescribed in these standards and guidelines. However, post-watershed analysis Riparian Reserve boundaries for intermittent streams may be different from the existing boundaries. The reason for the difference is the high variability of hydrologic, geomorphic and ecologic processes in a watershed affecting intermittent streams. At the same time, any analysis of Riparian Reserve widths must also consider the contribution of these reserves to other, including terrestrial, species. Watershed analysis should take into account all species that were intended to be benefitted by the prescribed Riparian Reserve widths. Those species include fish, mollusks, amphibians, lichens, fungi, bryophytes, vascular plants, American marten, bats, marbled murrelets, and northern spotted owls. The specific issue for spotted owls is retention of adequate habitat conditions for dispersal.

## Desired Condition

Water temperature, sediment loads, and nutrient cycling will be at levels that provide for productive riparian and aquatic ecosystems. Instream flows and fluvial processes will occur at the rates under which the stream system evolved. Habitat diversity, channel stability, and water quality will be high. Water table elevation in wet meadows will be at or near pre-grazing levels and will provide for the needs of aquatic and riparian biota. Large woody debris recruitment rates will be sufficient to maintain suitable stream habitat conditions. Riparian vegetation and nearby lower slope terrestrial plant communities will have a diverse multi-storied structure and provide shade and maintain microclimate in the reserve corridor. In some drainages, these reserve corridors will extend to ridgeline saddles and connect with the corridors of other watersheds to provide for travel and dispersal of animals and maintain habitat connectivity across the landscape.

## Standards and Guidelines

This direction was taken from the FSEIS ROD pages C-31 to C-38.

As a general rule, standards and guidelines for Riparian Reserves prohibit or regulate activities in Riparian Reserves that retard or prevent attainment of the Aquatic Conservation Strategy objectives. Watershed analysis and appropriate NEPA compliance is required to change Riparian Reserve boundaries in all watersheds.

### General

1. Identify and attempt to secure in-stream flows needed to maintain riparian resources, channel conditions, and aquatic habitat.

2. Fell trees in Riparian Reserves when they pose a safety risk. Keep felled trees on-site when needed to meet coarse woody debris objectives.

3. Herbicides, insecticides, and other toxicants, and other chemicals shall be applied only in a manner that avoids impacts that retard or prevent attainment of Aquatic Conservation Strategy objectives.

4. Locate water drafting sites to minimize adverse effects on stream channel stability, sedimentation, and in-stream flows needed to maintain riparian resources, channel conditions, and fish habitat.

### Fire/Fuels Management

1. Design fuel treatment and fire suppression strategies, practices, and activities to meet Aquatic Conservation Strategy objectives, and to minimize disturbance of riparian ground cover and vegetation. Strategies should recognize the role of fire in ecosystem function and identify those instances where fire suppression or fuels management activities could be damaging to long-term ecosystem function.

2. Locate incident bases, camps, helibases, staging areas, helispots and other centers for incident activities outside Riparian Reserves. If the only suitable location for such activities is within the Riparian Reserve, an exemption may be granted following review and recommendation by a resource advisor. The advisor will prescribe the location, use conditions, and rehabilitation requirements. Use an interdisciplinary team to predetermine suitable incident base and helibase locations.

3. Minimize delivery of chemical retardant, foam, or additives to surface waters. An exception may be warranted in situations where overriding immediate safety imperatives exist, or, following review and recommendation by a resource advisor, when an escape would cause more long-term damage.

4. Design prescribed burn projects and prescriptions to contribute to attainment of Aquatic Conservation Strategy objectives.

5. Immediately establish an emergency team to develop a rehabilitation treatment plan needed to attain Aquatic Conservation Strategy objectives whenever Riparian Reserves are significantly damaged by wildfire or a prescribed fire burning outside prescribed parameters.

6. Other - In Riparian Reserves, the goal of wildfire suppression is to limit the size of all fires. When watershed and/or landscape analysis, or province-

level plans are completed and approved, some natural fires may be allowed to burn under prescribed conditions. Rapidly extinguishing smoldering coarse woody debris and duff should be considered to preserve these ecosystem elements. In Riparian Reserves, water drafting sites should be located and managed to minimize adverse effects on riparian habitat and water quality, as consistent with Aquatic Conservation Strategy objectives.

## Fish and Wildlife Management

1. Design and implement fish and wildlife habitat restoration and enhancement activities in a manner that contributes to attainment of Aquatic Conservation Strategy objectives.

2. Design, construct and operate fish and wildlife interpretive and other user-enhancement facilities in a manner that does not retard or prevent attainment of Aquatic Conservation Strategy objectives. For existing fish and wildlife interpretative and other user-enhancement facilities inside Riparian Reserves, ensure that Aquatic Conservation Strategy objectives are met. Where Aquatic Conservation Strategy objectives cannot be met, relocate or close such facilities.

3. Cooperate with federal, tribal, and state wildlife management agencies to identify and eliminate wild ungulate impacts that are inconsistent with attainment of Aquatic Conservation Strategy objectives.

4. Cooperate with federal, tribal, and state fish management agencies to identify and eliminate impacts associated with habitat manipulation, fish stocking, harvest and poaching that threaten the continued existence and distribution of native fish stocks occurring on federal lands.

## Lands

1. Identify in-stream flows needed to maintain riparian resources, channel conditions, and fish passage.

2. Tier 1 Key Watersheds: For hydroelectric and other surface water development proposals, require in-stream flows and habitat conditions that maintain or restore riparian resources, favorable channel conditions, and fish passage. Coordinate this process with the appropriate state agencies.

   During relicensing of hydroelectric projects, provide written and timely license conditions to the Federal Energy Regulatory Commission (FERC) that require flows and habitat conditions that maintain or restore riparian resources and channel integrity. Coordinate relicensing projects with the appropriate state agencies.

   For all other watersheds: For hydroelectric and other surface water development proposals, give priority emphasis to in-stream flows and habitat conditions that maintain or restore riparian resources, favorable channel conditions, and fish passage. Coordinate this process with the appropriate state agencies. During relicensing of hydroelectric projects, provide written and timely license conditions to FERC that emphasize in-stream flows and habitat conditions that maintain or restore riparian resources and channel integrity. Coordinate relicensing projects with the appropriate state agencies.

3. Locate new support facilities outside Riparian Reserves. For existing support facilities inside Riparian Reserves that are essential to proper management, provide recommendations to FERC that ensure Aquatic Conservation Strategy objectives are met. Where these objectives cannot be met, provide recommendations to FERC that such support facilities should be relocated. Existing support facilities that must be located in the Riparian Reserves will be located, operated, and maintained with an emphasis to eliminate adverse effects that retard or prevent attainment of Aquatic Conservation Strategy objectives.

4. For activities other than surface water developments, issue leases, permits, rights-of-way, and easements to avoid adverse effects that retard or prevent attainment of Aquatic Conservation Strategy objectives. Adjust existing leases, permits, rights-of-way, and easements to eliminate adverse effects that retard or prevent the attainment of Aquatic Conservation Strategy objectives. If adjustments are not effective, eliminate the activity. Priority for modifying existing leases, permits, rights-of-way and easements will be based on the actual or potential impact and the ecological value of the riparian resources affected.

5. Use land acquisition, exchange, and conservation easements to meet Aquatic Conservation Strategy

objectives and facilitate restoration of fish stocks and other species at risk of extinction.

## Minerals Management

1. Require a reclamation plan, approved Plan of Operations, and reclamation bond for all minerals operations that include Riparian Reserves. Such plans and bonds must address the costs of removing facilities, equipment, and materials; recontouring disturbed areas to near pre-mining topography; isolating and neutralizing or removing toxic or potentially toxic materials; salvage and replacement of topsoil; and seedbed preparation and revegetation to meet Aquatic Conservation Strategy objectives.

2. Locate structures, support facilities, and roads outside Riparian Reserves. Where no alternative to siting facilities in Riparian Reserves exists, locate them in a way compatible with Aquatic Conservation Strategy objectives. Road construction will be kept to the minimum necessary for the approved mineral activity. Such roads will be constructed and maintained to meet roads management standards and to minimize damage to resources in the Riparian Reserve. When a road is no longer required for mineral or land management activities, it will be closed, obliterated, and stabilized.

3. Prohibit solid and sanitary waste facilities in Riparian Reserves. If no alternative to locating mine waste (waste rock, spent ore, tailings) facilities in Riparian Reserves exists, and releases can be prevented, and stability can be ensured, then:

    a. analyze the waste material using the best conventional sampling methods and analytic techniques to determine its chemical and physical stability characteristics.

    b. locate and design the waste facilities using best conventional techniques to ensure mass stability and prevent the release of acid or toxic materials. If the best conventional technology is not sufficient to prevent such releases and ensure stability over the long term, prohibit such facilities in Riparian Reserves.

    c. monitor waste and waste facilities after operations to ensure chemical and physical stability and to meet Aquatic Conservation Strategy objectives.

    d. reclaim waste facilities after operations to ensure chemical and physical stability and to meet Aquatic Conservation Strategy objectives.

    e. require reclamation bonds adequate to ensure long-term chemical and physical stability of mine waste facilities.

4. For leasable minerals, prohibit surface occupancy within Riparian Reserves for oil, gas, and geothermal exploration and development activities where leases do not already exist. Where possible, adjust the operating plans of existing contracts to eliminate impacts that retard or prevent the attainment of Aquatic Conservation Strategy objectives.

5. Salable mineral activities such as sand and gravel mining and extraction within Riparian Reserves will occur only if Aquatic Conservation Strategy objectives can be met.

6. Include inspection and monitoring requirements in mineral plans, leases or permits. Evaluate the results of inspection and monitoring to effect the modification of mineral plans, leases and permits as needed to eliminate impacts that retard or prevent attainment of Aquatic Conservation Strategy objectives.

## Range Management

1. Adjust grazing practices to eliminate impacts that retard or prevent attainment of Aquatic Conservation Strategy objectives. If adjusting practices is not effective, eliminate grazing.

2. Locate new livestock handling and/or management facilities outside Riparian Reserves. For existing livestock handling facilities inside the Riparian Reserve, ensure that Aquatic Conservation Strategy objectives are met. Where these objectives cannot be met, require relocation or removal of such facilities.

3. Limit livestock trailing, bedding, watering, loading, and other handling efforts to those areas and times that will ensure Aquatic Conservation Strategy objectives are met.

## Recreation Management

1. New recreational facilities within Riparian Reserves, including trails and dispersed sites, should be designed to not prevent meeting Aquatic Conservation Strategy objectives. Construction of these facilities should not prevent future attainment of these objectives. For existing recreation facilities within Riparian Reserves, evaluate and mitigate impact to ensure that these do not prevent, and to the extent practicable contribute to, attainment of Aquatic Conservation Strategy objectives.

2. Adjust dispersed and developed recreation practices that retard or prevent attainment of Aquatic Conservation Strategy objectives. Where adjustment measures such as education, use limitations, traffic control devices, increased maintenance, relocation of facilities, and/or specific site closures are not effective, eliminate the practice or occupancy.

3. Wild and Scenic Rivers and Wilderness management plans will address attainment of Aquatic Conservation Strategy objectives.

## Research

1. A variety of research activities may be ongoing and proposed in Key Watersheds and Riparian Reserves. These activities must be analyzed to ensure that significant risk to the watershed values does not exist. If significant risk is present and cannot be mitigated, study sites must be relocated. Some activities not otherwise consistent with the objectives may be appropriate, particularly if the activities will test critical assumptions of these standards and guidelines; will produce results important for establishing or accelerating vegetation and structural characteristics for maintaining or restoring aquatic and riparian ecosystems; or the activities represent continuation of long-term research. These activities should be considered only if there are no equivalent opportunities outside of Key Watersheds and Riparian Reserves.

## Timber Management

1. Prohibit timber harvest, including fuelwood cutting, in Riparian Reserves, except as described below. Riparian Reserve acres shall not be included in calculations of the timber base.

    a. Where catastrophic events such as fire, flooding, volcanic, wind, or insect damage result in degraded riparian conditions, allow salvage and fuelwood cutting if required to attain Aquatic Conservation Strategy objectives.

    b. Salvage trees only when watershed analysis determines that present and future coarse woody debris needs are met and other Aquatic Conservation Strategy objectives are not adversely affected.

    c. Apply silvicultural practices for Riparian Reserves to control stocking, reestablish and manage stands, and acquire desired vegetation characteristics needed to attain Aquatic Conservation Strategy objectives.

## Transportation and Facilities

1. Federal, state, and county agencies should cooperate to achieve consistency in road design, operation, and maintenance necessary to attain Aquatic Conservation Strategy objectives.

2. For each existing or planned road, meet Aquatic Conservation Strategy objectives by:

    a. minimizing road and landing locations in Riparian Reserves.

    b. completing watershed analyses (including appropriate geotechnical analyses) prior to construction of new roads or landings in Riparian Reserves.

    c. preparing road design criteria, elements, and standards that govern construction and reconstruction.

    d. preparing operation and maintenance criteria that govern road operation, maintenance, and management.

    e. minimizing disruption of natural hydrologic flow paths, including diversion of streamflow

and interception of surface and subsurface flow.

f. restricting sidecasting as necessary to prevent the introduction of sediment to streams.

g. avoiding wetlands entirely when constructing new roads.

3. Determine the influence of each road on the Aquatic Conservation Strategy objectives through watershed analysis. Meet Aquatic Conservation Strategy objectives by:

   a. reconstructing roads and associated drainage features that pose a substantial risk.

   b. prioritizing reconstruction based on current and potential impact to riparian resources and the ecological value of the riparian resources affected.

   c. closing and stabilizing, or obliterating and stabilizing roads based on the ongoing and potential effects to Aquatic Conservation Strategy objectives and considering short-term and long-term transportation needs.

4. New culverts, bridges and other stream crossings shall be constructed, and existing culverts, bridges and other stream crossings determined to pose a substantial risk to riparian conditions will be improved, to accommodate at least the 100-year flood, including associated bedload and debris. Priority for upgrading will be based on the potential impact and the ecological value of the riparian resources affected. Crossings will be constructed and maintained to prevent diversion of streamflow out of the channel and down the road in the event of crossing failure.

5. Minimize sediment delivery to streams from roads. Outsloping of the roadway surface is preferred, except in cases where outsloping would increase sediment delivery to streams or where outsloping is not feasible or unsafe. Route road drainage away from potentially unstable channels, fills, and hillslopes.

6. Provide and maintain fish passage at all road crossings of existing and potential fish-bearing streams.

7. Develop and implement a Road Management Plan or a Transportation Management Plan that will meet the Aquatic Conservation Strategy objectives. As a minimum, this plan shall include provisions for the following activities:

   a. inspections and maintenance during storm events.

   b. inspections and maintenance after storm events.

   c. road operation and maintenance, giving high priority to identifying and correcting road drainage problems that contribute to degrading riparian resources.

   d. traffic regulation during wet periods to prevent damage to riparian resources.

   e. establish the purpose of each road by developing the Road Management Objective.

### Watershed and Habitat Restoration

1. Design and implement watershed restoration projects in a manner that promotes long-term ecological integrity of ecosystems, conserves the genetic integrity of native species, and attains Aquatic Conservation Strategy objectives.

2. Cooperate with federal, state, local, and tribal agencies, and private landowners to develop watershed-based Coordinated Resource Management Plans or other cooperative agreements to meet Aquatic Conservation Strategy objectives.

3. Do not use mitigation or planned restoration as a substitute for preventing habitat degradation.

## MANAGEMENT AREA 10 - SPECIAL INTEREST AREAS

These areas are set aside to manage for their unique ecological values for public use, education, and enjoyment. There are three botanical areas, one botanical/cultural area, one botanical/geologic area, one geologic area, and one ecological area within this management area.

**Botanical Areas:** Botanical areas are classified under 36 CFR 294.1 and managed to protect areas of the Forest with important botanical resources. These areas include some of the best examples of indigenous and sensitive plant concentrations, sensitive plant habitat, conifer diversity and unique plant communities on the

Forest. Detailed maps are on file in the Forest Supervisor's Office in Eureka.

**Geologic Areas:** The complex geologic history of the Forest has produced an equally complex distribution of interesting geologic materials and features, including bedrock structures and landforms. The goals and desired future conditions of geologic areas are similar to those of botanical areas.

## Goals

Manage to maintain ecological processes and the unique feature for which the area was designated.

Promote public use, education, interpretation, and enjoyment of the special interest values of the area when such activities do not harm the values for which the area was designated.

Special Interest Area management strategies will be developed as identified in Chapter 5 of this plan. These management strategies will identify the botanical, ecological, geologic, and/or cultural attributes, environmental setting, threats and resource conflicts, restoration needs, access development, recreation opportunities, and monitoring elements for each area.

## Desired Condition

The desired condition for these areas is that natural processes—biological and geophysical—will prevail and natural elements of the area will be maintained or enhanced where appropriate. Few signs of management activities will be present, other than to provide public access and accommodations. Educational or interpretive information on the ecological or scenic values of the area will be provided.

## Standards and Guidelines

### Fire/Fuels

Fire is considered an ecological process operating within SIAs. Due to practices of fire suppression, it is likely that fuel loads are artificially high in some areas. There is interest in using prescribed fire to reduce the build-up of fuels with the hope of restoring a more "natural" set of conditions through which a fire might burn. Therefore, a modified suppression policy may not be beneficial to the area. If a wildfire does begin within the boundaries of a SIA, the need for suppression might depend on the fire intensity, the location of the area on the landscape, the past and projected weather, and the proximity of the area to lands managed for other uses (timber, wildlife habitat areas, private lands). A fuel model could be developed which would define fire behavior parameters, which in turn would define the need for fire suppression.

1. Prescribed fire may be utilized as a management tool to restore a fire regime appropriate to the area.

2. Fires occurring in the vicinity of SIAs at flame lengths less than four feet may be confined or contained. Consideration shall be given to the establishment of fuel breaks along the borders of the areas to prevent the spread of fire off-site.

3. If fire suppression is needed within SIAs, it shall be accomplished with minimum ground and vegetative disturbance. Incident bases shall be located outside the SIA boundary.

4. Fire rehabilitation plans shall consider: (a) reliance on germination of seed stored in the soil surface (the seed bank) instead of active revegetation; and (b) the use of non-vegetative means of erosion control or non-persistent non-native seed until local plant material can be collected and/or propagated.

### Fisheries, Wildlife, Watershed Management

In most cases, resource projects with the objective of enhancing the biological components or restoring the physical processes of an area are most appropriate within SIAs. Opportunities exist to correct erosion problems along access routes and restore riparian/wetland areas. Habitat enhancement and watershed projects must be consistent with SIA goals and objectives.

1. Permit habitat enhancement projects which are consistent with restoring the natural components and/or processes of SIAs.

2. The use of native plant species shall be required for any project where revegetation is necessary. Plants used in revegetation shall either be grown from seed or cuttings, or shall be taken from

transplants from within the area. The Forest Botanist can assist in identifying a local, native seed source. If necessary, certified weed-free straw, rice straw, or other medium demonstrated to reduce the potential of contamination by exotic seed shall be required for erosion control.

3. Adverse impacts to riparian/wetland areas shall be mitigated through educational means, barrier placement, fencing, or access closure.

## Minerals

1. SIAs will be evaluated for withdrawal from mineral entry consistent with standard 16-7 in the Minerals section of this chapter.

2. If mining is proposed, any botanical survey needed to complete a biological evaluation (whether by forest personnel or consultant) must meet standards outlined in the Forest Service Handbook (FSH 2609.25).

3. Require a plan of operations for mineral operations within a designated SIA; notices of intent for mineral operations under 36 CFR 228 will not constitute authorization to operate within a SIA.

4. Require a reclamation plan and reclamation bond or financial guarantee adequate to carry out that plan for activities authorized within a SIA. Plans will provide for reshaping to original topography and restoring vegetation with native species collected from the area. Plans and bonds or guarantees shall be adequate to cover more than one attempt at revegetation and follow-up monitoring for 5 years after initial revegetation.

## Pest Management

1. No management action should be taken against endemic insects or forest pathogens unless it can be determined that their occurrence has been exacerbated by human activities or spread would significantly compromise the integrity of the SIA.

2. In order to reduce the spread of Port-Orford-cedar root disease, a risk analysis will be completed for all projects (see 20-7) in watersheds containing Port-Orford-cedar.

3. Access and/or projects proposed in uninfected watersheds which have potential risk for infection shall have a risk analysis performed.

## Recreation

Recreation opportunities exist within the SIA but shall be secondary to managing for the botanical, ecological, and/or geologic features of the area. Education and interpretation shall be the focus of recreational use and should be encouraged to the extent that the special values of the areas are not compromised.

1. The Recreation Opportunity Spectrum (ROS) classes provided within these areas include roaded natural, semi-primitive motorized and semi-primitive non-motorized. Opportunities exist to manage portions of the areas as semi-primitive non-motorized to avoid resource conflicts.

2. When issuing special use permits for organized events, primary consideration will be given to the botanical, ecological, geologic, and/or cultural values of the area.

3. Due to the threat of introduction of non-natives to the area and the potential for resource damage, pack animals shall be restricted to designated access routes in some areas and prohibited in others.

4. Primitive camping is permitted in designated areas. Campsites will be located to minimize adverse impacts. Impacts associated with heavy visitor use may warrant site closure for camping or the development of appropriate support facilities.

5. Recreational access will be determined on an area-by-area basis.

6. The use of sites within SIAs as shooting ranges shall be discouraged.

## Timber and other Forest Products

Given the primary objectives for establishing SIAs, extracting trees for commercial purposes is not appropriate within SIAs.

1. Timber harvesting shall not be programmed within SIAs. Salvage logging and firewood cutting (commercial and individual use) are also prohibited.

2. Trees felled for safety reasons, access development, or sensitive plant management shall be permitted; however, felled trees shall remain in place or be relocated within the area. Exceptions to this policy might include catastrophic events which kill a large number of trees.

3. Christmas tree cutting is not compatible with the management direction for SIAs.

4. Collection of plant material (beargrass, florist greenery) for personal or commercial use is not compatible with the management direction for SIAs. In regard to the collection of plants for Native American use, see standards and guidelines under the Threatened, Endangered, and Sensitive Plant Management section of this chapter.

## Transportation and Facilities

Given the objective of managing for the naturalness of the SIAs, development of facilities will be kept to a minimum. If it is determined that sanitary facilities, picnic areas and parking spaces are needed or appropriated, they shall be located without disturbing the special features of the areas. The design of any development shall be in keeping with the naturalness of the areas, for example, the use of wood material instead of metal or plastic. Facilities development and the identification of access routes shall be identified in the management plan for each area.

1. Use of native plant species shall be required for any facility management where revegetation is required. Plants used in revegetation shall either be grown from seed or cuttings or shall be taken from transplants from within the area. The Forest Botanist can assist in identifying a local, native seed source. If necessary, certified weed-free straw, rice straw, or other medium demonstrated to reduce the potential of contamination by exotic seed shall be required for erosion control.

2. Development of water and rock sources, stockpiling of rock materials and water sources within the areas are not compatible with the management direction for SIAs.

3. Roads exist within all of the Botanical Areas except
Myrtle Creek. These roads are open for public access and will be maintained to minimize resource damage. Roads which are identified as contributing to resource damage shall be repaired to mitigate the problem, closed on a seasonal or year-round basis, or decommissioned. The course of action will depend on the severity of the resource problem and the potential for continued damage (see also standard and guideline 7 below regarding the North Fork Smith River).

4. Consider existing routes (old roads, trails) within the areas for designation as multiple-use routes where possible and appropriate. If identified as appropriate during SIA recreation planning, use existing routes for public access. Construct new routes as necessary to direct use so as not to impact sensitive areas and/or to encourage access to areas with interpretive values.

5. Level 2 road (maintained for high-clearance vehicles) maintenance plans that involve ground-disturbing activities (brushing, mowing, culvert removal or reconstruction, etc.) and uprooting vegetation require a sensitive plant report prior to starting activities. No report is needed for maintenance associated with the road-bed surface (e.g. removal of down vegetation or rocks, limbing encroaching brush and trees from the tread), or cleaning debris from culverts and waterbars.

6. In some cases, roads accessing the areas are a County responsibility. Coordination between the District and the appropriate County contact should be encouraged to prevent any resource damage which might occur as a result of using the County roads.

7. To prevent the introduction of Port-Orford-cedar root disease into uninfested areas of the North Fork Smith River Botanical Area, close Road 18N13 to vehicle access. Vehicle access into remaining areas (Road 18N09 and associated spur roads) is prohibited pursuant to 36 CFR 261.50; the prohibition exempts officials pursuant to 36 CFR 261.50(d)(4) and persons with a permit, special-use authorization, or operating plan, as defined in 36 CFR 261.2, issued by the District Ranger or higher-ranked authorized official. Access shall not be allowed during the wet season and during periods of heavy rain in the summer. If monitoring determines that these measures are not effective, additional mitigation measures will be considered and analyzed.

### Visual Resources

1. Visual management shall meet or exceed the inventoried VQOs of the specific areas.

## MANAGEMENT AREA 11 - SPECIAL REGENERATION

Some areas of the Forest meet all National Forest management area criteria for timber suitability, but would require extremely high investments for successful regeneration within five years of harvest. These are areas with 8" to 24" of rock on the surface, but good soil below the rock, or areas with relatively low conifer productivity that support dense stands of mature hardwoods. Low productivity sites, including ultramafic soils with poor conifer stocking, make up a large part of this management area.

In the Forest data base, areas coded “soil groups 4 and 5” with poor conifer stocking were included in this management area.

### Goals

There will be no regulated timber management within this management area unless further environmental analyses determine that specific areas are capable of timber production.

Site specific evaluation will indicate which areas with low site productivity or areas with extremely rocky surfaces are suitable for investment of funds to produce timber products using silvicultural prescription 3. Those areas that are entered for timber management purposes will be regenerated with conifer species suitable for the site and capable of surviving in the harsh conditions present. The prescription should take into account regeneration sources, pest damage, current and potential stand growth/yield and regeneration costs.

### Desired Condition

Special regeneration areas will be primarily influenced by ecological processes. Those areas capable of producing forest products will be managed at rates which are sustainable given their harsh conditions and soil properties. Experimental treatments will be used on occasion to explore productivity-enhancing prescriptions.

### Standards and Guidelines

### Pest Management

1. In order to reduce the spread of Port-Orford-cedar root disease, a risk analysis will be completed for all projects (see 20-7) in watersheds containing Port-Orford-cedar.

### Recreation

1. Same as for general forest management area.

### Timber Management

1. If specific areas are determined capable, available and suitable for timber management, longer regeneration periods, longer harvest entry cycles and natural regeneration will generally be emphasized (silvicultural strategies 3 and 4, see the vegetation management section of this chapter).

2. Minimum stocking levels will be determined on a site-by-site basis considering site potential, current stocking and economics.

### Visual Resources

1. Manage to meet VQO of partial retention. However, this area consists of small parcels scattered throughout the Forest. Therefore, these parcels will more practically assume the VQO of the adjacent management areas.

### Wildlife Resource Management

1. Manage area consistent with the retention standards for vegetation management (see the vegetation management section of this chapter).

2. Maintain snags and logs to meet the vegetation management standards or, if the site will not permit these standards, to the extent possible given site limitations.

## MANAGEMENT AREA 12 - SCENIC RIVER

This management area includes segments of the Trinity and Smith Rivers and adjacent corridors of land classified as "scenic" under the National Wild and Scenic Rivers Act of 1968 and designated by the Secretary of the Interior on January 19, 1981. Scenic rivers have high scenic quality and largely undeveloped shoreline, and are free of impoundments and accessible in places by roads. The basic distinctions between a "wild" and a "scenic" river area are degree of development, type of land use and road accessibility. This management direction applies to the corridors on each side of scenic river segments, except those small parcels of National Forest System land that contain encroachments or are interspersed with mineral patents and that may qualify for sale, interchange, or exchange under the Small Tracts Act and implementing regulations. Management area boundaries and direction are identified in the South Fork Trinity Wild and Scenic River Management Plan for the scenic segments of the Trinity River, and in the Smith River NRA Act for the scenic segments of the Smith River.

This area is located within the matrix; all matrix standards and guidelines apply in this area. Timber management within this management area will use silvicultural strategy 3.

Newly identified encroached areas and mineral fractions within this management area will be evaluated concurrently for exclusion from the management area and Small Tracts Act conveyance. Evaluation will include a consideration of the history of the area's use and management, the values for which the designated scenic river was established and is managed, and the effects on those values of conveying the lands out of federal ownership. The Plan may be amended to exclude encroached parcels and mineral fractions from the management area when conveying them out of federal ownership would not adversely affect the integrity of the management area. Private lands within the management area that are offered in exchange or interchange, under the STA, for federal lands within the Wild and Scenic Rivers System will be evaluated for inclusion in the management area. The Plan may be amended to include within the management area parcels of private land offered in exchange or interchange for encroached parcels when such parcels would maintain or enhance the integrity of the area.

### Goals

The goal is to maintain and enhance the outstandingly remarkable values for which the rivers are designated, and provide recreational opportunities that do not adversely impact or degrade those values. Preserve the rivers and their immediate environment in a predominately natural setting for the benefit and enjoyment of present and future generations.

### Desired Condition

Scenic river segments will appear to be in a natural forest condition as seen from the river. The river area will appear largely primitive, and shorelines will be largely undeveloped. Shorelines should not show substantial evidence of human activity, although some

discernible developments may be present. Recreational users will occasionally meet other individuals.

## Standards and Guidelines

### Minerals Management

1. Mineral activity will be conducted in a manner that minimizes surface disturbance, sedimentation, pollution and visual impairment. Surface use on new and existing mining claims will conform to regulations of the Secretary of Agriculture.

### Pest Management

1. In order to reduce the spread of Port-Orford-cedar root disease, a risk analysis will be completed for all projects (see 20-7) in watersheds containing Port-Orford-cedar.

### Range Management

1. Grazing management will be consistent with scenic river values.

### Recreation

1. Maintain existing ROS class of semi-primitive non-motorized and semi-primitive motorized. Larger scale public use facilities, such as moderate size campgrounds, public information centers, and administrative headquarters are allowed if such structures will be visually screened from the river.

### Timber Management

1. Lands considered suitable for timber harvest may be harvested subject to meeting the visual quality objective of retention and other goals of the management area.

### Transportation and Facilities Management

1. All water supply dams and major diversions are prohibited. Minor natural-looking diversion facilities that provide water for livestock or human use will not adversely impact the scenic river values.

2. Development of hydroelectric power facilities is prohibited.

3. Flood control dams and levees are prohibited.

4. Any use of rip-rap along the riverbanks should meet the VQO of retention.

5. Roads may occasionally bridge the river area. Short stretches of conspicuous roads and longer stretches of inconspicuous roads are allowed within the river corridor.

6. Public use facilities are allowed if screened from the river. However, new structures that would have a direct and adverse effect on river values are not allowed.

### Visual Resources

1. Management activities within scenic river corridors should meet retention VQOs.

2. Middleground areas visible from the scenic river corridor should be managed to meet partial retention VQOs.

### Wildlife Resource Management

1. Manage area consistent with the vegetation management standards and guidelines in this chapter.

## MANAGEMENT AREA 13 - RETENTION VISUAL QUALITY OBJECTIVE

"Retention" areas on the Forest are located primarily within the foreground of State Highways 36, 96, 199, and 299. There are also lands managed for retention VQOs in other areas. Viewsheds with a VQO of retention will have a natural appearance as seen from the viewing location. Although the quality of scenery from the viewing locations may be affected by activities on private lands, the direction for the management area applies only to National Forest lands.

Most management activities are acceptable, considered on a project-by-project basis, and would be designed according to the retention objectives of the visual management system. The overall character of the landscape in a retention area may change over time, but individual and cumulative project effects should not dominate the viewed landscape.

This area is located within the matrix; all matrix standards and guidelines apply in this area. Timber management within this management area will use silvicultural strategy 3.

### Goals

The primary goal is to maintain the area in a natural or near-natural appearing condition. Manage human activities so they are subordinate to the characteristic landscape. Also manage human activities so they are not evident to the casual Forest visitor. Manage for a programmed, sustained harvest of wood products in areas that are timber-suited.

### Desired Condition

The signs of management activities will not be apparent in areas managed to meet retention VQOs. Views from visually important roads and trails will appear forested and provide a natural or near-natural appearance. Management activities will not be visually evident to the average visitor to the area.

Vegetative or ground-disturbing management activities will repeat the representative characteristics of the landscape and will not dominate the visual character of the viewed landscape.

### Standards and Guidelines

### Pest Management

1. In order to reduce the spread of Port-Orford-cedar root disease, a risk analysis will be completed for all projects (see 20-7) in watersheds containing Port-Orford-cedar.

### Recreation

1. Recreation facilities should emulate the colors, textures, and forms of the surrounding landscape as much as practical and remain visually subordinate to the landscape.

2. Maintain existing ROS classes.

### Timber Management

1. Timber harvest may occur in retention areas to create visual diversity and enhance the visual resource. Silvicultural methods will include salvage, individual tree selection, small shelterwood units, and group selection. Regeneration harvests will be less than 5 acres. Where visually evident from a view point, stumps will be flush-cut. Slash will be cleaned up and areas with evidence of equipment operation will be rehabilitated to a natural state.

### Transportation and Facilities Management

1. Roads should conform to topographic features. Minimum impact roads should be constructed where feasible. Road cutbanks will be shaped to blend with natural features.

## MANAGEMENT AREA 14 - MANAGED HABITAT

The Managed Habitat Management Area is intended to protect and enhance habitat for a broad range of species dependent on structural features common to late-successional and old-growth vegetation through the context of vegetation management compatible with timber outputs. This management area consists of three components: (1) a block of designated habitat for late-successional species, particularly the marten, in a gap along South Fork Mountain between several large Late-Successional Reserves; (2) Managed Late-Successional Areas that were designated in the FSEIS ROD based on protection buffers for specific endemic species identified by the Scientific Assessment Team (SAT) (1993); and (3) travel and ecological corridors outside riparian reserves, where necessary.

The large late-successional reserves and other reserved areas are designated to provide well-distributed habitat of sufficient size and spacing to support subpopulations for mature and old-growth associated species. These large reserves are expected to support successful breeding pairs of most emphasis wildlife species. The habitat areas in this management area were established to encourage movement between reserves, protect species that may not receive adequate protection through the reserve system, and facilitate dispersal into potentially vacant habitat.

Riparian reserves provide the foundation for both travel and ecological or connectivity corridors. These areas are located along perennial and intermittent streams and around lakes, ponds and wetlands. There are some areas where additional connectivity (corridors) are needed outside the riparian reserves: for example, travel corridors are needed in saddles to facilitate wildlife dispersal among watersheds; and ecological corridors may be needed to fill in gaps in the riparian reserve system between large reserve blocks. These ecological corridors are intended to prevent possible isolation of sub-populations and allow for the genetic exchange within populations of wildlife species with limited mobility. Ecological corridors are composed primarily of mature forest stands exhibiting old-growth structural features to the extent the landscape allows. The actual location of travel or ecological corridors outside riparian reserves will be determined through landscape-level analyses. These corridors will be managed using silvicultural strategy 5 to maintain desired corridor structure and ensure that suitable habitat is maintained through time.

Timber management within the South Fork Mountain habitat area will use silvicultural strategy 5; timber management within the protection buffers for the *Sarcosoma mexicana* and Del Norte salamander will follow the direction outlined below.

The *Sarcosoma mexicana* (fungus) and Del Norte salamander are likely to be assured viability if they occur within designated areas. However, there might be occupied locations outside these areas that will be important to protect as well. When located, the occupied sites need to be protected as described in the standards and guidelines below.

This area is located within the matrix; all matrix standards and guidelines apply in this area.

## Goals

Within the South Fork Mountain managed habitat area, manage habitat attributes, compatible with ecological processes, to provide moderate to high quality habitat conditions for the marten and other species dependent on late-successional and old-growth forests and provide for dispersal among LSRs on the Six Rivers and Shasta-Trinity National Forests.

Provide travel and ecological corridors as needed outside riparian reserves. Use landscape-level analyses to determine where these corridors are needed. Silvicultural strategies within the corridors will maintain desired corridor structure and ensure that suitable habitat is maintained through time.

Established protocols will be used to ensure a high likelihood of locating occupied sites for the Del Norte salamander and the *Sarcosoma mexicana*, and such surveys will be conducted prior to ground-disturbing activities within the known or suspected ranges and within the habitat types or vegetation communities occupied by these species, according to the implementation schedule for Survey and Manage components 1, 2, 3, and/or 4 in the Forest-wide standards and guidelines.

## Desired Condition

Habitat within the South Fork Mountain managed habitat area will be multi-layered stands of mid- to late-successional stages to provide for the needs of the marten and other species. Large snags and down logs will be available for denning and resting cover and for prey species habitat. Silvicultural strategies will maintain and enhance desired stand structural components.

Cool, moist conditions and microclimate features will be maintained within protection buffers for the Del Norte salamander through canopy closures of 40 percent or greater.

Within protection buffers for the *Sarcosoma mexicana*, the duff and litter layers will be deep to provide habitat for this species.

Travel and ecological corridors outside riparian reserves will be dense forest to provide travel habitat. Signs of vegetative management might be noticeable, but will not occur as large openings.

## Standards and Guidelines

### Amphibian Management

1. Del Norte Salamander - This species occurs in talus slopes protected by overstory canopy that maintains cool, moist conditions on the ground. The species is a slope-valley inhabitant, and sometimes occurs in high numbers near riparian areas. Riparian Reserves, in combination with Late-Successional Reserves and other reserves, will offer some protection to the species, but significant numbers also occur in upland areas. Additional mitigation options in this upland matrix include identifying locations (talus areas inhabited by the species) by using a standardized survey protocol, then protecting the location from ground-disturbing activities. Designate a buffer of at least the height of one site-potential tree or 100-feet horizontal distance, whichever is greater, surrounding the location. Within the site and its surrounding buffer, maintain 40 percent canopy closure and avoid any activities that would directly disrupt the surface talus layer. Partial harvest within the buffer may be possible if 40 percent canopy closure can be maintained; in such cases, tree harvest must be conducted using helicopters or high-lead cable systems to avoid compaction or other disturbance of talus. The implementation schedule for this species is the same as for survey and manage components 1 and 2.

### Fire/Fuels Management

1. Proposed fuels treatment will be designed to protect and maintain special habitat components, such as snags, down woody debris and hardwoods at levels identified in the vegetation management section of this chapter. Contingency plans to protect these areas during wildfire suppression activities should be developed and available to fire management personnel. Particularly critical are habitat areas designated for threatened and endangered species.

### Minerals Management

1. Operational plans, including habitat restoration measures, must be completed prior to any activities. Restrictions on noise disturbing activities (dredging, blasting, etc.) are listed in the Forest-wide standards and guidelines for Wildlife at the end of this chapter.

### Nonvascular Plant Management

1. *Sarcosoma mexicana* (Fungus) - This mushroom occurs in deep conifer litter layers in older forests. It is uncommon to rare and is found in the California, Oregon and Washington Coast Ranges into British Columbia. Mitigation activities include surveying for locations and protecting deep litter layers of older forests where found. Defer prescribed burning of understory or other activities which would not retain a deep litter layer. The implementation schedule for this species is the same as for survey and manage component 3.

For this plant, it is recommended that regional and state ecologists or botanists should: (1) maintain a spatially explicit data base of all known sites in National Forests and BLM Districts, and (2) develop species or area management plans, to be implemented under the guidance of the regional botany programs.

### Pest Management

1. In order to reduce the spread of Port-Orford-cedar root disease, a risk analysis will be completed for all projects (see 20-7) in watersheds containing Port-Orford-cedar.

### Recreation

1. New developed recreation sites may be permitted if no detrimental impacts to the three management indicator species occur.

2. For that portion of this management area managed for ROS class semi-primitive non-motorized, the following direction would apply:

    a) Most roads would be closed to public motorized use. Administrative use would not be prohibited.

    b) Motorized and mechanical equipment would be used for resource management.

    c) Access for prior permitted use would continue.

    d) These areas would meet retention and partial retention VQOs.

    e) Semi-primitive recreation opportunities would be provided; facilities for the convenience of the user would not be provided; use levels would be low.

3. For that portion of this management area managed for ROS Class semi-primitive motorized, the following direction applies:

    a) OHV use would be restricted to designated routes. Road and trail density would be at low to moderate levels.

    b) High standard roads would not occur. Traffic service level 1 or 2 roads would occur.

    c) These areas would meet the retention or partial retention VQOs, with small amounts of maximum modification.

## Timber Management

1. Timber harvest prescriptions in managed habitat will be consistent with the objectives established for each designated area to achieve moderate to high capability habitat or maintain the desired structure of ecological and travel corridors.

2. Management within an active ecological corridor that will change its structure, so as to impair its wildlife function, may occur only when effective replacement habitat is available.

3. Harvest prescriptions will be designed to create, maintain, or enhance habitat for the species of concern.

4. Firewood gathering intensity will be consistent with wildlife objectives.

## Transportation and Facilities Management

1. Eliminate or minimize disturbance to breeding animals from vehicle traffic in the locations and during the dates listed under the wildlife resource management section of this chapter. Vehicle use includes automobile, snowmobile, and all terrain vehicle traffic on all roads and trails.

2. Minimize the mileage of open roads.

3. Roads not providing a primary travel access should be closed, if possible, as soon after use as practicable. Existing roads not serving as a main system access route should be closed (gated or barricaded) to nonessential traffic.

### Visual Resources

1. Manage to meet partial retention VQOs with small amounts of modification.

## MANAGEMENT AREA 15 - RECREATIONAL RIVER

This management area includes segments of the Klamath, Trinity, and Smith Rivers and adjacent corridors of land classified as "recreational" by the National Wild and Scenic Rivers Act of 1968, designated by the Secretary of the Interior on January 19, 1981, as well as changes made as a result of the creation of the SRNRA. The recreational classification applies to those river segments which are readily accessible by public roads and have experienced substantial human modification to the scenery.

Generally, this management area excludes those small parcels of National Forest System land that contain encroachments or are interspersed with mineral patents and that may qualify for sale, interchange, or exchange under the Small Tracts Act and implementing regulations. Many segments of these river corridors will appear essentially natural as seen from the river. Natural character will be prevalent within riparian reserve management areas that extend outward from each side of the river. Management activities, including timber harvesting, may be evident at some locations, but within the foreground view, these activities will meet the partial retention VQO and will remain visually subordinate to the characteristic landscape. Recreational use is expected to increase and may trigger future restrictions to protect recreation river values in some sections of the recreational river segments. More specific information on the desired future conditions of these river segments will be developed within the individual river management plans.

The corridor boundaries and management direction for the recreational segments of the Smith River were designated in the Smith River NRA Act. Corridor widths and management direction for the South Fork Trinity River were designated in the Lower South Fork Trinity Wild and Scenic River Management Plan. Corridor widths for the remaining recreational river segments on the Klamath and Trinity Rivers have been delineated to follow the riparian reserve management area boundaries, as those rivers were designated for their outstanding anadromous fisheries values.

Newly identified encroached areas and mineral fractions within this management area will be evaluated concurrently for exclusion from the management area and Small Tracts Act conveyance. Evaluation will include a consideration of the history of the area's use and management, the values for which the designated recreational river was established and is managed, and the effects on those values of conveying the lands out of federal ownership. The Plan may be amended to exclude encroached parcels and mineral fractions from the management area when conveying them out of federal ownership would not adversely affect the integrity of the management area. Private lands within the management area that are offered in exchange or interchange, under the STA, for federal lands within the Wild and Scenic Rivers System will be evaluated for inclusion in the management area. The Plan may be amended to include within the management area parcels of private land offered in exchange or interchange for encroached parcels when such parcels would maintain or enhance the integrity of the area.

This area is located within the matrix; all matrix standards and guidelines apply in this area. Timber management within this management area would use silvicultural strategy 5.

### Goals

Protect the recreational rivers and their immediate environments for the benefit and enjoyment of present and future generations. Maintain and enhance the outstandingly remarkable values for which the rivers are designated, while providing for public recreational and resource uses that do not adversely impact or degrade those values. Manage recreational activities to assure that the character and quality of recreational

use will not cause adverse impacts of the resource values for which the rivers were designated.

### Desired Condition

Recreational river waterways should remain generally natural and riverine in appearance. The river area may be developed for a range of agricultural and forestry practices, and may include some residential, commercial or similar development. Portions of recreational river corridors within the riparian reserve management area will be managed consistent with the management goals and desired condition of the riparian reserves.

### Standards and Guidelines

### Fire and Fuels Management

1. All wildfires occurring in this management area will be treated under the control strategy. Suppression techniques will maintain the natural character of the management area to the extent possible.

### Geology, Soils and Watershed Management

1. Water supply dams and major diversions will not be permitted. Minor diversion facilities that provide water for livestock, wildlife or human use may be allowed if they have a natural appearance and do not adversely affect recreation river values.

### Minerals

1. Mineral activity will be conducted in a manner that minimizes surface disturbance, sedimentation, pollution and visual impairment. Surface use on new and existing mining claims will conform to regulations of the Secretary of Agriculture.

### Pest Management

1. In order to reduce the spread of Port-Orford-cedar root disease, a risk analysis will be completed for all projects (see 20-7) in watersheds containing Port-Orford-cedar.

### Recreation

1. Manage for ROS classes of roaded natural, semi-primitive motorized, and semi-primitive non-motorized. Campgrounds and picnic areas may be established in close proximity to the river.

### Timber

1. Timber management activities will be consistent with the recreation emphases of these segments.

### Transportation and Facilities Management

1. Roads and trails may be constructed. Bridge crossings and numerous river access points may occur.

2. New flood control structures are prohibited. No new development of hydroelectric power facilities is allowed. New structures are allowed for both habitation and for intensive recreation.

### Visual Resources

1. Manage to achieve a VQO of partial retention within the recreational river corridor and in middleground areas visible from the recreational river corridor.

### Wildlife Resource Management

2. Where timber harvest occurs, retain the components described in the vegetation management section of this chapter.

## MANAGEMENT AREA 16 - PARTIAL RETENTION VISUAL QUALITY OBJECTIVE

These areas are typically middleground and background viewing areas as seen from highly sensitive viewing areas, or are foreground areas as seen from moderately sensitive viewing locations such as county roads, streams, or trails.

Most management activities are acceptable, considered on a project-by-project basis, and should be designed to meet the partial retention objectives of the visual management system. The overall character of the landscape in a partial retention area may change over

time, but individual and cumulative project effects should not dominate the viewed landscape.

This management area is located within the matrix; all standards and guidelines for matrix management apply in this area. Timber management in this management area will use silvicultural strategy 5.

### Goals

Maintain the area in a near-natural appearing condition. Provide an attractive, forested landscape where management activities remain visually subordinate to the character of the landscape. Manage human activities so they are subordinate to the character of the landscape. Manage for a programmed, sustained harvest of forest products in areas that are timber-suited.

### Desired Condition

Viewsheds with a VQO of partial retention will have a near-natural or natural appearance as seen from sensitive viewing locations. The visual effects of management activities will remain subordinate to the character of the landscape.

### Standards and Guidelines

### Fire/Fuels Management

1. All wildfires occurring in the management areas will be treated under the control strategy. Suppression techniques will maintain a near natural character of the management area to the extent possible.

### Pest Management

1. In order to reduce the spread of Port-Orford-cedar root disease, a risk analysis will be completed for all projects (see 20-7) in watersheds containing Port-Orford-cedar.

### Recreation

1. Recreation facilities should emulate the colors, textures, and forms of the surrounding landscape as much as practical and remain visually subordinate to the landscape.

2. Manage to ROS classes of rural, roaded natural, semi-primitive motorized, and semi-primitive non-motorized.

### Timber Management

1. Timber harvest may occur in partial retention areas. A wide range of silvicultural methods may be used. Regeneration harvests will be shaped to appear as natural openings common to the characteristic landscape. Individual trees and clumps of trees will be left to reduce the visual contrast of the harvest activities. Harvest activities may be visually apparent to the Forest visitor but would not dominate the viewed landscape. Generally a near natural-to natural landscape would appear.

### Transportation and Facilities Management

1. Roads should conform to topographic features; minimum impact roads should be constructed where feasible. Road cutbanks will be shaped to blend with natural features.

2. Most facilities could occur if designed to reduce apparent contrast with the natural landscape.

### Wildlife Resource Management

1. Fish and wildlife habitat improvement projects should be allowed if compatible with meeting the partial retention VQO.

## MANAGEMENT AREA 17 - GENERAL FOREST

This management area includes forested land where commercial timber management will occur. All of these lands are within the Forest matrix and AMA. Timber harvesting can be scheduled on lands identified as suitable throughout this management area. Silvicultural activities include timber harvest, reforestation, conifer release, precommercial thinning and forest pest management. A relatively small proportion of the General Forest is allocated for other uses such as developed campgrounds, roads, cultural sites, and administrative sites, with a portion classified as unsuitable for timber production. The location of general forest areas are displayed on Map B (PRF).

### Goals

The primary goal(s) are to produce a sustained yield of timber, contribute younger seral stages to the overall vegetation mosaic of the forest, and conserve key components of functional habitat for mature and old-growth associated species. The general forest management area will be managed using a variety of silvicultural strategies designed to maintain the range of stand conditions typical of the plant associations and disturbance regimes found on the Forest. Forest stands of all ages will be managed to have a multi-storied structure. Both even-aged and uneven-aged systems shall be utilized. On upper and mid-slopes, where high intensity fires are most frequent, even-age systems would predominate. Lower on the slope, where high intensity fires are less frequent and smaller scale disturbance have a greater influence on stand development, a combination of even and uneven-age systems would be utilized.

Regenerated areas should generally range from 5 to 30 acres in size, but may be extended to 40 acres in the mixed conifer vegetation type and 60 acres in the Douglas-fir type. Selection of stands for regeneration will be determined by an analysis of the amount and distribution of seral stages, as well as present and future wildlife habitat needs, conifer stocking and stand vigor. Thinning, group selection or individual tree selection will be used to accelerate the development of stand characteristics and species diversity desirable for wildlife species, increase timber growth and production, and provide species and structural diversity. To accommodate the thinning and uneven-age management regime, total road densities may increase slightly in certain parts of this management area. However, the potential cumulative adverse effects of this increase would be offset by the closing of new and existing roads not serving other resource functions, reducing the overall open road density relative to current conditions.

### Desired Condition

The general forest management area will be a mosaic of forested stands comprised of a variety of vegetative species. The composition and structure of individual stands will vary depending on vegetative series and seral stage development. In some areas, the conifer component will be sparse due to vegetative manipulations designed to mimic natural disturbances and openings. Other areas will consist of mature forest stands with many components of late-successional and old-growth stands.

### Standards and Guidelines

### Fire/Fuels Management

1. Wildfires will be suppressed. Management related fuels will be treated so as to be consistent with wildlife habitat needs as described in Forest-wide Standards and Guidelines.

### Geology, Soils, and Watershed Management

1. Design management operations to maintain the existing productivity of the site.

2. Design and implement best management practices to meet State water quality criteria.

### Pest Management

1. In order to reduce the spread of Port-Orford-cedar root disease, a risk analysis will be completed for all projects (see 20-7) in watersheds containing Port-Orford-cedar.

### Recreation

1. Manage for ROS classes of rural, semi-primitive motorized, semi-primitive non-motorized, and roaded natural.

### Timber Management

1. Silvicultural prescriptions shall follow the Forest-wide standards and guidelines for vegetation management and matrix lands as described in this chapter.

### Visual Resources

1. Manage to meet partial retention VQOs, with a small amount of modification.

### Wildlife Resource Management

1. Manage this area to be consistent with the retention standards in the vegetation management section of this chapter.

2. Maintain snags and logs consistent with the standards and guidelines described in the vegetation section of this chapter.

3. Use riparian reserves as the foundation for travel and ecological or connectivity corridors containing functional habitat between designated wildlife habitat areas and over ridges between watersheds. These corridors will provide for interior habitat not influenced by edge effects. Corridors will be located by identifying specific connection points between designated habitat areas; the path of the functional corridor will be established following on-site review. Open road densities within corridors will be reduced to minimize wildlife disturbance.

## HAYFORK ADAPTIVE MANAGEMENT AREA

The information in this section was taken from FSEIS ROD pages D-1 to D-17 except as noted otherwise.

The Hayfork Adaptive Management Area is comprised of 488,500 acres in northwestern California, and is administered by the Six Rivers and Shasta Trinity National Forests and the Yreka District Bureau of Land Management; it also potentially includes private and state lands. The communities associated with the Adaptive Management Area are the town of Hayfork, and Trinity and Humboldt Counties. It is a landscape unit designated to encourage the development and testing of technical and social approaches to achieving desired ecological, economic, and other social objectives. The emphasis of the Hayfork Adaptive Management Area is the development, testing, and application of forest management practices, including partial cutting, prescribed burning, and low-impact approaches to forest harvest, which provide for a broad range of forest values, including commercial timber production and provision of late-successional and high quality riparian habitat. Identified Late-Successional Reserves will be maintained. Full watershed analysis will be conducted in critical watersheds.

The overall objective for the Hayfork Adaptive Management Area is to learn how to manage on an ecosystem basis in terms of both technical and social challenges, and in a manner consistent with applicable laws. It is hoped that localized, idiosyncratic approaches that may achieve the conservation objectives of these standards and guidelines can be pursued. These approaches rely on the experience and ingenuity of resource managers and communities rather than traditionally derived and tightly prescriptive approaches that are generally applied in management of forests.

The Hayfork Adaptive Management Area is intended to contribute substantially to the achievement of objectives for the FSEIS ROD standards and guidelines. This includes provision of well-distributed late-successional habitat outside of reserves, retention of key structural elements of late-successional forests on lands subjected to regeneration harvest, and restoration and protection of riparian zones as well as provision of a stable timber supply.

### TECHNICAL OBJECTIVES

The Hayfork Adaptive Management Area has scientific and technical innovation and experimentation as objectives. The guiding principle is to allow freedom in forest management approaches to encourage innovation in achieving the goals of these standards and guidelines. This challenge includes active involvement by the land management and regulatory agencies early in the planning process.

The primary technical objectives of the Adaptive Management Areas are development, demonstration, implementation, and evaluation of monitoring programs and innovative management practices that integrate ecological and economic values. Experiments, including some of large scale, are likely.

Demonstrations and pilot projects alone, while perhaps significant, useful, and encouraged in some circumstances, may not be sufficient to achieve the objectives.

Technical topics requiring demonstration or investigation are a priority for the Hayfork Adaptive Management Area and cover a wide spectrum, from the welfare of organisms to ecosystems to landscapes. Included are development, demonstration, and testing of techniques for:

Creation and maintenance of a variety of forest structural conditions including late-successional forest conditions and desired riparian habitat conditions.

Integration of timber production with maintenance or restoration of fisheries habitat and water quality.

Restoration of structural complexity and biological diversity in forests and streams that have been degraded by past management activities and natural events.

Integration of the habitat needs of wildlife (particularly of sensitive and threatened species) with timber management.

Development of logging and transportation systems with low impact on soil stability and water quality.

Design and testing of effects of forest management activities at the landscape level.

Restoration and maintenance of forest health using controlled fire and silvicultural approaches.

The Hayfork Adaptive Management Area will have an interdisciplinary technical advisory panel, including specialists from outside government agencies, that will provide advice and support to managers and local communities involved with this effort.

## SOCIAL OBJECTIVES

The primary social objective of the Hayfork Adaptive Management Area is the provision of flexible experimentation with policies and management. This area should provide opportunities for land managing and regulatory agencies, other government entities, nongovernmental organizations, local groups, landowners, communities, and citizens to work together to develop innovative management approaches. Broadly, the Hayfork Adaptive Management Area is intended to be a prototype of how forest communities might be sustained.

Innovative approaches include social learning and adaptation, which depend upon local communities having sufficient political capacity, economic resources, and technical expertise to be full participants in ecosystem management. Similarly, management will need to be coordinated and characterized by collaboration across political jurisdictions and diverse ownerships. This will require mediating across interests and disciplines, strengthening local political capability, and enhancing access to technical expertise. Adaptive management is, by definition, information dependent. Setting objectives, developing management guidelines, educating and training a workforce, organizing interactive planning and management institutions, and monitoring accomplishments all require reliable, current inventories. New information technologies can be used to provide such information. Local people might be ideally suited to this task if appropriately trained.

## AGENCY APPROACHES AND MANAGEMENT REVIEW

Agencies are expected to jointly develop plans for the Hayfork Adaptive Management Area. Development of a broad plan that identifies general objectives and roles, and provides flexibility should be the goal. Such a plan could be used in competing for financial resources, garnering political support, providing a shared vision, and identifying experiences to be tracked.

If the Hayfork Adaptive Management Area is to make timely contributions to the objectives of the FSEIS ROD standards and guidelines, it is absolutely critical that initiation of activities not be delayed by requirements for comprehensive plans or consensus documents beyond those required to meet existing legal requirements for activities. Development of such documents can proceed simultaneously with other activities. The management direction and standards and guidelines in this Forest Plan can provide the

starting point for activities. Initial involvement of user groups and communities would emphasize how the strategy and plans should be implemented.

Initial direction and continuing review should be provided by the Regional Interagency Executive Committee. It is important that the interagency coordination involve both the regulatory and management agencies, and that the regulatory agencies participate in planning and regular review processes.

## ADAPTIVE MANAGEMENT AREA IMPLEMENTATION GUIDELINES

### Role of Agencies

The Forest and other agencies will facilitate collaborative efforts, partnerships, mutual learning and innovation. They will provide staff work to the process of managing the Adaptive Management Areas. This could include providing meeting places, meeting facilitation, and expert analysis. Agency scientists are expected to provide scientific design of monitoring and experiments, though the decision is reserved for the federal land manager.

Although the agencies have a facilitation role, the land management agencies retain the authority and responsibility to make decisions and the regulatory agencies retain the authority and responsibility to regulate. Nothing in these guidelines is intended to change those authorities or responsibilities.

### Local Communities

Specific community roles with public agencies and subject matter experts (such as the technical advisory panels) will include helping find innovative ways to set objectives, develop plans, implement projects, and monitor accomplishments. For example, Subtitle G of the 1990 Farm Bill gives criteria to identify "natural resource dependent communities" which may be used if appropriate when identifying local communities.

### Participation in Adaptive Management Areas

Although the emphasis is on the participation of people who are actively involved with that geographic location, nothing in these guidelines should be construed to suggest that the interests of people living outside "local communities" should not be considered in making agency decisions. Participation will be self identifying, to the extent possible. Experiments to address how this might happen are encouraged.

### Project Development and Implementation

Specific project planning must:

* Involve the public early
* Coordinate with overall activities within the province
* Begin some projects as soon as practicable to respond to and facilitate public interest and involvement
* Begin some projects prior to completing an entire watershed analysis
* Begin watershed analysis as soon as possible
* Develop early plans and projects with the best available information
* Identify needs for improved inventory
* Proceed simultaneously with activities and Adaptive Management Area planning
* Assign priority status to watershed restoration projects that can be completed quickly
* Begin projects in nonsensitive sections of the Adaptive Management Area

### Plans

All Adaptive Management Areas will have a plan. An individual public, interagency approach to planning will be developed for each Adaptive Management Area. The plan should address or provide:

* A shared vision of the Adaptive Management Area, (e.g., the kind of knowledge the participants hope to gain). Identification of the desired future conditions may be developed in collaboration with communities, depending on the area.
* Learning that includes social and political knowledge, not just biological and physical information.

* A strategy to guide implementation, restoration, monitoring and experimental activities.
* A short-term (3 to 5 year) timber sale plan and long-term yield projections.
* Education of participants.
* A list of communities influenced by the Adaptive Management Area projects and outputs.
* An inventory of community strategies, and resources and partners being used.
* Coordination with overall activities within the province.
* A funding strategy.
* Integration of the community strategies and technical objectives.

### Review

Monitoring and research, with careful experimental design, will be conducted in Adaptive Management Areas. Research in forest ecology and management as well as social, biological, and earth sciences may be conducted. Each Adaptive Management Area will have an interdisciplinary technical advisory panel that will provide advice to managers and the local communities involved with this effort. The technical advisory panels will provide advice and information on the appropriateness of the project.

Direction and review are provided by the Regional Interagency Executive Committee, through the Regional Ecosystem Office. This review will help assure that plans and projects developed for the various Adaptive Management Areas will be both scientifically and ecologically credible. It will assure that new, innovative approaches are used, that the laws and the goals of the plan are met, and that validation monitoring is incorporated.

The Regional Ecosystem Office will facilitate and coordinate the implementation of the Adaptive Management Area program. Federal agencies are expected to use the Adaptive Management Areas to explore new ways of working internally and externally.

### Legal

All activities must comply with existing laws such as Endangered Species Act, National Environmental Policy Act, National Forest Management Act, Forest Land Policy and Management Act, Federal Advisory Committee Act, National Historic Preservation Act, Clean Water Act, Clean Air Act, and treaty rights. Management and regulatory agencies should work together to determine ways to expedite management while ensuring compliance, to improve cooperation through planning and on-the-ground consultation, and to avoid confrontation.

## FIRE AND FUELS MANAGEMENT

In the Hayfork Adaptive Management Area, fire managers are encouraged to actively explore and support opportunities to research the role and effects of fire management on ecosystem functions. Cooperation across agency and ownership boundaries should be emphasized. The standards and guidelines in this Forest Plan should be followed until an approved Adaptive Management Area plan is established. Fire management experts will participate on the local Interdisciplinary Technical Advisory Panel for the Adaptive Management Area. Management of the Hayfork Adaptive Management Area is intended to be innovative and experimental. Wildfire suppression actions, however, should use accepted strategies and tactics, and conform with specific agency policy.

## TIMBER SUPPLY

The Hayfork Adaptive Management Area is expected to produce timber as part of its program of activities consistent with the specific direction under these standards and guidelines. The rates and methods of harvest will be determined on an area-by-area basis. Each area management team is expected to develop a strategy for ecosystem management as part of the Adaptive Management Area plan to guide implementation, restoration, monitoring, and experimental activities involving timber sales. The strategy should contain a short-term (3 to 5 year) timber sale component and an assessment of long-term outputs of timber.

## EDUCATION

Technical and scientific training of a local workforce should be an educational priority of the Adaptive Management Area Program. Formal schooling and field apprenticeship might provide the workforce needed to help implement ecosystem management, particularly in the area of monitoring. This program might be based on collaborations among local community colleges, state universities, and the agencies.

## STANDARDS AND GUIDELINES

Late-Successional Reserves within the Hayfork Adaptive Management Area will be managed according to the standards and guidelines for such reserves except as provided elsewhere in this section. Management of these areas will comply with the standards and guidelines for Late-Successional Reserves, and management around these areas will be designed to reduce risk of natural disturbances. Unmapped Late-Successional Reserves are specified for certain Protection Buffers (see the Special Habitat Management Area management direction)

Riparian protection in the Hayfork Adaptive Management Area should be comparable to that prescribed for other federal land areas. For example, the South Fork Trinity and Pilot Creek Key Watersheds with aquatic conservation emphasis within the Hayfork Adaptive Management Area must have a full watershed analysis and initial Riparian Reserves comparable to those for Tier 1 Key Watersheds. Riparian objectives (in terms of ecological functions) in other portions of the Hayfork Adaptive Management Area should have expectations comparable to Tier 2 Key Watersheds where applicable. However, flexibility is provided to achieve these conditions, if desired, in a manner different from that prescribed for other areas and to conduct bonafide research projects within riparian zones.

At the same time, any analysis of Riparian Reserve widths must also consider the contribution of these reserves to other, including terrestrial, species. Watershed analysis should take into account all species that were intended to be benefited by the prescribed Riparian Reserve widths. Those species include fish, mollusks, amphibians, lichens, fungi, bryophytes, vascular plants, American marten, red tree voles, bats, marbled murrelets, and northern spotted owls. The specific issue for spotted owls is retention of adequate habitat conditions for dispersal.

Standards and guidelines for matrix management in the Forest-wide Vegetation Management section of this chapter (there is no matrix in Adaptive Management Areas) provide specific measures for coarse woody debris, and for green tree and snag retention, for the matrix. The intent of the measures must also be met in Adaptive Management Areas, but specific standards and guidelines are not prescribed for these areas.

### Bats

Provide additional protection for caves, mines, and abandoned wooden bridges and buildings that are used as roost sites for bats.

Most bat species occurring in the Pacific Northwest roost and hibernate in crevices in protected sites. Suitable roost sites and hibernacula, however, fall within a narrow range of temperature and moisture conditions. Sites commonly used by bats include caves, mines, snags and decadent trees, wooden bridges, and old buildings. Additional provisions for the retention of large snags and decadent trees are included in the standard and guideline for green tree patches in the matrix. Caves, mines, and abandoned wooden bridges and buildings, however, are extremely important roost and hibernation sites, and require additional protection to ensure that their value as habitat is maintained.

This provision is intended to apply in matrix forests and the Hayfork Adaptive Management Area, and elements such as protection of known occupied caves should be considered for other land allocations. Conduct surveys of crevices in caves, mines, and

abandoned wooden bridges and buildings for the presence of roosting bats, including fringed myotis, silver-haired bats, long-eared myotis, long-legged myotis, and pallid bats. For the purposes of this standard and guideline, caves are defined as in the Federal Cave Resources Protection Act of 1988 as "any naturally occurring void, cavity, recess, or system of interconnected passages which occur beneath the surface of the earth or within a cliff or ledge ( . . . but not including any . . . man-made excavation) and which is large enough to permit an individual to enter, whether or not the entrance is naturally formed or man-made." Searches should be conducted during the day in the summer (to locate day roosts and maternity colonies), at night during the late summer and fall (to locate night roosts, which are important for reproduction), and during the day in the winter (to locate hibernacula). If bats are found, identify the species using the site and determine for what purpose it is being used by bats. As an interim measure, timber harvest is prohibited within 250 feet of sites containing bats. Management standards and guidelines that may be included as mitigation measures in project or activity plans will be developed for the site. These standards will be developed following an inventory and mapping of resources. The purpose of the standards and guidelines will be protection of the site from destruction, vandalism, disturbance from road construction or blasting, or any other activity that could change cave or mine temperatures or drainage patterns. The size of the buffer, and types of activities allowed within the buffer, may be modified through the standards developed for the specific site. Retention of abandoned bridges or buildings must be made contingent on safety concerns.

Townsend's big-eared bats are of concern to state wildlife agencies. These bats are strongly associated with caves, and are extremely sensitive to disturbance, especially from recreational cavers. When Townsend's big-eared bats are found occupying caves or mines on federal land, the appropriate agency should be notified, and management prescriptions for that site should include special consideration for potential impacts on this species.

## Soil and Litter Disturbance

Modify site treatment practices, particularly the use of fire and pesticides, and modify harvest methods to minimize soil and litter disturbance.

Many species of soil and litter-dwelling organisms, such as fungi and arthropods, are sensitive to soil and litter disturbance. Site treatments should be prescribed which will minimize intensive burning, unless appropriate for certain specific habitats, communities or stand conditions. Prescribed fires should be planned to minimize the consumption of litter and coarse woody debris. Other aspects to this standard and guideline include minimizing soil and litter disturbance that may occur as a result of yarding and operation of heavy equipment, and reducing the intensity and frequency of site treatments. Soil compaction, and removal or disturbance of humus layers and coarse woody debris, may impact populations of fungi and arthropods. These provisions are intended to apply throughout the matrix forests and within the Hayfork Adaptive Management Area.

## Old-Growth Fragments

Provide for old-growth fragments in watersheds where little remains.

Matrix standards and guidelines in the Forest-wide Vegetation Management section of this chapter specify retention of old-growth fragments in fifth field watersheds containing less than 15 percent of such stands. In the Hayfork Adaptive Management Area, less than 15 percent of fifth field watershed in late-successional forest should be considered as a threshold for analysis rather than a strict standard and guideline, and the role of remaining stands of late-successional forests must be fully considered in watershed analysis before they can be modified.

## Hierarchy of Standards and Guidelines

In summary, management activities in the Hayfork Adaptive Management Area will be conducted to achieve the objectives described in these standards and guidelines. Standards and guidelines for Congressionally Reserved Areas or Late-Successional Reserves must be followed when they occur within the Hayfork Adaptive Management Area. Flexibility is provided to meet objectives for Riparian Reserves and Key Watersheds. Full watershed analysis will be conducted prior to new management activities in identified Key Watersheds within the Hayfork Adaptive Management Area. The standards and guidelines in this Plan need to be considered during

planning and implementation of activities within the Hayfork Adaptive Management Area, and they may be modified in the Hayfork Adaptive Management Area plan based on site-specific analysis. Otherwise, standards and guidelines are to be developed to meet the objectives of the Hayfork Adaptive Management Area and the overall strategy. Coordination with the Regional Ecosystem Office through the Regional Interagency Executive Committee is required.

Adaptive Management Areas would contribute to accomplishing the objectives of the FSEIS ROD standards and guidelines, such as protection or enhancement of riparian habitat and provision for well-distributed late-successional forest habitat. Detailed prescriptions for achieving such objectives are not provided, however, in order to permit managers to develop and test alternative approaches applicable to their areas and in a manner consistent with existing environmental and other laws.

# RESOURCE GOALS, DIRECTION, AND FOREST-WIDE STANDARDS AND GUIDELINES

## INTRODUCTION

This section is organized alphabetically by resource and presents the goals, direction, and Forest-wide standards and guidelines for each resource. The **goal** statements provide the management intent for the resource. The **direction** for each resource describes the activities necessary to produce the outputs displayed in Table IV-2 as well as reach other objectives identified in this chapter. The Forest-wide **standards and guidelines** are applied across all management areas to set the minimum or maximum level for implementation within which management practices will be carried out to achieve the goals and direction. Even though standards differ from guidelines by definition, they are considered equally important in project planning and implementation. Standards are identified by the word “will” and are baseline criteria for measuring quality or quantity of the action. Guidelines use the word “should” and identify a desirable level of attainment. Deviation from either a standard or a guideline at the project level requires a Forest Plan amendment. The following standards and guidelines represent the best current practices and technology available for meeting the goals and direction of each resource area and the requirements of NFMA. As discussed in Chapter 2 of the FEIS, standards and guidelines can and will be

revised when new information determines that they are not adequate to guide implementation of on-the-ground activities consistent with resource protection goals. Chapter 5 of this plan outlines the role of the monitoring process in determining adequacy of standards and guidelines.

# PHYSICAL ENVIRONMENT

## GEOLOGY, SOIL, AND WATERSHED MANAGEMENT

### Goals

The primary management goal is maintenance of long-term soil productivity and high water quality.

Identify geologic hazards and minimize the impacts from management activities on streams and facilities.

Plan and conduct all forest management activities to maintain existing water quality or, where degraded, restore water quality to meet State water quality standards for the North Coast Region.

Maintain the integrity of watersheds and riparian ecosystems, including riparian zones, for the protection or enhancement of riparian-dependent resources.

### Direction

Manage soil and water resources to protect and enhance long-term productivity of the forest, water quality, associated beneficial uses, and aquatic ecosystems.

Where applicable and practical, restore the productive capacity of soils damaged by past events. Soil is a fundamental, largely nonrenewable resource that is the basis for high-level sustained yields of all other resources.

Program emphasis is to avoid or mitigate the impacts of management activities on slope instability, water quality and soil productivity.

Refine and update Soil Resource Inventory information as part of the coordinated resource inventory process. Lands classified unsuitable for timber production due to marginal reforestation prospects or potential for loss of soil productivity will be identified and removed from the timber base.

Identify watershed improvement needs to be included on the Forest's Watershed Improvement Needs Inventory. Prioritize projects based on severity, needs, effects on beneficial uses, and potential for recovery.

Design all resource management activities to meet State water quality criteria. Best Management Practices will be applied in planning, implementation and maintenance of all Forest activities as means to achieve water quality standards. Proper installation, operation and maintenance of State approved BMPs are presumed to meet the manager's obligation for compliance with applicable water quality standards as well as compliance with the Clean Water Act (EPA, Water Quality Standards Handbook, Chapter 2. 1987/ MAA with SWRCB 1981.)

Assessments of the cumulative effects of project level activities on soil and water resources will be provided during project analysis at whatever level of analysis is necessary (site, watershed, or basin).

### Standards and Guidelines

### Soil Productivity

1-1 Implement Forest soil quality standards as described in Appendix L.

1-2 For each timber harvest unit, soil porosity will be maintained to at least 90 percent of its natural condition over at least 85 percent of the project area.

1-3 Where soils are susceptible to compaction, actions will be required to mitigate or avoid compaction (such as breaking up the skid trails with rippers during the dry season, skidding over slash, or limiting the number of trips to two to three).

1-4 Tractor skid trails should be limited to 15 percent of the harvest area.

1-5 Mechanical slash piling will be limited to normal operating season, unless a special prescription is developed.

Standards and guidelines 1-1 thru 1-5 relate to soil productivity in forest and range production areas. They do not apply to lands dedicated to other uses, such as administrative sites or transportation system roads. They identify points at which further alteration of soil properties could result in significant change or impairment in the productive capacity of the soil, and techniques to maintain soil productivity.

### Soil Erosion and Mass Movement

1-6 The potential for increased mass movement and soil erosion will be addressed for proposed timber harvest and road building. Landslide hazard maps and a risk assessment should be developed for timber harvest planning. Alternate road specifications or road locations should be evaluated where proposed management would increase the potential for mass movement and soil erosion.

1-7 Roads, landings, and timber harvest units will be located and designed to avoid triggering or accelerating mass movements that would adversely affect a stream or degrade a commercial growing site by removing a substantial volume of topsoil.

1-8 Tractors will be limited to slopes of 35 percent or less in order to minimize soil disturbance and subsequent erosion. (Other factors important in determining tractor verses cable/aerial yarding are topography, soil erodability, soil stability, cost, and the existing road location and potential roading needs.)

### Water Quality and Cumulative Watershed Effects

## VEGETATION MANAGEMENT

### Goals

Manage vegetation to maintain biological diversity at all physiographic scales. A combination of management strategies in both reserved and matrix areas shall provide a range of ecological conditions, meet a variety of resource objectives, and provide a continuous supply of forest products.

Vegetation across the Forest shall be managed to reflect the range of conditions characteristic of recent, historic vegetation patterns and disturbance regimes. A mix of different aged stands will occur across the Forest in proportion to the mix which appears to have existed in the past few centuries. Large and small patches of young stands will be created through wildfire, timber harvest, landslides and other disturbance. Older stands will be maintained and generated through natural succession, small scale disturbance, silvicultural treatment, fuels treatment, and fire suppression.

Conservation of late-successional vegetation is emphasized to provide essential habitat for species dependent on these forest conditions. The spatial and temporal distribution of old-growth stands throughout the landscape is an important component of ecosystem diversity. The long term goal of reducing fragmentation in late-successional forests is intended to create a contiguous forested landscape which provides well-distributed, functional habitat for late-successional forest related species, such that their populations remain viable and persist over time.

### Direction

The amount and distribution of seral stages across the Forest indicate that the rate of stand replacing disturbance events has varied in the past from north to south (refer to the Biological Diversity section of FEIS Chapter 3). Current data suggests that there are three different disturbance zones across the Forest. The northern zone is 471,670 acres and encompasses lands north and west of the Klamath river. All of the Smith River NRA and approximately half of the Orleans Ranger District are within this zone. The middle zone is 256,000 acres and includes lands south of the Klamath river to Last Chance and Whiting Ridges. This zone includes the southern portion of the Orleans Ranger District and all of the Lower Trinity Ranger District. The southern zone, which is 230,810 acres,

encompasses the entire Mad River Ranger District and includes lands south of Whiting and Last Chance Ridge to the southern boundary of the Forest.

Table IV-7 displays an estimated range of seral stages likely to have existed in the past few centuries. These numbers do not reflect the impacts of timber harvest. The relative proportion of seral stages in these three zones varies as differences in past climatic conditions, human and natural caused fires, and fire suppression have varied. In each of these three zones, the Forest will be managed to provide a mix of different aged stands within a subset of the historic range of variability (HRV). Providing for a mix of seral stages which is similar to that which has occurred in the recent past should maintain the ecological processes and conditions needed to help sustain plants, animals and other organisms which currently reside on the Forest. The recommended management range (RMR) depicted in Table IV-7 is a subset of the HRV; the RMR was established to manage for healthy, sustainable ecosystems that mimic natural processes and functions. The criteria used to develop the RMR include the following:

1. Current climatic conditions are relatively moist compared to historic conditions. Based on the moist climate and current disturbance regimes, there is an increased capability to maintain more acres in late seral stages and fewer acres in early seral stages.

2. The current management emphasis is to maintain habitat for late-successional and old-growth forest related species to buffer against unpredictable high intensity fire events.

3. The Forest is proposing a fuels reduction program to reduce the risk of high intensity stand replacing wildfire. The Forest will also continue to suppress wildfires in many areas of the Forest.

Maintaining the range of the RMR towards the upper end of the HRV in later seral stages provides a buffer against unpredictable high intensity stand replacing wildfire events. If such events occur, there is less risk of exceeding the HRV than there would be if the RMR for later seral stages was towards the lower end of the HRV. These RMRs are adjustable based on shifts in climate and should be reviewed each decade for possible changes.

The Forest will manage to be within the RMRs listed in Table IV-7 for each vegetation series on a landscape scale. Smaller scales (such as sub-watersheds) within each zone may not be within the RMR; however, the objective is to meet the RMR in each zone.

Within individual watersheds, vegetation shall be managed to provide the diversity of stand structures and species composition characteristic of the vegetation type, slope position, disturbance regime, past stand history and desired management objective. On the portion of matrix and AMA lands that are suitable for timber production, vegetation objectives include timber and other commodity production. On reserved lands and lands unsuitable for timber management, vegetation management activities would be designed to meet other resource objectives.

The number and distribution of snags and logs per acre will vary across the Forest, but overall would strive to maintain the range currently found on mature and old-growth stands on the Forest. Within a watershed, snag and log numbers will vary depending on the mix of seral stages, vegetation series, and topographic features present. The desired range may be increased in some areas to meet wildlife habitat needs or decreased in areas where fire hazard or human safety concerns exist.

Vegetation will continue to be shaped by large and small scale disturbance events throughout the Forest. Vegetation management activities should be aimed at reducing the impact of disturbance where it is likely to jeopardize management objectives.

Both the matrix and the Hayfork AMA contain lands that are not capable, available, and suitable for timber production; these lands include nonforested areas and forested areas that are technically unsuitable for timber production, and therefore do not contribute to ASQ. The intent of the measures outlined below must be met in the Hayfork AMA, but specific standards and guidelines are not prescribed for the AMA.

## Direction for lands where timber management is an objective:

Matrix objectives for silviculture should include: (1) production of commercial yields of wood, including those species such as Pacific yew that require extended rotations, (2) retention of moderate levels of ecologically valuable old-growth components such as snags, logs, and relatively large green trees, and (3) increasing ecological diversity by providing early-successional habitat.

**Table IV-7 Recommended Management Range (RMR), Historic Range of Variability (HRV) by Zone, Vegetation Series, and Seral Stage from 1790-1990, Existing Conditions (EC), and 1990 Pre-logging Condition (PR).**

| Series/ Seral stage | North Zone | | | | Central Zone | | | | South Zone | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | HRV% | RMR% | EX% | PR% | HRV% | RMR% | EX% | PR% | HRV% | RMR% | EX% | PR% |
| **Tanoak** | | | | | | | | | | | | |
| Early Mature | 9-25 | 9-17 | 25 | 25 | 11-18 | 11-14 | 11 | 11 | 12-36 | 24-32 | 15 | 15 |
| Mid Mature | 2-23 | 10-20 | 23 | 23 | 11-19 | 12-17 | 19 | 18 | 8-36 | 22-32 | 36 | 36 |
| Late Mature | 2-13 | 7-13 | 2 | 2 | 9-19 | 14-19 | 11 | 15 | 5-19 | 12-19 | 19 | 19 |
| Old Growth | 29-48 | 38-48 | 25 | 48 | 22-50 | 36-50 | 19 | 50 | 21-29 | 24-29 | 18 | 29 |
| **Douglas-fir** | | | | | | | | | | | | |
| Early Mature | 7-23 | 7-15 | 19 | 19 | 13-23 | 13-18 | 22 | 22 | 16-40 | 16-35 | 32 | 35 |
| Mid Mature | 2-29 | 5-24 | 29 | 29 | 10-27 | 12-20 | 27 | 27 | 7-40 | 23-35 | 37 | 40 |
| Late Mature | 2-16 | 9-16 | 2 | 2 | 9-14 | 12-14 | 11 | 12 | 2-14 | 9-14 | 14 | 14 |
| Old Growth | 27-45 | 36-45 | 37 | 45 | 22-34 | 28-34 | 26 | 34 | 7-20 | 11-20 | 7 | 8 |
| **White Fir** | | | | | | | | | | | | |
| Early Mature | 13-34 | 13-23 | 34 | 34 | 15-23 | 15-19 | 23 | 23 | 18-36 | 18-23 | 30 | 35 |
| Mid Mature | 3-20 | 8-16 | 20 | 20 | 11-20 | 14-18 | 20 | 20 | 8-35 | 20-30 | 32 | 35 |
| Late Mature | 1-12 | 6-12 | 1 | 1 | 8-16 | 12-16 | 15 | 15 | 4-13 | 9-13 | 13 | 13 |
| Old Growth | 23-31 | 27-31 | 29 | 31 | 30-41 | 35-41 | 31 | 41 | 8-11 | 8-11 | 11 | 11 |
| **Red Fir** | | | | | | | | | | | | |
| Early Mature | 14-40 | 14-27 | 40 | 40 | | | | | | | | |
| Mid Mature | 3-26 | 7-20 | 26 | 26 | | | | | | | | |
| Late Mature | 1-10 | 5-10 | 1 | 1 | | | | | | | | |
| Old Growth | 14-18 | 14-18 | 17 | 17 | | | | | | | | |

Note: The ranges and existing condition are expressed as percentages of the vegetation series in each seral stage within each of the three zones. See the Biological Diversity section of FEIS Chapter 3 for a description of specific vegetation series and seral stages.

Stands in the matrix can be managed for timber and other commodity production, and to perform an important role in maintaining biodiversity. Silvicultural treatments of forest stands in the matrix can provide for retention of old-growth ecosystem components such as large green trees, snags and down logs, and depending on site and forest type, can provide for a diversity of species. Retention of green trees following timber harvest in the matrix provides a legacy that bridges past and future forests. Retaining green trees serves several important functions including snag recruitment, promoting multistoried canopies, and providing shade and suitable habitat for many organisms in the matrix.

Retaining green trees of various sizes, ages, and species, in well-distributed patches as well as dispersed individuals, will promote species diversity. These trees may also act as refugia or centers of dispersal for many organisms including plants, fungi, lichens, small vertebrates, and arthropods. Patches of trees may provide protection for special microsites

such as seeps, wetlands, or rocky outcrops. Trees retained within the Riparian Reserves can contribute to overall retention objectives, but will generally not be sufficiently dispersed across the landscape to fully satisfy these objectives. Diversity of tree structure should be considered when selecting trees for retention. Complex canopy structure and especially leaning boles are beneficial for some lichens. Trees that are asymmetrical provide a diversity of habitat substrates, and often have more lichen and moss epiphytes on large lateral limbs than symmetrical trees. Location of green trees is also important (e.g., ridgelines are optimal locations for lichen dispersal).

Coarse woody debris is essential for many species of vascular plants, fungi, liverworts, mosses, lichens, arthropods, salamanders, reptiles and small mammals. Because of drier microclimates, logs in the matrix may be occupied by species different from those found on coarse woody debris in late-successional forests. However, these logs may provide transitional islands for the maintenance and eventual recovery of some late-successional organisms in the matrix.

Adequate numbers of large snags and green trees are especially critical for bats because these trees are used for maternity roosts, temporary night roosts, day roosts, and hibernacula. Large snags and green trees should be well distributed throughout the matrix because bats compete with primary excavators and other species that use cavities. Day and night roosts are often located at different sites, and migrating bats may roost under bark in small groups. Thermal stability within a roost site is important for bats, and large snags and green trees provide that stability. Individual bat colonies may use several roosts during a season as temperature and weather conditions change. Large, down logs with loose bark may also be used by some bats for roosting. *(last 5 paragraphs from FSEIS ROD pages B-5 to B-7)

Silvicultural systems within the matrix contribute to management of the Late-Successional Reserves. Fire and fuels management in the matrix can reduce the risk of fire and other large-scale disturbances that would jeopardize the reserves. Harvesting trees immediately adjacent to Late-Successional Reserves may result in increased wind damage along boundaries. In such cases, “feathering” stands within harvest units may be appropriate to reduce this risk. Local expertise will be essential in designing meaningful strategies for wind protection. *(FSEIS ROD page B-8)

The distribution of old-growth stands throughout the landscape is an important component of ecosystem diversity, and plays a significant role in providing for biological and structural diversity across the landscape. Isolated remnant old-growth patches are ecologically significant in functioning as refugia for a host of old-growth associated species, particularly those with limited dispersal capabilities that are not able to migrate across large landscapes of younger stands. These include, but are not limited to, many species of fungi, lichens, bryophytes, arthropods, and vascular plants, and will likely include vertebrate species such as small mammals and amphibians, and various bird species. Isolated patches will function as refugia where old-growth associated species are able to persist until conditions become suitable for their dispersal into adjacent stands. Loss of these old-growth stands may result in local extirpation of an array of species. It is prudent to retain what little remains of this age class within landscape areas where it is currently very limited. This will ensure future options for management and enhancement of the diversity within adjacent developing stands. *(FSEIS ROD page C-44)

Vegetation management activities will be prescribed to establish and maintain a diversity of native plant species, and protect vegetation from undesirable loss from insects, disease, or plant competition. Vegetation will be managed to reduce risk of fire and other large-scale disturbances that would jeopardize reserve areas, or other resource management goals. Prescribed fire and commercial thinning will be utilized, to the extent practicable, to reduce fuel loading, control species composition and stand density.

### On lands not suitable for timber management:

A variety of activities including planting, seeding, thinning, creating snags, or the use of fire may be used, where standards and guidelines allow, to create desirable wildlife habitat, help maintain natural ecological processes and meet other resource objectives. Regeneration may occur in some of these areas but, with the possible exception of salvage operations after catastrophic events, would be minimal.

### Standards and Guidelines

Additional standards and guidelines for vegetation management are included in the Biological Diversity and specific management area sections of this chapter.

4-1 A variety of silvicultural prescriptions will be utilized to meet resource objectives. Both even and uneven-aged systems will be practiced.

4-2 Individual stand prescriptions will vary depending on resource objectives, current stand conditions, vegetation type, past stand history (including disturbance), and site potential.

4-3 Prescriptions will be designed to maintain or enhance native species diversity within stands. Structural components (canopy layers, tree sizes, spacing of trees, etc) will vary in different stands, but individual stands should collectively contribute to the overall diversity of the landscape.

4-4 For each zone and vegetation series, harvest prescriptions shall be implemented to create a seral stage distribution within the range of the recommended management variability (RMR) as depicted in Table IV-7. Stand regeneration may be utilized where these numbers indicate current conditions are in excess of the RMR. Stand regeneration should be limited in areas where current conditions are below the RMR. Intermediate harvesting and uneven age prescriptions should be implemented to accelerate stand growth from one seral stage to another, or to increase diversity within individual stands. For vegetation series not listed in Table IV-7, until further information can be gathered, silvicultural activities should be developed through interdisciplinary landscape analysis.

4-5 Silvicultural treatments shall be designed and implemented to minimize fragmentation of mature and old-growth habitat.

4-6 Forest stands shall be managed to provide a renewable supply of large snags and logs well distributed across the landscape in a manner that meets the needs of species and provides for ecological function *(FSEIS ROD page C-40).

Snags and logs will be retained at 80-100 percent of the average numbers found on mature and old-growth stands within the Forest. The numbers of snags and logs retained within a stand shall be determined by seral stage and vegetation series. Table IV-8 displays current data on snag and log numbers for the series found on the Forest. As more data is collected, this table will be revised. Where vegetation treatments occur (including timber harvest and prescribed burning) the actual number of snags and logs per acre will vary depending on wildlife habitat needs, fire hazard, or human safety. However, over any 40 acre contiguous area, the 80 to 100 percent objective shall be met. (Example: a 40 acre area in the tanoak vegetation series containing 10 acres of early mature and 30 acres of mid mature would need to have between 112 and 140 snags total after harvest of any part of the area.)

4-7 The number of snags and logs retained in regenerated stands shall be approximately equal to the number of snags and logs associated with the seral stage and vegetation series of the stand before harvest.

4-8 Down logs should be left within forest patches that are retained under green tree retention guidelines in order to provide the microclimate that is appropriate for organisms that use this substrate. *(FSEIS ROD page C-41)

4-9 Where economically feasible, the numbers of logs prescribed in Table IV-8 should be protected from burning. Where consumption of these logs is likely, consider alternative prescriptions which would allow for greater retention and protection of coarse woody debris.

4-10 Regeneration harvesting will be done only when knowledge and technology indicate that each area harvested can be adequately restocked within five years after harvest. All units where regeneration harvesting occurs shall be reforested.

4-11 The Chief's directive (June 4, 1992) on ecosystem mangement limits "clearcutting" to areas where it is essential to meet Forest Plan objectives. Clearcutting is permitted only when needed to:

a. establish, enhance or maintain habitat for endangered, threatened and sensitive species.

b. enhance wildlife habitat or water yield values, or to provide for recreation, scenic vistas, utility lines, road corridors, facility sites, reservoirs or similar development.

c. rehabilitate lands adversely impacted by events, such as fires, windstorms, insect or disease infestations.

d. preclude or minimize the occurrence of potentially adverse impacts from insect or disease infestations, windthrow, logging damage or other factors affecting forest health.

e. provide for the establishment and growth of desired trees or other vegetation species that are shade intolerant.

f. rehabilitate poorly stocked stands due to past management practices or natural events.

g. meet research needs.

**Table IV-8. Mean Snag and Log Densities**

| Vegetation Series/ Seral Stage | Number Plots | Snags/Acre Mean | Snags/Acre Std. Error | Logs/Acre Mean | Logs/Acre Std. Error |
|---|---|---|---|---|---|
| **Tanoak** | | | | | |
| Early Mature | 32 | 3.2 | 0.9 | 8.2 | 2.6 |
| Mid Mature | 19 | 3.6 | 1.1 | 4.7 | 1.9 |
| Late Mature | 33 | 1.3 | 0.4 | 1.8 | 0.7 |
| Old Growth | 218 | 4.3 | 0.3 | 9.2 | 0.8 |
| **White fir** | | | | | |
| Early Mature | 40 | 1.7 | 0.3 | 4.0 | 1.4 |
| Mid Mature | 79 | 5.2 | 0.6 | 5.3 | 1.3 |
| Late Mature | 73 | 7.6 | 0.8 | 11.0 | 1.5 |
| Old Growth | 230 | 5.9 | 0.3 | 13.5 | 0.9 |
| **Red fir** | | | | | |
| Early Mature | 7 | 4.6 | 2.5 | 6.3 | 3.8 |
| Mid Mature | 19 | 6.5 | 1.2 | 7.7 | 2.0 |
| Late Mature | 32 | 7.2 | 1.1 | 9.7 | 2.3 |
| Old Growth | 65 | 8.2 | 0.8 | 11.4 | 1.6 |
| **Douglas-fir** | | | | | |
| Early Mature | 13 | 3.7 | 1.5 | 16.0 | 8.0 |
| Mid Mature | 17 | 1.2 | 0.6 | 5.4 | 1.5 |
| Late Mature | 15 | 0.9 | 0.4 | 6.3 | 2.9 |
| Old Growth | 88 | 3.9 | 0.4 | 8.7 | 1.6 |

4-12 Pure hardwood stands (white oak and black oak) will not be converted to conifer stands.

4-13 Increased utilization of small conifer material and hardwoods is encouraged where it is consistent with the land management objectives for the area.

4-14 Management created vegetation openings should be representative of vegetation shapes and sizes within the landscape. Regeneration openings shall not exceed 40 acres in mixed conifer and 60 acres in Douglas-fir without 60 day public notice and review by the Regional Forester. Exceptions to this size limitation are permitted following fires, windstorms, or where widespread tree mortality has occurred from disease or insect attack.

4-15 Regeneration units are considered an opening until they become adequately stocked with trees 4 1/2 feet high. If units have less than 15% shared boundary, they are considered a separate forest opening.

4-16 Reforest after catastrophic disturbance where conifer stocking is needed to meet management direction and is unlikely to occur naturally within the desired timeframe.

4-17 Selection of vegetation management methods shall be based on a site-specific analysis.

Approved herbicides shall be used only if essential to meet land management objectives, when their use is consistent with the Biological Diversity standards and guidelines, and after a full range of alternative methods have been considered.

4-18 All vegetation management practices should be designed to maintain a healthy forest consistent with the management objectives for the area. Levels of acceptable mortality from disease, insects, fire or other biological or physical factors should be defined for project areas. Conditions that promote the introduction and spread of disease, increase the risk of insect attack, or promote fire risk outside of these acceptable levels should be avoided.

## The Following Standards and Guidelines Apply on Lands Where Timber Management is an Objective:

4-20 Harvest of scheduled timber should occur only on lands which are determined to be capable, available and suitable. The suitability of land for timber production would be field verified at the project level. Yields from suitable lands would be chargeable towards the allowable sale quantity (ASQ).

4-21 For regeneration units, retain the existing vegetation on at least 15 percent of the acreage associated with each cutting unit (stand). As a general guide, 70 percent of the total area to be retained should be aggregates of moderate to larger size (1/2 acre to 2.5 acres or more) with the remainder as dispersed structures (individual trees, and if possibly including smaller clumps less than 1/2 ac.) Larger aggregates may be particularly important where adjacent areas have little late-successional habitat. To the extent possible, patches, dispersed trees and snags should include the largest, oldest live trees, decadent or leaning trees, and hard snags occurring in the unit. Hardwood trees should be retained as part of this existing vegetation in proportion to their numbers in the uncut stand. Patches should be retained and managed into the future as part of the stand. *(FSEIS ROD pages C-41 to C-42)

4-22 Salvage harvesting shall be a priority in Matrix lands.

4-23 As a minimum, snags are to be retained within all harvest units at levels sufficient to support species of cavity-nesting birds at 40 percent of potential population levels based on published guidelines and models. The objective is to meet the 40 percent minimum standard throughout the matrix, with per-acre requirements met on average areas no larger than 40 acres. To the extent possible, snag management within harvest units should occur within the areas of green tree retention. The needs of bats should also be considered in these standards and guidelines as those needs become better known. Snag recruitment trees left to meet an identified, near-term (less than 3 decades) snag deficit do not count toward green-tree retention requirements. *(FSEIS ROD page C-42)

4-24 Coarse woody debris already on the ground should be retained and protected to the greatest extent possible from disturbance during treatment (e.g. slash burning and yarding) which might otherwise destroy the integrity of the substrate. *(FSEIS ROD page C-40).

4-25 Landscape areas where little late-successional forest persists should be managed to retain late-successional patches. This standard and guideline will apply in fifth field watersheds (20 to 200 square miles) in which Federal Forest lands are currently comprised of 15 percent or less late-successional forest. This assessment should include all allocations in the watershed. Within such an area, all remaining late-successional stands should be protected. Protection of these stands could be modified in the future, when other portions of the watershed have recovered to the point where they could replace the ecological roles of these stands. *(FSEIS ROD page C-44)

4-26 Achieve the following stocking of well distributed trees within five years of the final regeneration harvest, unless a silvicultural prescription documents different desired levels of conifer stocking.

| Forest Type | R-5 Site Class | Minimum TPA | Recommended TPA |
|---|---|---|---|
| Ponderosa & Jeffrey Pine | I | 150 | 200 |
| | II | 125 | 200 |
| | III | 100 | 150 |
| | IV | 75 | 125 |
| Red Fir & White Fir | All | 200 | 300 |
| Douglas-fir | All | 125 | 225 |

1-9 Best management practices (BMPs) will be implemented for land disturbing activities as means to achieve state water quality objectives. The specific techniques for applying BMPs will be determined on a site-specific basis during project-level environmental assessments. The BMPs will be incorporated into the implementation documents (BMPs are listed in Appendix M).

1-10 Analyses for assessing project level cumulative effects will consider the following: (1) adjacent private and public lands, (2) the sensitivity of the watershed and stream channel, (3) the beneficial uses of the water, (4) past impacts (both natural and activity caused), and (5) all proposed, and reasonable, foreseeable future activities in the watershed.

1-11 Cumulative impacts should be discussed and displayed in terms of the specific processes and the expected effect to the stream channel, water quality, and beneficial uses.

### AIR QUALITY

### Goal

To maintain air quality at acceptable levels for the protection and use of Forest resources and to meet applicable Federal and State standards and regulations.

### Direction

The adherence to sound smoke management principles is the key element in mitigating the impacts of smoke on air quality and air quality related values and health effects. Smoke management involves the concept of maintaining desired air quality by avoiding unacceptable combinations of concentration, duration, and dispersal of smoke. The central principle of smoke management is to promote dispersion of smoke and other pollutants that have the potential to cause health and visibility impacts. Fugitive dust abatement will occur when necessary to meet air quality standards. The Forest will coordinate with the appropriate air quality regulatory agencies during the planning and implementation of its resource management activities that affect air quality.

### Standards and Guidelines

2-1 National Forest activities will be designed and managed to maintain air quality at levels which meet State and/or local government standards and regulations.

2-2 Prescribed burning will only be conducted on "burn days" unless a special no-burn day permit is obtained from the North Coast Air Quality Management District.

2-3 Proper dust abatement measures will be taken prior to any activity that will result in the sustained generation of dust.

2-4 Prescribed burning activities will be coordinated with affected groups and agencies.

2-5 Prescribed burning operations will comply with the procedures specified in the Open Burning Regulations for California North Coast Air Basin.

2-6 The best available predictive methods and models and the most cost efficient technology will be utilized to minimize the impacts on human and biological health and visibility of prescribed burning on smoke sensitive areas and designated Federal Class I and II areas.

## BIOLOGICAL ENVIRONMENT

### BIOLOGICAL DIVERSITY

### Standards and Guidelines

3-1 Implement management actions in a manner that complements ecological processes and is within the historic range of variability of the Forest. The components, structure and processes within the ecosystem shall be managed in a manner to promote long-term sustainability.

3-2 Manage, restore, or recover ecosystems, as necessary, through project implementation.

3-3 Manage for biological diversity at the landscape and Forest levels. Manage unique habitats at the stand level; protect their existing micro-environments and the viability of dependent plant and animal species.

3-4 Monitor the diversity of plant and animal communities at a Forest-wide level. Stand and landscape-level parameters should be monitored

at a landscape level. Reductions or increases in a particular aspect of Forest diversity may be prescribed when needed to meet Forest objectives.

3-5 Coordinate proposed management actions within the Klamath and California Coast Range provinces to develop a coordinated management approach for species or communities that move across administrative boundaries. Assure that the most recent scientific information is available for use in project planning.

3-6 Manage for a distribution and abundance of plant and animal populations that contribute to healthy, viable populations of all native and desirable non-native species. Maintain desired populations throughout their historic range where feasible.

3-7 Management-created vegetation openings in a landscape should similate the vegetation pattern shapes and sizes within that landscape.

3-8 Where large blocks of a specific habitat type or seral stage are needed to maintain population viability of a species into the future, management activities that change the typical size and shape of the created opening may be implemented. When modifying the vegetation patterns, project planning shall consider the potential change to ecological processes and functions that would occur as a result of the management action.

3-9 All vegetation management practices should be designed to maintain a healthy forest. Conditions that promote the introduction and spread of disease, increase the risk of insect attack, or promote unacceptable fire risk should be avoided.

3-10 Landscape-level analyses shall assess the landscape in terms of current ecosystem components, structure and processes, how they have evolved through time and space, and implications for future management actions.

3-11 During project planning, consider the impacts to biological diversity parameters at the stand and landscape levels. The applicable aspects of components, structure and processes should be considered within each environmental document. Assess the potential changes to the following parameters that represent Forest diversity:

**1. Component Parameters**

a. The potential change in the vegetation (plant associations), wildlife or fisheries habitat.
b. The change in habitat condition or abundance for threatened, endangered, and sensitive species.
c. The potential change to species diversity and abundance. The Forest MIS/assemblages and changes in the amount of seral stages should be used to monitor the changes.
d. The genetic diversity of vegetation within the project area (see the Region 5 Base Level Genetics Program Standards).

**2. Structure Parameters**

a. The capability of species to move through or around an area (dispersal opportunities, habitat linkages, and population connectivity). Identify opportunities to maintain migration routes.
b. Horizontal (size and shape of openings or patches of vegetation) and vertical (number of understory and canopy layers, snag height, branching structure) vegetative patterns within the landscape and stand.
c. The connectivity of the landscape to allow for the dispersal of plants, animals, and other organisms.
d. The relative abundance and condition of stand structure attributes such as snags, canopy and understory plant communities, down woody material, and hardwood components within and across landscapes.
e. Age class and seral stage structure of the stand and landscape.

**3. Process Parameters**

a. The natural succession rates in the project area (where vegetative manipulations are occurring).
b. The natural/historic occurrence interval and magnitude of disturbances such as fire, windthrow, and pest infestations.
c. The site's ability to cycle nutrients and maintain site productivity.
d. The age, level, or structure of the hardwood component.

e. The past and present human-use patterns in the area.
f. The site's ability to retain nutrients in soil and plant and microbial biomass, both currently and following the project.
g. The site's ability to regenerate naturally (without management or inputs).
h. The site's water holding and water production capability.
i. The site's ability to retain sediment given current and post-disturbance soil cover quality and quantity.

3-12 Emphasize management activities that promote the maintenance or increase of desirable native plant species that currently have low population levels, or those with limited habitat distribution. These species may include Port-Orford-cedar, sugar pine, Pacific yew, etc.

## NATIVE PLANT MATERIAL USE

### Goals

To conserve the native biological diversity and adaptive capacity of plant communities, species, and populations. This includes maintaining the integrity of the natural pattern of adaptive genetic structure within and among populations of a species.

To reduce the adverse impacts of management activities on the basic natural resources of soil, water, and plant gene pool diversity.

To stabilize soil after major disturbances while concurrently avoiding long-term adverse effects on the composition, structure, and function of natural plant communities.

To maintain or enhance water quality by controlling the composition and structure of plant communities through use of appropriate plant materials.

To prevent the displacement of native species through the introduction of aggressive, long lasting, undesirable vegetation into managed or natural plant communities.

To move rapidly toward the general use of locally adapted native plant species in ecosystem management.

To guide the program development for acquiring, propagating, and using native plant materials for interdisciplinary ecosystem management projects. These include wildlife, riparian, watershed, road-side, emergency post-fire soil stabilization, and other revegetation and restoration projects.

To stimulate development of new ways to achieve ecosystem management objectives that consider multidisciplinary long-term effects. This includes the evaluation of alternatives that provide economical as well as practical means to restore plant communities.

## Direction

To the extent practicable, seeds and plants used in reforestation, erosion control, fire rehabilitation, riparian restoration, forage enhancement, and other vegetation projects shall originate from genetically local sources of native plants. Where possible, prescriptions shall ensure that revegetation includes a mix of species appropriate to the site and its plant associations. Native plants are intrinsically valuable, biologically diverse, and ecologically adapted to their habitats. They are key factors in sustaining resilient, healthy, and productive ecosystems. This policy supports management for sustainable use of ecosystems. A key element of sustainability is the conservation of natural biological diversity.

## Standards and Guidelines

## General

5-1 Prescriptions for use of plant materials must be developed for revegetation by knowledgeable plant resource specialists prior to implementation to ensure that the project is feasible and that suitable plant material is used.

5-2 All revegetation facets must be evaluated early in the planning process for Forest projects. For projects that involve soil disturbance, special consideration must be given to stockpiling of duff or topsoil (with seedbank and mycorrhizae) for later use in restoration of soil and vegetation, and where erosion control is required, mechanical methods must also be evaluated. All revegetation projects must consider both natural and artificial regeneration alternatives including collection of local sources of suitable native plant seed or cuttings, nursery propagation, and on-site planting and maintenance activities.

5-3 Plant materials (seed, cuttings, and whole plants) used in all revegetation projects shall originate from genetically local sources of native species, to the extent practicable.

a. Encourage natural regeneration where seed source and soil conditions are favorable. Where natural regeneration is likely to fail within the desired time frame and soil protection is necessary, evaluate the use of non-vegetative techniques that allow natives to return, such as weed- and disease-free mulching, erosion blankets, or sterile straw waddles.

b. Alternatively, collect seed as near to the site as possible within an adaptive (seed) zone, follow genetic guidelines, and grow in the appropriate nursery. If a genetically local or similarly adapted stock of native species is not available for revegetation, consider either eliminating, delaying, or modifying the project such as planting natives in stages as they become available.

c. When locally-collected plant material is not available and project objectives justify the use of non-native plant materials, use species that are not invasive, allelopathic, or likely to significantly compete with natives for nutrients, water, or space. Document the rationale for the use of non-native plant materials.

5-4 Do not use plant materials of species sold as natives if the genetic origin and physiological quality is not known. For now use only those commercial sources of native plant materials that are collected within the same ecological section (National Hierarchy of Ecological Units) or geographic subdivisions, at the district level, as mapped in the Jepson Manual (1993), as the project area. Refer to the genetic guidelines below and use the seed zoning rules for further guidance.

5-5 Plant materials collected or purchased for Forest projects must be carefully evaluated to ensure that these materials are healthy and free of pests, and that they are properly handled, stored, and conditioned for successful use.

## Genetic Guidelines for Plant Collections

5-6 Origin is known

a. Document location of parent plants (see FSH 2409.42)

b. Identify and track collections from origin to nursery and back to field using a database management system.
c. Monitor survival, health, and growth performance over time.

5-7 Locally adapted

a. Seed origin should be as close as possible to the project site.
b. Use California tree seed zones to guide the transfer of plant materials.
    1. See California tree seed zone map and rules established in 1970 (Buck, et al.). These provide a framework for determining gene transfer priorities based on geoclimatic factors, when other information is lacking.
    2. Collect and use plant materials within local 500 ft elevation bands where possible and never transfer woody plants more than 1000 feet up or down in elevation in the same seed zone.
    3. Avoid transferring plant materials from one geographic district to another. Geographic districts are those described in the Jepson Manual.
c. Where possible, within seed zones and elevation bands collect and use plant materials within the same vegetation series or, for riparian species, within watershed delineations.
d. Collect and use plant materials in more localized areas in certain situations where site-specific ecotypes may develop, including:
    1. populations on unusual soils (e.g. serpentine)
    2. populations from extreme or marginal environments for the species (tolerance limits to temperature, precipitation, nutrients, etc).
    3. populations with known or suspected unique genetic characteristics.

5-8 Genetically diverse

a. Plant materials should be collected from the project site. If not possible, plant materials should be collected from several sub-populations that are well-distributed within an adaptive (seed) zone.
b. Separate collections by 100 or more feet for most outcrossing woody plants to ensure unrelatedness. Note: closer spacing may be appropriate for certain forbs and grasses that are highly specialized to their microenvironments.
c. Collect an approximately equal number of seeds/cuttings from each parent representative of that population. Ensure that the collection comes from a large number (30-50, but number depends on exact species) of unrelated parents.

5-9 High quality

a. Select healthy, vigorous parent stock.
b. Collect at appropriate time (e.g. when seeds are mature and cuttings are dormant).
c. Use optimal collection, processing, and storage procedures.
d. Use cultural practices that will maximize the success rate (minimize losses) from collection to nursery and on through project completion.

## SENSITIVE PLANT SPECIES MANAGEMENT

### Goals

Maintain the health and well-being of threatened, endangered and sensitive species and their habitats. Take all steps necessary to ensure that actions authorized, funded, or carried out by the Forest Service are not likely to jeopardize the continued existence of these species. Manage other botanical resources on a sustainable basis. Practice the use of native species for all revegetation and erosion control projects.

### Standards and Guidelines

6-1 Federally listed threatened or endangered plants and their habitats will be managed to achieve recovery plan objectives (FSM 2670.21 and 2672.31). If an approved plan is not available, all known populations and their occupied habitat will be protected from negative impacts associated with forest management activities. The Del Norte population of McDonald's rock-

**Table IV-9.**
Species to be protected through survey and management standards and guidelines. Each of the four survey strategies is described in the text.

| Species | Survey Strategies 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| **FUNGI** | | | | |
| **MYCORRHIZAL FUNGI** | | | | |
| **Boletes** | | | | |
| *Gastroboletus turbinatus* | | | x | |
| **Boletes, low elevation** | | | | |
| *Boletus piperatus* | | | x | |
| *Tylopilus pseudoscaber* | x | | x | |
| **Rare Boletes** | | | | |
| *Boletus haematinus* | x | | x | |
| *Boletus pulcherrimus* | x | | x | |
| **False Truffles** | | | | |
| *Nivatogastrium nubigenum* | x | | x | |
| *Rhizopogon abeitis* | | | x | |
| *Rhizopogon atroviolaceus* | | | x | |
| *Rhizopogon truncatus* | | | x | |
| *Thaxterogaster pingue* | | | x | |
| **Uncommon False Truffle** | | | | |
| *Macowanites chlorinosmus* | x | | x | |
| **Rare False Truffles** | | | | |
| *Alpova olovaceotinctus* | x | | x | |
| *Arcangeliella crassa* | x | | x | |
| *Gautieria otthii* | x | | x | |
| *Leucogaster citrinus* | x | | x | |
| *Martellia fragrans* | x | | x | |
| *Martellia monticola* | x | | x | |
| *Rhizopogon brunneiniger* | x | | x | |
| *Rhizopogon evadens var. subalpinus* | x | | x | |
| *Rhizopogon flavofibrillosus* | x | | x | |
| **Undescribed Taxa, Rare Truffles & False Truffles** | | | | |
| *Gastrosuillus sp. nov #Trappe 7516* | x | | x | |
| *Gynmomyces sp. nov #Trappe 7545* | x | | x | |
| **Rare Truffles** | | | | |
| *Choiromyces alveolatus* | x | | x | |

Survey Strategies: 1 = manage known sites; 2 = survey prior to activities and manage sites; 3 = conduct extensive surveys and manage sites; 4 = conduct general regional surveys.

**Table IV-9.**
Species to be protected through survey and management standards and guidelines. Each of the four survey strategies is described in the text.

| Species | Survey Strategies | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| **Chanterelles** | | | | |
| *Cantharellus cibarius* | | | x | x |
| *Cantharellus subalbidus* | | | x | x |
| *Cantharellus tubaeformis* | | | x | x |
| **Chanterelles - Gomphus** | | | | |
| *Gomphus bonarii* | | | x | |
| *Gomphus clavatus* | | | x | |
| *Gomphus floccosus* | | | x | |
| *Gomphus kauffmanii* | | | x | |
| **Rare Chanterelle** | | | | |
| *Cantharellus formosus* | x | | x | |
| *Polyozellus multiplex* | x | | x | |
| **Uncommon Coral Fungi** | | | | |
| *Ramaria abietina* | | | x | |
| *Ramaria araiospora* | x | | x | |
| *Ramaria botryis var. aurantiiramosa* | x | | x | |
| *Ramaria concolor f. tsugina* | | | x | |
| *Ramaria coulterae* | | | x | |
| *Ramaria fasciculata var. sparsiramosa* | x | | x | |
| *Ramaria gelatiniaurantia* | x | | x | |
| *Ramaria largentii* | x | | x | |
| *Ramaria rubella var. blanda* | x | | x | |
| *Ramaria rubrievanescens* | x | | x | |
| *Ramaria rubripermanens* | x | | x | |
| *Ramaria suecica* | | | x | |
| *Ramaria thiersii* | x | | x | |
| **Rare Coral Fungi** | | | | |
| *Ramarua amyloidea* | x | | x | |
| *Ramaria aurantiisiccescens* | x | | x | |
| *Ramaria celerivirescens* | x | | x | |
| *Ramaria claviramulata* | x | | x | |
| *Ramaria concolor f. marri* | x | | x | |
| *Ramaria cyaneigranosa* | x | | x | |
| *Ramaria hilaris var. olympiana* | x | | x | |
| *Ramaria lorithamnus* | x | | x | |
| *Ramaria maculatipes* | x | | x | |
| *Ramaria rainierensis* | x | | x | |
| *Ramaria rubribrunnescens* | x | | x | |

Survey Strategies: 1 = manage known sites; 2 = survey prior to activities and manage sites; 3 = conduct extensive surveys and manage sites; 4 = conduct general regional surveys.

**Table IV-9.**
Species to be protected through survey and management standards and guidelines. Each of the four survey strategies is described in the text.

| Species | Survey Strategies | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| **Rare Coral Fungi (continued)** | | | | |
| *Ramaria stuntzii* | x | | x | |
| *Ramaria verlotensis* | x | | x | |
| *Ramaria gracilis* | x | | x | |
| *Ramaria spinulosa* | x | | x | |
| **Phaecollybia** | | | | |
| *Phaecollybia attenuata* | | | x | |
| *Phaecollybia californica* | x | | x | |
| *Phaecollybia carmanahensis* | x | | x | |
| *Phaecollybia dissiliens* | x | | x | |
| *Phaecollybia fallax* | | | x | |
| *Phaecollybia gregaria* | x | | x | |
| *Phaecollybia kauffmanii* | x | | x | |
| *Phaecollybia olivacea* | | | x | |
| *Phaecollybia oregonensis* | x | | x | |
| *Phaecollybia piceae* | x | | x | |
| *Phaecollybia pseudofestiva* | | | x | |
| *Phaecollybia scatesiae* | x | | x | |
| *Phaecollybia sipei* | x | | x | |
| *Phaecollybia spadicea* | | | x | |
| **Uncommon Gilled Mushrooms** | | | | |
| *Catathelasma ventricosa* | | | x | |
| *Cortinarius boulderensis* | x | | x | |
| *Cortinarius cyanites* | | | x | |
| *Cortinarius magnivelatus* | x | | x | |
| *Cortinarius olympianus* | x | | x | |
| *Cortinarius spilomius* | | | x | |
| *Dermocybe humboldtensis* | x | | x | |
| *Hebeloma olympiana* | x | | x | |
| *Hygrophorus caeruleus* | x | | x | |
| *Hygrophorus vernalis* | x | | x | |
| **Rare Gilled Mushroom** | | | | |
| *Cortinarius verrucisporus* | x | | x | |
| **Uncommon Ecto-Polypores** | | | | |
| *Albatrellus ellisii* | | | x | |
| *Albatrellus flettii* | | | x | |

Survey Strategies: 1 = manage known sites; 2 = survey prior to activities and manage sites; 3 = conduct extensive surveys and manage sites; 4 = conduct general regional surveys.

**Table IV-9.**
Species to be protected through survey and management standards and guidelines. Each of the four survey strategies is described in the text.

| Species | Survey Strategies | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| **Rare Ecto-Polypores** | | | | |
| *Albatrellus avellaneus* | x | | x | |
| *Albatrellus caeruleoporus* | x | | x | |
| **Tooth Fungi** | | | | |
| *Hydnum repandum* | | | x | |
| *Hyndum umbilicatum* | | | x | |
| *Phellodon atratum* | | | x | |
| *Sarcodon fuscoindicum* | | | x | |
| *Sarcodon imbricatus* | | | x | |
| **Rare Zygomycetes** | | | | |
| *Glomus radiatum* | x | | x | |
| **Saprobes (Decomposers)** | | | | |
| **Uncommon Gilled Mushrooms** | | | | |
| *Baeospora myriadophylla* | | | x | |
| *Chrysomphalina grossula* | | | x | |
| *Collybia bakerensis* | x | | x | |
| *Gymnopilus puntifolius* | x | | x | |
| *Marasmius applanatipes* | x | | x | |
| *Mycena hudsoniana* | x | | x | |
| *Mycena lilacifolia* | | | x | |
| *Mycena marginella* | | | x | |
| *Mycena monticola* | x | | x | |
| *Mycena overholtsii* | x | | x | |
| *Mycena quinaultensis* | x | | x | |
| *Mycena tenax* | | | x | |
| *Mythicomyces corneipes* | | | x | |
| *Neolentinus kauffmanii* | x | | x | |
| *Pholiota albivelata* | x | | x | |
| **Rare Gilled Mushrooms** | | | | |
| *Clitocybe subditopoda* | x | | x | |
| *Clitocybe senilis* | x | | x | |
| *Rhodocybe nitida* | x | | x | |
| *Rhodocybe speciosa* | x | | x | |
| **Bondarzewia Polypore** | | | | |
| *Bondarzewia montana* | x | x | x | |

Survey Strategies: 1 = manage known sites; 2 = survey prior to activities and manage sites; 3 = conduct extensive surveys and manage sites; 4 = conduct general regional surveys.

**Table IV-9.**
Species to be protected through survey and management standards and guidelines. Each of the four survey strategies is described in the text.

| Species | Survey Strategies | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| **Rare Resupinates and Polypores** | | | | |
| *Aleurodicsus farlowii* | x | | x | |
| *Dichostereum granulosum* | x | | x | |
| *Cudonia monticola* | | | x | |
| *Gyromitra californica* | | | x | x |
| *Gyromitra esculenta* | | | x | x |
| *Gyromitra infula* | | | x | x |
| *Gyromitra melaleucoides* | | | x | x |
| *Gyromitra montana (syn. G. gigas)* | | | x | x |
| *Otidea leporina* | | | x | |
| *Otidea onitica* | | | x | |
| *Otidea smithii* | x | | x | |
| *Plectania melastoma* | | | x | |
| *Podostroma alutaceum* | | | x | |
| *Sarcosoma mexicana* | | | x | |
| *Sarcosoma eximia* | | | x | |
| *Spathularia flavida* | | | x | |
| **Rare Cup Fungi** | | | | |
| *Aleuria rhenana* | x | | x | |
| *Bryoglossum gracile* | x | | x | |
| *Helvella compressa* | x | | x | |
| *Helvella crassitunicata* | x | | x | |
| *Helvella elastica* | x | | x | |
| *Helvella maculata* | x | | x | |
| *Pithya vulgaris* | x | | x | |
| *Plectania milleri* | x | | x | |
| **Club Coral Fungi** | | | | |
| *Clavariadelphus ligula* | | | x | x |
| *Clavariadelphus pistilaris* | | | x | x |
| *Clavariadelphus truncatus* | | | x | x |
| *Clavariadelphus borealis* | | | x | x |
| *Clavariadelphus lovejoyae* | | | x | x |
| *Clavariadelphus sachalinensis* | | | x | x |
| *Clavariadelphus subfastigiatus* | | | x | x |
| **Jelly Mushroom** | | | | |
| *Phlogoitis helvelloides* | | | x | x |
| **Branched Coral Fungi** | | | | |
| *Clavulina cinerea* | | | x | x |

Survey Strategies: 1 = manage known sites; 2 = survey prior to activities and manage sites; 3 = conduct extensive surveys and manage sites; 4 = conduct general regional surveys.

**Table IV-9.**
Species to be protected through survey and management standards and guidelines. Each of the four survey strategies is described in the text.

| Species | Survey Strategies 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| **Branched Coral Fungi (continued)** | | | | |
| *Clavulina cristata* | | | x | x |
| *Clavulina ornatipes* | | | x | x |
| **Mushoroom Lichen** | | | | |
| *Phytoconis ericetorum* | | | x | x |
| **Parasitic Fungi** | | | | |
| *Asterophora lycoperdoides* | | | x | |
| *Asterophora parasitica* | | | x | |
| *Collybia racemosa* | | | x | |
| *Cordyceps capitata* | | | x | |
| *Cordyceps ophioglossoides* | | | x | |
| *Hypomyces lutevirens* | | | x | |
| **Cauliflower Mushroom** | | | | |
| *Sparassis crispa* | | | x | |
| **Moss Dwelling Mushrooms** | | | | |
| *Cyphellostereum laeve* | | | x | |
| *Galerina atkinsoniana* | | | x | |
| *Galerina cerina* | | | x | |
| *Galerina heterocystis* | | | x | |
| *Galerina sphagnicola* | | | x | |
| *Galerina vittaeformis* | | | x | |
| *Rickenella setipes* | | | x | |
| **Coral Fungi** | | | | |
| *Clavicorona avallanea* | | | x | |
| **LICHENS** | | | | |
| **Rare Forage Lichen** | | | | |
| *Bryoria tortuosa* | x | | x | |
| **Rare Leafy (arboreal) Lichens** | | | | |
| *Hypogymnia duplicata* | x | x | x | |
| *Tholurna dissimilis* | x | | x | |
| **Rare Nitrogen-fixing Lichens** | | | | |
| *Dendriscocaulon intricatulum* | x | | x | |
| *Lobaria hallii* | x | | x | |
| *Lobaria linita* | x | x | x | |

Survey Strategies: 1 = manage known sites; 2 = survey prior to activities and manage sites; 3 = conduct extensive surveys and manage sites; 4 = conduct general regional surveys.

**Table IV-9.**
Species to be protected through survey and management standards and guidelines. Each of the four survey strategies is described in the text.

| Species | Survey Strategies 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| **Rare Nitrogen-fixing Lichens (continued)** | | | | |
| *Nephroma occultum* | x | | x | |
| *Pannaria rubiginosa* | x | | x | |
| *Pseudocyphellaria rainierensis* | x | x | x | |
| **Nitrogen-fixing Lichens** | | | | |
| *Lobaria oregana* | | | | x |
| *Lobaria pulmonaria* | | | | x |
| *Lobaria scrobiculata* | | | | x |
| *Nephroma bellum* | | | | x |
| *Nephroma helveticum* | | | | x |
| *Nephroma laevigatum* | | | | x |
| *Nephroma parile* | | | | x |
| *Nephroma resupinatum* | | | | x |
| *Pannaria leucostictoides* | | | | x |
| *Pannaria mediterranea* | | | | x |
| *Pannaria saubinetii* | | | | x |
| *Peltigera collina* | | | | x |
| *Peltigera neckeri* | | | | x |
| *Peltigera pacifica* | | | | x |
| *Pseudocyphellaria anomala* | | | | x |
| *Pseudocyphellaria anthraspis* | | | | x |
| *Pseudocyphellaria crocata* | | | | x |
| *Stitca beauvoisii* | | | | x |
| *Sticta fulginosa* | | | | x |
| *Sticta limbata* | | | | x |
| **Pin Lichens** | | | | |
| *Calicium abeitinium* | | | | x |
| *Calicium adaequatum* | | | | x |
| *Calicium adspersum* | | | | x |
| *Calicium glaucellum* | | | | x |
| *Calicium viride* | | | | x |
| *Chaenotheca brunneola* | | | | x |
| *Chaenotheca chrysocephala* | | | | x |
| *Chaenotheca ferruginea* | | | | x |
| *Chaenotheca furfuracea* | | | | x |
| *Chaenotheca subroscida* | | | | x |
| *Chaenothecopis pusilla* | | | | x |
| *Cyphelium inquinans* | | | | x |
| *Microcalicium subtile* | | | | x |
| *Stenocybe clavata* | | | | x |

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**Table IV-9.**
Species to be protected through survey and management standards and guidelines. Each of the four survey strategies is described in the text.

| Species | Survey Strategies 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| **Pin Lichens (continued)** | | | | |
| *Stenocybe major* | | | | x |
| **Rare Rock Lichens** | | | | |
| *Pilophorus nigricaulis* | x | | x | |
| *Sticta arctica* | x | | x | |
| **Riparain Lichens** | | | | |
| *Cetrelia cetrarioides* | | | | x |
| *Collema nigrescens* | | | | x |
| *Leptogium burnetiae var. hirsutum* | | | | x |
| *Leptogium cyanescens* | | | | x |
| *Leptogium saturninum* | | | | x |
| *Leptogium teretiusculum* | | | | x |
| *Platismatia lacunosa* | | | | x |
| *Ramalina thrausta* | | | | x |
| *Usnea longissima* | | | | x |
| **Aquatic Lichens** | | | | |
| *Dermatocarpon luridum* | x | | x | |
| *Hydrothyria venosa* | x | | x | |
| *Leptogium rivale* | x | | x | |
| **Rare Oceanic Influenced Lichens** | | | | |
| *Bryoria pseudocapillaris* | x | | x | |
| *Bryoria spiralifera* | x | | x | |
| *Bryoria subcana* | x | | x | |
| *Beullia oidalea* | x | | x | |
| *Eroiderma sorediatum* | x | | x | |
| *Hypogymnia oceanica* | x | | x | |
| *Leioderma sorediatum* | x | | x | |
| *Leptogium brebissonii* | x | | x | |
| *Niebla cephalota* | x | | x | |
| *Pseudocyphellaria flavicans* | x | | x | |
| *Usnea hesperina* | x | | x | |
| **Oceanic Influenced Lichens** | | | | |
| *Cetraria californica* | x | | x | |
| *Heterodermia leucomelos* | x | | x | |
| *Loxospora sp nov. "corallifera"* (Brodo in edit) | x | | x | |
| *Pyrrhospora quernea* | x | | x | |

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**Table IV-9.**
Species to be protected through survey and management standards and guidelines. Each of the four survey strategies is described in the text.

| Species | Survey Strategies 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| **Additional Lichen Species** | | | | |
| *Cladonia norvegica* | | | x | |
| *Heterodermia sitchensis* | | | x | |
| *Hygomnia vittiata* | | | x | |
| *Hypotrachyna revoluta* | | | x | |
| *Ramalina pollinaria* | | | x | |
| *Nephroma isidiosum* | | | x | |
| **BRYOPHYTES** | | | | |
| *Antitrichea curtipendula* | | | | x |
| *Bartramiopsis lescurii* | x | | x | |
| *Brotherella roelli* | x | | x | |
| *Diplophyllu albicans* | x | | x | |
| *Douinia ovata* | | | | x |
| *Encalypta brevicolla var. crumiana* | x | | x | |
| *Herbertus aduncus* | x | | x | |
| *Herbertus sakurali* | x | | x | |
| *Iwatsuklella leucotricha* | x | | x | |
| *Kurzia makinoana* | x | x | | |
| *Orthodontlum gracile* | x | | x | |
| *Plagiochila satol* | x | | x | |
| *Plagiochila semidecurrens* | x | | x | |
| *Pleuroziopsis ruthenica* | x | | x | |
| *Ptilidium californicum* | x | x | | |
| *Racomitrium aquaticum* | x | | x | |
| *Radula brunnea* | x | | x | |
| *Scouleria marginata* | | | | x |
| *Tetraphis geniculata* | x | | x | |
| *Tritomaria quinquedentata* | x | | x | |
| **AMPHIBIAN** | | | | |
| Del Norte salamander | | x | | |
| **MOLLUSKS** | | | | |
| *Helminthoglypta talmadgei* | x | x | | |
| *Monadenia churchi* | x | x | | |
| *Vespericola pressleyi* | x | x | | |
| *Prophysaon dubium* | x | x | | |
| *Fluminicola n. sp. 1* | x | x | | |
| *Fluminicola n. sp. 3* | x | x | | |

Survey Strategies: 1 = manage known sites; 2 = survey prior to activities and manage sites; 3 = conduct extensive surveys and manage sites; 4 = conduct general regional surveys.

**Table IV-9 .**
Species to be protected through survey and management standards and guidelines. Each of the four survey strategies is described in the text.

| Species | Survey Strategies | | | |
|---|---|---|---|---|
| | **1** | **2** | **3** | **4** |
| **Vascular Plants** | | | | |
| *Allotropa virgata* | x | x | | |
| *Bensoniella oregana* (California) | x | x | | |
| *Clintonia andrewsiana* | x | x | | |
| *Cypripedium fasciculatum* | x | x | | |
| *Cypripedium montanum* | x | x | | |
| *Pedicularis howellii* | x | x | | |
| *Scoliopus biglovei* | x | x | | |
| **Arthropods** | | | | |
| Canopy herbovires (south range) | | | | x |
| Coarse wood chewers (south range) | | | | x |
| Litter and soil dwelling species (south range) | | | | x |
| Understory and forest gap herbivores | | | | x |

Survey Strategies: 1 = manage known sites; 2 = survey prior to activities and manage sites; 3 = conduct extensive surveys and manage sites; 4 = conduct general regional surveys.

cress is a candidate for federal listing. Determination of whether this species will be listed is likely to follow the taxonomic treatment now underway.

### Sensitive Plant Management

6-2 Before the NEPA process is completed, projects will be assessed through a biological evaluation to determine if management activities are likely to adversely affect sensitive plant resources. After completion of the evaluation, proposed actions will be prohibited if they are found likely to jeopardize the continued existence of the species or the maintenance of the viable populations throughout their existing range. Appropriate mitigation measures will be required if activities are not prohibited.

6-3 Develop Species/Habitat Management Guides for species as needed. The guides will provide biological information and present status of the species, describe distribution, identify potential threats to the species and define management guidelines. Concurrently or as soon as possible after development of the management guide, develop a monitoring plan that is implementable and trackable. Species at risk will be prioritized for management guide development. At-risk species might include those species that in the next decade will be potentially threatened by management activities.

6-4 Federally listed threatened or endangered plant species are protected by the Endangered Species Act; the Forest will not issue collection permits for these species.

## SURVEY AND MANAGE

This direction was taken from FSEIS ROD pages C-4 to C-6 except as noted otherwise.

### Goals and Direction

These measures may apply within any land allocations. However, the survey and manage provision for each species will be directed to the range of that species and the particular habitats that it is known to occupy. The "survey and manage" standards and guidelines will provide benefits to amphibians, mammals, bryophytes, mollusks, vascular plants, fungi, lichens, and arthropods. Table IV-9 at the end of this section shows what species are covered by the survey and manage provision, and which of the following four categories is to be applied to each.

### Standards and Guidelines

The standard and guideline contains four components, and priorities differ among them.

7-1 **Manage known sites:** Management of known species sites should receive the highest priority of these four categories. Efforts must be undertaken to acquire information on these known sites and to manage this information so that it is available to all project planners. An effective way to accomplish this is to compile the information in a GIS data base. Those efforts should be coordinated by the Regional Ecosystem Office, and should be completed expeditiously. As soon as the information becomes available, it should be used in the design or modification of activities. Activities that are implemented in 1994 should use this information to the greatest degree possible. Activities implemented in 1995 and later must include provisions for these known sites. In most cases, the appropriate action will be protection of relatively small sites, on the order of tens of acres. For some species, including some vascular plants, the appropriate action will include the use of specific management treatments such as prescribed fire. For rare and endemic fungus species, areas of 160 acres should be temporarily withdrawn from ground-disturbing activities around known sites until those sites can be thoroughly surveyed and site-specific measures prescribed. For one fungus species, *Oxyporous nobilissimus*, there are only six known sites in the range of the northern spotted owl and two of these do not currently have a protected status. Management areas of all useable habitat up to 600 acres are to be established around these two sites for the protection of those populations until the sites can be thoroughly surveyed and site-specific measures prescribed. The actions to protect *Oxyporous* must be undertaken immediately.

7-2 **Survey prior to ground-disturbing activities:** Measures to survey for species and manage newly discovered sites are to be phased in over a somewhat longer time frame than the measures

specified for currently known sites (see above). For some species, these efforts have been ongoing through rare and sensitive species programs. Where such efforts have been ongoing, they should continue. However, protocols have not been developed for surveys for all of these species, and the expertise needed to conduct them is not readily available in some cases. Efforts to use designed protocols and implement surveys should be started immediately. Where surveys are completed, the information gathered from them should be used to establish managed sites for species. Within the known or suspected ranges and within the habitat types or vegetation communities associated with the species, surveys for Del Norte salamanders must precede the design of all ground-disturbing activities that will be implemented in 1997 or later. Use of established survey protocols for the other 71 species listed in Table IV-9 must begin in 1994 and proceed as soon as possible. These surveys must be completed prior to ground disturbing activities that will be implemented in F.Y. 1999 or later. Work to establish habitat requirements and survey protocols may be prioritized relative to the estimated threats to the species as reflected in the SEIS. Management standards will be developed to manage habitat for the species on sites where they are located. These surveys may be conducted at a scale most appropriate to the species. For most species, this survey would start at the watershed analysis level with identification of likely species locations based on habitat. Those likely locations would then be thoroughly searched prior to implementation of activities. For other species, the identification of likely sites may be most appropriately done at the scale of individual projects. Surveys should be designed for maximum efficiency, focusing on the likely range and habitats of the target species. Multispecies surveys should be used wherever they would be most efficient. To the degree possible, surveys should be designed to minimize the number of site visits needed to acquire credible information. Survey protocols and proposed site management should be incorporated into interagency conservation strategies developed as part of ongoing planning efforts coordinated by the Regional Ecosystem Office.

7-3 **Extensive surveys:** Conduct extensive surveys for the species to find high-priority sites for species management. Specific surveys prior to ground-disturbing activities are not a requirement. Rather, the surveys will be done according to a schedule that is most efficient, and sites will be identified for protection at that time. This strategy entails some risk because some species sites may be disturbed prior to completion of surveys. It is recommended primarily for species whose characteristics make site and time-specific surveys difficult. For example, some fungi only produce fruiting bodies under specific climatic conditions, so finding their location may take several to many years. It would be most efficient to do broad surveys for these species during times of appropriate conditions rather than attempting annual, site-specific surveys. Surveys under this strategy must be underway by 1996. As with surveys described in item 2 above, surveys should be designed for efficiency and standardized protocols should be used.

7-4 **General regional surveys:** The objective is to survey for the species to acquire additional information and to determine necessary levels of protection. Species intended to benefit from this standard and guideline are the arthropods, the fungi species that were not classed as rare and endemic, bryophytes, and lichens. These groups of species are particularly poorly known. Many species have likely not yet been identified, and there is only general information available on the abundance and distribution of known species. The information gathered through these efforts may be useful in refining these standards and guidelines to better provide for these species as part of the adaptive management process. These surveys are expected to be both extensive and expensive, but the information from them is critical to successful implementation of ecosystem management. They will be initiated no later than F.Y. 1996 and are to be completed within ten years.

Annual status reports are to be submitted to the Regional Ecosystem Office for review beginning at the end of F.Y. 1995. As experience is acquired with these requirements, agencies may propose changes to the Regional Ecosystem Office for analysis. These changes could include changing the schedule, moving

**Table IV-11. Restricted Activities and Periods of Restriction for Wildlife Species**

| Species | Status | Standards and Guidelines | Restriction Period |
|---|---|---|---|
| Bald eagle/ Peregrine falcon | Endangered | All activities not related to nest monitoring are restricted within nest protection zone. Restricted disturbance within the primary disturbance zone. | Jan 1 to August 31/ Jan 1 to July 31 (June 1) |
| Northern spotted owl | Threatened | Restrict harrassment from vocal imitations of owl calls and smoke generated from management activities within 0.25 miles of active nest sites. No vocal imitations of spotted owl calls will be performed in spotted owl habitat areas unless a formal survey is being conducted. | Feb 1 to July 31 (July 1) |
| Marbled murrelet | Threatened | Restrict activities in 8-2 within 0.25 miles of active nest sites. | April 1 to Sept 15 (July 1) |
| California wolverine | Candidate Category 2 | Follow 8-2 within 0.25 miles of active dens. | Feb 1 to July 1 (June 1) |
| Pacific big-eared bat | " " | Follow 8-2 within 500 ft of roosts or maternity areas. | Nov 1 to July 1 (May 1) |
| Northern goshawk | Sensitive | Follow 8-2 within 200 acre area around active nest tree. | March 1 to Aug 31 (July 1) |
| Willow flycatcher | " " | Follow 8-2 within 0.25 miles of active nest sites. | June 1 to Aug 31 (June 1) |
| Pacific fisher | " " | Follow 8-2 within 0.25 miles of active dens. | Feb 1 to May 31 (May 1) |
| American marten | " " | Follow 8-2 within 0.25 miles of active dens. | Mar 15 to June 31 (June 1) |
| Black bear | " " | Follow 8-2 within 500 feet of active dens | Jan 1 to May 1 |
| Great blue heron | Special Concern | Follow 8-2 within 500 feet of active or recently active (within 5 years) rookeries. | Mar 1 to Aug 31 (June 1) |
| Osprey | " " | Follow 8-2 within 0.25 miles of active nest sites. Restrict construction and operation of permanent facilities (including roads and trails) adjacent to foraging waters endangering reproductive success. | Mar 1 to Aug 31 |
| Golden eagle | " " | Follow 8-2 within 0.25 miles of active nest sites. | Jan 1 to Aug 31 |

a species from one survey strategy to another, or dropping this mitigation requirement for any species whose status is determined to be more secure than originally projected. The Regional Ecosystem Office will forward such proposals, along with recommendations, to the Regional Interagency Executive Committee for action as appropriate.

### Manage Recreation Areas to Minimize Disturbance to Species

7-5 This standard and guideline applies throughout all land allocations. This standard and guideline will benefit a number of fungi and lichen species whose known locations are predominantly within established recreation sites. This standard and guideline falls within the category of the survey and manage standard and guideline above, and species to be protected through this standard and guideline are among those shown in Table IV-9 at the end of this section. Additional information on the habitat requirements of these species are discussed in Appendix J of the Final SEIS.

### Protect Sites From Grazing

7-6 This standard and guideline applies throughout all land allocations. This standard and guideline is designed to benefit mollusks and vascular plants. Known and newly discovered sites of these species will be protected from grazing by all practicable steps to ensure that the local populations of the species will not be impacted. Species to be protected through this standard and guideline are:

Mollusks: *Ancotrema voyanum*, *Monadenia fidelis klamathica*, *Monadenia fidelis ochromphalus*, *Fluminicola* n. sp. 1, *Fluminicola* n. sp. 3

Vascular Plant: *Pedicularis howellii* Gray

## WILDLIFE RESOURCE MANAGEMENT

### Goals

Maintain viable populations of all native and desirable non-native wildlife species occurring on the Forest by providing the variety, distribution, and amount of wildlife habitat types necessary, and maintaining a biologically diverse and functional forest landscape ecosystem. The Forest will focus on this goal through the monitoring and protection of selected Management Indicator Species (MIS), whose population status and trends are assumed to reflect: (1) the overall health and integrity of their respective biotic assemblage or community as a whole, and (2) community-level responses to management related disturbances.

Maintain or improve populations of endangered, threatened, and sensitive species by providing suitable habitats that are capable of meeting species requirements.

### Direction

State and federal wildlife agencies have joint responsibility with the Forest Service for managing wildlife resources on public lands and will be considered as partners in planning and implementation of activities that affect wildlife.

Forest management efforts consider all native vertebrate species. Several groups of species have special management needs. The following categories are referred to in the text: (1) endangered, threatened, proposed, candidate or sensitive species; (2) species dependent on specialized habitat conditions; (3) species requiring early, mature, or late successional forest conditions for optimum habitat; (4) popular harvest (game) species; and (5) State of California Species of Concern.

The bald eagle and peregrine falcon are Federally-listed endangered wildlife species that occur on the Forest. The northern spotted owl and the marbled murrelet are Federally-listed threatened species that occur on the Forest. Survey and monitoring of habitat and population trends will continue. Cooperative research will continue with studies headed by PSW and universities. Habitat for federally listed endangered or threatened species will be managed to achieve recovery plan objectives.

The US Fish and Wildlife Service recognizes candidate species as those which merit consideration for possible federal listing as endangered or threatened. Wildlife species known or likely to occur on the Forest and identified as candidates for listing currently include: California wolverine, white-footed vole, Pacific big-eared bat, Del Norte salamander, red-legged frog, western pond turtle, and Karok Indian snail. The Fish and Wildlife Service encourages federal agencies to take these species into account in environmental planning. Candidate species in

categories 1 and 2 may become officially listed under the Endangered Species Act as threatened or endangered in the future. Conservation strategies, including management objectives for habitats and populations of candidate species will be developed in cooperation with the Fish and Wildlife Service and the CDF&G, and implemented to ensure viable populations of these species throughout their geographic ranges and to reduce the probability of their being federally listed.

The Forest Service has a region-wide sensitive species designation for species whose viability is a concern as evidenced by current or predicted downward trends in population numbers or habitat capability throughout part or all of the species range in this Region. The concern for viability may arise due to critical situations in other parts of the species' range, and not necessarily on the Forest. Sensitive wildlife species known or likely to occur on the Forest include: The northern goshawk, great gray owl, Pacific fisher, American marten, willow flycatcher, and western pond turtle. Habitats for sensitive species are managed to maintain well-distributed populations throughout their ranges, and to prevent them from becoming Federally listed under the Endangered Species Act as threatened or endangered.

Forty-one Forest fish and wildlife species (Table IV-10) have been selected as management indicator species or assemblages for a variety of habitats that are affected by resource management activities on the Forest. Indicator species are selected on the basis of their known roles in their respective biotic assemblage or community. Many MIS occupy a niche in their particular assemblage that is either highly dependent on other members for food, or may be extremely sensitive to management related disturbance, or both. Other MIS were selected based on concern for their current population status. It is assumed that, with current knowledge, these MIS are indicative of the integrity of communities as a whole, where they serve to focus the Forest's monitoring and feedback loop, and provide an assessment of the overall health of the represented habitats/ecosystems. They serve as the primary measure of the biological diversity trend on the Forest.

**Table IV-10.**
**Management Indicator Species - Fish and Wildlife**

| INDIVIDUAL SPECIES | SNAG |
|---|---|
| **ASSEMBLAGE** | |
| Northern spotted owl | Flammulated owl |
| Pileated woodpecker | Western screech owl |
| Black bear | Red-breasted sapsucker |
| American marten | Downy woodpecker |
| Fisher | Hairy woodpecker |
| Black-tailed deer | White-headed woodpecker |
| | Vaux's swift |
| **BOG/SEEP/SPRING/WET** | Brown creeper |
| **MEADOW ASSEMBLAGE** | Western bluebird |
| Olympic salamander | Douglas squirrel |
| **MARSH/LAKE/POND** | **DOWN WOODY MATERIAL** |
| **ASSEMBLAGE** | **ASSEMBLAGE** |
| California red-legged frog | Arboreal salamander |
| Western pond turtle | Clouded salamander |
| Wood duck | Blue grouse |
| | Dusky-footed woodrat |
| **RIVER/STREAM/CREEK** | Western fence lizard |
| **ASSEMBLAGE** | |
| Cutthroat trout | **BLACK OAK/ WHITE OAK** |
| Steelhead/Rainbow trout | **ASSEMBLAGE** |
| Summer Steelhead | Acorn woodpecker |
| Tailed frog | Scrub jay |
| Common merganser | Lazuli bunting |
| Ruffed grouse | Western gray squirrel |
| Winter wren | |
| American dipper | |
| Yellow-breasted chat | |
| **TANOAK/MADRONE ASSEMBLAGE** | |
| Hammond's flycatcher | |

Western tanager
Black-headed grosbeak

Habitat necessary for maintenance of well-distributed populations of several selected indicator species dependent on mature and late-successional forest is protected or managed within the designated special habitat and managed habitat management areas.

All proposed projects that involve disturbance to wildlife habitat and have the potential to impact listed or sensitive wildlife species will be evaluated to determine if any listed species are present. Where such species are present, a biological evaluation will be used to determine the potential effect on the species, and the environmental assessment will prescribe mitigation measures consistent with Forest management objectives. Proposed actions will be prohibited if they are found likely to adversely affect the continued existence of the species or the maintenance of viable populations throughout their existing range.

Species of concern are species which are specifically managed because their conservation is of special interest in California to the Forest Service.

In cooperation with CDF&G, population trends and habitat use should be monitored to determine the extent of immigration of elk on the Forest. The information will be used to develop an elk management strategy for the Forest, including the identification of key use areas and eventually a plan for their management, that is coordinated with with the Klamath Province Interagency Roosevelt Elk Working Group.

## Standards and Guidelines

### General Wildlife Management

8-1 Introductions of desired non-native or native species of wildlife will be evaluated through appropriate NEPA documentation and coordinated with appropriate state and federal agencies.

8-2 Activities generating loud or continuous noise (e.g., timber harvest, road construction, hauling, blasting, frequent vehicle traffic, power boats, large crowds of people, etc.) will be restricted during the periods shown in Table IV-11 within the distances or areas listed for each species. (Restrictions may be waived after the dates listed in parentheses if the area is not occupied or has failed - use standardized protocol).

### Endangered, Threatened, Proposed, Candidate and Sensitive species

8-3 Consultation and conference requirements with the USFWS will be met in accordance with the Endangered Species Act.

8-4 Biological assessments/evaluations for endangered, threatened, proposed, candidate and sensitive species will be prepared for every project to determine if the project “may effect” these animals. This evaluation will determine the effects of the proposed activity on these species and their habitat (designated habitat area), including beneficial effect or likely to adversely effect. A field reconnaissance to determine if a species is present or expected should be completed as part of the biological evaluation process if the species or suitable habitat is likely to occur in the project area.

8-5 Site specific habitat management plans are required for federally listed threatened and endangered species to protect and enhance essential habitat, and to explain allowable, desired and planned management activities within each area. Habitat area (designated) management plans will be completed, as part of the biological evaluation process, for Sensitive wildlife species that may be affected by proposed management activities.

### Bald eagle and peregrine falcon

8-6 Bald eagles and their habitat will be managed in accordance with the Pacific Bald Eagle Recovery Plan (USDI, Fish and Wildlife Service, 1986). Peregrine falcons and their habitat will be managed in accordance with the Pacific Coast American Peregrine Falcon Recovery Plan (USDI, Fish and Wildlife Service, 1982). While recovery plans currently do not exist for northern spotted owl or marbled murrelet, the Forest will amend this Plan as needed to be consistent with new recovery plans and Regional direction for these species.

8-7 Nesting habitat for bald eagles and peregrine falcons will be managed through the zone concept. Habitat and nest sites within these management zones will be managed at high to moderate levels of habitat capability, as defined in the bald eagle Habitat Capability Model and the peregrine falcon Habitat Capability Model for Six Rivers National Forest (see Appendix B of the FEIS).

8-8 Four known bald eagle nest sites, feeding areas, and two suspected wintering sites will be protected and managed in compliance with recovery plan goals and objectives. In addition, fourteen habitat areas for peregrine falcon will be protected to achieve a minimum of seven breeding pairs on the Forest. Refer to the Special Habitat Management Area direction for information on how the nest site protection zone and winter roosts are managed. The zones covered by these Forest-wide standards and guidelines are described below:

a. The primary disturbance zone is located outside the nest site protection zone. It is intended to increase reproductive success by buffering nesting birds from a variety of disturbances and to provide foraging habitat.

b. The feeding zone is the area most heavily used for hunting. For eagles, it is generally associtted with a lake or river fishery; for falcons, it includes a variety of habitat types. Management of this zone is focused on the maintenance and improvement of bald eagle perch sites, as well as prey abundance for both species, by maintaining habitat within the RMR.

8-9 Eliminate or minimize disturbance to breeding birds from vehicle traffic in the locations and periods listed in Table IV-11. Vehicle use includes motorized vehicles such as automobiles, snowmobiles, and OHVs as well as riverway vehicles such as jet skiis, rafts, and boats.

8-10 Disturbance-generating activities (e.g. road construction and reconstruction, hauling, dredging, blasting) should be restricted during the breeding season in proximity to nesting pairs during the period listed in Table IV-11.

8-11 New developed recreational sites may be permitted if no detrimental impacts to the bald eagle or peregrine falcon would occur.

8-12 Minimize conflicts between the use of feeding areas by bald eagles and recreational users (such as boating, fishing, rafting) where the feeding activity of the eagle(s) is being significantly altered.

8-13 Timber harvest prescriptions within these zones will be consistent with the wildlife objectives established for each designated area to achieve and maintain moderate to high capability habitat. Harvest prescriptions will be designed to create, maintain, or enhance habitat for the species of concern.

## Northern spotted owl

8-14 Spotted owl habitat will be managed according to the direction in the FSEIS ROD until a recovery plan is completed and adopted by the U.S. Forest Service. Management direction regarding the northern spotted owl is contained in the special habitat management area section of this chapter. Reasonable and prudent measures identified by the USFWS during consultation will be incorporated in project plans. Habitat fragmentation in surrounding habitat should be minimized or reduced.

8-15 Formal consultation, requesting an incidental take permit be issued by the USFWS, is currently required to reduce suitable habitat below 500 acres within 0.7 miles, and/or below

1,340 acres within 1.3 miles of nests or activity centers.

8-16 The management direction in the Special Habitat Management Area specifies the protection of 100 acres of owl habitat around all known owl activity centers. Management of stands in the matrix surrounding these areas will be designed to reduce risks of natural disturbance.

### Marbled murrelet

8-17 Marbled murrelet habitat will be managed according to the direction in the FSEIS ROD until a recovery plan is completed and adopted by the U.S. Forest Service. Management direction regarding the marbled murrelet is contained in the special habitat management area section in this chapter. Reasonable and prudent measures identified by the USFWS during consultation will be incorporated in project plans. Habitat fragmentation in surrounding habitat should be minimized or reduced.

8-18 Observe restrictions on loud and continuous activities within 0.25 mile of nest sites and activity centers during the period listed in Table IV-11.

### Candidate Species, Category 2

8-19 Known nest sites, roost sites, den sites and associated micro-habitat conditions will be protected for candidate species. Criteria for protection are described as follows:

### California wolverine

8-20 Maintain habitat characteristics consistent with their Habitat Capability Model (FEIS, Appendix B, Table 4) at den sites.

### White-footed vole

8-21 White-footed voles find the highest quality habitat in gaps along perennial streams, typically resulting from fallen trees, which support dense herbaceous vegetation in mature and old-growth forest types. Areas meeting these criteria should be maintained and surveyed for evidence of the white-footed vole when projects are planned in the area. Maintain 40-60 percent canopy closure at occupied areas.

### Pacific big-eared bat

8-22 Maintain essential habitat characteristics near roost sites (e.g., caves, mine tunnels, buildings). In areas with a high potential for disturbance, secure entrances to roost/maternity areas with a gate system which allow bats in and out but exclude humans. Reduce disturbance at occupied sites during critical time periods (see Table IV-11).

8-23 The management direction for all bats listed at the end of this section (other species from the FSEIS ROD) also applies for the Pacific big-eared bat.

### Del Norte salamander

Management direction regarding the Del Norte salamander is contained in the Managed Habitat Management Area section of this chapter.

### Western pond turtle

8-24 Maintain habitat characteristics consistent with their Habitat Capability Model (FEIS, Appendix B Table 12) within 300 feet around occupied pond and stream habitats.

### Karok Indian snail

8-25 Maintain habitat characteristics through protection within riparian reserves and occupied habitat.

### Northern goshawk

The following standards and guidelines are intended to provide management direction for northern goshawks within the Klamath and California Coastal Provinces. Although intended for application in Matrix lands and Adaptive Management Areas, the habitat goals described should also be considered in assessments of Late Successional Reserves. These guidelines assume that the Forest Plan land allocations will provide adequate foraging habitat in the general landscapes surrounding managed goshawk territories. These guidelines should be integrated into the process of determining desired future conditions in lansdcape

planning, and must be evaluated relative to the reference variability for a given landscape. In this context, they provide a spatial element for biological diversity. Goshawks, like many other rare, long-lived species, show great fidelity to certain spatial elements (special places) within landscapes.

## Habitat Management

**I. Primary Nest Zone**

8-26 Establish a 0.5 mile radius circle (504 acres) around the last known nest or the geometric center of a cluster of all known nests. Within this circle, maintain 40 percent (200 acres) in the eastern portions of the Klamath Province and the southeastern portions of the California Coastal Province, and 60 percent in the western portions of the Klamath and northwestern portions of the California Coastal Provinces in dense mature forest cover (>60 percent crown closure, >24" dbh [4B,C+]). Existing nest stand should be used to determine desired forest structure. This 200 acres should include the active and historic nest stands and be as contiguous as possible relative to existing conditions. The remaining 60 percent (or 40 percent) should be managed for a habitat mosaic dominated by large-tree conditions and open understories (3N,G - 4P,N,G+), but lower canopy closure (40 to 60 percent) and small openings are allowable. Encourage use of underburning, precommercial thinning, and fuels reduction to achieve desired habitat conditions.

**II. Foraging Habitat Zone**

8-27 Establish a 1.0 mile radius circle (2010 acres: 1506 acres excluding primary nest zone) centered on the primary nest zone. Maintain 60 percent (900 acres) in a mosaic of mid-mature (3N,G+) to late-successional forest condition. Desired conditions include open understories, large coarse woody debris, large snags, small openings. The remaining 40 percent can be younger stands and small openings. Encourage use of underburning, fuels reduction, and thinning to achieve desired habitat conditions.

**III. Disturbance**

8-28 Restrict habitat-modifying activities between March 1st and August 31st within the primary nest zone (0.5 mile radius). Restrict activities producing loud and/or continuous noise within 0.25 miles of active nest sites as shown in Table IV-11. Normal levels of vehicle traffic on existing roads may be allowed in cases where goshawks appear to be habituated to such activities (see Table IV-11).

**IV. Implementation**

8-29 Standards and guidelines apply to occupied territories, as well as existing known nest sites from the original goshawk network, until surveys provide sufficient data to assess the distribution of this species, and to validate the assumption that this species is adequately provided for by the large reserved areas distributed throughout the Forest. Planned timber sale areas should be surveyed to Region 5 protocol for goshawks for a minimum of one season (intensive protocol) or two seasons (broadcast only). These guidelines may be superseded by the adoption of a conservation strategy for Northern Goshawk, and modified in response to new information. Implementation should be integrated into landscape-level planning for diversity, rather than approached as single-species protection.

## Great gray owl

Management direction for the great gray owl is contained in the Special Habitat Management Area section of this chapter.

## Willow flycatcher

8-30 Maintain essential habitat characteristics in a 10 acre nest protection area around occupied nest sites. Manage occupied willow stands to maintain maximum foliage density of shrubs and grass within six feet of the ground during the breeding season. Eliminate grazing from June 1 to August 15 within the nest protection area.

## Fisher

8-31 Maintain habitat characteristics consistent with their Habitat Capability Model (FEIS, Appendix B Table 7) within 500 feet of known den sites.

### American marten

8-32 Maintain habitat characteristics consistent with their Habitat Capability Model (FEIS, Appendix B Table 8) within 500 feet of known den sites.

### Harvest Species

The harvest species addressed here are those species which are of greatest concern to the public, State, or Forest Service. They are as follows:

Black-tailed deer, *Odocoileus hemionus*
Roosevelt elk, *Cervus elaphus rooseveltii*
Black bear, *Ursus americanus*
Wild turkey, *Meleagris gallopavo* (introduced species)

8-33 In cooperation with California Department of Fish and Game (CDFG), the deer herd management plans and their associated action plans should be revised to comply with the Forest plan direction and implemented. Population trends and habitat conditions should be monitored to establish or revise management objectives in the deer herd management plans. If action plans do not exist, action plans should be developed consistent with the Forest Plan direction.

8-34 Vegetative security/screening cover along heavily used roads adjacent to high value areas for wildlife (meadows, glades, ponds, springs, seeps, key deer or elk areas) will be retained.

8-35 A management zone will be designated around key habitual use areas. Management activities in these zones should maintain or enhance habitat for the species. The actual size and shape of these zones will depend upon topography, vegetation and other relevant factors.

### Black-tailed deer

8-36 Use vegetation management to maintain or improve habitat quality within key deer areas. Objectives of habitat management within key deer areas are outlined in the deer herd management plans.

### Roosevelt elk

8-37 Vegetation management strategies for elk need to be developed, in cooperation with the Klamath Province Interagency Roosevelt Elk working group.

### Black bear

8-38 Bear wallows and dens will be protected by maintaining essential habitat characteristics within 200 feet of the den or wallow. Maintain vegetation near the den or wallow that provides a visual screen from roads, trails, and other areas frequented by people.

### Wild turkey

8-39 Maintain essential habitat characteristics within 100-200 feet around key habitual use areas, which include strutting grounds, nesting sites, and night roosts. Maintain vegetation that provides a visual screen from roads, trails, and other areas frequented by people. Future introductions should be located to minimize impacts on other resources.

## Species of Concern

Currently, listed species of concern on the Forest are as follows:

State of California listed species have been addressed in previous sections as Federally listed threatened and endangered species or Forest Service sensitive species:

Peregrine falcon (see endangered species) (endangered)
Bald eagle (see endangered species) (endangered)
Great gray owl (see sensitive species) (threatened)
Willow flycatcher (see sensitive species) (endangered candidate)
California wolverine (see candidate species) (threatened)
Marbled murrelet (see endangered species) (threatened)

State of California species of special concern for conservation:

Great blue heron, *Ardea* ***herodias***
Osprey, *Pandion* ***haliaetus***
Sharp-shinned hawk, *Accipiter striatus*
Golden eagle, *Aquila* ***chrysaetos***
Prairie falcon, *Falco* ***mexicanus***
Long-eared owl, *Asio* ***otus***
Purple martin, *Progne* ***subis***
Yellow warbler, *Dendroica* ***petechia***
Yellow-breasted chat, *Icteria* ***virens***

8-40 A management zone that maintains essential habitat characteristics and minimizes adverse disturbances will be designated around known nest sites of species of concern. Feeding areas and wintering areas may also require some level of protection. Zones should approximate the acreages and locations listed below for each species. The actual size and shape of the zone will depend upon topography, vegetation, location of pilot trees, or other relevant factors. Management activities in the zone should maintain or enhance breeding habitat for the species.

### Great blue heron

8-41 Maintain essential habitat characteristics within a 10-20 acre area around active or recently occupied (within the last five years) rookeries.

### Osprey

8-42 Maintain essential habitat characteristics within 500 feet of nest trees, and minimize potential disturbances from developments (recreation/ roads).

### Sharp-shinned hawk

8-43 Maintain 10 acres of moderate to high capability habitat around active or recently occupied (within five years) nest sites.

### Golden eagle

8-44 Maintain essential habitat characteristics within 500 feet of active or recently occupied (within the last five years) nest sites.

### Incidental Species

These species are not known but are likely to occur on the forest. When active nests are located, establish the following zones:

### Prairie falcon and long-eared owl

8-45 Maintain essential habitat characteristics within 500 feet of active or recently active (within the last five years) nest sites.

### Purple martin, yellow warbler and yellow-breasted chat

8-46 Maintain nest trees for these species.

8-47 Vegetative manipulation should be planned to minimize habitat fragmentation of mature or older forest types.

8-48 The mature white oak and black oak forest vegetation types should be managed for mast production with the objective being to maximize the number of mature trees through time.

8-49 For all other hardwood forests, mast-berry production should be maintained or enhanced. Natural cavity availability should be maintained or enhanced.

8-50 Maintain snags, logs, and green trees as described in retention requirements listed in Table IV-8.

## Additional Species from the FSEIS ROD

These standards and guidelines incorporated from the Scientific Analysis Team Report will result in protection for specific species. The following rare and locally endemic species are likely to be assured viability if they occur within designated areas. However, where these species occur in the matrix, the following standards and guidelines will be applied. For the birds listed below, activities implemented in 1995 and later must include these provisions.

## Birds:

White-headed woodpecker, black-backed woodpecker, flammulated owl: These species will not be sufficiently aided by application of mitigation measures for riparian habitat protection or for marbled murrelets alone. The viability of all four species within the range of the northern spotted owl was rated as a medium risk on National Forests, although they each are much more widely distributed elsewhere.

Apply the following mitigation standards and guidelines to ensure that the distribution and numbers of all four species do not severely decline on National Forests and BLM Districts within the range of the northern spotted owl. These guidelines apply to the forest matrix outside designated habitat for the northern spotted owl and Riparian Reserves. Maintain adequate numbers of large snags and green-tree replacements for future snags within the four species' ranges in appropriate forest types. Where feasible, green-tree replacements for future snags can be left in groups to reduce blowdown. Specifically, the Scientific Analysis Team recommends that no snags over 20 inches dbh be marked for cutting. The Scientific Analysis Team recognizes, however, that safety considerations may prevent always retaining all snags. Use of standardized definitions of hazard trees is required. For the longer term, provide for sufficient numbers of green trees to provide for the full (100 percent) population potential of each species.

As depicted by Neitro in Management of Wildlife and Fish Habitats in Forest of Western Oregon and Washington (1985), the 100 percent population potential for white-headed woodpeckers is 0.60 conifer snags (ponderosa pine or Douglas-fir) per acre in forest habitats; these snags must be at least 15 inches dbh (or largest available if 15 inch dbh snags are not available) and in soft decay stages, and must be provided in stands of ponderosa pine and mixed pine/ Douglas-fir. The 100 percent population potential for black-backed woodpeckers is 0.12 conifer snags per acre in forest habitats; these snags must be at least 17 inches dbh (or largest available if 17 inch dbh snags are not available) and in hard decay stages, and must be provided in stands of mixed conifer and lodgepole pine in higher elevations of the Cascade Range. Provision of snags for other cavity-nesting species, including primary cavity-nesters, must be added to the requirements for these two woodpecker species. Site-specific analysis, and application of a snag recruitment model (specifically, the Forest Service's Snag Recruitment Simulator) taking into account tree species, diameters, falling rates, and decay rates, will be required to determine appropriate tree and snag species mixes and densities. If snag requirements cannot be met, then harvest must not take place.

As identified by the expert panel, black-backed woodpeckers also require beetle infested trees for foraging; some such trees should be provided in appropriate habitat, and sanitation harvest of all such trees would be detrimental to the species. More information is needed on habitat use, seasonal occurrence, and use of forest age classes and burns, for the black-backed woodpecker.

Flammulated owls are secondary cavity-nesters and use cavities, in snags and live trees, created by woodpeckers or, less often, that occur naturally. It is assumed that standards and guidelines for snags and green-tree replacements for woodpeckers and other primary cavity-nesting species, as provided by existing National Forest and BLM District Land and Resource Management Plans and for the woodpeckers in this species group, would provide for flammulated owls.

Note: The snag recommendations above are based on the model presented by Neitro and others (1985). In that model, snag requirements for individual species were treated as additive in developing snag

requirements for the overall community of cavity excavators. As noted above, "provision of snags for other cavity-nesting species, including primary cavity nesters, must be added to the requirements for these two woodpecker species" (black-backed and white headed woodpeckers).

Snag requirements are developed by the National Forests for specific forest cover types, and these may be further broken down by geographic location. The intent is to tailor the requirements to those species that are actually expected to occur in an area. To determine if the protection buffer requirements should be added to existing Forest or BLM District Plan requirements, the basis for those existing requirements should be analyzed to determine if they include the species identified by SAT at the specified level of percent population potential. If they do not, then the SAT requirements must be added to the existing Forest Plan requirements.

### Bats

Most bat species occurring in the Pacific Northwest roost and hibernate in crevices in protected sites. Suitable roost sites and hibernacula, however, fall within a narrow range of temperature and moisture conditions. Sites commonly used by bats include caves, mines, snags and decadent trees, wooden bridges, and old buildings. Additional provisions for the retention of large snags and decadent trees are included in the standard and guideline for green tree patches in the matrix. Caves, mines, and abandoned wooden bridges and buildings, however, are extremely important roost and hibernation sites, and require additional protection to ensure that their value as habitat is maintained.

This provision is intended to apply in matrix forests and Adaptive Management Areas, and elements such as protection of known occupied caves should be considered for other land allocations. Conduct surveys of crevices in caves, mines, and abandoned wooden bridges and buildings for the presence of roosting bats, including fringed myotis, silver-haired bats, long-eared myotis, long-legged myotis, and pallid bats. For the purposes of this standard and guideline, caves are defined as in the Federal Cave Resources Protection Act of 1988 as "any naturally occurring void, cavity, recess, or system of interconnected passages which occur beneath the surface of the earth or within a cliff or ledge ( . . . but not including any . . . man-made excavation) and which is large enough to permit an individual to enter, whether or not the entrance is naturally formed or man-made." Searches should be conducted during the day in the summer (to locate day roosts and maternity colonies), at night during the late summer and fall (to locate night roosts, which are important for reproduction), and during the day in the winter (to locate hibernacula). If bats are found, identify the species using the site and determine for what purpose it is being used by bats. As an interim measure, timber harvest is prohibited within 250 feet of sites containing bats. Management standards and guidelines that may be included as mitigation measures in project or activity plans will be developed for the site. These standards will be developed following an inventory and mapping of resources. The purpose of the standards and guidelines will be protection of the site from destruction, vandalism, disturbance from road construction or blasting, or any other activity that could change cave or mine temperatures or drainage patterns. The size of the buffer, and types of activities allowed within the buffer, may be modified through the standards developed for the specific site. Retention of abandoned bridges or buildings must be made contingent on safety concerns.

Townsend's big-eared bats are of concern to state wildlife agencies. These bats are strongly associated with caves, and are extremely sensitive to disturbance, especially from recreational cavers. When Townsend's big-eared bats are found occupying caves or mines on federal land, the appropriate agency should be notified, and management prescriptions for that site should include special consideration for potential impacts on this species.

## AQUATIC AND RIPARIAN ECOSYSTEMS

The Forest's fisheries, water, and riparian resources are among the highlights of the Six Rivers National Forest. The Forest includes some of the purest free-flowing streams in the nation, including the Smith River, the last undammed river system in California. Some of the most outstanding salmon and steelhead angling opportunities in the NF System exist in the Smith River NRA. The watersheds of the Forest are critical in providing quality water and maintaining stream conditions that are optimum for sustaining the economically and socially important commercial, sport, and subsistence anadromous fisheries of this area. Under the direction of the President's Plan and its Aquatic Conservation Strategy, ensuring the quality of our aquatic and riparian resources will be one of the Forest's main priorities.

### Goals

Provide diverse, high quality fish habitat capable of maintaining or enhancing ecologically functional populations and stocks of fish at risk. Follow direction outlined in the Aquatic Conservation Strategy (FSEIS ROD pages B-9 to B-33 except as noted otherwise) which outlines specific objectives regarding the Forest goals in the management of aquatic and riparian resources.

Maintain riparian dependent resources (water, fish, wildlife, riparian-related aesthetics, and aquatic vegetation).

Manage riparian areas to maintain water quality; stream temperature; stream bank stability; wildlife habitat, connectors, and corridors; and to retain sources of large woody debris for habitat structure and channel stability.

## Direction

The primary vehicle for protecting and maintaining fish habitat on the Forest will be to protect, enhance, and maintain habitat quality and quantity. Protection will require fisheries concerns to be addressed in all potentially impacting land management activities and projects. All Forest activities and projects will be designed to minimize adverse impacts or actually enhance fisheries and riparian resources. Enhancement of fisheries and riparian resources will be attained through stream and riparian habitat improvement projects, with habitat structures or treatments designed and implemented on an annual schedule throughout the Forest. Habitat improvement projects will be funded through both line item appropriations for habitat improvement, and through timber sale area improvement funds (K-V funds).

Maintenance of fish habitat capability focuses on protecting existing high quality riparian and stream habitat by minimizing possible adverse impacts from proposed management activities or mitigating effects from past activities. A key strategy in the protection and maintenance of Forest fisheries resources is the designation of riparian reserves, managed to protect and benefit all members of aquatic and riparian communities. Riparian-dependent resources (fish, water quality, wildlife habitat) will receive preferential consideration when conflicts occur among land use activities. Further management direction supporting maintenance of fish habitat is implicit throughout the Forest-wide standards and guidelines and within the Riparian Reserve Management Area prescriptions discussed in this chapter.

Habitat capability information is utilized in planning road construction, timber harvest, and other projects in order to reduce the potential impacts from excess sedimentation or water temperature increases. Habitat assessments are integrated into project level planning to identify potential stream habitat degradation from erosion and sedimentation, water temperature increases, or loss of large woody debris recruitment.

Habitat improvement and restoration efforts will be planned and implemented according to the FSEIS ROD in an interagency manner with the involvement and cooperation with the California Department of Fish and Game and other state and federal agencies as appropriate. Fish habitat restoration work will be done through both upland watershed restoration and instream habitat maintenance by: 1) facilitating and enhancing the natural recruitment processes of large woody debris, and 2) use of site-specific structural treatment. Site-specific work will be performed in areas where access is available, hydrological conditions are favorable, and detailed habitat surveys have identified a need for treatment and good potential for enhancement benefits. Stream habitat inventories along with annual spawning and rearing surveys wil be employed in both treated streams and in other representative sub-basins to monitor year-to-year fluctuations in salmonid relative abundance with regard to habitat use in order to evaluate effectiveness of habitat projects. “Effectiveness monitoring” is the key to fine tuning habitat improvement methods for the future. Effectiveness monitoring is described in detail in Chapter 5 of this Plan. Inventories and surveys also provide valuable baseline information on life history, natural population fluctuations, and seasonal changes in habitat availability; all sound fisheries and riparian management strategy.

The Aquatic Conservation Strategy (FSEIS ROD pages B-9 to B-33 except as noted otherwise) outlines specific objectives regarding the Forest goals in the management of aquatic and riparian resources. The aquatic conservation strategy employs several tactics to approach the goal of maintaining “natural” disturbance regimes. Land use activities need to be limited or excluded in those parts of the watershed prone to instability. The distribution of land use activities, such as timber harvest or roads, must minimize increases in peak streamflows. Headwater riparian areas need to be protected, so that when debris slides and flows occur they contain coarse woody

debris and boulders necessary for creating habitat farther downstream. Riparian areas along larger channels need protection to limit bank erosion, ensure an adequate and continuous supply of coarse woody debris to channels, and provide shade and microclimate protection. Watersheds currently containing the best habitat, in addition to those with the greatest potential for recovery, should receive increased protection and receive highest priority for restoration programs.

Any species-specific strategy aimed at defining explicit standards for habitat elements and not incorporating ecological aspects would be insufficient for protecting even the targeted species. The Aquatic Conservation Strategy must strive to maintain and restore ecosystem health at watershed and landscape scales to protect habitat for fish and other riparian-dependent species and resources and restore currently degraded habitats. This approach seeks to prevent further degradation and restore habitat over broad landscapes as opposed to individual projects or small watersheds. Because it is based on natural disturbance processes, it may take decades, possibly more than a century, to accomplish all of its objectives. Some improvements in aquatic ecosystems, however, can be expected in 10 to 20 years.

The important phrases in these standards and guidelines are "meet Aquatic Conservation Strategy objectives," "does not retard or prevent attainment of Aquatic Conservation Strategy objectives," and "attain Aquatic Conservation Strategy objectives." These phrases, coupled with the phrase "maintain and restore" within each of the Aquatic Conservation Strategy objectives, define the context for review and implementation of management activities. Complying with the Aquatic Conservation Strategy objectives means that the Forest must manage the riparian-dependent resources to maintain the existing condition or implement actions to restore conditions. The baseline from which to assess maintaining or restoring the condition is developed through a watershed analysis. Improvement relates to restoring biological and physical processes within their ranges of natural variability.

The standards and guidelines are designed to focus the review of proposed and certain existing projects to determine compatibility with the Aquatic Conservation Strategy objectives. The standards and guidelines focus on "meeting" and "not preventing attainment" of Aquatic Conservation Strategy objectives. The intent is to ensure that a decision maker must find that the proposed management activity is consistent with the Aquatic Conservation Strategy objectives. The decision maker will use the results of watershed analysis to support the finding. In order to make the finding that a project or management action "meets" or "does not prevent attainment" of the Aquatic Conservation Strategy objectives, the analysis must include a description of the existing condition, a description of the range of natural variability of the important physical and biological components of a given watershed, and how the proposed project or management action maintains the existing condition or moves it within the range of natural variability. Management actions that do not maintain the existing condition or lead to improved conditions in the long term would not "meet" the intent of the Aquatic Conservation Strategy and thus, should not be implemented.

## Aquatic Conservation Strategy Objectives

The following aquatic conservation strategy objectives are from FSEIS ROD page B-11.

Forest lands will be managed to:

1. Maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features to ensure protection of the aquatic systems to which species, populations and communities are uniquely adapted.

2. Maintain and restore spatial and temporal connectivity within and between watersheds. Lateral, longitudinal, and drainage network connections include floodplains, wetlands, upslope areas, headwater tributaries, and intact refugia. These network connections must provide chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian-dependent species.

3. Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.

4. Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Water quality must remain within the range that maintains the biological, physical, and chemical integrity of the system and benefits survival, growth, reproduction, and migration of

individuals composing aquatic and riparian communities.

5. Maintain and restore the sediment regime under which aquatic ecosystems evolved. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.

6. Maintain and restore in-stream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The timing, magnitude, duration, and spatial distribution of peak, high, and low flows must be protected.

7. Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands.

8. Maintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distributions of coarse woody debris sufficient to sustain physical complexity and stability.

9. Maintain and restore habitat to support well-distributed populations of native plant, invertebrate, and vertebrate riparian-dependent species.

Components of the Aquatic Conservation Strategy
The following aquatic conservation strategy components are from FSEIS ROD page B-12.

1. Riparian Reserves: Lands along streams and unstable and potentially unstable areas where special standards and guidelines direct land use.

2. Key Watersheds: A system of large refugia comprising watersheds that are crucial to at-risk fish species and stocks and provide high quality water.

3. Watershed Analysis: Procedures for conducting analysis that evaluates geomorphic and ecologic processes operating in specific watersheds. This analysis should enable watershed planning that achieves Aquatic Conservation Strategy objectives. Watershed Analysis provides the basis for monitoring and restoration programs and the foundation from which Riparian Reserves can be delineated.

4. Watershed Restoration: A comprehensive, long-term program of watershed restoration to restore watershed health and aquatic ecosystems, including the habitats supporting fish and other aquatic and riparian-dependent organisms.

These components are designed to operate together to maintain and restore the productivity and resiliency of riparian and aquatic ecosystems. Late-Successional Reserves are also an important component of the Aquatic Conservation Strategy. The standards and guidelines under which Late-Successional Reserves are managed provide increased protection for all stream types. Because these reserves possess late-successional characteristics, they offer core areas of high quality stream habitat that will act as refugia and centers from which degraded areas can be recolonized as they recover. Streams in these reserves may be particularly important for endemic or locally distributed fish species and stocks.

## Riparian Reserves

See the Riparian Reserve Management Area for the management direction and standards and guidelines for Riparian Reserves.

## Key Watersheds

Refugia are a cornerstone of most species conservation strategies. They are designated areas that either provide, or are expected to provide, high quality habitat. A system of Key Watersheds that serve as refugia is crucial for maintaining and recovering habitat for at-risk stocks of anadromous salmonids and resident fish species. These refugia include areas of high quality habitat as well as areas of degraded habitat. Key Watersheds with high quality conditions will serve as anchors for the potential recovery of depressed stocks. Those of lower quality habitat have a high potential for restoration and will become future sources of high quality habitat with the implementation of a comprehensive restoration program (see Watershed Restoration later in this section of these standards and guidelines).

All Key Watersheds on the Forest are designated as Tier 1 (Aquatic Conservation Emphasis) Key Watersheds. Tier 1 Key Watersheds contribute directly

to conservation of at-risk anadromous salmonids, bull trout, and resident fish species. They also have a high potential of being restored as part of a watershed restoration program.

The key watersheds for anadromous fish on Six Rivers National Forest are listed in Table IV-12 below with the area of each and the percent managed by the Forest.

**Table IV-12.**

**Key watersheds on Six Rivers National Forest (SRNF)**

**with the area of each watershed and the percent under SRNF management.**

| River/stream | Area (ac.) | % SRNF |
|---|---|---|
| **1. Smith River** | 390,680 | 85 |
| **2. Klamath River tributaries** | | |
| Blue Creek | 80,240 | 80 |
| Bluff Creek | 47,440 | 98 |
| Camp Creek | 27,280 | 97 |
| Red Cap Creek | 40,280 | 99 |
| **3. Trinity River tributaries** | | |
| Lower South Fork Trinty River | 55,510 | 52 |
| Horse Linto Creek | 43,750 | 97 |
| **4. Mad River tributary** | | |
| Pilot Creek | 25,440 | 99 |
| **5. North Fork Eel River** | 110,310 | 62 |

## Watershed Analysis

Watershed analysis is required in Key Watersheds, for roadless areas in non-Key Watersheds, and Riparian Reserves prior to determining how proposed land management activities meet Aquatic Conservation Strategy objectives. Watershed analyses must be completed before initiating actions within a Key Watershed, except that in the short term, until watershed analysis can be completed, minor activities such as those that would be categorically excluded under National Environmental Policy Act regulations (except timber harvest) may proceed if they are consistent with Aquatic Conservation Strategy objectives and Riparian Reserves and standards and guidelines are applied. Timber harvest, including salvage, cannot occur in Key Watersheds without a watershed analysis. Ultimately, watershed analyses should be conducted in all watersheds on federal lands as a basis for ecosystem planning and management.

In the initial years of implementation, the process for watershed analysis is expected to evolve to meet long-term goals described in these standards and guidelines. However, some projects proposed for the first few years of implementation are in areas that require watershed analysis prior to approval of the projects (i.e., Key Watersheds, Riparian Reserves, and inventoried roadless areas). In F.Y.s 1995-96, watershed analysis done for these projects may be less detailed than analyses that are completed in later years. Regardless, analysis done during the initial years (F.Y. 1995-96) will comply with the following guidance:

The goal of the analysis is to determine whether the proposed actions are consistent with the objectives of the standards and guidelines.

Existing information will be used to the greatest extent possible, with new information collected, to the maximum extent practicable, to fill crucial data gaps.

Analysis will address the entire watershed, even though some areas may be analyzed at a lower level of

precision, and the analysis of issues may be prioritized.

Information from the analysis will flow into the NEPA documentation for specific projects, and will be used where practicable to facilitate Endangered Species Act and Clean Water Act compliance.

Restoration opportunities will be identified.

As described elsewhere in these standards and guidelines, watershed analysis is an ongoing, iterative process. Watershed analyses will expand as appropriate to consider additional available information, changing conditions and potential effects associated with long-term management issues and needed actions. *(From FSEIS ROD page A-7)

Watershed analysis will focus on collecting and compiling information within the watershed that is essential for making sound management decisions. It will be an analytical process, not a decision-making process with a proposed action requiring NEPA documentation. It will serve as the basis for developing project-specific proposals, and monitoring and restoration needs for a watershed. Some analysis of issues or resources may be included in broader scale analyses because of their scope. The information from the watershed analyses will contribute to decision making at all levels. Project-specific NEPA planning will use information developed from watershed analysis. For example, if watershed analysis shows that restoring certain resources within a watershed could contribute to achieving landscape or ecosystem management objectives, then subsequent decisions will need to address that information.

## Watershed Restoration

Watershed restoration will be an integral part of a program to aid recovery of fish habitat, riparian habitat, and water quality. Restoration will be based on watershed analysis and planning. Watershed analysis is essential to identify areas of greatest benefit-to-cost relationships for restoration opportunities and greatest likelihood of success. Watershed analysis can also be used as a medium to develop cooperative projects involving various landowners. In many watersheds the most critical restoration needs occur on private lands downstream from federally managed lands. Decisions to apply a given treatment depend on the value and sensitivity of downstream uses, transportation needs, social

expectations, risk assessment of probable outcomes for success in correcting problems, costs, and other factors. Watershed analysis, including the use of sediment budgets, provides a framework for considering benefit-to-cost relations in a watershed context. Thus, the magnitude of restoration needs within the planning area will be based on watershed analysis.

The most important components of a watershed restoration program are control and prevention of road-related runoff and sediment production, restoration of the condition of riparian vegetation, and restoration of in-stream habitat complexity. Other restoration opportunities exist, such as meadow and wetland restoration and mine reclamation, and these may be quite important in some areas. However, these opportunities are much less extensive than the three components listed above.

## Roads

Road treatments range from full decommissioning (closing and stabilizing a road to eliminate potential for storm damage and the need for maintenance) to simple road upgrading, which leaves the road open. Upgrading can involve practices such as removing soil from locations where there is a high potential of triggering landslides, modifying road drainage systems to reduce the extent to which the road functions as an extension of the stream network, and reconstructing stream crossings to reduce the risk and consequences of road failure or washing out at the crossings.

The decision to apply a given treatment depends on the value and sensitivity of downstream uses, transportation needs, social expectations, assessment of probable outcomes for success at correcting problems, costs, and other factors. Watershed analysis, including the use of sediment budgets, provides a framework for considering benefit-to-cost relations in a watershed context.

## Riparian Vegetation

Active silvicultural programs will be necessary to restore large conifers in Riparian Reserves. Appropriate practices may include planting unstable areas such as landslides along streams and flood terraces, thinning densely-stocked young stands to encourage development of large conifers, releasing young conifers from overtopping hardwoods, and reforesting shrub and hardwood-dominated stands with conifers. These practices can be implemented along with silvicultural treatments in uplands areas, although the practices will differ in objective and, consequently, design.

## In-Stream Habitat Structures

In-stream restoration, based on the interpretation of physical and biological processes and deficiencies during watershed analysis, can be an important component of an overall program for restoring fish and riparian habitat. In-stream restoration measures are inherently short term and must be accompanied by riparian and upslope restoration to achieve long-term watershed restoration. Maintaining desired levels of channel habitat complexity, for example, may best be achieved in the short term by introducing structures.

However, a riparian area with the complete array of functions and processes should provide coarse woody debris to the channel in the long term.

In-stream restoration will be accompanied by riparian and upslope restoration if watershed restoration is to be successful. In-stream restoration, including in-channel structures, will not be used to mitigate for management actions that degrade existing habitat, as a substitute for habitat protection, or to justify risky land management activities and practices. Priority must be given to protecting existing high quality habitat.

## Standards and Guidelines

### General

9-1 Summer steelhead (a sensitive species) will be managed in accordance with the regional implementation plan. A biological evaluation (BE) for summer steelhead will be prepared for all projects that could affect this species.

9-2 Manage all activities and implement the management direction given in the Riparian Reserve Management Area section of this chapter.

9-3 Priority for fish habitat and riparian restoration will be placed on 1) maintenance or restoration of salmonid spawning and rearing habitats. (The major components of these habitats are: a) Rearing: water temperatures, pool depths, overhead and instream cover, instream woody debris and low-gradient habitats (e.g. side channels, glides and wintering areas), and b) Spawning: gravel quantity, quality and stability; instream cover for adults in the form of pools and woody debris.); and 2) maintaining and restoring the function of riparian processes including LWD recruitment and retention, canopy cover, and nutrient supply and flow to the stream ecosystem.

9-4 Existing habitat improvements will be maintained. Improvement projects will be evaluated on effectiveness in providing their designated habitat attributes (cover, depth, shade, spawning substrate, etc.).

9-5 Habitat for native species other than salmon and steelhead will be improved.

9-6 Large woody debris recruitment and loading will be maintained or increased through retention of instream material and by providing for natural recruitment of trees as outlined in Riparian Reserve Management Area section of this chapter.

9-7 All existing and proposed sand and gravel operations shall be designed and conducted so as to have no negative effects on fish habitat, fish populations, riparian dependent species of plants and animals, and stream channel stability. All sand and gravel mining operations and proposals shall be reviewed by an ID team, including a fisheries biologist and hydrologist, to determine the necessary NEPA steps and documentation.

### Key Watersheds

9-8 Inside roadless areas - No new roads will be built in remaining unroaded portions of inventoried (RARE II) roadless areas that still qualify as “roadless.”

9-9 Outside roadless areas - Reduce existing system and nonsystem road mileage. If funding is insufficient to implement reductions, there will be no net increase in the amount of roads in Key Watersheds.

9-10 Key Watersheds are highest priority for watershed restoration, especially those that currently contain poor quality habitat.

9-11 Watershed analysis is required prior to management activities, except minor activities such as those categorically excluded under NEPA (and not including timber harvest or salvage).

9-12 Watershed analysis is required prior to timber harvest.

### Watershed Analysis

9-13 Watershed analysis is required in all remaining roadless areas prior to resource management activities, except minor activities such as those categorically excluded under NEPA.

9-14 Watershed analysis is recommended in non-key watersheds.

9-15 Watershed analysis is required to change Riparian Reserve widths in all watersheds.

9-16 Earthflows will be analyzed for inclusion within Riparian Reserves.

### Restoration

9-17 Watershed restoration should focus on removing and upgrading roads.

9-18 Watershed restoration should restore channel complexity. In-stream structures should only be used in the short-term and not as a mitigation measure.

## SOCIAL AND ECONOMIC ENVIRONMENT

### NATIVE AMERICAN TRUST RESPONSIBILITY

### Goals

Emphasize increasing understanding, communications, and partnerships with Federally recognized Tribal governments.

Improve relationships between the Forest Service and Indian people.

Facilitate access and use of National Forest System lands by Indian people.

### Direction

Maintain a government-to-government relationship with Tribal governments as a condition of their treaty rights. Involve interested local Native Americans in policy making and project level planning.

Of significant importance to the Forest is the Native American Contemporary Use Area (NACUA) Management Area. The Forest has trust responsibilities to local Native Americans, and this management area is recognition of their need for solitude and the protection of spiritual places sacred to the Native American.

Gathering of plants and other material for the making of baskets, religious regalia, clothing, and food takes place throughout the area managed by the Forest. Managers and employees will be sensitive to the needs of Native Americans pursuing their ancestral traditions.

### Standards and Guidelines

10-1 Follow government-to-government protocol as established by agreements.

10-2 Consult and coordinate on projects that have the potential to affect Native American values.

10-3 Prepare a memorandum of understanding (MOU) with Federally-recognized Tribes for all Forest lands within cultural districts eligible for the National Register of Historic Places. Develop the agreement jointly, between the Forest Service and the Tribe(s). At a minimum, the MOU should address Forest management activities that may affect religious ceremonies. Also, wildfire management options and opportunities, timber salvage opportunities, and cultural resource protection should be addressed.

10-4 Coordinate planned Forest management activities for areas immediately surrounding the districts with the Tribe(s). Determine if the activities would affect ceremonies occurring within the districts. Mitigation measures should be used to avoid conflicts with ceremonial activities.

10-5 The Forest will neither deny access nor preclude the use of sacred sites on forest land.

10-6 Programs and activities will honor Indian treaty rights and fulfill legally mandated trust responsibilities to the extent they are determined applicable to National Forest System lands.

10-7 Programs and activities should be administered to have regard for and be sensitive to traditional Indian religious beliefs and cultural practices.

10-8 Provide research, transfer of technology, and technical assistance to Indian governments.

### RURAL COMMUNITY ASSISTANCE

#### Standards and Guidelines

11-1 Assist National Forest dependent communities in establishing local action teams, developing and implementing local action plans.

11-2 Recognize, and where feasible remove, barriers that impede the flow of financial and technical assistance and the transfer of technology to rural communities.

11-3 The Forest will work with local community leaders and individuals to provide opportunities for the development of natural resource-based enterprises identified in local action plans. Within the scope of existing laws and direction, the Forest may contribute current technology, equipment, technical skills, work force, natural resources or financial resources to work with and support efforts of local communities.

11-4 The Forest will develop and maintain partnerships with cooperating organizations and agencies in the development and implementation of resource-based programs and activities supportive of local action plans.

11-5 Where appropriate, the Forest should identify options to develop opportunities for non-traditional forest-based programs and activities.

11-6 The Forest will consider rural development options and opportunities in resource decisions that may assist rural communities in implementing local action plans.

11-7 Explore opportunities to increase local employment in Forest project implementation.

11-8 Actively seek cooperative funding to finance rural development opportunities from public and private sources.

11-9 Where possible, the Forest may integrate human resource programs into the implementation phase of natural resource programs. These programs would provide work, training, youth education and opportunities for under-employed, unemployed, elderly, and other individuals with special needs.

## RESOURCE MANAGEMENT PROGRAMS

### HERITAGE RESOURCES

#### Goals

Identify, evaluate, and provide for public appreciation of cultural resources on National Forest lands. Maintain a well-balanced heritage resource program in the areas of prehistory, history, ethnography, and contemporary values.

Recognize the contemporary values of the American Indians who use the Forest and provide positive resolution where other resource uses conflict with those values.

#### Direction

The heritage resource program will be fully integrated with other resource management activities. Cultural resource inventories will precede all activities with the potential to affect heritage resources. All sites located during these inventories will be documented in accordance with Regional standards. The Forest management impacts to all significant cultural resources will be mitigated, as set forth in the National Historic Preservation Act of 1966.

Information gaps occur in prehistoric, historic, and ethnographic records. Data will be collected and interpretation programs developed as time and funds permit.

#### Standards and Guidelines

12-1 A cultural resources inventory will be completed for any proposed activity that could affect cultural resources. Results of these inventories will be documented in a project specific Cultural Resources Inventory Report (CRIR). A certified archaeological surveyor, archaeologist, or historian will conduct the cultural resource inventory.

12-2 The significance of and effects on inventoried sites will be evaluated by an archaeologist or historian. Consultation with the California State Historic Preservation Officer and the Advisory Council on Historic Preservation will take place as required.

12-3 Identified cultural resources will be protected from disturbance and artifact theft through the implementation procedures outlined for the National Historic Preservation Act and the Archaeological Resources Protection Act.

12-4 Proposed projects with potential to affect local Native American cultural values or contemporary uses, or in locations known as traditional Native American spiritual use areas, will be discussed with a cross section of the local Indian population and Tribal Governments. These discussions will take place in the early stages of planning and environmental analysis to identify possible mitigation opportunities or alternatives.

## TRANSPORTATION AND FACILITIES

### Goals

Provide public access to National Forest lands for the use and enjoyment of its natural resources.

Provide a safe, efficient and cost-effective transportation system.

Provide access for the physically challenged to a wide variety of Forest Service programs, services and activities.

Provide safe, functionally efficient and aesthetically pleasing facilities to support the Forest programs.

### Direction

### Transportation System

Integrate the maintenance and development of routes with wildlife resource objectives to minimize open road densities.

The Forest's road and trail system must be sufficient to respond to resource management objectives. The development, maintenance, and management of the roads and trails will be an integral part of the resource management planning activities.

Road and trail development activities include but are not limited to the following: transportation planning, route location, route survey, design, contracting, construction and inspection.

Road and trail management activities include the establishment and annual updating of a Transportation System Development Plan and a Transportation System Management Plan which support implementation of this Land and Resource Management Plan. Other activities include planning, organizing, and controlling application of actions to develop and maintain the Forest road system, and the management of people, equipment, and funds.

### Administrative Sites

Development, maintenance, and management of administrative sites and facilities (for example: offices, barracks, visitor centers, etc.).

Administrative site development activities include, but are not limited, to the following: site survey, contracting, site construction, and inspection.

Site maintenance activities include those actions necessary to be able to occupy the site in a safe and orderly manner.

Site management activities include the establishment and maintenance of site development plans for each site plus the compilation of projects by priority into a Facilities Master Plan. The Facilities Master Plan will support implementation of this Land and Resource Management Plan, and health and safety items will be

given highest priority for funding. Other management activities include planning, organizing, and controlling actions to develop and maintain administrative sites as well as management of people, structures, equipment, and funds.

Three utility corridors are designated in the Lands section of this Chapter.

## Standards and Guidelines

13-1 Existing permanent roads not necessary for administrative, recreation, resource protection, commercial and/or public access should be closed after all project work has been completed. Travel restrictions may be imposed on Forest road users to reduce or eliminate conflicts between user groups or provide for public safety.

13-2 Stream crossings on roads will be constructed and maintained so as not to impede the passage of fish, deteriorate water quality, nor impact the aquatic ecosystem. Further specific standards are given in the Riparian Reserve Management Area direction.

13-3 Culverts or bridges should be constructed for permanent stream crossings on transportation system roads. Further specific standards are given in the Riparian Reserve Management Area direction.

13-4 The permanent transportation system should be maintained to meet the objectives as stated in the annual maintenance program. Correction of existing problems and prevention of future resource damage is the highest priority.

13-5 Temporary roads will be obliterated and rehabilitated.

13-6 The selection, design and development of aggregate sources, road surfacing methods and materials will meet Federal standards for airborne asbestos.

13-7 A pit development plan should be prepared for large aggregate sources to insure efficient use of aggregate resources and avoid adverse environmental effects.

13-8 On the existing trail system, the Forest should satisfy recreational demand in a condition that protects other resources and meets minimum requirements for user safety. Trails should be maintained to accommodate the designated mode of travel.

13-9 At a minimum, sufficient maintenance will be provided to protect soil and water resources from potential impacts from trails included in the Forest Trail System.

13-10 Displacement of Forest system trails by new roads should be avoided. Where displacement is unavoidable and recreation use warrants, new trails should be constructed to replace those

sections lost in order to protect the integrity of the system and to maintain the quality of recreation experiences.

13-11 Buildings will be maintained according to the annual maintenance program with emphasis on public and employee health and safety.

13-12 Facilities will be designed and constructed to comply with local, state, and national codes.

13-13 Where possible, roads will be located to avoid riparian areas, wetlands, and wet meadows, and maintain existing drainage patterns.

13-14 All stream crossings will be designed to meet standards outlined in the Riparian Reserve Management Area direction.

13-15 In order to reduce the spread of Port-Orford-cedar, a risk analysis will be completed for all projects (see 20-7) in watersheds containing Port-Oford-cedar.

## FIRE/FUELS MANAGEMENT

### Goal

Provide well-planned and well-executed fire protection and fuel management programs (including fire use through prescribed burning) that are responsive to land and resource management objectives.

### Direction

Fire is a fundamentally important ecological process in most grassland, shrubland, and forest types in California. In fire-adapted ecosystems fire regulates biotic productivity and stability in ways that cannot be fully emulated by mechanical or chemical means. In the prolonged absence of fire, and aggravated by other disturbance factors, these fire-adapted forests and grasslands have undergone significant changes in species composition and structure. Intermediate canopy layers and higher ground fuel loadings have developed which allow ground fires to reach the crown more easily, making fires more difficult to control. Often more apparent during prolonged periods of drought, these changes have predisposed extensive areas to epidemic insect infestations, disease outbreaks, and severe stand replacing wildfires. Also, the growing urban/wildland intermix requires adjustments in strategies to protect life and property.

To address these issues, a Forest-wide Fire Management Action Plan will be developed that describes and analyzes the current and potential fire and fuels situation on the Forest (and adjacent areas of influence). Strategies for future fire and fuels management will also be developed as part of this action plan. A programmatic diversity will be maintained in fire management, but efforts in prevention, suppression, hazard reduction, fire use, and fire rehabilitation will be aligned to more fully complement one another in support of ecosystem management.

Application of prescribed fire for ecosystem maintenance and restoration, and for hazard reduction should vary in extent and frequency of application, and intensity of burning. The differences in applications should be related to the role of natural fire in specific landscapes, current ecosystem needs, and wildfire hazard analysis included in fire management planning efforts. Deviations from the standards and guidelines of the selected alternative may be necessary due to area-specific fuel loading conditions, the wide natural variability in provinces and individual stand histories, and/or local social issues and concerns.

Post-fire rehabilitation will be consistent with the standards and guidelines in the Native Plant Material Use section of this chapter.

### Standards and Guidelines

14-1 All wildfires will receive a suppression response that is appropriate to meet the management area objectives. The response will be safe, timely, and cost efficient.

14-2 When properly equipped Forest Service engines and trained personnel are available, they will take fire suppression action to protect structures within the Forest's area of responsibility for all reported fires that involve a threat to life or pose a threat to National Forest resources.

14-3 Concentrations of fuels created by management activities will be reduced to acceptable levels and arrangements based on the site specific wildfire risk and the needs of other resources. The selected treatment methods should consider resource values and environmental limitations (for example, topography, accessibility) as well as costs.

14-4 Prescribed fire will be used in natural fuels treatment for various benefits including: a)

enhancement of diversity in the structure and composition of plant communities; b) reduction of fire hazard; c) area enhancement for the production and protection of commercial timber yields; d) enhancement of the production of plants and other materials for Native American gathering; and e) enhancement of other resource outputs such as wildlife habitat, forage, and browse.

14-5 When prescriptions for timber, wildlife, and other resource management projects call for burning as a method of accomplishment, the risk of fire damage to adjacent resource and property values will be evaluated and plans developed to minimize negative impacts.

14-6 Naturally ignited fires may be managed as prescribed fires, as determined on a case-by-case basis through an assessment of hazard and risk and the direction found in the area specific fire management plan.

14-7 Structural components such as snags, duff, and coarse woody debris should be protected from wildfire and suppression damage to the extent possible. Trees and snags should be felled only if they pose a threat to firefighter safety or contribute to the risk of wildfire spread.

14-8 Those suppression actions which are likely to cause more damage to critical resources (for example, threatened and endangered plant or animal species, and their habitats) than the fire itself will be carefully evaluated and alternative actions considered. Resource management experts will be involved to evaluate potential suppression damage compared to potential wildfire damage.

14-9 Appropriate resource management experts will be included in developing project level hazard reduction plans. These plans should identify levels of coarse woody debris and snags (of adequate size and in sufficient amounts) to meet the habitat requirements of species of concern. Additionally, these plans must provide for the safety of firefighting personnel and produce a fuel profile that supports land allocation objectives.

14-10 Resource management activities should be designed and implemented so that the wildfire hazard level of the surrounding area is not increased to an unacceptable level.

14-11 For areas in the matrix that are located in the rural interface, fire management activities should be coordinated with local governments, agencies, and landowners during watershed analysis to identify additional factors which may affect hazard reduction goals. Hazard reduction may become more important in the rural interface and areas adjacent to structures, dwellings or other amenities. *(FSEIS ROD page C-48)

## LANDS

### Goals

Reduce land management problems and minimize conflicts between uses of National Forest System and adjacent private lands.

Actively pursue and eliminate illegal occupancy and use.

### Direction

The acquisition of private land and exchange of Federal land is conducted to consolidate National Forest System land ownership and improve management efficiency. As opportunities arise, landownership may be adjusted through purchase, exchange, or other methods of acquisition as appropriate. Reasons for adjustments include consolidation of National Forest Lands, reduction of landline location work, reduction of administration costs, needed rights-of-way, and protection of scenic qualities of designated Wild and Scenic Rivers. Priority will be given to the acquisition of available private lands with high recreation, wildlife (threatened and endangered species in particular) and anadromous fish values, and lands within designated wilderness or wild and scenic river corridors. Priority will also be given to conveying to private ownership small parcels of land that contain encroachments or mineral fractions and that qualify for conveyance under the Small Tracts Act. Conversely, the Forest will retain areas known to have high wildlife and anadromous fish values. Likewise, lands within designated wilderness and wild and scenic river corridors, except those small parcels of land that qualify for disposal under the Small Tracts Act, will be retained.

Special use applications require environmental analysis and may require appropriate site-specific requirements and mitigation measures.

Rights-of-way are considered encumbrances on National Forest System land that may eliminate or restrict management opportunities. Full evaluation through environmental analysis is needed before deeding an easement.

The following are designated and will be managed as multi-use communications sites: Camp Six, Horse Mountain, and the Six Rivers National Forest portion of Pickett Peak. Continue to authorize minor development, resource monitoring, and government agency uses at single-use communications sites.

The three existing utility corridors identified in the Western Utility Group's Western Regional Corridor Study (1992) are designated and will be managed as utility corridors. These corridors encompass Pacific Power and Light Company's Lines 38 and 44 (Smith River National Recreation Area) and Pacific Gas and Electric Company's Humboldt Cottonwood #1 (Lower Trinity District) and Humboldt Cottonwood #2 (Mad River District).

### Standards and Guidelines

15-1 When lands are acquired or disposed of, the physical and biological attribute of those lands will be added or deleted from the database.

15-2 Special uses should be allowed on National Forest System land when these uses will not conflict with National Forest programs or objectives, cannot be reasonably developed on private land, and are in the public's interest.

15-3 Sanitary land fills will not be approved or permitted on National Forest System lands.

15-4 Development of new electronic or telecommunications sites should be considered only if existing sites are inadequate or there are no other options.

15-5 Rights-of-way needed for public access and National Forest resource needs must be acquired in advance of scheduled programs.

15-6 Lands identified for exchange should be maintained in an unencumbered state and in a condition that will optimize their exchange value.

15-7 Evaluate newly identified encroached areas and mineral fractions within a wild and scenic river corridor concurrently for exclusion from the management area and Small Tracts Act conveyance. Convey qualifying parcels under STA when the Plan is amended to exclude such parcels from Recreational, Scenic, or Wild River Management Areas.

## MINERALS

### Direction

Manage National Forest System lands that are not withdrawn from mineral entry to encourage and facilitate the exploration, development and production of mineral resources while ensuring that these activities are integrated with the use and protection of other resources.

### Standards and Guidelines

16-1 Operating plans will address reclamation of disturbed land to a second productive use consistent with management area direction. Reclamation bonds will be required for all operations proposing to disturb surface resources where natural processes would not be expected to restore the surface in one season.

16-2 The presence of valid existing rights will be confirmed before approving proposed mineral operations in areas withdrawn from mineral entry other than for annual assessment work, except when claim can be held by payment of a fee, and for limited sampling or mapping prior to determination of valid existing rights by the BLM.

16-3 Activities proposed to facilitate mineral exploration, development or production will be approved only if they are necessary to the mineral entry.

16-4 Appropriate environmental analysis will be the basis for approving proposed mineral-related activities, establishing reclamation objectives and requirements, designing necessary mitigations to protect other resources, and establishing bonding requirements.

16-1 Mineral activities should be coordinated with other Federal, State and local authorities.

16-6 Compliance checks should be conducted on approved mineral activities to ensure that they are being conducted in compliance with a permit, lease, or approved operating plan.

16-7 Withdrawals from mineral entry should be for the purpose of maintaining other public values in the area or to reserve the area for a particular public purpose or program. Actions to withdraw lands from entry under the General Mining Laws should be initiated when the following conditions occur:

a. There is potential for mineral development that would conflict with the resource value to be protected;

b. Applicable laws and regulations would not provide for adequate protection of surface resources and uses; and

c. Mitigation and restoration measures could not be prescribed to provide the opportunity for adequate protection of surface resources and uses.

## RANGE

### Goals

Manage for healthy rangeland ecosystems. Maintain the biologic diversity of rangeland ecosystems and protect fish and wildlife resources. Maintain rangeland productivity on suitable rangelands while providing forage for livestock production consistent with demand and other resource values and uses.

### Direction

Maintain or improve herbaceous forage vegetation. On annual grasslands, maintain a high density of naturalized annual grasses and forbs through proper management of residual dry matter. Where meadows are dry to moist, leave adequate residue for soil protection and avoid excessive use and trampling. Avoid early season use of wet meadows to maintain water tables and provide a maximum density of desired species.

Conduct rangeland project decisions (RPD) on all allotments during the planning period. Allotments are prioritized for completion of RPDs (see Appendix F). The RPD will include a strategy for the management of riparian areas to benefit all pertinent resource uses. The RPD will identify vegetative needs for the riparian area and include management actions required to attain riparian objectives.

### Standards and Guidelines

Standards and guidelines, including those identified in the FSEIS ROD, that pertain to the effects of the range program upon other resource areas are found under other resource and management area headings (e.g. Wilderness and Riparian Reserve Management Areas). Forage utilization of key species on key areas will be measured using percent, by weight, of current forage production. Methods of measurement include, but are not limited to: grazed plant method, height-weight method, clipped plots, ocular estimates, and percent of leaders grazed. Utilization standards may be less than those stated if trends are downward or if an interdisciplinary team, during the Rangeland Project Decision process, decides to lower the standard based on site-specific circumstances. Utilization allowances apply to use by livestock and wildlife. Standards and guides applicable to range management will be implemented to attain the aquatic conservation strategy objectives as outlined in the FSEIS ROD.

17-1 All rangelands will be managed for satisfactory ecological condition as defined in Table IV-13 below.

**Table IV-13.**

| Range Condition | Ecological Trend | Condition |
|---|---|---|
| Excellent | N/A | Satisfactory |

| | | |
|---|---|---|
| Good | N/A | Satisfactory |
| Fair | Upward/Static | Satisfactory |
| Fair | Downward | Unsatisfactory |
| Poor | N/A | Unsatisfactory |

17-2 Annual grasslands will be managed by the amount of residual dry matter at the time of germination in the fall (Draft FSH 2209.21, 6.61). If the residual dry matter standards are met, the annual grassland is considered to be in satisfactory ecological condition. The standards in Table IV-14 should provide adequate soil protection.

**Table IV-14.**

| Minimum Residual Dry Matter (RDM) | pounds per acre |
|---|---|
| Lower/flat slopes | 750 |
| Average/gentle slopes | 1000 |
| Upper/steep slopes | 1250 |

17-3 On perennial grasslands, allowable utilization can vary by grazing system, season of use, and ecological condition. As a general rule, maximum utilization is as shown in Table IV-15:

**Table IV-15.**

| Ecological Grazing System | Season-of-use | Condition | Utilization |
|---|---|---|---|
| Continuous | Full season/ Spring | Satisfactory | 40% |
| Continuous | Full season/ Spring | Unsatisfactory | 20% |
| Continuous | Summer | Satisfactory | 45% |
| Continuous | Summer | Unsatisfactory | 25% |
| Deferred/Rotation | N/A | Satisfactory | 60% |
| Deferred/Rotation | N/A | Unsatisfactory | 25% |

17-4 On wet meadows in satisfactory ecological condition, allow no more than 60 percent utilization. Allow no more than 30 percent utilization where ecological condition is unsatisfactory.

17-5 Where meadows are moist to dry, allow no more than 55 percent utilization when ecological condition is satisfactory. When ecological condition is unsatisfactory, allow no more than 25 percent utilization.

17-6 Utilization of shrubs in riparian areas will not exceed 20 percent of the current year's growth.

17-7 Utilization of herbaceous species along streambanks will not exceed 30 percent.

17-8 At the end of the grazing season, no more than 20 to 30 percent of the streambank along homogeneous reach will be altered by a combination of natural and artificial causes, including trampling by livestock (as evidenced by sloughing, eroding, and broken down banks). These bank stability standards may be exceeded only by natural causes, which may preclude activities such as livestock and recreation use.

17-9 Soil displacement (mechanical movement of soil) as a result of livestock will not exceed 10 percent of the area affected in coarse soils (gravels, sands, loamy sands, and sandy loams). In medium and fine soils (loams, silts, and clays) disturbance will not exceed 20 percent (Draft FSH 2209.21, 3.31a).

17-10 Soil compaction is a problem on heavy soils, especially if they are wet. Soil compaction will be judged as none, light, moderate, or heavy. Proper use should not exceed moderate compaction (Draft FSH 2209.21, 3.31a).

17-11 Rangeland project decisions (RPD), developed in accordance with NEPA, will coordinate livestock use with other resource and activities. RPDs will be compatible with management area direction. Allotments may be analyzed as a group using a landscape approach.

17-12 In determining carrying capacity, an animal-unit (defined as a 1000 lb mature cow) is considered to consume 26 lbs of dry weight forage per day (Draft FSH 2209.21, 3.33j). A cow with a calf is considered to be 1.32 animal-units. A deer is considered to be .19 animal units.

17-13 Carrying capacity determinations will take into consideration wildlife habitat objectives. Livestock grazing will be compatible with wildlife habitat objectives on designated wildlife areas.

17-14 Fencing will be designed and constructed to allow for safe passage of deer. On wire fences, the top wire will be, on the average, no more

than 42 inches from the ground. The bottom wire will be, on the average, no less than 16 inches from the ground.

17-15 Where applicable, utilize Coordinated Resource Management Planning (CRMP) in the development and implementation of Rangeland Project Decisions (RPD).

17-16 Transportation systems on range allotments will be designed and constructed with consideration for livestock distribution and drift.

17-17 Permittees will use salt as a management tool to aid in livestock distribution. In general, the placement of salt will be as follows:

1. In under-utilized vegetation types
2. On accessible ridges, knolls, and benches
3. In openings in browse types
4. At least 1/4 mile from riparian areas (unless riparian areas are physically protected such as with a fence)
5. At least 1/4 mile from plantations with seedlings less than 5 feet tall
6. At least 1/4 mile from land not under control of permittee

17-18 Extensions of season-of-use to grazing permittees will be granted only when they do not conflict with management area direction.

17-19 Maintenance of range improvements is the permittee's responsibility. Permittee will provide materials needed for normal repairs. All structural improvements will be operational prior to turnout and will be maintained during the period of use.

17-20 Permittees will generally share in the funding of range projects.

17-21 Permittees are to keep their cattle distributed through the season and prevent trespass into other units and/or allotments.

17-22 Livestock forage allocation and season of use will be established by an interdisciplinary team during the rangeland project decision process. This allocation will adhere to proper use criteria and will consider key areas, key species, condition and trend of soil and vegetation, livestock and wildlife requirements, aesthetics, and other resources.

17-23 Require supplemental feed for recreational livestock use, as necessary.

## RECREATION

Nationally, National Forest System lands, facilities, and programs are used by more recreation visitors than any other outdoor recreation provider in the United States. This Forest's recreation program is guided by the following principles: provide a full spectrum of high quality recreation opportunities to ensure customer satisfaction; encourage our employees to be innovative and responsive to customer needs; use partnerships effectively in meeting customer needs; incorporate the concept of universal design into all developed recreation settings to ensure accessibility and useability for a diversity of visitors reflecting age, ability and culture; and manage recreation resources in a sustainable manner compatible with other ecosystem values.

### Goals

Provide a wide range of quality outdoor recreation opportunities, emphasizing the unique character of the Six Rivers by providing access, facilities, and information necessary to meet public demand.

Incorporate universal design into all developed recreation settings to ensure accessibility and usability for a diversity of visitors.

Emphasize the national recreation strategy primarily through implementation of the Smith River National Recreation Area Management Plan.

Establish partnerships to develop recreation resources involving the three northern California counties (Del Norte, Humboldt, and Trinity), the State of California Department of Parks and Recreation, and the National Park Service and other partners.

Market unique Six Rivers National Forest and Smith River NRA recreation and tourism opportunities in cooperation with other State and Federal resource agencies and regional tourism organizations.

Support local economic development strategies that focus on increased recreation and tourism.

Improve customer service and enhance user enjoyment through quality interpretive and visitor information that interprets forest resources and management.

Provide quality wild, scenic and recreational river opportunities along designated rivers, based on the values for which they were designated under the Wild and Scenic Rivers Act.

Maintain wilderness to preserve its wilderness character while providing opportunities for a quality wilderness experience.

Develop designated motorized recreation routes on existing roads and trails, and expand opportunities by creating partnerships with user groups and other agencies.

### Direction

The "Recreation Opportunity Spectrum Users Guide" will be used to determine the applicable activities, social settings, and recreational experiences for each ROS class.

### Developed Sites:

Upgrade existing sites to current standards. Focus new construction in the SRNRA and in other areas of high use on the Forest such as lakes and rivers.

### Dispersed Recreation:

Continue to encourage semi-primitive non-motorized, semi-primitive motorized, and roaded recreation. Emphasize dispersed recreation along the river corridors and existing trails and roads that provide access to the interior of the Forest. Provide opportunities for non-motorized and motorized recreation through management of semi-primitive, non-motorized and motorized areas. Provide additional river access miles of hiking trails.

### Motorized Recreation:

Motorized recreation is the most popular recreation activity occurring within National Forest System Lands and is a legitimate use. It is conducted in a variety of vehicles which includes, but is not limited to, passenger cars, motorhomes, fourwheel drives, motorcycles, snowmobiles, all-terrain vehicles, and sport-utility vehicles.

Provide a range of recreational opportunities to meet the needs of motorized recreationists. Manage motorized recreation to provide for public safety and resource protection, and to reduce user conflicts. Develop a cooperative effort with state, local, and other agencies, Indian Tribes, and user groups to identify potential motorized recreation facilities and interpretive opportunities, where appropriate. Provide planning and implementation of the Statewide Motorized Trail (renamed California Backcountry Discovery Trail) as outlined in the MOU between BLM, USDA-FS, and the State of California.

This Plan contains programmatic direction for motorized recreation; implementation schedules will be developed consistent with Plan direction for different areas of the Forest to assess potential user and resource conflicts and propose designated routes. Specific routes would be designated at the project level through the NEPA process.

Cooperative funding and grant monies will be sought to help finance the design, construction, and maintenance of motorized recreation facilities.

### Wilderness:

Develop a modest level of trail reconstruction. Trail construction will focus on the development of loop systems to provide access, disperse recreation use, and add diversity to wilderness recreation experience. Existing trail systems will be maintained according to the Wilderness management direction.

### Trails:

Develop trail management objectives for all trails included in the Forest trail system. These management objectives will be used to identify the standard for each of the Forest's system trails.

## Standards and Guidelines

### General Recreation

18-1 Provide and maintain adequate directional signs to all recreation facilities.

18-2 Manage recreation according to the recreation opportunity spectrum (ROS) classes described in the ROS User's Guide, as specified in the management prescriptions.

18-3 Rehabilitate existing recreation developments to better serve the changing needs of users and to provide a quality recreation experience. Improve access for persons with disabilities at recreation sites.

18-4 Consider concessionaire operation of developed sites where it best serves public recreation needs.

18-5 Use the national reservation service for developed campsite reservations to provide customer service and increase tourism opportunities.

18-6 Use volunteer hosts in campgrounds to provide customer service, assist with minor maintenance duties, and to deter vandalism.

18-7 Work with recreation service partners (e.g. outfitters/guides, resorts) to cooperatively provide quality recreation opportunities.

18-8 Work in partnership with local communities, universities, and other agencies to expand recreational facilities, programs, and trails on both public and private lands.

18-9 Remove hazard trees in developed recreation sites, and along roads and trails.

18-10 Provide adequate off-road parking at trailheads to accommodate acceptable levels of use.

18-11 Maintain trailhead information sites that provide safety and effective recreation information.

18-12 Protect recreation amenities around areas of concentrated use.

18-13 Use available technology to provide odor-free, cost-effective toilet facilities where demand warrants their placement. Sanitary facilities will be blended to retain the line, form, color, and texture of the surrounding area wherever possible.

### Dispersed Recreation

18-14 Provide for a variety of dispersed uses consistent with resource protection.

18-15 Manage the trail system to provide for a range of recreational opportunities.

18-16 Manage most trails for multiple uses. Sign to indicate the preferred or desired use type. Restrict specific types of trail use only for reasons of resource protection or user conflicts.

18-17 Provide trailheads at road intersections as needed. Facilities at trailheads will be provided for health and safety or resource protection.

18-18 Trail maintenance will be performed in the following order of priority: 1) Correct trail hazards that endanger public health and safety, 2) prevent resource damage, 3) protect the trail resource, 4) repair, replace, or remove signs or markers, and 5) for the comfort and convenience of the user.

18-19 Depending on ROS class designation, facilities will be installed at areas of concentrated public use to protect the resource and for public health and safety rather than for user convenience.

18-20 Wildlife viewing and other non-consumptive wildlife opportunities should be identified and developed.

### Motorized Recreation

18-21 OHV use is restricted to designated routes.

18-22 Level 2 roads are open to motorized recreation vehicles (including OHVs), unless otherwise designated closed.

18-23 Roads and trails emphasized for motorized recreation will be signed.

18-24 Road, trail, or area use may be further restricted or prohibited by order of the Forest Supervisor if necessary to provide for public safety, prevent resource damage, or otherwise serve the public interest.

18-25 Closed routes will be evaluated for obliteration, restoration, or rehabilitation.

18-26 Over-the-Snow Vehicle (OSV) travel is permitted upon at least 12 inches of snow with no ground contact.

18-27 In order to reduce the spread of Port-Orford-cedar root disease, a risk analysis will be completed for all projects (see 20-7) in watersheds containing Port-Orford-cedar.

## Interpretive Services and Visitor Information

18-28 Provide information and/or interpretation to direct visitors to their destinations, to facilitate understanding of resource management activities, and to acquaint them with unique or special features within the Forest.

18-29 Provide printed information about recreation opportunities, management activities, selected heritage resource areas, conservation of threatened and endangered species, and features of special areas such as Special Interest Areas using national and regional formats for publications.

18-30 Develop and maintain a Forest-wide Interpretive Services Implementation Schedule.

18-31 Provide recreation information to users on a 24-hour basis through after-hours kiosks, bulletin boards, or other similar means.

18-32 Use the TREAD LIGHTLY and 'Pack it in, Pack it out' programs to inform recreationists and other users about responsible land use ethics.

18-33 Cooperate with tourism organizations and other agencies in developing regional tourism guides and publications.

### Mechanized Recreation

18-34 Allow mountain bike use on all Forest development roads and forest system trails unless otherwise designated.

18-35 Cross-country travel or use off roads or trails by mountain bikes is not permitted.

18-36 Mountain bike use is not allowed in wildernesses and research natural areas.

18-37 Road or trail use may be restricted or prohibited to mountain bike use by order of the Forest Supervisor if necessary to provide for public safety, prevent resource damage, or otherwise serve the public interest.

## SPECIAL FOREST PRODUCTS

### Goals

Provide a wide-range of opportunities for collection of Special Forest Products (SFPs). Manage plant material collected to ensure sustainability and the conservation of plant diversity. Maintain awareness of the cultural values placed upon certain plant species and the activity of collecting. Educate collectors and the general public about the ecology of the plants collected and harvesting techniques which reduce impacts to the resource. Monitor collection activities to improve our knowledge base regarding tolerance of certain species to collection. Encourage commercial production (such as mushroom farming) through rural development programs.

### Direction

SFPs can be defined as nontimber, renewable plant material that is collected either for personal or commercial use. Current policy authorizes the Forest to sell forest products where it will serve local needs and meet land management objectives. The policy calls for the use of management measures which shall perpetuate or increase the production of special forest products (36 CFR 223.5). The current policy is broad and provides little management direction for an emerging complex issue. Managing SFPs warrants consideration of biological, social, cultural and economic factors. At the core of the SFPs issue is the need to manage in a sustainable manner concurrent with the maintenance of plant diversity indigenous to the area; both are inherent principles in ecosystems management. Significant components of managing SFPs include research in coordination with PSW (ie. to garner more information on biological/ecological attributes of a species and species' response to collection), monitoring (ie. to discern whether certain harvesting practices are sustainable) and assessment of the social fabric affected by our decisions (ie. consultation with Tribal Governments).

SFPs will be managed in such a way so as not to result in adverse effects to other resources and to be consistent with management area direction (ie. Special Interest Areas, Riparian Reserve Management Area, Managed Habitat Areas). Collection of SFPs is handled through the permitting process. This process involves identification of collecting areas, education (relative to S&Gs, appropriate harvesting techniques, preventing the spread of Port-Orford-cedar root disease), annual compilation of permits issued, consideration of fee structure adjustments and the subsequent evaluation of market trends and resource concerns.

SFPs are divided into the following groups based upon the portion of the plant to be harvested, product use and other factors, such as native versus non-native (non-native implies not indigenous to the Klamath or Coast Range Provinces and likely introduced as a result of human settlement).

Group 1: Products collected by complete plant removal with mortality
Group 2: Products collected by cutting plants without expected mortality
Group 3: Edible fungi
Group 4: Non-native plants
Group 5: Miscellaneous products which do not appropriately fall into any one of the other categories
Group 6:
a. Non-vascular plants with the potential to be rare
b. Plants of cultural/spiritual significance

Tables IV-16 and IV-17 contain examples of plants, by group, currently collected on the Forest.

Opportunities exist in a variety of arenas from SFP resource enhancement (prescribed burning, importing large woody debris to serve as a germination substrate, overstory removal, management of stands in late seral stage condition for those fungi associated with older forests) and sponsorship of educational programs for interested parties to building incentives to encourage off-Forest commercial production of SFPs which would provide an alternative to collecting in the wild.

Management of SFPs is a reiterative process; as new markets develop and we learn more about the ecology and habitat requirements of plants collected as SFPs, management direction and associated S&Gs will change to reflect new findings. Through instigation of an annual review process, soliciting and facilitating research opportunities, initially scheduling qualitative monitoring of specific collecting sites and education, the Forest will make gains toward ensuring the sustainability of SFPs, maintaining biodiversity and reducing social conflicts.

## Standards and Guidelines

19-1 All commercial collection requires a miscellaneous forest products permit. The Forest will identify the collection area as part of the permit. Selection of collection areas will be consistent with Management Area direction. Environmental analyses will consider effects at both local and larger scales (i.e. province or region).

19-2 The following standards and guidelines are intended to disperse commercial collecting pressures relative to the part of the plant harvested. Permits should specify dispersed collecting methods. These standards and guidelines are to be specified as part of the commercial permitting process, unless other standards and guidelines are developed through further environmental analyses.

Group 1: Products collected by complete plant removal
with mortality

a. Harvest at a rate of every 4th plant/species/site (or can be interpreted as 25 percent of each species/permitted area; eg. if there are 80 wild ginger plants in a given area, move through the area, selecting every 4th plant for removal which would total 20 plants or 25 percent of plants in the area).

b. Areas in which permits are issued should be rested for two years between harvests.

Group 2: Products collected by cutting plants without expected mortality

a. For foliage and fruits: harvest at a rate of every 4th plant/species/site and remove no more than 25 percent from each plant (e.g. if there are 20 salal bushes in a given area, select 4 bushes and remove up to 25 percent of the stems from each bush). In some cases an individual plant is not easy to recognize (i.e. plants which grow in clumps/colonies/clones), in which case a “plant” is synonymous with an individual stem arising from the ground.
b. For flowers: harvest at a rate of every 4th plant/species/site.

Group 3: Edible fungi (applies to both commercial and personal collection, except where specified)

a. Raking, digging, and hoeing are not allowed during harvesting.
b. Activities that might result in soil compaction should be minimized.
c. Areas in which commercial permits are issued should be considered for rest on a 2-year basis between harvests. This does not pertain to personal collection.
d. Permits issued for the spreading hedgehog mushroom (*Hydnum repandum*) will be closely tracked in accordance with the Survey and Manage measures listed in Table IV-9.

Group 4: Non-native plants

a. No collection restrictions apply.

Group 5: Miscellaneous products

a. Collection restrictions will be specified as part of commercial permits.

Group 6: Potentially rare non-vascular plants, and plants with spiritual significance

a. Commercial collection of SFPs is prohibited unless otherwise determined through further environmental analysis.

19-3 Conduct annual review of the SFPs program including assessment of permit process, products collected (species and quantity), monitoring process, resource concerns and social issues. Review team should consist of Forest and District SFPs Coordinators, Tribal Government Program Manager, Rural Development Coordinator, Forest Botanist, Wildlife Biologist and Ecologist.

19-4 Where there are potential conflicts between commercial and traditional collection, specific collecting areas will be identified and designated for tribal collecting in consultation with Tribal Governments. For beargrass, acorns and other traditional plant materials, areas will be established that prohibit commercial harvest but allow for personal use.

19-5 All collection (personal or otherwise) of rare flora is prohibited unless determined by the Forest Botanist to be of educational or scientific value. Rare flora include the Forest sensitive species, species listed in Table IV-9 as requiring survey and management strategies 1 and 2, and taxa listed by the California Native Plant Society as rare and occurring in northwest California (CNPS 1994).

19-6 SFPs collection sites should be encouraged in areas where removal of SFPs will meet other objectives; i.e., within plantations, under power line rights-of-way, areas scheduled for timber sales. Where continual maintenance is needed, such as underneath power lines, application of the aforementioned standards and guidelines assigned to Group 1 and Group 2 are discretionary.

19-7 Personal use collection will be managed through different educational venues including: District displays, brochures, newspaper articles, visitor contact.

**Table IV-16.**
**Special Forest Products List**

Note: This table is based upon current requests for permits; other products may be added based on future requests for permits.

| **Product List**<br>**Part of plant (if applicable)**<br>**Group** |
|---|
| Christmas trees<br>above ground removal w/ mortality<br>1 |
| Firewood<br>down material/live standing<br>5 |
| Burls<br>complete removal w/ mortality<br>1 |
| madrone |
| California bay |
| big-leaf maple |
| manzanita |
| black oak<br>Poles/posts<br>above ground removal w/ mortality<br>1 |
| Cones<br>fallen fruit<br>5 |

# CHAPTER 5 CONTENTS

**PAGE**

# FOREST PLAN IMPLEMENTATION, MONITORING, EVALUATION, AND AMENDMENT

## INTRODUCTION

This chapter describes how the Forest Plan will be put into practice. The first section explains how the management direction described in the preceding chapter will be implemented in the daily operation of the Forest by developing individual projects to achieve management area, Forest and province goals. Generally, implementation will be accomplished through landscape-scale analysis, and will comply with the FSEIS Record of Decision (FSEIS ROD) of April 1994 and its accompanying standards and guidelines. The second section describes the Monitoring and Evaluation Program which will determine if specific management direction is implemented as designed and is effective in achieving management objectives. This section also explains how monitoring results will be used to make periodic adjustments to management practices through the adaptive management process. The Forests Monitoring Plan has been modified since the 1993 Draft to comply with implementation direction in Appendix E of the FSEIS ROD. The third section of this chapter outlines when and how the Forest Plan could be amended or revised.

## IMPLEMENTATION

Forest planning is pursuant to the National Forest Management Act [NFMA, P.L. 94-588, CFR Part 219} which addresses broad-scale land allocations and general management direction for National Forest System (NFS) lands. The Forest Plan is implemented through the daily operations of the Forest which involve the coordination of numerous activities including technical assessments, information management, project planning, decision-making, project implementation, public service and administrative support to all the above. This document is not a complete guide to all operations of the Forest — manuals and handbooks contain much additional direction. The Forest Plan addresses the general allocation of resources to manage a diverse landscape in compliance with legal requirements and public desires about the use of their lands.

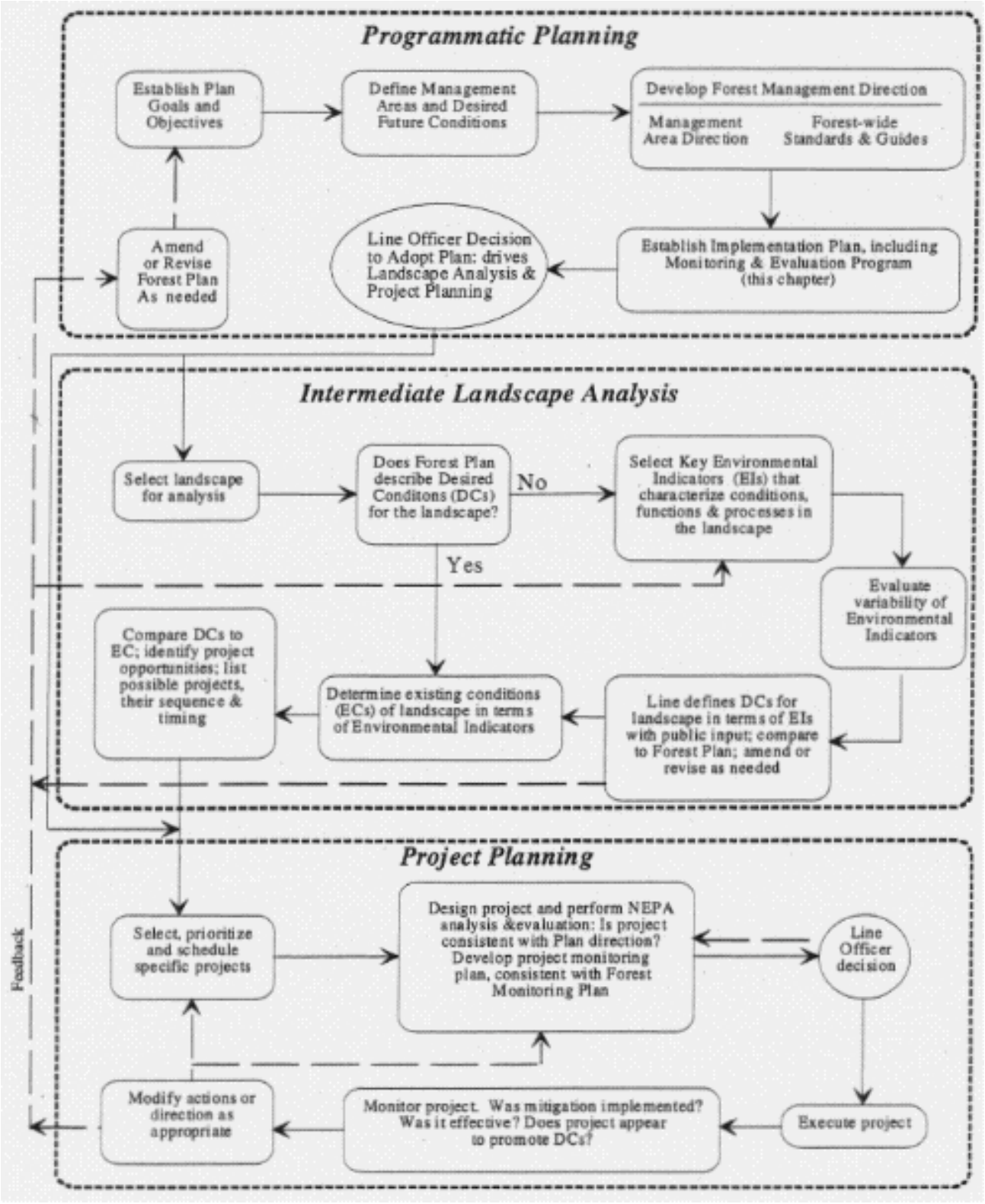
## PLANNING AND PROGRAM-OF-WORK DEVELOPMENT

Forest Service planning involves two levels of decisions through which a Forest's program of work is implemented. The first level is programmatic and is covered by this document and its supporting Environmental Impact Statement. As described in Chapter 4, this Forest Plan provides general direction and broad goals for 17 management areas, and also specifies standards and guidelines that will direct project implementation throughout the Forest in achieving desired conditions for each management area and for the Forest collectively. This direction serves as a "blueprint" and "ordinance" under which future project-level decisions are made. However, the individual projects and other activities are not identified at the programmatic level.

The second planning and decision level involves the actual implementation of this direction. It includes the identification, analysis, design and execution of projects and other allowable activities across the Forest. Each proposed activity or project will be evaluated to ensure that on-the-ground implementation is consistent with the management direction and goals in this Forest Plan. Projects will normally be evaluated with respect to provisions of the National Environmental Policy Act (NEPA), as discussed in a separate section below. Proposed activities that are inconsistent with this Plan's direction can only go forward through the amendment or revision processes which are described in the third section of this chapter.

An additional level of analysis between these two formal planning and decision levels will address management issues of large landscapes across multiple jurisdictions and ownerships within the broad framework of ecosystem management. These analyses will allow land management agencies,

Figure V-i. Forest Planning and Project Implementation through Ecosystem Analysis.



4. Define desired conditions. This is a quantitative and qualitative description of the analysis landscape in terms of environmental indicators that ideally is forged between the Forest management team and public stakeholders. Defining desired conditions may involve compromises among the various indicators because the RMR for one indicator may be incompatible with RMRs for others. If this desired condition is outside the scope of the current Forest Plan, amendment or revision procedures would need to be followed.

5. Determine existing conditions. This description should be parallel to the preceding description of desired conditions; that is, it should be based on most or all of the same indicators. These two steps will commonly be done together. Links to larger and smaller scales are important to examine at this stage.

6. Compare existing and desired conditions. This comparison will indicate where the landscape currently sits in relation to long-term goals for its sustainability. Typically, desired conditions will be represented by ranges of values, while existing conditions will be single values. Over large analysis areas, however, existing conditions may be represented by a spatial distribution of values that is more comparable to the range of desired conditions. It is important to note that desired conditions are more than a list of RMRs - they involve value judgments by management and the public.

7. Identify project opportunities. The goal of this step is to develop a schedule of projects designed to move the landscape progressively closer to its desired condition over years or decades. An interdisciplinary team would explore different ways to manipulate landscape components, structures and processes to achieve desired outcomes. Previously identified differences between existing and desired conditions present opportunities for action. Collaboration with the public is appropriate at this stage to elicit ideas that might not be obvious to the Forest team. From the comprehensive list of project opportunities, the management team and technical staff would select, prioritize and schedule a tentative list of projects for implementation. Some key questions to address in this process are:

• How effective and efficient will a particular project or action be in moving the landscape toward or maintaining desired conditions?

• What is the feasibility of protecting critical landscape elements if these projects or actions are implemented?

• What are the potential cumulative effects of these projects or actions on biodiversity and sustainability at the landscape scale?

• How well would the projects or actions provide important goods, services or other values to the public?

The resulting schedule of approved projects is expected to help allocate limited resources, promote a rational sequence of work where appropriate, and help arrange partnerships well in advance of implementation.

8. Project implementation and evaluation. Selected projects would then proceed through the usual NEPA process, but the goals and issues are likely to be broader in scope than in the past when projects focused on administrative targets. Issues and effects of implementation would generally be framed in terms of previously identified environmental indicators. Lastly, monitoring plans would be an integral part of each project to evaluate how effectively the various project actions have achieved desired conditions in terms of key environmental indicators. Because of its wider scope, ecosystem monitoring efforts must be coordinated among Federal, State and local agencies and other interests. It should be able to detect changes in ecological systems, provide standardized data as a basis for decisions, ensure prompt analysis and application of data in the adaptive management process, and distribute results in a timely manner.

The FSEIS ROD identifies watershed analysis as one of the primary tools for this intermediate level of project development. Watershed analysis is a rigorous, scientifically based procedure to help understand ecological structures, functions and processes and their interactions within a watershed, and to describe past and current conditions and trends. This understanding will be based on a compilation and synthesis of existing physical and biological information about a landscape of 20 to 200 square miles. Watershed analyses must be interdisciplinary and must involve multiple agencies

to comply with the FSEIS ROD. These ongoing studies will be initiated on the Forest during the next three to five years, and will be the dominant scale at which ecosystem management is implemented in the daily operations of the Forest. Each analysis should (1) describe important conditions, interactions and causes of change in the watershed; (2) examine large-scale relationships among ecosystem components, functions and processes that will assist managers in making ecologically sound project-level decisions; and (3) guide future monitoring and inventory by disclosing critical gaps in existing data. Ultimately, project-level decisions based on watershed analysis will be more likely to preserve biodiversity by sustaining the important processes and functions that are identified and better understood at these larger scales.

The methodology of watershed analysis is currently being developed and tested. It is expected to evolve s various techniques are tried and evaluated. In any Oase, a large proportion of the Forest program of work for the first decade of this Plan will involve watershed and ecosystem analysis to begin identifying and prioritizing actions that implement the Plan. The results of watershed analyses will be used to reveal the most useful indicators for monitoring environmental change, to detect magnitude and duration of changes in conditions, to formulate and test hypotheses about causes of change, and to manage the ecosystem for desired outcomes. The results of these studies also may indicate the need for a Plan amendment, and would be used to support the NEPA analysis for the amendment.

Some ecosystem concerns, such as vegetation disturbance regimes and the viability of certain terrestrial and aquatic species, cannot be addressed adequately within the limits of a 20- to 200-square-mile watershed. These concerns will be dealt with in larger scale landscape analyses or studies of broader scope such as river basin analyses and late seral reserve (LSR) assessments. As they are completed, these broader studies will provide a reference to ongoing watershed-scale analyses. The key to having these multiple and concurrent levels of ecosystem analysis work effectively together is open communication among the various Forest Service units, interdisciplinary teams, other state and federal agencies, and the public.

### Project Environmental Analysis

All proposed projects and activities during this planning period will be evaluated to assess compliance with management area direction and Forest-wide standards & guidelines, as well as consistency with ongoing landscape-level analyses. The evaluation will meet the requirements of NEPA, and will be documented in accordance with the Council of Environmental Quality Regulations [40 CFR 1500-1508] and the Forest Service Environmental Policy and Procedures Handbook [FSH 1909.15].

Ecosystem management principles will be emphasized in applying the NEPA process to project development. In the past, projects were driven primarily by commodity output targets. Potential impacts on other “dependent resources” were mitigated to the extent practicable, but this often resulted in conflicts among individual resource objectives. Under ecosystem management, a variety of innovative practices including new silvicultural treatments will be applied to create and sustain desired forest conditions for various purposes. This will require a more integrated and balanced approach to project design, execution and evaluation, as explained earlier. Outputs of goods and services, both commodity and amenity, will be byproducts of maintaining forest health.

Public participation is required in all NEPA analyses, and will be especially important for potentially controversial or innovative projects and activities. The overriding goal will be to determine an ecologically sound balance between reasonable levels of commodity outputs and sustained forest health, including the viability of dependent wildlife communities. Individual resource objectives will focus on achieving forest health in the long term, as well as protecting particular resources in the short term. Monitoring will be a key component of this strategy. The project ID Team will prepare a project monitoring plan that supports and is consistent with the goals of the Monitoring Plan described in the next section.

Supplemental Management Direction The Forest must comply with certain legal mandates outside the scope of NFMA in implementing this Plan. All projects and activities must be consistent with the following specific directives that take precedence over general Plan direction.

including the Forest Service, to evaluate the connections among individual projects and their cumulative effects more comprehensively. Project selection and design will generally be directed at accomplishing broad ecological, objectives rather than individual resource output objectives as in the past In particular, ecosystem management will enable the Forest to address the issues of timber supply and wildlife habitat protection together in an appropriately broad context. These intermediate analyses are not subject to the provisions of NEPA, but ideally they will involve substantive interaction with other State and Federal agencies, as well as public stakeholders. They are expected to provide a comprehensive understanding of the conditions, functions and processes of ecosystems at varying scales that can serve as a basis for subsequent project implementation. The three levels of planning and implementation, and the connections among them, are shown in Figure V-i.

Region 5 of the Forest Service is preparing an Ecosystem Management Guidebook for this intermediate level of analysis. The following are highlights of the existing draft. A major premise of ecosystem management is that ecosystems can be sustained by maintaining their inherent biodiversity. This will be done on NFS lands by collecting and analyzing data about a variety of environmental indicators that are considered to provide valid measures of ecosystem health as management activities occur on the landscape. The Forest management team will decide what the desired conditions of these indicators should be in conjunction with other agencies and interested publics. Individual projects will then be designed' and prioritized to achieve those desired conditions as much as possible. Not all projects will need to be supported by landscape-level analysis, however. For example, road maintenance, some fuels treatments and thinning projects may proceed under a simple decision notice. The ultimate goal of ecosystem management is for the landscapes comprising the Forest to be both productive and sustainable — they need to provide human goods and uses while preserving the important functions of natural systems for non-human uses. A synopsis of the steps in ecosystem analysis follows.

1. Select the landscape to analyze. The boundaries will depend on the analysis questions and should encompass those ecosystem elements that are relevant to the questions being addressed.

2. Select key ecosystem elements and indicators. Environmental, indicators will be used to represent the response of biological, physical and social ecosystem elements. Ideally, groups of indicators will be selected to give a more comprehensive measure of the element they represent. The selection of elements and their indicators is governed by the expected detail, scope and degree of quantification needed for the analysis. Some indicators will be broad in scope (coarse filter indicators) and address diversity within and among species, as well as diversity of ecosystem conditions. Other indicators will be focused (fine filter indicators) and deal with specific, critical elements such as T&E species. Finally, selected indicators should include a mix of ecosystem components, structures (arrangements of components), and processes (relations among components. and structures).

3. Evaluate variability of environmental indicators. This step estimates historic range of variability (HRV) and derives recommended management range (RMR). HRVs serve collectively as a comparative benchmark that represents the envelope within which a particular ecosystem has presumably evolved. Establishing HRVs requires quantifiable data about past and current conditions of the selected environmental indicators. RMR is a selected range of variability designed to preserve ecosystem resilience and sustainability. In most instances, extreme values of environmental indicators that may be within the HRV are not included in the RMR since they could jeopardize ecosystem resilience and sustainability if caused to occur more frequently by management disturbances. The RMRs are a collective recommendation by resource specialists to management and provide the basis for establishing desired conditions.

with pertinent management direction identified in the environmental analysis document. This would include any relevant management area direction, such as special mitigation for riparian areas, managed wildlife habitat, or botanical areas, if management activities were proposed there.

As individual projects are proposed, designed and executed to carry out the direction of this Plan, the project ID Team and the decision maker will prepare a monitoring schedule as an integral part of the environmental analysis for the project. The project monitoring schedule will be specific in terms of the resource and management issues involved. Where appropriate, it will emphasize monitoring items that address this Plan's driving issues (maintaining biodiversity, protecting riparian areas, and providing a steady timber supply), but not to the exclusion of other important resource issues raised by the project.

The most common forms of compliance monitoring will be end-product reviews and general management reviews. It is expected that all projects would be evaluated when completed, except for routine management actions that are unlikely to affect other resources. End-product reviews will be conducted by interdisciplinary teams of line officers, resource specialists, and other staff. Representatives from the public and other agencies may be invited to participate on these review teams. The project ID Team leader will be responsible for conducting and documenting the review.

Compliance monitoring will be considered as an "overhead cost" of implementing projects. On the average, it is expected to account for about five percent of total project cost. It would vary from project to project, depending on the issues and resource sensitivities involved. For example, a routine road maintenance project would probably warrant a lower percentage expenditure on compliance monitoring than a silvicultural project which included some timber harvest in a landscape containing sensitive riparian and wildlife areas or cultural resources. The level of monitoring would be one of the issues to be dealt with during public scoping for the project, and a rationale for the selected level will be presented in the supporting environmental analysis.

Acceptable levels of compliance would also be specified in the environmental analysis for the project and could vary depending on a variety of factors, such as potential resource damage, critical issues, or public concerns. The minimum level of compliance for general planning purposes will be 80 percent acceptable implementation of specified direction. For some critical resource concerns, such as prevention of sedimentation in riparian zones, protection of TES species habitat or protection of cultural resource sites, it could be as high as 95-100 percent. If compliance with the management direction on a sample basis falls below the specified threshold, the reason(s) for non- compliance will be determined to the extent possible, and corrective actions will be taken to ensure future compliance.

General management reviews also will be conducted periodically on a sample of Forest projects by teams of Forest and Regional Office staff. These reviews will provide for Regional oversight of Forest Plan goal accomplishment on a broader scale than end-product reviews.

scientific disciplines, organizations and members of the public who are involved at various steps of the adaptive management process will vary with the scope of the issue(s) being considered. Some decisions may be local while others are regional in scope; some will have a limited technical focus while others will require a broad interdisciplinary approach.

New information requiring an adjustment of strategy could come from monitoring, research, regulatory changes or organizational assessments. The decision to change strategies or goals would be made by the Forest Supervisor, the Regional Forester or an interagency steering committee, depending on the scope of the issue. Any changes in federal land management decisions that arise from the adaptive management process will be subject to existing regulatory and statutory requirements, including NEPA. Most adjustments are expected to be within the realm of administrative change, while some will require formal NEPA procedures.

The concept of adaptive management applies to all land allocations. It acknowledges the need to manage forest resources under circumstances that contain varying degrees of uncertainty. There is a considerable range in the degree of confidence associated with different management strategies, resources and geographic locations. Although there are known gaps in scientific knowledge, there is enough reliable information, field experience and scientific data to proceed with implementation of this Plan.

**Monitoring Actions**

The Forest monitoring program presented below is in accordance with the Land and Resource Management Planning Handbook {FSH 1909.12, Chap. 6, WO Amendment 1, 7/88]. It is limited to those actions necessary to comply with the regulations set forth by NEPA and NFMA, and it will be evaluated and updated periodically. Other resource monitoring required by laws, executive orders or supplemental plans (such as T&E recovery plans) will continue to occur; those plans are presented in Appendix H.

In order for the monitoring, evaluation and adjustment steps to be effective and efficient, several criteria must be met. Monitoring must ask specific questions that focus on measurable performance and pertain to key elements of existing management direction. Monitoring questions must lead to information that can actually resolve the issues or concerns that generated them. Therefore, the conditions or processes that are monitored should be indicative of ecosystem responses to natural events and management disturbances. From a practical standpoint, the scope and costs of monitoring must fit within real constraints of budget and personnel that would be allocated to monitoring activities as a percentage of the total Forest program. Therefore, monitoring will generally be conducted on a sample basis, and its level and intensity will vary, depending on the sensitivity of the management area or resource and the scope of actual management. Monitoring should be coordinated among agencies and organizations (both public and private) for efficiency and usefulness of results,. especially at larger scales. Protocols and reporting criteria will be developed to promote this coordination. Finally, a long-term commitment for consistent and adequate funding is required to gather and evaluate useful environmental data. This will be done by building the costs of necessary monitoring into all projects.

Forest Plan monitoring occurs at two levels, corresponding to the levels of planning described earlier. At the project level, monitoring will examine in detail how well specific management direction (the standards and guidelines) is applied on the ground and how effectively it produces desired or expected results. At the broader level, Plan performance is measured against the attainment of the goals listed in Chapter 1. Monitoring actions at this broad level will question how well projects and other activities achieve the goals and attain the desired conditions of the 17 management areas, individually and collectively. Therefore, the Monitoring Program has been organized around groups of management areas with similar goals. The principal concern is to preserve and enhance forest health so that the various commodity and non-commodity outputs can be achieved over the long term. Program results, such as recreation use, fisheries and wildlife habitat improvements, and timber production also will be examined at this broad level to ensure that they are comparable to Plan projections.

1. Compliance (implementation) monitoring is used to determine if plans, prescriptions, projects and activities are actually implemented as designed and are consistent with Plan objectives and with Forest-wide standards and guidelines. Compliance monitoring will be conducted on a sample basis to evaluate and document as objectively as possible the degree of conformance (expressed as a percentage)

**Program Budget Process**

The Budget and Program Development process allocates dollars and other resources among capital investment projects and both fixed and variable cost activities. Fixed cost activities include general administration, facilities maintenance, and those expenditures necessary to ensure public safety and protect the environment. Variable costs are associated with production of goods and services that can be controlled, such as resource planning, inventories or management projects, as well as unforeseen costs such as fire suppression. The Forest budget will be developed to achieve the mix of goods and services established by this Plan. The relative proportions of forest goods and services are expected to remain fairly constant, although total outputs may vary with the annual budget allocated to the Forest.

Annual deviations from the programmed distribution fbr individual resources will be evaluated to determine the need for Plan amendment. Cost and accomplishment data will be used to update and modify budget proposals. A proposed 3-year schedule for watershed analyses has been prepared by the Management Team and is presented in Appendix B. Annual programs of work will evolve from these analyses, and budgets prepared accordingly. Present uncertainty about commodity output levels that would be consistent with FSEIS ROD guidelines make it impossible to provide any greater detail. Typically, allocated budget amounts differ substantially from submitted budget levels.

## MONITORING AND EVALUATION

The Monitoring and Evaluation Program provides essential information about the relative success of management strategies in this Forest Plan. Its fundamental purpose is to determine how well the Plan (1) delivers projected goods and services that the public desires, (2) creates or maintains desired conditions in each management area, consistent with public expectations, and (3) protects other forest resources and values to ensure forest health and biodiversity. Monitoring and evaluation include both formal and informal processes to review Forest projects periodically and provide feedback to adjust management practices at various points. This is the essence of the adaptive management strategy, as explained below. Monitoring observes and records both the effects of natural processes and the results ofactions permitted by the Forest Plan. It is conducted at a variety of levels and scales. Evaluation examines those effects and results, determines how well they meet Plan direction, and identifies appropriate changes in management direction to keep the Plan viable. These internal reviews are then summarized and given to the public for comment. As described below under AMENDMENT AND REVISION, this review may result in new issues or revised management goals, which subsequently would be translated into revised management direction. Monitoring results also may affect ongoing watershed or ecosystem analyses by modifying the suite of environmental indicators or revising desired conditions. Results will also be combined with new research information to provide a basis for changes to the Plan through the adaptive management strategy.

Additional guidance for monitoring is provided in Section E of the FSEIS ROD. A working group attached to the Regional Ecosystem Office is currently finalizing an Interagency Framework for Monitoring the President's Forest Ecosystem Plan. Monitoring will be conducted at multiple scales (project area, riparian reserves, LSRs, provinces, river basins) and levels (individual project or site, landscape assessment, Forest Plan, Regional Guides). The coordination among agencies, individual units and other organizations will be emphasized in the final monitoring framework. The monitoring plan for the Six Rivers National Forest will tier to the interagency framework when completed, and will be modified or amended as necessary to be in compliance with that direction.

**Adaptive Management**

The adaptive management process is inherent in the various feedback links shown in Figure V-1. According to the FSEIS ROD, adaptive management is an ongoing process of action-based planning, monitoring, research, evaluation and adjustment, the objective of which is to improve Plan implementation and the accomplishment of its management goals. Current management direction is based on current scientific understanding. For ecosystem management to succeed, it must have the flexibility to respond to new information and knowledge. Adaptive management is the mechanism by which new information will be evaluated and a decision made whether to make adjustments. Adaptive management decisions may vary in scale from individual watersheds or specific forest types to the entire Forest or whole physiographic provinces. Consequently, the

Group II: Non-Commodity Values . These lands are protected in a near-natural condition to provide non- commodity outputs such as essential wildlife & fish habitat, river-oriented & other recreational experiences, and visual quality. The overall monitoring purpose is to ensure protection of both inherent & dependent resource values (including important fish & wildlife habitat, and high quality recreational use).

| **Monitoring Element** | **Effectiveness Monitoring Questions** | **Sampling Methods and Intensity** | **Threshold of Concern and Responsible Staff** |
|---|---|---|---|
| Special Habitat (219,690 ac)<br><br>*[includes LSRs from FSEIS ROD]* | Is identified critical habitat for peregrine falcon, bald eagle, marbled murrelet & spotted owl occupied at anticipated levels?<br><br>Is the habitat functional in terms of reproductive success, thereby contributing to recovery goals?<br>If *Ptilidium Californicum,* great grey owl, or *Ulota meglospora* occur on SRNF, are protection buffers adequate? | Field surveys, in accordance with established protocols, to document occupancy and reproductive success.<br><br>Detailed sampling protocols are displayed in Appendix H.<br><br>Methodologies will be further refined by the Regional Ecosystem Office (REO). | TOCs are specified in the protocols (see Appendix H).<br><br>Analysis of monitoring data, in cooperation with adjoining Forests, research personnel, and other regulatory agencies, could result in re-evaluating the set-aside strategies and related management direction for these species.<br><br>S.O. & District wildlife *staff* |
| Riparian and Aquatic Ecosystems (99,730 ac)<br><br>*[includes Riparian Reserves from FSEIS ROD]* | Do project-level resource protection measures and the general exclusion of management disturbances from riparian areas promote short & long-term health *of* riparian ecosystems and viability of dependent resources? *<br><br>Do riparian areas provide functional wildlife habitat connectors? | Fisheries habitat condition surveys, including baseline surveys in relatively undisturbed riparian areas,<br><br>Annual fish counts on approximately *25* miles of representative stream reaches.<br><br>See Appendix H under *Water* & *Fisheries* for details.<br><br>Methodologies will be further refined by the REO.<br><br>Field surveys to sample habitat conditions along approximately 20 miles of riparian corridors. | More than 15% of surveyed reaches or areas display conditions below desired levels of habitat quality.<br><br>Fish counts are below *85%* of desired levels for sampled species.<br><br>Analysis of monitoring data may result in re-evaluating Riparian Strategy.<br><br>S.O. & District fisheries biologists, ecologists and earth scientists. |
| Recreational & Scenic River (1030 ac) *[plus considerable additional acreage in Riparian]* | Are designated river corridors being managed to provide a range of recreational opportunities and access, ranging from developed to near-natural settings?<br><br>Do the visual, aesthetic and fisheries values satisfy recreational users needs? | Direct field evaluation of 20 sample sites (access or view points) or river segments per year to assess maintenance of visual & aesthetic values.<br><br>Surveys of public satisfaction using informal questionnaires at access points. | More than 15% noticeable degradation of key values, or expressed public dissatisfaction.<br><br>S.O. & District recreation *staff* |

* monitoring items that will likely be resolved only in the long-term , defined as more than approximately 30-50 yrs

| Group II: Non-Commodity Values (cont.) | | | |
|---|---|---|---|
| **Monitoring Element** | **Effectiveness Monitoring Questions** | **Sampling Methods and Intensity** | **Threshold of Concern and Responsible** Staff |
| **Smith River** NRA (187,770 ac) *[includes only the acreage outside of other management areas]* | Do management direction and prescriptions specified in the NRA Plan (including uneven- aged management with extended rotations) create and preserve the recreational values and biologic diversity * while allowing limited levels of commodity outputs? | Sample and rate overall visual/aesthetic quality for 15% of areas affected by management disturbances.<br>Conduct formal surveys of public users to assess satisfaction with recreational values provided. | More than 15% of visual ratings fall substantially below predetermined levels.<br>More than 20% of public surveyed express dissatisfaction with recreational quality.<br>S.O. & District recreation staff, silviculturists, wildlife biologists, resource officer |

**Group III: Adaptive Management** – These are lands that will be managed for a balance between traditional commodity outputs and biologic diversity that promotes long-term forest health. The overall monitoring purpose is to evaluate the effectiveness of the adaptive management strategy in achieving balanced multiple use of all resources.

| **Monitoring Element** | **Effectiveness Monitoring Questions** | **Sampling Methods and Intensity** | **Threshold of Concern and Responsible Staff** |
|---|---|---|---|
| **Managed Habitat** (103,630 ac)<br>*[includes* ***Managed LSRs from the FSEIS ROD]*** | **Do silvicultural practices** produce stand structure in the short term that mimics known, occupied habitat, and that would therefore be considered functional?<br>Does managed habitat provide connectivity between riparian reserve corridors and other large wildlife reserves?<br>Are identified suitable habitat areas occupied at desired levels after disturbance with active, reproductive animals?<br>Did any candidate or sensitive species become listed? | **Survey protocols for** marten, fisher, Del Norte salamander & ***Sarcosoma mexicana*** are being developed. Baseline sample of suitable habitat areas in years 1 to *5; 50%* sample of habitat for effectiveness (occupancy) thereafter.<br>Sampling procedures for candidate species not yet developed.<br>Methodologies will be further refined by the REQ.. | Inventoried habitat suitability less than minimum standards.<br>Less than 90% of designated, suitable habitat is occupied.<br>More than a 20% decline in detected presence, habitat availability, or occupancy.<br>Any species is petitioned for State or Federal listing.<br>S.O. & District wildlife staff |
| **Partial Retention VQO** (27,080 ac) | **Do proposed silvicultural** strategies meet Partial Retention VQO standards throughout the Forest matrix? | Sample & rate visual quality for *25%* of area affected by any vegetation or land disturbance using standardized methods. | More than 20% of sampled sites do not meet Partial Retention VQO.<br>S.O. landscape architect |

| **Group Ill: Adaptive Management** (cont) | | | |
|---|---|---|---|
| **Monitoring Element** | **Effectiveness Monitoring Questions** | **Sampling Methods and Intensity** | **Threshold of Concern and Responsible Staff** |
| **General Forest** | **Will stocking** levels, growth | Inventory 20% of plantations | More than 10% deviation |
| (109,150 ac, | **and** yield rates of timber-suited | less than 20 yrs old for | below projected yields or |
| total; 69,890 ac | lands meet long-term Forest | stocking levels & yields. | levels. |
| timber-suited) | output goals? | | |
| | Will proposed silvicultural strategies generate predicted | Conduct general management reviews of economic & | More than *5%* change in productivity or suitability |
| Special | net values of the timber | budget data, as well as stand | class beyond that expected |
| Regeneration | program? | inventory data. | from planned activities. |
| (46,850 ac) *[includes* ***Matrix from the*** *FSEIS* ***ROD]*** | Is the current inventory system effective in determining which lands can be managed successfully for timber production? | | Timber management staff |
| | Does the identification of key watersheds and special managment prescriptions successfully protect habitat of identified at-risk fish species? | Forest-wide habitat surveys in representative reaches –(refer to Riparian Management Area) | Same as for Riparian Management Area |
| | Are prescriptions and mitigations designed to maintain soil productivity and protect water quality effective in limiting erosion, mass wasting & sediment yield to streams from areas disturbed by management? (Includes BMPs & evaluation of cumulative watershed effects) | End-product review of sample projects, up to 10 yrs after completion; documentation of on-site & off-site effects, using data sheets, comparative airphoto inventories, and photographs from reference sites. Includes Region *5* BMP Evaluation Process (BMPEP). | More than 10% of sampled cases indicate failure to protect on-site or off-site dependent resource values. BMPEP has its own established TOCs.<br><br>S.O. & District earth scientists and fisheries biologists |
| | Are practices & mitigations designed to protect habitat and habitat components (such as snags and large downed logs) for other wildlife species in the General Forest Management Area successful in maintaining desired populations? | Sampling methods and intensity, using a variety of environmental indicators, will be developed from landscape- scale ecosystem analyses and at the project level. | Thresholds and other management criteria will be developed as part of landscape-scale analysis.<br><br>S.O. & District wildlife staff |

| Name or Type of Strategy | Purpose & Scope of Strategy | Completion Target Date | Responsible Unit(s) |
|---|---|---|---|
| Fire Management Action Strategy | Establish direction for specific implementation actions within the fire management program. | 1998 | Fire / fuels |
| Off-Highway Vehicle (OHV) Management Strategies | Assess areas for OHV use. Schedule projects to implement vehicle use in some areas and restrict use in other areas. | As needed | Recreation |
| Transportation Management Strategy | Assess transportation system and use. Schedule projects to construct, reconstruct, or decommission roads based on anticipated needs. | 1998 | Engineering |
| Threatened, Endangered and Sensitive (TES) Species Guides | Ensure a coordinated approach on regional and provincial levels to TES species management and conservation, including territory management plans. | 2002 | Wildlife, fisheries and botany |
| Visual Corridor Management Strategies | Develop management strategies for scenic byways on the Forest. | 1998 | Recreation |

***Table V-2. Existing plans or strategies retained and incorporated by reference into the Forest Plan.***

| Name or Type of Plan/Strategy | Purpose of Plan/Strategy | Responsible Unit |
|---|---|---|
| Smith River National Recreation Area Management Plan | Establishes eight management areas within the Smith River NRA, and sets general direction for each area. | Smith River NRA (Gasquet) |
| Facilities Master Plan | Coordinates and prioritizes the siting, construction and maintenance of Forest facilities. | Engineering |
| Lower South Fork Trinity River Wild & Scenic River Management Plan | Guides management of the wild & scenic segments of the lower South Fork Trinity River. | Recreation |
| Communications Site Plans for Camp 6, Orleans Mtn., Horse Mtn., Antenna Ridge, Baldwin Ridge, and Pickett Peak | Guides management of designated multiple-use communications sites until updates are completed. Plans for Camp 6 and Horse Mtn. need updating to reflect current conditions and trends. | Lands |
| Forest Development Transportation Plan | Documents designation of non-temporary Forest transportation facilities. | Engineering |

**Table V-3: Effectiveness Monitoring Program** - acres listed are aggregate for the Forest, not counting any overlap with a Management Area listed above it in the table.

**Group I: Reserved / Special Emphasis** – These lands are managed to remain in essentially natural condition for specific uses. The overall monitoring purpose is to ensure protection of intrinsic values and provide for user satisfaction.

| Monitoring Element | Effectiveness Monitoring Questions | Sampling Methods and Intensity | Threshold of Concern and Responsible Staff |
|---|---|---|---|
| Wilderness (123,150 ac)<br><br>**Wild Rivers** (14,250 ac) | Does management direction maintain the desired balance between protecting the natural characteristics & key resources of these management areas, and providing satisfaction to public users? | Field evaluation of 20 sample sites (trails or campsites) per year to aswss protection of visual quality & aesthetic values.<br><br>Annual surveys of public satisfaction using informal questionnaires at trail heads. | More than 15% noticeable degradation of key values or expressed dissatisfaction by public. Apply the ***Limits of*** *Acceptable Change* criterion.<br><br>S.O. & District recreation *staff.* |
| NACUAs (1140 ac) | Does management direction provide the solitude desired by Native American contemporary users, while minimizing conflicts with other recreational uses? | Formal surveys of Native American users and informal surveys of other recreational users. | More than 15% expressed dissatisfaction with level of solitude provided.<br><br>Forest heritage resources staff |
| Research Natural Areas (6990 ac) | Does management promote the maintenance of biodiversity in these areas so as to conserve their ecological components and meet the needs of researchers? | Qualitative assessments to determine gross changes. Establishment of permanent transects (similar to California Native Plant Society (CNPS) protocol). | Sampling indicates more than a *25%* change in any variable of concern over a *5-* to 10-year period.<br><br>See Appendix H for additional details.<br><br>Forest botanist, ecologist |
| **Special Interest Areas** (330 ac) | Does management ensure the conservation of diverse plant communities and associated rare plant species in the areas?<br><br>Do restoration efforts restore degraded habitats effectively?<br><br>Does public use compromise the integrity of the area's natural features?<br><br>Is the permit process adequately protecting uninfècted areas of North Fork Smith River botanical area? | Field surveys of rare plant populations, communities and degraded habitat,<br><br>Establish permanent transects (similar to CNPS protocol) or plots as appropriate.<br><br>Informal user surveys,<br><br>Field inspections to check gate closure and compliance? | Sampling indicates more than a *25%* change in any variable of concern over a *5-* to 10-year period. See Appendix H for details.<br><br>More than 20% of those surveyed express dissatisfaction.<br><br>Two or more trespass violations in wet periods; three or more in dry periods<br><br>Forest botanist, geologist,<br>recreation staff |

## *Table V-1. Supplemental strategies needed to implement the Forest Plan.*

| Name or Type of Strategy | Purpose & Scope of Strategy | Completion Target Date | Responsible Unit(s) |
|---|---|---|---|
| Watershed Analyses | Collect and compile information within watersheds that is essential to making management decisions. Required prior to management actions in key watersheds. | As needed. All key watersheds by 1998 | All resource programs |
| Late Successional Reserve (LSR) Assessments | Describe conditions in each LSR, provide a fire management plan, list criteria for treatments and areas that could be treated, and list monitoring components. | As needed. All LSR assessments completed by 2000 | Wildlife |
| Adaptive Management Area (AMA) Plan | Identify desired conditions, learning opportunities, and develop a strategy to guide implementation, restoration, monitoring & experimental activities in the Hayfork AMA. | 1996 | All resource programs |
| Ecosystem Management Strategies | Assess terrestrial and aquatic ecosystems (e.g., province, river basin, section, species range) to determine issues, management priorities, and coordinated management actions. | As needed. | All resource programs |
| Wilderness Implementation Schedules | Coordinate management of the Siskiyou,YoIIa Bolly, and North Fork Eel wilderness areas. | 1998 | Recreation |
| Wild and Scenic River Management Plans | Coordinate management of the wild and scenic segments of the Klamath, Trinity and North Fork Eel Rivers with adjoining National Forests and other agencies. | 2002 | Recreation |
| Research Natural Area (RNA) Management Strategies | Guide and promote research within RNAs. Develop additional management direction to protect natural characteristics. | 2002 | Ecology and botany |
| Special Interest Area (SIA) Management Strategies | Guide management and promote interpretive management strategies within SIAs. | Begin in 1996; completed by 1999 | Botany and geology |
| Species Habitat Guides | Coordinate habitat enhancement and project implementation for specific plant species. | As needed. | Botany |
| Land Adjustment Strategy | Guide land adjustment program; provide information for exchange proponents. | 1995. with periodic updates. | Lands |

the most useful information on Plan performance. Considerable effort will be needed to acquire reliable data, however. The intensity and scope of effectiveness monitoring will depend on funding levels and project activity levels. Highest priority will be given to monitoring items that (1) are related to the driving issues of this Plan, (2) involve new and uncertain practices, or (3) could have substantial consequences if monitoring were neglected. About 90 percent of the monitoring budget will be allocated to questions that pertain directly to the driving issues of maintaining biodiversity, protecting riparian areas, and providing a steady timber supply. Many of these priority items also deal with uncertainty about new techniques or involve high risk of resource impacts if not monitored. Costs associated with the various wildlife elements are considerably higher than other elements because of the complex scientific protocols needed to acquire statistically reliable data on both habitat and populations. As the wildlife data base grows, biologists' understanding of habitat-population relationships may also improve. This could allow for sufficiently reliable predictions of population dynamics with less complex and costly monitoring techniques in the future, and also could enable the Forest to apply proven management techniques outside the specific monitoring areas.

Data collection and analysis will be integrated as much as possible to gain a more complete understanding of the interactions among resource concerns, such as wildlife habitat and stand productivity, or upsiope watershed condition and fisheries habitat. Resource specialists will design and perform effectiveness monitoring in an interdisciplinary mode to ensure data compatibility and consistency, avoid duplication of effort, and increase the likelihood of gaining useful insights about the complex cause and effect relationships within forest ecosystems.

The scope of effectiveness monitoring will vary over time. Monitoring costs are expected to be greater during the first and second decade of Plan implementation as new ecosystem data are collected and management strategies are tried. Some effects are likely to appear in the short term, requiring immediate and relatively continuous monitoring. Other effects may not appear for years or decades, and will require long-term, intermittent monitoring. Adjustments in monitoring levels will be handled through the Plan amendment process where changes are deemed significant.

The Effectiveness Monitoring Plan is presented in Table V-3. Monitoring elements have been grouped under four main headings. Each of the first three groups include designated management areas that have a common theme in terms of direction and goals: Special Emphasis, Non-Commodity Values, and Adaptive Management. Most effectiveness monitoring related to individual resources will be planned and conducted in one of these groups, particularly the Adaptive Management group. The remaining resource-specific effectiveness monitoring is listed under a fourth group of items that address project performance and target attainment Forest-wide. PSW will be responsible for management and monitoring of the Experimental Forest. Monitoring emphasis at the Nursery will be on efficient productivity of seedlings within constraints set by State guidelines for air and water quality standards.

• Endangered Species Act — requires implementation and monitoring of existing recovery plans for the Peregrine Falcon and Bald Eagle, as well as final recovery plans for the Northern Spotted Owl and Marbled Murrelet once those plans are completed. The Endangered Species Act also requires consultation with the U.S. Fish & Wildlife Service under Sec.7 on any actions that may affect these federally listed species.• Clean Water Act — requires application of Best Management Practices (which are incorporated in this Forest Plan's standards & guidelines) and evaluation of their effectiveness.• Wilderness Act — provides administrative direction pursuant to the Act that requires development of implementation schedules for allowable activities in, and overall management of each designated Wilderness area.• Wild and Scenic Rivers Act — requires development of management plans for wild, scenic and recreational segments, including monitoring of public use and protection of intrinsic values.The management plan for the South Fork Trinity River was completed by the Shasta-Trinity National Forests in 1994. It prescribes extensive monitoring of public use, and is incorporated by reference into this Forest Plan.• Smith River National Recreation Area Act — all management activity must comply with direction in the Smith River Plan (see Appendix A), as required by the Act.The data collection phase of the forest planning process addressed current issues and concerns on the Forest. Plan analysis identified specific areas or issues that will be addressed more completely during Plan implementation. Table V-1 lists additional strategies needed to implement the Forest Plan. This supplemental direction will conform to Forest Plan direction on a site-specific basis, and will also identify any needs for resource coordination. The resultant documents are required by law or are necessary to coordinate project development or implementation more effectively. All other plans, strategies or Forest direction are superseded by the Forest Plan, with the exception of those existing stratcgics listed in Table V-2 that are rctaincd and incorporated by reference into this Forest Plan.

In addition, several research programs will either be initiated or continued to facilitate implementation of the Forest Plan. Most will be integrated with validation monitoring actions (see below) that deal with regional issues addressed by the FSEIS ROD. In general, these studies relate to critical assumptions or modeling parameters used in development of this Plan. The most critical needs that are currently identified include:

• specific habitat requirements, conditions of occupancy, and population dynamics of TES species dependent on mature and old-growth forests;

• habitat requirements of sensitive aquatic and riparian species, as well as interactions among the physical and biological variables affecting those habitats;

• response of timber stands to new silvicultural techniques, including the feasibility of maintaining a multistoried structure and retaining legacy trees, snags and logs; and

• general effects of management on overall biodiversity and forest health, as well as socioeconomic health of dependent communities.

Monitoring and evaluation are expected to identify additional research needs during the life of this Plan. Other less critical research questions, as well as details on the above items, are presented in Appendix G. The PSW and PNW Research Stations will have general responsibility for these research programs, while Forest personnel will collaborate and provide input to their design and execution.

Implementation of the Forest Plan will change the way some resources are currently managed. All permits, operating plans, leases, and contracts issued prior to issuance of the Forest Plan will be administered under existing provisions. Changes to existing timber sale and silvicultural contracts may be proposed and implemented on a case-by-case basis where overriding resource considerations are present. Appropriate NEPA documentation will be prepared for these changes. All proposed new or renewal lease applications, permits, contracts and operating plans will be evaluated for consistency with, and administered under the provisions of the Forest Plan. All supplemental management direction, as discussed above, will be consistent with Forest Plan direction within one year of Plan approval, subject to valid existing rights and outstanding permits, contracts or cooperative agreements.

**ADMINISTRATIVE REVIEWS**

Purpose:

• Evaluate Forest compliance with required procedures & documentation consistency with Plan direction.

• Identify remedial actions and responsibilities as necessary.

Participants: Forest line & LMP staff; Regional LMP, Budget & NEPA staff

Procedure: general review of planning records & project files

• Are they properly maintained?

• Are "Consistency with the Plan findings documented?

• Are appropriate amendments being expedited?

• Was the 5-year review conducted and documented?

• Are implementation, monitoring & evaluation being conducted using an interdisciplinary approach?

• Are NEPA requirements, including public involvement, being done properly?

• Are program budgets consistent with the Plan?

• Are economic considerations being incorporated in Plan implementation?

**ACTIVITY REVIEWS**

Purpose:

• Review implementation of activities on the ground for consistency with Plan direction & management requirements, and accomplishment of Plan goals

• Determine the need to adjust monitoring, evaluation or other requirements

Participants: varies with purpose & issues involved; Forest Line & staff, plus key Regional staff

Procedure: Field reviews of completed or in-progress projects

• Are Plan content & direction understood & followed by Forest personnel?

• Are projects & other activities achieving Plan goals?

• Are applicable standards & guidelines being applied?

• Are both project and Forest-wide monitoring occurring?

• Are management area delineation's appropriate?

• Are interdisciplinary procedures effective in Plan implementation?

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The outcome of general management reviews will be a Report and Action Plan that could change implementation procedures, expand or modify monitoring activities, or modify the Plan.

2. Effectiveness monitoring is the "heart' of the monitoring plan because it determines how well management area direction and Forest-wide standards and guidelines achieve the Plan's performance goals. It also addresses whether specific practices produce the expected results, individually and collectively, To measure accomplishment of Plan goals, effectiveness monitoring should be an integrated and balanced examination of both direct and indirect results of management practices. Measured responses to management activities will provide essential guidance for the kinds and locations of subsequent projects through the adaptive management process.

Effectiveness monitoring is conducted by technical specialists on a selective basis in response to resource values and risks, as well as public issues. It is performed only when compliance monitoring has demonstrated that management direction is being implemented within acceptable limits. It will involve both objective and subjective data collection and analysis. The majority of monitoring activity will be focused at this level because it is expected to provide

**Group IV: Forest-wide Resource Elements** – Standards & Guidelines that pertain to more than one of the preceding groups. The overall monitoring purpose is to evaluate how well specific direction accomplishes Plan goals on a ***Forest-wide*** basis.

| **PHYSICAL ENVIRONMENT** | | | |
|---|---|---|---|
| **Monitoring Element** | **Effectiveness Monitoring Questions** | **Sampling Methods and Intensity** | **Threshold of Concern and Responsible Staff** |
| **Air Quality** | Do prescriptions for fuels treatment produce levels of particulate matter that exceed currently established guidelines for State air quality & smoke management? | Sampling systems & models are under development, | Particulate matter levels in excess of baseline values for extended periods of time in areas of concern.<br><br>S.O. fire & fuels management staff |
| **BIOLOGICAL ENVIRONMENT** | | | |
| **Monitoring Element** | **Effectiveness Monitoring Questions** | **Sampling Methods and Intensity** | **Threshold of Concern and Responsible Staff** |
| Biodiversity | Is forest ecosystem functioning productive sustainable ecological unit?<br><br>Do silvicultural treatments and<br>– fire management maintain<br>– natural processes and move vegetation towards recommended management ranges? *<br>Are desired habitat conditions for northern spotted owl and marbled Murrelet maintained where adequate and restored where inadequate?<br>Are desired habitat conditions for at-risk fish stocks maintained where adequate and restored where inadequate? | These questions will be addressed by means of a number of physical and biological indicators that will track ecosystem conditions and trends.<br>Indicators may include land & vegetation condition, patterns of plant disease or infestation, amounts & distribution of fuels, aparian & aquatic habitat condition, and air & water quality parameters.<br><br>Methodologies will be further developed by the REO. | Reliable indications, as determined by resource specialists, that desired ecosystem conditions or trends are not being maintained or restored by combined management actions.<br>Forest management team and other resource managers at S.O. and on Districts. |
| Sensitive Plants | Are sensitive plant populations being protected by standards & guidelines, and other specific project mitigations? | Annual field evaluation of 20% of established long-term monitoring sites within managed forest, botanical, and research natural areas.<br><br>(See Appendix H for details.) | Sample populations show more than a 20% decline in number of individuals over a 5-year sampling period.<br><br>Botany / ecology staff |

**Group IV: Forest-wide Resource Elements** (cont)

**BIOLOGICAL ENVIRONMENT** (cont)

| Monitoring Element | Effectiveness Monitoring Questions | Sampling Methods and Intensity | Threshold of Concern and Responsible Staff |
|---|---|---|---|
| **Survey** & **Manage** Species | Does management promote conservation of vascular and non-vascular plants associated with late-successional and old- growth forests?<br><br>Has management helped to avoid the listing of any Survey & Manage species? | See FSEIS ROD for details under *Survey & Manage.*<br><br>Initial sampling will probably involve a census for species of unknown or little known distribution. Once mapped, ecology plots (in accordance with Region 5 Ecosystem Classification) can provide a framework to collect habitat data. Permanent quadrants or transects will be installed for subsequent monitoring. | Thresholds have not yet been established.<br>Forest botanist, ecologist |

## SOCIO-ECONOMIC ENVIRONMENT

| Monitoring Element | Effectiveness Monitoring Questions | Sampling Methods' and Intensity | Threshold of Concern and Responsible Staff |
|---|---|---|---|
| **Community Health** | **What** are the measurable effects of Forest management on socioeconomic conditions of dependent communities in Del Norte, Humboldt & Trinity Counties?<br><br>To what degree are various public interest groups (such as Amenity Values, Native American Cultural Users, Timber-dependent & Firewood Gatherers) satisfied with those aspects of Forest management that affect group interests? | Compile and analyze employment/unemployment data in occupations related to forest products & recreational uses.<br><br>Evaluate commodity data for timber sold, recreational use, permits and applications for grazing or minerals, as well as payments to counties.<br><br>Develop & conduct formal surveys of representative Forest users to gauge satisfaction with management.<br><br>Methodologies will be further developed by the REO. | Greater than 20% change in employment/unemployment levels in any category.<br><br>Greater than 15% annual change in commodity or non-commodity outputs, or greater than 10% change for 3 successive years.<br><br>Greater than 15% expressed dissatisfaction with Forest management by any interest group.<br><br>Public affairs, timber management, recreation & heritage resources staff. |

| Group IV: Forest-wide Resource Elements (cont) | | | |
|---|---|---|---|
| **RESOURCE MANAGEMENT PROGRAMS** | | | |
| **Monitoring Element** | **Effectiveness Monitoring Questions** | **Sampling Methods and Intensity** | **Threshold of Concern and Responsible Staff** |
| **Dispersed Recreation** | Are the types & amount of recreation that are occurring compatible with adopted Recreation Opportunity Spectrum (ROS) classes?<br><br>Are public expectations of recreational use & opportunity being accommodated?<br><br>Is OHV use effectively limited or restricted to designated routes to avoid resource damage outside those routes? | Annual field reviews of areas classified as primitive and semi-primitive (including both non-motorized & motorized) to assess project effects on recreation setting & ROS category.<br><br>Annual field sampling of 20% of OHV routes. | More than 10% variance from planned use levels.<br>Visible damage of Forest resources along or adjacent to OHV routes.<br><br>S.O. & District resource officer & recreation staff; Forest engineering staff (for OHV use) |
| Fire **Management** & Fuels **Treatment** | Do fire suppression strategies protect dependent resources in the various management areas, such as wilderness, managed wildlife, & general forest?<br><br>Are fuels treatments effective in reducing fuel loadings to lower the potential for uncontrolled ignitions, while protecting residual soil & other organic legacy? What are the short-term and long-term * effects ***of*** fuels treatments on ecological processes, * structural elements, and species composition? | Review all significant fire suppression actions with respect to this concern,<br><br>Document fuel loadings & calculate fire hazard as pait of end-product reviews for other resources (refer to Group III).<br><br>Short term: pre- and post- burn inspections, Long-term: to be developed at landscape scale for various representative geographic & topographic settings | Unacceptable loss of dependent resources resulting from suppression strategy.<br><br>Fuel loadings above safe levels, according to fire spread models, in more than 20% of areas inventoried.<br><br>Undesirable alteration of species composition or forest structure.<br><br>S.O. fuels management *staff;* ecology/botany staff |
| **Forest Pests** & Diseases | Are applicable mitigations & management strategies preventing / minimizing significant damage or growth reductions from destructive insects or diseases on the Forest, including Port-Orford cedar root disease? | Routine sampling during stand exams and reforestation surveys,<br><br>Bi-annual aerial detection surveys, plus intensive sampling of road systems infected by POC root disease.<br><br>(See Appendix H for details.) | Pathogen or pest levels indicate potential for damage or growth loss in 15% of samples.<br><br>Detected acceleration of POC root disease spread.<br><br>S.O. & District silviculturists |

**Group IV: Forest-wide Resource Elements (cont)**

| **RESOURCE MANAGEMENT PROGRAMS** (cont) | | | |
|---|---|---|---|
| **Monitoring Element** | **Effectiveness Monitoring Questions** | **Sampling Methods and Intensity** | **Threshold of Concern and Responsible** Staff |
| Heritage Resources | Have activities adversely affected cultural sites or values?<br>Do project-level mitigations protect heritage resource values and deter vandalism?<br>Do projects encourage Native American contemporary use? | Review all projects with identified significant cultural sites or values, or that are intended to promote Native American contemporary use.<br>Methodologies will be further developed by the REO. | Ineffective heritage resource protection, based on visible field evidence.<br>Heritage resources staff |
| Lands - Special Use Permits | Are special use permits issued & administered in a timely manner? | Part of routine program management review. | Documented permittee dissatisfaction.<br>S.O. lands staff; District resource officer |
| **Minerals** | **Are operating permits** & plans being administered in ways that protect surface resources?<br>Are areas withdrawn from mineral entry appropriate for withdrawal? | Field evaluation & documentation of *50%* of currently operating mineral operations annually. | Observed non-compliance with operating plans.<br>Visible damage to surface resources.<br>District resource officer, S.O. minerals staff |
| **Range** | Has management direction maintained vegetation quality in areas with satisfactory conditions, and improved areas with unsatisfactory conditions? | Random field sampling of 30% of key grazing areas annually to document ecological conditions & impacts on other resources. | More than 20% of sampled areas in satisfactory condition exhibit downward trend in forage quality or ecological integrity.<br>Sampled areas in unsatisfactory condition exhibit a downward trend.<br>District resource officer |

**Group IV: Forest-wide Resource Elements (cont)**

**RESOURCE MANAGEMENT PROGRAMS** (cont)

| **Monitoring Element** | **Effectiveness Monitoring Questions** | **Sampling Methods and Intensity** | **Threshold of Concern and Responsible Staff** |
|---|---|---|---|
| **Special Forest** Products | Are special forest products (SFPs) managed to ensure sustainability of the resource while maintaining other forest values?<br>Are publics adequately informed about availability of products, proper harvesting techniques, and lands not available for harvest of SFPs? | Establish long-term quadrats or belts through collection areas and a paired control to assess harvesting effects on species of concern. Monitor within *5* years of baseline. | Interdisciplinary task force will evaluate permits to identify resource pressures, market demand and areas to improve SFP management.<br>Forest botanist, silviculturist |
| Transportation **& Facilities** | Do Forest roads and other facilities support a full range of management objectives, while providing safe use by the public? | Annual survey of roads and facilities on a planned 3-year rotation schedule, emphasizing facilities used by the public. | Any significant unsafe condition; ***should be corrected promptly or close the facility.*** **S.O. engineering** staff |
| Wildlife | Are seasonal restrictions adequate to prevent disturbance or displacement of sensitive species? | Annual monitoring of management related disturbances at selected sites. | Evaluate all sites where seasonal restrictions have apparently failed.<br>Wildlife staff |

3. Validation monitoring focuses on the Forest Plan strategy and determines if it is the best way to meet Forest goals. It also examines the assumptions underlying management direction. New information on the validity of current assumptions is being developed from different areas of forest research. For example, new information related to fisheries and wildlife, particularly the accuracy of habitat capability models and life history knowledge, is being developed through the Forest Service Fish and Wildlife Habitat Relationships Program. In terms of Plan implementation, validation monitoring will be initiated when effectiveness monitoring indicates that the desired results are not being attained. Some validation monitoring will probably be initiated immediately, however, in conjunction with currently known research needs on the key resource issues cited earlier. Specific questions that are an immediate priority include:

• Are populations of TES species stabilizing or increasing?

• Are the assumed relationships between wildlife populations and late-successional habitat valid?

• Are reserves occupied by stable populations of sensitive species?

• Can silvicultural practices create and maintain habitat conditions as expected? • Do changing National Forest activities and programs affect dependent human communities as predicted?

• Does the public approve of forest conditions that are or will be created by implementing this and other Forest Plans?

No cost estimates are presented for validation monitoring. It would be conducted very selectively on “high stakes” issues because of the large commitment of time and resources needed to achieve meaningful results. Validation monitoring normally will involve long-term studies that examine cause-effect relationships. Because of the large geographic scope of the issues involved and the diversity of jurisdictions involved in resolving these resource questions, validation monitoring will be conducted by a variety of participants, including Forest Service Research, personnel on this and adjoining National Forests, and other cooperating agencies. Universities and other public groups may participate in designing and performing the data collection to support validation monitoring.

Validation and
effectiveness monitoring are key, complementary facets of implementing the adaptive management strategy. Both approaches are required: validation monitoring examines the attainment of the broad goals of ecosystem management, while effectiveness monitoring looks in detail at the means of achieving those goals - the actual management practices. Therefore, both validation and effectiveness monitoring must be subject to periodic adjustment as this Plan is implemented, with the results of one guiding the design and performance of the other.

**Evaluation and Management Responses**

Evaluation of monitoring results will compare the actual costs, outputs, or conditions to projected or desired values. Differences between the actual and desired values that exceed the compliance tolerance (for implementation monitoring) or the threshold of concern (for effectiveness monitoring) would indicate a possible management problem requiring corrective action. As explained earlier, the management response to unacceptable levels of compliance will be to take additional actions to ensure that the Forest Plan is implemented as designed. Management problems identified through evaluation of effectiveness monitoring will be resolved in one or more of the following ways:

• modifying management practices, activities, or performance

• revising project implementation schedules or the cost per unit of outputs

• deferring action and re-evaluating the threshold of concern

• modifying the standards and guidelines as a Plan amendment

• modifying management area direction as a Plan amendment

• revising the Plan.

The Planning ID Team will evaluate monitoring results annually and quantify the degree of compliance during Plan implementation. An annual report summarizing pertinent observations and measurements of project performance in critical resource areas will be prepared and made available for public review by January 1st of each year. The results of effectiveness monitoring will be compiled and evaluated at least every two years. The evaluation

process will be applied to a representative sample of Forest projects. Based upon this evaluation, the ID Team will recommend changes in management direction or desired amendments and revisions in the Forest Plan to the Forest Supervisor.

Effectiveness and validation monitoring together will be the means of evaluating how well the adaptive management strategy is working in achieving desired conditions of the 17 management areas, other specific landscapes within the Forest for which watershed analyses have been completed, and the Forest as a whole. These questions will also have provincial and regional contexts. This level of evaluation must have a longer term focus because results are not likely to be evident for several years or decades. The means and protocols of defining the level of success in reaching ecosystem management goals have not yet been established. It will require cooperation between and committment of the National Forests involved as well as research, regulatory agencies, and academia.

**AMENDMENT AND REVISION**

National Forest planning is an ongoing process. Forest Plans can and should be modified when conditions warrant. Amendment or revision may be needed because of either external factors, such as a change in issues, new research results, or changing socioeconomic conditions, or internal factors such as monitoring and evaluation results. The general threshold for revision or amendment is tied to ongoing research efforts, as explained earlier.

The Forest Supervisor will review the conditions on NFS lands covered by this Plan, as well as public opinion, at least every five years to determine whether those conditions or public demands have changed enough to warrant an adjustment to the Plan. Adjustments may also result when the Forest Supervisor determines that changes in the policies, goals or objectives of the Resources Planning Act could affect Forest programs. In addition, the Planning ID Team may recommend an adjustment of the Forest Plan whenever the monitoring and evaluation program yields information indicating a need for change in management direction.

The need for Plan adjustment also may arise from an individual situation. When a proposed action appears to be inconsistent with the Plan, either the action cannot be implemented or a Plan amendment must be prepared. The most efficient way to amend the Plan is through the environmental analysis and decision document for the proposed action, but only if the amendment is determined to be non-significant. The Forest Supervisor will determine whether a proposed amendment would result in a significant change, based on an analysis of the objectives, standards and guidelines, and other contents of the Plan. A change is likely to be significant if it (1) will occur during the current plan period, (2) involves a sizable component of the planning area (3) substantially affects the output of goods or services, or (4) could set a precedent for future decisions [FSH 1909.12, Chap. 5, Section 5.32]. If the change resulting from the proposed amendment is determined to be significant with respect to earlier or newly emerging issues, concerns and opportunities, the Forest Supervisor will follow the same procedures that are required for development and approval of a Forest Plan. If the change resulting from the amendment is determined not to be significant with respect to the Forest Plan, the amendment may be implemented following appropriate public notification and satisfactory completion of NEPA requirements.

The need for Forest Plan revision will be evaluated at least every 15 years. Under current NFMA regulations, procedures for revising the Plan are the same as those required for initial Plan preparation and approval. By keeping the Plan current through periodic, incremental amendments, however, the more complex revision process may be unnecessary.

# LIST OF PREPARERS

## PLANNING TEAM

A planning team was established to support the interdisciplinary team during the preparation of the Final Environmental Impact Statement (FEIS) and Forest Plan. The primary role of the planning team was to do the necessary data collection and analysis and to prepare the FEIS and Plan as directed by the interdisciplinary team. The planning team members are identified below and their responsibilities, education, and experience summarized.

**LAURA M. CHAPMAN**
Forest Planner (1992-present). B.S.E., civil engineering, 1984. M.S., environmental systems, pending. Registered Professional Engineer (Civil), 1991. Additional classes in NEPA, planning, forest modeling, GIS, and social assessment. Relevant experience: four years as civil engineer, three years as hydrologist, two years as Forest Planning Analyst.

Team Leader. Responsible for all aspects of formulation and completion of the FEIS and Forest Plan. Provides technical expertise in NEPA, NFMA, and RPA laws, policy and implementation. Also provides technical expertise in data analysis, database management, and computer mapping.

**GEORGE J. ALBERT, JR.**
Visual Information Specialist (1984-present). A.A., geology, 1972. A.S., physical science, 1978. B.A. geography, 1991. Additional courses in NEPA, planning, GIS and Social Impact Analysis, member Pi Gamma Mu International Social Science Honor Society, 1993. Relevant experience: five years as a cartographic Technician with the U.S. Geological Survey ; six years as planning core team cartographic technician; two years as illustrator/team leader; two years as Forest GIS core steering team member and cartographic advisor.

Responsible for maps, graphics, social impact analysis discussions, wild, scenic and recreational river mapping, roadless area and ROS area updates, GIS data entry, tracking, and quality control. Provides technical expertise in geography, cartography, social impact analysis, and graphic design.

**JERRY BARNES**
Forest Fisheries Biologist (1972-present). B.S. geology, 1955. Three years graduate courses in fisheries. Relevant experience: One year with Oregon Department of Fish and Wildlife as Fisheries Biologist.

Responsible for fisheries and riparian discussions.

**MICHAEL J. FURNISS**
Forest Hydrologist/Soil Scientist (1991-present). B.S., Soils and Plant Nutrition, 1974. M.S., Soil Science, 1977. Relevant experience: 13 years as District hydrologist/soil scientist, specializing in restoration planning and techniques and in mitigation of road-related watershed effects.

Responsible for water and soil discussions.

**JEAN M. HAWTHORNE**
Public Services Staff Officer (1994-present), Past Land Management Planning/ Recreation/ Heritage Resources Staff Officer (1991-1994). B.A., outdoor recreation administration, 1974. Relevant experience: six years as Forest Public Affairs Specialist with interpretive services, recreation, and human resource programs; six years as Regional Interpretive Services Program Leader with responsibilities for tourism,

marketing, interpretive association management, visitor services, training, and HOST program.

Responsible for recreation discussions.

**LISA D. HOOVER**
Botanist (1990-present). B.A., environmental sciences, botany emphasis, 1981. M.S., forest ecology, 1988. Relevant experience: one year as botanist with National Park Service, two years as a botanical consultant; currently a member of two natural resources advisory boards; active involvement with the Nature Conservancy.

Responsible for botany, research natural area, special interest area, and special forest products discussions and standards and guidelines.

**THOMAS M. JIMERSON**
Zone Ecologist (1984-present). B.S., wildlife and fisheries management, 1974. M.S., natural resources with forestry emphasis, 1978. Ph.D., wildland resource science, 1990. Relevant experience: two years as a botanist with the U.S. Fish and Wildlife Service; six years as Forest Botanist managing Sensitive Plant Program.

Responsible for biological diversity, research natural areas, and special interest area discussions, assumptions for vegetative modeling.

**DAVID W. JONES**
Humboldt Nursery Manager (1994-present) and Forest Silviculturist (1989-present). B.S., forest management, 1968. Advanced courses in Forest ecology and silviculture, 1980. Region 5 certified silviculturist, 1983. Relevant experience: three years as Reforestation Forester; one year as District Resource Officer; nine years as District Silviculturist.

Responsible for silvicultural strategies, management area direction, trees with special management consideration.

**MARK A. LANE**
Range Conservationist (1991 to Present). A.A., forestry, 1975. B.S., range/forest management, 1983. M.S. range science, 1988. Relevant experience: six years as Range Conservationist with the Soil Conservation Service; two years as Biological Technician with RMFRES, AZ.

Responsible for range data and discussions.

**SUSAN G. MACMEEKEN**
District Silviculturist (1990-present). B.S., forestry, 1981. Region 5 Certified Silviculturist, 1983. Relevant experience: five years as District Timber Planner; five years as District Culturist.

Responsible for timber, vegetation, pests, and trees with special management considerations sections.

**JEFFREY L. MATTISON**
Wildlife Planning Biologist (1991-present). B.S., wildlife management, 1974. M.S., range ecology/ hydrology, 1977. Additional courses in NEPA documentation and Endangered Species Act. Relevant experience: eight years as District Wildlife Biologist; four years as Assistant Wildlife Planning Biologist.

Responsible for wildlife input, including biodiversity and threatened and endangered wildlife species, timber and wildlife interactions.

**MICHAEL E. McCAIN**
Fishery Biologist (1991-present). B.S., fisheries, 1987. M.S., natural resources, 1994. Additional courses in freshwater and landscape ecology, biometrics, and mathematical modeling. Relevant experience: one year as soil and water conservation Technician with State of Ohio; one year as Biological Technician with State of California Department of Fish and Game; two years as Biological Technician with the U.S. Fish and Wildlife Service; five years as Research Biological Technician with Redwood Sciences Lab, Pacific Southwest Forest and Range Experiment Station, USFS.

Responsible for fish and wildlife data, Forest monitoring program and editing.

**RAYMOND L. McCRAY**
Forester-Recreation (1992-present). B.S., forestry, 1983. Additional training in recreation management, NEPA, technical writing, and engineering. Relevant experience: ten years as District Forestry Technician; five years as logging system specialist and team leader; three years as District Recreation and Heritage Resource Program Coordinator.

Responsible for wilderness and roadless management data and discussions, wild and scenic river data, OHV data.

**DONALD A. PASS**
Forester (1988-present). B.S., forestry, 1978. Additional courses in NEPA, timber planning and

wilderness management. Relevant experience: seven years as District Timber Sale Preparation Technician; one year as District Timber Sale Preparation Forester and silviculturist; three years as District Timber Planner; two years as District Wilderness Manager.

Responsible for wilderness and roadless management data and discussions, wild and scenic river data.

**SHIRLEY M. RECH**
Forester (1989-present). B.S., forest management, 1986. M.S., forest management, 1989; MBA, 1989. Additional courses in NEPA, forest economics, and public administration. Relevant experience: four years as District IDT member responsible for social/ economic analyst for timber sale projects; one year as District Silviculturist.

Responsible for discussion of economic environment and analysis of the economic impacts of the alternatives.

**LUCY A. SALAZAR**
Forest Vegetative Management Specialist (1990-present). B.A., mathematics (1976). M.S., forestry, 1980. Relevant experience: 10 years as a Research Forester with Riverside Fire Lab, Pacific Southwest Forest and Range Experiment Station, USFS, investigating fire management planning concurrent with four years experience with GIS and fire/fuels applications.

Responsible for fire, fuels, and air quality discussions.

**FERNANDO A. SANCHEZ**
Forest Landscape Architect and Recreation Manager (1994-present). B.L.A., landscape architecture, 1969. Relevant experience: 23 years as a Forest Landscape Architect concurrent with 20 years as a Land Management Planning team member and Recreation Planner.

Responsible for visual quality discussions, wild and scenic rivers data.

**MARK E. SMITH**
Forest Geologist (1986-present). M.S., geology, 1975. Ph.D., earth resources, 1978. Additional courses in regional planning and soils engineering. Relevant experience: three years consulting in regional geologic hazard analysis; seven years as staff geologist.

Responsible for analysis of geologic resources and hazards, and monitoring discussion and plan.

**MEREDITH A. SMITH**
Realty Specialist (1987-present). B.A., home economics, 1962. Additional courses in environmental document writing, NEPA process, and public land law. Relevant experience: 10 years as Applications Examiner, writing Forest Service instruments and documents, concurrent with special use preparation and administration.

Responsible for writing and editing portions of the FEIS and Plan; provides data on land uses, status, and adjustments.

**KENNETH L. WILSON**
Heritage Resources Program Manager (1979-present); Acting Land Management Planning and Recreation Staff Officer (1990-1991). B.A., anthropology, 1972. M.A., anthropology, 1980. Relevant experience: seven years as private cultural resources consultant intermingled with duties as federal archaeologist.

Responsible for heritage resource discussions.

**KENNETH A. WRIGHT**
Forest Planning Analyst (1992-present). B.S., forest science, 1976. M.S., watershed management, 1987. Additional courses in NEPA, modeling, and soil and water monitoring. Relevant experience: two years as research hydrologist; six years as planning hydrologist concurrent with seven years as District earth scientist; one year as Forest Planner.

Responsible for performing technical analysis, linear modeling (FORPLAN), data base design and management, and GIS.

## RETIRED OR TRANSFERRED

The following individuals, who have retired or transferred from the Six Rivers National Forest, participated as members of the Planning Team during part of their tenure on the Forest.

Norman Carpenter, Forest Landscape Architect (detailer)
John Coburn, Planning Forester (retired)
Randy Ferrin, Planning Hydrologist (transferred)
Gail Grifantini, Forest Planner (transferred)
Danny Heavilin, Assistant Forest Planner (transferred)
Christopher M. Knopp, Forest Planner/Planning Hydrologist (transferred)
Jane LaBoa, Planning Forester (transferred)
Harold P. Luedtke, Planning Forester (transferred)

Owen A. Peck, Forest Planner (retired)
Shannon D. Quinsey, Operations Research Analyst (transferred)
Daniel Schlender, Forest Landscape Architect (transferred)
Joy Smith, Assistant Forest Planner (transferred)
David Solis, Wildlife Planning Biologist (transferred)
Ed Toth, Wildlife Planning Biologist (transferred)
Catherine Young, Cultural Resources Specialist (resigned)
Bob Zane, Program Analyst (transferred)

## INTERDISCIPLINARY TEAM

The Forest Interdisciplinary Team consists of the Forest Supervisor, Deputy Forest Supervisor, Forest Staff Officers, and District Rangers. The Interdisciplinary Team collectively represents the diverse specialized areas of professional and technical knowledge needed to develop the Forest Land Management Plan. The education and experience of each member of the Interdisciplinary Team pertinent to this planning effort are summarized below.

**MARTHA J. KETELLE**
Forest Supervisor (1994-present), Past Deputy Forest Supervisor (1991-1993). A.B., geology, 1967. M.S., water resources/geology, 1970. M.L.A., landscape architecture, 1976. Additional courses in facilitation. Relevant experience: four years as researcher in visual impact analysis and geologic investigations; 3 years as Congressional legislative staffer; four years as federal agency legislative liaison; four years as federal agency public liaison in environmental quality.

**MARCIA R. ANDRE**
District Ranger, Mad River Ranger District (1992-present). A.A., forest management, 1976. Relevant experience: seven months as Acting District Ranger; one year as Assistant District Timber Management Officer; six years as District Timber Sales Administrator; four years as Assistant Small Sales Officer; three years as Timber Sale Preparation Technician.

**JEAN M. HAWTHORNE**
Public Services Staff Officer (1994-present), past Land Management Planning/ Recreation/ Heritage Resources Staff Officer (1991-1994). B.A., outdoor recreation administration, 1974. Relevant experience: six years as Forest Public Affairs Specialist with interpretive services, recreation, and human resource programs; six years as Regional Interpretive Services Program Leader with responsibilities for tourism, marketing, interpretive association management, visitor services, training, and HOST program.

**KATHLEEN HEFFNER McCLELLAN**
Forest Civil Rights Officer (1991-present). Five years of course work in administration and anthropology. Relevant experience: 14 years as cultural anthropologist working with contemporary Native American issues and uses of Forest lands.

**JOHN C. LARSON**
District Ranger, Orleans Ranger District (1978-1981; 1986- present). B.S., forest management, 1967. Additional courses in managing the NEPA process. Relevant experience: 14 years as District Ranger; 8 years in various timber management positions.

**GEORGE A. LOTTRITZ**
Natural Resources Group Staff Officer (1994 to present). Past Timber and Fire Staff Officer (1988-1994). B.S., forest management, 1967. Additional courses in ecology, silviculture, and the NEPA process, Region 5 Certified Silviculturist. Relevant experience: eight years as forester; three years as resource forester; 11 years as Forest Silviculturist.

**BRIAN N. MORRIS**
District Ranger, Gasquet Ranger District (1992-present). B.S., forest management 1967. Additional

courses in recreation management. Relevant experience: five years as forester; two years as land use coordinator; five years as Resource Officer; two years as Recreation Officer.

**HAROLD L. SLATE**
Forest Engineer/Lands and Minerals Staff Officer (1990-present). B.S., civil engineering, 1973. Additional courses in managing the NEPA process. Relevant experience: six years in transportation planning; three years in facilities planning and development; four years in environmental engineering; four years as Assistant Forest Engineer.

### RETIRED OR TRANSFERRED

The following individuals, who have retired or transferred from the Six Rivers National Forest, participated as members of the Interdisciplinary Team during their tenure as line or staff officers on the Forest.

Robert S. Black, Forest Engineer/Lands and Minerals Staff Officer (retired)
C. Eugene Brock, District Ranger, Gasquet Ranger District (retired)
Floyd Damoth, Timber and Fire Management Staff Officer (retired)
James L. Davis, Forest Supervisor (retired)
Lawrence C. Cabodi, District Ranger, Lower Trinity Ranger District (retired)
Karen Caldwell, Acting District Ranger/NRA Manager Gasquet RD (transferred)
Linda C. Costanzo, Comptroller (retired)
Richard L. Gibson, Public Affairs Officer (retired)
Cynthia Henchell, Humboldt Nursery Manager (transferred)
Jack R. Kahl, Fish, Wildlife, Range, Ecosystems and Watershed Staff Officer (retired)
Tony Montana, Human Resources Officer (reassigned)
Owen A. Peck, Land Management Planner/ Recreation Staff Officer (retired)
Anthony R. Ramirez, Humboldt Nursery Manager (resigned)
Julie Ranieri, Appeals/ Environmental Coordinator (reassigned)
Jan R. Seils, Deputy Forest Supervisor (retired)
Gretchen Smyth, Information Services Staff Officer (transferred)
Janice Stevenson, Acting District Ranger Mad River RD (reassigned)
Leah C. Stewart, Information Services Staff Officer (transferred)
Patricia C. Visser, Economic Development Specialist (reassigned)

## TECHNICAL SUPPORT

The planning process is supported by most Forest employees, either directly or indirectly. Many people provided the technical support necessary to complete the planning process and publish the documents: managing public involvement; reading, coding, and keying public input; gathering and analyzing data; writing, reviewing, and editing technical discussions; preparing graphics, text, and layout. Others provided support by filling in behind for those who were more intimately involved in the planning effort. Those who provided significant support are identified below.

Chris Adair, graphics and editing
Eric Brunner, timber
Lori Damoth, data entry
Amy Dozier, writing/editing
Bruce Emad, socio-economic studies (private industry)
Mike Ericksen, CalVeg vegetation classification
Richard Farrington, geology
Marlette Grant, publishing
Cheryl Gruenthal, wildlife biology
Todd Healy, writer/editor
Sherry Hirst, data base queries
Ken Hoffman, editing, wildlife modeling
John Hunter, wildlife biology
Tom Keter, archaeology
Don Kudrna, wildlife biology
Diane Kunes, computer maps
Nora Laughlin, lands; landscape architect
Dennis McKinnon, computer maps & desktop publishing
Pat Manley, wildlife biology
Scott Miles, soils

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