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CEDAR LOG FLAT

RESEARCH NATURAL AREA

STRATEGIC MANAGEMENT PLAN

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Cedar Log Flat Research Natural Area Strategic Management Plan

USDA Forest Service Siskiyou National Forest Galice Ranger District

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1.0 INTRODUCTION

Research Natural Areas (RNA's) of the Forest Service are lands that are permanently protected for the purposes of maintaining biological diversity, conducting non-manipulative research and monitoring, and fostering education. In RNA's natural conditions are allowed to prevail, usually by eliminating or limiting human intervention. In many cases, however, human activities have interrupted natural processes for several decades or more. In these cases, prescribed management actions are used to restore the processes upon which the natural communities and species depend. Cedar Log Flat Research Natural Area is just such a case.

Cedar Log Flat Research Natural Area (RNA) is located about 19 road miles to the west of Grants Pass, Oregon. It drains directly to Slate Creek, which flows into the Applegate River. All of the RNA is within Josephine County (Map 1). It is administered by the Galice Ranger District, Siskiyou National Forest. It was established to fill the Klamath Mountains Province representation of a Port-Orford-cedar/western azalea community (element), a Jeffrey pine/dwarf ceanothus savanna community (element), and a California pitcher-plant fen on serpentine-peridotite (Oregon Natural Heritage Plan, 1993). The Jeffrey pine-grass community at low elevations is an uncommon plant community. There are no other sites available to represent this plant community in the RNA system.

1.1 Policy

The Forest Service recognizes the role of Research Natural Areas in sound land use management and has provided for RNA establishment and management in Forest Service Manual (FSM) 4063. The basic policy is that Research Natural Areas may be used only for research, study, observation, monitoring and those educational activities that maintain unmodified conditions (FSM 4063.03).

The guiding principle of RNA's management is to allow the natural ecological processes occurring in the area to predominate. Human encroachments, activities and management implications, which directly or indirectly modify natural ecological processes, generally are to be mitigated with active management.

1.2 History

In March, 1907, the Siskiyou National Forest Act officially established the Siskiyou National Forest. In April, 1908 a parcel of land encompassing approximately 1/6th of the Cedar Log RNA was withdrawn as a Forest Administrative site. It is listed on Forest Maps in 1915, 1927, and 1937 as a Forest Service Ranger Station. Based upon commonly accepted practice, it is likely that the Slate Creek Guard Station existed prior to the 1908 withdrawal date. The 1939 Siskiyou National Forest Map lists this area as a "Cooperative Area" under protection of the State. The area is not identified on the 1942 Siskiyou National Forest Map and does not appear on Forest Maps again until the 1960's when it is listed as a campground. The campground designation appears as late as 1972.

The Siskiyou National Forest initiated the Forest Planning process in 1979. The identification of potential Research Natural Areas was part of this process. The unique value of Cedar Log Flat from both the ecological and biological standpoints was recognized by Tom Atzet, Area Ecologist, and Lee Webb, Forest Wildlife Biologist. The Record of Decision and Final Environmental Impact Statement (1989) for the Land and Resource Management Plan for the Siskiyou National Forest recommended 421 acres (170.4 hectares) of the area be established and included in the Nation-wide system of Research Natural Areas, with direction that an establishment report and management plan be completed (Land and Resource Management Plan, pages II-29; Record of Decision, page ROD-14).

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1.3 Basis for Establishment

Under regulations of 7 Code of Federal Regulations (CFR), the Secretary of Agriculture has delegated authority to the Chief of the Forest Service, who, pursuant to 36 CFR 251.23, shall establish a series of research natural areas, sufficient in number and size to illustrate adequately or typify for research or educational purposes, the important forest and range types in each forest region, as well as other plant communities that have special or unique characteristics of scientific interest and importance.

Under direction set forth in the Siskiyou National Forest Land and Resource Management Plan (Forest Plan) and in Forest Service Manual 4063, the Regional Forester and Pacific Northwest Research Station Director shall prepare a Research Natural Area Establishment Record. This document will describe features, objectives for establishment, and management direction. The Establishment Record will be submitted to the appropriate Regional Forester for signature (Designation Order) in concurrence with the Station Director.

Once approved, an RNA will not be re-evaluated in subsequent rounds of Forest Planning. Forest Service policy is such that unless catastrophic circumstances significantly alter the conditions for which a research natural area was originally created such that it no longer may serve that function, the designation of a research natural area shall be in perpetuity.

The Cedar Log Flat Research Natural Area Establishment Record was written by Diane White, Area Ecologist, and Cedar Log Flat RNA was officially established in 1996. The establishment of the Cedar Log Flat RNA is an administrative designation that ensures management direction that preserves the natural ecosystem processes at the site.

2.0 LAND MANAGEMENT CONTEXT

2.1 Research Natural Area Land Management Goals and Objectives

The management goal of the Cedar Log Flat RNA, as with all RNA's on the Forest, is the preservation of a naturally occurring physical and biological unit where natural conditions are maintained insofar as possible for the purposes of: (1) comparison with those lands influenced by man; (2) provision of educational and research areas for ecological and environmental studies; and (3) preservation of gene pools, typically rare and endangered plants and animals.

The primary objective of Cedar Log Flat RNA is to conserve the matrix of forestland, shrubland, serpentine meadow, and fens that occur on soils derived from serpentine bedrock found in the Cedar Log Creek area. This provides a spectrum of natural settings having special or unique characteristics of scientific interest or importance. The RNA will serve as a reference area for study of ecological succession in serpentine forestland and meadows; it will serve as a baseline for measuring long-term ecological changes; and as a monitoring site to determine effects of techniques and management practices applied to similar ecosystems.

The Cedar Log Flat Research Natural Area provides important links to the national network of RNA's and supports the need for preserving unique and characteristic natural ecological values.

More specifically, the basic management objectives of the Cedar Log Flat RNA (as modified from FSM 4063.02) are to:

1. Preserve the ecological integrity of the target elements in the area (Port-Orford-cedar/western azalea community, Jeffrey pine/dwarf ceanothus savanna community and California pitcher-plant fen on serpentine-peridotite community), plus maintain opportunities for natural processes of succession, climatic change and evolution.
2. Preserve and maintain the genetic diversity of native plant and animal populations in the RNA.
3. Provide a reference area for the study of evolution, succession, population dynamics and other ecosystem processes; a baseline area for measuring long-term ecological changes and responses of ecosystems to climate change; and as a control area for comparing results from manipulative research and effects of resource management techniques and practices.
4. Provide on-site and extension educational activities.



Cedar Log Flat Meadow - An Open Park-Like Stand Structure

Plan

2.2 Research Natural Area Land Management Direction

Siskiyou Forest Plan Forest-Wide and Management Area specific (Management Area 3) Standard and Guidelines address the management of designated and proposed for designation Research Natural Areas on the Forest. This includes the Cedar Log Flat RNA. The Northwest Forest Plan designated management allocations that overlay the Siskiyou Forest Plan Management Areas, when more restrictive. The Cedar Log RNA Strategic Management Plan incorporates Standards and Guidelines of Management Area 3 (MA3) in the Siskiyou Forest Plan and Standards and Guidelines of the Northwest Forest Plan. For this land allocation the direction and Standards and Guidelines under MA3 are more restrictive than those in the Northwest Forest Plan.

In summary, this Strategic Management Plan is written in accordance with guidelines and direction found within the Forest Service Manual, Siskiyou Forest Plan, as amended by the Northwest Forest Plan.

2.3 Surrounding Land Management Direction

Based on the Forest Plan, as amended by the Northwest Forest Plan, there are three land management allocations which are adjacent to or incorporated within the Cedar Log Flat Research Natural Area. These three allocations, listed in order of restrictiveness of management actions are: MA9 - Special Wildlife Site, MA11 - Riparian Reserve, and MA14 - Matrix. Briefly, the land allocations and their potential management activities to the RNA are;

MA9 - Special Wildlife Site - Cedar Log Meadow. This site has been allocated with the goal of protection or enhancement of the unique wildlife habitat. The Desired Future Condition is to provide for the unique characteristics that resulted in its designation. This site, and other MA9 sites, are important components of overall wildlife and botanical habitat diversity. As such, no programmed timber management is proposed.

MA11 - Riparian Reserve System - Riparian Reserves are where riparian dependent resources receive primary emphasis. Riparian Reserves occur at the margins of standing and flowing water, intermittent stream channels and ephemeral ponds, and wetlands. Riparian Reserves adjacent to Cedar Log Flat RNA parallel the stream network. Standards and Guidelines prohibit and regulate activities in the Riparian Reserve that retards or prevents attainment of the Aquatic Conservation Strategy objectives (Northwest Forest Plan).

MA14 - Matrix - The Cedar Log Flat RNA is located adjacent to Matrix lands. Most Forest-wide timber harvest and other silvicultural activities would be conducted in that portion of the Forest's matrix lands with suitable forest lands, according to standards and guidelines. Most scheduled timber harvest takes place in the matrix. The matrix lands surrounding the RNA includes areas that are non-forested, forested with low site productivity for timber production, and forested but unsuitable for timber production.

The Cedar Log Flat RNA falls within the **Applegate Adaptive Management Area**, as designated by the Northwest Forest Plan. Adaptive Management Areas are landscape units designated to encourage the development and testing of technical and social approaches to achieving desired ecological, economic, and other social objectives. Overall, management activities in Adaptive Management Areas will be conducted to achieve the objectives described in their specific land allocations as well as the Adaptive Management Area Management Plan.

2.4 RNA Administration

Pursuant to the Forest Service Manual (FSM 4063), in consultation with Forest Supervisors and District

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Rangers, Station Directors have authority to approve all management plans and to oversee and coordinate approved research on all Research Natural Areas, except those Research Natural Areas in congressionally designated areas. Cedar Log Flat RNA is not in a congressionally designated area.

District Rangers are responsible for direct administration, protection, and, in accordance with approved forest plans and/or project prescriptions, management of established Research Natural Areas.

Forest Supervisors have the responsibility to execute approved management plans for Research Natural Areas and to administer, manage, and protect Research Natural Areas. Forest Supervisors must coordinate with the Station Director or Director's representative needed changes in management or protection.

Plan

3.0 PHYSICAL AND BIOLOGICAL ENVIRONMENT**3.1 RNA Quick Statistics**Area:

421 Acres
170 Hectares

Elevation Range:

1700 to 3300 Feet
518 to 1006 Meters

Legal Location:

T36S, R08W, Sections 35 & 36

Climate:

Average Annual Temperature	54.7 F
Average Annual July Temperature	71.6 F
Average Annual December Temperature	40.2 F
Average Annual Precipitation	32.6 in
Average Annual Summer Precipitation *	2.1 in
(* June through September)	

Geologic Province:

Klamath Mountains Physiographic Province

Soils:

Pearsoll - Rock Outcrop Complex
Dukabella - Pearsoll Complex
Cornutt - Dukabella Complex

Plant Associations and Communities:

Jeffrey pine-Huckleberry oak (PIJE-QUVA)
Jeffrey pine/Dwarf ceanothus (PIJE/CEPU)
Douglas-fir-Jeffrey pine (PSME-PIJE)
Port-Orford-cedar-Bigleaf Maple (CHLA-ACMA)
Port-Orford-cedar/Box-leaved siltassel (CHLA/GABU)
Tanoak/California coffeeberry (LIDE3/RHCA)
Darlingtonia bogs (Plant Community)

3.2 Area And Elevation

Cedar Log Flat RNA is 421 acres (170.4 hectares) in size. The elevation ranges from 1700 (518 meters) to 3300 feet (1006 meters). Total elevational difference is 1600 feet (488 meters) (see Map 2).

3.3 Location

Cedar Log Flat RNA is located near the center of the eastern boundary of the Siskiyou National Forest (See Map 1). Approximately 19 road miles from Grants Pass, Oregon, it is located in the Slate Creek watershed, which flows into the Applegate River, thence Rogue River. It includes portions of Sections 35 and 36, Township 36 South, Range 8 West, Willamette Meridian. It lies at 42° 23' 46.8" latitude and 123° 35' 51.5" longitude.

All bearings referred to in this description are True Geodetic Bearings. Beginning at the easterly Ordinary High Water Line of Slate Creek at its junction with Buckeye Creek. Thence southerly along the easterly ordinary high water line past the junction of Cedar Log Creek to a point opposite the junction of an unnamed creek. Thence westerly along said unnamed creek to the end of the distinct drainage. Thence South 80° West to the top of the divide between Cedar Log Creek and Slate Creek. Thence northerly along said divide to Cedar Log Creek. Thence northerly to the summit and the northerly divide of Cedar Log Creek and Slate Creek. Thence southeasterly along said divide to a point due west of the point of beginning. Thence east to the point of beginning.

3.4 Access

Cedar Log Flat RNA is accessible to the public year round. The area can be accessed by road by U.S. Highway 199 from Grants Pass to Josephine County Road 3680 (Slate Creek Road) to Forest Service Road 2100020 (Slate Creek), which parallels Slate Creek and forms the eastern boundary of the RNA. Forest Service Road 2100020 ends at the RNA boundary. Forest Service Road 2100695 (Cedar Log), which enters the RNA, is physically blocked to cars and trucks, however is still passable by off-highway motorcycles. Access into the RNA may be difficult during periods of high flows on Slate Creek. There are no other roads that enter the RNA.

3.5 Principle Distinguishing Features

3.5.1 Climate

The climate of the area surrounding the RNA is cool, wet, and sometimes foggy during the winter, and hot and dry during the summer. The summer climate is Mediterranean, and drought between May and October is common. Temperature and precipitation averages (1951 and 1977) for the U.S. Weather Station in Grants Pass, Oregon, are shown below. The weather station is 19 air miles from Cedar Log Flat and reflects the conditions in the RNA.

Average Annual Temperature	54.7 F
Average Annual July Temperature	71.6 F
Average Annual December Temperature	40.2 F
Average Annual Precipitation	32.6 in
Average Annual Summer Precipitation *	2.1 in
(* June through September)	

3.5.2 Geology

Cedar Log Flat RNA lies within the Klamath Mountains physiographic province, a region characterized by steeply folded and faulted pre-Tertiary rock, deeply dissected terrain, and the accordance of its ridges and peaks into a broad peneplain, formed during the Miocene and Pliocene epochs.

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Bedrock in the area consists of serpentine and peridotite, and soils are shallow. Large areas exist of mostly bare parent material with little or limited amounts of soil and vegetation. Some of these areas consist of a blend of massive boulders, rocks, rock fragments and strips of parent material.

3.5.3 Soils

The soils within the Cedar Log RNA are described by a given soil complex. A soil complex is a map unit of two or more kinds of soils in such an intricate pattern or so small an area that it is not practical to map them separately. The primary soil complexes found within the RNA are Pearsoll-Rock Outcrop Complex, Dukabella-Pearsoll Complex, and Cornutt-Dukabella Complex. These soil complexes are briefly described below.

Pearsoll-Rock Outcrop Complex - Pearsoll soils are shallow to serpentinite and are well drained. The surface layer is extremely stony clay loam, and the subsoil is extremely cobbly clay. This complex includes approximately 50% Pearsoll soils and 25% rock outcrop. This complex also includes approximately 25% Dukabella soils (described below). Depth to bedrock ranges from 10 to 20 inches. Permeability is slow. Runoff is rapid, and the hazard of water erosion is high.

Dukabella-Pearsoll Complex - Dukabella soils are moderately deep to serpentinite and are well drained. The surface layer is very cobbly clay loam, and the subsoil is very cobbly clay loam and extremely cobbly clay. It is found mainly on mountainsides and ridgetops. The Pearsoll soils, as described above, are similar. This complex is approximately 60% Dukabella soils, 30% Pearsoll soils, 5% rock outcrops, and 5% Eightlar soils. Depth to bedrock ranges from 10 to 40 inches. Permeability is slow. Runoff is rapid to very rapid, and the hazard of water erosion is high.

Cornutt-Dukabella Complex - Cornutt soils are deep and well drained to metavolcanic rock. The surface layer is very cobbly clay loam, and the subsoil is clay. Cornutt soils are on mountainsides and alluvial fans. This complex is about 40% Cornutt soils and 35% Dukabella soils (described above). The remaining 25% is a mixture of Brockman, Josephine, Pearsoll, and Speaker soils. Depth ranges from 20 to 60 inches. Permeability is slow. Runoff is rapid, and the hazard of water erosion is high.

3.5.4 Hydrology

A major hydrologic feature of the Cedar Log Flat RNA is Slate Creek which flows in a southerly direction and forms the eastern boundary of the RNA (see Map 2). Historically, Slate Creek was a very important producer of anadromous fish in the Applegate River basin. Mining activity has occurred on most of the stream through National Forest administered Lands. Instream habitat complexity is minimal for spawning substrate, rearing pools, and side channels present on National Forest lands. Streamside shade and instream large wood is low since shade and conifers in riparian areas are limited. The creek gradient at this point is relatively low, around 3%, with a few stretches up to 8%.

Cedar Log Creek, a tributary to Slate Creek, flows east through the northern portion of the RNA. At the confluence of Cedar Log and Slate Creek, Cedar Log Creek provides up to 62% of Slate Creek's flow (1991). It consists of a moderate V-shaped canyon. The stream has a moderate gradient with occasional pools and riffles. The average gradient of the stream is 3%. Stream surveys have noted log jams in the creek which likely cause barriers to anadromous fish migration. Anadromous fish use the lower mile of Cedar Log Creek. Rainbow and cutthroat trout are present in the stream system. As with most streams in the drainage, it has typical low flows in summer months. Stream surveys have also noted past mining activity which has created pools in the outer stream bank. Timber removal adjacent to the stream, though not always associated with mineral exploration, has also occurred.

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The most notable hydrologic feature of the RNA itself is the presence of its wetlands. These bogs are characterized by the presence of the California pitcher-plant (*Darlingtonia californicum*). Known as “fens”, these bogs remain wet throughout the year and occur in the RNA serpentine meadow, within the road tread of Road 2100695 and along the gentle east-facing slope. Six bogs, each below a spring, have been located. During the summer months, these are the only sources of water outside the major creek drainages.

Numerous ephemeral channels also exist throughout the RNA.

3.5.5 Site History

The Cedar Log Flat RNA is located in an area transitional to Athapaskan and Takelma aboriginal groups (Gray 1987). Both groups engaged in similar subsistence-settlement systems based on hunting and gathering. Upland resources, such as those found on the RNA, as well as riverine resources, played an important role in the yearly seasonal round. An Athapaskan village, Taldaspan, is located just to the north at the mouth of Galice Creek. Just to the east of the RNA are four Takelma villages located within the general area where the Applegate River enters the Rogue River (Gray 1987).



Cedar Log Creek

3.5.6 Plant Communities

The vegetation composition is dictated by the ultrabasic parent rock-serpentine and peridotite. The soils derived from this rock are typically low in total and adsorbed calcium, and high in magnesium, chromium, and nickel. Serpentine areas are characterized by unusual plant communities; the vegetation is usually stunted, compared with vegetation on other soils. The flora usually includes endemics restricted to serpentine soils.

Conifers predominating in the RNA are Port-Orford cedar (*Chamaecyparis lawsoniana*) in the moister areas and Jeffrey pine (*Pinus jeffreyi*) in the drier areas. Knobcone pine (*Pinus attenuata*) is also present, indicating a recent fire. A number of sensitive and rare plant species occur in the RNA (see Section 4.3).

Older conifers in the RNA are approximately 180 to 215 years. The larger conifers are approximately 40 inches in Diameter Breast Height (DBH) and 130 feet in height. More than 160 woody and herbaceous plant species have been identified in the RNA.

Fire evidence is present throughout the RNA. Knobcone pine, a serotinous species and typical pioneer after fire, is present as a pure, small stand in the northern part of the RNA near the ridgetop. The presence of whiteleaf manzanita (*Arctostaphylos viscida*) is also an indicator of recent fires. There are many bole scars and fire scarred snags. Fire evidence along the creek is less evident, yet still present.

3.5.7 Human Features

Human made features/structures are limited in and adjacent to Cedar Log Flat RNA. Several fish habitat improvement structures have been installed in Slate Creek. Past mining activity has left visual impacts to the landscape, primarily along Cedar Log and Slate Creeks. No mining structures currently exist within or

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adjacent to the RNA.

Several prehistoric and historic sites are located within the RNA. A more detailed discussion of these can be found in Section 4.13.

Forest Service Road 2100020, which parallels Slate Creek, leads up to the RNA. Forest Service Road 2100695 (Cedar Log), which enters the RNA, is physically blocked to cars and trucks. It is still passable by off-highway motorcycles, ATVs and horseback. There are no other roads that enter the RNA.

Mining activity has occurred in the past outside the proposed RNA. A chromite mine, located about one-half mile to the northwest, was in operation more than 25-30 years ago. At that time the mine was operated under government subsidy. One open shaft and the road to the mine are all that remain. There are numerous placer claims (gold-located 1980) and one lode claim existing within the area. One of the placer claims is located on Cedar Log Creek. None of the claims appears to have had any activity within the last several years.

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4.0 RNA MANAGEMENT CONSIDERATIONS

4.1 Introduction

This section provides discussion on management direction in the Siskiyou National Forest Land and Resource Management Plan (Forest Plan), as amended by the Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl (Northwest Forest Plan), for the Cedar Log Flat RNA.

These land management planning documents provide direction and objectives for the management of lands administered by the National Forest System, including Research Natural Areas. In conjunction with ecological requirements of the Cedar Log Flat RNA, “Management Actions” have been proposed for most “Management Considerations” detailed in this section. Where pertinent, each Management Consideration provides discussion on (1) current information, (2) Forest Service Land Management Direction, and (3) Management Actions required to maintain and/or meet the management goals and objectives detailed in Section 2.0.

Management Actions designed to maintain desired future conditions and meet land management goals and objectives are summarized at the end of each management consideration. All activities proposed will abide by existing laws, regulations and requirements, including the National Environmental Policy Act (NEPA). Activities will also be consistent with management direction, and the Standards and Guidelines of the Forest Plan. Implementation scheduling of management actions will be dependent on availability of funds and personnel.

Monitoring elements, and specifics about each element, can be found in Section 5.0.

4.2 Botanical

Cedar Log Flat RNA contains six (6) plant associations and one (1) plant community (Appendix F). Cedar Log Flat has a high diversity of plant species; approximately 140 plants species are documented within the RNA. For a complete listing of vascular plant species, refer to Appendix A. Sensitive and rare plant species are discussed in Section 4.3.

Collection or gathering of any plant species, including plants with special status, outside of those identified in Section 4.12 (Research) is not compatible with the management goals and objectives of the RNA.

It is believed that general wildfire suppression efforts have allowed the encroachment of trees, shrubs and grasses in serpentine plant communities, reducing the habitat niche for forbs. Thus the Jeffrey Pine savanna site is less suitable for certain sensitive plant species and/or plants adapted to a “natural” fire regime. The increase of shrub and tree densities in the area of fens could result in higher transpiration rates and less water available for herbaceous fen species.

Monitoring of serpentine plant communities, and the associated sensitive plants discussed in Section 6.5, will help the Forest describe the responses of both individual species and communities to fire.

Botanical Management Actions

- T Monitoring of serpentine plant communities, and the sensitive plants associated with them, as discussed in Section 5.0, will help describe the responses of both individual species and communities to fire.
- T The introduction or reintroduction of native plant species needs to be coordinated with and through an approved research activity. Such activities need recommendation from the District Ranger and

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approval from the Forest Supervisor and Station Director.

4.2.1 Introduced and Noxious Weed Species

Forest Plan Standard and Guideline MA3-4 does not permit the introduction of exotic plant species into the RNA. Reintroduction of former native species may be permitted as long as the objectives of the RNA are met.

The presence of noxious weeds does not further the goals, objectives and desired future condition of the Cedar Log Flat RNA. Noxious weeds directly adjacent to the RNA pose a high risk of spreading into the RNA itself. Eradication of noxious weeds within and directly adjacent to the RNA, should they exist, is considered to be a high priority in maintaining the RNA's genetic diversity and integrity.

Noxious weed management activities will focus on maintaining the exclusion and encroachment of exotic species. Periodic (semi-annual) spring noxious weed surveys (monitoring) are recommended to assess the need for management actions.

Introduced Noxious Weed Species Management Actions

- T Semi-annual surveys and monitoring by the District Botanist and Wildlife Biologist is recommended to assess the need for potential management actions to eliminate the introduction and minimize the spread of introduced species.
- T Noxious weed management activities will focus on maintaining the exclusion and eliminate encroachment of exotic species into the RNA.
- T Semi-annual noxious weed surveys (monitoring) are recommended to assess the need for potential management actions.

4.3 Threatened, Endangered, Sensitive, and Rare Species

4.3.1 Plant Species

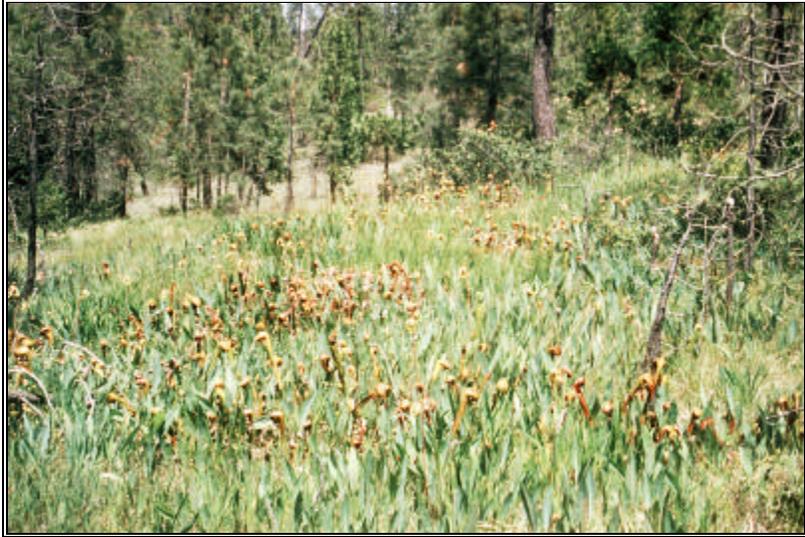
No Federally Threatened or Endangered plant species are known to exist in the Cedar Log Flat RNA, or within the Siskiyou National Forest. Four sensitive plant species (Regional Forester's list) are known to occur within the boundaries of the RNA. Eight species included in the Oregon Natural Heritage Program "List 4 species" also occur in the RNA.

Sensitive species occurring in the RNA include *Epilobium oregonum* (Oregon willow herb), *Microseris howelli* (Howell's microseris), *Senecio hesperius* (western senecio), and *Fritillaria glauca* (Siskiyou fritillaria). Draft Conservation Strategies have been written for the first three sensitive species.

The Oregon Natural Heritage's Program (ONHP) List 4 species are of conservation concern, but currently not threatened or endangered. Species on List 4 within the RNA include *Arabis aculeolata* (Waldo rockcress), *Arabis koehleri* var. *stipitata* (Koehler's stipitate rockcress), *Cypripedium californicum* (California lady's-slipper), *Darlingtonia californica* (California pitcher-plant), *Dicentra formosa* ssp. *oregana* (Oregon bleedingheart), *Eriogonum pendulum* (Modding buckwheat), *Lilium vollmeri*/*L. pardalinum* ssp. *wigginsii* (Volmer's lily), and *Thlaspi montanum* var. *siskiyouense* (Siskiyou Mountain pennycress).

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Direction for the management of Threatened and Endangered species, both plant and animal, is found within the Endangered Species Act, the Northwest Forest Plan, and in the Siskiyou Forest Plan' Forest-Wide Standards and Guidelines. Direction for the management of sensitive plant species can be found in Forest-Wide Standard and Guidelines 4-1 and 4-2.



One Of The RNA's Several Darlingtonia Fens

Collection or gathering of sensitive plant species and plants with special status, outside of those identified in Section 4.12

(Research) is not compatible with the management goals and objectives of the RNA.

Endangered, threatened and sensitive species are managed in cooperation with the USDI Fish and Wildlife Service, Oregon Department of Fish and Wildlife (animals), and Oregon Department of Agriculture (plants).

Threatened, Endangered, Sensitive, and Rare Plant Species Management Actions

- Collection or gathering of sensitive plant species and plants with special status, outside of those identified in Section 4.12 (Research), is not compatible with the management goals and objectives of the RNA

4.3.2 Fish Species

Cedar Log Creek contains several species of anadromous and resident salmonids: Rainbow and steelhead trout (*Oncorhynchus mykiss*), cutthroat trout (*Oncorhynchus clarki*) and coho salmon (*Oncorhynchus kisutch*). All races of steelhead trout in SW Oregon have been proposed for listing as Threatened under the Endangered Species Act. Coho salmon in SW Oregon is listed as Threatened under the Endangered Species Act.

Cedar Log Creek plays an integral role for anadromous fish populations within the Slate Creek watershed. The stream contains large amounts of wood material (mostly Port-Orford-cedar pieces) and complex habitat features of wood jams, pools and gravel tailouts. The quality of spawning gravel and protection afforded juvenile salmonids from floods is much higher here than the adjacent and larger Slate Creek. The management objectives of the Cedar Log RNA are compatible with maintaining the valuable salmonid habitat in Cedar Log Creek.

In accordance with Standard and Guideline MA3-4, Fish and Wildlife habitat improvement projects may be approved if they meet the objectives of the RNA and do not diminish the sustained long-term viability of other plant and wildlife resources.

4.3.3 Wildlife Species

There are no Federally listed Threatened or Endangered wildlife species known to exist within or immediately adjacent to the RNA.

Plan

Ringtails (*Bassariscus astutus*) have been trapped and released in the area. For a complete list of fauna observed in the RNA, refer to Appendix C. This baseline inventory of species consists of those animals listed in Appendix F of the 1989 Forest Plan, plus wildlife observations contained within the WILDOBS database, and other sources (see Appendix C).

4.4 Introduced Species

Forest Plan Standard and Guideline MA3-4 does not permit the introduction of exotic animal and fish species. Reintroduction of former native species may be permitted as long as the objectives of the RNA are met.

Management activities will focus on maintaining the exclusion and eliminating encroachment of exotic species. Periodic (semi-annual) spring surveys and monitoring are recommended to assess the need for potential management actions to eliminate the introduction and minimize the spread of introduced species..

4.5 Insects And Disease

Current conditions in the Slate Creek drainage show increased stress on coniferous stands resulting from high stand density and recent prolonged drought conditions. This stress has resulted in the increased incidence of insect attack and resulting mortality. The exclusion of the periodic fire disturbance element has exacerbated these effects.

Forest Plan Standard and Guideline MA3-6 addresses management actions which shall be taken against insects or diseases. Management Action may be appropriate where outbreaks drastically alter the natural ecological processes within the RNA. Management Actions will be designed with the overall objective of bringing ecological processes into their natural range.

Consistency with the Forest Plan will assist in meeting the management goal and desired future condition for the RNA's land allocation. Management actions which reintroduce natural disturbance regimes, such as prescribed fire, can aid in the maintenance and perpetuation of the RNA's natural ecological processes, and ultimately its desired future condition.

Any insect and disease occurrences should be documented and their progression or development be monitored. Establishment of baseline information is an important first step in documenting and monitoring insect and disease activity in the RNA. When these disturbance agents begin to threaten the resource on which the RNA established, management actions are valid options to consider. Management actions need to be made in consultation with Ranger District, Forest, Southwest Oregon Insect and Disease Center and PNW Research Station Entomologist and/or Pathologist.

4.5.1 Port-Orford-Cedar

Port-Orford-cedar (Port-Orford-cedar) populations within the RNA are concentrated along perennial streams, most notably Slate Creek adjacent to the east boundary, and Cedar Log Creek and its major tributaries to the west. The species is a valuable component of riparian ecosystems. It is also vulnerable on many microsites to *Phytophthora lateralis* (Port-Orford-cedar root disease), an introduced pathogen having potential to spread through human activities and natural processes. Protection strategies can limit the spread of Port-Orford-cedar root disease.

At this time, there is no known incidence of *Phytophthora lateralis* within the RNA, access roads or adjacent areas. Associated Port-Orford-cedar populations at highest risk are situated outside of the RNA adjacent to Forest road 2100020 in areas where the road exists in close proximity to Slate Creek. This road provides vehicle access to the RNA.

Direction for the management of Port-Orford-cedar is found in Forest-Wide Standard and Guideline 12-8.

Plan

Proactive management with the objective of preventing or limiting the introduction of root disease is needed for all management activities within and adjacent to the RNA. Planned management activities need be coordinated with the District Port-Orford-cedar Program Coordinator. Annual presence/absence monitoring for root rot in Port-Orford-cedar within and adjacent to the RNA should take place.

Management actions which reintroduce natural disturbance regimes, such as prescribed fire, can aid in the maintenance and perpetuation of the RNA's natural ecological process, and ultimately its desired future condition. Other management tools (e.g. disease inoculation, density management, etc.) are also available which meet this objective.

4.6 Fire

4.6.1 Fire History

Evidence of past fire activity is present throughout the RNA. A nearly pure stand of knobcone pine, a species that relies on fire for reproduction, is found in its north end. The presence of whiteleaf manzanita throughout the RNA is an indication of recent fires. There are numerous fire-caused scars on many of the older trees and snags in the RNA. Based upon information from surrounding areas, it is believed that American Indians would have burned quite often in this area.

The Jeffrey pine savanna found in the Cedar Log Flat RNA supports frequent, small patchy fires rather than extensive high intensity fire due to low fuel loading and widely spaced canopies. Except for forbs and grasses, fuel continuity is also lacking. The natural fire frequency in the area of the RNA is estimated at every 10-15 years (Atzet, 1996). The last fire recorded was in the early 1900's. We estimate that an 80-100 year time period has elapsed without fire occurrence in the RNA.

4.6.2 Wildfire Suppression Effects

The presumed ecological stress of a fire regime modified by lengthening of the fire return interval has modified the natural successional process:

- In the serpentine meadow, advance to where grass cover reduces the niche space for forbs. It is believed that the site has become less suitable for *Senecio hesperius* and *Microseris howellii*.
- Encroachment of trees and shrubs on the open serpentine meadow and savanna reduces the extent of these habitat types, which are rare components in the watershed and landscape, and on the Forest.
- The numbers of snags and down logs and their degree of decay have increased.

4.6.3 Wildfire Inside RNA

Evidence of past wildfire can be found throughout the Cedar Log Flat RNA. As stated above, fire scars on older live trees are present, even more so on the more barren south slopes. Many blackened snags along Cedar Log Creek were burned a great distance above the ground. The presence of a stand of knobcone pine is strong evidence of past wildfire activity. There is no evidence that knobcone pine is currently regenerating.

Forest Plan Standard and Guideline MA3-11 provides direction for controlling wildfires, prevention activities, prescribed fire activities and fuel accumulations. The Forest Plan states all wildfires occurring at Fire Intensity Level (FIL) 2 or above should be controlled at 30 acres or less, 90 percent of the time. A limited range of suppression technology and equipment emphasizing indirect attack should be used. In suppressing fires, chemical fire retardants and ground disturbing activity should be avoided. Traditional responses to wildfire ignitions may not be appropriate within the RNA. Wildfires occurring at FIL 1 should

Plan

be handled as outlined in the basic fire management direction for the Forest. Management should provide for a low level of prevention activities. A fire management plan needs to be developed to guide control and suppression activities related to wildfire ignitions within the RNA.

4.6.4 Wildfire Outside RNA

With the introduction of fire suppression activities, there has been a modification of the fire regime inside the RNA, outside the RNA, and in southwestern Oregon in general. Through prolonged fire suppression fuel loading has increased, fuel continuity has developed within serpentine ecosystems, and the effects of wildfire have become more severe.

Forest-Wide Standards and Guideline 12-1 provide a discussion of appropriate suppression response and strategy to wildfire.

4.6.5 Prescribed Fire

As directed in Forest Plan Standard and Guideline MA3-11, prescribed fire may be utilized as a tool to return fire to its natural role in the RNA and return plant communities to a condition similar to that which existed prior to active fire suppression. Managed prescribed fire, or wildfire, may be used to perpetuate the sere or cell(s) that the RNA is meant to represent. Forest-Wide Standards and Guideline 12-3 also discusses the role of prescribed fire in land management actions.

The overriding purpose of any proposed prescribed fire management action is to reintroduce fire into the Cedar Log Flat RNA ecosystem, bring the Jeffrey pine savanna back to its original condition prior to the exclusion of fire, and to assist the potential increase of sensitive plant species populations. Overall the objectives are to maintain the compliment of fire-dependent species in the RNA, some of which are rare, and to maintain the savanna habitat critical for neotropical migratory birds and other wildlife species.



Encroachment Of Shrubs Into RNA Serpentine Meadow

A large, grassy serpentine meadow (flat) is located within the RNA and contains a park-like appearance with an open stand of conifers (mostly Jeffrey pine). This area is approximately 18 acres and is the area of primary concern for reintroducing fire and its related effects. The serpentine meadow includes several *Darlingtonia* fens, that are also adapted to fire. Serpentine meadows of this type have been identified in the Forest Plan as requiring fire to maintain their size, structure, and composition.

An initial prescribed burn on most of the serpentine meadow area, and the east facing shrub-covered slope immediately above it is the immediate management action proposal. Burning would occur during late summer or early fall. These conditions are prescribed to mimic the conditions under which fire naturally occurred on this location, prior to active fire suppression, yet still provide prudent measures for control of the burn. Burning during this time of the year would also avoid the spring nesting season for the neotropical migratory birds.

Plan

A monitoring plan for fire effects would be developed as an important follow-up to any burning. Pre-burn data has already been collected on three of the sensitive plant species. Pre-burn data is available through the Area 5 Ecology Program plot data and pre-burn permanent data plots. This data includes species composition and abundance. This data is valuable baseline data which can be used to determine whether prescribed fire within the RNA has met its objectives.



RNA Serpentine Meadow Proposed For Prescribed Fire

Specific ecological objectives of an initial fire reintroduction into the serpentine meadow (Jeffrey pine savanna plant community) are;

- a) Reduce large shrub cover by 30-70% (target 50%).
- b) Reduce density of seedlings and sapling trees by 40-80% (target 50%).
- c) Reduce thatch understory by 75-100%.
- d) Reduce dominant grass species cover (Idaho fescue) by 10-30%.

Above the serpentine meadow is an area of approximately 155 acres of forest-shrubland. It has an easterly aspect, with steeper slopes and dense brush. This area is also proposed for the reintroduction of fire and its related effects. Specific ecological objectives of an initial fire reintroduction into the woodland and forest plant communities outside of the Jeffrey pine savanna are;

- a) Reduce shrub cover by 50-95% (target 75%).
- b) Reduce seedling and sapling trees by 50-90% (target 70%).
- c) Create snag and future down material in dominant type trees, 12" + dbh, by 10-40%.
- d) Reduce subdominant trees 4"-12" dbh by 40-90% (target 60%).

Prescribed fire within the RNA, implemented under direction of a fire management plan, may be utilized as a tool to return fire to its natural role in the area and return plant communities to a condition similar to that which existed prior to active fire suppression. Prescribed fire within the RNA may help reduce fire suppression needs outside of the RNA in the future. It is recommended prescribed fire ignitions within the RNA be managed using the objectives of the RNA establishment and the natural disturbance regimes as guidelines for control or suppression.

The long-term objectives for burning of the Jeffrey pine (forest-shrubland) area are (1) maintain or increase density of *Senecio hesperius* and *Microseris howellii*, (2) Reduce or maintain frequency of target non-native species, (3) Prevent new non-native species from becoming established, (4) Detail the quantitative effects of fire on savanna dominants and sensitive plants, and semi-quantitative monitoring of shrub, tree, and grass composition, (5) restore and maintain a natural disturbance process within the RNA.

The long-term objectives for burning of the *Darlingtonia californica* fen area is to maintain or increase the population of *Epilobium oregana* (Oregon willow-herb).

Plan

Based on the ecological goals, desired future condition, and long-term objectives (detailed above) for the Cedar Log Flat RNA, other projects which reintroduce fire into the RNA's ecosystem are likely to be proposed. These project would be proposed based on monitoring results of the initial prescribed fire management action.

Fire Management Actions

- T It is recommended prescribed fire ignitions within the RNA be managed using the objectives of the RNA establishment and the natural disturbance regimes as guidelines for control and suppression.
- T A fire management plan needs to be developed to guide control and suppression activities related to wildfire ignitions within the RNA.
- T An initial prescribed burn on most of the serpentine meadow area, and the east facing shrub-covered slope immediately above it is an immediate management action proposal. Burning would occur during late summer or early fall.
- T A monitoring plan for fire effects will be developed as important pre-measurements and follow-up to any burning.

4.7 Hydrology

The Northwest Forest Plan's Aquatic Conservation Strategy and the Siskiyou National Forest Plan include objectives by which all management activities are guided to protect wetlands, streams and water quality. The Cedar Log Flat RNA includes, but is not limited to, Darlingtonia fens, bogs and perennial and intermittent streams. Management activities, including use of prescribed fire, are to be designed to reach the Aquatic Conservation Strategy objectives.

4.8 Soil And Water

Forest Plan Standard and Guideline MA3-7 addresses soil disturbance, stabilization and rehabilitation activities in the event of soil disturbing activities, such as fire suppression. It states that soil stabilization of naturally occurring soil loss or movement should not be permitted unless part of an authorized study.

In accordance with the goals and objectives of the Cedar Log Flat RNA, no soil stabilization activities have taken place within the RNA. Though technically outside of the RNA boundary, in-stream fisheries enhancement structures have been placed in Slate Creek.

Any soil and/or water project proposed within the RNA is expected to be tied directly to a District Ranger, Forest Supervisor, and PNW Research Station approved project.

4.9 Minerals

As of 1994 there were four "active" placer claims on streams which form the border of the RNA. There are no placer claims within the RNA. A professional mineral examination of the claims would only be conducted during a withdrawal process. As such, none of these claims have had validity exams.

Forest Plan Standard and Guideline MA3-8, as amended by the Forest Plan Amendment for minerals operations in Riparian Reserves, provides direction for mining claims and mining activities and addresses withdrawal from mineral entry. If withdrawal from mineral entry occurs, valid claims existing prior to withdrawal may be developed.

Forest Service Manual 4063.04c (2) states that the authority to approve mining plans of operations is reserved to the Forest Supervisor in consultation with, and concurrence of, the Station Director.

Plan

In the event any claimant initiates activities, mitigation measures should be developed such that activities associated with mineral exploration minimizes impacts to RNA resource values or compromise the objectives for which the RNA was established.

Minerals Management Actions

T In the event any active mineral claimant initiates activities, mitigation measures should be developed such that activities associated with mineral exploration minimizes impacts to RNA resource values or compromise the objectives for which the RNA was established.

4.10 Range/Domestic Grazing

This RNA has not been grazed. No grazing allotments exist within or on adjacent lands to the Cedar Log Flat RNA.

Forest Plan Standard and Guideline MA3-5 prohibits grazing of domestic livestock.

Grazing of domestic livestock is not consistent with the management goals, objectives and desired future condition of the Cedar Log Flat RNA. Grazing would have adverse impacts on the botanical, biological, edaphic, and hydrologic resources of the RNA.

4.11 Recreation/Public Use

The Slate Creek area has been used for years by local people with off-highway vehicles - both motorcycles and four-wheel drives. In the past, horse camping has also been popular. The area is close to several homes, includes gentle slopes, and has unique floral and faunal species. As a result, the area offers good hiking and nature study opportunities.

Forest Plan Standard and Guideline MA3-2 discourages, restricts or prohibits certain recreation activities within the RNA. These include overnight camping, pack and saddle stock use, off-highway vehicle and other recreation uses. Specific management direction for each recreation activity is detailed below.

Forest Plan Standard and Guideline MA3-2 also directs educational uses, on-site interpretive or demonstrative facilities and publicity. Recreation activities and uses are discouraged if they threaten the values for which the RNA was established. The Forest Service has the authority to implement closures and/or institute permit systems should any recreational activity or public use threaten education and research values of Cedar Log RNA.

Potential threats from recreation/public use need to be identified (e.g. Port-Orford-Cedar Root Rot). Documentation of recreation/public use within the RNA is an important first step in development of baseline information. Monitoring of the effects of these uses is important in the development of future management recommendations and actions.

The use of signing along access points into the RNA is an appropriate means of public notification regarding the acceptable and unacceptable recreation uses. Under 36 CFR 261 direction is detailed regarding the posting of prohibited activities.

4.11.1 Dispersed Camping

Designated Forest Service campgrounds are located within a 30 mile drive of the RNA. Overnight accommodations are available in Grants Pass, 19 miles away. Dispersed camping is available adjacent to Slate Creek along the RNA boundary and is frequently used during hunting season.

Forest Plan Standard and Guideline MA3-2 discourages overnight camping within the RNA.

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Camping within the boundary of the RNA would likely have adverse impacts to botanical and other resources; therefore, it is not considered compatible with the management goals and objectives of the Cedar Log Flat RNA. Posting of the RNA boundary, particularly at major access points, is recommended to limit inappropriate access and use. The prohibition of dispersed camping within RNA's on the Forest is recommended to be included in the next phase of Forest Plan Revision scheduled for the year 2002. This would be accomplished in accordance with 36 CFR 261.

4.11.2 Educational Use

To date, educational uses of the RNA have been minimal. Some studies have been carried out by individual students in conjunction with coursework. This has mainly been at the community college and university level. A bird banding study has also been conducted.

Forest Plan Standard and Guideline MA3-2 directs that on-site interpretive or demonstrative facilities should be prohibited. Educational use of the Cedar Log Flat RNA should generally be directed toward higher level education activities (graduate level and above), but may be approved for any group or educational purpose. Publicity that would attract the general public to the area shall be avoided.

Educational use is one of the basic management objectives of Cedar Log Flat RNA, and RNA's in general. In fact, one of the objectives for establishment of the national RNA system is fostering education. Educational uses need to be conducted in a manner so as not to adversely affect the RNA's resources, or the short-term and long-term viability of species.

Permission to conduct educational activities within the RNA lies within the District Ranger's approval authority. The decision as to whether or not an educational activity is appropriate for the RNA is based on: 1) whether the data gained from the use will be beneficial to or gain insight into the ecosystems of the RNA, and 2) the involvement of an institution of a higher level of learning (college and/or university).

4.11.3 Equestrian

Equestrian activities in this case is broadly defined to include llamas. Equestrian activities within the Slate Creek drainage have been a favorite activity of some residents who live below the RNA.

Forest Plan Standard and Guideline MA3-2 discourages the use of pack and saddle stock use within the RNA.

Equestrian use within the Cedar Log Flat RNA has the potential for severe impacts to the fragile soils within the serpentine meadow, Darlingtonia fens, and the unique botanical resources. Cumulative impacts from continued use or multiple equestrian animal uses create more of a concern than do individual and isolated uses of equestrian recreational activities. Posting of the RNA boundary, and particularly at its major access points, is recommended to limit inappropriate access and use. The prohibition of equestrian use within RNA's on the Forest is recommended to be included in the next phase of Forest Plan Revision scheduled for the year 2002. This would be accomplished in accordance with 36 CFR 261.

4.11.4 Hiking

No trails are located in or adjacent to the Cedar Log Flat RNA. Existing roads, though, are commonly used by hikers for access to the RNA and to areas within the Slate Creek drainage. The road to Ramsey mine has been a destination for hikers, but is more commonly used by off-highway vehicle users.

Forest Plan Standard and Guideline MA3-10 allows new trail development only if compatible with the objectives for the area and if recommended by the District Ranger and approved by the Forest Supervisor and PNW Research Station Director.

Plan

Hiking in and of itself does not readily pose a threat to the resources of the RNA. Hiking, though, could have potentially adverse effects to resources. The ability to meet the RNA's management goals and desired future condition, if it is done in conjunction with educational studies of scale (large groups), collection and gathering of special forest products, or research activities (people and equipment), could be compromised. The discouragement of these activities and general hiking within the RNA is recommended.

4.11.5 Hunting

Hunting and trapping activities, though not prohibited, are not encouraged within the RNA, per Forest Plan Standard and Guideline MA3-4. The RNA is not considered to be a high quality hunting and trapping site. Dispersed camping is often associated with hunting and trapping activities.

If hunting or trapping is anticipated to be a problem, annually monitor and evaluate hunting activity and develop appropriate management actions as necessary.

4.11.6 Off-Highway Vehicle Use

Considerable off-highway vehicle activity takes place within the Slate Creek drainage. A remote trail network exists within the drainage which connects with other trails and drainages on the southern portion of the District. Loop trails, as opposed to destination trails, have been the most sought after routes. Some off-highway vehicle use within the RNA, particularly in the bogs, has been observed and has caused resource damage. Forest Service Road 2100695 (Cedar Log), which enters the RNA, is physically blocked to no longer allow entry of most cars and trucks but is still passable by off-highway motorcycles.

Forest Plan Standard and Guideline MA3-2 prohibits the use of all recreation off-highway vehicle activity within the RNA. This includes, but is not limited to, motorcycles, all-terrain vehicles and mountain bikes.

Efforts to abolish off-highway vehicles of any type within the RNA are considered to be appropriate in meeting the management goals, objectives, and desired future condition of the land allocation. Posting of the RNA boundary, and particularly at major access points, is recommended to limit inappropriate access and use. Infringement points into the RNA need to be identified and removed

Recreation/Public Use Management Actions

- T The use of signing along access points into the RNA is an appropriate means of public notification regarding the acceptable and unacceptable recreation uses.
- T Posting of the RNA boundary, and particularly at its major access points, is recommended to limit inappropriate equestrian, camping and off-highway vehicle access and use.
- T Off-Highway Vehicle infringement points into the RNA need to be identified and removed.
- T The prohibition of dispersed camping within RNA's on the Forest is recommended to be included in the next phase of Forest Plan Revision scheduled for the year 2002.
- T The prohibition of equestrian use within RNA's on the Forest is recommended to be included in the next phase of Forest Plan Revision scheduled for the year 2002.
- T The discouragement of educational studies of scale (large groups), collection and gathering of special forest products, or research activities and general hiking within the RNA is recommended.

4.12 Research

Research conducted at the Cedar Log Flat RNA has been limited to, though not technically defined as "research" per se, intensive sampling of flora and fauna, neotropical bird mist netting, and, to a lesser extent, monitoring activities.

Forest Plan Standard and Guideline MA3-12 provides direction for research activities within the RNA. All research proposals shall be approved by the PNW Station Director and any applicable permits obtained

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from the appropriate Siskiyou National Forest line officer. Research should be limited to non-consumptive, non-destructive and essentially observational activities. Some collecting of soil, plants, or animal specimens may be permitted on a case by case basis.

Research is one of the basic management objectives of Cedar Log Flat RNA, and RNA's in general. One of the objectives for establishment of the national RNA system is promoting the non-manipulative research and monitoring. Research needs to be conducted consistent with Forest Plan Standard and Guideline MA3-12 and in a manner so as not to adversely affect the RNA's resources, or the short-term and long-term viability of species.

Research Management Actions

- T The development of comprehensive listing of all known research conducted within the RNA is encouraged. This would include maintaining copies of the research products and a listing of findings and conclusions which they have documented.
- T Complimentary to research, all known monitoring, surveys, inventory, and activities should be listed by subject, source (person, document, data base) and year.
- T The Forest Botanist will maintain these records locally. The RNA database held at the PNW Research Station in Corvallis, OR. will also maintain a listing of these.

4.13 Cultural Resources

During cultural resource surveys of the Cedar Log Flat RNA and surrounding area two prehistoric sites have been found. The Cedar Log RNA includes five historic sites. These include two trails, a road, a mining ditch and the remains of a Forest Service guard station. In addition to the above, can dumps, historic campsites, a mining cabin and prospect were noted in the RNA, or very near its boundary. The 1937 Siskiyou National Forest Map also lists an unnamed trail running west from the Slate Creek Guard Station to the Onion Mountain Road. This trail has not been located.

Approximately 33% of the Cedar Log RNA has been identified as "High Probability Ground" meaning that there is a high likelihood of finding cultural resources in the area. In addition, another 20% (approximate) is identified as medium probability. Nothing inventoried has yet been determined to be eligible for National Register of Historic Places. The potentially prehistoric sites have been recommended for further study.

Forest-Wide Standard and Guidelines 3-4 requires coordination with the State Historic Preservation Officer (SHPO) for protection of significant sites from adverse effects due to ground disturbing activities.

The cultural heritage of the area within and adjacent to the Cedar Log Flat RNA is rich. Any management activities proposed within the RNA, by law, will require cultural resource surveys. At that time, located sites will be assessed for eligibility for the National Register of Historic Places. If found to be eligible, appropriate protection measures will be included in the management activity's work plan.

4.14 Special Forest Products

Special Forest Products are defined as renewable, vegetative resources that are gathered for a variety of personal and commercial uses. This includes plants and products such as Christmas trees, conifer boughs, beargrass, cones, as well as many others. Special Forest Products also include small diameter timber resources. No programmed Special Forest Products collection has been allowed within the RNA. Demand for special forest products is low in the RNA. Generally, special forest products are collected and gathered in more accessible locations.

Forest Plan Standard and Guideline MA3-6 prohibits the cutting of all vegetation, including firewood,

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except as part of a scientific investigation.

The unique values of the Cedar Log RNA are closely tied to its botanical resources. The collection and gathering of Special Forest Products, outside of those specifically identified in an approved research project, has the potential to negatively impact the RNA resources. Collection or gathering of Special Forest Products, particularly fen related species, is not compatible with the land management goals, objectives and desired future condition.

4.15 Access And Transportation

As stated in Section 3.3, access to the RNA is possible year round. Forest Service Road 2100020 ends at the RNA boundary. Forest Service Road 2100695 (Cedar Log), which enters the RNA, is physically blocked to cars and trucks. It is still passable by off-highway motorcycles. There are no other roads that enter the RNA.

No utility rights-of-way exist on or adjacent to the RNA. No roads are currently planned in the RNA. Future management activities in adjacent areas can be accessed without impacting the RNA.

Forest Plan Standard and Guideline MA3-10 states that new roads shall not be permitted unless they contribute to the objectives or to the protection of the area. It goes on to state that future utility corridor siting should avoid this Management Area. Standard and Guideline MA3-9 states that rights-of-way easements that would compromise the objectives of the RNA shall be discouraged.

Any licenses or permits for rights-of-way would likely compromise the integrity of the RNA. Existing conditions and access suggest that the development of roads within the RNA is not necessary to achieve, and is inconsistent with, the goals and objectives for the RNA. Posting of the RNA boundary, and particularly at its major access points, is recommended to limit inappropriate access and use.

Forest Service Road 2100695 was identified as a candidate road for decommissioning during the 1993 Forest level Transportation Needs Assessment. Prior to any recommendations to decommission this road, a complete review of impacts to the resources is warranted. Currently, a *Darlingtonia fens*' outer perimeter is located within the road tread. Access points into the RNA need to be monitored for future infringements. This monitoring information can be used to assess the need for management actions directed at controlling unauthorized use of the RNA by motorized vehicles.

Access and Transportation Management Actions

- T Posting of the RNA boundary, and particularly at its major access points, is recommended to limit inappropriate access and use.
- T A Forest Service Road 2100695 was identified as a candidate road for decommissioning during the 1993 Forest level Transportation Needs Assessment. Prior to any recommendations to decommission this road, a complete review of impacts to the resources is warranted.

4.16 Human Structures

No structures currently exist within the Cedar Log Flat RNA.

Areas designated as Research Natural Areas under direction found in 36 CFR 251.23 shall not allow the construction of permanent improvements, except improvements required in connection with their experimental use, unless authorized by the Chief of the Forest Service. Forest Plan Standard and Guideline MA3-10 addresses the building of facilities. New structures or facilities shall not be built except on valid existing mining claims with approved operating plans or as required as part of an authorized study.

It is not anticipated that a need for new structures or facilities within the Cedar Log Flat RNA would arise. The RNA is located in close proximity to the city of Grants Pass and Cave Junction. Therefore, the need for permanent structures related to mineral exploration would be unwarranted. The direction found in the Code of Federal Regulations and the Siskiyou Forest Plan are specific about the compatibility of structures within the RNA and need to be adhered to.

4.17 Special Uses

Currently, there are no rights-of-way easements, or special use permits in effect for the Cedar Log Flat RNA.

Areas designated as Research Natural Areas under direction found in 36 CFR 251.23 shall not allow occupancy under a special-use permit. Forest Plan Standard and Guideline MA3-12 directs that all new special uses for the RNA shall be denied, except for research permits approved by the PNW Research Station and directly relating to the objective for the RNA. It recommends against any licenses or permits that compromise the objectives of the RNA. New easements or permits for access which compromise the objectives of the RNA shall be discouraged.

Direction found in the Code of Federal Regulations, and the Siskiyou Forest Plan, are specific about the compatibility of special uses within the RNA. In all cases, the goals and objectives of the RNA need to drive decisions surrounding special uses, easements, and rights-of-way.

4.18 Timber Management

Timber resource values within the proposed RNA are low. Existing stand volumes average approximately six thousand board feet (6.0 MBF) per acre. Site quality and management potential are poor, mainly due to low productivity of the serpentine and peridotite soils. Because of the rocky nature of the soils, stands with larger volumes of harvestable timber are unplantable.

The proposed RNA contains 421 acres. Only 145 acres (mostly low site) is classified as tentatively suitable for timber harvest. For tentatively suitable land within the area, the Douglas-fir site index is approximately 75 and pine species is 50. Tentatively suitable for timber land within the RNA is capable of producing approximately 78 MBF per year on a long-term sustained yield basis.

Forest Plan Standard and Guideline MA3-6 prohibits cutting and removal of all vegetation. Therefore, programmed cutting and removal of vegetation, including timber and fuelwood, is prohibited within the boundary of the RNA. The removal of vegetation through cutting may be allowed when it is part of an approved research activity. Such activities need recommendation from the District Ranger and approval from the Forest Supervisor and Station Director.

Programmed timber harvest activities are not compatible with the goals, objectives and desired future condition of the Cedar Log Flat RNA. Any proposed timber management activities adjacent to the RNA will need coordination with District resource specialists through an interdisciplinary process to ensure the integrity of the RNA is maintained.

5.0 MONITORING PLAN

5.1 Definition of Monitoring

Monitoring can be defined as the repeated recording or sampling of similar information for comparison to a reference. The monitoring purpose determines what information is collected and what comparisons are made. Two critical features must be maintained regardless of how simple or complex a monitoring project is required: first, observations must be repeated; and second, the observations must be compared to an established reference.

5.2 Role of Monitoring

Within the context of the Siskiyou Forest Plan, monitoring involves a periodic comparison between the end results that are realized and those projected in the Forest Plan. The role of monitoring within the Cedar Log Flat RNA involves monitoring plans related specifically to Forest Plan described management actions and desired future conditions.

Monitoring in the RNA also has the role of developing baseline information through monitoring natural and human trends within the RNA. It provides biological information about the resources and the frequency of those resources. It enhances our knowledge about the interrelationships of various physical and biological variables, and thus increases our ability to manage the Cedar Log Flat RNA. Where at all possible, quality monitoring is augmented through cooperative agreements.

Generally, monitoring actions within Research Natural Areas are conducted to answer the question: Are present management recommendations maintaining the conditions/processes that the RNA was established to protect? What is learned from monitoring activities on the Cedar Log Flat RNA can apply to other ultramafic areas in the country, region or state.

5.3 The Cedar Log Flat RNA Monitoring Plan

Monitoring data gathered shall be collated and maintained annually on Forest with the Forest Botanist. When appropriate annually updated data will be distributed to PNW Research Station's RNA Coordinator for inclusion in its RNA Database. It will be the responsibility of individual resource specialists to sort and collate data into usable formats for the Forest Botanist. It is the Forest Botanist's responsibility to distribute the data to the PNW Research Station.

Ultimately, budgets, workforce, and District/Forest priorities will determine the amount of monitoring that is actually accomplished.

5.3.1 Ecological Status Monitoring

Ecological status monitoring involves tracking species and communities relative to stated objectives. Ecological status monitoring in the Cedar Log Flat RNA will serve to determine the current status of RNA elements, and track any trends in this status over time. Attributes measured to indicate the ecological status of RNA elements include population size, community composition, community structure, and areas occupied. It can help determine if any RNA values are at risk.

The Cedar Log Flat RNA was established to fill the Klamath Mountains Province representation of a Port-Orford-cedar/western azalea community (element), a Jeffrey pine/dwarf ceanothus savanna community (element), and a California pitcher-plant fen on serpentine-peridotite. Monitoring elements are listed below in order of priority.

Plan

- ↔ Element: Successional changes in plant associations and communities.
Element Objectives: The RNA was established as an example of several plant communities (elements) that are not represented elsewhere in the RNA system. This monitoring elements allows for baseline data on changes within plant associations and communities. It also allows for development of management recommendations to maintain the ecological status of the RNA.
Unit of Measure: Percent cover and relative distribution of species.
Frequency of Measurement: During major Strategic Management Plan revisions, or during resurveys of Area 5 Ecology Program plots. Utilize permanent survey plots set up for Prescribed Fire Monitoring.
Responsible Personnel: District/Forest Botanist with assistance for Area Ecology Program personnel.
Data Storage: District/Forest files. Baseline data is also included in Ecology Program database.
- ↔ Element: Noxious weed presence surveys.
Element Objectives: Assess need for management actions to reduce or eliminate introduction and spread.
Unit of Measure: Presence/absence and abundance of noxious weed by species.
Frequency of Measurement: Periodic (semi-annual) spring surveys.
Responsible Personnel: District Botanist or Wildlife Biologist. Can include sitings by other District Resource Personnel.
Data Storage: District Wildlife/Botany files, and the Forest Botanist files.
- ↔ Element: Presence/absence of insect (pest) and disease on herbaceous plants which could cause long term changes in plant communities. This element monitors insects and diseases which are considered harmful to plant communities, as opposed to beneficial. Examples include Port-Orford-cedar root rot and western pine beetle.
Element Objectives: Establishment of baseline insect and disease data is an important first step in documenting and monitoring insect and disease activity in the RNA.
Unit of Measure: Unit of measure will monitored qualitatively answering the questions; 1) Are the insect(s) and/or disease(s) spreading or receding?; 2) Has the presence of the insect(s) and/or disease(s) reached epidemic versus endemic levels?
Frequency of Measurement: During initial development of Strategic Management Plan, and during major Strategic Management Plan revisions.
Responsible Personnel: District Silviculture Personnel.
Data Storage: District and Forest Level Silviculture files, as well the Southwest Oregon Insect and Disease Center location.
- ↔ Element: Document any insect (pest) and disease occurrences and their progression or development on herbaceous plants.
Element Objectives: Access the need for development and implementation of insect and disease control measures.
Unit of Measure: Unit of measure will monitored qualitatively answering the questions; 1) Are the insect(s) and/or disease(s) spreading or receding?; 2) Has the presence of the insect(s) and/or disease(s) reached epidemic versus endemic levels?
Frequency of Measurement: Resurvey annually with the Forest's Aerial Insect and Disease Surveys. Collect survey data during yearly site visits by District Resource Personnel.
Responsible Personnel: District Silviculture, Forest Silviculture, and Southwest Oregon Insect and Disease Center (SWOIDC) and PNW Research Station resource specialists.
Data Storage: Positive recognition data should be kept on file at the District and Forest Level by Silviculture Personnel, as well the SWOIDC location.

Plan

↔ Element: Surveys and monitoring for the presence of non-noxious introduced plant and wildlife species.

Element Objectives: Assess the need for potential management actions to eliminate the introduction and minimize the spread of non-noxious introduced plant and wildlife species.

Unit of Measure: Presence/absence and abundance by species of introduced plant (non-noxious) and wildlife species.

Frequency of Measurement: Periodic (semi-annual) spring surveys.

Responsible Personnel: District botanist and wildlife biologist. Can include sitings by other resource personnel.

Data Storage: District Wildlife/Botany files, and the Forest Botanist files.

↔ Element: Presence/absence monitoring for root rot in Port-Orford-cedar within and adjacent to the RNA.

Element Objectives: Evaluate the need for the prevention of import of Root Rot and control measures against the spread.

Unit of Measure: Presence/absence and, if present, acreage affected by POC root rot.

Frequency of Measurement: Annually

Responsible Personnel: The District Port-Orford-cedar Coordinator directs surveys and verifies any positive sitings.

Data Storage: District Port-Orford-cedar Coordinator to maintain year to year monitoring data.

5.3.2 Defensibility Monitoring

Defensibility monitoring involves on the ground assessments of factors which affect manager's ability to protect the Research Natural Area and its element occurrences. It includes the existing and anticipated land use within and adjacent to the RNA and its potential for degrading the elements or their governing ecological processes. It also involves checking for evidence of prohibited use, encroachment or degradation within the RNA, and changes or activities surrounding the RNA. Monitoring elements are listed below in order of priority.

↔ Element: Access points into the RNA monitored for future infringements

Element Objectives: This monitoring information can be used to assess the need for management actions directed at controlling unauthorized use of the RNA by motorized vehicles.

Unit of Measure: Number and location of infringements.

Frequency of Measurement: Bi-annually

Responsible Personnel: District Recreation Specialist and/or Zone Engineering Cadre. Can include sitings by other resource personnel.

Data Storage: District Recreation Files and Zone Engineering Road Management Objective logs.

↔ Element: Resource effects caused by recreation and educational public use.

Element Objectives: Data is important in the development of future management recommendations and actions.

Unit of Measure: Number, frequency and observational effects of public use within RNA.

Frequency of Measurement: Annually

Responsible Personnel: The District Recreation Specialist, or their designee, should determine thresholds for negative effects. Can include sitings by other resource personnel.

Data Storage: District Recreation Files.

↔ Element: Hunting activity within the RNA.

Plan

Element Objectives: If it is determined to be a potential problem, monitor and evaluate hunting activity and develop appropriate management actions, if necessary.

Unit of Measure: Incidence of environmental damage to the RNA. Examples include vehicular use, refuse, campsites and campfires, etc.

Frequency of Measurement: Annual basis following hunting season(s).

Responsible Personnel: Accomplished through coordination between District Wildlife Biologist and District Recreation Biologist.

Data Storage: District Wildlife Biologists files.

↔ Element: Mineral activities within and adjacent to the RNA.

Element Objectives: Monitored for mitigation measure needs to protect the resources, and ultimately the objectives for establishment.

Unit of Measure: Type and number of mineral activities within and adjacent to the RNA.

Frequency of Measurement: Annually prior to ODFW dredging season.

Responsible Personnel: District Minerals Technician

Data Storage: District Minerals Technician files.

5.3.3 Management Treatment Monitoring

This type of monitoring tracks the effectiveness of management treatments occurring inside or outside the RNA to protect or restore RNA elements or natural features/processes.

5.3.3.1 Reintroduction of Prescribed Fire

Monitoring the reintroduction of prescribed fire into the Cedar Log Flat RNA will provide an opportunity to assess fire effects in the savanna and forest shrubland ecosystems, and to evaluate *Epilobium oreganum*'s response to fire. More broadly, monitoring will measure the response to fire of serpentine plant communities, and the sensitive species associated with them. Ultimately, monitoring will determine if differences in vegetation character between burned and unburned areas develop.

Pre-Burn Monitoring - Pre-burn vegetation data has been gathered through a series of fixed plots. Five intensive plots were established (1996) primarily to monitor the effects of prescribed fire on sensitive plants and the more common plants that make up the Jeffrey pine savanna. Each plot consists of two treatment units, one of which will be burned and one left as a control. In addition, photo points have been established for each of the five plots.

To monitor potential changes to the *Darlingtonia* fens, two fixed plots (1996) have been established. The primary purpose of these plots is to monitor the effects of prescribed fire on *Epilobium oreganum*. One plot is in a fen that will be burned, and one in a fen that will be maintained as a control (no burn). Plant, edaphic, hydrologic and position data were taken for each *Epilobium oreganum* plant in these two plots.

Prior to implementation of a prescribed burn, a burn plan will be developed and recommended by the District Ranger and approved by the Forest Supervisor and PNW Research Station Director. Prior to burning, photo plots will be established to monitor units to be burned. With these plots a fuels inventory will be conducted, photos will be taken, and a location map will be established.

Prior to burning, pre-burn monitoring of fuel moisture and weather conditions will be conducted within established plots. Data will be recorded and maintained as part of the monitoring process. Fuel moisture will be determined using the Computrac Moisture Analyzer, fuel moisture scale or a moisture meter. Ten-hour fuel moisture sticks may be placed on the unit to monitor fuel moisture condition, and location indicated on burn map.

Plan

Prior to ignition a belt weather kit will be used to record weather conditions on site and determine if prescribed conditions exist. Weather and fuel moisture samples will be gathered prior to burning to determine drying trends and to determine when the unit is in prescription to burn. Spot weather forecasts may be obtained at the burn bosses discretion, to determine outlooks during periods of transitioning weather.

Post-Burn Monitoring And Evaluation - Each monitoring plot established, as described above, will be resampled in accordance with the Cedar Log Flat Prescribed Fire Monitoring Plan, prepared cooperatively between the Siskiyou National Forest and The Nature Conservancy of Oregon.

Each of the two units to be burned will be monitored for weather and fire behavior during the burning operations. Following the completion of the burn operation the units will be evaluated to determine how well the operation and prescription met the objectives in the burn plan. If necessary, this information will be used to fine tune other prescriptions or operational procedures which may be called for in the future.

Monitoring of burn results will take place during the fall of year following the prescribed burn. Additional monitoring is also proposed for one, two, five and ten years following the burn.

Implementation results of burn monitoring and evaluation will be filed with the burn plan. The fuels technician or another person so designated by the burn boss will be responsible for the collection of the data. Some units may be given extensive monitoring and evaluation. The information collected will be used for long-term studies and to help develop a better modeling procedure for future planning.

Within one year after the burn, fuels inventory and photos of the plots will be conducted again. Monitoring plot data will be kept on file at the District (fire management). All monitoring will be completed before the end of the field season. Fuels inventory monitoring is also proposed for one, two, five and ten years following the burn.

5.3.4 Compliance Monitoring

Compliance monitoring is the identification of, and coordination with, personnel and agencies responsible for management activities which may influence RNA elements or resources. It also involves the devising of strategies to keep these personnel informed of RNA objectives.

The following is a list of personnel, departments, and agencies with which to coordinate regarding the Cedar Log Flat RNA objectives.

5.3.4.1 Personnel/Departments within the Forest Service

Pacific Northwest Research Station: the Station Director and Regional RNA Coordinator are all key people in the management and administration of the Cedar Log Flat RNA. The Regional RNA Coordinator is the primary contact for any management activity influencing the RNA.

Fire: the District Fire Management Officer is the primary contact for any fire suppression or other fire related management needs. The Zone Fire Planner is the primary contact for development of prescribed fire management needs.

Public Services: the primary contacts for information about the Cedar Log Flat RNA are the Forest Botanist and District Environmental Coordinator. General information on the RNA and its surrounding resources is available from the Information Specialists at the District Office's front desk.

Ecology: primary contacts for ecological information about the Cedar Log Flat RNA elements and

Plan

disturbance regimes are the personnel in the Area 5 Ecology Department. This includes the Area and Associate Ecologists. In addition, the District Wildlife Biologist, Fisheries Biologist and Botanist can provide and coordinate ecological information.

Silviculture: the District Silviculturist is the primary contact for any monitoring of insect and disease or other silvicultural related activities within the RNA. The District Silviculturist will utilize the personnel and expertise of Southwest Oregon Insect and Disease Center as needed.

5.3.4.2 Agencies Other Than The Forest Service

Oregon Department of Fish and Wildlife: this agency controls the hunting, fishing and trapping regulations within the RNA. Recommendations regarding these activities should be coordinated with this agency. Any reintroduction of wildlife species should be coordinated with this agency.

Oregon Department of Forestry: the Cedar Log Flat RNA is located in a mutual aid block for response to wildfire ignitions. The Oregon Department of Forestry will automatically respond to wildfire within and adjacent to the RNA. The Forest Service will maintain management responsibilities of the suppression activities.

5.3.4.3 Strategies For Compliance Monitoring

The Galice District Ranger is the responsible party and contact for all activities or plans regarding the Cedar Log Flat RNA. The District Ranger is to do this in coordination with the PNW Station Director. The Galice

5.4. Strategic Management Plan Implementation

Monitor the plan so that it is current with local, regional and national management policy, current ecosystem management policy, and management actions necessary to protect the ecological integrity of the RNA.

Utilize this Strategic Management Plan as baseline data for a 10 year period, or Forest Plan planning cycle, whichever is least. Sampling methods during the interim 10 year period will be those described in the RNA monitoring sections above. A full evaluation of this Strategic Management Plan will be conducted 10 years after adoption, or sooner if substantial changes occur in management direction or environmental conditions.

Based on scientifically credible monitoring data, interim minor adjustments to management recommendations can occur at any point without the need for a full scale revision. The adaptive management process will be used to guide interim adjustments. The District Planning Staff will be responsible for triggering minor and major adjustment to the Strategic Management Plan.

APPENDIX A

Partial List of Vascular Plant Species Observed

The following is a partial list of vascular plants identified within Cedar Log Flat RNA:

Trees

<i>Acer macrophyllum</i>	Bigleaf maple
<i>Alnus rubra</i>	Red alder
<i>Arbutus menzeisii</i>	Pacific madrone
<i>Calocedrus decurrens</i>	Incense cedar
<i>Chamaecyparis lawsoniana</i>	Port-Orford-cedar
<i>Lithocarpus densiflorus</i>	Tanoak
<i>Pinus attenuata</i>	Knobcone pine
<i>Pinus jeffreyi</i>	Jeffrey pine
<i>Pinus lambertiana</i>	Sugar pine
<i>Pinus ponderosa</i> (small number)	Ponderosa pine
<i>Pseudotsuga menziesii</i>	Douglas-fir
<i>Quercus chrysolepis</i>	Canyon liveoak
<i>Quercus garryana</i>	Oregon white oak
<i>Quercus kelloggii</i>	California black oak
<i>Salix sp.</i>	Willow
<i>Taxus brevifolia</i>	Pacific yew
<i>Umbellularia californica</i>	California-laurel (Oregon myrtle)

Shrubs

<i>Amelanchier alnifolia</i>	Serviceberry
<i>Arctostaphylos nevadensis</i>	pinemat manzanita
<i>Arctostaphylos patula</i>	Greenleaf manzanita
<i>Arctostaphylos viscida</i>	Whiteleaf manzanita
<i>Baccharis douglasii</i>	Baccharis
<i>Berberis nervosa</i>	Dwarf Oregongrape
<i>Berberis pumilus</i>	Pygmy hollygrape
<i>Ceanothus cuneatus</i>	Wedgeleaf ceanothus
<i>Ceanothus integerrimus</i>	Deerbrush ceanothus
<i>Ceanothus prostratus</i>	Squawcarpet
<i>Ceanothus pumilus</i>	Dwarf ceanothus
<i>Cercocarpus sp.</i>	Mountain mahogany
<i>Chrysothamnus parryi</i>	Rabbit-brush
<i>Clematis sp.</i>	Virgin's bower
<i>Cornus nuttallii</i>	Pacific dogwood
<i>Cornus occidentalis</i>	Western dogwood
<i>Corylus cornuta var. californica</i>	California hazel
<i>Eriodictyon californicum</i>	California yerbasanta
<i>Garrya buxifolia</i>	Box-leaved silk-tassel
<i>Gaultheria shallon</i>	Salal
<i>Gaultheria ovatifolia</i>	Slender salal
<i>Holodiscus discolor</i>	Creambush ocean-spray

Plan

<i>Juniperus communis</i>	Common juniper
<i>Ledum glandulosum</i>	Western ledum
<i>Lonicera hispidula</i>	Hairy honeysuckle
<i>Physocarpus sp.</i>	Ninebark
<i>Quercus breweri</i>	Brewers oak
<i>Quercus garryana var. breweri</i>	Oregon oak
<i>Quercus vaccinifolia</i>	Huckleberry oak
<i>Rhamnus californica</i>	California coffeeberry
<i>Rhododendron occidentale</i>	Western azalea
<i>Rhus diversiloba</i>	Poison oak
<i>Ribes sp.</i>	Gooseberry
<i>Rosa gynocarpa</i>	Baldhip rose
<i>Rosa sp.</i>	Rose
<i>Rubus parviflorus</i>	Thimbleberry
<i>Rubus sp.</i>	Blackberry
<i>Vaccinium parvifolium</i>	Red huckleberry
<u>Herbs</u>	
<i>Acnatherum lemmonii</i>	Common name unknown
<i>Achillea millefolium</i>	Common yarrow
<i>Adiantum pedatum var. aleuticum</i>	Northern maidenhair
<i>Allium falcifolium</i>	Sickleleaf onion
<i>Allium sp.</i>	Onion
<i>Apocynum sp.</i>	Dogbane
<i>Aquilegia formosa</i>	Sitka columbine
<i>Arabis aculeolata</i>	Waldo rockcress
<i>Arabis koehleri var. stipitata</i>	Koehleri's rockcress
<i>Arabis sp.</i>	Rockcress
<i>Arabis subpinnatifida</i>	Rockcress
<i>Arceuthobium campylopodum</i>	Yellow leafless mistletoe
<i>Arnica sp.</i>	Arnica
<i>Asarum caudatum</i>	Western wild ginger
<i>Aspidotis densa</i>	Rock fern
<i>Balsamorhiza deltoidea</i>	Puget balsamroot
<i>Blepharipappus scaber</i>	Blepharipappus
<i>Boschniakia strobilaceae</i>	Ground-cone
<i>Brickellia greenei</i>	Brickellia
<i>Brodiaea hendersonii</i>	Henderson's brodiaea
<i>Bromus sp.</i>	Brome
<i>Calochortus tolmiei</i>	Tolme's mariposa
<i>Calypso bulbosa</i>	Fairy-slipper
<i>Calystegia sp.</i>	Morning glory
<i>Camassia quamash</i>	Common camas
<i>Campanula prenanthoides</i>	California harebell
<i>Carex sp.</i>	Sedge
<i>Castilleja applegatei</i>	Applegate's paintbrush
<i>Castilleja brevilobata</i>	Short-lobed paintbrush
<i>Castilleja elata</i>	Slender paintbrush
<i>Castilleja pruinosa</i>	Paintbrush

Plan

<i>Cerastium sp.</i>	Chickweed
<i>Chimaphila umbellata</i>	Common prince's pine
<i>Claytonia lanceolata</i>	Lanceleaf springbeauty
<i>Collinsia grandiflora</i>	Large-flowered blue-eyed Mary
<i>Collinsia linearis</i>	Blue-eyed Mary
<i>Collomia tinctoria</i>	Collomia
<i>Convolvulus sp.</i>	Morning glory
<i>Cypripedium californicum</i>	California lady's slipper
<i>Danthonia californica</i>	California oatgrass
<i>Darlingtonia californica</i>	California pitcher-plant
<i>Delphinium sp.</i>	Larkspur
<i>Dentaria tenella</i>	Oregon toothwort
<i>Dicentra formosa ssp. oregana</i>	Oregon bleedingheart
<i>Disporum hookeri</i>	Oregon fairybell
<i>Dodecatheon hendersonii</i>	Hendersons shootingstar
<i>Elymus glaucus</i>	Blue wildrye
<i>Epilobium brachycarpum</i>	Fire weed
<i>Epilobium minutum</i>	Small-flowered willow-herb
<i>Epilobium oregonense</i>	Oregon willow-herb
<i>Epilobium paniculatum</i>	Autumn willow-herb
<i>Erigeron bloomeri nudatus</i>	Scabland fleabane
<i>Eriogonum nudum</i>	Barestem buckwheat
<i>Eriogonum pendulum</i>	Long-stalked buckwheat
<i>Eriophyllum lanatum var. lanceolatum</i>	Common eriophyllum
<i>Erysimum capitatum</i>	Coast wallflower
<i>Erythronium citrinum</i>	Fawn-lily
<i>Erythronium hendersonii</i>	Hendersons fawn-lily
<i>Festuca californica</i>	California fescue
<i>Festuca idahoensis</i>	Idaho fescue
<i>Festuca rubra</i>	Red fescue
<i>Fritillaria glauca</i>	Siskiyou fritillaria
<i>Fritillaria lanceolata</i>	Checker lily
<i>Galium ambiguum</i>	Obscure bedstraw
<i>Gilia capitata</i>	Bluefield gilia
<i>Goodyera oblongifolia</i>	Rattlesnake-plantain
<i>Habenaria sparsiflora</i>	Canyon habenaria
<i>Haplopappus racemosus ssp. congesta</i>	Racemed goldenweed
<i>Hastingsia album</i>	Rush lily
<i>Hastingsia serpentinicola</i>	No Common Name
<i>Helenium bigelovii</i>	Bigelow sneezeweed
<i>Hieracium bolanderi</i>	Bolandars hawkweed
<i>Hieracium sp.</i>	Hawkweed
<i>Horkelia sericata</i>	Silky horkelia
<i>Iris chrysophylla</i>	Slender-tubed iris
<i>Juncus sp.</i>	Rush
<i>Koeleria macrantha</i>	Koeler's grass
<i>Lathyrus nevadensis</i>	Peavine
<i>Ligusticum apiifolium</i>	Parsley-leaved licorice-root
<i>Lillium sp.</i>	Lily

Plan

<i>Lillium vollmeri</i>	Vollmeri lily
<i>Linnaea borealis</i>	Western twinflower
<i>Lithophragma heterophylla</i>	Woodland star
<i>Lithospermum californicum</i>	Stoneseed
<i>Lomatium howellii</i>	Howells biscuit-root
<i>Lomatium sp.</i>	Biscuit-root
<i>Lomatium triternatum</i>	Nine-leaf biscuit-root
<i>Lotus oblongifolis</i>	Lotus
<i>Madia madidides</i>	Woodland tarweed
<i>Melica geyeri</i>	Geyers oniongrass
<i>Microseris howellii</i>	Howells microseris
<i>Mimulus guttatus</i>	Yellow monkey-flower
<i>Monardella odoratissima</i>	Mountain balm
<i>Montia parviflora</i>	Little leaf montia
<i>Narthecium californicum</i>	California bogasphodel
<i>Orobanche bulbosa</i>	Broomrape
<i>Orobanche uniflora</i>	Naked broomrape
<i>Orthocarpus bracteosus</i>	Owl-clover
<i>Orthocarpus hispidus</i>	Hairy owl-clover
<i>Osmorhiza occidentalis</i>	Western sweet-root
<i>Parnassia palustris</i>	Worldwide parnassia
<i>Penstemon sp.</i>	Penstemon
<i>Perideridia oregana</i>	Oregon yampah
<i>Phacelia corymbosa</i>	Phacelia
<i>Plagiobothrys sp.</i>	Popcorn-flower
<i>Pityrogramma triangularis</i>	California goldfern
<i>Polygonum californicum</i>	Knotweed
<i>Polypodium hesperium</i>	Columbia fern
<i>Polystichum munitum</i>	Swordfern
<i>Poa sandbergii</i>	Sandbergs bluegrass
<i>Pteridium aquilinum</i>	Brackenfern
<i>Pyrola sp.</i>	Pyrola
<i>Pyrrocoma racemosa</i>	No common name
<i>Ranunculus occidentalis</i>	Western buttercup
<i>Rudbeckia californica</i>	California coneflower
<i>Rumex occidentalis</i>	Western dock
<i>Sanguisorba officinalis</i>	Garden burnet
<i>Saxifraga integrifolia</i>	Swamp saxifrage
<i>Sedum laxum heckneri</i>	Heckners stonecrop
<i>Senecio hesperius</i>	Groundsel
<i>Senecio integerrimus</i>	Western groundsel
<i>Senecio ligulifolius</i>	Groundsel
<i>Silene campanulata</i>	Slender campion
<i>Silene hookeri</i>	Hookers silene
<i>Sisyrinchium idahoense</i>	Idaho blue-eyed grass
<i>Smilacina racemosa</i>	Western false Solomons-seal
<i>Smilacina stellata</i>	Starry false Solomons-seal
<i>Stipitata lemmoni</i>	Lemons needlegrass
<i>Synthyris reniformis</i>	Snow-queen

Plan

Thlaspi montanum var. siskiyouensis
Tofieldia glutinosa
Trientalis latifolia
Trifolium eriocephalum
Trillium ovatum
Trillium rivale
Viola adunca
Viola cuneata
Whipplea modesta
Wyethia sp.
Xerophyllum tenax
Zigadenus venenosus

Siskiyou pennycress
Tofieldia
Western starflower
Wooly-head clover
White trillium
Oregon trillium
Early blue violet
Wedgeleaf violet
Whipplevine
Mules ears
Common beargrass
Deadly zigadenus

APPENDIX B

List of Avian Species

This list of birds was compiled during a multi-year bird-banding project conducted by Dennis Vroman, Galice Ranger District, Siskiyou National Forest.

<i>Bonasa umbellua</i>	Ruffed grouse
<i>Buteo jamaicensis</i>	Red-tailed hawk
<i>Callipepla californica</i>	California quail
<i>Caolaptes auratus</i>	Northern flicker, Red-shafted
<i>Carduelis psaltria</i>	Lesser goldfinch
<i>Carpodacus purpureus</i>	Purple finch
<i>Cathartes aura</i>	Turkey vulture
<i>Catharus guttatus</i>	Hermit thrush
<i>Catherpes mexicanus</i>	Canyon wren
<i>Certhis americana</i>	Brown creeper
<i>Ceryle alcyon</i>	Belted kingfisher
<i>Chamaea fasciata</i>	Wrentit
<i>Columba fasciata</i>	Band-tailed pigeon
<i>Contopus borealis</i>	Olive-sided flycatcher
<i>Contopus sordidulus</i>	Western wood-pewee
<i>Cohvus corax</i>	Common raven
<i>Cyanocitta stelleri</i>	Steller's jay
<i>Dendroica coronata</i>	Yellow-rumped warbler, Audubon's
<i>Dendroica nigrescens</i>	Black-throated gray warbler
<i>Dryocopus pileatus</i>	Pileated woodpecker
<i>Empidonax difficilis</i>	Western flycatcher
<i>Falco columbarius</i>	Merlin
<i>Glaucidium gnoma</i>	Pygmy owl
<i>Ixoreus naevius</i>	Varied thrush
<i>Junco hyemalis</i>	Dark-eyed junco, Oregon
<i>Melospiza lincolnii</i>	Lincoln's sparrow
<i>Myadestes townsendi</i>	Townsend's solitaire
<i>Oporornis tolmiei</i>	MacGillivray's warbler
<i>Oreortyx pictus</i>	Mountain quail
<i>Parus atricapillus</i>	Black-capped chickadee
<i>Parus rufescens</i>	Chestnut-backed chickadee
<i>Passerella iliaca</i>	Fox sparrow
<i>Pheucticus melanocephalus</i>	Black-headed grosbeak
<i>Picoides villosus</i>	Hairy woodpecker
<i>Pipito erythrophthalmus</i>	Rufous-sided towhee
<i>Piranga ludouiciana</i>	Western tanager
<i>Psaltriparus minimus</i>	Common bushtit
<i>Regulus calendula</i>	Ruby-crowned kinglet
<i>Regulus satrapa</i>	Golden-crowned kinglet
<i>Selasphorus rufus</i>	Rufous hummingbird
<i>Sialia mexicana</i>	Western bluebird

Plan

Sitta canadensis
Sitta carolinensis
Sphyrapicus ruber
Stellula calliope
Thryomanes bewickii
Troglodytes troglodytes
Turdus migratorius
Vermivora celata
Vermivora ruficapilla
Vireo solitarius
Wilsonia pusilla
Zenaidura macroura
Zonotrichia atricapilla

Red-breasted nuthatch
White-breasted nuthatch
Red-breasted sapsucker
Calliope hummingbird
Bewick's wren
Winter wren
American robin
Orange-crowned warbler
Nashville warbler
Solitary vireo
Wilson's warbler
Mourning Dove
Golden-crowned sparrow

APPENDIX C

List of Mammals, Reptiles, Amphibians and Butterflies

MAMMALS - These species were trapped, or their sign observed, by Gary Sublette, trapper, during the 1983-1984 trapping season. Bat species are those likely to be present, based on data compiled from a survey site 3.75 air miles from the RNA (Student project, 1977, Southern Oregon State College, Ashland, OR, Steven Cross, faculty advisor).

<i>Bassariscus astutus</i>	Ringtail
<i>Canis latrans</i>	Coyote
<i>Citellus beecheyi</i>	California ground squirrel
<i>Eptesicus fuscus</i>	Big brown bat
<i>Erethizon dorsatum</i>	Porcupine (sign)
<i>Eutamias townsendii</i>	Townsend's chipmunk
<i>Felis concolor</i>	Mountain lion (sign)
<i>Lasionycteris noctivagans</i>	Silver-haired bat
<i>Lepus californicus</i>	Black-tailed jackrabbit (sign)
<i>Lynx rufus</i>	Bobcat
<i>Mephitis mephitis</i>	Striped skunk
<i>Microtus spp.</i>	Vole
<i>Myotis californicus</i>	California myotis
<i>Myotis evotis</i>	Long-eared myotis
<i>Neotoma fuscipes</i>	Dusky-footed woodrat (sign)
<i>Odocoileus hemionus</i>	Black tail deer
<i>Procyon lotor</i>	Raccoon
<i>Sciurus griseus</i>	Western gray squirrel
<i>Spilogale putorius</i>	Spotted skunk
<i>Sylvilagus spp.</i>	Rabbit
<i>Urocyon cinereoargenteus</i>	Gray fox
<i>Ursus americanus</i>	Black bear (sign)

REPTILES AND AMPHIBIANS. - Species observed on the RNA by Dennis Vroman, Galice Ranger District, Siskiyou National Forest.

<i>Crotalus viridis</i>	Western rattlesnake
<i>Diadophis punctatus</i>	Ringneck snake
<i>Eumeces skiltonianus</i>	Western skink
<i>Gerrhonotus multicarinatus</i>	Southern alligator lizard
<i>Hyla regilla</i>	Pacific tree frog
<i>Pituophis malanoleucus catenifer</i>	Gopher snake (Pacific ssp.)
<i>Rana boylei</i>	Foothill yellow-legged frog
<i>Sceloporus occidentalis</i>	Western fence lizard
<i>Thamnophis elegans elegans</i>	Western terrestrial garter snake

BUTTERFLIES. - Species observed on the RNA by Dennis Vroman, Galice Ranger District, Siskiyou National Forest.

<i>Adelpha berdowii</i>	California Sister
<i>Anthocharis sara flora</i>	Sara Orange Tip
<i>Celastrina argiolus echo</i>	Echo Blue
<i>Cercyonis pegala</i>	Large Wood Nymph
<i>Chlosyme (Charidryas) palla spp.</i>	Northern Checkerspot
<i>Coenonympha spp.</i>	Ringlet
<i>Neophasia menapia</i>	Pine Butterfly
<i>Nymphalis californica</i>	California Tortoiseshell
<i>Ochlodes sylvanoides</i>	Woodland Skipper
<i>Papilio spp.</i>	Black Swallowtail
<i>Phyciodes spp.</i>	Crescentspot
<i>Pterourus spp.</i>	Yellow Swallowtail
<i>Speyeris spp.</i>	Fritillary

APPENDIX D

List of Preparers

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APPENDIX E

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APPENDIX F

Plant Associations and Communities Found in Cedar Log Flat RNA.

	<u>ACRES</u>
Jeffrey pine-Huckleberry oak (PIJE-QUVA)	245
Jeffrey pine/Dwarf ceanothus (PIJE/CEPU)	22
Douglas-fir-Jeffrey pine (PSME-PIJE)	115
Port-Orford-cedar-Bigleaf Maple (CHLA-ACMA)	5
Port-Orford-cedar/Box-leaved silktassel (CHLA/GABU)	16
Tanoak/California coffeeberry (LIDE3/RHCA)	10
Darlingtonia bogs (Plant Community)	8
Total	421

Plant Association Descriptions

Jeffrey pine-Huckleberry oak (PIJE-QUVA) - This is the most dominant association within the RNA. It is located throughout the south slope north of Cedar Log Creek and on the west slope on the southern end of the RNA. Jeffrey pine dominates the overstory with some Douglas-fir and incense cedar present. The understory is characterized by a dominance of huckleberry oak with presence of California laurel, incense cedar, Jeffrey pine, Douglas-fir, Pacific madrone and canyon live oak (in decreasing order of frequency). The dominant shrubs are whiteleaf manzanita and coffeeberry with varying amounts of box-leaved silktassel, creambush oceanspray, dwarf ceanothus and pinemat manzanita (pinemat manzanita is located only on the southwest corner of the RNA). The herbaceous layer is dominated by grasses and common serpentine species. This association has a large amount of surface rock. This association can have microsites of Douglas-fir-Jeffrey pine present when small areas of Douglas-fir regeneration occur.

Jeffrey pine/Dwarf ceanothus (PIJE/CEPU) - This association is located on a bench formation on the eastern side of the RNA. The area has a high water table and three bogs are present above the bench. The association has the appearance of a park. The overstory is entirely Jeffrey pine. The understory is almost entirely Jeffrey pine with minor amounts of incense cedar and traces of California laurel and Brewer oak. Near the fringes of the association Douglas-fir and huckleberry oak can be found. The dominant shrub is dwarf ceanothus which varies from 1%-15%, yet always present. Whiteleaf manzanita and coffeeberry are also found in minor amounts. The herbaceous layer is 85%-90%. It is dominated by grasses. Other herbs that are consistently present in any noteworthy numbers are *Horkelia sericata*, *Zigadenus venenosus*, *Trifolium eriocephalum*, *Ranunculus occidentalis* and *Dodecatheon hendersonii*.

Douglas-fir-Jeffrey pine (PSME-PIJE) - This association dominates the middle portion of the RNA on north and northeast aspects and above the riparian zones. The overstory is dominated by Jeffrey pine and Douglas-fir with minor amounts of Port-Orford-cedar, sugar pine and incense cedar. Jeffrey pine actually dominates the overstory in most cases. The understory is dominated by huckleberry oak with Douglas-fir, Jeffrey pine and incense cedar consistently present. Pacific madrone, California laurel and Port-Orford-cedar can be present in varying amounts. The shrub layer is characterized by whiteleaf manzanita, coffeeberry and box-leaved silk-tassel. The occurrence of beargrass in the herb layer is fairly consistent.

Port-Orford-cedar/Box-leaved silktassel (CHLA/GABU) - This association is located along Cedar Log Creek and is quite narrow. It is wider on the south side of the creek (north aspect) than the north side of the creek. Port-Orford-cedar is the dominant regenerating species and box-leaved silk-tassel, western azalea and coffeeberry are consistently found. The association fits the description well yet doesn't key due to the lack of pinemat manzanita and western white pine. The overstory is dominated by Port-Orford-cedar and Douglas-fir with Jeffrey pine and sugar pine occasionally present. The understory is dominated by huckleberry oak and California laurel with fair amounts of Port-Orford-cedar and Douglas-fir and minor amounts of canyon live oak, Pacific madrone and Pacific yew. The shrub layer is dominated by coffeeberry, and western azalea. box-leaved silk-tassel is usually present at 1%-5% outside of the creek influence. Common herbs are sword-fern, Henderson's fawn-lilly, celery-leaved licorice-root, Oregon trillium and beargrass. Tanoak becomes more abundant further upstream. This appears to be a contact zone association. Fertile parent materials (from further upstream) are mixing with serpentine and peridotite and creating a productive association with ultrabasic indicators present.

Port-Orford-cedar-Bigleaf Maple (CHLA-ACMA) - This association is a minor component within the RNA and is localized to the flat alluvial junction of Cedar Log Creek and Slate Creek. This association is also a contact zone of various parent material deposits. The association keys well due to the presence of red alder and big-leafed maple. The overstory consisted of Port-Orford-cedar and Douglas-fir. The understory is dominated by California laurel with red alder, big-leafed maple, Port-Orford-cedar, Douglas-fir, canyon live oak, tanoak and Pacific yew all present. The dominant shrubs are coffeeberry, western serviceberry, and trailing blackberry. The dominant herb is sword-fern with moderate amounts of Henderson's fawn-lilly and braken.

Tanoak/California coffeeberry (LIDE3/RHCA) - This association is a minor component within the RNA and is located on the upper reaches of Cedar Log Creek. The association is found only on the south side of the creek (north aspect). Tanoak is the dominant regenerating species yet otherwise looks like Port-Orford-cedar/box-leaved silk-tassel. The presence of California laurel, Port-Orford-cedar and coffeeberry make this tanoak climax a very common association on ultrabasic parent materials. This area is more productive than other tanoak/coffeeberry associations. The same species are present that occur in Port-Orford-cedar/box-leaved silk-tassel (described above) with tanoak dominating the understory. There appears to be a slightly higher percentage of Pacific madrone and Pacific yew in this association than Port-Orford-cedar/box-leaved silk-tassel - otherwise, very similar.

Darlingtonia bogs (Plant Community) - These areas have not been classified into associations. There are six *Darlingtonia californica* bogs identified. The water is fed by springs above the bogs. California pitcher plant is the most identifying characteristic of these bogs. Common associated species are *Carex* spp., *Ledum columbianum*, *Rhododendron occidentale*, and *Sanguisorba officinalis*. Some of the bogs identified also contain *Epilobium oreganum* which is identified as sensitive. At the source of the springs, Port-Orford-cedar is dominant. These areas were too small to map as different associations.

APPENDIX G

Cedar Log Flat Research Natural Area Prescribed Fire Monitoring: First Year Report