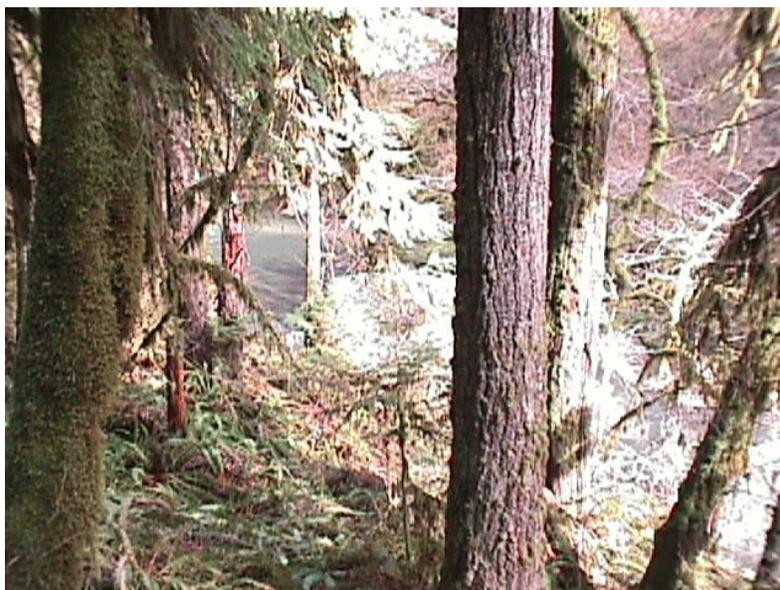


# Wassen Creek Trail

## Environmental Assessment

EA No. OR125-94-17



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## **SECTION I - Purpose and Need for Action**

### **Project Location**

The proposed project area is located on the Bureau of Land Management (BLM), the United States Forest Service (USFS), and the Roseburg Forest Product lands in the Coast Range of Oregon. This area includes Township 21 South; Range 10 West; Sections 10, 11, 12, 13, 14, 15, 22, and 23, and Township 21 South; Range 9 West; Sections 7, 8, & 17 of the Willamette Meridian.

Wassen Creek subwatershed drains about 17,788 acres mostly occupied by a maturing, 100 plus years old, Douglas-fir forest. Wassen Creek is a major tributary to the Smith River, which is a major tributary of the Umpqua River. The subwatershed is primarily under BLM or USFS public ownership with less than 2,000 acres, largely in the lower portions of the watershed, in private ownership. Roseburg Forest Products is the main private land holder, with some small private holdings near the confluence of Wassen Creek and Smith River.

### **Purpose/Need**

The purpose of this environmental assessment is to analyze the effects of constructing a hiking trail through BLM, USFS, and Roseburg Forest Product lands to access Wassen Creek, which would include Wassen Lake on BLM lands, and Devil's Falls, and Folley Falls on USFS lands.

Since the early 1980's, there has been increasing interest in the Wassen Creek area. The Coos Bay District (BLM) and the Siuslaw Forest Mapleton Ranger District (USFS) both proposed trail construction along Wassen Creek in their respective management plans (*Coos Bay District Management Plan ROD, 1995* and *Land and Resource Management Plan, Siuslaw National Forest, 1990*). The project encompasses areas of scenic interest to people including the 100 plus year old Douglas-fir forest with its remnant older trees scattered throughout the drainage, Wassen Lake, Wassen Creek, and Devil's and Folley falls.

According to the Coos Regional Trails Partnership (a partnership of public individuals, and non-profit and private groups), Wassen Creek trail would be an important addition to expanding the recreational opportunities on the south coast of Oregon. If implemented, it would meet the identified need of local area trail users for a long distance hike within the region, and meet a goal of local communities to attract visitors for longer periods of time. This area has been promoted in guidebooks (Bill Sullivan's *Exploring Oregon's Wild Areas* and Wendell Wood's *A Walking Guide to Oregon's Ancient Forests*) and magazine articles, such as in *Wild Oregon*. Due to public interest, and increased available information, visitation has increased slightly around Wassen lake and in the upper reaches of the creek. Concerns on how hikers are accessing the area (Wood's walking guide mentions hikers "booting up" the creek due to the lack of trail access and a user-created steep trail descends down to the creek at Wassen lake). Public interest and the desire to protect the area have led to a push to plan and build a trail along the creek.

### **Relevant Documents**

Direction for management action comes from the *Final Coos Bay District Resource*

*Management Plan (RMP) and Environmental Impact Statement (EIS)* - (BLM, September 1994), and its *Record of Decision (ROD)* - (BLM, May 1995), and from the *Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl* (Interagency, February 1994) (FSEIS; Northwest Forest Plan), its *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl*, and accompanying *Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl* (Interagency, April 1994). This Environmental Assessment (EA) is tiered to these documents. The Middle Smith River Watershed Analyses includes the Wassen Creek Drainage and is hereby incorporated by reference. The above documents are available for review at the Coos Bay and North Bend Public Libraries, the Coos Bay District Office of BLM, and the Oregon State Office of BLM in Portland, Oregon. This plan has been reviewed to determine if the preferred action conforms with the land use plan's terms and conditions as required by 43 CFR 1601.5. The preferred projects are in conformance with the Aquatic Conservation Strategy (ACS) objectives as described in the Standards and Guidelines (S&G's, pp. B-9 through B-34) of the Northwest Forest Plan. The analysis file for this project contains several reports from staff specialists, which are hereby incorporated by reference.

Management activities also conform to the *Noxious Weed Strategy for Oregon & Washington* (USDI BLM August 1994) and *Partners Against Weeds, An Action Plan for the Bureau of Land Management* (USDI BLM January 1996), and the *Trails Management Handbook* [USFS, FSH 2309.18] and the *Trail Manual* [State of California, Department of Parks and Recreation, 1991], hereby incorporated by reference.

### **Land Designations**

BLM lands in the project area are designated as a Tier 1 key watershed. This is because the lands are considered to contribute directly to the conservation of at-risk anadromous salmonids, bull trout, and resident fish species, and/or have a high potential of being restored as part of a watershed restoration program. Additionally the BLM lands are designated as an Area of Critical Environmental Concern (ACEC) for the following reasons:

- presence of special status species including northern spotted owls and marbled murrelets,
- the relatively pristine state of Wassen creek within the area, which met recreation wild and scenic river requirements but was not designated, and
- the large block of relatively roadless mid-aged (100+years) Douglas-fir forest ecosystem, which fills, or partially fills, the 1998 Oregon Natural Heritage Plan Coast Range Ecoregion Western Hemlock Zone Cells 16, and 21 (i.e. western hemlock, rhododendron, and swordfern cell, and the western hemlock/evergreen huckleberry cell), and fills the Palustrine Wetland Cell 93 (i.e. Pond at mid to high elevation, including slump ponds).

### **Scoping**

The primary purpose for scoping is to identify public and agency needs or issues, relating to the proposal. A district team was formed to analyze the issues and alternatives in this EA. The scoping process consisted of notifying the public, of the planned EA, through an announcement

in the local newspaper. Additionally, BLM contacted adjacent landowners, interested parties from the District's mailing list, and local trail clubs for input. Any scoping input can be found in the Analysis File.

### **Identified Issues**

Through the scoping process the following issues were identified:

**Issue 1: Will trail construction adversely affect any special status wildlife species?**

Resolution: Trail construction would only occur following consultation with the US Fish and Wildlife Service (USFWS) and would be conducted according to the terms and conditions issued by the USFWS in a biological opinion. The terms and conditions would include project design criteria (PDCs), which are mitigation measures applied to project activities (trail construction) designed to minimize potential detrimental effects to proposed or listed species. In general, these PDCs would allow trail construction to occur only during the time period outside of the nesting season for northern spotted owls and marbled murrelets. The trail and its immediate surroundings would also be inspected periodically to ensure that there are no un-foreseen effects from visitation.

**Issue 2: Will trail construction adversely affect any special status botanical species?**

Resolution: The District Botanist determined that the construction of a primitive trail would have no effect on any special status botanical species. The trail and its immediate surroundings would also be inspected periodically to ensure that there are no un-foreseen effects from visitation.

**Issue 3: Will trail construction and use affect the area's ACEC designation?**

Resolution: The trail would not affect Wassen Creek's designation as an ACEC. The Coos Bay RMP included trail development along with the ACEC designation and the trail is permitted under the Wassen Creek ACEC Management Plan (BLM, June 2001) providing standard NEPA processes are followed. The trail's design features are developed to ensure that the reasons or qualities that originally led to the area's designation as an ACEC would not be jeopardized. The trail and its immediate surroundings would also be inspected periodically to ensure that there are no un-foreseen effects from visitation.

### **Permits, Licenses, and Entitlements Necessary to Implement the Projects**

No permits, licenses, or entitlements are necessary to implement trail construction/maintenance.

## **SECTION II - Alternatives Including the Proposed Action**

### **No Action**

Under this alternative there would be no additional management of the existing situation. Visitor access would continue to be through hiking up the creek and using trails created by other visitors or animals.

### **Proposed Action**

The trail and its related structures (trailhead improvements, bridges, turnpikes, retaining walls, etc.) would be built and maintained to be consistent with semi-primitive and primitive classifications, see design features below. The proposed trail would be about 13 to 15 miles in length and would be constructed in three parts as described below. The trail would start at Wassen Lake and parallel Wassen Creek, passing Devil's Staircase and Folley waterfalls, and end at Roseburg Forest Product's Road number 21-10-11.0. There would, also, be an access or egress at the end of BLM Road number 21-10-12.3 (see maps).

Part 1: would be construction of the trail segment within BLM ownership. The trail would be approximately 5 to 6 miles in length and run from Wassen Lake, following the north side of Wassen Creek, to the top of a ridge at the end of BLM Road 21-10-12.3. An approximate 100 foot segment of trail construction necessitates a foot bridge installation where it crosses the Wassen Lake inlet tributary. This elevated surface would help to protect the physical and biological integrity of this crossing. Trailhead improvements at each end include placement of maintenance rock, an information board with a map display, and visitor registration. BLM Road No. 21-10-12.3 would be improved by adding a lift of crushed rock and blading and shaping the road bed.

Part 2: would involve the construction of an 6 to 7 mile trail on Mapleton RD land (USFS). The trail would link into BLM's portion and allow for public access to Folley falls and Devil's Staircase falls. After the implementation of this part, the public would have to return back to BLM lands after viewing the waterfalls, until part 3 was completed.

Part 3: would involve the construction of a 2 mile connection trail linking Parts 1 and 2 with Roseburg Forest Product Road No. 21-10-11.0. This would require the acquisition of an easement from Roseburg Forest Products (RFP) by the federal government. This easement would allow public access across approximately 100 yards of RFP land (SE of SE section 10), about 1/4 mile of RFP Road # 21-10-11.0, and about 1/2 mile of RFP Road # 21-10-10.0. The public would then travel USFS Road # 110 to and from this trailhead. Construction of a trailhead as indicated in Part 1 would be necessary at the end of RFP Road No. 21-10-11.0.

### **Project Design Features**

#### Timing Restrictions for trail construction only

- Formal consultation with U.S. Fish and Wildlife Service on impacts to species and Critical Habitat would be completed before any habitat disturbing activities related to trail construction could begin.
- Apply seasonal restrictions to trail construction work on all portions of the trail 1 March-

- 30 September, to limit disturbance to all wildlife species.
- *Spotted owl* - Projects within 1/4 mile of a northern spotted owl nest site would not occur 1 March-30 June. This may be waived in a particular year if nesting or reproductive success surveys conducted according to U.S. Fish and Wildlife Service-endorsed survey guidelines reveal that spotted owls are non-nesting or that no young are present that year.
- *Marbled murrelet* - Projects within 1/4 mile of an occupied marbled murrelet site would not occur 1 April-5 August. Project activities from 6 August-15 September would be scheduled no earlier than 2 hours after sunrise and no later than 2 hours before sunset.
  - Projects within 1/4 mile of unsurveyed suitable marbled murrelet habitat would have a daily timing restriction 1 April-15 September. On site work would occur no earlier than 2 hours after sunrise and no later than 2 hours before sunset.
- *Bald eagle* - If an active eagle nest, roost, or perch is detected, work activities that cause disturbance would not take place within 400 meters, or within 800 meters line-of-sight from nests, roosts, or perches during periods of use, unless repeated surveys indicate that the structures are not being used during the normal season of use. For nests the period of eagle use is 1 January-31 August (or 2 weeks after fledgling) and for roosts the period is 15 November-15 March.

#### Trail Design

- All construction and maintenance techniques would conform to the *Trail Manual* [BLM, 9114-1] and the *Trails Management Handbook* [USFS, FSH 2309.18] and not exceed standards for a primitive and semi-primitive foot traffic, only, trail. Activities include but are not limited to: cutting brush, clearing of downed debris, tread construction, placing of debris to prevent unauthorized paths and short-cuts,, water barring, stream crossings as needed, placement of signs, and treatment of noxious weeds.
- Trail construction would be done with hand and power tools, and no vehicular machinery, to minimize soil impacts, see wildlife seasonal restrictions above. Plant and soil disturbance would be limited to minimize sediment production, protect bank stability, and maintain riparian species composition. The trail would be brushed no more than 6 feet wide and tread width would be 12 to 24 inches. Cross-slope portions of the trail would require half to full bench tread excavation and would be out sloped.
- Brushing of large and mature understory shrub species, such as rhododendron and vine maple, should be avoided. These older understory shrubs are important for epiphytic bryophyte and lichen species (McCune and Rosso, unpublished data). If avoiding these areas are not possible, then site specific botanical surveys would occur.
- Roots and logs would be removed for safety or resource protection issues only. The trail surface type would be left natural and would accumulate litter/duff.
- Trail construction would not involve falling of trees greater than 11 inches DBH and would not alter canopy cover (i.e. openings in tree cover can not occur due to trail construction).
- Construction would avoid disturbing coarse woody material (especially Decay Class 3, 4 and 5 logs) and the area immediately surrounding it, when possible. This includes individual and/or groups of logs. Avoid bucking sections out of large down logs of any decay class, during construction or if large trees or snags fall across the trail. Cut steps to cross logs or reroute the trail to avoid them. Minimize damage to logs in advanced decay

- classes during trail construction and maintenance.
- Water dips, bars and other drainage devices would be constructed when and as often as needed (ex. any steep slopes that may concentrate runoff or contribute sedimentation to stream channels, seeps, channels, or surface water flow).

#### Signing/Trail Head Designs

- Trailheads, roads, and parking areas would be designed for adequate drainage to minimize delivery of water and sediment, and would include grading. Basic erosion controls would be used for construction and improvements.
- Trailhead bulletin boards would be posted at each access to the trail system, including but not limited to: one at Wassen Lake, one at the end of the BLM road #21-10-12.3, and one at the end of RFP road #21-10-11.0. The bulletin boards would contain the following:
  - low impact camping/leave no trace ethics (ex. “Please stay on trails and only use designated areas”).
  - fire safety information
  - noxious weed information
  - trail map and locations of other trails in the area
  - theft awareness information
  - Posted as primitive and/or semi-primitive area for foot traffic only, and closed to motorized traffic, bikes, and horses.
  - fishing regulations for cutthroat trout within Wassen Creek

#### Maintenance Designs

- Trails would be inspected periodically for maintenance. Maintenance would meet specifications in the *Trails Management Handbook* and the *Trail Manual* for primitive and semi-primitive foot trails, and may be done through contracting, volunteers, BLM employees, and/or USFS employees. Activities would include brushing, clearing of downed debris, removing plants from the tread, placing of debris to prevent unauthorized paths and short-cuts, tread reconstruction, rerouting sections of trail which pose maintenance or environmental problems/concerns, placement and repair of signs and stream crossings (bridges) as needed, re-grading of the parking area, and treatment of noxious weeds.
- Trail surface type would be natural and would accumulate litter/duff, which would not be raked or removed during maintenance.
- To limit disturbance to all wildlife species during nesting season, apply seasonal restrictions to trail maintenance work on all portions of the trail 1 March-30 September. Maintenance may occur with hand tools only during the nesting season.
- Maintenance would not involve the use of vehicular machinery, to minimize soil impacts.

### Stream Crossings

- Bridges or low water fords would be used for stream crossings, except for Wassen Lake inlet as discussed below. Bridges would consist of one or two native log stringers. All crossings would include features to minimize erosion or sedimentation, and would be inspected periodically to maintain these features for water quality protection.
- An approximate 100 foot segment of trail construction necessitates a foot bridge installation where it crosses the Wassen Lake inlet tributary. This elevated surface would help to protect the physical and biological integrity of this crossing. A wildlife biologist would be on-site during construction for guidance on avoiding impacts to amphibian egg masses. Foot bridge construction would minimize the removal of vegetation to limit surface disturbance and erosion.
- Foot bridge construction should be per engineering specifications to prevent settling and subsequent water blockages. Footers should be located outside the outer most slope break of the stream channel. The preferred ground contacting material should be plastic or cedar to eliminate the risk of soil and water contamination and to be "environmentally friendly".

### Noxious Weeds

- During construction of the trail system and trailheads, all noxious weeds within 100 feet of work areas would be removed. Furthermore, these areas are to be maintained as weed free.

### Tree/Snag/Hazard Tree Felling

- Trees selected on site for use in trail construction would be examined by wildlife and botanical specialists prior to use or falling, and directions provided to avoid disturbing nearby special resources. No trees over 11 inches in DBH may be felled for trail construction, and removal of roots and duff should be avoided where appropriate.
- Trees adjacent to the trail would not be felled unless they pose danger to trail users or maintenance workers. Trees which fall or are felled across the trail, only that portion of the tree which lies within the maintained clearing limits would be removed from the trail or modified (steps cut into log) to allow crossing.

### Monitoring

- Evaluate trail use and condition, and apply other conservation practices if needed for the protection of riparian vegetation, soil, and water resources. Monitoring examples include: A) determine if heavy use of trail use deteriorates the hardened trail surface and begins to contribute sediment or excessive runoff to Wassen Lake or tributaries to Wassen Creek, or B) if interpretive signs do not deter visitors from impacting sensitive areas.

## SECTION III - Description of Affected Environment

### Geology & Soils

#### Geology

The trail is located within the Tyee formation (Balswin, E. M., 1973), consisting of bedded sandstone and siltstone. This formation has little groundwater potential. Geological hazards mapping (Beaulieu, J. D., 1975) indicate the proposed trail extends through existing landslide topography in section 17 near Wassen Lake, with slopes from 15 to 50%. Also, in section 12 the trail is located at the crest of 50 percent and greater slopes.

#### Soils

The Coos Bay District Soil Inventory (1977) shows the entire trail in the Preacher-Bohannon loamy soil map unit. Specific soil characteristics can be obtained from the Soil Surveys of Coos County, Oregon (1989) and Douglas County (1994) and the Soil Inventory of the Coos Bay District (1977). The degree of impact is relative to the soils susceptibility to surface layer compaction or disturbance, amount of vegetation removal, and the hazard of erosion and windthrow. Table 1 below shows the soil types and their associated recreational limitation.

**Table 1:** Recreational Soil Properties for Preacher-Bohannon loams series.

Soil Series	Slope %	Path & Trail Hazard	Runoff	Water Erosion Hazard	Windthrow Hazard
Preacher	3-30	Moderate slope	Medium	Slight/Moderate	Slight
Preacher	30-60	Severe slope	Rapid	High	Slight
Preacher	60-90	Severe slope	Rapid	High	Slight
Bohannon	3-30	Moderate slope	Medium	Slight/Moderate	Moderate
Bohannon	30-60	Severe slope	Rapid	High	High
Bohannon	60-90	Severe slope	Rapid	High	Moderate

Soil Survey of Coos County, 1989

### Hydrology

The area has a Mediterranean type of climate with cool, wet winters and warm, dry summers. Hydrology is driven by precipitation in the form of rain. Average annual precipitation varies from about 74 inches on the coast in Reedsport to over 100 inches at the crest of the coast range (approximately 3000 feet) (USDI BLM, 1995(b)). The peak flows, low flows, annual flows and groundwater levels are all dependent on the amount, intensity and distribution of rainfall. The close correlation between precipitation and runoff indicates that this system rapidly translates rainfall into runoff due to a high drainage density, low bedrock permeability, high precipitation totals, and steep slopes in the headwaters.

Near the headwaters of the creek and the eastern trailhead, in section 17, is Wassen lake that was formed from a natural landslide. The creek flows West and is predominantly a bedrock stair stepped B stream type, under the Rosgen stream classification system (Rosgen 1994). Sources of water to the lake originate predominately from two tributary streams, direct precipitation, and groundwater discharge. The quantity from each of these input sources fluctuates seasonally with regional weather patterns. This fluctuation causes the water level of the lake to lower during the

dry cycle, which occurs primarily from mid-summer to late fall. These levels then rebound after the return of the winter rains and persist again into the early part of summer.

### **Vegetation, Including T&E Species**

#### *Vegetation*

For the Oregon Coast Range, the Wassen Creek Area of Critical Environmental Concern is a relatively large roadless area composed of middle- to late-successional forests with some old-growth. The forests are dominated by 100 + years old Douglas-fir and western hemlock with western red cedar occurring in undisturbed riparian areas. Hardwood trees include bigleaf maple and red alder. The understory woody vegetation is composed of regenerating western hemlock with Douglas-fir in canopy gaps, and vine maple with salmonberry in moister areas. Ground vegetation includes sword fern and numerous forbs. On the upper slopes, a drier condition exists supporting a shrub layer of rhododendron and salal. The entire length of the trail was walked in July 1994 and no Category ½ Survey & Manage or Protection Buffer species were noted.

#### *Threatened & Endangered Plants*

No Threatened & Endangered plant species or potential habitat occur within the vicinity of the project. No survey for Threatened & Endangered plants are necessary for this project.

#### *Special Status Plants, and Survey & Manage Plants*

Wassen Creek contains potential habitat for several Special Status and Survey & Manage plant species. Pre-disturbance surveys are required (see appendix for list of potential species). No Special Status Plants and Survey & Manage plant species are currently identified within the area.

### **Aquatic Habitat/Fisheries, Including T&E Species**

Wassen Creek is a fifth order tributary to the West Fork Smith River. A falls at river mile 7.9, known as the “Devil’s Staircase,” is an anadromous fish barrier. Because of this barrier, Wassen Creek supports an exclusively native cutthroat population above the falls. Other native fish species that utilize the creek within the project area include dace, sculpin, and possibly Pacific lamprey. Anadromous fish species that utilize the lower portions of Wassen Creek (not within the project area) include coho salmon, steelhead trout, and possibly chinook salmon. A comprehensive aquatic habitat inventory was completed in 1993 on Wassen Creek by the Oregon Department of Fish and Wildlife (ODFW). Overall, aquatic habitat conditions within the proposed project were found to be in good condition.

### **Wildlife, Including T&E Species**

#### *Wildlife General*

The project area is within Late Successional Reserve (LSR) number 265. A list of species associated with mature or late successional forests can be found in Appendix C of the South Coast - Northern Klamath Late-Successional Reserve Assessment (USDA; USDI, 1998). Most of the listed species could be expected to occur within the project area.

#### *Threatened and Endangered Species:*

Bald Eagle - There are no known bald eagle nest sites within several miles of the project area. There have been a few reports over the last several years of bald eagles soaring in the vicinity of the proposed trail. Eagles typically nest in the largest, most dominant Douglas-fir tree within a Wassen Creek Trail EA

conifer stand. Live canopies usually cover the nest which are often located within the top 20 feet of the tree. Nests commonly provide an unobstructed view of water, and are usually within 0.5 miles of open water.

Northern Spotted Owl - There are three historic spotted owl sites for two pairs of owls near the proposed trail. This includes one alternate site for one of the owl pairs. The proposed location of the trail is within suitable nesting, roosting, and foraging habitat for spotted owls. The proposed trail is within a designated spotted owl Critical Habitat No. OR-55 and may be constructed within 0.25 miles of site centers for spotted owls.

Marbled Murrelet - The proposed trail would be located within “unsurveyed suitable” marbled murrelet habitat and is within designated marbled murrelet Critical Habitat Unit OR-04-d. The project area has not been surveyed for marbled murrelets, however it is within a larger block of habitat that probably provides the best habitat for long term productivity of the species within the watershed (USDA; USDI, 1997).

#### *Other Special Status Species:*

Red Tree Vole - The proposed route is within suitable habitat for red tree voles. Surveys would not be required for red tree voles as the project design features prohibit activities which would disturb red tree vole habitat.

Mollusks - Currently only sites of Oregon Megomphix, known before 9/30/99, require protection. There is one known site within the proposed project area.

Amphibians and Reptiles - A survey was conducted in 1994 to detect presence and identify herptiles in the Wassen Lake area. Eleven species of herptiles were identified, including two special status species, the Red-legged frog, and the Southern Torrent salamander.

### **Human Uses**

Until the early 1980's, mostly only locals knew about and frequented the area. The majority of these visited Wassen lake at the headwaters of the creek. In the early 1980's, the creek and its surrounding pristine forest were publicized in magazines like Wild Oregon and guidebooks including *Exploring Oregon's Wild Areas* and *A Walking Guide to Oregon's Ancient Forests*. Use increased to the lake, as well as to the waterfalls. Over the years several user-created access trails have been formed. Parts of these access trails are hazardous to users and damaging to the environment, and go straight up or straight down for considerable distances. Some people seeking access to the roadless area have obtained it by walking up the creek, which is an easy way to travel in this “trail-less” area. The lake is still the primary destination for many recreationists particularly due to its proximity to a paved road, easy access on abandoned skid roads, and the lure of fishing. As a result, impacts from litter, fire rings, and cleared campsites are to be found.

### **Cultural Resources**

Class I Inventory (review of project documentation and records check) shows cultural resources are not reported in the vicinity of this project area. On a site visit to the project area during 1995, when the trail route was originally flagged, cultural resources were not observed.

## SECTION IV - Environmental Consequences

This section describes the scientific and analytical basis for the comparison of the alternatives, and the probable consequences as they relate to the alternatives.

The environmental consequences to critical elements of the human environment are outlined in the following table and the following elements are unaffected by the no action or proposed action: Air Quality, Cultural Resources, Environmental Justice, Farm Lands, Flood Plains, Native American Religious Concerns, Port-Orford-cedar, Threatened & Endangered Botanical & Fish Species, Solid or Hazardous Waste, Water Quality Drinking & Ground, Wild & Scenic Rivers, and Wilderness.

### Critical Elements of Each Alternative

Critical Elements of the Human Environment	Present in the Project Area	Affected by No Action	Affected by Proposed Action
Air Quality	Yes	No	No
Area of Critical Environmental Concern	Yes	Yes	Yes
Cultural Resources	No	N/A	N/A
Environmental Justice	No	N/A	N/A
Farm Lands (Prime/Unique)	No	N/A	N/A
Flood Plains	Yes	No	No
Native American Religious Concerns	No	N/A	N/A
Noxious Weeds	Yes	Yes	Yes
Port Orford Cedar Management	No	N/A	N/A
Threatened & Endangered Species (Wildlife)	Yes	Yes	Yes
Threatened & Endangered Species (Botanical)	No	No	No
Threatened & Endangered Species (Fish)	No	No	No
Wastes; Hazardous or Solid	No	N/A	N/A
Water Quality; Drinking/Ground	No	No	No
Wetlands/Riparian Zones	Yes	Yes	Yes
Wild and Scenic Rivers	No	N/A	N/A
Wilderness	No *	N/A *	N/A *

Source: Wassen Creek Trail EA Team, Coos Bay District, 2000

\* Proposed by USFS but not designated.

### Alternative 1 - No Action

Under this alternative, there would be no action and thus the environment described in Section III would remain unchanged.

### Geology & Soils, and Hydrology

Since no construction would occur under this alternative, no degradation would result from direct BLM actions. However, soil and water quality degradation could occur as a result of unregulated foot traffic, especially along the lake and creek margins, by current recreational visitors. This random foot traffic kills vegetation and can cause soil disturbance or compaction.

This increases exposure to erosion, sheet erosion, and gulying of exposed surfaces. All of the above can decrease infiltration and water retention, and increase sediment transportation and overland water flow. No indirect effects to water resources are expected.

Management impacts in the Wassen Creek watershed are relatively low compared with other watersheds in the Lower Umpqua Basin. Cumulative effects as a result of the no action alternative would most likely have a negligible effect on the hydrology and water resources of the Wassen Creek subwatershed.

### **Vegetation, including botanical T&E species**

The unregulated foot traffic and visitor use (ex. camping and fires) is currently resulting in loss of vegetation especially along the lake and creek margins. This could result in a possible decline in the composition and structural diversity of plant communities. Also, see discussions in the geology and aquatic habitat sections.

### **Aquatic Habitat/Fisheries; Including T&E Species**

#### *Direct and Indirect Effects*

No environmental consequences to the aquatic resource would result from implementing this alternative. This alternative would indirectly maintain the current aquatic habitat conditions. Vegetation within the Riparian Reserve would continue to develop and provide the long term necessary elements for a healthy aquatic ecosystem. However, the current unregulated foot traffic that is using the stream channel for a path could result in Redd disturbance, sediment delivery, and general harassment of aquatic species. This could result in streambed disturbance and short term, localized turbidity. This is not expected to have a significant impact on the aquatic resource.

#### *Short-term Uses vs Long-term Productivity*

No measurable change to the current trend in long-term productivity (50-100+ years) of fisheries or aquatic resources is anticipated by foregoing construction of the proposed trail.

#### *Irreversible or Irrecoverable Commitments of Resources*

No irreversible or irretrievable commitments of fisheries or aquatic resources would be anticipated by foregoing construction of the proposed trail.

#### *Cumulative Effects*

There would be no ascertainable cumulative effects that should result due to this Alternative. This is due to the continued increased size and amounts of large wood contributed to the aquatic ecosystem, as the Riparian Reserve develops and delivers material to the stream over the long term. The minor unregulated foot traffic could pose a negative impact to the resource depending upon timing and duration of recreation traffic.

### **Wildlife, Including T&E Species**

Indirect effects include the impact of current trail users when spotted owls are encountered. Spotted owls have been known to approach hikers on trails. Ordinarily, encounters with owls are unlikely to cause disturbance to owls. Under this alternative, no wildlife resources would be directly impacted. See the Biological Assessment associated with BO # 1-7-98-F-079 for a

description of cumulative effects. No additional cumulative impacts would be expected under this alternative.

### **Human Uses**

Under this alternative current visitation trends and impacts from visitation would continue as discussed in this EA.

### **Cultural Resources**

Because no cultural resources were found or known to be within the project area implementation of the No Action alternative is not expected to impact cultural resources.

## **Alternative 2 - Proposed Action**

### **Geology, Soils, & Hydrology**

#### *Soils*

Recreational development according to the Coos County Soil Survey, shows a severe limitation for the steeper mapping units of the Preacher-Bohannon soil series. These limitations would be negated by proper design, location, and construction materials. A review of the Erosion factors (K, T, and wind erodibility group) place these soils in the high rill and sheet erosion category. Only land subject to the direct exposure of rainfall should exhibit such rates of erosion. This erosion is anticipated to be negligible due to the narrow footprint of the exposed trail surface, the existing full vegetative canopy layer and the protective duff layer adjacent to the trail.

The construction of this trail, footer installation, and bridge and low water crossing development may cause some minor sedimentation and soil movement during the first wet season from rainfall and drip, and may persist until trail use compacts the freshly disturbed pathways and vegetation regrows. To sustain these soils and limit the effects of erosion, a minimum of the vegetation would be removed. Additionally, design measures for revegetating and stabilizing disturbed soils, such as using slash for sediment filters adjacent to bridges, water barring, etc., would limit or reduce soil erosion and subsequent potential sedimentation to water resources. Any minor sediment that would enter a stream channel should settle out within a short distance and not have any adverse effects on aquatic habitats. No indirect effects are expected from the proposed action being implemented.

Cumulative effects as a result of construction and frequent use of this trail system, would most likely have a negligible effect on soils or sedimentation within the Wassen Creek subwatershed and no long term effects are expected from the proposed action being implemented.

### **Hydrology**

No Activities under this action are anticipated to adversely effect stream flow or water quality in the Wassen Creek subwatershed. Bridges and native rock armored low water crossings would be used at stream crossings as well as a foot bridge segment along the lake margin and inlet tributary traversing along Wassen Lake.

Some very minor sedimentation is anticipated during the initial few rainfall events of the first rainy season until the disturbed areas of the newly constructed trail and foot bridge footers

stabilize and vegetation regrows. However, this impact is only anticipated to be minor and of short duration due to the small footprint of the trail surface and minimal amount of vegetative disturbance.

Road renovation to BLM road No. 21-10-12.3 would have no effect on hydrology or water resource due to ridge-top location. No indirect effects are expected from the proposed action being implemented.

Cumulative effects as a result of construction and frequent use of this trail system, would most likely have a negligible effect on the hydrology and water resources of the Wassen Creek subwatershed. Management impacts in the Wassen Creek watershed are relatively low compared with other watersheds in the Lower Umpqua Basin.

### **Vegetation, including T&E Species**

This project would have no effect on special status and Survey and Manage botanical species and no cumulative effects are expected.

### **Aquatic Habitat/Fisheries; Including T&E Species**

#### *Direct and Indirect Effects*

No activities would be expected to adversely affect aquatic habitat. Stream crossings would consist of bridges or low water crossings with native rock to reduce erosion and sedimentation. Bridges would be constructed utilizing on-site native materials and consist of one or two log stringers. In addition, bridges and crossings would be inspected to ensure that the trail system is not increasing sediment delivery to stream channels. Trail construction within riparian areas would be minimized and would not involve the falling of trees over 11 inches diameter. Trail construction would not alter canopy cover.

Road renovation would be completed on 1/8 mile of BLM Road No. 21-10-12.3. This would likely include blading, shaping, and surfacing. No renovation would occur within the Riparian Reserve. Road related actions would be located on a ridgetop area, and would not likely affect aquatic habitat.

The proposed trail location would occur within areas of the Riparian Reserve of a fish bearing stream. However, no trees would be felled greater than 11 inches diameter. Canopy cover would not be significantly altered. The tread width of the trail would be 12-24 inches in width and would require brushing approximately six feet in width. This would not be expected to affect aquatic or riparian habitat. Exposed soil from trail construction could generate sediment which could be delivered to the stream within the first year following trail construction. It is expected these effects would be minor due to the narrow width of the trail. Existing vegetation between the trail and the stream would likely act as a filter and absorb sediment runoff.

#### *Short-term Uses vs Long-term Productivity*

No measurable change to the current trend in long-term productivity (50-100+ years) of fisheries or aquatic resources is anticipated by construction of the proposed trail.

### *Cumulative Effects*

The proposed project occurs within a roadless mature and late successional stand which has been relatively “undisturbed”. Providing access into the area would increase disturbance within the area. However, effects of the increased access are expected to be minimal, and the Riparian Reserve would not be significantly altered. Over time, vegetation, duff and material within the trail prism would reduce sediment runoff. Stream crossings would also be maintained to reduce erosion and sediment. It is not expected that any significant long term effects would occur as a result of the proposed action.

Endangered Species Act (ESA) and Magnuson Stevonson Act Determination of Effects on Oregon Coast Coho Salmon (Threatened) and Oregon Coast Steelhead (Candidates), from Implementation of the Proposed Action Alternative is: **No Effect**

The affected area associated with the proposed action is located above an impassable natural barrier (Devil’s Staircase). Coho salmon have not been documented above the falls. Resident cutthroat trout populations exist within the project area. The proposed actions would not effect downstream aquatic habitat or the fisheries resource. Therefore, because of the “No Effect” determination and the absence of listed fish within the project area, Section (7) ESA consultation is not required for the proposed action for listed fish species nor their Essential Fish Habitat.

### **Wildlife, Including T&E Species**

See the Biological Assessment associated with BO # 1-7-98-F-079 for a description of cumulative effects.

### *Spotted Owls*

The removal of scattered, individual trees, which do not contain nesting structure (e.g. broken decayed tops, cavities, etc.) during construction is not likely to appreciably affect spotted owl habitat. Following completion of the trail, the BLM would incur new liabilities for hazard trees. The primitive trail designation and the level of expected use reduce the concern for hazard trees because the chances of injury to hikers from hazard trees is relatively low.

All reasonable options should be considered (e.g. re-routing the trail, posting warning signs), prior to removing a suitable spotted owl nesting tree. If it is determined that a suitable nest tree must be felled, it would be left on site, and the loss of an occasional suitable nest tree is unlikely to appreciably affect spotted owls, because of the relative abundance of potential nest trees in this mature stand with scattered older trees. Indirect effects include the impact of trail users when spotted owls are encountered. Spotted owls have been known to approach hikers on trails, and the owls would be vulnerable to anyone wishing to harm them. Ordinarily, encounters with owls are unlikely to cause disturbance to owls, and would enrich a wilderness experience for most recreationists.

The proposed trail “may affect” and is “likely to adversely affect” northern spotted owls because the trail would pass within 0.25 miles of owl site centers and because trail users have potential to directly harm owls. The proposed trail is “not likely to adversely affect critical habitat” because only scattered trees would be felled and nest trees are presumably not limiting in this stand.

### *Marbled Murrelets*

The removal of scattered, individual trees, which do not contain nesting structure (e.g. platforms, moss covered limbs  $\geq$  4 inch diameter, etc.) during construction is not likely to appreciably affect marbled murrelet habitat. Following completion of the trail, the BLM would incur new liabilities for hazard trees. The primitive trail designation and the level of expected use reduce the concern for hazard trees because the chances of injury to hikers from hazard trees is relatively low.

All reasonable options should be considered (e.g. re-routing the trail, posting warning signs), prior to the removal of a suitable marbled murrelet nest tree. If it is determined that a suitable nest tree must be felled, it would be left on site, and the loss of an occasional suitable nest tree is unlikely to appreciably affect marbled murrelet, because of the relative abundance of these trees in this high-quality mature stand. Hikers may disturb nesting murrelets and cause them to change behavior. Hamer and Nelson (1998) noted behavioral responses by nesting murrelets to human presence on the ground. The human presence associated with a primitive trail within a several thousand acre stand of quality nesting habitat is unlikely to appreciably affect murrelet nesting behavior.

The proposed trail “may affect” and is “likely to adversely affect” marbled murrelets because potential nest trees could be felled, and because hikers may disturb nesting murrelets. The trail is “likely to adversely affect” Critical Habitat because individual trees contributing primary constituent elements could be felled if they become hazard trees.

### *Bald Eagles*

In an Oregon study, Isaacs *et al.* (1983) reported that 85% of the bald eagle nests were within 1 mile of major bodies of water. Snags and trees with exposed lateral limbs are important for perching. There would be no removal of large trees or snags during the construction of the trail, but activities may occur near potential bald eagle foraging or nesting habitat. Individual large trees or snags could be removed in the future if they become a hazard to trail users.

The construction, use, and maintenance of the trail “may affect”, but is “not likely to adversely affect” bald eagles or their habitat because the falling of scattered trees would not appreciably reduce the value of the stand as habitat, because project design criteria (PDCs) would mitigate disturbance to nesting eagles, and because eagles do not appear to be using the area for nesting. If an active bald eagle nest, within 800 meters of the trail, is discovered in the future, seasonal restrictions on trail use should be considered for portions of the trail, and restrictions may be implemented, if deemed necessary by BLM or USFWS Biologists.

### *Special Status Species:*

*Red Tree Vole* - Surveys would not be required for red tree voles because project design features prohibit activities which would disturb red tree vole habitat.

*Mollusks* - There is an incidental discovery site of the Survey and Manage mollusk, Oregon Megomphix, that was discovered prior to 9/30/99 within this area. No impacts are expected to the site. Should the trail be located near this site it would be protected according to standards and guidelines at the time of construction.

*Amphibians and Reptiles* - If seasonal restrictions applied for spotted owls and marbled murrelets were applied throughout the project area, the restrictions would provide adequate protection for amphibian tadpoles during the construction phase of the trail. Trail use is not expected to cause significant adverse affects to amphibians or reptiles (Applegarth, pers. comm.).

### **Human Uses**

Construction of the trail would inevitably lead to an increase in use in the project area. Levels of use would probably be higher for the first year or two due to write-ups in newspapers and magazines. However, after this initial period, levels should subside to levels equivalent to that along the North Fork of the Smith River Trail, which is grossly estimated at 500 to 1,200 people a year (USFS, Mapleton R.D.). Due to the steep and brushy terrain, impacts from trail visitation should be kept localized to the trail. Still, the trail and surrounding flat areas should be checked yearly for impacts from hiking and camping. If any area is becoming denuded or dispersed camping spots are found too close to water sources, they should be rehabilitated and consideration should be given to designating an area(s) for such activities.

Cumulatively the Wassen creek trail would increase visitor use to the whole area, the trail use is not expected to exceed 200 people a year. When the trail is completed it would keep people from walking in the creek and causing resource damage. Impacts from trail visitation should have no effect on the surrounding area because hiking would be very difficult if people left the trail, due to large logs and steep terrain. The overall effects anticipated of the human use on Wassen creek trail would be negligible.

### **Cultural Resources**

It is not expected that cultural resources would be affected by this trail construction. However, if cultural resources are observed during project activities, work must stop and the District Archeologist must be notified.

*Consistency with Aquatic Conservation Strategy Objectives.*

The proposed action would not prevent attainment of objectives outlined in the ACS (see Table \*)

Table 3

Impacts of the Proposed Action on aquatic/riparian values within the Tye Province Physiographic Area, Matrix of Factors and Indicators (Attachment 3 to the NMFS Biological Opinion, March 18, 1997), and assessment of consistency with ACS objectives.

ACS Objectives Northwest Forest Plan	Factors/Indicators(NMFS)	Wassen Creek Trail (EA OR 125-94-17)
<p>Objectives # 2, 4, 8, and 9 Design features will maintain spacial and temporal connectivity within the drainage network with regard to shade and water temperature (ACS#2), maintain water quality with respect to temperature (ACS#4), maintain vegetation for adequate summer/winter thermal regulation for aquatic species (ACS#8), and therefore maintain habitat for well-distributed riparian-dependent populations (ACS#9).</p>	<p>Water Quality and/or Temperature</p>	<p>Riparian Reserve (RR) habitat would be maintained on all streams on federally-managed lands within, and adjacent to, the project area. No trees would be felled greater than 11 inches DBH. Brushing and tree felling for a "18 to 24 " wide trail would not be expected to alter canopy cover or significantly impact the Riparian Reserves habitat. Stream temperature would not be affected from the proposed actions</p>
<p>Objectives # 4, 5, 6, 8, and 9 Design features will maintain water quality (ACS#4) in the long term, maintain the sediment regime in the long term (ACS#5), maintain instream flows to retain patterns of sediment routing (ACS#6), maintain vegetation to provide adequate rates of erosion (ACS#8), &amp; thus maintain habitat for well-distributed riparian-dependent populations (ACS#9).</p>	<p>Water Quality, Sediment, and/or Turbidity</p>	<p>Construction of the trail within Riparian Reserves could generate sediment and increase sediment runoff to the stream. Sediment generated from trail construction would be minimal ("12-24" trail width).</p>
<p>Objectives # 4, 6, 8, and 9 Design features will maintain water quality with regard to chemical concentration/nutrients (ACS#4), maintain instream flows to retain patterns of nutrient routing (ACS#6), maintain vegetation to provide adequate nutrient filtering (ACS#8), and therefore maintain habitat for well-distributed riparian-dependent populations (ACS#9).</p>	<p>Water Quality, Chemical Concentration, and/or Nutrients</p>	<p>Compliance with the Oregon State Forest Practice Rules regarding spill prevention and containment (OAR 629-620-100 Sections 2, 3 &amp; 4) should reduce the possibility of release of hazardous materials to surface waters.</p>
<p>Objectives # 2, and 9 These design features will maintain spacial and temporal connectivity within the drainage network (ACS#2) and therefore maintain habitat for well-distributed riparian-dependent populations (ACS#9).</p>	<p>Habitat Access and/or Physical Barriers</p>	<p>All trail stream crossings will be bridges or low water crossings. No barriers would be created or removed as part of the project.</p>
<p>Objectives # 3, 5, 6, 8, and 9 Design features will maintain the banks and bottom configurations of the aquatic system (ACS#3), maintain the sediment regime in the long term (ACS#5), maintain instream flows to retain patterns of sediment routing (ACS#6), maintain vegetation to provide adequate rates of erosion, and to supply coarse woody debris sufficient to sustain physical complexity and stability (ACS#8), and therefore maintain habitat for well-distributed riparian-dependent populations (ACS#9).</p>	<p>Habitat Elements and/or Sediment</p>	<p>Construction of the trail within Riparian Reserves could generate sediment and increase sediment runoff to the stream. Sediment generated from trail construction would be minimal (12-14" trail width).</p>
<p>6,8,9 These design features will maintain instream flows to retain patterns of wood routing (ACS#6), maintain vegetation to provide an adequate supply of coarse woody</p>	<p>Habitat Elements,</p>	<p>Riparian Reserve (RR) widths would be maintained on all streams on federally-managed lands within, and adjacent to,</p>

ACS Objectives Northwest Forest Plan	Factors/Indicators(NMFS)	Wassen Creek Trail (EA OR 125-94-17)
debris sufficient to sustain physical complexity and stability (ACS#8), and therefore maintain habitat for well-distributed riparian-dependent populations (ACS#9).	and/or Large Woody Debris	the project area. The proposed action would not involve the felling of trees greater than 11 inches DBH. Large woody debris recruitment would not be effected.
3,5,6,8,9 Design features will maintain: stream-bottom configurations (ACS#3), the sediment regime (ACS#5), stream flow (ACS#6), and amounts and distributions of CWD sufficient to sustain physical complexity and stability (ACS#8), and therefore maintain habitat for well-distributed riparian-dependent populations (ACS#9).	Habitat Elements and/or Pool Area (%)	Riparian Reserve (RR) widths would be maintained on all streams on federally-managed lands within, and adjacent to, the project area. Sediment delivery to the stream would likely be minimal and would not be expected to decrease pool area. Large wood and large wood recruitment would not be affected. No actions would likely affect pool area.
3,5,6,8,9 Design features will maintain: stream-bottom configurations (ACS#3), the sediment regime (ACS#5), stream flow (ACS#6), and amounts and distributions of CWD sufficient to sustain physical complexity and stability (ACS#8), and therefore maintain habitat for well-distributed riparian-dependent populations (ACS#9).	Habitat Elements and/or Pool Quality	Riparian Reserve (RR) widths would be maintained on all streams on federally-managed lands within, and adjacent to, the project area. Sediment delivery to the stream would likely be minimal and would not be expected to decrease pool quality. Large wood and large wood recruitment would not be affected. No actions would likely affect pool quality.
1,2,3,5,6,7,8,9 Design features will maintain watershed and landscape-scale features (ACS#1), connections with floodplains and wetlands (ACS#2), the physical integrity of the aquatic system (ACS#3), the sediment regime (ACS#5), stream flow (ACS#6), the timing and variability of floodplain inundation (ACS#7), and amounts and distributions of CWD sufficient to sustain physical complexity and stability (ACS#8), and therefore maintain habitat for well-distributed riparian-dependent populations (ACS#9).	Habitat Elements and/or Off-Channel Habitat	Riparian Reserve (RR) widths would be maintained on all streams on federally-managed lands within, and adjacent to, the project area. No proposed actions would diminish LWD recruitment, alter the flow regime, reduce the flood-prone area or impinge on its function; thus would not affect off-channel habitat.
2,3,5,6,8,9 Design features will maintain stream network connections (ACS#2), the physical integrity of the aquatic system (ACS#3), the sediment regime (ACS#5), stream flow (ACS#6), and amounts and distributions of CWD sufficient to sustain physical complexity and stability (ACS#8), and therefore maintain habitat for well-distributed riparian-dependent populations (ACS#9).	Channel Condition & Dynamics, Width, and/or Depth Ratio	Riparian Reserve (RR) widths would be maintained on all streams on federally-managed lands within, and adjacent to, the project area. The proposed actions are not expected to adversely affect in-stream flows, large wood recruitment, or streambank vegetation.
3,5,6,8,9 Design features will maintain the physical integrity of the aquatic system (ACS#3), the sediment regime (ACS#5), stream flow (ACS#6), and amounts and distributions of CWD sufficient to sustain physical complexity and stability (ACS#8), and therefore maintain habitat for well-distributed riparian-dependent populations (ACS#9).	Channel Condition & Dynamics and/or Streambank Condition	Riparian Reserve (RR) widths would be maintained on all streams on federally-managed lands within, and adjacent to, the project area. The proposed actions would not adversely affect large wood recruitment, or streambank vegetation.
1,2,3,5,6,7,8,9 Design features will maintain watershed and landscape-scale features (ACS#1), connections with floodplains and wetlands (ACS#2), the physical integrity of the aquatic system (ACS#3), the sediment regime (ACS#5), stream flow (ACS#6), the timing and variability of floodplain inundation (ACS#7), and amounts and distributions of CWD sufficient to sustain physical complexity and stability (ACS#8), and therefore maintain habitat for well-distributed riparian-dependent populations (ACS#9).	Channel Condition & Dynamics and/or Floodplain Connectivity	Riparian Reserve (RR) widths would be maintained on all streams on federally-managed lands within, and adjacent to, the project area. No new road construction on federal land would occur within the Riparian Reserve. No proposed actions would alter the floodplain or floodplain connectivity.

ACS Objectives Northwest Forest Plan	Factors/Indicators(NMFS)	Wassen Creek Trail (EA OR 125-94-17)
1,2 Design features will maintain the distribution, diversity and complexity of watershed and landscape-scale features (ACS#1) and the spacial and temporal connectivity within the drainage network (ACS#2).	Watershed Condition, and/or Road Density & Location	Approximately, 1/8 mile of road would be renovated as part of the project. The road occurs along a ridge-top area, and is not within the Riparian Reserve.
1,2,5,6,7,8,9 Design features will maintain watershed and landscape-scale features (ACS#1), connections within and between watersheds (ACS#2), the sediment regime (ACS#5), stream flow (ACS#6), the timing and variability of floodplain inundation (ACS#7), and species composition and structural diversity of riparian plant communities (ACS#8), and therefore maintain habitat for well-distributed riparian-dependent populations (ACS#9).	Watershed Condition and/or Disturbance History	The proposed actions would increase public access into the project area. However, use of the trail would not significantly affect aquatic or riparian habitat.
1,3,5,8 Design features will maintain watershed and landscape-scale features (ACS#1), the integrity of the aquatic system (ACS#3), the sediment regime (ACS#5), and species composition and structural diversity of riparian plant communities (ACS#8).	Watershed Condition and/or Landslide and Erosion Rates	Trails will be constructed to minimize erosion and potential for increase in landslides.
1,2,4,8,9 Design features will maintain watershed and landscape-scale features (ACS#1), connections within and between watersheds (ACS#2), and species composition and structural diversity of riparian plant communities (ACS#8), and therefore maintain water quality (ACS#4) and habitat for well-distributed riparian-dependent populations (ACS#9).	Watershed Condition, and/or Riparian Reserves	The current Riparian Reserve is mostly older conifers. Vegetation brushing and tree felling (<12") would occur. However, canopy cover would not be altered. No actions would significantly affect the integrity Riparian Reserve.

## Section IV - References and Contacts

### References

Baldwin, Ewart M., 1973, Beaulieu, J. D., 1975. *Geologic Map of the Goodwin Peak & Scottsburg Quadrangles (in part) Oregon*. In Environmental Geology of Western Coos, and Douglas Counties, Oregon. Oregon Department of Geology & Minerals Industries, Bulletin 87.

Beaulieu, J. D., Hughes, P. W., 1975. *Geologic Hazard Map of the Goodwin Peak & Scottsburg Quadrangles (in part) Oregon*. In: Environmental Geology of Western Coos and Douglas Counties, Oregon. Oregon Department of Geology and Mineral Industries, Bulletin 87.

*Final Coos Bay District Resource Management Plan (RMP) and Environmental Impact Statement (EIS)* - (BLM, September 1994)

*Final Coos Bay District Resource Management Plan Record of Decision (ROD)* - (BLM, May 1995)

*Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl* (Interagency, February 1994) (FSEIS; Northwest Forest Plan)

McCune and Rosso, unpublished data, OSU

*Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl, and accompanying Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl* (Interagency, April 1994).

Watershed analyses

*Noxious Weed Strategy for Oregon & Washington* (USDI BLM August 1994)

*Partners Against Weeds, An Action Plan for the Bureau of Land Management* (USDI BLM January 1996)

*Trails Management Handbook* [USFS, FSH 2309.18]

*Trail Manual* [BLM, 9114-1]

### Contacts

The general public was notified of the planned EA through a public announcement in *The World*. Adjacent landowners were contacted during the Scoping Process through direct mailing. The EA Analysis File contains a list of attendees of the open public meeting as well as adjacent landowners, interested individuals, and public agencies contacted during the scoping process.

Additionally, the following groups were contacted and/or assisted in the planning and design of the proposed project:

Oregon Natural Resources Council  
Coos Regional Trails Partnership  
USFS-Mapleton Ranger District

## Appendix - A - Plant Species Lists

SPECIAL STATUS VASCULAR (PART 1) AND NONVASCULAR (PART 2) PLANT SPECIES  
KNOWN OR SUSPECTED TO OCCUR ON THE BUREAU OF LAND MANAGEMENT'S COOS BAY DISTRICT  
(File G:\CB\District\Botany\6840district.doc, updated 10/03/02 NJB)

Alphabetical definition of terms, acronyms, and abbreviations for Part 1 and Part 2.

AS = Assessment Species are species that are on ONHP List 2.

BS = Bureau Sensitive species (includes SoC, state listed, and ONHP List 1).

D = Documented on Coos Bay District.

FE = Federally Endangered species.

ft = feet (multiply by 0.3048 to get meters).

M = Myrtlewood Field Office.

m = meters (multiply by 3.281 to get feet).

ONHP = Oregon Natural Heritage Program.

ONHP 1 = List 1: Taxa that are threatened with extinction or presumed to be extinct throughout their entire range. ONHP 2 =

List 2: Taxa that are threatened with extirpation or presumed to be extirpated from the state of Oregon.

ONHP 3 = List 3: Taxa for which more information is needed before status can be determined, but which may be threatened or endangered in Oregon or throughout their range.

ONHP 4 = List 4: Taxa that are of concern, but are not currently threatened or endangered.

S = Suspected on Coos Bay District.

SE = State Endangered, species listed as endangered by the Oregon Department of Agriculture (ODA).

SoC = Species of Concern, all former Candidate 2 species for which there is not enough information known to warrant listing under the Endangered Species Act.

ST = State Threatened, species listed as threatened by the ODA.

S&M = Survey and Manage Nonvascular Plant (category assignment [2002] in parentheses).

TS = Tracking Species are species that are on ONHP List 3 and List 4.

U = Umpqua Field Office.

Note: **Bolded and underlined** species are Bureau Sensitive (BS or ONHP List 1) and Assessment Species (AS or ONHP List 2) that require pre-disturbance surveys if the proposed project is within the range of the species, there is potential habitat within the project area, or the project may cause significant negative effect on the species habitat or persistence.

Part 1: Vascular Plants (Alphabetized by scientific name).

Scientific Name	Common Name	D/S	Status	Life form, habitat, elevation, flowering time
<i>Abronia latifolia</i>	yellow sand verbena	DMU	TS, ONHP 4	Perennial herb, coastal beaches and dunes, New River ACEC, < 100 ft, flowers June into autumn.
<b><u><i>Abronia umbellata</i> ssp. <i>breviflora</i></u></b>	pink sand verbena	DMU	SoC, BS, ONHP 1, SE	Annual herb, coastal beaches and dunes, <100 ft, New River ACEC (T29S, R15W, Sections 3, 10, 15, 22) and North Spit ACEC (T25S, R14W, Sections 26 and 35), possibly at Greggs Creek (T35S, R14W, Section 18), flowers May into autumn.
<i>Adiantum jordanii</i>	Jordan's or California maidenhair fern	DMU	TS, ONHP 3	Perennial herb, moist shaded seeps, hillsides, or moist woods/forests, <1,200 m.
<i>Allium bolanderi</i> var. <i>mirabile</i>	potato bulb Bolander's onion	SM	TS, ONHP 4	Perennial forb/herb, rocky clay soils including serpentine, <1,000 m.
<b><u><i>Arctostaphylos hispidula</i></u></b>	Howell's manzanita	DM	AS, ONHP 2	Perennial shrub, rocky serpentine soils, 300-600 m; Grizzly Mountain/Signal Buttes at T37S, R14W, Sections 1 and 4; Palmer Butte at T40S, R13W, Sections 1, 4, 9, 10; Bosley Butte at T39S, R13W, Sec 10; Brushy Bald Mountain at T35S, R14W, Sec 14; flowers late-March to August.

Scientific Name	Common Name	D/S	Status	Life form, habitat, elevation, flowering time
<b><u>Artemisia pycnocephala</u></b>	Beach wormwood, coastal sagewood or sagewort	DM	AS, ONHP 2	Perennial subshrub or shrub, coastal dunes and strand, west of Lost Lake (T29S, R15W, Sec 35), New River ACEC
<i>Atriplex leucophylla</i>	beach saltbush	DM	TS, ONHP 3	Perennial herb, coastal dunes, 0-10 m; at New River ACEC (one plant in 2000) at T29S, R15W, Sec 3; flowers April to October.
<b><u>Baccharis douglasii</u></b>	marsh baccharis, saltmarsh bacchris	SM	AS, ONHP 2	Perennial subshrub, moist salt marshes, stream edges, 0-750 m.
<b><u>Bensoniella oregona</u></b>	Oregon bensoniella	DM	SoC, BS, SC, ONHP 1	Perennial forb/herb, seasonally wet meadows, 3,500 to 4,500 ft; Kenyon Mountain at T30S, R9W, Sections 3 and 4 (Douglas Co.), flowers late June through July.
<b><u>Brodiaea terrestris ssp. terrestris</u></b>	dwarf brodiaea	DMU	AS, ONHP 2	Perennial forb/herb, stabilized dunes and meadow north and east of Muddy Lake, New River ACEC (T30S, R15W, Sec 11)
<i>Cardamine nuttallii</i> var. <i>gemma</i>	Nuttall's toothwort, purple toothwort, bittercress	SM	TS, ONHP 4	Perennial forb/herb, redwood forests, possible facultative wetland, <100 m
<i>Carex barbarae</i>	Santa Barbara sedge	DMU	TS, ONHP 3	Perennial graminoid, seasonally wet places, usually occurs in wetlands, but occasionally found in non wetlands, <900 m, known from the lower Rogue River.

Scientific Name	Common Name	D/S	Status	Life form, habitat, elevation, flowering time
<b><u>Carex brevicaulis</u></b>	shortstemmed sedge	DMU	AS, ONHP 2	Perennial graminoid, stabilized sand dunes and meadows, New River ACEC at Learning Center and north of Muddy Lake (T30S, R15W, Sec 11), Lost Lake, (T29S, R15W, Sec 36), and Floras Lake (T31S, R15W, Sec 8).
<b><u>Carex gigas</u></b>	Siskiyou sedge	SM	AS, ONHP 2	Perennial graminoid, serpentine areas, wet meadows, 850-1,800 m, known from near Signal Buttes.
<b><u>Carex gynodynamis</u></b>	hairy sedge, Olney's hairy sedge	DMU	AS, ONHP 2	Perennial graminoid, moist meadows and open forests, <600 m, Smith Pond off of Signal Tree road (T30S, R9W, Sec 3)
Carex leptalea	flaccid sedge, bristlystalked sedge	SMU	TS, ONHP 3	Perennial graminoid, wet meadows, swamps
Carex macrocephala	bighead sedge, largehead sedge	SMU	TS, ONHP 4	Perennial graminoid, beaches and dunes, reported from Oregon Dunes NRA at Horsfal Beach
Carex serpenticola	Serpentine sedge	DM	TS, ONHP 4	Perennial graminoid, serpentine openings, meadows, known from near Signal Buttes area.

Scientific Name	Common Name	D/S	Status	Life form, habitat, elevation, flowering time
<u>Castilleja mendocinensis</u>	Mendocino Coast Indian paintbrush	SM	SoC, BS, ONHP 1	Perennial subshrub or forb/herb, coastal strand, coastal prairie, Northern Coastal scrub, closed-cone pine forest in dune and coastal habitats, and <100 m.
<b><u>Cicenda quadrangularis</u></b> (= <b>Microcala quadrangularis</b> )	Oregon timwort	DM	AS, ONHP 2	Annual forb/herb, coastal wetlands, valley grassland, northern oak woodland, foothill woodland, between 0-1,000 ft, along trail between Croft Lake bog and New River in low depression (T30S, R15W, Sec 10)
<b><u>Cimicifuga elata</u></b>	tall bugbane	SU	BS, ONHP 1	Perennial forb/herb, coniferous forest, north of Umpqua River, and east side of district, flowers in summer (June to early August).
<b><u>Cochlearia groenlandica</u></b> (= <b>C. officinalis</b> )	Spoonwort, scurveygrass	SMU	AS, ONHP 2	Annual, biennial, and perennial forb/herb, coastal headlands, seabird nesting areas on offshore rocks, <50 m, known from Cape Sebastian.
<b><u>Cordylanthus maritimus</u></b> <b><u>ssp. palustris</u></b>	Point Reyes bird's-beak	DU	SE, BS, ONHP 1	Annual, coastal salt marshes, sea level, North Spit ACEC at T25S, R13W, Section 19, flowers June to October.
<b><u>Cryptantha leiocarpa</u></b>	seaside or coastal cryptantha	DM	AS, ONHP 2	Annual forb/herb, semi-stabilized sand dunes, north shore of Floras Lake (T31S, R15W, Sec 8).
<i>Cyperus bipartitus</i>	shining cyperus,	SMU	TS, ONHP 3	Annual graminoid, wetlands,

Scientific Name	Common Name	D/S	Status	Life form, habitat, elevation, flowering time
<i>Cypripedium californicum</i>	California lady's-slipper	DM	TS, ONHP 4	Perennial forb/herb, serpentine substrate, moist slopes in mixed-evergreen or coniferous forests, also in riparian, streambank, and bog/fen habitats, 50-2,200 m, blooms in May, one historic collection from eastern Coos County in Gold Basin.
<b><u>Cypripedium fasciculatum</u></b>	clustered lady's slipper	SM	SoC, BS, ONHP 1	Perennial forb/herb, numerous plant habitats: mixed evergreen, mixed conifer, and pine/oak forests
<i>Darlingtonia californica</i>	California pitcher-plant, cobra-lily	DMU	TS, ONHP 4	Perennial herb, coastal and serpentine bogs (fens), 0 to 4,000 ft, blooms in May and June, New River ACEC at Muddy Lake(T30S, R15W, Sec 11) and Lost Lake, (T29S, R15W, Sec 36).
<i>Dichelostemma ida-maia</i>	firecracker flower	SM	TS, ONHP 4	Perennial forb/herb, forest edges, open woods, and grasslands near coast, 30-2,000 m.
<b><u>Enemion stipitatum</u></b> (= <i>Isopyrum</i> s.)	Siskiyou false rue-anemone, dwarf isopyrum	SU	AS, ONHP 2	Perennial forb/herb, shaded slopes, chaparral, mixed evergreen forest, oak woodlands
<u><i>Ericameria arborescens</i></u>	golden fleece	DM	AS, ONHP 2	Perennial shrub, foothill woodland and chaparral, between 0 and 9,000 ft, Bosley Butte (T39S, R13W, Sec 15 & 16), blooms in September.

Scientific Name	Common Name	D/S	Status	Life form, habitat, elevation, flowering time
<b><u>Erigeron cervinus</u> (includes <u>E. delicatus</u>)</b>	Siskiyou daisy	SM	AS, ONHP 2	Perennial forb/herb, open rocky slopes, meadows, pine to fir woods, serpentine areas, 900 to 1900 m.
Eriogonum nudum var. paralinum	coast naked stemmed buckwheat, Del Norte buckwheat	SM	TS, ONHP 3	Perennial subshrub, shrub, forb/herb, coastal dunes
<b><u>Eriophorum chamissonis</u></b>	Chamisso's cottongrass, russet cotton-grass	DM	AS, ONHP 2	Perennial graminoid, coastal wetlands, on floating sphagnum mats in lake, and bogs, northwest end of Lost Lake (T29S, R15W, Sec 25 & 36)
<b><u>Erysimum menziesii ssp. concinnum</u></b>	Pacific wallflower, curly wallflower	SM	AS, ONHP 2	Biennial or perennial forb/herb, coastal bluffs, headlands, cliffs, 0-300 m, flowers generally in winter and spring, north side of Humbug Mt. (may be extirpated at this site).
Erythronium revolutum	coast fawn-lily, coast trout-lily	DMU	TS, ONHP 4	Perennial herb, shady conifer woods and margins of wet areas, stream banks with full light, 0-1,000 m, blooms in April and May, occurs in Elk River and Sixes River drainages.
Euonymus occidentalis	western wahoo, western burning bush	DMU	TS, ONHP 4	Perennial tree or shrub, riparian areas, shaded streambanks, canyons, <2,000 m (possibly at Camas Creek and Mnt. Kellet)
<b><u>Frasera fastigiata</u> (=F. <u>umpquaensis</u>, <u>Swertia f.</u> and <u>Swertia u.</u>)</b>	Umpqua swertia, clustered green gentian	SM	BS, ONHP 1	Perennial forb/herb, mountain meadows, 1,700 to 1,900 m, between Bear Camp and Elk Wallow.

Scientific Name	Common Name	D/S	Status	Life form, habitat, elevation, flowering time
<b><u>Fritillaria glauca</u></b>	Siskiyou fritillaria	SM	AS, ONHP 2	Perennial forb/herb, serpentine and talus slopes, 600 to 2,100 m, known from Bear Camp and Vulcan Peak.
<b><u>Gentiana setigera</u></b>	Waldo gentian	DM	SoC, BS, ONHP 1	Perennial herb, serpentine fens, 1,000 to 3,000 ft, Hunter Creek Bog ACEC, T37S, R14W, Section 13 and 24, flowers August into October, until the first frost.
<b><u>Gilia millefoliata</u></b>	manyleaf gilia	DM	BS, ONHP 1	Annual forb/herb, semi-stabilized coastal dunes, < 32 ft, Floras Lake, New River ACEC at T31S, R15W, Section 8, flowers from April to June or July.
<b><u>Hazardia whitneyi</u> var. <u>discoidea</u> (= <u>Haplopappus whitneyi</u>)</b>	Whitney's bristleweed	SM	AS, ONHP 2	Perennial subshrub or shrub, open coniferous forest, 1,000 to 2,500 m, known from Fishoot Trail, Bear Camp Ridge, and near Elk Wallow.
Hesperevax sparsiflora var. brevifolia	short-leaved evax	DM	TS, ONHP 3	Annual forb/herb, semi-stabilized sand dunes, sandy bluffs, and flats, 0-200 m, known from Fourmile Creek mouth and Floras Lake at New River ACEC.
<b><u>Hieracium bolanderi</u></b>	Bolander's hawkweed	DM	TS, ONHP 4	Perennial forb/herb, dry pine woods or forested slopes on serpentine, 2,700 m, blooms June to July.

Scientific Name	Common Name	D/S	Status	Life form, habitat, elevation, flowering time
<b><u>Hydrocotyle verticillata</u></b>	whorled marsh pennywort	SMU	AS, ONHP 2	Perennial vine, forb/herb, swampy ground, lake margins, wetlands, primarily coastal (Croft Lake), <100 m.
<b><u>Iliamna latibracteata</u></b>	California globe mallow or wild hollyhock	DMU	AS, ONHP 2	Perennial forb/herb, moist ground and stream banks, blooms June and July, Big Sandy Tie road (T28S, R10W, Sec 31), site extirpated during culvert replacement in 1999: T31S, R12W, Sec 17
Juncus gerardii	mud rush, saltmeadow rush	DMU	TS, ONHP 3	Perennial graminoid, exposed coastal estuary meadows and salt marshes just above high-tide line; also inland, flower and fruiting late spring to summer.
Kalmiopsis leachiana	North Umpqua kalmiopsis	SM	TS, ONHP 4	Perennial shrub, serpentine areas of open mountain slopes in rocky areas, flowers in May and June, rarely July.
<b><u>Lasthenia macrantha ssp. prisca</u></b>	large-flowered goldfields	DM	SoC, BS, ONHP 1	Perennial herb, coastal headlands, 2-100 ft, Cape Blanco lighthouse, T32S, R16W, Section 2 and reported from Greegs Creek, T35S, R14W, Section 18, flowers from March to June.
Leucothoe davisiae	Sierra laurel	SM	TS, ONHP 3	Perennial shrub, bog and wet areas in acidic soil, 1,300 to 2,600 m, known from Bear Camp and Pyramid Rock.

Scientific Name	Common Name	D/S	Status	Life form, habitat, elevation, flowering time
<b><u>Lewisia cotyledon var. cotyledon</u></b> (=L. c. var. <b><u>purdyi</u></b> )	Siskiyou lewisia, Purdy's lewisia	SM	SoC, BS, ONHP 1	Perennial forb/herb, between 4,265 and 7,545 ft, known from Mt. Bolivar summit.
<i>Lilaea scilloides</i>	flowering quillwort, awl-leaf lilaea	DU	SoC, ONHP 3	Annual graminoid, wetlands, shallow water and adjacent mud flats, fresh water margins, flowers in summer, known from lower Umpqua River near Dean Creek viewing area.
<b><u>Lilium kelloggii</u></b>	Kellogg's lily	SMU	AS, ONHP 2	Perennial forb/herb, 3-5 ft in height, gaps and roadsides in yellow pine and redwood forests, sandstone and sedimentary type soil in dry wooded areas, 175-1300 m, blooms in June.
<b><u>Lilium occidentale</u></b>	Western lily, Eureka lily	DMU	FE, SE, BS, ONHP 1	Perennial herb, coastal bogs and scrub, < 100 m, experimental population at New River ACEC, flowers from mid-June to end of July.
<b><u>Limonium californicum</u></b>	western marsh rosemary	DU	AS, ONHP 2	Perennial subshrub or forb/herb, coastal salt marshes between 0 and 160 ft; North Spit ACEC (T25S, R13W, Sec 19)
<b><u>Lupinus tracyi</u></b>	Tracy's lupine	SM	AS, ONHP 2	Perennial forb/herb, dry open montane forest, 1,500 to 2,000 m, known from Pistol River Road and near Oregon Mountain and Bear Camp.

Scientific Name	Common Name	D/S	Status	Life form, habitat, elevation, flowering time
<b><u>Lycopodiella inundata</u></b>	bog club-moss, inundated clubmoss	DM	AS, ONHP 2	Perennial subshrub or shrub: rhizomatous fern, coastal wetlands, moist conditions in lake and pond margins, muddy depressions, peat bogs, fens, edge and coastal habitats, New River (T30S, R15W, Sec 3)
<b><u>Microseris bigelovii</u></b>	coast microseris, coastal silverpuffs	SM	AS, ONHP 2	Annual forb/herb, sandy soil, or soil pockets on rocky coastal headlands, open moist places (Cape Blanco, Port Orford Heads, and Goat Island), <100 m.
<b><u>Microseris howellii</u></b>	Howell's microseris, Howell's silverpuffs	SM	BS, ONHP 1	Perennial forb/herb, meadow, filtered light, dry upper slope, rocky, serpentine-peridotite soils. Known from the eastern edge of the Illinois River Valley in the BLM Medford District and Siskiyou National Forest, Josephine County.
Mimulus douglasii	Douglas' monkeyflower, brownies	DM	TS, ONHP 4	Annual forb/herb, open rocky outcrops in moist soil, known from Slater Ridge.
Minuartia californica	California sandwort	DM	TS, ONHP 4	Annual forb/herb, open rocky outcrops in moist soil and meadows, known from Edson Butte.

Scientific Name	Common Name	D/S	Status	Life form, habitat, elevation, flowering time
<b><u>Monardella purpurea</u></b>	Siskiyou monardella	DM	AS, ONHP 2	Perennial subshrub or forb/herb, openings in shrubby, rocky serpentine slopes or Jeffrey pine or knobcone pine savanna, blooms from June to September, east of summit of Rocky Peak (T34S, R14W, Sec 3), and observed on Bosley Butte.
<b><u>Oenothera wolfii</u></b>	Wolf's evening-primrose	SM	SoC, ST, BS, ONHP 1	Biennial herb, base of coastal bluffs
<b><u>Ophioglossum pusillum</u></b>	Northern adder's-tongue	SMU	AS, ONHP 2	Perennial forb/herb, marsh edges, low pastures, grassy roadside ditches, coastal wetlands, 1,000-2,000 m, known from Oregon Dunes NRA.
<b><u>Pellaea andromedifolia</u></b>	coffee fern, coffee cliffbrake	DMU	AS, ONHP 2	Perennial forb/herb, fern, rocky outcrops between 0 and 5900 ft, Cherry Creek Ridge (T27S, R10W, Sec 25), and Irwin Rocks.
<b><u>Phacelia argentea</u></b>	silvery phacelia	DM	SoC, ST, BS, ONHP 1	Perennial forb/herb, sand dunes, 10 to 40 ft, New River ACEC at T29S, R15W, Sec 35 and 36; T30S, R15W, Sec 2, 22, 33; T31S, R15W, Sec 8; Humbug Mountain at T34S, R15W, Sec 1; and Greggs Creek at T35S, R14W, Sec 18; flowers May to end of August.

Scientific Name	Common Name	D/S	Status	Life form, habitat, elevation, flowering time
<i>Phacelia verna</i>	spring phacelia	DMU	TS, ONHP 4	Annual herb, open mossy covered rock outcrops, moist banks and crevices in basaltic rock, shallow soils of steep hillsides, blooms from April to June, known from eastern Coos County.
<i>Poa laxiflora</i>	loose-flowered bluegrass	DU	TS, ONHP 4	Perennial graminoid, moist woods to rocky open slopes (Big Tree Recreation Site)
<i>Poa piperi</i>	Piper's bluegrass	DMU	TS, ONHP 4	Perennial grass, serpentine meadows and rock outcrops, road cuts, talus, chaparral, and forest openings, 100-500 m, flowers from April to June.
<i>Poa rhizomata</i>	timber bluegrass	SMU	TS, ONHP 3	Perennial graminoid, shady, moist slopes in forest, in rich loose soils over granitics 400-1000m
<b><u>Poa unilateralis</u></b>	San Francisco bluegrass	SM	AS, ONHP 2	Perennial graminoid, coastal headlands and prairies, in +/- saline soils, known from Henry Rock, ~1/2 mile north of Pistol River bridge.
<b><u>Polystichum californicum</u></b>	California sword fern	DMU	AS, ONHP 2	Perennial forb/herb, fern, woods, streambanks, shaded rocky outcrops, Pistol River (T38S, R14W, Sec 22), Indian Creek Road (T29S, R12W, Sec 24)
<i>Puccinellia pumila</i>	dwarf alkaligrass	DU	TS, ONHP 3	Perennial graminoid, coastal salt marshes and flats, <10 m, known from North Spit ACEC.

Scientific Name	Common Name	D/S	Status	Life form, habitat, elevation, flowering time
<b><u>Rhynchospora capitellata</u></b>	brownish beakrush	SM	AS, ONHP 2	Perennial graminoid, marshes and seeps < 2,000 m, collected from sphagnum bog north of Brookings.
<b><u>Romanzoffia thompsonii</u></b>	Thompson's mist maiden	DM	BS, ONHP 1	Annual forb/herb, mossy covered rock outcrops, 750 to 6,000 ft; Slater Ridge at T30S, R9W, Sec 33; flowers from March to early August.
<b><u>Salix delnortensis</u></b>	Del Norte willow	SM	AS, ONHP 2	Perennial shrub, serpentine riparian areas, 90-500 m, known from near Hunter Creek bog.
<b><u>Saxifragopsis fragarioides</u></b> (= <u>Saxafraga fragarioides</u> )	joint-leaved saxifrage	SM	AS, ONHP 2	Perennial forb/herb, rock crevices, dry cliffs; red fir, subalpine, and lodgepole forests; 4,900 to 9,800 ft, blooms in June and July, known from Big Craggies.
<b><u>Schoenoplectus subterminalis</u></b> (=Scirpus subterminalis)	swaying bulrush, water clubrush or bulrush	DM	AS, ONHP 2	Perennial graminoid, freshwater wetlands, lake-margin and edge habitats, New River ACEC at Muddy Lake (T30S, R15W, Sec 11)
<b><u>Sedum laxum ssp. heckneri</u></b>	Heckner's stonecrop	SM	AS, ONHP 2	Perennial succulent herb, steep serpentine outcrops, dry areas in serpentine, peridotite, and gabbro rock outcrops in lodgepole, red fir, and yellow pine forests from 4,500 to 5,300 ft, blooms in June and July.

Scientific Name	Common Name	D/S	Status	Life form, habitat, elevation, flowering time
<i>Senecio triangularis</i> var. <i>angustifolius</i>	bog senecio, narrow-leaved arrowleaf senecio	DM	TS, ONHP 3	Perennial subshrub, shrub, forb/herb, wet meadows, stream banks in open, coniferous forests, coastal sphagnum peat bogs, 1,000-3,500 m, blooms July to September, collected at Harris bog, north of Brookings.
<i>Sidalcea cusickii</i>	Cusick's checkermallow or checkerbloom	DMU	TS, ONHP 4	Perennial herb, open forests, meadows, rocky areas, flowers from May through July, local endemic to upper Coquille and Umpqua River systems.
<b><u><i>Sidalcea malviflora</i> ssp. <i>patula</i></u></b>	coast checker bloom, Siskiyou checkerbloom	DM	SoC, BS, ONHP1	Perennial herb, open coastal forest, prairie, mixed evergreen forest, coastal headlands, open meadows; sea level to 2,600 ft; Edson Butte at T31S, R14W, Sec 22; Grizzly Mountain at T37S, R14W, Sec 4; flowers in May and June.
<i>Smilax californica</i>	California smilax or greenbrier	SM	TS, ONHP 4	Perennial shrub, subshrub, or vine, streambanks in coniferous forests, known from Rogue River.
<b><u><i>Streptanthus howellii</i></u></b>	Howell's streptanthus	SM	BS, ONHP 1	Perennial herb, rocky serpentine areas in open conifer and hardwood forest, 600 to 1,500 m, known from near Vulcan Lake trailhead.
<i>Thlaspi montanum</i> var. <i>siskiyouense</i>	Siskiyou pennycress	SM	TS, ONHP 4	Perennial forb/herb, known from Lemmingsworth Gulch Trail and Red Mountain.

Scientific Name	Common Name	D/S	Status	Life form, habitat, elevation, flowering time
<i>Tofieldia glutinosa</i> ssp. <i>glutinosa</i>	sticky tofieldia	SM	TS, ONHP 3	Perennial forb/herb, coastal bogs, north of Croft Lake (T30S, R15W, Sec 11)
<i>Triglochin striata</i> (also spelled <i>striatum</i> )	three-ribbed arrow-grass	DM	TS, ONHP 3	Perennial graminoid; wetlands, saline or brackish, and coastal alkaline marshes, <10 m, flowers summer and fall, known from mud flats along New River, rare but locally common.
<b><u>Trillium angustipetalum</u></b>	Narrowpetal wakerobin	DM	AS, ONHP 2	Perennial forb/herb, moist forests, montane coniferous forest, foothill woodland, chaparral, 100 to 2,000 m, Grizzly Mtn. and Colebrook Butte (T34S, R14W, Sec 21)
<b><u>Triteleia hendersonii</u> var. <u>leachiae</u></b>	Leach's brodiaea, Leach's triteleia, and blue-striped brodiaea	DM	BS, ONHP 1	Perennial forb, rocky areas, forest edges, 2,800 ft; Sawtooth Rock, north of Soldier Camp Mountain at T35S, R13W, Sections 1 and 12; flowers April and May (possibly into July).
<b><u>Triteleia laxa</u></b>	Ithuriel's spear, common triplet lily, grassnut	SM	AS, ONHP 2	Perennial forb/herb, meadows in mixed evergreen, foothill woodland, and chaparral, 0-4,600 ft, blooms from June to August.
<b><u>Utricularia gibba</u></b>	humped bladder-wort	DM	AS, ONHP 2	Annual or perennial forb/herb, wetlands in ponds, shallow lakes, and bogs, southeast end of Lost Lake, New River ACEC.

Scientific Name	Common Name	D/S	Status	Life form, habitat, elevation, flowering time
<b><u>Utricularia minor</u></b>	lesser bladderwort	SM	AS, ONHP 2	Perennial forb/herb, wetlands, ponds, shallow lakes, sphagnum bog, east side of Outlet Creek at northwest corner of Croft Lake (private land T30S, R15W, Sec 10).
Vaccinium oxycoccos (= V. o. var. intermedium)	wild bog cranberry	SU	TS, ONHP 4	Perennial subshrub or shrub, in sphagnum bogs
Vancouveria chrysantha	golden insideout flower, yellow vancouveria	SM	TS, ONHP 4	Perennial forb/herb, dry sites in chaparral and coniferous forests, <1,500 m, known from Packsaddle Mtn. and Lemmingsworth Gulch trail.
Viola langsdorfii	Langsdorf violet, Aleutian violet	SMU	TS, ONHP 3	Perennial forb/herb, coastal and inland wetlands
<b>Viola primulifolia ssp. occidentalis</b>	Western bog violet	SM	BS, ONHP 1	Perennial forb/herb, <i>Darlingtonia</i> bogs and fens in serpentine soil, 100 to 500 m, blooms from April to occasionally June.

Part 2: Nonvascular Plants (Alphabetized by scientific name). This list includes Northwest Forest Plan Survey and Manage (S&M) non-vascular species, as updated by the 2001 S&M Annual Species Review (June 2002).

Scientific Name	Group	D/S	Status	Habitat
<i>Albatrellus avellaneus</i>	fungi	OSMU	TS, ONHP 3	hypogenous fungi in coniferous forests
<i>Amanita novinupta</i>	fungi	SMU	TS, ONHP 3	unknown
<b><u>Andreaea schofieldiana</u></b>	moss	SM	AS, ONHP 2	unknown
<i>Asterophora parasitica</i>	fungi	SMU	TS, ONHP 3	in colonies of old mushrooms, esp. <i>Russula densifolia</i>
<b><u>Bryoria pseudocapillaris</u></b>	lichen	SM	AS, ONHP 2, S&M (A)	rock or conifer bark in exposed coastal headlands
<b><u>Bryoria spiralifera</u></b>	lichen	SU	AS, ONHP 2, S&M (A)	Shore pine and Sitka spruce in coastal habitats, often with RAME
<i>Bryoria subcana</i>	lichen	SU	TS, ONHP 3	conifer and hardwood bark in coastal dune or high-precipitation montane sites (Big Creek)
<i>Buellia oidalea</i>	lichen	SM	TS, ONHP 3	bark of various shrubs, hardwoods, and conifers, maritime, less than 1 km from coastline
<i>Caloplaca stantonii</i>	lichen	SU	TS, ONHP 3	loose sandstone, coastal
<b><u>Calypogeia sphagnicola</u></b>	liverwort	SMU	AS, ONHP 2	wetlands containing sphagnum
<b><u>Cladidium bolanderia</u></b>	lichen	SM	AS, ONHP 2	unknown
<b><u>Cryptomitrium tenerum</u></b>	liverwort	SM	AS, ONHP 2	unknown
<b><u>Diplophyllum plicatum</u></b>	liverwort	DU	AS, ONHP 2	tree boles of <i>Tsuga</i> and <i>Thuja</i>
<b><u>Encalpyta brevicolla var. crumiana</u></b>	moss	SM	BS, ONHP 1	
<b><u>Erioderma solediatum</u></b>	lichen	OSU	AS, ONHP 2	Ericaceous shrubs in coastal forests
<i>Fissidens grandifrons</i>	moss	SM	TS, ONHP 3	on limestone in streams, waterfalls, and wet areas
<i>Fissidens pauperculus</i>	moss	SM	TS, ONHP 3	bare, moist soil banks, with <i>F. limbatus</i>

Scientific Name	Group	D/S	Status	Habitat
<i>Glomus radiatum</i>	fungi	SMU	TS, ONHP 3	hypogenous fungi in coniferous forests
<i>Glomus pubescens</i>	fungi	SMU	TS, ONHP 3	hypogenous fungi in coniferous forests
<i>Gymnomyces monosporus</i>	fungi	DU	TS, ONHP 3	false truffle, probably under hardwoods
<i>Helvella elastica</i>	fungi	DU	TS, ONHP 3	duff in coniferous forests
<i>Helvella maculata</i>	fungi	SU	TS, ONHP 3	duff in coniferous forests (removed from S&M)
<i>Kurzia makinoana</i>	liverwort	SU	AS, ONHP 2	unknown
<i>Lecanora caesiorubella</i> ssp. <i>merrillii</i>	lichen	SMU	TS, ONHP 3	trunks and branches of hardwoods (oak, alder, maple, and tan oak)
<b><u>Leioderma sorediatum</u></b>	lichen	OSU	AS, ONHP 2	thin moss mats on rhododendron and huckleberry branches near coast
<i>Leucogaster citrinus</i>	fungi	SM	TS, ONHP 3	hypogenous fungi in coniferous forests
<i>Limbella fryei</i>	moss	SU	SOC, BS, ONHP 1	wet rotting logs, lower trunks, and leaf litter in dense coastal swamps
<i>Niebla cephalota</i>	lichen	DMU	TS, ONHP 3	rock or bark on immediate coast, exposed sites always within sight and sound of ocean
<i>Orthodontium gracile</i>	moss	SM	AS, ONHP 2	unknown
<i>Orthodontium pellucens</i>	moss	SM	AS, ONHP 2	unknown
<i>Otidea leporina</i>	fungi	DMU	TS, ONHP 3 S&M (D)	duff in coniferous forests
<i>Phaeocollybia oregonensis</i>	fungi	DMU	TS, ONHP 3	coniferous forests
<i>Phaeocollybia radicata</i>	fungi	DMU	TS, ONHP 3	coniferous forests
<i>Platyhypnidium riparioides</i>	moss	DMU	TS, ONHP 3	on rock under or adjacent to waterfalls
<i>Pseudoleskeella serpentinensis</i>	moss	SM	AS, ONHP 2	unknown

Scientific Name	Group	D/S	Status	Habitat
Ramaria araiospora var. araispora	fungi	DMU	TS, ONHP 3, S&M (B)	coniferous forests
Rhizopogon flavofibrillosus	fungi	SM	TS, ONHP 3	unknown
Rhizopogon brunneiniger	fungi	SU	TS, ONHP 3	hypogenous fungi in coniferous forests
Sarcosoma latahense	fungi	DMU	TS, ONHP 3	coniferous forests (removed from S&M)
<b><u>Schistostega pennata</u></b>	moss	SU	AS, ONHP 2	on damp soils in dark places, such as root wads
Sigridea californica	lichen	OSMU	TS, ONHP 3	coastal
<b><u>Sulcaria badia</u></b>	lichen	OSMU	AS, ONHP 2	hardwood, conifer bark, and spruce branches, lowlands, valley fringes, and coast, 300-600 m
<b><u>Teloschistes flavicans</u></b>	lichen	DMU	AS, ONHP 2	coastal forests, shore pine/Sitka spruce
Tetraphis geniculata	moss	SU	TS, ONHP 3	rotten logs in moist, lowland to mid-elev conifer forests
<b><u>Triquetrella californica</u></b>	moss	SM	AS, ONHP 2	exposed to shaded soil, rocks or sand, coastal shore pine/Sitka spruce
Usnea hesperina	lichen	OSMU	TS, ONHP 3 (E)	coastal influenced forests
Usnea rubicunda	lichen	SMU	TS, ONHP 3	coastal influenced forests

**Survey and Manage Plants**5-Nov-02

Range/habitat fall within the

**Coos Bay District**

Revised by Jennie Sperling 11-05-02

Species	Com	D/DO	Habitat
FUNGI			
<i>Albatrellus avellaneus</i>	1B	DO	terrestrial polypore, assoc w/ pinacea fruits Oct. - Jan
<i>Albatrellus caeruleoporus</i>	1B		terrestrial polypore, assoc w/ pinacea fruits Sept.- Nov
<i>Albatrellus ellisii</i>	1B		Mycorrhizal polypore, assoc w/ old growth & mixed conifer/hdwd, coastal
<i>Arcangeliella camphorata</i>	1B	DO	subsoil sporocarp, assoc w/pinacea, esp. PSME & TSHE 200-950 m Jun-Oct
<i>Asterophora lycoperdoides</i>	1B		parasitic on mushrooms, OG forest
<i>Asterophora parasitica</i>	1B		parasitic on mushrooms, OG forest
<i>Baeospora myriadophylla</i>	1B		litter/humus
<i>Balsamia nigrens</i>	1B		subsoil, assoc w/Pinacea, esp. PSME, PIJE Perhaps Hunter Cr? Mar-Jun, Oct
<i>Boletus pulcherrimus</i>	1B		solitary, w/ABGR, PSME, LIDE3 Jul-Dec
<i>Catathelasma ventricosa</i>	1B	DO	late successional forests
<i>Chalciporus piperatus</i>	1D	D	low elevation and coastal PISI forests
<i>Chamonixia caespitosa</i>	1B		subsoil w/ PSME, TSHE, PISI coastal Jun-Nov
<i>Chromosera cyanophylla</i>	1B		litter/humus
<i>Chrysomphalina grossula</i>	1B		litter/humus
<i>Clavariadelphus ligula</i>	1B		old forest with deep duff
<i>Clavariadelphus occidentalis</i>	1B		old forest with deep duff

Species	Com	D/DO	Habitat
<i>Clavariadelphus sachalinensis</i>	1B		old forest with deep duff
<i>Clavariadelphus subfastigiatus</i>	1B		old forest with deep duff
<i>Clavariadelphus truncatus</i>	D	D	old forest with deep duff
<i>Clavulina castanopes</i> v. <i>lignicola</i>	1B		old forest with deep duff
<i>Clitocybe senilis</i>	1B		gregarious in duff, conifer forests Jul-Oct
<i>Collybia racemosa</i>	1B		parasitic on fungi, conifer forests
<i>Cordyceps capitata</i>	remov		parasitic on fungi, conifer forests <b>(Manage KS)</b>
<i>Cordyceps ophioglossoides</i>	1B		parasitic on fungi, conifer forests
<i>Cortinarius barlowensis</i>	1B		late successional forests
<i>Cortinarius cyanites</i>	1B	UV	late successional forests
<i>Cortinarius depauperatus</i>	1B		late successional forests
<i>Cortinarius olympianus</i>	1B	D	assoc w/ Pinacea Sep-Nov
<i>Cortinarius tabularis</i>	1B		late successional forests
<i>Cortinarius valgus</i>	1B		late successional forests
<i>Cudonia monticola</i>	1B	D	mature forests w/ well developed duff
<i>Cyphillostereum laeve</i>	1B		w/moss
<i>Dermocybe humboldtensis</i>	1B	DA	assoc w/ Pinaceae, Nov-Dec Irwin Rocks
<i>Destuntzia fusca</i>	1B		subsoil, w/ PSME, TSHE, LIDE3 Oct, Dec
<i>Destuntzia rubra</i>	1B	DA	subsoil w/ PSME, ABGR, LIDE3, ARME Mar-Jul, Oct, Dec
<i>Endogone oregonensis</i>	1B	D	subsoil w/PSME, TSHE, PISI, Feb, Jul, Sep, Nov
<i>Fayodia bisphaerigera</i>	1B		duff in conifer forests
<i>Galerina atkinsoniana</i>	1B		w/moss
<i>Galerina cerina</i>	1B		w/moss

Species	Com	D/DO	Habitat
<i>Galerina heterocystis</i>	1E		w/moss
<i>Galerina sphagnicola</i>	1E		w/moss
<i>Galerina vittaeformis</i>	remov		w/moss <b>(Manage KS)</b>
<i>Gastroboletus turbinatus</i>	1B		w/ PISI, TSHE
<i>Gomphus bonarii</i>	1B		late successional conifer forests
<i>Gomphus clavatus</i>	1B	D	late successional conifer forests
<i>Gomphus kauffmanii</i>	1E		late successional conifer forests
<i>Gyromitra californica</i>	1B		conifer forests
<i>Gyromitra infula</i>	remov	D	conifer forests <b>(Manage KS)</b>
<i>Gyromitra meloaleuroides</i>	remov		conifer forests <b>(Manage KS)</b>
<i>Helvella elastica</i>	1B	D	gregarious on soil under conifers May-Dec
<i>Hydropus marginellus</i>	1B		litter & duff
<i>Hygrophorus karstenii</i>	1B		late successional forests
<i>Hypomyces luteovirens</i>	1B		parasitic on fungi, conifer forests
<i>Leucogaster citrinus</i>	1B	DO	subsoil w/ PICO, PSME, TSHE Aug-Nov >280m
<i>Leucogaster microsporus</i>	1B	DO	subsoil w/ PSME, TSHE Aug-Nov >300m
<i>Macowanites chlorinosmus</i>	1B	DO	w/PISI, PSME Jan, Jul-Nov <200 m
<i>Mycena monticola</i>	remov		Litter/humus <b>(Manage KS)</b>
<i>Mycena quinaultensis</i>	1B		gregarious on senescent needles May-Dec
<i>Mycena tenax</i>	1B		litter/humus
<i>Mythicomycetes corneipes</i>	1B		litter/humus
<i>Neolentinus kauffmanii</i>	1B	DO	saprophytic on PISI, fruits all year
<i>Omphalina ericetorum</i>	1B		lichenized mushroom on decorticate wood
<i>Otidea leporina</i>	D	D	w/ PSME, TSHE Oct-Dec
<i>Otidea smithii</i>	1B		On exposed soil, moss or duff under POTR, PSME, TSHE Aug-Dec

<b>Species</b>	<b>Com</b>	<b>D/DO</b>	<b>Habitat</b>
<i>Phaeocollybia attenuata</i>	1B	D	moist low elevation coniferous forests
<i>Phaeocollybia californica</i>	1B	D	w/PISI, PSME, TSHE Mar, May, Oct, Nov
<i>Phaeocollybia dissilens</i>	1B	D	w/PISI, PSME, TSHE Oct-Nov
<i>Phaeocollybia fallax</i>	1D	D	moist low elevation coniferous forests
<i>Phaeocollybia kauffmanii</i>	1D	D	w/PISI, PSME, TSHE Sep-Jan
<i>Phaeocollybia olivacea</i>	F	D	moist low elevation coniferous forests
<i>Phaeocollybia oregonensis</i>	1B	D	w/ PSME, TSHE Oct-Nov
<i>Phaeocollybia picea</i>	1B	DA	w/ PSME, TSHE Oct-Nov
<i>Phaeocollybia pseudofestiva</i>	1B	D	moist low elevation coniferous forests
<i>Phaeocollybia scatesiae</i>	1B	DO	w/ PISI & Vaccinium
<i>Phaeocollybia sipei</i>	1B	D	w/ PSME, TSHE Oct-Nov
<i>Phaeocollybia spadicea</i>	1B		moist low elevation coniferous forests
<i>Phellodon atratus</i>	1B		w/ conifers and hardwoods
<i>Pholiota albivelata</i>	1B	DO	fallen conifer branches, debris Apr-Jan
<i>Podostroma alutaceum</i>	1B		saprobic on wood fragments in conifer duff
<i>Pseudaleuria quinaultiana</i>	1B		disturbed microsites in OG forests w/ PISI, PSME, TSHE
<i>Ramaria abietina</i>	1B		litter/humus w/ Pinaceae
<i>Ramaria araiospora</i>	1B	D	w/ Abies, PSME, TSHE Oct-Nov
<i>Ramaria aurantiiscescens</i>	1B		w/ Abies, PSME, TSHE Oct
<i>Ramaria celerivirescens</i>	1B	D	w/ Abies, PSME, TSHE Oct-Nov
<i>Ramaria concolor</i> f. <i>tsugina</i>	1B	UV	litter/humus w/ Pinaceae
<i>Ramaria conjunctipes</i> v. <i>sparsiramosa</i>	1B		litter/humus w/ Pinaceae
<i>Ramaria coulterae</i>	1B		litter/humus w/ Pinaceae
<i>Ramaria cyaneigranosa</i>	1B	D	w/ Abies, PSME, TSHE Oct-Nov
<i>Ramaria gelatiniaurantia</i>	1B	D	w/ Abies, PSME, TSHE Oct-Nov

<b>Species</b>	<b>Com</b>	<b>D/DO</b>	<b>Habitat</b>
Ramaria gracilis	1B		w/ Abies, PSME, TSHE Oct-Nov
Ramaria rainierensis	1B	D	w/ Abies, PSME, TSHE Dec, Mar
Ramaria rubella v blanda	1B		on wood in conifer forests Oct
Ramaria rubribrunnescens	1B	DA	w/ Pinacea Oct-Nov
Ramaria rubrievanescens	1B	D	w/ Pinacea Jun, Sep-Oct
Ramaria rubripermanens	D	DA	w/ Pinacea Jun, Oct
Ramaria stuntzii	1B	D	w/ Pinacea Oct-Nov
Ramaria suecica	1B		litter/humus w/ Pinaceae
Ramaria verlotensis	1B	DA	w/ Pinaceae Nov
Rickenella swartzii	1B		on moss
Russula mustelina	1B		late successional forests
Sarcodon fuscoindiscus	1B		conifer stands & mixed coastal hardwoods
Sowerbyella rhenana	1B	DA	groups in duff of moist, relatively undisturbed older conifer forests. One under LIDE3 Oct-Dec
Sparassis crispa	1D	D	Large old conifers
Spathularia flavida	1B		mature forests w/ well developed duff layer
Stagnicola perplexa	1B		litter/humus
Thaxterogaster pavelekii	1B		subsoil w/ PISI & PICO coastal Mar-Jun, Nov
Thaxterogaster pingue	1B	DA	subsoil in Siskiyou
Tremiscus helvelloides	D	D	Riparian, esp. in the cours of intermittent streams and adjacent to permanent streams
Tuber asa	1B		w/ PSME , TSHE 170-500m Jul, Oct
Tuber pacificum	1B	DA	w/ PSME, TSHE 235m Feb, Jun, Jul
Tylopilus porphyrosporus	1D	D	duff or decomposed logs w/ PISI, PSME Aug-Dec

Species	Com	D/DO	Habitat
LICHENS			
<u>Bryoria pseudocapillaris</u>	A-04	D	exposed trees, esp. PISI & PICO and shrubs on coastal windswept dunes and rocky headlands at or near seal level within 3 km of ocean (MR)
<i>Bryoria spiralifera</i>	A-04	DO	exposed trees, esp. PISI & PICO and shrubs on coastal windswept dunes and rocky headlands at or near seal level within 3 km of ocean (MR)
<i>Bryoria subcana</i>	1B	DO UV	Bark and wood of conifers in forests of coastal bays, streams, dune forests, and high precipitation ridges and summits within 30 miles of the ocean (MR)
<u>Bryoria tortuosa</u>	1A		trees in well-lit, open stands, most frequently on oaks and pines (MR)
<i>Buellia oidalea</i>	1E	DO	On bark and wood on a wide variety of trees and shrubs, from sea level to 200 ft, within 3 km of ocean. (MR)
<i>Calicium abietinum</i>	1B		On decorticate wood of conifers and deciduous trees, esp. oak, in open situations. Also decort Fraxinus and Abies spp. (calicium study)
<i>Calicium glaucellum</i>	1F		old ecorticate wood of live conifers and hard snags, inc. PIPO, PSME, THPL, PISI. Also on dead lignum of deciduous trees, incl. Quercus. Tolerant of low humidity, often on very dry wood. Most sites are near ponds or from old forests with high hardwood densities, indicating exposed conditions (calicium study)
<i>Calicium viride</i>	1F	DO	on conifer and hdwd branches. Esp. on bark of OG trees, but also hard decorticate snags.
<i>Cetrelia cetrarioides</i>	1E	D	moist riparian and valley bottoms, esp. older ALRU stands over seepy or swampy ground
<i>Chaenotheca ferruginea</i>	1B		trunks of conifers in old boreal forests (3&4)

Species	Com	D/DO	Habitat
<i>Chaenotheca furfuracea</i>	1F	DO	Moist, shaded situations, generally under overhanging branches, near tree bases. Very shade tolerant. Decorticated trunks of conifers, thin rootlets of fallen conifers, and occ. on shaded rocks. (3&4)
<i>Chaenothecopsis pusilla</i>	1E		Lignen of conifers (3&4)
<i>Cladonia norvegica</i>	1B	DA	on rotten wood and tree bases in humid forests (Lincoln City - coastal) mostly cascades
<i>Dendriscoaulon intricatum</i>	1E		Mossy tree trunks between 1640-2100' elev. in humid forests. <b>(Manage KS)</b>
<i>Dermatocarpon luridum</i>	1E		Fresh water aquatic on rocks. Seepy terraces, slopes and riparian edges with ALRU, PSME, TSHE and Acer spp. and granite rocks on stream edge. Elev. 1000-4400 feet.
<i>Heterodermia sitchensis</i>	1E		On trees on immediate coast
<i>Hypogymnia duplicata</i>	1A	DO	moist hemlock stands, moss covered basalt outcrops and snags in bogs, primarily between 1100-5450 ft. (MR)
<i>Hypotrachyna revoluta</i>	1E		Coastal, on trees and rocks
<i>Leptogium cyanescens</i>	1A	S	On bark, rotten logs, and rocks in W. Hemlock/Pac. Silver fir zones from 1400-4600'elv. In mxd stands.
<i>Leptogium burnetia</i> var. <i>hirsutum</i>	1E	S	On mossy rocks.
<i>Leptogium rivale</i>	1E	S	Aquatic, on rocks submerged in or next to 1250-3200' streams in old growth PSME /mixed conifer forests.
<i>Lobaria linita</i>	1A		mature to OG forests, oak forests with rock outcrops, late-mature tanoak and madrone forests. btwn 1800-6700 elevation (MR)
<i>Nephroma occultum</i>	A-04		Old growth PSME forests (W. Cascades) at 1000-3100' elev.

Species	Com	D/DO	Habitat
<i>Niebla cephalota</i>	1A	D	exposed PISI, SIHO, PICO in open forests, edges and scrublands along windswept coastal headlands, sand dunes, stabilized deflation plains, and marshy swales of the immediate coast (MR)
<i>Pannaria rubiginosa</i>	1E	DO	PSME/TSHE forests, OG PISI, THPL and shrub thickets of willow and ericaceous shrubs in the dune and deflation plain habitat where it its epiphytic on Hooker's willow. 50-1600 ft. (MR)
<i>Pannaria saubinetii</i> ( <i>Fuscopannaria saubinetii</i> )	1F	D	Moist or wet forests, in deep shade to somewhat open sites, low to mid elevation
<i>Peltigera pacifica</i>	1E	D	Riparian forests/hardwood stands in moist forests at low to mid-elevation.
<i>Platismatia lacunosa</i>	1C	D	ALRU bark in low-elev riparian corridors, ass w/ METE7, migrating up river drainages
<i>Psuedocyphellaria</i> sp. 1 (proposed new name: <i>P.perpetua</i> )	1B	DA	conifer litter in riparian OG PSME, PISI, TSHE on immediate coast, and on shaded branches of bristly manzanita in an unspecified shrub community on stabilized sand dunes
<i>Psuedocyphellaria rainierensis</i>	1A		conifer trees in OG TSHE forests, 330-4000 ft. (MR)
<i>Pyrrhospora quernea</i>	1E	DO	Hypermaritime habitats within a few km of ocean, incl. near estuaries, on stabilized dunes, and rocky coastal headlands. PISI & PICO in OG, also on oaks alder elderberry and other coastal shrubs, and on old board fences and other wood. May be on sandstone (MR)
<i>Ramalina pollinaria</i>	1E	D	bark and wood, low elevation swamps, (Zwagg Island - disjunct)
<i>Ramalina thrausta</i>	1A		Low OG PSME and conifer forests on immediate coast
<i>Stenocybe clavata</i>	1E	DO	Bark of PSME

Species	Com	D/DO	Habitat
<i>Teloschistes flavicans</i>	1A	D	forest headlands and junces of the coastal fog belt, esp. on capes or peninsulas. On exposed branches, twigs and boles of PISI, PICO and stems of Hooker's will in old stands (MR)
<i>Usnea hesperina</i>	1E	DO	coniferous trees and hardwood shrubs in forested and shrubby habitats of the coastal fog belt. All known sites are within 3 miles of ocean. Some old trees or shrubs are present at all sites. Sites are exposed such as a forest headland or ridge, or have exposed microhabitats (MR)
<i>Usnea longissima</i>	1F	D	Bark & wood, PISI, PIMU, PSME or various shrubs, coastal headlands
<b>BRYOPHYTES</b>			
<i>Diplophyllum albicans</i>	F	D	on lower tree trunks, rotten wood and humic soil and on seepy rock surfaces (MR)
<i>Diplophyllum plicatum</i>	1B	D	near riparian areas, usually on THPL boles
<i>Encalyptra brevicolla</i> v. <i>crumiana</i>	1B	DA	moist protected microsites on rock outcrops, in exposed sites, OR is foggy ridgeline in shade (MR)
<i>Herbertus aduncus</i>	1E		Exposed rocks that are wet most of year.
<i>Kurzia makinoana</i>	1B		in forested and bog sites on decaying wood or humus. Also on rocky cliffs, ledges and soil banks
<i>Racomitrium aquaticum</i>	E	S	Moist rocks and boulders in and near streams, springs, waterfalls, on cliff faces and rock outcrops. Elv:2-6K'
<i>Rhizonium nudum</i>	B	S	On damp forest soil, humus, and along creek beds.
<i>Schistostega pennata</i>	1A		mineral soil in shaded pockets of rootwads, attached to rock or soil around entrance of caves & animal burrow (SP)

Species	Com	D/DO	Habitat
Tetraphis geniculata	1A		on well rotted logs and stumps, often on cut ends (SP)
<b>VASCULAR PLANTS</b>			
Cypripedium fasciculatum	1C		Klamath Mtn. Province, on any parent material, including serpentine, dry or damp, rocky to loamy, 60-100% shade, mixed evergreen, mixed conifer, old stream terraces (MR)

D: Documented on district lands

DO: Documented within district boundaries on other land

DA: Documented in an adjacent district

UV: unverified report

MR: info taken from management recommendations

SP: Survey Protocols

3&4: info taken from “Federal Survey and Manage Lichens withing Range of the NSO and Illustrated Synopsis of Strategy 3 & 4 Lichens ...”

Manage KS: Manage existing known sites even though removed from Survey and Manage list (2001 Annual Species Review)

A-04: Although the category has changed to pre-disturbance surveys required (2001 Annual Species Review), surveys are not required till the protocols are written by Sept. 2003 and made effective by March 2004.

Remov: Removed from the list of further specimens to be surveyed but known sites need to be managed according to the buffer protocol.