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# North Fork Silver Creek Research Natural Area: Guidebook Supplement 47

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Front cover. North Fork Silver Creek Research Natural Area (RNA). Looking north across north-facing slope into North Fork Silver Creek (low-elevation ravine). Forest edge (midrange) is RNA boundary.

## Abstract

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This guidebook describes major biological and physical attributes of the 243-ha (600-ac) North Fork Silver Creek Research Natural Area (RNA), Josephine County, Oregon. Chosen to represent the diversity of shrub species that occur in the western Siskiyou Mountains on non-serpentine metamorphic bedrock, the RNA supports manzanita (*Arctostaphylos* spp.), giant chinquapin (*Chrysolepis chrysophylla*), deer oak (*Quercus sadleriana*), Sierra laurel (*Leucothoe davisiae*), Pacific rhododendron (*Rhododendron macrophyllum*), and salal (*Gaultheria shallon*). The site was also designated to represent examples of two forest types present on non-serpentine soils in southwestern Oregon: (1) Port Orford cedar-western hemlock (*Chamaecyparis lawsoniana*-*Tsuga heterophylla*) with Sierra laurel and western swordfern (*Polystichum munitum*); and (2) white fir/Cascade barberry (*Abies concolor*/*Berberis nervosa*) forest with longtube twinflower (*Linnaea borealis*) and sweet after death (*Achlys triphylla*).

Keywords: Research natural area, area of critical environmental concern, conifer diversity, shrub diversity, manzanita (*Arctostaphylos* spp.), giant chinquapin (*Chrysolepis chrysophylla*), Sadler oak (*Quercus sadleriana*), Sierra laurel (*Leucothoe davisiae*), Pacific rhododendron (*Rhododendron macrophyllum*), salal (*Gaultheria shallon*), Port Orford cedar (*Chamaecyparis lawsoniana*), western hemlock (*Tsuga heterophylla*), white fir (*Abies concolor*), Douglas-fir (*Pseudotsuga menziesii*).

## Preface

The research natural area (RNA) described in this supplement<sup>1</sup> is administered by the Medford District, Bureau of Land Management (BLM), U.S. Department of the Interior.

North Fork Silver Creek RNA is part of a federal system<sup>2</sup> of natural areas established for research and educational purposes.<sup>3</sup> Of the 183 federal RNAs established in Oregon and Washington, 45 are described in *Federal Research Natural Areas in Oregon and Washington: a Guidebook for Scientists and Educators* (see footnote 1). This report is a supplement to the guidebook.

Each RNA is a site where elements<sup>4</sup> are protected or managed for scientific purposes and natural processes are allowed to dominate. The objectives for establishing RNAs are to:

- Maintain a wide spectrum of high-quality areas that represent the major forms of variability found in forest, shrubland, grassland, alpine, and natural situations that have scientific interest and importance that, in combination, form a national network of ecological areas for research, education, and maintenance of biological diversity.
- Preserve and maintain genetic diversity, including threatened, endangered, and sensitive species.
- Protect against human-caused environmental disruptions.
- Serve as reference areas for the study of natural ecological processes, including disturbance.

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<sup>1</sup> Supplement No. 43 to Franklin, J.F.; Hall, F.C.; Dyrness, C.T.; Maser, C. 1972. *Federal research natural areas in Oregon and Washington: a guidebook for scientists and educators*. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station. 498 p.

<sup>2</sup> Six federal agencies cooperate in this program in the Pacific Northwest: U.S. Department of the Interior, Bureau of Land Management, Fish and Wildlife Service, and National Park Service; U.S. Department of Agriculture, Forest Service; U.S. Department of Energy; and U.S. Department of Defense. In addition, the federal agencies cooperate with state agencies and private organizations in Oregon and Washington in the Pacific Northwest Interagency Natural Area Committee.

<sup>3</sup> See Wilson et al. (2009) for a more complete discussion of rationale for establishment of research natural areas.

<sup>4</sup> Elements are the basic units to be represented in a natural area system. An element may be an ecosystem, community, habitat, or organism. Taken from Dyrness, C.T.; Franklin, J.F.; Maser, C.; Cook, S.A.; Hall, J.D.; Faxon, G. 1975. *Research natural area needs in the Pacific Northwest: a contribution to land-use planning*. Gen. Tech. Rep. PNW-38. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station. 231 p.

- Provide onsite and extension educational activities.
- Serve as baseline areas for measuring long-term ecological changes.
- Serve as control areas for comparing results from manipulative research.
- Monitor effects of resource management techniques and practices.

The guiding principle in managing RNAs is to maintain natural ecological processes or conditions for which the site is designated. Activities that impair scientific or educational values are not permitted within RNAs. Management practices necessary to maintain or restore ecosystems may be allowed.<sup>5</sup>

Federal RNAs provide a unique system of publicly owned and protected examples of relatively unmodified ecosystems where scientists can conduct research with minimal interference and reasonable assurance that investments in long-term studies will not be lost to logging, land development, or similar activities. Scientists and educators wishing to visit or use North Fork Silver Creek RNA for scientific or educational purposes should contact the Medford BLM district office manager in advance and provide information about research or educational objectives, sampling procedures, and other prospective activities. Research projects, educational visits, and collection of specimens from the RNA all require prior approval. There may be limitations on research or educational activities.

A scientist or educator wishing to use the RNA is obligated to:

- Obtain permission from the appropriate administering agency before using the area (see footnote 2)
- Abide by the administering agency's regulations governing use, including specific limitations on the type of research, sampling methods, and other procedures.
- Inform the administering agency on progress of the research, published results, and disposition of collected materials.

The purpose of this approval process is to:

- Ensure that the ecological integrity and scientific and educational values of the RNA are not compromised.
- Provide information to scientists about other research occurring on the RNA so that potential collaborations may be fostered and conflicts avoided.

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<sup>5</sup> Wilson, T.M.; Schuller, R.; Holmes, R.; Pavola, C.; Fimbel, R.A.; McCain, C.N.; Gamon, J.G.; Speaks, P.; Seevers, J.I.; DeMeo, T.E.; Gibbons, S. 2009. Interagency strategy for the Pacific Northwest Natural Areas Network. Gen. Tech. Rep. PNW-GTR-798. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 33 p.

- Maintain records of research activities and research results to benefit the BLM, other agencies, and future researchers.

Appropriate uses of RNAs are determined by the administering agency. Destructive analysis of vegetation is generally not allowed, nor are studies requiring extensive substrate modification such as extensive soil excavation. Collection of plant and animal specimens is generally restricted to voucher specimens or approved research activities. Under no circumstances may collecting significantly reduce species populations. Collecting must also be carried out in accordance with all other federal and state agency regulations.

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## Introduction

North Fork Silver Creek Research Natural Area (RNA) is located approximately 40 km (25 mi) west-northwest of Grants Pass in Josephine County, Oregon. The 243-ha (600-ac) site was established as an Area of Critical Environmental Concern/RNA in 1995. This management designation was subsequently reaffirmed in the Medford District Resource Management Plan (Federal Register 1995, USDI BLM 1995).

The RNA has been established because it supports examples of two forest communities on non-serpentine soils (e.g., gabbro) within the Siskiyou Mountains (Klamath Mountains ecoregion): (1) Port Orford cedar-western hemlock (*Chamaecyparis lawsoniana*-*Tsuga heterophylla*) with Sierra laurel (*Leuocothoe davisii*), and western swordfern (*Polystichum munitum*); and (2) white fir/Cascade barberry (*Abies concolor*/*Berberis nervosa*) moderately dry site forest with long-tube twinflower (*Linnaea borealis* var. *longiflora*) and sweet after death (*Achlys triphylla*) (ONHAC 2010). Additionally, conifer and shrub diversity are high, and include paleo-endemics such as Brewer spruce (*Picea breweriana*) and deer oak (*Quercus sadleriana*). The site also appears to be a stronghold for Sierra laurel, a special-status species (USDI BLM 2004).

## Access and Accommodations

The RNA is located in sections 15 and 16, Township 35 South, R 9 West, Willamette Meridian, in Josephine County, Oregon. To access the area from Interstate 5 north of Grants Pass, Oregon, take the Merlin exit # 61 and head west on Merlin Road through the town of Merlin, Oregon. From this point, the road turns into Galice Road. At 23.8 km (14.8 mi) from Interstate 5, turn left onto road # 34-8-36.0. This turn is also marked at the road to Gold Beach, and it occurs just after passing over a bridge. Continue on paved road 34-8-36.0. At 38.5 km (23.9 mi), stay on road marked to Gold Beach. At 39.4 km (24.5 mi), go left downhill on 35-9-1.0 (paved). To access the upper slopes of North Fork Silver Creek RNA, turn left at 42.8 km (26.6 mi) and cross over creek and proceed uphill. To access lower elevations within the RNA, continue east along the North Fork of Silver Creek for an additional 1.3 km (0.8 mi) (fig. 1).

Prior to visiting the site, obtain permission to access the area for research or educational purposes at the Bureau of Land Management (BLM), Medford District office in Medford, Oregon. Maps and additional directions to the area are available at this office. Lodging is available in Grants Pass, Oregon.

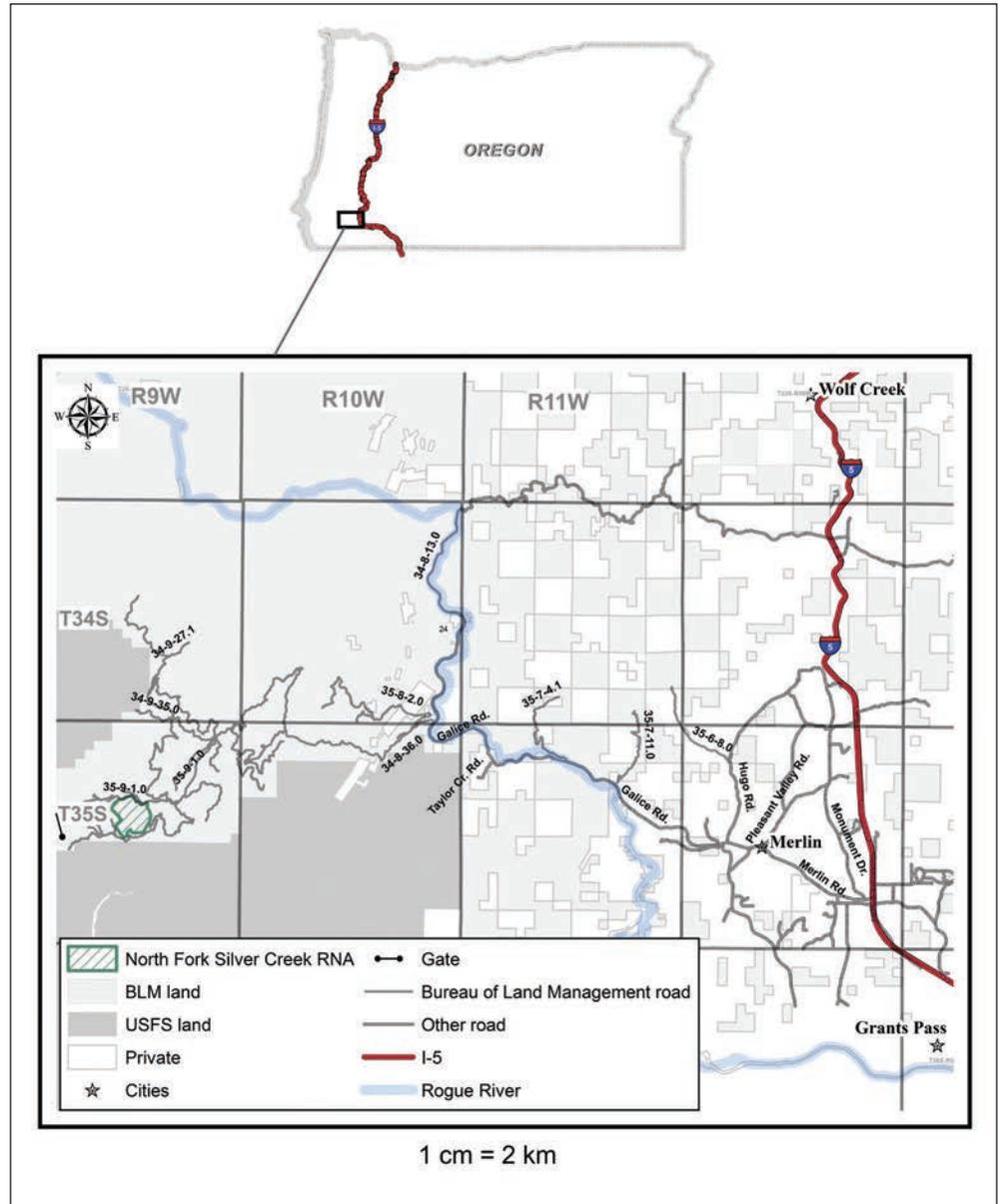


Figure 1—North Fork Silver Creek Research Natural Area location and access.

## Environment

The RNA is situated within the Silver Creek drainage basin in the central Siskiyou Mountains of southwestern Oregon (USDI BLM 2011, ONHAC 2010). Elevations within the RNA range from about 730 m (2,395 ft) adjacent to North Fork Silver Creek on the north boundary to 1200 m (3,937 ft) on the upper slopes of the south boundary. The generally north-facing slopes are incised by three intermittent streams, which originate within the RNA providing 1<sup>st</sup>- and 2<sup>nd</sup>-order stream reaches, which flow into the North Fork Silver Creek, a 3<sup>rd</sup>-order stream. The micro

topography formed by side slopes of the streams provides east- and west-facing side canyons (fig. 2). The steep, rugged terrain is typical of many areas within the Siskiyou Mountains (USDI BLM 2004).

Bedrock geology in the area occurs as a broad north-south band, which is composed primarily of intrusive metamorphosed volcanic rocks. This band was consolidated through plate tectonic activity from the early to late Jurassic period (approximately 150 to 190 million years ago) (OR DOGAMI 1979).

The Beekman and Vermisa soil series predominate throughout the RNA. Beekman series soils are moderately deep, well-drained soils that formed in colluvium weathered from altered sedimentary and extensive igneous rocks. The Vermisa series consists of shallow, somewhat excessively drained soils that formed in colluvium and residuum weathered from metasedimentary or metavolcanic rocks. Vermisa soils are on mountain side slopes and canyon walls. The two series often occur together as a complex within the North Fork Silver Creek RNA (USDA NRCS 2013b).

## **Climate**

The North Fork Silver Creek watershed has a marine-influenced Mediterranean climate with cool, wet winters and warm, dry summers. From late fall through spring, unstable low-pressure air masses from the Pacific Ocean bring frequent storms, sometimes accompanied by high winds. During the summer, stable high-pressure air masses bring generally clear skies and temperature inversions. Temperatures are modified by proximity to the Pacific Ocean—in winter by its warming influence, and in summer by its cooling influence (USDI BLM 2004).

The precipitation is in the form of rain and snow. About 95 percent of the Silver Creek watershed is in the transient snow zone where snowpacks accumulate and melt throughout the winter in response to alternating cold and warm fronts. Average annual precipitation in the watershed is highly variable, ranging between about 1371 and 3048 mm (54 and 120 in) with the average amounts increasing from east to west (USDI BLM 2004).

The nearest weather station with climate data roughly comparable to the RNA is in Illahe, Oregon (354133), located about 67 km (40 mi) northwest of the RNA (table 1). Here, extended periods of cloudiness and heavy periods of precipitation occur during the winter. About 80 percent of average annual precipitation falls from November through March. Annual precipitation occurs as a mixture of rain and snow, averaging 208 cm (82 in) per year. Six percent of the average annual precipitation falls from May through August (WRCC 2013). Precipitation is likely 10

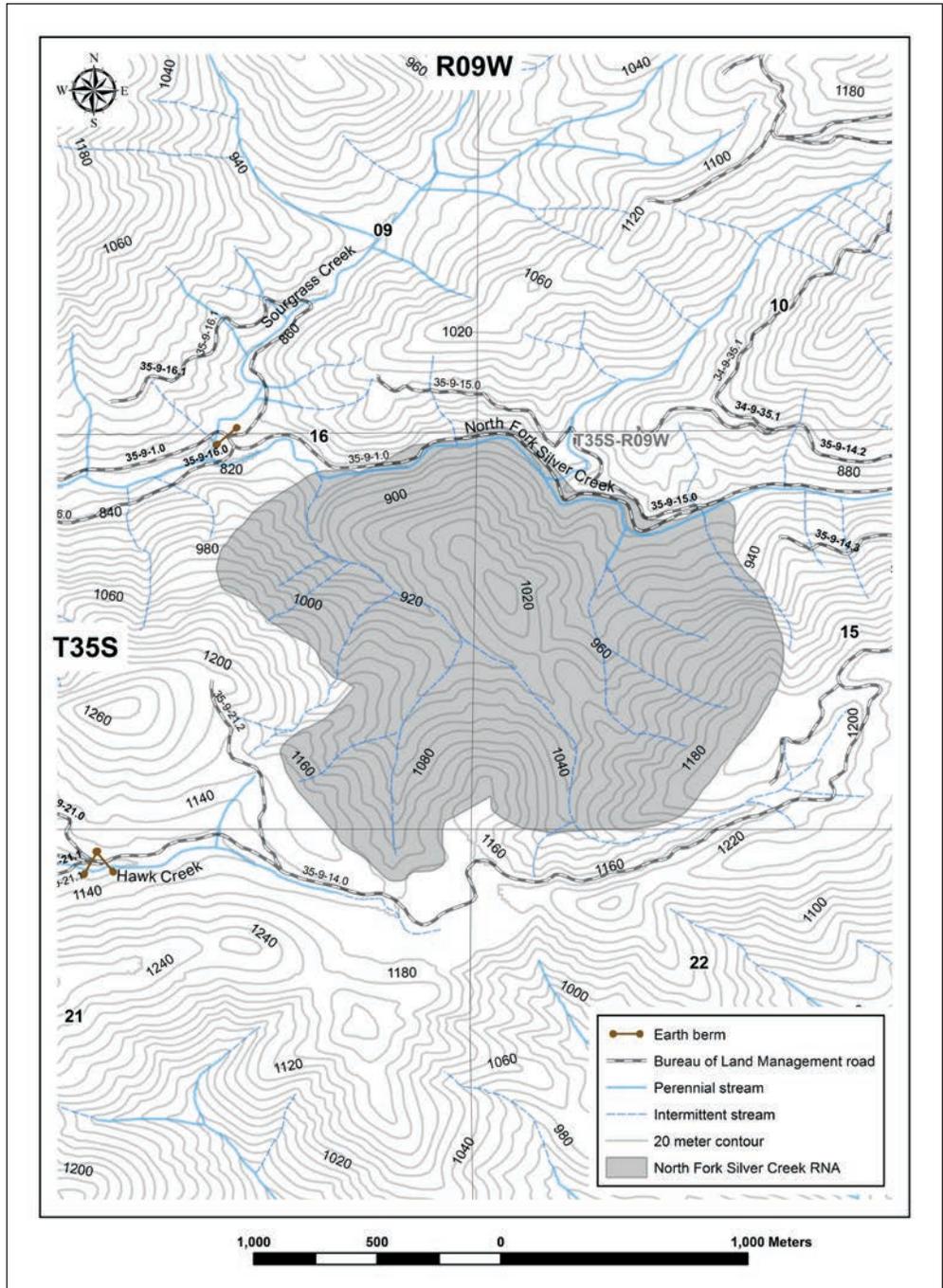


Figure 2—North Fork Silver Creek Research Natural Area topography, elevation, hydrology, and boundary.

**Table 1—Temperature and precipitation summary, (354133)  
10/1/1938 to 6/30/2007—Illahe, Oregon**

Average minimum January temperature	2.2 °C (36.0 °F)
Average maximum January temperature	9.4 °C (48.9 °F)
Average minimum July temperature	11.7 °C (52.1 °F)
Average maximum July temperature	31.1°C (88.0 °F)
Average annual precipitation	2080 mm (81.90 in)
Average June–August precipitation	58 mm (2.28 in)
Average annual snowfall	272 mm (10.70 in)

to 20 percent higher within the RNA than the Illahe weather station data indicate. Snowfall occurs predominantly from December through March. Table 1 provides an approximation of precipitation and temperature regimes affecting the RNA.

## Vegetation

Represented on the site is a diversity of shrub species that occur in the western Siskiyou Mountains on non-serpentine, igneous and meta-igneous bedrock (gabbro). The RNA supports manzanita (*Arctostaphylos* spp.), giant chinquapin (*Chrysolepis chrysophylla*), deer oak, Pacific rhododendron (*Rhododendron macrophyllum*), and salal (*Gaultheria shallon*). Red alder (*Alnus rubra*) dominates the lower riparian zone but is replaced by coniferous forest on the upper reaches. This forest contains Port Orford cedar (*Cupressus lawsoniana*) and Douglas-fir (*Pseudotsuga menziesii*) in the moist draw with salal, deer oak, and Pacific rhododendron in the understory. Upslope forests comprise white fir and western hemlock with sporadic red huckleberry (*Vaccinium parviflora*) and tanoak (*Notholithocarpus densiflorus*). Upper slopes are more xeric, and support 150-year-old Douglas-fir, sugar pine (*Pinus lambertiana*), and ponderosa pine (*Pinus ponderosa*), with white fir regeneration in the understory. Knobcone pine (*Pinus attenuata*) is scattered at upper elevations and occupies previously burned sites.

Existing vegetation within the North Fork Silver Creek RNA can be identified as community types using current vegetation. Community type names follow those identified in *Field Guide to the Plant Associations of Southwestern Oregon* (Atzet et al. 1996) or are compared to types described by them. Atzet et al. (1996) classify plant associations using current vegetation to identify potential natural vegetation that would be present under climax conditions. Stands within the RNA are not in climax condition, owing in large part to recent natural disturbances such as wildfire

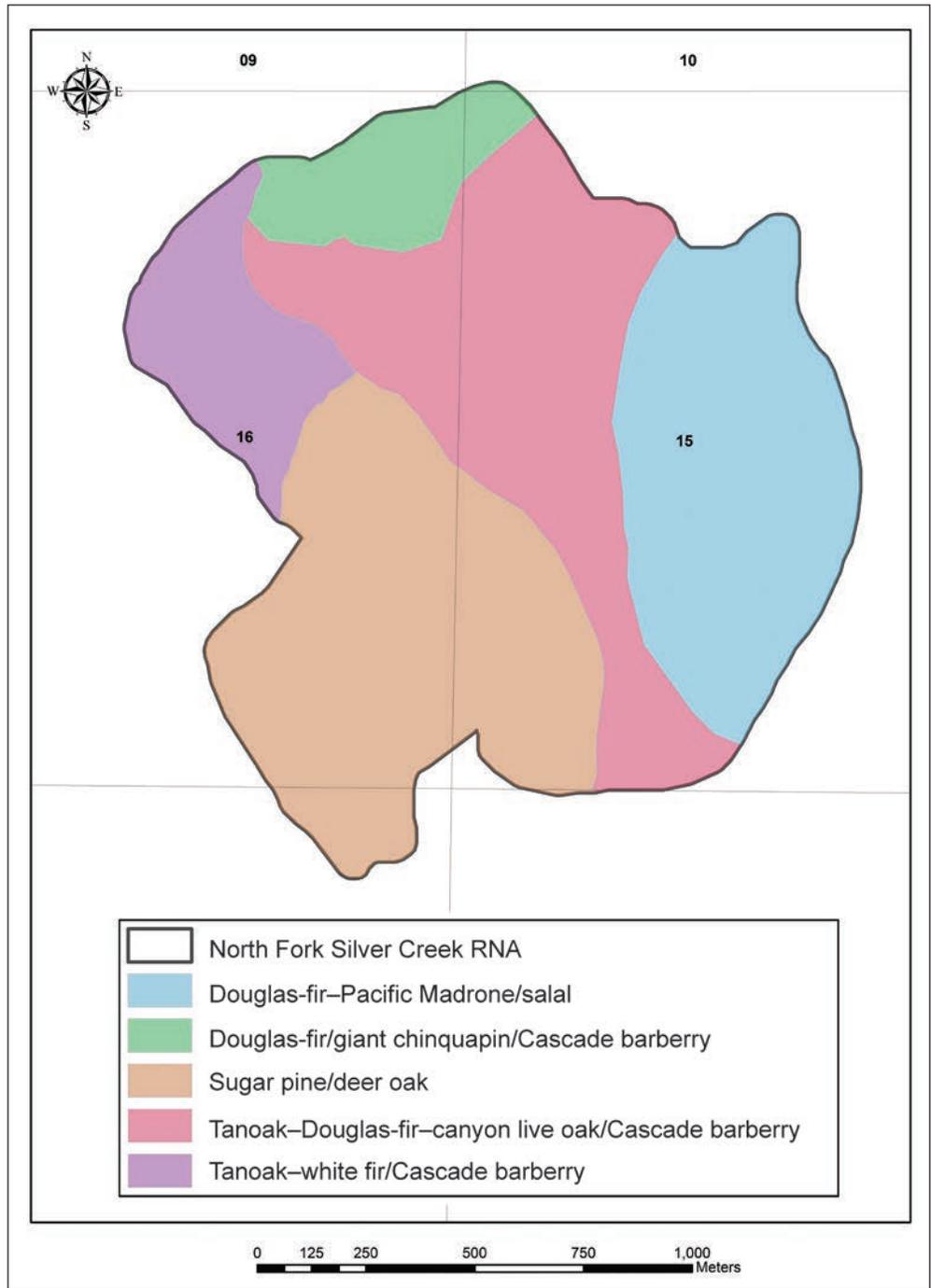


Figure 3—Plant communities of North Fork Silver Creek Research Natural Area (RNA).

(see “Disturbance History” section). Plant community type descriptions (Lawrence and Kaye 2003) and distribution within the RNA (fig. 3) follow.

The tanoak-white fir/Cascade barberry community predominates on northeast aspects at lower elevation within the RNA. The overstory is dominated by Douglas-fir (*Pseudotsuga menziesii*) with about 50 percent canopy cover, and with lesser amounts of white fir, Brewer spruce, and western yew (*Taxus brevifolia*). Giant chinquapin and canyon live oak are present in the subcanopy. The shrub layer is dominated by tanoak and Cascade barberry. Other shrubs present include salal, deer oak, Pacific rhododendron, dwarf rose (*Rosa gymnocarpa*), thimbleberry (*Rubus parviflorus*), common whipplea (*Whipplea modesta*), and Oregon boxleaf (*Paxistima myrsinites*). The herbaceous layer is comprised of sweet after death, dogbane (*Apocynum androsaemifolium*), pipsissewa (*Chimaphila umbellata*), drops-of-gold (*Prosartes hookeri*), yellowleaf iris (*Iris chrysophylla*), longtube twinflower, whiteveined wintergreen (*Pyrola picta*), broadleaf starflower (*Trientalis borealis* ssp. *latifolia*), Pacific trillium (*Trillium ovatum*), and western rattlesnake plantain (*Goodyera oblongifolia*). Species richness within this community is 31 in the RNA. This community type is very similar to that described by Atzet et al. (1996) as tanoak/white fir/Cascade barberry, but differs in lacking incense cedar (*Calocedrus decurrens*) in the overstory (Lawrence and Kaye 2003).

Douglas-fir/giant chinquapin/Cascade barberry is a steep northwest-facing community with a slope of 60 to 88 percent and occupies the northern portion of the RNA. Douglas-fir dominates the canopy with about 80 percent cover, while sugar pine contributes about 10 percent cover to the overstory. Other conifers scattered throughout the community include grand fir (*Abies grandis*), western white pine (*Pinus monticola*), and western hemlock. Giant chinquapin is the dominant subcanopy hardwood, and Pacific madrone is scattered throughout. The shrub layer is diverse and is represented by Cascade barberry, salal, tanoak, deer oak, Pacific madrone, dwarf rose, California dewberry (*Rubus ursinus*), common snowberry (*Symphoricarpos albus*), red huckleberry (*Vaccinium parviflorum*), bearbrush (*Garrya fremontii*), California coffeeberry (*Rhamnus californica* ssp. *occidentalis*), and common whipplea. The total species richness for this community in the North Fork Silver Creek RNA is 43, which differs from Atzet et al.’s (1996) average species richness for the community type of 28, primarily owing to a more diverse tree and shrub community (Lawrence and Kaye 2003).

A sugar pine/deer oak community type occupies several different aspects, including northwest- and northeast-facing slopes. A forked drainage with a diverse array of plant life runs through this community but is classified as a riparian association. The sugar pine/deer oak community type is rich in diversity with 57 different

vascular plants present. It is topographically situated on the upper half of the RNA, ranging in elevation from 951 to 1170 m (3,120 to 3,840 ft), and occupies several different aspects. Sugar pine is an overstory dominant in this community, while deer oak contributes the greatest amount of cover (20 percent) to the shrub layer (fig. 4). Although sugar pine is the most prevalent tree, other tree species contribute to the diverse canopy, including white fir, grand fir, noble fir (*Abies procera*), Port Orford cedar, knobcone pine (*Pinus attenuata*), ponderosa pine, Douglas-fir, and western hemlock. Canyon live oak is the primary understory hardwood. Common shrubs within the community include Pacific madrone, Waldo manzanita (*Arctostaphylos cinerea*), Eastwood's manzanita (*A. glandulosa*), and pinemat manzanita (*A. nevadensis*); Cascade barberry; western teaberry (*Gaultheria ovatifolia*), bearbrush; tanoak; deer oak; California coffeeberry; Pacific rhododendron; and red huckleberry. Typical herbaceous species include sugar stick (*Allotropa virgata*) (fig. 5), dogbane, Klamath arnica (*Arnica spathulifolia*), pipsissewa, drops-of-gold, elegant piperia (*Piperia elegans*), yellowleaf iris, longtube twinflower, whiteveined wintergreen, sanicle (*Sanicula* sp.), snowplant (*Sarcodes sanguinea*), and common beargrass (Lawrence and Kaye 2003). Long-term vegetation monitoring plots were established in this community in 2012 (Schuller et al. 2012).



Figure 4—High-elevation ridgeline community with knobcone pine, sugar pine, Douglas-fir, white fir, and western hemlock present. Shrubs include Pacific rhododendron, manzanita subspecies Cascade barberry, western teaberry, tanoak, deer oak, and red huckleberry.



Figure 5—Understory conditions within the tanoak-Douglas-fir-canyon live oak/Cascade barberry plant community. Douglas-fir is the overstory dominant and Pacific rhododendron, deer oak, and red huckleberry occur as major shrubs. Herbaceous diversity is low in this stand.

A tanoak-Douglas-fir-canyon live oak/Cascade barberry plant association occurs within the central portion of the RNA between 829 and 1183 m (2720 and 3880 ft) elevation (fig. 6). It is on both the western and eastern sides by the central drainages that run through the RNA. The aspect for this community is variable and ranges from north to west to northeast, while the slope steepness varies from 30 to 60 percent. Plant species richness is moderately high ( $n = 48$ ). Douglas-fir, sugar pine, and western white pine dominate the overstory. Pacific madrone, incense cedar, giant chinquapin, knobcone pine, and western hemlock are minor to subdominant components to the mid - and upper -canopy. However, on west-facing slopes sugar pine is clearly dominant, whereas on the northeast-facing slopes western white pine is more abundant. The shrub component is very similar to that of the sugar pine/deer oak community (see above), except that tanoak, Pacific rhododendron, and canyon live oak are dominant here. The species rich herbaceous layer is represented by sweet after death, dogbane, variableleaf collomia (*Collomia heterophylla*), white hawkweed (*Hieracium albiflorum*), yellowleaf iris, longtube twinflower, whiteveined wintergreen, broadleaf starflower, Pacific trillium, common beargrass, frosted Indian paintbrush (*Castilleja pruinosa*), Washington lily



Figure 6—Red alder stand adjacent to northern Research Natural Area boundary along North Fork Silver Creek, with well-developed shrub layer including currant subspecies, common snowberry, vine maple, Saskatoon serviceberry, redosier dogwood, and willow subspecies.

(*Lilium washingtonianum*), shrubby bedstraw (*Galium multiflorum*), old-man-in-the-Spring (*Senecio vulgaris*), and big deervetch (*Lotus crassifolius*). The composition of this community type differs from that described by Atzet et al. (1996) in that western white pine is an important component of the overstory, and poison oak (*Toxicodendron diversilobum*) is absent from it on the RNA (Lawrence and Kaye 2003). Long-term vegetation monitoring plots were established in this community in 2012 (Schuller et al. 2012).

The Douglas-fir/Pacific rhododendron-salal is a steep, northwest-facing plant community occupying the eastern boundary of the RNA and extends from 829 m (2,720 ft) elevation adjacent to the North Fork Silver Creek up to the highest point in the RNA at 1195 m (3,920 ft) elevation. Slope steepness varies from 30 to 65 percent. This community is characterized by Douglas-fir being a major canopy dominant and Port Orford cedar being a minor associated species. Grand fir, sugar pine, and western hemlock add to the conifer diversity in this community. Giant chinquapin comprises about 20 percent of the midcanopy layer, but much of it is resprouting after being burned in the 2002 Biscuit Fire.

The shrub layer is dominated by Pacific rhododendron and salal. Other species occupying the shrub layer include Cascade barberry, tanoak, canyon live oak, deer

oak, huckleberry oak (*Quercus vaccinifolia*), dwarf rose, red huckleberry, and common whipplea. The herbaceous layer consists of sweet after death, dogbane, Klamath arnica drops-of-gold, shrubby bedstraw, yellowleaf iris, longtube twinflower, whiteveined wintergreen, Pacific trillium, common beargrass, and western brackenfern. This community exhibits a species richness of 29 compared to an average of 20 in Atzet et al.'s (1996) description of the Douglas-fir/salal/Pacific rhododendron plant association. Their characterization of this community also did not include Port Orford cedar, grand fir, or western hemlock (Lawrence and Kaye 2003).

The North Fork Silver Creek RNA also contains riparian areas of first- and second-order intermittent streams. Two central drainages run through the heart of the RNA. These first- and second-order streams drain off the ridge that divides the north fork from the main fork of Silver Creek. Although relatively small, these areas support substantial floristic diversity. They typically occur on north-facing slopes and vary in steepness from 20 to 60 percent. These community types are diverse with a species richness of 52 and are inhabited by many species tolerant of mesic microsites.

Incense cedar and western hemlock are the principal overstory conifers. Port Orford cedar, Douglas-fir, western yew, and red alder (*Alnus rubra*) are also frequent overstory associates. Salal and Pacific rhododendron are shrub layer dominants. Other common shrubs include Cascade barberry, western teaberry, Sierra laurel, western azalea (*Rhododendron occidentale*), dwarf rose, California dewberry, and red huckleberry. The herbaceous layer includes sugar stick (*Allotropa virgata*), sweet after death, coastal brookfoam (*Boykinia elata*), bunchberry dogwood (*Cornus canadensis*), California pitcherplant (*Darlingtonia californica*), western rattlesnake plantain, Leopard lily (*Lilium pardalinum*), Washington lily (*L. washingtonianum*), longtube twinflower, muskflower (*Mimulus moschatus*), Brewer's miterwort (*Mitella breweri*), oneleaf foamflower (*Tiarella trifoliata* var. *unifoliata*), broadleaf starflower, Pacific trillium, brook wakerobin (*T. rivale*), and green false hellebore (*Veratrum viride*) (Lawrence and Kaye 2003).

The North Fork Silver Creek is a third-order stream that flows from east to west adjacent to the northern boundary of the RNA. It occupies the lowest topographic position in the RNA, with an average elevation of 819 m (2,680 ft). This is the most species-rich community in the RNA, with a total of 77 vascular plant species.

Incense cedar and Douglas-fir are the dominant canopy trees, with sugar pine being a minor associate. Other tree species include white fire, red alder, Port Orford cedar, willow (*Salix* sp.), and western yew. Common shrubs contributing to the understory diversity include giant chinquapin, vine maple (*Acer circinatum*), Saskatoon serviceberry (*Amelanchier alnifolia*), hollyleaved barberry (*Berberis*

*aquifolium*), snowbrush ceanothus (*Ceanothus velutinus*), Pacific dogwood (*Cornus nuttallii*), redosier dogwood (*C. sericea* ssp. *stolonifera*), salal, Sierra laurel, Pacific rhododendron, western azalea (*Rhododendron occidentale*), stink currant (*Ribes bracteosum*), redflower currant (*R. sanguineum*), common snowberry, and red huckleberry.

The herbaceous layer consists of Pacific onion (*Allium validum*), western columbine (*Aquilegia formosa*), British Columbian wildginger (*Asarum caudatum*), coastal brookfoam, American skunkcabbage (*Lysichiton americanus*), scarlet monkeyflower (*Mimulus cardinalis*), muskflower, coastal miterwort (*Mitella ovalis*), Oregon fetid adderstongue (*Scoliopus hallii*), arrowleaf ragwort (*Senecio triangularis*), bigflower tellima (*Tellima grandiflora*), threelobed foamflower (*Tiarella trifoliata*), pioneer violet (*Viola glabella*), ladyfern (*Athyrium filix-femina*), Henderson's sedge (*Carex hendersonii*), and fowl mannagrass (*Glyceria elata*).

Road 35-9-1 bounds the northern boundary of the RNA. Several vascular plant species characteristic of ruderal or disturbed sites occur along this roadside and nowhere else within the RNA. This floral assemblage includes three highly invasive, nonnative plant species: Canada thistle (*Cirsium arvense*), common St. Johnswort (*Hypericum perforatum*), and oxeye daisy (*Leucanthemum vulgare*). Native species tolerant of disturbance also occupy the roadside habitat: pearly everlasting (*Anaphalis margaritacea*), naked buckwheat (*Eriogonum nudum*), and Santa Inez goldenbanner (*Thermopsis macrophylla*).

A list of scientific and common names for vascular plants, lichens, and fungi known to occur within the RNA appears in appendixes 1, 2, and 3, respectively.

## Fauna

The diversity of soil types and vegetative communities in the North Fork Silver Creek watershed provides potential habitat for a wide range of sensitive animal species. Few formal wildlife surveys have been conducted in the watershed to date, however. More than 200 vertebrate and thousands of invertebrate wildlife species might occur in the watershed. The watershed contains potential habitat for 47 vertebrate special-status species, 15 mammals, 19 birds, and 13 reptiles and amphibians, as well as eight invertebrate special-status species (USDI BLM 2004).

Other vertebrates of concern include cavity nesting species, band-tailed pigeons, Neotropical migrant birds, and six birds on U.S. Fish and Wildlife species of concern list (most are also BLM special-status species). Of the 47 special-status species, most are associated with older forest habitats. However, other important habitats to these species include riparian areas and pine stands (USDI BLM 2004), such as those occurring within North Fork Silver Creek RNA.

Amphibians, reptiles, birds, and mammals known or expected to occur within the RNA are listed in appendix 4. These lists have been derived from published literature (Csuti et al. 1997) on the species distribution, life history characteristics, and availability of habitat within the RNA.

## Disturbance History

Throughout southwestern Oregon, fire exclusion has resulted in significant increases in stand density (stems per acre), shifts in species composition (e.g., increases in fire-intolerant, shade-tolerant species), and changes in stand structure. These transformations have increased the forest's susceptibility to large, severe fires and epidemic attack by insects and disease and have affected the habitat quality for rare plants. Fire exclusion in Silver Creek watershed over the last 100 years contributed to the size and severity of the Biscuit Fire in 2002. The Biscuit Fire burned throughout the Silver Creek and North Fork Silver Creek watersheds ultimately burning 500,000+ acres in southwestern Oregon over a 4-month period. The large size of this fire is an example of landscape effects where fire has been excluded for a long time (USDI BLM 2004).

Fire is a primary agent of natural disturbance in the North Fork Silver Creek watershed. Most of the watershed has historically experienced a mixed- to high-severity fire regime. Mixed-severity fire regimes are associated with infrequent fires (35 to 100+ years) of both high and low intensity, creating a mosaic effect. At the landscape level, mixed-severity fire regimes create a patchy appearance and individual stands will often consist of two or more age classes. A high percentage of the Silver Creek watershed's natural stands have a history of frequent surface fires, resulting in two- or three-storied stands where each story is even aged. The increase of layered understory vegetation further contributes to fire intensity. Waxy-leaved shrubs and trees (such as those occurring within the RNA) can also carry flames into the overstory, creating a high-intensity fire.

The Biscuit Fire of 2002 had a dramatic impact on the plant communities within North Fork Silver Creek RNA. The fire affected about 95 percent of the RNA, but less than 5 percent was categorized as a high-intensity fire (USDI BLM 2004). Most of the overstory trees were not killed, whereas the shrub and herb layer suffered dramatic dieback. However, the shrub layer exhibited vigorous resprouting, allowing for proper species identification (Lawrence and Kaye 2003).

In addition to fire exclusion, the nonnative Port Orford cedar root disease (*Phytophthora lateralis*) occurs within the watershed. Humans have been the main vectors of this pathogen into the watershed.

## Research History

The following research and monitoring projects have been undertaken within North Fork Silver Creek RNA:

Hawk (1977) studied Port Orford cedar forest types within the RNA (Greene et al. 1986).

Lawrence and Kaye (2006) conducted a floristic inventory and mapped vegetation communities present within the RNA.

Schuller et al. (2012) established long-term vegetation monitoring plots in unburned stands within the sugar pine/deer oak plant community, and within the Douglas-fir/giant chinquapin/Cascade barberry plant community.

## Maps

Maps applicable to North Fork Silver Creek RNA: Topographic—Hobson Horn, Oregon, 7.5 minute, 1:24,000 scale, 1989; Medford District—Western portion, BLM transportation map, 1.27 cm = 1.6 km (0.5 in = 1 mi) [2004].

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## English Equivalents

1 hectare (ha) = 2.47 acres (ac)

1 kilometer (km) = 0.62 mile (mi)

1 meter (m) = 3.28 feet (ft)

1 square meter (m<sup>2</sup>) = 10.76 square feet

1 centimeter (cm) = 0.394 inch (in)

1 millimeter (mm) = 0.0394 inch

Degrees Fahrenheit (°F) = 1.8 degrees Celsius + 32

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## Appendix 1: Plants <sup>1 2</sup>

### Coniferous trees:

<i>Abies concolor</i> (Gord. & Glend.) Lindl. ex Hildebr.	White fir
<i>Abies grandis</i> (Douglas ex D. Don) Lindl.	Grand fir
<i>Abies procera</i> Rehd.	Noble fir
<i>Calocedrus decurrens</i> (Torr.) Florin	Incense cedar
<i>Chamaecyparis lawsoniana</i> A. Murray bis Parl.	Port Orford cedar
<i>Picea breweriana</i> S. Wats.	Brewer spruce
<i>Pinus attenuata</i> Lemmon	Knobcone pine
<i>Pinus lambertiana</i> Dougl.	Sugar pine
<i>Pinus monticola</i> Dougl. ex D. Don	Western white pine
<i>Pinus ponderosa</i> Laws.	Ponderosa pine
<i>Pseudotsuga menziesii</i> (Mirb.) Franco	Douglas-fir
<i>Taxus brevifolia</i> Nutt.	Western yew
<i>Tsuga heterophylla</i> (Raf.) Sarg.	Western hemlock

### Deciduous trees > 8 m (26.3 ft) tall

<i>Acer glabrum</i> Torr. var. <i>douglasii</i> (Hook.) Dippel	Douglas maple
<i>Alnus rubra</i> Bong.	Red alder
<i>Arbutus menziesii</i> Pursh	Pacific madrone
<i>Chrysolepis chrysophylla</i> (Dougl. ex Hook.) Hjelmq.	Giant chinquapin
<i>Cornus nuttallii</i> Audubon ex Torr. & A. Gray	Pacific dogwood
<i>Notholithocarpus densiflorus</i> (Hook. & Arn.) Manos et al.	Tanoak
<i>Quercus chrysolepis</i> Liebm.	Canyon live oak
<i>Salix</i> sp.	Willow

### Tall shrubs 2 m to 8 m (6.6 to 26.3 ft) tall:

<i>Acer circinatum</i> Pursh	Vine maple
<i>Amelanchier alnifolia</i> (Nutt.) Nutt. ex M. Roem.	Saskatoon serviceberry
<i>Cornus sericea</i> ssp. <i>stolonifera</i>	Redosier dogwood
<i>Garrya fremontii</i> Torr.	Bearbrush
<i>Quercus sadleriana</i> R. Br.	Deer oak
<i>Rhododendron macrophyllum</i> D. Don ex G. Don	Pacific rhododendron

### Medium shrubs 0.5 m to 2m (1.6 to 6.6 ft) tall:

<i>Arctostaphylos</i> × <i>cinerea</i> Howell (pro sp.) [ <i>canescens</i> × <i>viscida</i> ]	Waldo manzanita
<i>Arctostaphylos glandulosa</i> Eastw.	Eastwood's manzanita
<i>Arctostaphylos nevadensis</i> A. Gray	Pinemat manzanita
<i>Berberis aquifolium</i> Pursh	Hollyleaved barberry
<i>Ceanothus velutinus</i> Dougl. ex Hook.	Snowbrush ceanothus
<i>Gaultheria shallon</i> Pursh	Salal
<i>Leucothoe davisiae</i> Torr. ex A. Gray	Sierra laurel
<i>Paxistima myrsinites</i> (Pursh) Raf.	Oregon boxleaf
<i>Quercus vaccinifolia</i> Kellogg	Huckleberry oak

<i>Rhamnus californica</i> ssp. <i>occidentalis</i>	California buckthorn
<i>Rhododendron occidentale</i> (Torr. & Gray) A. Gray	Western azalea
<i>Ribes bracteosum</i> Dougl. ex Hook.	Stink currant
<i>Ribes sanguineum</i> Pursh	Redflower currant
<i>Rosa gymnocarpa</i> Nutt.	Dwarf rose
<i>Rubus laciniatus</i> Willd.	Cutleaf blackberry
<i>Rubus leucodermis</i> Dougl. ex Torr. & A. Gray	Whitebark raspberry
<i>Rubus parviflorus</i> Nutt.	Thimbleberry
<i>Symphoricarpos albus</i> (L.) S.F. Blake	Common snowberry
<i>Toxicodendron diversilobum</i> (Torr. & A. Gray) Greene	Poison oak
<i>Vaccinium parvifolium</i> Sm.	Red huckleberry
Low shrubs <0.5 m (1.6 ft) tall:	
<i>Berberis nervosa</i> Pursh	Cascade barberry
<i>Gaultheria ovatifolia</i> A. Gray	Western teaberry
<i>Rubus nivalis</i> Dougl. ex Hook.	Snow raspberry
<i>Rubus ursinus</i> Cham. & Schldtl.	California dewberry
<i>Whipplea modesta</i> Torr.	Common whipplea
Herbs:	
<i>Achlys triphylla</i> (Sm.) DC.	Sweet after death
<i>Adenocaulon bicolor</i> Hook.	American trailplant
<i>Allium validum</i> S. Wats.	Pacific onion
<i>Allotropa virgata</i> Torr. & A. Gray ex A. Gray	Sugar stick
<i>Anaphalis margaritacea</i> (L.) Benth. & Hook.	Pearly everlasting
<i>Anemone</i> sp.	Windflower
<i>Apocynum androsaemifolium</i> L.	Dogbane
<i>Aquilegia formosa</i> Fisch. ex DC.	Western columbine
<i>Arnica spathulata</i> Greene	Klamath arnica
<i>Asarum caudatum</i> Lindl.	British Columbian wildginger
<i>Boykinia occidentalis</i> Torr. & A. Gray	Coastal brookfoam
<i>Castilleja pruinosa</i> Fernald	Frosted Indian paintbrush
<i>Chimaphila menziesii</i> (R. Br. ex D. Don) Spreng.	Little prince's pine
<i>Chimaphila umbellata</i> (L.) Bart.	Pipsissewa
<i>Cirsium arvense</i> (L.) Scop.	Canada thistle
<i>Claytonia parviflora</i> Dougl. ex Hook. ssp. <i>parviflora</i>	Streambank springbeauty
<i>Claytonia sibirica</i> L.	Siberian springbeauty
<i>Collomia heterophylla</i> Dougl. ex Hook.	Variableleaf collomia
<i>Corallorhiza maculata</i> (Raf.) Raf.	Summer coralroot
<i>Cornus canadensis</i> L.	Bunchberry dogwood
<i>Darlingtonia californica</i> Torr.	California pitcherplant
<i>Dicentra formosa</i> (Haw.) Walp.	Pacific bleeding heart
<i>Epilobium</i> sp.	Willowherb
<i>Eriogonum nudum</i> Dougl. ex Benth.	Naked buckwheat
<i>Galium aparine</i> L.	Stickywilly
<i>Galium multiflorum</i> Kellogg	Shrubby bedstraw

<i>Galium oreganum</i> Britton	Oregon bedstraw
<i>Galium triflorum</i> Michx.	Sweet scented bedstraw
<i>Goodyera oblongifolia</i> Raf.	Western rattlesnake plantain
<i>Heuchera micrantha</i> Lindley	Small-flowered alumroot
<i>Hieracium albiflorum</i> Hook.	White hawkweed
<i>Hypericum perforatum</i> L.	Common St. Johnswort
<i>Iris chrysophylla</i> Howell	Yellowleaf iris
<i>Lathyrus</i> sp.	Pea
<i>Leucanthemum vulgare</i> Lam.	Oxeye daisy
<i>Lilium pardalinum</i> Kellogg	Leopard lily
<i>Lilium washingtonianum</i> Kellogg	Washington lily
<i>Linnaea borealis</i> L. var. <i>longiflora</i> (Torr.) Hultén	Longtube twinflower
<i>Listera convallarioides</i> (Sw.) Nutt. ex Elliott	Broadlipped twayblade
<i>Lotus crassifolius</i> (Benth.) Greene	Big deervetch
<i>Lupinus albicaulis</i> Dougl.	Sicklekeel lupine
<i>Lysichiton americanus</i> Hultén & H. St. John	American skunkcabbage
<i>Madia</i> sp.	Tarweed
<i>Maianthemum racemosum</i> (L.) Link	Feathery false lily-of-the-valley
<i>Mimulus cardinalis</i> Dougl. ex Benth.	Scarlet monkeyflower
<i>Mimulus moschatus</i> Dougl. ex Lindl.	Muskflower
<i>Mitella breweri</i> A. Gray	Brewer's miterwort
<i>Mitella ovalis</i> Greene	Coastal miterwort
<i>Monotropa hypopitys</i> L.	Pinesap
<i>Penstemon anguineus</i> Eastw.	Siskiyou beardtongue
<i>Piperia elegans</i> (Lindl.) Rydb. ssp. <i>elegans</i>	Elegant piperia
<i>Platanthera sparsiflora</i> (S. Wats.) Schltr. var. <i>sparsiflora</i>	Sparse-flowered bog-orchid
<i>Prosartes hookeri</i> Torr.	Drops-of-gold
<i>Pyrola asarifolia</i> Michx.	Liverleaf wintergreen
<i>Pyrola picta</i> Sm.	Whiteveined wintergreen
<i>Rumex obtusifolius</i> L.	Bitter dock
<i>Sanicula</i> sp.	Sanicle
<i>Sarcodes sanguinea</i> Torr.	Snowplant
<i>Scoliopus hallii</i> S. Wats.	Oregon fetid adderstongue
<i>Senecio triangularis</i> Hook.	Arrowleaf ragwort
<i>Senecio vulgaris</i> L.	Old-man-in-the-Spring
<i>Streptopus amplexifolius</i> (L.) DC.	Claspleaf twistedstalk
<i>Tellima grandiflora</i> (Pursh) Douglas ex Lindl.	Bigflower tellima
<i>Thermopsis macrophylla</i> Hook. & Arn.	Santa Inez goldenbanner
<i>Tiarella trifoliata</i> L. var. <i>trifoliata</i>	Threleaf foamflower
<i>Tiarella trifoliata</i> L. var. <i>unifoliata</i> (Hook.) Kurtz	Oneleaf foamflower
<i>Trientalis borealis</i> Raf. ssp. <i>latifolia</i> (Hook.) Hultén	Broadleaf starflower
<i>Trillium ovatum</i> Pursh	Pacific trillium
<i>Trillium rivale</i> S. Wats.	Brook wakerobin
<i>Veratrum viride</i> Ait.	Green false hellebore

<i>Vicia americana</i> Muhl. ex Willd.	American vetch
<i>Viola glabella</i> Nutt.	Pioneer violet
<i>Viola sempervirens</i> Greene	Evergreen violet
<i>Xerophyllum tenax</i> (Pursh) Nutt.	Common beargrass

Grasses, sedges, and rushes:

<i>Bromus vulgaris</i> (Hook.) Shear	Columbia brome
<i>Carex deweyana</i> Schwein.	Dewey sedge
<i>Carex hendersonii</i> L. H. Bailey	Henderson's sedge
<i>Carex rossii</i> Boott	Ross' sedge
<i>Elymus glaucus</i> Buckley	Blue wildrye
<i>Festuca roemerii</i>	Roemer's fescue
<i>Festuca subulata</i> Trin.	Bearded fescue
<i>Glyceria elata</i> (Lam.) Hitchc.	Fowl mannagrass
<i>Vulpia</i> sp.	Fescue

Ferns:

<i>Athyrium filix-femina</i> (L.) Roth	Ladyfern
<i>Polystichum munitum</i> (Kaulf.) C. Presl	Western swordfern
<i>Pteridium aquilinum</i> (L.) Kuhn	Western brackenfern

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<sup>1</sup> Nomenclature for vascular plants, ferns, and fern-allies follows the *Flora of North America* (1993+) and the Oregon Flora Project web site (Cook and Sundburg 2013).

<sup>2</sup> Compiled from field surveys (Lawrence and Kaye 2003, Schuller et al. 2012).

## Appendix 2: Amphibians, Reptiles, Birds, and Mammals<sup>1 2</sup>

Family	Scientific name	Common name
Amphibians:		
Ambystomatidae	<i>Ambystoma gracile</i>	Northwestern salamander
Dicamptodontidae	<i>Dicamptodon tenebrosus</i>	Pacific giant salamander
	<i>Rhyacotriton variegatus</i>	Southern torrent salamander
Plethodontidae	<i>Aneides ferreus</i>	Clouded salamander
	<i>Ensatina eschscholtzi</i>	Ensatina
	<i>Plethodon dunni</i>	Dunn's salamander
	<i>Plethodon elongatus</i>	Del Norte salamander
Salamandridae	<i>Taricha granulosa</i>	Roughskin newt
Hylidae	<i>Pseudacris regilla</i>	Pacific chorus frog
Leiopelmatidae	<i>Ascaphus truei</i>	Tailed frog
Ranidae	<i>Rana aurora</i>	Red-legged frog
	<i>Rana boylei</i>	Foothill yellow-legged frog
	<i>Rana catesbeiana</i>	Bullfrog
Reptiles:		
Anguidae	<i>Elgaria coerulea</i>	Northern alligator lizard
	<i>Elgaria multicarinata</i>	Southern alligator lizard
Phrynosomatidae	<i>Sceloporus graciosus</i>	Sagebrush lizard
	<i>Sceloporus occidentalis</i>	Western fence lizard
Scincidae	<i>Eumeces skiltonianus</i>	Western skink
Boidae	<i>Charina bottae</i>	Rubber boa
Colubridae	<i>Coluber constrictor</i>	Racer
	<i>Contia tenuis</i>	Sharptail snake
	<i>Diadophis punctatus</i>	Ringneck snake
	<i>Lampropeltis zonata</i>	California mountain kingsnake
	<i>Pituophis catenifer</i>	Gopher snake
	<i>Thamnophis atratus</i>	Pacific coast aquatic garter snake
	<i>Thamnophis couchii</i>	Western aquatic garter snake
	<i>Thamnophis elegans</i>	Western terrestrial garter snake
Viperidae	<i>Thamnophis ordinoides</i>	Northwestern garter snake
	<i>Thamnophis sirtalis</i>	Common garter snake
	<i>Crotalus viridis</i>	Western rattlesnake
Birds:		
Ardeidae	<i>Butorides virescens</i>	Green heron
Anatidae	<i>Aix sponsa</i>	Wood duck
	<i>Lophodytes cucullatus</i>	Hooded merganser
Cathartidae	<i>Cathartes aura</i>	Turkey vulture
Accipitridae	<i>Accipiter cooperii</i>	Cooper's hawk
	<i>Accipiter striatus</i>	Sharp-shinned hawk
	<i>Aquila chrysaetos</i>	Golden eagle

	<i>Buteo jamaicensis</i>	Red-tailed hawk
	<i>Haliaeetus leucocephalus</i>	Bald eagle
	<i>Pandion haliaetus</i>	Osprey
Phasianidae	<i>Bonasa umbellus</i>	Ruffed grouse
	<i>Dendragapus obscurus</i>	Blue grouse
	<i>Oreortyx pictus</i>	Mountain quail
Columbidae	<i>Columba fasciata</i>	Band-tailed pigeon
Strigidae	<i>Aegolius acadicus</i>	Northern saw-whet owl
	<i>Bubo virginianus</i>	Great-horned owl
	<i>Glaucidium gnoma</i>	Northern pygmy-owl
	<i>Otus flammeolus</i>	Flammulated owl
	<i>Otus kennicottii</i>	Western screech-owl
	<i>Strix occidentalis caurina</i>	Northern spotted owl
	<i>Strix varia</i>	Barred owl
Caprimulgidae	<i>Chordeiles minor</i>	Common nighthawk
	<i>Phalaenoptilus nuttallii</i>	Common poorwill
Apodidae	<i>Chaetura vauxi</i>	Vaux's swift
Trochilidae	<i>Calypte anna</i>	Anna's hummingbird
	<i>Selasphorus rufus</i>	Rufous hummingbird
	<i>Stellula calliope</i>	Calliope hummingbird
Alcedinidae	<i>Ceryle alcyon</i>	Belted kingfisher
Picidae	<i>Colaptes auratus</i>	Northern flicker
	<i>Dryocopus pileatus</i>	Pileated woodpecker
	<i>Melanerpes lewis</i>	Lewis' woodpecker
	<i>Picoides arcticus</i>	Black-backed woodpecker
	<i>Picoides albolarvatus</i>	White-headed woodpecker
	<i>Picoides pubescens</i>	Downy woodpecker
	<i>Picoides villosus</i>	Hairy woodpecker
	<i>Sphyrapicus ruber</i>	Red-breasted sapsucker
Tyrannidae	<i>Contopus borealis</i>	Olive-sided flycatcher
	<i>Contopus sordidulus</i>	Western wood peewee
	<i>Empidonax difficilis</i>	Pacific-slope flycatcher
	<i>Empidonax hammondi</i>	Hammond's flycatcher
	<i>Empidonax oberholseri</i>	Dusky flycatcher
Hirundinidae	<i>Progne subis</i>	Purple martin
	<i>Tachycineta bicolor</i>	Tree swallow
Corvidae	<i>Corvus brachyrhynchos</i>	American crow
	<i>Corvus corax</i>	Common raven
	<i>Cyanocitta stelleri</i>	Steller's jay
	<i>Perisoreus canadensis</i>	Gray jay
Paridae	<i>Parus atricapillus</i>	Black-capped chickadee
	<i>Parus rufescens</i>	Chestnut-backed chickadee
Aegithalidae	<i>Psaltriparus minimus</i>	Bushtit
Sittidae	<i>Sitta canadensis</i>	Red-breasted nuthatch
	<i>Sitta carolinensis</i>	White-breasted nuthatch

Certhiidae	<i>Certhia americana</i>	Brown creeper
Troglodytidae	<i>Thryomanes bewickii</i>	Bewick's wren
	<i>Troglodytes troglodytes</i>	Winter wren
Cinclidae	<i>Cinclus mexicanus</i>	American dipper
Muscicapidae	<i>Catharus guttatus</i>	Hermit thrush
	<i>Catharus ustulatus</i>	Swainson's thrush
	<i>Ixoreus naevius</i>	Varied thrush
	<i>Myadestes townsendi</i>	Townsend's solitaire
	<i>Regulus satrapa</i>	Golden-crowned kinglet
	<i>Turdus migratorius</i>	American robin
	Bombycillidae	<i>Bombycilla cedrorum</i>
Vireonidae	<i>Vireo cassinii</i>	Cassin's vireo
	<i>Vireo gilvus</i>	Warbling vireo
	<i>Vireo huttonii</i>	Hutton's vireo
	<i>Vireo solitarius</i>	Solitary vireo
Emberizidae	<i>Dendroica coronata</i>	Yellow-rumped warbler
	<i>Dendroica petechia</i>	Yellow warbler
	<i>Dendroica nigrescens</i>	Black-throated gray warbler
	<i>Dendroica occidentalis</i>	Hermit warbler
	<i>Junco hyemalis</i>	Dark-eyed junco
	<i>Melospiza melodia</i>	Song sparrow
	<i>Oporornis tolmiei</i>	MacGillivray's warbler
	<i>Passerella iliaca</i>	Fox sparrow
	<i>Pheucticus melanocephalus</i>	Black-headed grosbeak
	<i>Pipilo chlorurus</i>	Green-tailed towhee
	<i>Pipilo maculatus</i>	Spotted towhee
	<i>Piranga rubra</i>	Western tanager
	<i>Spizella passerina</i>	Chipping sparrow
	<i>Wilsonia pusilla</i>	Wilson's warbler
<i>Zonotrichia leucophrys</i>	White-crowned sparrow	
Fringillidae	<i>Carduelis pinus</i>	Pine siskin
	<i>Carpodacus purpureus</i>	Purple finch
	<i>Coccothraustes vespertinus</i>	Evening grosbeak
	<i>Loxia curvirostra</i>	Red crossbill
Mammals:		
Didelphidae	<i>Didelphis virginiana</i>	Virginia opossum
Soricidae	<i>Sorex sonomae</i>	Fog shrew
	<i>Sorex pacificus</i>	Pacific shrew
	<i>Sorex trowbridgii</i>	Trowbridge's shrew
Talpidae	<i>Neurotrichus gibbsii</i>	Shrew-mole
	<i>Scapanus orarius</i>	Coast mole
Vespertilionidae	<i>Antrozous pallidus</i>	Pallid bat
	<i>Corynorhinus townsendii</i>	Townsend's big-eared bat
	<i>Eptesicus fuscus</i>	Big brown bat
	<i>Lasionycteris noctivagans</i>	Silver-haired bat

	<i>Lasiurus cinereus</i>	Hoary bat
	<i>Myotis californicus</i>	California myotis
	<i>Myotis evotis</i>	Long-eared myotis
	<i>Myotis lucifugus</i>	Little brown myotis
	<i>Myotis thysanodes</i>	Fringed myotis
	<i>Myotis volans</i>	Long-legged myotis
	<i>Myotis yumanensis</i>	Yuma myotis
Leporidae	<i>Lepus americanus</i>	Snowshoe hare
Aplodontidae	<i>Aplodontia rufa</i>	Mountain beaver
Sciuridae	<i>Glaucomys sabrinus</i>	Northern flying squirrel
	<i>Sciurus griseus</i>	Western gray squirrel
	<i>Spermophilus lateralis</i>	Golden-mantled ground squirrel
	<i>Tamias amoenus</i>	Yellow-pine chipmunk
	<i>Tamias townsendii</i>	Townsend's chipmunk
	<i>Tamiasciurus douglasii</i>	Douglas' squirrel
	Castoridae	<i>Castor canadensis</i>
Muridae	<i>Clethrionomys californicus</i>	Western red-backed vole
	<i>Microtus longicaudus</i>	Long-tailed vole
	<i>Microtus oregoni</i>	Creeping vole
	<i>Microtus townsendii</i>	Townsend's vole
	<i>Neotoma cinerea</i>	Bushy-tailed woodrat
	<i>Neotoma fuscipes</i>	Dusky-footed woodrat
	<i>Ondatra zibethicus</i>	Muskrat
	<i>Peromyscus maniculatus</i>	Deer mouse
	<i>Phenacomys albipes</i>	White-footed vole
	<i>Phenacomys longicaudus</i>	Red tree vole
Dipodidae	<i>Zapus trinotatus</i>	Pacific jumping mouse
Erethizontidae	<i>Erethizon dorsatum</i>	Common porcupine
Canidae	<i>Canis latrans</i>	Coyote
	<i>Urocyon cinereoargenteus</i>	Common gray fox
Ursidae	<i>Ursus americanus</i>	Black bear
Procyonidae	<i>Bassariscus astutus</i>	Ringtail
	<i>Procyon lotor</i>	Common raccoon
Mulstelidae	<i>Martes pennati</i>	Pacific fisher
	<i>Mustela erminea</i>	Ermine
	<i>Mustela frenata</i>	Long-tailed weasel
	<i>Spilogale gracilis</i>	Western spotted skunk
	<i>Taxidea taxus</i>	American badger
Felidae	<i>Felis concolor</i>	Mountain lion
	<i>Lynx rufus</i>	Bobcat
Cervidae	<i>Cervus elaphus</i>	Elk
	<i>Odocoileus hemionus</i> ssp. <i>columbianus</i>	Black-tailed deer

<sup>1</sup> Compiled from habitat descriptions and distribution maps in Csuti et al. 1997.

<sup>2</sup> Nomenclature taken from Csuti et al. 1997.

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