North Fork Silver Creek Research Natural Area: Guidebook Supplement 47

Reid Schuller, Rachel Showalter, Tom Kaye, and Beth Lawrence
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Authors

Reid Schuller is a plant ecologist, Western Stewardship Science Institute, P.O. Box 1173, Bend, OR 97709; Rachel Showalter is a botanist, Grants Pass Resource Area-Medford District, Bureau of Land Management, Grants Pass, OR 97526; Tom Kaye is executive director and plant ecologist, Institute for Applied Ecology, Corvallis, OR 97330; Beth Lawrence is a botanist, Institute for Applied Ecology, Corvallis, OR 97330. The Pacific Northwest Research Station is publishing this guidebook as part of a continuing series of guidebooks on federal research natural areas begun in 1972.

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


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 daviesiae), 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 daviesiae), 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 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 of natural areas established for research and educational purposes. 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 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.


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

• 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.5

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.

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 (Leucothoe davisii), and western sword fern (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, Wil-lamette 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.
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 1st- and 2nd-order stream reaches, which flow into the North Fork Silver Creek, a 3rd-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.
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.

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

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average minimum January temperature</td>
<td>2.2 °C (36.0 °F)</td>
</tr>
<tr>
<td>Average maximum January temperature</td>
<td>9.4 °C (48.9 °F)</td>
</tr>
<tr>
<td>Average minimum July temperature</td>
<td>11.7 °C (52.1 °F)</td>
</tr>
<tr>
<td>Average maximum July temperature</td>
<td>31.1 °C (88.0 °F)</td>
</tr>
<tr>
<td>Average annual precipitation</td>
<td>2080 mm (81.90 in)</td>
</tr>
<tr>
<td>Average June–August precipitation</td>
<td>58 mm (2.28 in)</td>
</tr>
<tr>
<td>Average annual snowfall</td>
<td>272 mm (10.70 in)</td>
</tr>
</tbody>
</table>
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, Californian dewberry (*Rubus ursinus*), common snowberry (*Symphoricarpos albus*), red huckleberry (*Vaccinium parviflorum*), bearbrush (*Garrrya 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 (*Artnica 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.
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
(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 brevicaulis*), 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), threeleaf 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].

Acknowledgments

The following people merit recognition for their contributions: Steve Haney, geographic information specialist, Medford District, BLM, created the maps in figures 1, 2, and 3; and Jason Reilly, wildlife biologist, Grants Pass Resource Area, Medford District, BLM, reviewed and improved the list of animals in appendix 2. We also thank the three manuscript reviewers: Todd Wilson, wildlife biologist and research natural area coordinator, U.S. Forest Service, Pacific Northwest Research Station; Bryan Wender, BLM Medford district botanist; and Colleen Dulin, BLM Grants Pass resource area lead hydrologist. The project is funded through the BLM Medford District, and is administratively supported by the USDA Forest Service Pacific Northwest Research Station.
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 (m²) = 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

References


U.S. Department of the Interior, Bureau of Land Management [USDI BLM].

U.S. Department of the Interior, Bureau of Land Management [USDI BLM].


Appendix 1: Plants  

Coniferous trees:

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

Deciduous trees > 8 m (26.3 ft) tall:

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

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

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

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

- Arctostaphylos ×cinerea Howell (pro sp.) 
  {canescens × viscosa} — Waldo manzanita
- Arctostaphylos glandulosa Eastw. — Eastwood’s manzanita
- Arctostaphylos nevadensis A. Gray — Pinemat manzanita
- Berberis aquifolium Pursh — Hollyleafed barberry
- Ceanothus velutinus Dougl. ex Hook. — Snowbrush ceanothus
- Gaultheria shallon Pursh — Salal
- Leucothoe davisiæ Torr. ex A. Gray — Sierra laurel
- Paxistima myrsinites (Pursh) Raf. — Oregon boxleaf
- Quercus vaccinifolia Kellogg — Huckleberry oak
Rhamnus californica ssp. occidentalis
Rhododendron occidentale (Torr. & Gray) A. Gray
Ribes bracteosum Dougl. ex Hook.
Ribes sanguineum Pursh
Rosa gymnocarpa Nutt.
Rubus laciniatus Willd.
Rubus leucodermis Doug. ex Torr. & A. Gray
Rubus parviflorus Nutt.
Symphoricarpos albus (L.) S.F. Blake
Toxicodendron diversilobum (Torr. & A. Gray) Greene
Vaccinium parvifolium Sm.

Low shrubs <0.5 m (1.6 ft) tall:
Berberis nervosa Pursh
Gaultheria ovatifolia A. Gray
Rubus nivalis Doug. ex Hook.
Rubus ursinus Cham. & Schldtl.
Whipplea modesta Torr.

Herbs:
Achlys triphylla (Sm.) DC.
Adenocaulon bicolor Hook.
Allium validum S. Wats.
Allotropa virgata Torr. & A. Gray ex A. Gray
Anaphalis margaritacea (L.) Benth. & Hook.
Anemone sp.
Apocynum androsaemifolium L.
Aquilegia formosa Fisch. ex DC.
Arnica spathulata Greene
Asarum caudatum Lindl.
Boykinia occidentalis Torr. & A. Gray
Castilleja prunosa Fernald
Chimaphila menziesii (R. Br. ex D. Don) Spreng.
Chimaphila umbellata (L.) Bart.
Cirsium arvense (L.) Scop.
Claytonia parviflora Doug. ex Hook. ssp. parviflora
Claytonia sibirica L.
Collomia heterophylla Doug. ex Hook.
Corallorhiza maculata (Raf.) Raf.
Cornus canadensis L.
Darlingtonia californica Torr.
Dicentra formosa (Haw.) Walp.
Epilobium sp.
Eriogonum nudum Doug. ex Benth.
Galium aparine L.
Galium multiflorum Kellogg

California buckthorn
Western azalea
Stink currant
Redflower currant
Dwarf rose
Cutleaf blackberry
Whitebark raspberry
Thimbleberry
Common snowberry
Poison oak
Red huckleberry
Cascade barberry
Western teaberry
Snow raspberry
California dewberry
Common whipplea
Sweet after death
American trailplant
Pacific onion
Sugar stick
Pearly everlasting
Windflower
Dogbane
Western columbine
Klamath arnica
British Columbian wildginger
Coastal brookfoam
Frosted Indian paintbrush
Little prince’s pine
Pipsissewa
Canada thistle
Streambank springbeauty
Siberian springbeauty
Variableleaf collomia
Summer coralroot
Bunchberry dogwood
California pitcherplant
Pacific bleeding heart
Willow herb
Naked buckwheat
Stickywilly
Shrubby bedstraw
Galium oreganum Britton
Galium triflorum Michx.
Goodyera oblongifolia Raf.
Heuchera micrantha Lindley
Hieracium albiflorum Hook.
Hypericum perforatum L.
Iris chrysophylla Howell
Lathyrus sp.
Leucanthemum vulgare Lam.
Lilium pardalinum Kellogg
Lilium washingtonianum Kellogg
Linnaea borealis L. var. longiflora (Torr.) Hultén
Listera convallarioides (Sw.) Nutt. ex Elliott
Lotus crassifolius (Benth.) Greene
Lupinus albicaulis Dougl.
Lysichiton americanus Hultén & H. St. John
Madia sp.
Maianthemum racemosum (L.) Link

Mimulus cardinalis Dougl. ex Benth.
Mimulus moschatus Dougl. ex Lindl.
Mitella breweri A. Gray
Mitella ovalis Greene
Monotropa hypopitys L.
Penstemon anguineus Eastw.
Piperia elegans (Lindl.) Rydb. ssp. elegans
Platanthera sparsiflora (S. Wats.) Schltr. var. sparsiflora
Prosartes hookeri Torr.
Pyrola asarifolia Michx.
Pyrola picta Sm.
Rumex obtusifolius L.
Sanicula sp.
Sarcodes sanguinea Torr.
Scoliopus hallii S. Wats.
Senecio triangularis Hook.
Senecio vulgaris L.
Streptopus amplexifolius (L.) DC.
Tellima grandiflora (Pursh) Douglas ex Lindl.
Thermopsis macrophylla Hook. & Arn.
Tiarella trifoliata L. var. trifoliata
Tiarella trifoliata L. var. unifoliata (Hook.) Kurtz
Trientalis borealis Raf. ssp. latifolia (Hook.) Hultén
Trillium ovatum Pursh
Trillium rivale S. Wats.
Veratrum viride Ait.
Oregon bedstraw
Sweet scented bedstraw
Western rattlesnake plantain
Small-flowered alumroot
White hawkweed
Common St. Johnswort
Yellowleaf iris
Pea
Oxeye daisy
Leopard lily
Washington lily
Longtube twinflower
Broadlipped twayblade
Big deervetch
Sicklekeel lupine
American skunkcabbage
Tarweed
Feathery false lily-of-the-valley
Scarlet monkeyflower
Muskflower
Brewer’s miterwort
Coastal miterwort
Pinesap
Siskiyou beartongue
Elegant piperia
Sparse-flowered bog-orchid
Drops-of-gold
Liverleaf wintergreen
Whiteveined wintergreen
Bitter dock
Sanicle
Snowplant
Oregon fetid adderstongue
Arrowleaf ragwort
Old-man-in-the-Spring
Claspleaf twistedstalk
Bigflower tellima
Santa Inez goldenbanner
Threeleaf foamflower
Oneleaf foamflower
Broadleaf starflower
Pacific trillium
Brook wakerobin
Green false hellebore
Vicia americana Muhl. ex Willd.  American vetch
Viola glabella Nutt.  Pioneer violet
Viola sempervirens Greene  Evergreen violet
Xerophyllum tenax (Pursh) Nutt.  Common beargrass

Grasses, sedges, and rushes:
Bromus vulgaris (Hook.) Shear  Columbia brome
Carex deweyana Schwein.  Dewey sedge
Carex hendersonii L. H. Bailey  Henderson’s sedge
Carex rossii Boott  Ross’ sedge
Elymus glaucus Buckley  Blue wildrye
Festuca roemeri  Roemer’s fescue
Festuca subulata Trin.  Bearded fescue
Glyceria elata (Lam.) Hitche.  Fowl mannagrass
Vulpia sp.  Fescue

Ferns:
Athyrium filix-femina (L.) Roth  Ladyfern
Polystichum munitum (Kaulf.) C. Presl  Western swordfern
Pteridium aquilinum (L.) Kuhn  Western brackenfern

¹ 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).
² Compiled from field surveys (Lawrence and Kaye 2003, Schuller et al. 2012).
## Appendix 2: Amphibians, Reptiles, Birds, and Mammals

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Buteo jamaicensis  Red-tailed hawk
Haliaeetus leucocephalus  Bald eagle
Pandion haliaetus  Osprey
Phasianidae
Bonasa umbellus  Ruffed grouse
Dendragapus obscurus  Blue grouse
Oreortyx pictus  Mountain quail
Columbidae
Columba fasciata  Band-tailed pigeon
Strigidae
Bubo virginianus  Great-horned owl
Glaucidium gnoma  Northern pygmy-owl
Otus flammeolus  Flammulated owl
Otus kennicottii  Western screech-owl
Strix occidentalis caurina  Northern spotted owl
Strix varia  Barred owl
Caprimulgidae
Chordeiles minor  Common nighthawk
Phalaenoptilus nuttallii  Common poorwill
Apodidae
Chaetura vauxi  Vaux’s swift
Trochilidae
Calypte anna  Anna’s hummingbird
Selasphorus rufus  Rufous hummingbird
Stellula calliope  Calliope hummingbird
Alcedinidae
Ceryle alcyon  Belted kingfisher
Picidae
Colaptes auratus  Northern flicker
Dryocopus pileatus  Pileated woodpecker
Melanerpes lewis  Lewis’ woodpecker
Picoides arcticus  Black-backed woodpecker
Picoides albolarvatus  White-headed woodpecker
Picoides pubescens  Downy woodpecker
Picoides villosus  Hairy woodpecker
Sphyrapicus ruber  Red-breasted sapsucker
Tyrannidae
Contopus borealis  Olive-sided flycatcher
Contopus sordidulus  Western wood peewee
Empidonax difficilis  Pacific-slope flycatcher
Empidonax hammondii  Hammond’s flycatcher
Empidonax oberholseri  Dusky flycatcher
Hirundinidae
Progne subis  Purple martin
Tachycineta bicolor  Tree swallow
Corvidae
Corvus brachyrhynchos  American crow
Corvus corax  Common raven
Cyanocitta stelleri  Steller’s jay
Perisoreus canadensis  Gray jay
Paridae
Parus atricapillus  Black-capped chickadee
Parus rufescens  Chestnut-backed chickadee
Aegithalidae
Psaltriperus minimus  Bushtit
Sittidae
Sitta canadensis  Red-breasted nuthatch
Sitta carolinensis  White-breasted nuthatch
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1 Compiled from habitat descriptions and distribution maps in Csuti et al. 1997.
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