United States
Department of
Agriculture

Forest Service

Pacific Northwest
Research Station

General Technical
Report
PNW-GTR-730

September 2007

Forest Peak Research Natural Area: Guidebook Supplement 33

Reid Schuller and Ronald L. Exeter

Authors

Reid Schuller is a consulting plant ecologist living in Bend, Oregon; **Ronald L. Exeter** is a botanist, Salem District, Marys Peak Resource Area, U.S. Bureau of Land Management, 1717 Fabry Road SE, Salem, OR 97306.

The PNW Research Station is publishing this guidebook as part of a continuing series of guidebooks on federal research natural areas begun in 1972.

Cover

Steep slopes of Forest Peak RNA with grass meadow vegetation and Oregon white oak (*Quercus garryana*) coppice in mid-ground and Douglas-fir (*Pseudotsuga menziesii*) in background. Dominant ground cover is a mixture of native and nonnative grasses. The northern ridgeline boundary of Forest Peak is on the upper right.

Abstract

Schuller, Reid; Exeter, Ronald L. 2007. Forest Peak Research Natural Area: guidebook supplement 33. Gen. Tech. Rep. PNW-GTR-730. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 23 p.

This guidebook describes the Forest Peak Research Natural Area (RNA), a 62.8-ha (153.3-ac) tract containing a mature Douglas-fir (*Pseudotsuga menziesii*) forest and a grass bald within the Willamette Valley Foothill Ecoregion. Forest Peak RNA also contains an undisturbed third-order stream reach.

Keywords: Research natural area, Douglas-fir forest, Oregon Coast Range, Willamette Valley foothill forest, grassland meadow, grass bald, third-order stream

Preface

The research natural area (RNA) described in this supplement[1] is administered by the Bureau of Land Management (BLM), U.S. Department of the Interior. The BLM Salem District office has RNA program administrative responsibility and the Marys Peak Resource Area has on-the-ground management responsibility for the RNA. Scientists and educators wishing to visit or use the RNA for scientific or educational purposes should contact the resource area field 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.

Forest Peak RNA is part of a federal system of such tracts established for research and educational purposes. Each RNA constitutes a site where natural features are protected or managed for scientific purposes and natural processes are allowed to dominate. Their main purposes are to provide:

- Baseline areas against which effects of human activities can be measured or compared.
- Sites for study of natural processes in undisturbed ecosystems.
- Gene pool preserves for all types of organisms, especially rare and endangered types.

[1] Supplement No. 33 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.

The federal system is outlined in *A Directory of the Research Natural Areas on Federal Lands of the United States of America.*[2]

Of the 96 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). Supplements to the guidebook such as this publication constitute additions to the system.

The guiding principle in management of RNAs is to prevent unnatural encroachments or activities that directly or indirectly modify ecological processes or conditions. Logging and uncontrolled grazing are not allowed, for example, nor is public use that might impair scientific or educational values. Management practices necessary to maintain or restore ecosystems may be allowed.

Federal RNAs provide a unique system of publicly owned and protected examples of undisturbed 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. In return, a scientist wishing to use an RNA is obligated to:

- Obtain permission from the appropriate administering agency before using the area.[3]
- 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 these limitations is to:

- Ensure that the scientific and educational values of the tract are not impaired.
- Accumulate a documented body of knowledge and information about the tract.
- Avoid conflict between studies and activities.

---

[2] Federal Committee on Ecological Reserves. 1977. A directory of the research natural areas on federal lands of the United States of America. Washington, DC: U.S. Department of Agriculture, Forest Service. 280 p.

[3] 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.

Research must be essentially nondestructive; destructive analysis of vegetation is generally not allowed, nor are studies requiring extensive modification of the forest floor or extensive excavation of soil. Collection of plant and animal specimens should be restricted to the minimum necessary to provide voucher specimens and other research needs. Under no circumstances may collecting significantly reduce populations of species. Collecting also must be carried out in accordance with agency regulations. Within these broad guidelines, appropriate uses of RNAs are determined by the administering agency.

Salem BLM management direction is to preserve, protect, or restore native species composition and ecological processes of biological communities (including terrestrial and aquatic cells[4] listed in the 2003 Oregon Natural Heritage Plan). These RNAs are available for short- or long-term scientific study, research, and education and will serve as a baseline against which human impacts on natural systems can be measured. The Marys Peak Resource Area does not issue special forest product permits within RNAs.

---

[4] Cells are the basic units that must be represented in a natural area system. A cell can 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.

Contents

1 **Introduction**
2 **Access and Accommodations**
3 **Environment**
5 **Climate**
6 **Vegetation**
10 **Fauna**
10 **Disturbance History**
12 **Research History**
12 **Maps and Aerial Photography**
12 **Acknowledgments**
13 **English Equivalents**
13 **References**
15 **Appendix 1: Plants**
20 **Appendix 2: Amphibians, Reptiles, Birds, and Mammals**

Introduction

Forest Peak Research Natural Area (RNA) is a 62.8-ha (155.3-ac) area located in the western foothills of the Willamette Valley, Oregon. The tract was designated as an RNA in 1995.[1] The tract contains first- and second-order stream reaches in addition to a small segment of an undisturbed, third-order stream within the Willamette Valley Ecoregion[2] (Oregon Natural Heritage Program 2003).

Remnant Douglas-fir forest

Most of the RNA contains a high-quality, representative example of mature Douglas-fir (*Pseudotsuga menziesii*) forest (see appendixes for species names and authorities). Historically, Douglas-fir forests were a common feature within the Willamette Valley foothills. This has changed significantly over the past century owing to timber harvesting. Today, low-elevation Douglas-fir stands that are uncut and unroaded are few in number and small. In contrast to other remnant Douglas-fir stands in the region, Forest Peak is comparatively large. Much of the closed-canopy forest of the RNA has retained its "interior stand" integrity and is less vulnerable to edge effects (windthrow, altered insolation budgets) than most smaller RNAs within the region (Juday 1976).

Douglas-fir is a prominent feature in other RNAs occurring within and along the foothill margins of the Willamette Valley. As a group, the Douglas-fir forest communities located within the Willamette Valley and Valley Margin ecological provinces occur along a moisture gradient with drier sites in the south and increasingly wetter sites to the north. Along this gradient, many of the mature and old-growth stands within RNAs support stands of Douglas-fir in the upper canopy that are successional to either grand fir (*Abies grandis*) or western hemlock (*Tsuga heterophylla*). For further comparison, see Fox Hollow RNA, Mohawk RNA, and Camas Swale RNA to the south of Forest Peak, and Little Sink RNA, and The Butte RNA to the north.

Forest Peak is distinctive in that it occurs along the wetter end of the moisture gradient, based on the presence of grand fir along the streams at lower elevations within the RNA. The mesic moisture regime is also reflected by the abundance of bigleaf maple (*Acer macrophyllum*) and swordfern (*Polystichum munitum*). But the

[1] In May, 1995, 54.2-ha (134-ac) were designated in the Salem District Resource Management Plan. An additional 8.6 ha (21.3-ac) parcel is proposed for addition to the designated RNA. The combined 62.8-ha (155-ac) parcels are treated in this report.

[2] Roughly the same geographic area has variously been referred to as the Western Oregon Interior Valleys Province—Willamette Valley section (Dyrness et al. 1975), the Valley Margin Zone (Juday 1976), and the Western Interior Valleys Physiographic Province (USDI BLM 1996).

Douglas-fir stands at Forest Peak are **not** successional to western hemlock and do not appear to be successional to grand fir, at least on the mid and upper slopes of Forest Peak. We sampled three Douglas-fir stands in 2006 and provisionally placed them into the Douglas-fir series based on the sparse cover or absence of grand fir. The comparatively large size of the RNA, the presence of a core area without edge effects, and the occurrence of the Douglas-fir on the mesic end of a moisture gradient combine to provide a distinctive niche for Forest Peak within the region (Greene 1989). A 3.2-ha (8-ac) grass meadow[3] along the summit ridge fringed by an Oregon white oak (*Quercus garryana*) woodland represents additional site diversity within Forest Peak RNA. Magee (1985) defined grass bald as any meadow that occurs on or near the summits of montane peaks and ridges. The sites on which they occur are generally located within the climatic tolerance ranges of adjacent tree species.

Forest Peak RNA is administered by the Salem District of the USDI Bureau of Land Management (BLM) and managed as part of the Marys Peak Resource Area.

Access and Accommodations

Forest Peak RNA is located in section 29, township 10 South, range 5 West, Willamette Meridian. Contact the Salem BLM for access information and permission to access the area (fig.1). Vehicle access via BLM Road 10-6-14 is as follows: From Monmouth, Oregon, at the intersection of Hwy. 99W and Main Street E, travel south on Hwy. 99 for approximately 11.8 km (7.3 mi) to the intersection of Hwy. 99W and Airlie Road. Turn west on Airlie Road for approximately 9.5 km (5.9 mi) to the Junction of Maxfield Creek Road. Turn south on Maxfield Creek road and continue approximately 8.5 km (5.3 mi) to the junction of BLM Road 10-6-14. This junction is located between two bridges on the south side of Maxfield Creek Road. Access to BLM Road 10-6-14 goes through the residential properties at 24820 and 24822 Maxfield Creek Road. Vehicle access is restricted by private landowners and two locked gates. Past the second gate proceed on Road 10-6-14 for 5.2 km (3.2 mi) to road junction 10-5-20. Continue on road 10-6-14 approximately 2 km (1.25 mi) to the ridgetop and park. Walk west-southwest approximately 0.3 km (0.2 mi) to the Forest Peak RNA boundary.

An alternate access route (not shown) is available, but access is also restricted by locked gates on private lands.

[3] We refer to "grass meadows" throughout the text, replacing the less descriptive term "grass bald."

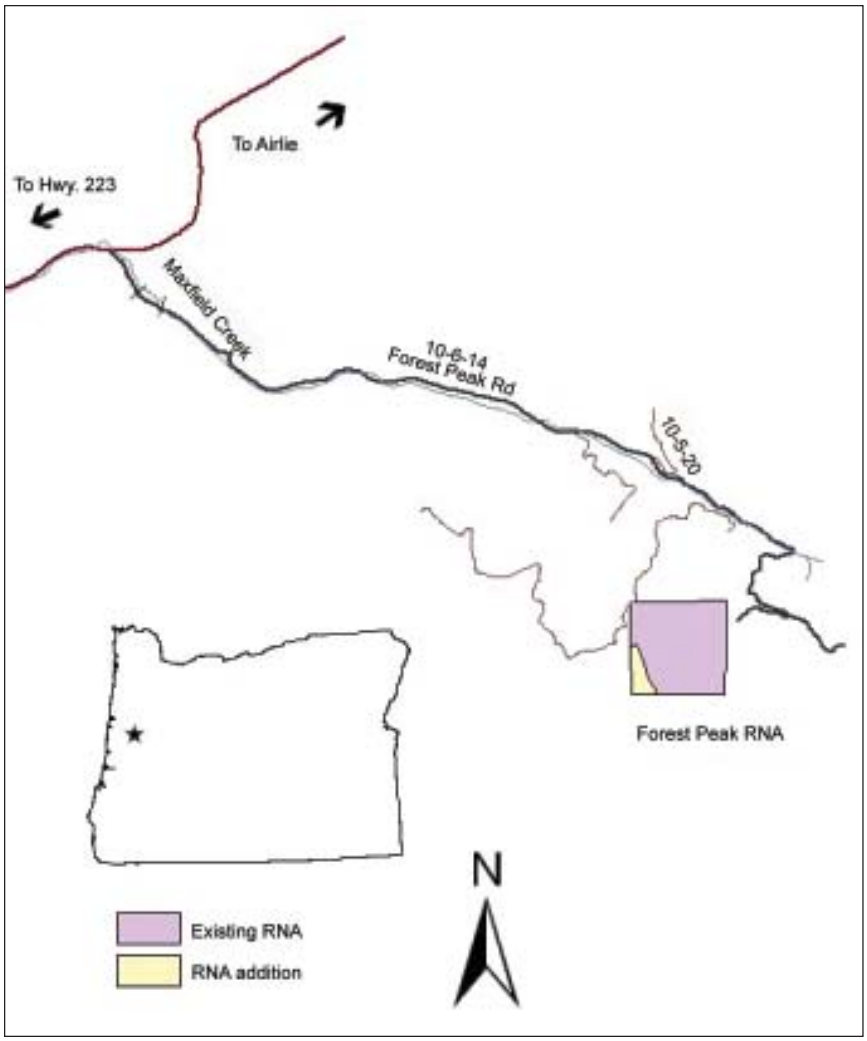

Figure 1—Forest Peak Research Natural Area (RNA) location and access.

There are no maintained trails within the RNA. Cross-country foot travel is generally difficult owing to steep slopes and loose soils. Nearby lodging accommodation is available in Monmouth or Corvallis, Oregon.

Environment

Elevations range from 278 m (912 ft) in the southeastern portion where an unnamed, third-order stream flows south out of the RNA to 540 m (1,778 ft) along the ridgeline of Forest Peak in the northern portion of the tract (fig. 2). Slopes are moderately inclined (20 to 40 percent) and face southeast along the summit ridgeline, but then drop steeply (40 to 80 percent) through the central portion of the

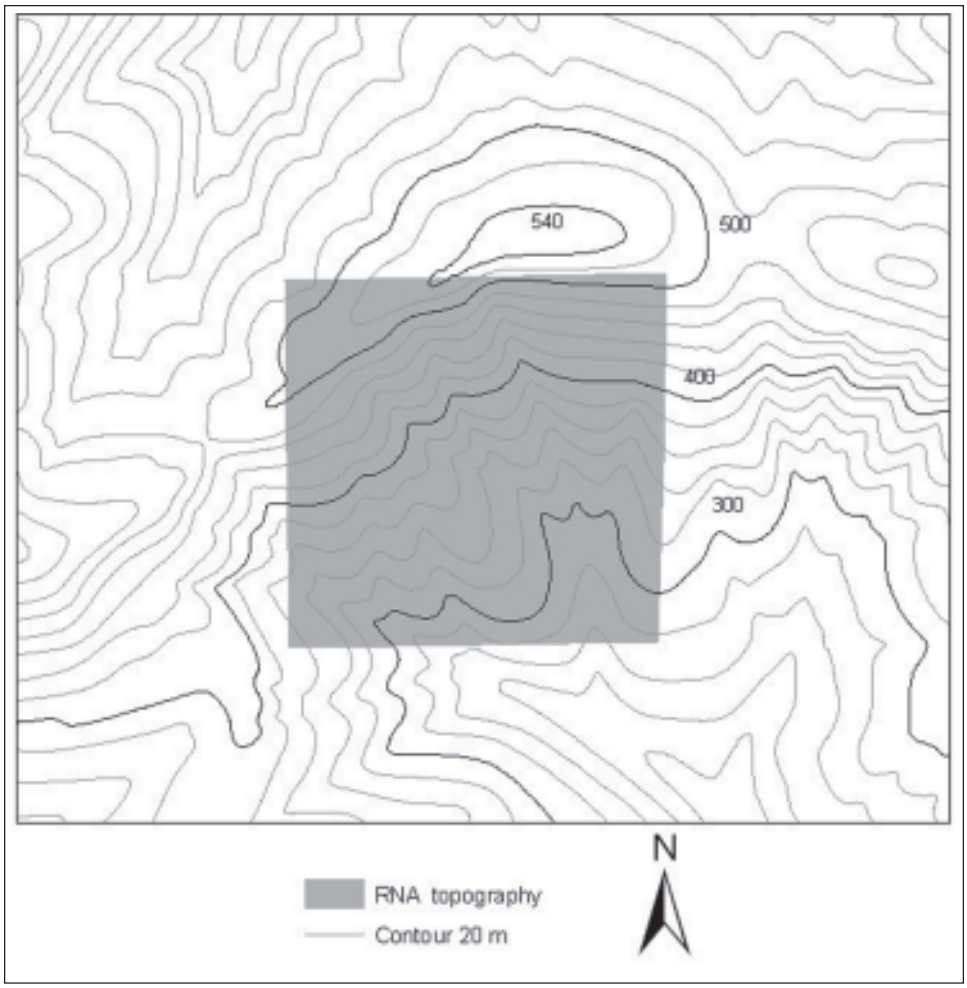

Figure 2—Forest Peak Research Natural Area (RNA) boundary and topography.

RNA. Slopes are oriented south to southeast in the southern third of the area, and drainages are moderately steep.

Bedrock exposed along the summit ridge of Forest Peak has been mapped as part of the Siletz River Volcanics series of lower Eocene age. These rocks are part of a broad, northeast trending belt extending from the northwest corner of the Monroe quadrangle to Coffin Butte in the Albany quadrangle. Rocks consist of a thick sequence of zeolitic pillow lava, basalt flows, and flow breccia, which can be interbedded with minor amounts of tuffaceous siltstone and fine tuff (Vokes et al. 1954).

The primary (85 percent of the area) soil mapping unit within the RNA is the Price-MacDunn-Ritner complex, 30- to 60-percent slopes. Parent material is a loamy colluvium derived from basalt over a clayey colluvium derived from basalt.

Soils are silty clay loams to a depth of 2.5 to 20 cm (1 to 8 in), and silty clay at depths of 79 to 137 cm (31 to 54 in). A gravelly silty clay loam layer occurs at 137 to 218 cm (54 to 86 in) depth and overlies bedrock. The taxonomic classification of this complex includes fine, mixed, superactive, mesic Typic Haploxerepts; and clayey-skeletal, mixed, superactive mesic Typic Haploxerepts (USDA NRCS 2006). Soils underlying the grass bald are mapped as Witzel-Ritner complex, 30- to 60-percent slopes. Parent material is gravelly colluvium derived from basalt. Soils are shallow and are very cobbly loam to a depth of 0 to 10 cm (0 to 4 in) and very cobbly clay loam to a depth of 28 to 43 cm (11 to 17 in) to contact unweathered bedrock (USDA NRCS 2006).

Climate

Modified by a rain-shadow effect

The climate of Forest Peak RNA is modified by a rain-shadow effect resulting from its position along the lee side of the Oregon Coast Range (Franklin and Dyrness 1988) and by its geographic proximity to the warm, dry Willamette Valley (Hawk 1974). Summers are usually moderately dry and warm with the June-August period receiving about 4 percent of the total annual precipitation. Winters are typically cool and wet with the majority of precipitation occurring during the November-March period, mostly in the form of rain. Average annual snowfall of 193 mm (7.6 in) occurs predominantly from December through February. Snowpack typically melts quickly. For the 40-year period 1961 to 2001, snowpack depth monthly averages were negligible (Western Regional Climate Center 2006).

Meteorological data from the climatic station of comparable elevation and distance from the Pacific Ocean nearest to Forest Peak, the Corvallis, Oregon, station (Western Regional Climate Center 2006). The Corvallis station is located approximately 11.3 km (7 mi) south-southwest of the RNA.

Period of record: 7/1/1948 to 12/31/2005–Corvallis Water Bureau, Oregon (station 351877)

Average minimum January temperature	0.4 °C	(32.8 °F)
Average maximum January temperature	7.4 °C	(45.4 °F)
Average minimum July temperature	10.3 °C	(50.6 °F)
Average maximum July temperature	26.0 °C	(78.8 °F)
Average annual precipitation	1715 mm	(67.51 in)
Average June-August precipitation	61 mm	(2.42 in)
Average annual snowfall	193 mm	(7.60 in)

Vegetation

Douglas-fir forest

Forest Peak RNA has two major vegetation cover types: coniferous forest and grassland meadows. The conifer forest overstory is dominated by Douglas-fir. Bigleaf maple (*Acer macrophyllum*) is also abundant and scattered throughout the RNA where it forms a subcanopy beneath the taller Douglas-fir. Grand fir (*Abies grandis*) is a component of the forest canopy adjacent to the third-order stream at lower elevations in the southeastern portion of the tract. It also occurs sporadically as a sapling in the southern half (lower elevation portion) of the RNA (Alvorsen 1989), but occurs infrequently on the steep, upper elevation slopes below the summit ridge. Western hemlock (*Tsuga heterophylla*) and western redcedar (*Thuja plicata*) are both absent from the RNA. Oregon white oak (*Quercus garryana*) forms a narrow fringe surrounding the grassland meadows. Pacific madrone (*Arbutus menziesii*) also occurs sporadically adjacent to the summit ridgeline where openings in the upper canopy provide more sunlight. At lower elevations, red alder (*Alnus rubra*) and Oregon ash (*Fraxinus latifolia*) are locally common within riparian habitats (Alvorsen 1989).

The forest understory is quite open, and tall shrubs such as California hazelnut (*Corylus cornuta* var. *californica*) and oceanspray (*Holodiscus discolor*) have a patchy distribution and are only locally abundant. The low shrub, dwarf Oregongrape (*Berberis nervosa*), is widespread and abundant on steep, forested slopes. Poison oak (*Toxicodendron diversilobum*) is locally abundant along the grassland meadow margins and in forest openings.

Herbaceous ground cover within the Douglas-fir forest is variable. Swordfern (*Polystichum munitum*) is locally abundant in some areas. Common associates may include alpine circaea (*Circaea alpina*), parsley-leaved lovage (*Ligusticum apiifolium*), Hooker's fairybells (*Prosartes hookeri*), inside-out flower (*Vancouveria hexandra*), vanilla leaf (*Achlys triphylla*) (Alvorsen 1989), and bracken fern (*Pteridium aquilinum*).

Plant association descriptions of old-growth forests in the Valley Margin Zone indicate that the most common and widespread plant association in the region is present within the RNA: the Douglas-fir–bigleaf maple/hazel/pathfinder plant association (*Pseudotsuga menziesii-Acer macrophyllum*/*Corylus cornuta* var. *californica/Adenocaulon bicolor*) (Juday 1976). A recent classification of forest plant associations in the Oregon Coast Range (McCain and Diaz 2002) describes an additional plant association that occurs at lower elevations within Forest Peak RNA: the grand fir/dwarf Oregongrape-salal (*Abies grandis*/*Berberis nervosa-Gaultheria shallon*) plant association. Other plant associations were identified in 2006 when

three permanent vegetation plots were established to quantitatively characterize stand structure and vegetation composition of representative stands within the RNA (tables 1 and 2). These have been identified as Douglas-fir/California hazelnut-creeping snowberry/swordfern (*Pseudotsuga menziesii/Corylus cornuta* var. *californica-Symphoricarpos mollis/Polystichum munitum*) (fig. 3), and Douglas-fir/dwarf Oregongrape (*Pseudotsuga menziesii/Berberis nervosa*) (fig. 4). Classification of these associations is provisional and is based on the minor role or absence of shade-tolerant conifers. We placed these stands in the Douglas-fir series based on the sparse cover or absence of grand fir. In the nearby and more heavily managed McDonald-Dunn Forest, Hubbard (1991) concluded that the presence of a Douglas-fir series (e.g., association without grand fir) was not supported by her data.

Grass meadow

A recent botanical survey of the grass meadow found it to be a mix of nonnative and invasive grass species and a diverse array of native grasses and herbaceous species. Dominant nonnative species include tall oatgrass (*Arrhenatherum elatius*), soft brome (*Bromus hordeaceus*), poverty brome (*Bromus sterilis*), hedgehog dogtail (*Cynosurus echinatus*), and medusahead wildrye (*Taeniatherum caput-medusae*). A native species of bracken fern (*Pteridium aquilinum)* is a major component of the herb layer, which increases with fire and/or soil disturbance. Native herbaceous species that are not dependent on or increase with soil disturbance include broadpetal strawberry (*Fragaria virginiana*), blue fieldmadder (*Sherardia arvensis*), and Oregon sunshine (*Eriophyllum lanatum*). Native bunchgrasses such as Roemer's fescue (*Festuca roemeri*), Lemmon's needlegrass (*Achnatherum lemmonii*), California danthonia (*Danthonia californica*), and junegrass (*Koeleria macrantha*) are present in minor amounts (Salix Associates 2004). Noteworthy additions to the herbaceous flora include species typical of Willamette Valley prairies: Puget balsamroot (*Balsamorhia deltoidea*), rhombic-petaled clarkia (*Clarkia rhomboidea*), American carrot (*Daucus pusillus*), and spatulate-leaved spurge (*Euphorbia spathulata*) (Alvorsen 1989) (see app. 1).

Table 1—Physical features of three permanent plots in Forest Peak Research Natural Area

	Plot		
Physical features	**103**	**104**	**105**
Elevation (m)	466	383	425
Aspect (°)	324	294	352
Slope grade (%)	15	27	30
Slope position	Upper	Mid	Mid

Table 2—Plant association, understory coverage, and frequency of three permanent plots in the Forest Peak Research Natural Area

	Plant association[a] and plot					
	Psme/Cococ-Symo/Pomu Plot 103		Psme/Bene Plot 104		Psme/Bene Plot 105	
Species	Cover[b]	Frequency	Cover	Frequency	Cover	Frequency
			Percent			
Shrubs:						
Berberis nervosa[c]		—	66	—	52	—
Corylus cornuta var. *californica*		—		—	7	—
Holodiscus discolor	7	—		—		—
Rosa gymnocarpa	tr	—	1	—	3	—
Symphoricarpos mollis	1	—	2	—	1	—
Toxicodendron diversilobum		—	1	—		—
Herbs, grasses, and ferns:						
Polystichum munitum	28	57	4	7	18	29
Circaea alpina	2	28				
Ligusticum apiifolium	4	36				
Hieracium albiflorum	tr	7				
Goodyera oblongifolia	tr	4				
Lathyrus sp.	tr	4				
Viola sempervirens	tr	4				
Trientalis latifolia	tr	4			tr	4
Lactuca muralis	tr	7			1	4
Melica subulata	tr	14			tr	4
Galium triflorum	1	21			tr	14
Moehringia macrophylla	1	14	tr	4		
Pteridium aquilinum			2	7		
Iris chrysophylla			tr	4		
Vancouveria hexandra			3	11	3	25
Adenocaulon bicolor			tr	4	2	11
Rubus ursinus[d]			tr	4	tr	7
Trisetum sp.			tr	4	tr	7
Osmorhiza berteroi			tr	4	tr	4
Anemone deltoidea			tr	7	tr	4
Prosartes smithii					4	29
Thalictrum occidentale					2	7
Trillium ovatum					1	7
Bromus vulgaris					tr	14
Nemophila parviflora					tr	4
Fragaria vesca var. *crinita*					tr	4

Note: PSME = *Pseudotsuga menziesii*, COCOC = *Corylus cornuta* var. *californica*, SYMO = *Symphoricarpos mollis*, POMU = *Polystichum munitum*, BENE = *Berberis nervosa*. tr = trace (<0.5 percent foliar cover).

[a] Plant association names all have a suffix, NWO Coast, that differentiates them from plant associations having similar names that occur in the Oregon Cascades sensu McCain and Diaz (2002).

[b] Cover is expressed as percentage of foliar cover; frequency is expressed as percentage of relative frequency. Zero values are not included.

[c] McCain and Diaz (2002) referred to *Berberis nervosa* as *Mahonia nervosa*. We use the currently accepted genus name of *Berberis* in this document. See Flora of North America (2006) and the Oregon Flora Project (2006) in the "References" section.

[d] Treated as an herb in this data set.

Figure 3—Understory vegetation with oceanspray (*Holodiscus discolor*) occupying the tall shrub layer and swordfern (*Polystichum munitum*) a conspicuous component of the herbaceous layer within a 150-year-old stand of Douglas-fir (*Pseudotsuga menziesii*). Taken from plot number 103.

Figure 4—Understory vegetation with California hazelnut (*Corylus cornuta* var. *calfornica*) occupying the tall shrub layer and dwarf Oregongrape (*Berberis nervosa*) a dominant component of the low shrub layer. Swordfern (*Polystichum munitum*) is patchy and locally abundant. Taken from plot number 104.

Tree age data

Tree age data were collected in 2006 from 12 Douglas-fir (four samples collected from dominant individuals within each of three permanent plots). Tree diameters at core height ranged between 66 and 125 cm (26 and 49 in). Tree ages ranged from 113 years old to 183 years. Eight of the twelve trees were aged between 152 and 167 years old. Douglas-fir mean age is 151 years, and median age is 155 years. This indicates a major period of forest establishment around 1840 to 1850, probably a result of a stand-destroying fire preceding Douglas-fir establishment. This period coincides with the immigration of Euro-Americans into the adjacent Willamette Valley. Similarly, this period coincides with the cessation of annual prairie burning by Native Americans (Johannessen 1971, Morris 1934). The presence of a grass meadow within the RNA raises the probability that a grassland burn escaped into the adjacent forest. Further support for this scenario is the presence of fire-charred old-growth Douglas-fir situated along the third-order stream in the southeastern portion of the tract (Alvorsen 1989). These >183-cm (6-ft) diameter at breast height (d.b.h.) specimens are located in a ravine at the confluence of two small streams. This topographic position is where Juday (1976) often located old-growth stringers (linear stands) that survived stand-destroying fires in the Valley Margin Zone and the Oregon Coast Range.

Figure 5 illustrates the current age-class distribution of forest stands within the RNA. It is consistent with a history of a stand-destroying fire followed by a surge of Douglas-fir recruitment and establishment, followed by periodic establishment of Douglas-fir and bigleaf maple.

Fauna

Reptiles, amphibians, birds, and mammals known or expected to occur within the RNA are listed in appendix 2. Lists have been compiled from a combination of field observations and published literature. They represent an informed approximation based on geographic location, habitat availability, and species distribution patterns (Csuti et al. 1997).

Disturbance History

A stand-destroying fire burned through the RNA some time before about 1840. This period also marked a significant increase in Euro-American settlement of the Willamette Valley. Soon after, the pattern of annual burning of grassland meadows and prairies for hunting and collection of food plants by Native Americans was significantly curtailed. Large fires in the *Tsuga heterophylla* Zone of the Oregon

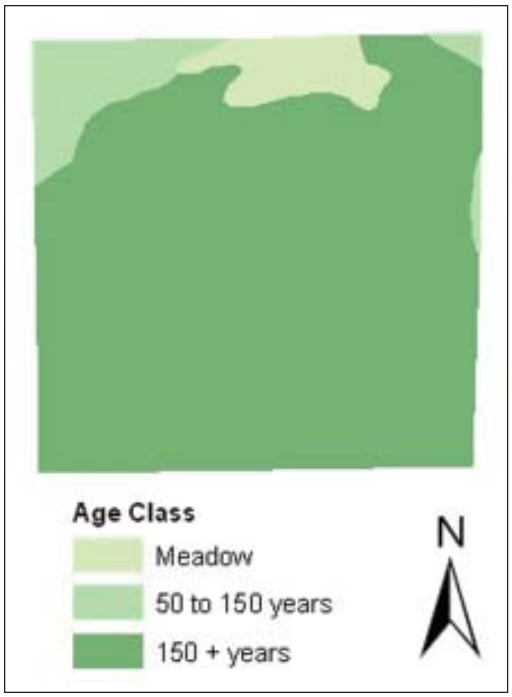

Figure 5—Stand age-class distribution in Forest Peak Research Natural Area.

Coast Range, the Cascade Mountains, and the Olympic Mountains of Washington were recorded in the first part of the 20th century. The mid and late 20th century witnessed the advent of modern fire suppression and timber harvesting techniques that greatly reduced the chance of fires burning free the way they once did (Agee 1993). The absence of wildfire within Forest Peak RNA over the past century and a half has led to filling in of small openings and the margins of the grassland meadows so that the former openings now have an overstory of Douglas-fir suppressing the shade-intolerant Oregon white oak (*Quercus garryana*) and Pacific madrone (*Arbutus menziesii*). The absence of a major fire event for the past 150 years has allowed for the development of the Douglas-fir and bigleaf maple forest present on the site today.

Absence of a recent major fire

The impacts of road building, forest harvesting, and grazing practices in the past century have contributed to the invasion and spread of highly invasive, weedy plant species. Evidence of weed invasion is most pronounced in the grass meadows where numerous nonnative grass species have invaded along with a small population of the highly invasive shrub, Scot's broom (*Cytisus scoparius*). Grass invaders

present in the grass bald include tall oatgrass (*Arrhenatherum elatius*), soft brome (*Bromus hordeaceus*), poverty brome (*Bromus sterilis*), hedgehog dogtail (*Cynosurus echinatus*), and Medusahead wildrye (*Taeniatherum caput-medusae*). A highly invasive perennial grass, slender falsebrome (*Brachypodium sylvaticum*), has also been recorded in the RNA. Meadow knapweed (*Centaurea pratensis*), another highly invasive species, has recently been observed growing in the vicinity on cutover private forest lands (Salix Associates 2004). The grass meadows and surrounding environs were grazed by domestic livestock and feral goats at different times in the past (Alvorsen 1989).

Research History

Alvorsen (1989) conducted a floristic inventory and natural area assessment in 1989. Salix Associates (2004) conducted a botanical inventory of seven land parcels in the vicinity of Forest Peak. Three permanent vegetation plots were established in 2006 to characterize forest structure and composition and to establish a baseline from which to monitor vegetation change over time (the project summarized, in part, in table 2). Data are on file at the Salem District office of the BLM, and the Forestry Sciences Laboratory, Pacific Northwest (PNW) Research Station, U.S. Department of Agriculture, Forest Service, Corvallis, Oregon.

Maps and Aerial Photography

Maps applicable to Forest Peak RNA: Topographic—Airlie South 7.5 minute 1:24,000 scale, 1984; BLM Salem District Westside Recreation Map 1:10,560, 1996. Aerial Photography: 2003 color 1:12,000 (6-07-2003 BLM 12 0-03-SAL 10-38, 0, 1, 2, 3); 1998 (7-23-1998 BLM 12 0-98-SAL 30-20-20,21,22); 1993 (6-2-1993 BLM 12 0-93-ASC 41-27-57); 1982 (5-29-1982 BLM 12 0-82-ASC 10-23 A-7); and 1956 (7-16-1956 PO 8-1,2,3,4).

Acknowledgments

We thank Sarah Greene, Greg Downing, Claire Hibler, and Hugh Snook for assistance in the field, and Dave Calver for assistance in the field and creating maps for this publication. We also thank the Salem District, BLM for funding this project and the USDA Forest Service PNW Research Station for publishing this supplement.

English Equivalents

1 hectare (ha) = 2.47 acres (ac)
1 kilometer (km) = 0.62 mile (mi)
1 meter (m) = 3.28 feet (ft)
1 centimeter (cm) = 0.394 inch (in)
1 millimeter (mm) = 0.0394 inch

References

Agee, J.K. 1993. Fire ecology of Pacific Northwest forests. Washington, DC: Island Press. 493 p.

Alvorsen, E. 1989. Unpublished inventory report. 6 p. On file with: USDI Bureau of Land Management, Salem District Office, 1717 Fabry Road SE, Salem, OR 97306.

Csuti, B.; Kimerling, A.J.; O'Neil, T.A.; Shaughnessy, M.M.; Gaines, E.P.; Huso, M.M.P. 1997. Atlas of Oregon wildlife. Corvallis, OR: Oregon State University Press. 427 p. + map.

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.

Flora of North America. 2006. Partial nomenclature of vascular plants, ferns, and fern allies within Oregon. http://www.efloras.org/flora_page.aspx?flora_id=1. (November 3, 2006).

Franklin, J.F.; Dyrness, C.T. 1988. Natural vegetation of Oregon and Washington. 2nd ed. Corvallis, OR: Oregon State University Press. 452 p.

Greene, S.E. 1989. Unpublished manuscript. 2 p. On file with: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station, 3200 SW Jefferson Way, Corvallis, OR 97331.

Hawk, G.M. 1974. Little Sink Research Natural Area: supplement No. 4 to Federal Research Natural Areas in Oregon and Washington. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 14 p.

Hubbard, C.J. 1991. A plant association classification for McDonald-Dunn Forest. Corvallis, OR: Oregon State University. 178 p. M.S. thesis.

Johannessen, C.L. 1971. The vegetation of the Willamette Valley. Annals of the Association of American Geographers. 61(2): 286–302.

Juday, G.P. 1976. The location, composition, and structure of old-growth forests of the Oregon Coast Range. Corvallis, OR: Oregon State University. 206 p. Ph.D. dissertation.

Magee, T.K. 1985. Invasion of trees into a grassy bald on Marys Peak, Oregon, Coast Range. Corvallis, OR: Oregon State University. 165 p. M.S. thesis.

McCain, C.; Diaz, N. 2002. Field guide to the forested plant associations of the northern Oregon Coast Range. Tech. Pap. R6-NR-ECOL-TP-02-02. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Region. 250 p.

Morris, W.G. 1934. Forest fires in Oregon and Washington. Oregon Historical Quarterly. 35: 313–339.

Oregon Flora Project. 2006. The Oregon plant atlas. http://www.oregonflora.org/oregonplantatlas.html. (September 22, 2006).

Oregon Natural Heritage Program. 2003. Oregon natural heritage plan. Salem, OR: Department of State Lands, 167 p.

Salix Associates. 2004. Botanical inventory of Maxfield parcels. Unpublished inventory report. 8 p. On file with: USDI Bureau of Land Management, Salem District Office, 1717 Fabry Road SE, Salem, OR 97306.

U.S. Department of Agriculture, Natural Resources Conservation Service [USDA NRCS]. 2006. Soil maps from Benton County, Oregon. http://websoilsurvey.nrcs.usda.gov/app/. (December 28, 2006).

U.S. Department of the Interior, Bureau of Land Management [USDI BLM]. 1996. Research natural areas in Washington and Oregon. 2nd ed. BLM/OR/WA/PL-96/016+1792. Portland, OR. 74 p.

Vokes, H.E.; Myers, D.A.; Hoover, L. 1954. Geology of the west-central border area of the Willamette Valley, Oregon. Oil and Gas Investigations Map OM 110. Salem, OR: U.S. Geological Survey.

Western Region Climate Center. 2006. Oregon climate data. http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?orfall. (December 10, 2006)

Appendix 1: Plants[12]

Scientific name	Common name
Coniferous trees	
Abies grandis (Dougl.) Lindl.	Grand fir
Pseudotsuga menziesii (Mirbel) Franco.	Douglas-fir
Taxus brevifolia Nutt.	Western yew
Thuja plicata Donn ex D. Don	Western redcedar
Tsuga heterophylla (Raf.) Sarg.	Western hemlock
Deciduous trees >8 m (26.3 ft) tall	
Acer macrophyllum Pursh	Bigleaf maple
Alnus rubra Bong.	Red alder
Arbutus menziesii Pursh	Pacific madrone
Corylus cornuta L. var. *californica* (DC.) Sharp	California hazelnut
Quercus garryana Dougl.	Oregon white oak
Tall shrubs 2 to 8 m (6.6 to 26.3 ft) tall	
Acer circinatum Pursh	Vine maple
Amelanchier alnifolia Nutt.	Serviceberry
Cornus nuttallii Aud. ex T. & G.	Pacific dogwood
Cornus stolonifera Michx.	Red-osier dogwood
Fraxinus latifolia Benth.	Oregon ash
Holodiscus discolor (Pursh) Maxim.	Oceanspray
Oemleria cerasiformis Torr. & Gray	Indian plum
Philadelphus lewisii Pursh	Mockorange
Medium shrubs 0.5 to 2 m (1.6 to 6.6 ft) tall	
Berberis aquifolium Pursh	Tall Oregongrape
Cytisus scoparius (L.) Link	Scot's broom, Scotch broom
Gaultheria shallon Pursh	Salal
Lonicera ciliosa (Pursh) DC.	Orange honeysuckle
Lonicera hispidula (Lindl.) Dougl.	Hairy honeysuckle
Ribes bracteosum Dougl.	Stink currant
Rosa gymnocarpa Nutt.	Baldhip rose
Rubus leucodermis Dougl. ex T. & G.	Whitebark raspberry
Symphoricarpos mollis Nutt.	Creeping snowberry
Toxicodendron diversilobum (Torr. & Gray) Greene	Poison oak
Low shrubs <0.5m (1.6 ft) tall	
Berberis nervosa Pursh	Dwarf Oregongrape
Rubus ursinus Cham. & Schlecht.	Trailing blackberry
Whipplea modesta Torr.	Whipplevine

Scientific name	Common name
Ferns and allies	
Adiantum pedatum L.	Maidenhair fern
Athyrium filix-femina (L.) Roth.	Lady fern
Dryopteris arguta (Kaulf.) Watt.	Coastal shield fern
Pityrogramma triangularis (Kauf.) Maxon	California goldfern
Polypodium glycyrrhiza DC. Eat.	Licorice fern
Polystichum munitum (Kaulf.) Presl	Western swordfern
Pteridium aquilinum (L.) Kuhn.	Bracken fern
Herbs	
Achillaea millefolium L.	Western yarrow
Achlys triphylla (Smith) DC.	Vanilla leaf
Adenocaulon bicolor Hook.	Pathfinder, trail plant
Agoseris grandiflora (Nutt.) Greene	Large-flowered agoseris
Allium sp.	Onion
Amsinckia retrorsa Suksd.	Rigid fiddleneck
Anaphalis margaritacea (L.) B. & H.	Pearly everlasting
Anemone deltoidea Hook.	Three-leaved anemone
Anisocarpus madioides Nutt.	Woodland tarweed
Apocynum androsaemifolium L.	Spreading dogbane
Aquilegia formosa Fisch.	Red columbine
Arabis glabra (L.) Bernh.	Tower rockcress
Asarum caudatum Lindl.	Wild ginger
Balsamorhiza deltoidea Nutt.	Puget balsamroot
Brodiaea coronaria (Salisb.) Engl.	Harvest brodiaea
Calochortus tolmiei H. & A.	Tolmie mariposa
Calypso bulbosa (L.) Oakes	Calypso orchid
Calystegia atriplicifolia Hallier	Night-blooming morning glory
Campanula scouleri Hook. ex A. DC.	Scouler's harebell
Cardamine oligosperma Nutt.	Little western bittercress
Centaurea nigrescens Willd.	Meadow knapweed
Cephalanthera austiniae (Gray) Heller	Phantom orchid
Cerastium glomeratum Thuill.	Sticky chickweed
Cimicifuga elata Nutt.	Tall bugbane
Circaea alpina L.	Alpine circaea
Cirsium arvense (L.) Scop.	Canada thistle
Cirsium callilepis (Greene) Jeps.	Mountain thistle
Clarkia amoena (Lehm.) Nels. & Macbr.	Farewell-to-spring
Clarkia purpurea (Curtis) Nels. & Macbr.	Clarkia
Clarkia rhomboidea Dougl.	Rhombic-petaled clarkia
Claytonia perfoliata (Donn) Howell	Miner's lettuce
Claytonia sibirica (L.) Howell	Siberian miner's lettuce
Collomia grandiflora Dougl. ex Lindl.	Large-flowered collomia
Collomia heterophylla Hock.	Varied leaf collomia
Cornus canadensis L.	Bunchberry dogwood
Crepis capillaris (L.) Wallr.	Smooth hawksbeard
Cryptantha intermedia (Gray) Greene	Common cryptantha
Cynoglossum grande Dougl. ex Lehm.	Pacific houndstongue

Scientific name	Common name
Daucus carota L.	Queen Anne's lace
Daucus pusillus Michx.	American carrot
Delphinium menziesii DC.	Menzies' larkspur
Dicentra formosa (Andr.) Walpers	Pacific bleedingheart
Epilobium brachycarpum C. Presl	Autumn willowweed
Equisetum telmateia Ehrh.	Giant horsetail
Eriogonum nudum Dougl. ex Benth.	Barestem buckwheat
Eriophyllum lanatum (Pursh) Forbes	Oregon sunshine
Erodium cicutarium (L.) L'Her.	Filaree, stork's-bill
Euphorbia spathulata Lam.	Spatulate-leaved spurge
Eurybia radulina (Gray) Nesom	Roughleaf aster
Fragaria vesca L. var. *crinita* (Rydb.) Hitchc.	Hairy woodland strawberry
Fragaria virginiana Duchesne var. *platypetala* (Rydb.) Hall	Broad petal strawberry
Galium aparine L.	Stickywilly
Galium parisiense L.	Wall bedstraw
Galium triflorum Michx.	Sweetscented bedstraw
Geranium dissectum L.	Cut-leaf geranium
Goodyera oblongifolia Raf.	Western rattlesnake plantain
Hieracium albiflorum Hook.	White-flowered hawkweed
Hydrophyllum tenuipes Heller	Slender-stem waterleaf
Hypericum perforatum L.	St. Johnswort
Hypochaeris radicata L.	Hairy cat's-ear
Iris chrysophylla T.J. Howell	Yellow-leaf iris
Iris tenax Dougl.	Oregon iris
Lactuca muralis (L.) Fresen.	Wall lettuce
Lagophylla ramosissima Nutt.	Slender rabbitleaf
Lapsana communis L.	Nipplewort
Lathyrus nevadensis S. Wats. var. *nevadensis*	Sierra peavine
Lathyrus polyphyllus Nutt. ex T. & G.	Pacific peavine
Leucanthemum vulgare Lam.	Oxeye daisy
Ligusticum apiifolium (Nutt.) Gray	Parsley-leaved lovage
Lithophragma sp.	Woodlandstar
Lomatium utriculatum (Nutt.) Coult. & Rose	Pomo-celery lomatium
Lotus purshianus (Benth.) C. & C.	Spanish-clover
Lupinus polycarpus Greene	Small-flowered lupine
Madia gracilis (Smith) Keck var. *gracilis*	Slender tarweed
Maianthemum racemosum (L.) Link	Feathery false-Solomonseal
Maianthemum stellatum (L.) Desf.	Starry false-Solomonseal
Marah oreganus (T. & G.) Howell	Oregon bigroot
Mimulus alsinoides Dougl. ex Benth.	Chickweed monkeyflower
Mimulus guttatus DC.	Common monkeyflower
Mitella caulescens Nutt.	Leafy mitrewort
Moehringia macrophylla (Hook.) Fenzl	Bigleaf sandwort
Myosotis discolor Pers.	Yellow and blue forget-me-not
Nemophila parviflora Dougl. ex Benth.	Smallflower nemophila
Oenanthe sarmentosa Presl ex DC.	Pacific waterparsley
Osmorhiza berteroi DC.	Mountain sweet-cicely
Petasites frigidus (L.) Fries var. *palmatus* (Ait.) Cronq.	Coltsfoot

Scientific name	Common name
Phacelia nemoralis Greene ssp. *oregonensis* Heckard	Woodland phacelia
Phlox gracilis (Hook.) E. Greene	Slender phlox
Plagiobothrys scouleri (H. & A.) Johnst. var. s*couleri*	Scouler's popcorn flower
Plantago lanceolata L.	English plantain
Plectritis congesta (Lindl.) DC.	Rosy plectritis
Prosartes hookeri Torr.	Hooker's fairybells
Prosartes smithii (Hook.) Utech	Smith's fairybells
Prunella vulgaris L.	Common self-heal
Pyrola picta Smith	Whitevein pyrola
Ranunculus occidentalis Nutt.	Western buttercup
Ranunculus uncinatus D. Don.	Little buttercup
Rumex acetosella L.	Sheep sorrel
Sanicula bipinnatifida Dougl.	Poison sanicle
Sanicula crassicaulis DC.	Pacific sanicle
Satureja douglasii (Benth.) Briq.	Yerba buena
Senecio jacobaea L.	Tansy ragwort
Sherardia arvensis L.	Blue fieldmadder
Sidalcea virgata Howell	Rose checker-mallow
Silene gallica L.	Windmill pink
Silene hookeri Nutt.	Hooker's silene
Sisymbrium altissimum L.	Tumblemustard
Solidago canadensis L. var. *salebrosa* (Piper) Jones	Canada goldenrod
Sonchus asper (L.) Hill	Prickly sowthistle
Stachys cooleyae Heller	Cooley's hedge-nettle
Stellaria crispa Cham. & Schlect.	Crisped starwort
Stellaria media (L.) Cyrill.	Common chickweed
Symphyotrichum hallii (Gray) Nesom	Hall's aster
Synthyris reniformis (Dougl.) Benth.	Snow queen
Taraxacum officinale Weber	Dandelion
Tellima grandiflora (Pursh) Dougl.	Fringecup
Thalictrum occidentale Gray	Western meadowrue
Thysanocarpus curvipes Hook.	Sand fringepod
Tiarella trifoliata L. var. *trifoliata*	Three-leaf foamflower
Tolmiea menziesii (Pursh) T. & G.	Piggyback plant
Tonella tenella (Benth.) Heller	Small-flowered tonella
Torilis arvensis (Huds.) Link.	Spreading hedge parsley
Tragopogon dubius Scop.	Yellow salsify
Trientalis latifolia Hook.	Starflower
Trifolium albopurpureum T. & G. var. *dichotomum* (Hook. & Arn.) Isley	Clover
Trifolium campestre Schreb.	Hop clover
Trifolium dubium Sidth.	Least hop clover
Trifolium microcephalum Pursh	Smallheaded clover
Trifolium microdon H. &. A.	Thimble clover
Trifolium obtusiflorum Hook. & Arn.	Clammy clover
Trifolium willdenowii Spreng.	Tomcat clover

Scientific name	Common name
Trillium ovatum Pursh	Western trillium
Vancouveria hexandra (Hook.) Morr. & Dcne.	Inside-out flower
Veratrum sp.	False hellebore
Veronica arvensis L.	Common speedwell
Vicia americana Muhl. ex Willd.	American vetch
Vicia hirsuta (L.) Gray	Hairy vetch
Vicia sativa L.	Common vetch
Viola glabella Nutt.	Stream violet; yellow wood v.
Viola sempervirens Greene	Redwoods violet
Wyethia angustifolia (DC.) Nutt.	Narrowleaf wyethia
Yabea microcarpa (Hook. & Arn.) Koso-Pol.	California hedge parsley
Grasses, sedges, and rushes	
Achnatherum lemmonii (Vasey) Barkw.	Lemmon's needlegrass
Agrostis hallii Vasey	Hall's bentgrass
Aira caryophyllea L.	Silver hairgrass
Arrhenatherum elatius (L.) Presl.	Tall oatgrass
Brachypodium sylvaticum (Huds.) Beauv.	Slender falsebrome
Bromus carinatus H. & A.	California brome
Bromus hordeaceus L. ssp. *hordeaceus*	Soft brome
Bromus secalinus L.	Chess brome
Bromus sitchensis Trin.	Alaska brome
Bromus sterilis L.	Poverty brome
Bromus tectorum L.	Cheatgrass brome
Bromus vulgaris (Hook.) Shear	Columbia brome
Carex deweyana Schw.	Dewey's sedge
Carex hendersonii L.H. Bailey	Henderson's sedge
Carex rossii Boott	Ross' sedge
Cynosurus echinatus L.	Hedgehog dogtail
Dactylis glomerata L.	Orchardgrass
Danthonia californica Boland.	California danthonia
Elymus glaucus Buckl. var. *glaucus*	Blue wildrye
Festuca californica Vasey	California fescue
Festuca occidentalis Hook.	Western fescue
Festuca roemeri (Pavlick) S. Aiken	Roemer fescue
Koeleria macrantha (Ledeb.) J.A. Schultes	Junegrass
Glyceria elata (Nash) M.E. Jones	Tall mannagrass
Juncus effusus L.	Common rush
Luzula comosa E. Mey.	Pacific woodrush
Melica subulata (Griseb.) Scribn.	Alaska oniongrass
Poa pratensis L.	Kentucky bluegrass
Taeniatherum caput-medusae (L.) Nevski	Medusahead wildrye
Trisetum sp.	Oatgrass

[1] Compiled from numerous sources.

[2] Nomenclature for vascular plants, ferns, and fern-allies follows the Flora of North America Web site (2006) and the Oregon Flora Project Web site (2006).

Appendix 2: Amphibians, Reptiles, Birds, and Mammals[1]

Order	Scientific name	Common name
Amphibians		
Caudata	*Ambystoma gracile*	Northwestern salamander
	Ambystoma macrodactylum	Long-toed salamander
	Aneides ferreus	Clouded salamander
	Dicamptodon tenebrosus	Pacific giant salamander
	Ensatina eschscholtzi	Ensatina
	Plethodon dunni	Dunn's salamander
	Plethodon vehiculum	Western redback salamander
	Rhyacotriton variegatus	Southern torrent salamander
	Taricha granulosa	Rough-skinned newt
Anura	*Ascaphus truei*	Tailed frog
	Bufo boreas	Western toad
	Pseudacris regilla	Pacific chorus frog
	Rana aurora	Red-legged frog
Reptiles		
Squamata	*Elgaria coerulea*	Northern alligator lizard
	Charina bottae	Rubber boa
	Coluber constrictor	Racer
	Contia tenuis	Sharptail snake
	Eumeces skiltonianus	Western skink
	Sceloporus occidentalis	Western fence lizard
	Thamnophis elegans	Western terrestrial garter snake
	Thamnophis ordinoides	Northwestern garter snake
	Thamnophis sirtalis	Common garter snake
Birds		
Falconiformes	*Accipiter cooperii*	Cooper's hawk
	Accipiter gentilis	Northern goshawk
	Accipiter striatus	Sharp-shinned hawk
	Buteo jamaicensis	Red-tailed hawk
	Cathartes aura	Turkey vulture
	Circus cyaneus	Northern harrier
	Falco sparverius	American kestrel
	Haliaeetus leucocephalus	Bald eagle
Galliformes	*Bonasa umbellus*	Ruffed grouse
	Callipepla californica	California quail
	Dendragapus obscurus	Blue grouse
	Oreortyx pictus	Mountain quail
	Phasianus colchicus	Ring-necked pheasant
Charadriiformes	*Actitis macularia*	Spotted sandpiper
	Brachyramphus marmoratus	Marbled murrelet
	Charadrius vociferus	Killdeer

Order	Scientific name	Common name
Columbiformes	*Columba fasciata*	Band-tailed pigeon
	Zenaida macroura	Mourning dove
Strigiformes	*Aegolius acadicus*	Northern saw-whet owl
	Bubo virginianus	Great-horned owl
	Glaucidium gnoma	Northern pygmy owl
	Otus kennicottii	Western screech-owl
	Strix occidentalis	Spotted owl
	Strix varia	Barred owl
Caprimulgiformes	*Chordeiles minor*	Common nighthawk
Apodiformes	*Chaetura vauxi*	Vaux's swift
	Selasphorus rufus	Rufous hummingbird
Coraciiformes	*Ceryle alcyon*	Belted kingfisher
Piciformes	*Colaptes auratus*	Northern flicker
	Dryocopus pileatus	Pileated woodpecker
	Picoides pubescens	Downy woodpecker
	Picoides villosus	Hairy woodpecker
	Sphyrapicus ruber	Red-breasted sapsucker
Passeriformes	*Bombycilla cedrorum*	Cedar waxwing
	Carduelis pinus	Pine siskin
	Carduelis tristis	American goldfinch
	Carpodacus purpureus	Purple finch
	Catharus ustulatus	Swainson's thrush
	Certhia americana	Brown creeper
	Chamaea fasciata	Wrentit
	Cinclus mexicanus	American dipper
	Coccothraustes vespertinus	Evening grosbeak
	Contopus borealis	Olive-sided flycatcher
	Contopus sordidulus	Western wood peewee
	Corvus brachyrhynchos	American crow
	Corvus corax	Common raven
	Cyanocitta stelleri	Steller's jay
	Dendroica coronata	Yellow-rumped warbler
	Dendroica nigrescens	Black-throated gray warbler
	Dendroica occidentalis	Hermit warbler
	Dendroica petechia	Yellow warbler
	Empidonax difficilis	Pacific-slope flycatcher
	Empidonax hammondii	Hammond's flycatcher
	Empidonax traillii	Willow flycatcher
	Geothlypis trichas	Common yellowthroat
	Ixoreus naevius	Varied thrush
	Junco hyemalis	Dark-eyed junco
	Loxia curvirostra	Red crossbill
	Melospiza melodia	Song sparrow
	Molothrus ater	Brown-headed cowbird
	Myadestes townsendi	Townsend's solitaire
	Oporornis tolmiei	MacGillivray's warbler
	Parus atricapillus	Black-capped chickadee

Order	Scientific name	Common name
	Parus rufescens	Chestnut-backed chickadee
	Perisoreus canadensis	Gray jay
	Pheucticus melanocephalus	Black-headed grosbeak
	Pipilo maculatus	Spotted towhee
	Piranga rubra	Western tanager
	Progne subis	Purple martin
	Psaltriparus minimus	Bushtit
	Regulus satrapa	Golden-crowned kinglet
	Sialia mexicana	Western bluebird
	Sitta canadensis	Red-breasted nuthatch
	Sitta carolinensis	White-breasted nuthatch
	Spizella passerina	Chipping sparrow
	Stelgidopteryx serripennis	Northern rough-winged swallow
	Tachycineta bicolor	Tree swallow
	Tachycineta thalassina	Violet-green swallow
	Thryomanes bewickii	Bewick's wren
	Troglodytes aedon	House wren
	Troglodytes troglodytes	Winter wren
	Turdus migratorius	American robin
	Vermivora celata	Orange-crowned warbler
	Vermivora ruficapilla	Nashville warbler
	Vireo gilvus	Warbling vireo
	Vireo huttoni	Hutton's vireo
	Vireo solitarius	Solitary vireo
	Wilsonia pusilla	Wilson's warbler
	Zonotrichia leucophrys	White-crowned sparrow
Mammals		
Didelphimorphia	*Didelphis virginiana*	Virginia opossum
Insectivora	*Neurotrichus gibbsii*	Shrew-mole
	Scapanus orarius	Coast mole
	Scapanus townsendii	Townsend's mole
	Sorex bairdi	Baird's shrew
	Sorex bendirii	Pacific marsh shrew
	Sorex pacificus	Pacific shrew
	Sorex sonomae	Fog shrew
	Sorex trowbridgii	Trowbridge's shrew
	Sorex vagrans	Vagrant shrew
Chiroptera	*Corynorhinus townsendii*	Townsend's big-eared bat
	Eptesicus fuscus	Big brown bat
	Lasionycteris noctivagans	Silver-haired bat
	Lasiurus cinereus	Hoary bat
	Myotis californicus	California myotis
	Myotis evotis	Long-eared myotis
	Myotis lucifugus	Little brown myotis

Order	Scientific name	Common name
	Myotis thysanodes	Fringed myotis
	Myotis volans	Long-legged myotis
	Myotis yumanensis	Yuma myotis
Lagomorpha	*Lepus americanus*	Snowshoe hare
	Sylvilagus bachmani	Brush rabbit
Rodentia	*Aplodontia rufa*	Mountain beaver
	Castor canadensis	American beaver
	Clethrionomys californicus	Western red-backed vole
	Erethizon dorsatum	Common porcupine
	Glaucomys sabrinus	Northern flying squirrel
	Microtus longicaudus	Long-tailed vole
	Microtus oregoni	Creeping vole
	Microtus townsendii	Townsend' vole
	Neotoma cinerea	Bushy-tailed woodrat
	Neotoma fuscipes	Dusky-footed woodrat
	Peromyscus maniculatus	Deer mouse
	Phenacomys albipes	White-footed vole
	Phenacomys longicaudus	Red tree vole
	Spermophilus beecheyi	California ground squirrel
	Tamias townsendii	Townsend's chipmunk
	Tamiasciurus douglasii	Douglas' squirrel
	Thomomys mazama	Western pocket gopher
	Zapus trinotatus	Pacific jumping mouse
Carnivora	*Canis latrans*	Coyote
	Felis concolor	Mountain lion
	Lutra canadensis	Northern river otter
	Lynx rufus	Bobcat
	Martes americana	American marten
	Mephitis mephitis	Striped skunk
	Mustela erminea	Ermine
	Mustela frenata	Long-tailed weasel
	Mustela vison	Mink
	Odocoileus hemionus ssp. *columbianus*	Black-tailed deer
	Procyon lotor	Common raccoon
	Spilogale gracilis	Western spotted skunk
	Urocyon cinereoargenteus	Common gray fox
	Ursus americanus	Black bear
	Vulpes vulpes	Red fox
Artiodactyla	*Cervus elaphus*	Elk

[1] Nomenclature, distribution, and habitat characteristics taken from Csuti et al. 1997

This Page Left Blank Intentionally

Pacific Northwest Research Station

Web site	http://www.fs.fed.us/pnw
Telephone	(503) 808-2592
Publication requests	(503) 808-2138
FAX	(503) 808-2130
E-mail	pnw_pnwpubs@fs.fed.us
Mailing address	Publications Distribution Pacific Northwest Research Station P.O. Box 3890 Portland, OR 97208-3890

U.S. Department of Agriculture
Pacific Northwest Research Station
333 S.W. First Avenue
P.O. Box 3890
Portland, OR 97208-3890