

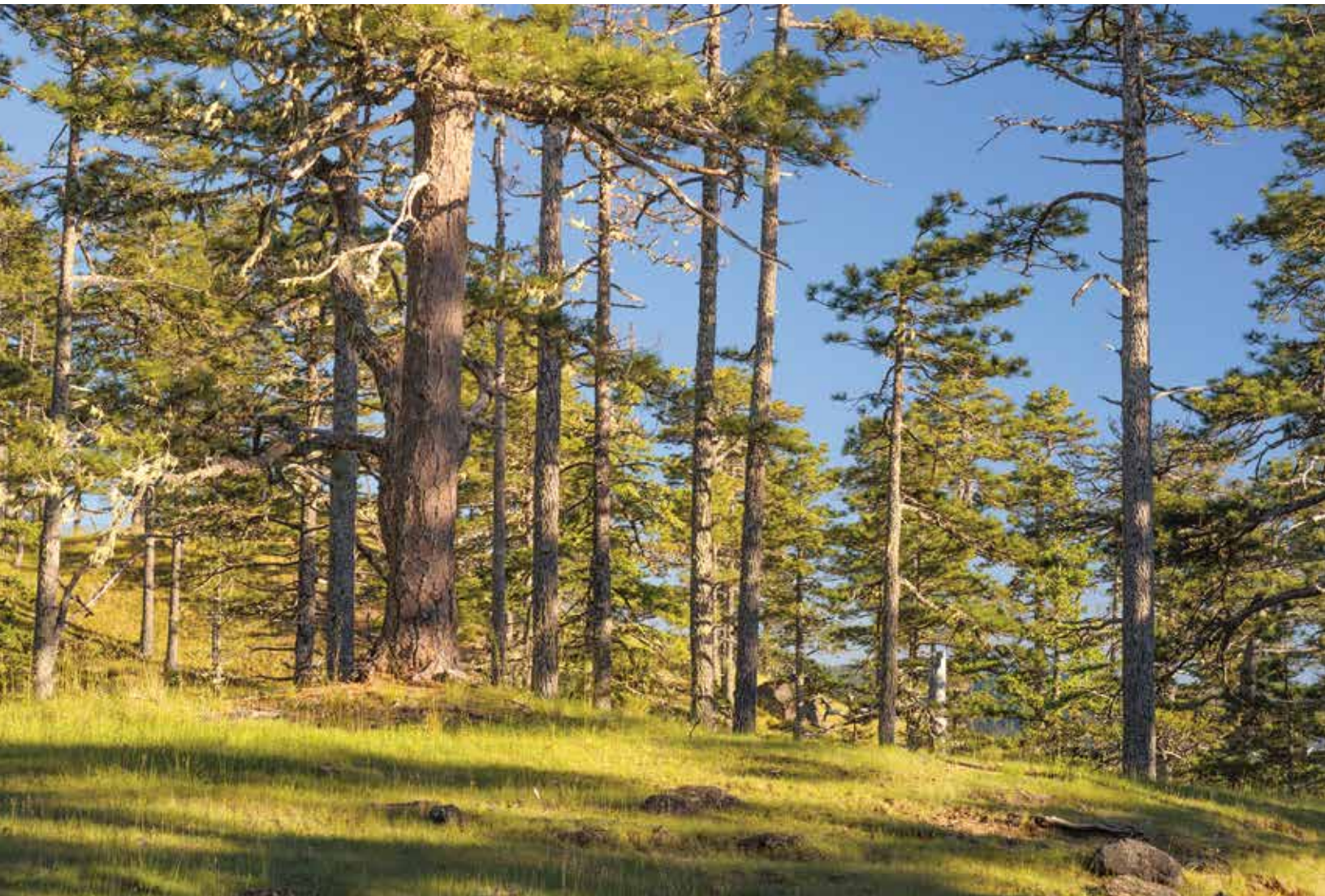


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North Fork Hunter Creek and Hunter Creek Bog Areas of Critical Environmental Concern

Reid Schuller, Tim Rodenkirk, and Kip Wright



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Cover: The Hunter Creek areas of critical environmental concern in southwestern Oregon. Photo by Frank Price.

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Abstract

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A description of major biotic and abiotic features within the North Fork Hunter Creek and Hunter Creek Bog areas of critical environmental concern in southwestern Oregon. Extensive lists of vascular plants, fungi, lichens, bryophytes, and wildlife species known or likely to occur are provided in appendices. This guidebook is part of a continuing series of guidebooks on federal research natural areas that began in 1972.

Keywords: Area of critical environmental concern (ACEC), knobcone pine (*Pinus attenuata*), Jeffrey pine (*Pinus jeffreyi*), oak (*Quercus spp.*) savanna, serpentine fen, Port Orford cedar (*Chamaecyparis lawsoniana*), Johnson's hairstreak, (*Callophrys johnsoni*), Mardon skipper, (*Polites mardon*), Gasquet manzanita, (*Arctostaphylos hispidula*), and elegant gentian, (*Gentiana setigera*).

Preface

Area of critical environmental concern (ACEC) designations highlight areas where special management attention is needed to protect, and prevent irreparable damage to, important historic, cultural, and scenic values; fish, or wildlife resources or other natural systems or processes; or to protect human life and safety from natural hazards.¹ The ACEC designation indicates to the public that the U.S. Department of the Interior, Bureau of Land Management (BLM) recognizes that an area has significant values and has established special management measures to protect those values. In addition, designation also serves as a reminder that significant values or resources exist that must be accommodated near or within an ACEC. This designation may also support a funding priority (USDI BLM 2017a).

The Federal Land Policy and Management Act provides for ACEC designation and established national policy for the protection of public land areas of critical environmental concern. Section 202(c) (3) of the act mandates that the BLM give priority to the designation and protection of ACECs in the development and revision of land use plans. The BLM's planning regulations (43 CFR 1610.7-2) establish the process and procedural requirements for the designation of ACECs in resource management plans and plan amendments (USDI BLM 2017a).

The ACECs described in this document meet the following criteria for relevance and importance, as established and defined in 43 CFR 1610.7-2:

1. Relevance

An area meets the relevance criterion if it contains one or more of the following:

- A significant historic, cultural, or scenic value (including, but not limited to, rare or sensitive archeological resources and religious or cultural resources important to American Indians).
- A fish and wildlife resource (including, but not limited to, habitat for endangered, sensitive, or threatened species, or habitat essential for maintaining species diversity).
- A natural process or system (including, but not limited to, endangered, sensitive, or threatened plant species; rare, endemic, or relic plants or plant communities that are terrestrial, aquatic, or riparian; or rare geological features).

¹The North Fork Hunter Creek and Hunter Creek Bog sites are designated areas of critical environmental concern (ACECs) (USDI Bureau of Land Management 2016).

- Natural hazards (including, but not limited to, areas of avalanche, dangerous flooding, landslides, unstable soils, seismic activity, or dangerous cliffs). A hazard caused by human action may meet the relevance criteria if it is determined through the resource management planning process that it has become part of a natural process.

2. Importance

The value, resource, system, process, or hazard described above must have substantial significance and values to satisfy the importance criteria. This generally means that the value, resource, system, process, or hazard is characterized by one or more of the following:

- Has more than locally significant qualities that give it special worth, consequence, meaning, distinctiveness, or cause for concern, especially compared to any similar resource.
- Has qualities or circumstances that make it fragile, sensitive, rare, irreplaceable, exemplary, unique, endangered, threatened, or vulnerable to adverse change.
- Has been recognized as warranting protection in order to satisfy national priority concerns or to carry out Federal Land Policy and Management Act mandates.
- Has qualities that warrant highlighting to satisfy public or management concerns about safety and public welfare.
- Poses a significant threat to human life, safety, or property.

The rationale supporting designation of the North Fork Hunter Creek ACEC was based on (1) historic/cultural, (2) fish and wildlife, and (3) natural processes. The rationale supporting designation of the Hunter Creek Bog ACEC was similarly based on (1) historic/cultural, (2) fish and wildlife, and (3) natural processes (USDI BLM 2016).

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Introduction

The major biological and physical features described here occur within two geographically distinct blocks of land separated by private forestland and public land managed by the U.S. Department of the Interior, Bureau of Land Management (BLM). The North Fork Hunter Creek area of critical environmental concern (ACEC) occupies 779 ha (1,924 ac); the Hunter Creek Bog ACEC includes 292 ha (721 ac).

Both Hunter Creek Bog¹ and North Fork Hunter Creek were proposed as ACECs under the 1994 final Coos Bay BLM District Resource Management Plan and designated under its record of decision (USDI BLM 1995). The ACEC designation was subsequently confirmed in the 2016 Northwestern and Coastal Oregon Record of Decision and Resource Management Plan (USDI BLM 2016).

The two sites were designated ACECs because they support the following high-quality, representative ecosystem types within the Klamath Mountains ecoregion and State of Oregon Natural Areas Plan-listed populations of sensitive plant and animal species (Blakeley-Smith 2008, ONAP 2015, USDA FS 2015):

Ecosystem types

- Knobcone pine (*Pinus attenuata*) forest
- Jeffrey pine (*Pinus jeffreyi*) grassland savanna
- Coastal oak (*Quercus sp.*) conifer woodland and meadow mosaic
- California picture plant (*Darlingtonia californica*) fen² on serpentine-peridotite, with Port Orford cedar (*Chamaecyparis lawsoniana*)

Animal and plant species

- Johnson's hairstreak (*Callophrys johnsoni*)
- Mardon skipper (*Polites mardon*)
- Gasquet manzanita (*Arctostaphylos hispidula*)
- Elegant gentian (*Gentiana setigera*)

¹Technically this is a fen. A fen is a wetland in which the water is alkaline to only slightly acidic and has been in contact with mineral soil. Bogs are acidic, low in minerals, and usually dominated by sedges, shrubs, and abundant mosses in the genus *Sphagnum*. In a fen, the substrate is accumulated organic material derived primarily from graminoids (grasses, sedges, rushes) and bryophytes other than sphagnum. Fens may be flat or sloping, including relatively steep slopes. In Oregon, there are apparently no true bogs, and the acidic wetlands with sphagnum are classified as poor fens. The modifier comes from the relatively poor nutrient levels and acidic conditions. In western Oregon, certain species are indicators of acid substrates, such as *Drosera rotundifolia* and *Vaccinium oxycoccos*. Others, including *Darlingtonia californica* and *Gentiana setigera*, are commonly found in fens (Lang and Christy 2004).

²Although the term "fen" is scientifically more accurate, the term "bog" is used throughout this document to retain historical consistency with previous usage, and to obviate uncertainty regarding whether Hunter Creek "Bog" and Hunter Creek "Fen" are, in fact, the same site.

Access and Accommodations

Both ACECs are in the Siskiyou Mountains of Curry County, Oregon. To access the Hunter Creek Bog ACEC from Gold Beach, Oregon, proceed south from Gold Beach for 4.8 km (3 mi) on U.S. Highway 101. Turn east off of Highway 101 onto the southernmost spur road to Hunter Creek Loop Road. Continue on this paved road for 7.4 km (4.6 mi) to the end of the pavement, then proceed an additional 9 km (5.6 mi) to Hunter Creek Bog, which is at the northwest end of this ACEC (fig. 1). During winter months, Hunter Creek Loop Road sometimes has road slumps or slides. Before traveling to this site, it is advisable to contact the U.S. Department of Agriculture (USDA), Forest Service office in Gold Beach for current road conditions.

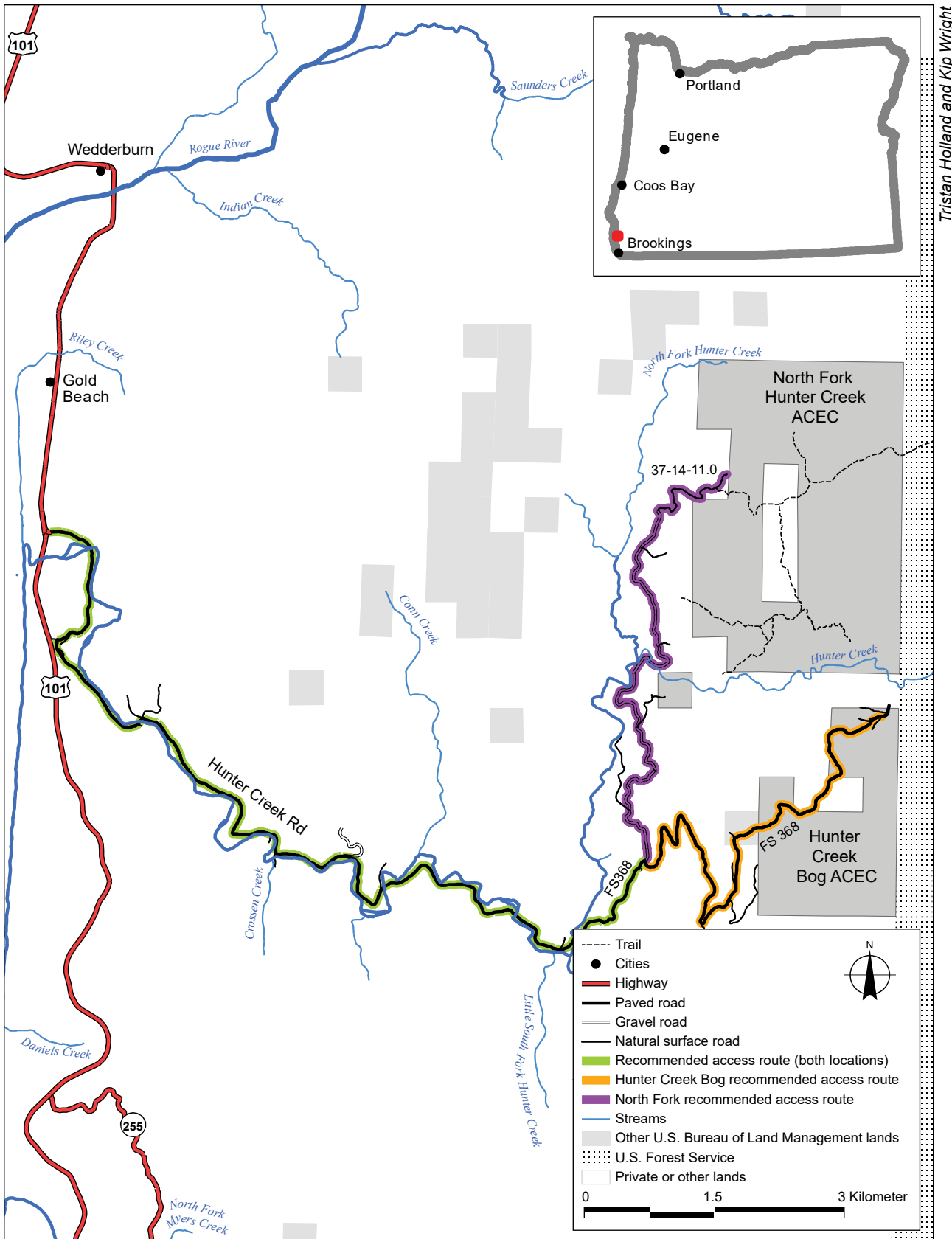
The North Fork Hunter Creek ACEC has a complex mix of land ownership adjacent to it, making access difficult, particularly during the wet, winter months when poor road conditions can make entry impossible. For these reasons, it is always advisable to obtain permission from Coos Bay Bureau of Land Management to access this area, either through private lands or for detailed information on entry through Forest Service lands. Maps and additional directions to North Fork Hunter Creek ACEC can be obtained at the Coos Bay Bureau of Land Management District Office in North Bend, Oregon, before visiting the site.

Environment

The elevation ranges from about 200 to 920 m (656 to 3,018 ft). The lowest elevation occurs in the southwest quarter of section 14, township 37S, range 14W; and the upper elevation occurs in the northeast quarter of section 1, township 37S, range 14W (figs. 2, 3). Hunter Creek and its tributaries generally drain to the west for 16 km (10 mi) where Hunter Creek flows directly into the Pacific Ocean about 2.4 km (1.5 mi) south of Gold Beach.

Geology, Hydrology, and Soils

The bedrock geology of the Hunter Creek ACECs consists primarily of three units, listed youngest to oldest in age: Dothan and Otter Point Formations, an ultramafic rock sheet, and the Colebrooke Schist Formation. These units were created seaward, likely as hydrothermally metamorphosed trench fill sediments and subsequently accreted onto the North American Plate as the Pacific Plate was subducted beneath the North American Plate. The youngest rocks in the watershed, the Dothan and Otter Point Formations are composed of greywacke, sandstone, and mudstone, with inclusions of cherts and pillow basalts (Ramp et al. 1977). The more resistant volcanic units often form the topographic highs (EA EST 1998). The Dothan and Otter Point Formations were thrust under the older Colebrooke Schist Formation and ultramafic rock sheet. A thrust fault is mapped in the northwest portion



Tristan Holland and Kip Wright

Figure 1—Hunter Creek areas of critical environmental concern (ACECs) location and access.

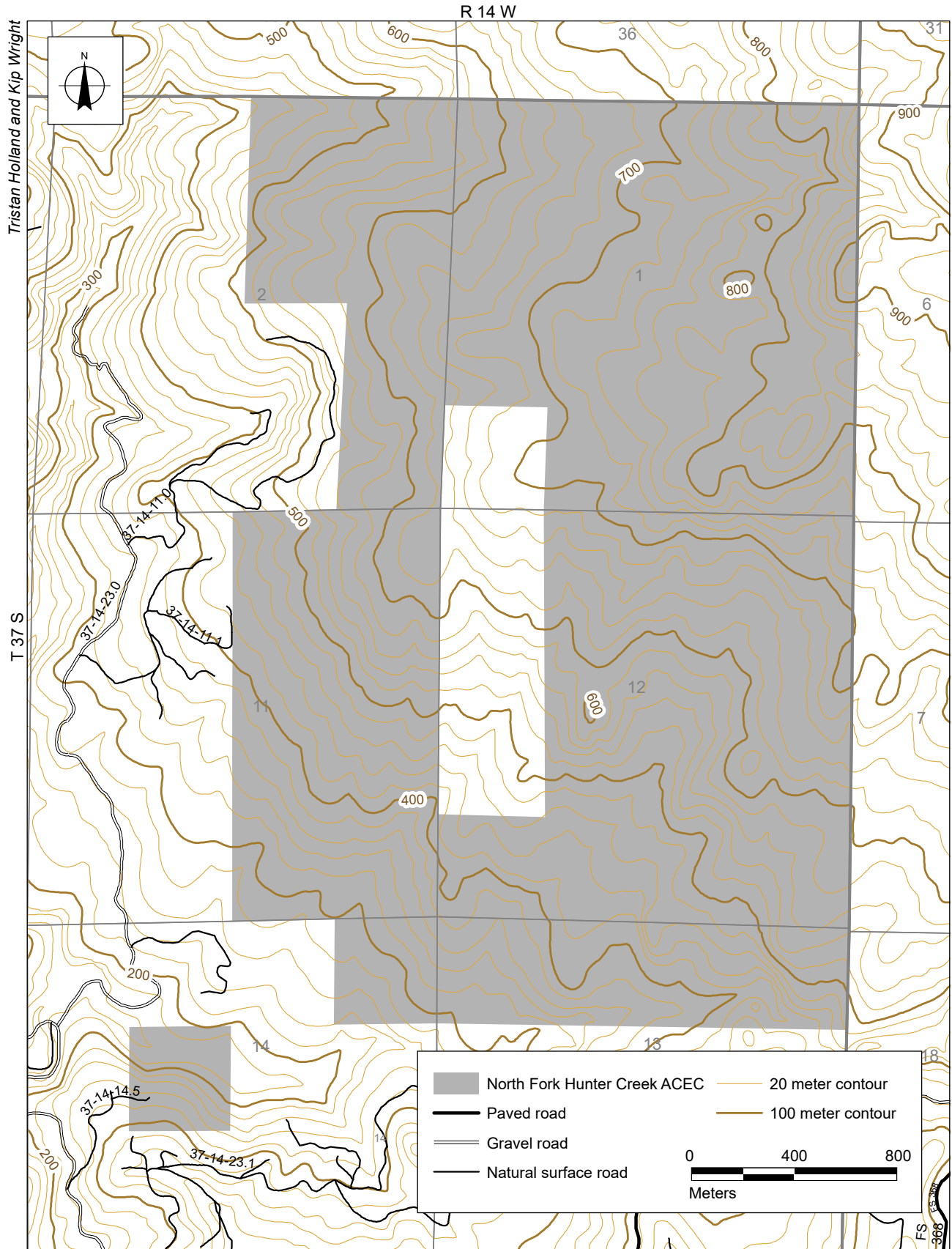


Figure 2—Boundary, topography, and hydrology of Hunter Creek area of critical environmental concern, North Fork Hunter Creek unit.

North Fork Hunter Creek and Hunter Creek Bog Areas of Critical Environmental Concern

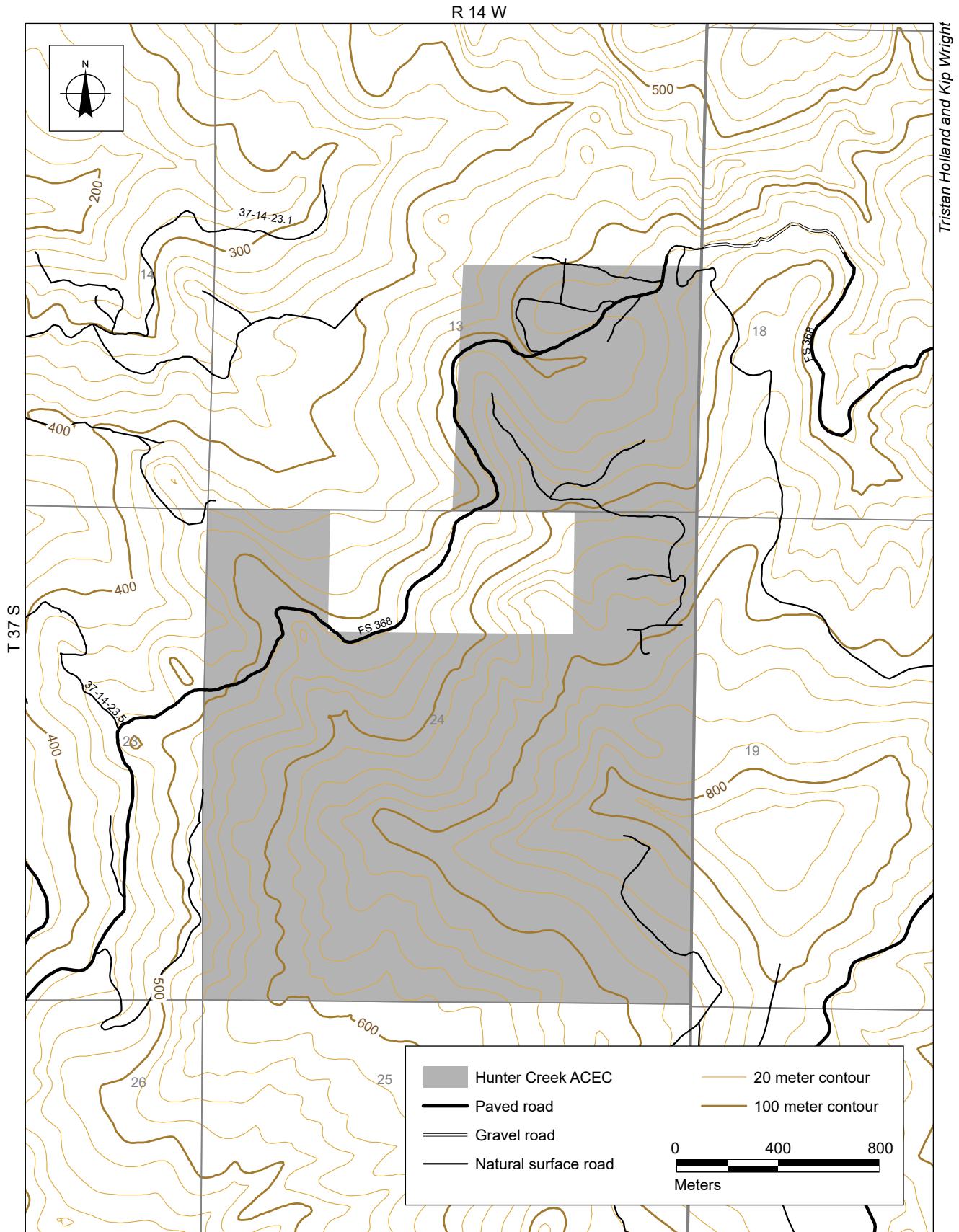


Figure 3—Boundary, topography, and hydrology map of Hunter Creek area of critical environmental concern, Hunter Creek Bog unit.

of Hunter Creek Bog ACEC in sections 14 and 24 of T27S and R14W (Ramp et al. 1977). The ultramafic rock units are serpentinite and various peridotites. The Colebrooke Schist Formation includes metamorphic rocks derived from sedimentary rocks and submarine basalt. The predominant rock type is a silver-gray schist or phyllite (Ramp et al. 1977).

All of the ACECs' rock units are susceptible to landslides. Based on past landslide mapping, landslide deposits cover 1,220 ac, or 46 percent of the land surface of both ACEC parcels combined (DOGAMI 2017). Landslides change the topography and the hydrology. They block and reroute streams, form sag ponds, change the groundwater movements, and form flat bench-like topography. The bogs and fens are likely within large landslide deposits.

The Hunter Creek Bog, also called a fen (section 13), occurs where the underlying serpentine parent material has weathered to clay, creating an impervious boundary to the vertical migration of groundwater, resulting in local perched water tables (Bowen et al. 1982, Brian 2004, EA EST 1998). Hunter Springs Bogs (section 24) occur on the north and south slopes on an eroded east-west ridge, basically Colebrook Schist Formation overlying Dothan Formation (Bowen et al. 1982).

The soils names are shown in figures 4 and 5. A large portion (55.8 percent) of the soils are derived from serpentine bedrock as reflected in the following mapped soil units within the area: (1) Redflat-Mislatnah-Greggo complex; (2) Greggo-Mislatnah-Rock outcrop complex; and (3) Mislatnah-Redflat-Greggo complex (USDA NRCS 2019).

Based on hand auger samples, soils in the Hunter Creek Bog in T37S, R14W, and the southeast quarter of section 13 range from 4 to 7 feet deep (Ramp and Peterson 1973). Though not described as a soil series, the soil in the Hunter Creek Bog is a black, poorly drained organic soil (histosol), influenced by the perched water table flowing over the ultramafic bedrock (Brian 2004).

The North Fork Hunter Creek ACEC soils are deep, fine, cobbly, silty, clay loams formed in materials weathered from serpentine and peridotite. Depth to bedrock is at least 102 cm (40 in). Serpentinite readily flakes apart and weathers to clay-sized particles that are red from the oxidized iron. Thus, soils are reddish brown to red in color and contain about 10 to 30 percent rock fragments. Serpentine-derived soils of the North Fork Hunter Creek ACEC, primarily at upper elevations and ridgelines, often underly Jeffrey pine forest (USDI BLM 2017c).

Climate

The ACECs have a marine-influenced, modified 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

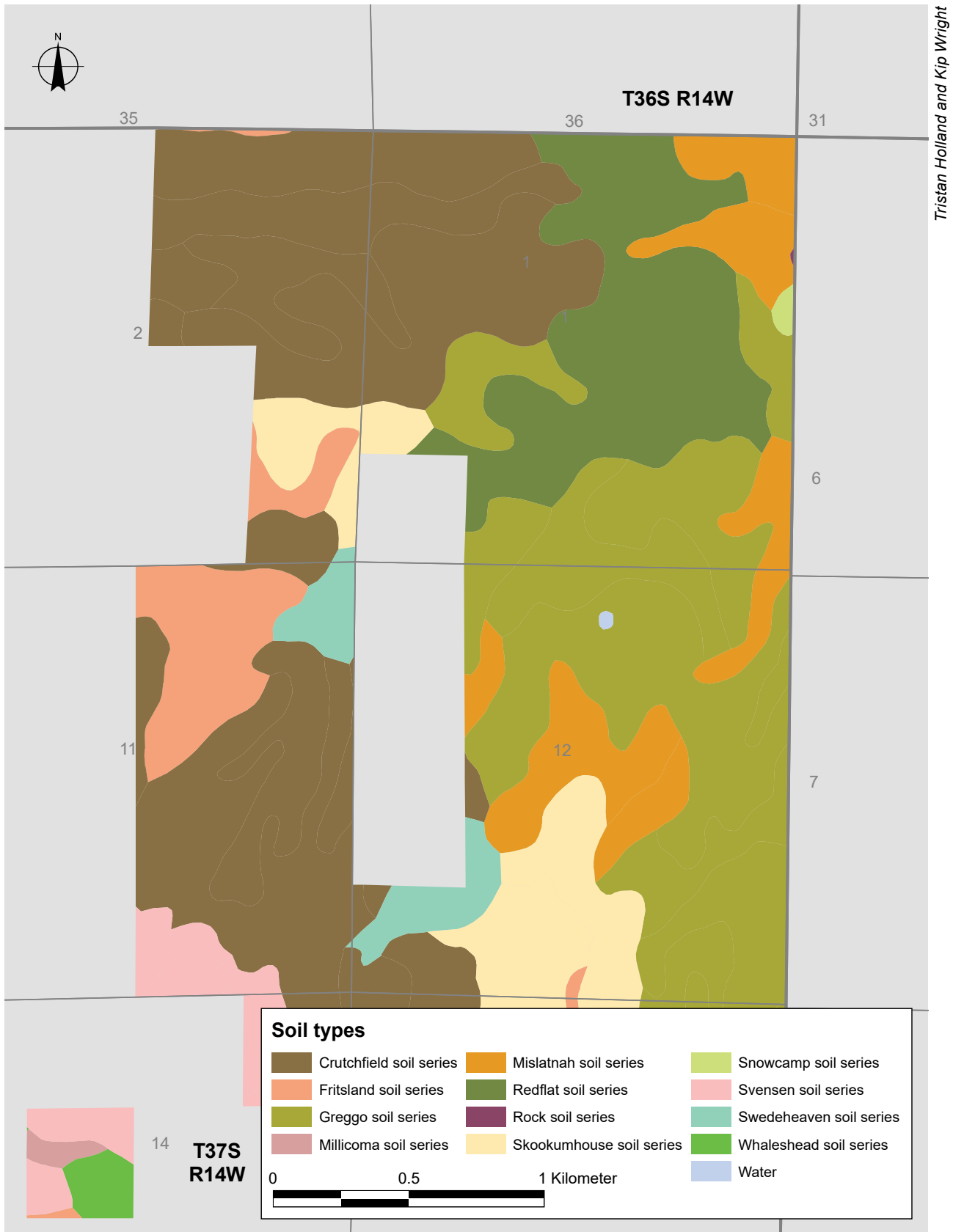


Figure 4—Soils map of Hunter Creek area of critical environmental concern. North Fork Hunter Creek unit.

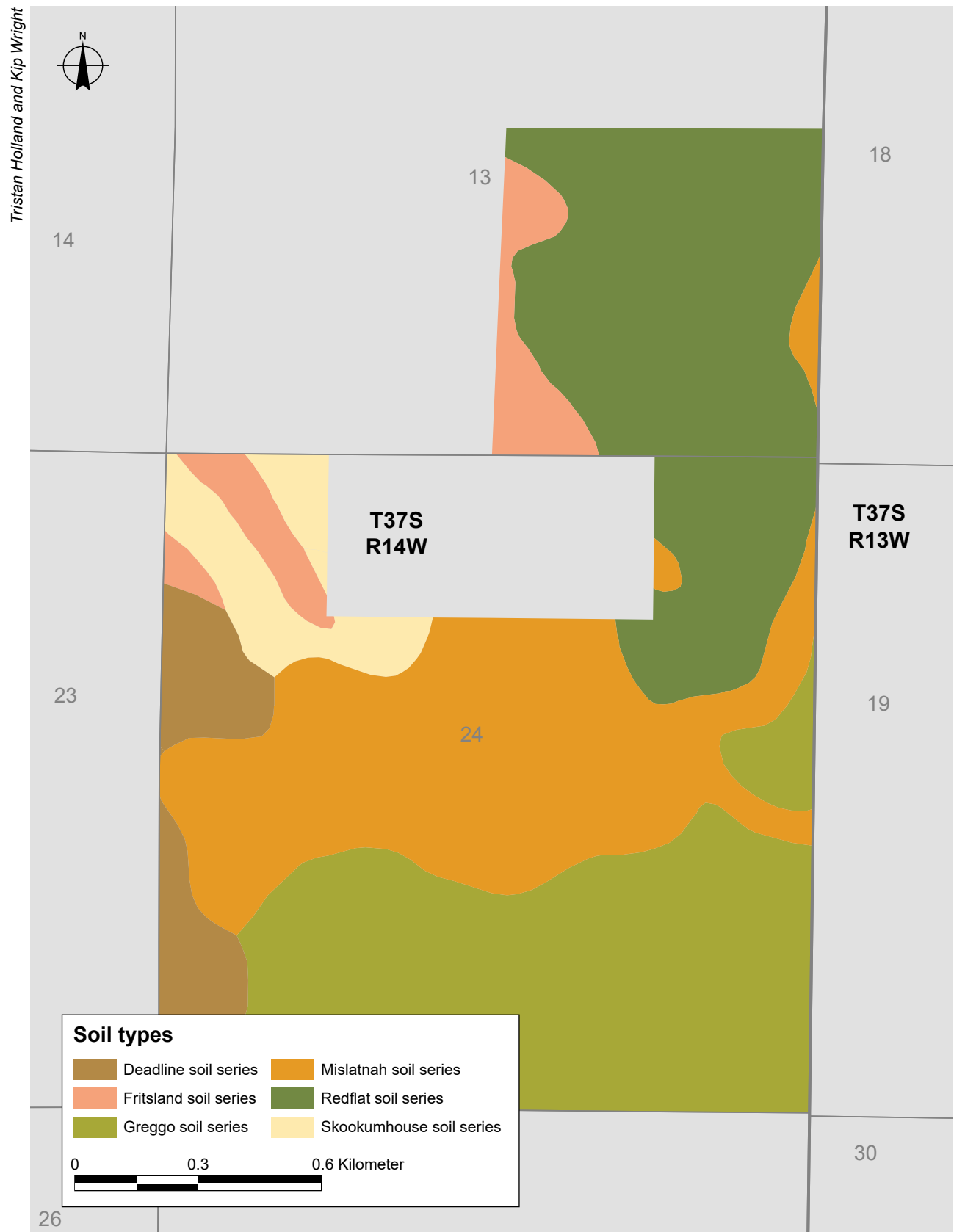


Figure 5—Soils map of Hunter Creek area of critical environmental concern, Hunter Creek Bog unit.

accompanied by high winds. During the summer, stable high-pressure air masses bring generally clear skies. Temperatures are modified by proximity to the Pacific Ocean—in winter by its warming influence, and in summer by its cooling influence (WRCC 2016).

Flynn Prairie remote automatic weather stations, or RAWS, are at 470 m (1543 ft) elevation, east of Gold Beach (west of Hunter Creek ACEC) (NOAA 2016). It is located 21 km (13 mi) northwest of Hunter Creek Bog ACEC and provides roughly comparable, short-term precipitation data. Total rainfall at Flynn Prairie for water year 2016 (October 1–September 30) was 3281.9 mm (129.3 in).

The Illahe, Oregon (354133) RAWS near Agness, Oregon is operated by the Western Regional Climate Service. It is the closest RAWS to the North Fork Hunter Creek and Hunter Creek Bog ACECs. It is 305 to 610 m (1,000 to 2,000 ft) lower in elevation than the upper elevations in the Hunter Creek drainage. Conditions are much hotter in the summer than within the ACECs. The Illahe station is located 32 km (20 mi) north of the Hunter Creek Bog ACEC and 48 km (30 mi) inland from the Pacific Ocean. Transient snow has been reported above 762 m (2,500 ft) elevation (Brian 2004, WRCC 2016) within the Hunter Creek Bog ACEC.

Summers are dry, with June through August receiving only 3 percent of the average annual total precipitation (table 1). Average annual snowfall is 272 mm (10.7 in) at the Illahe RAWS. Snowfall occurs primarily above 762 m (2,500 ft) within the ACECs, and total annual precipitation (rain and snowfall combined) are estimated to average 2032 to 2540 mm (80 to 100 in) (Brian 2004). Average January minimum temperatures at the Illahe station are 2.2 °C (36.0 °F). Average July maximum temperatures are 31.1 °C (88.0 °F) (WRCC 2016).

Table 1—Temperature and precipitation summary, October 1938 through June, Illahe, Oregon

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

Vegetation

Meadow/Savanna (Map Unit A)

Figures 6 and 7 show the vegetation types in each ACEC. A description of each of these vegetation types follows. Grasses are the most dominant species in

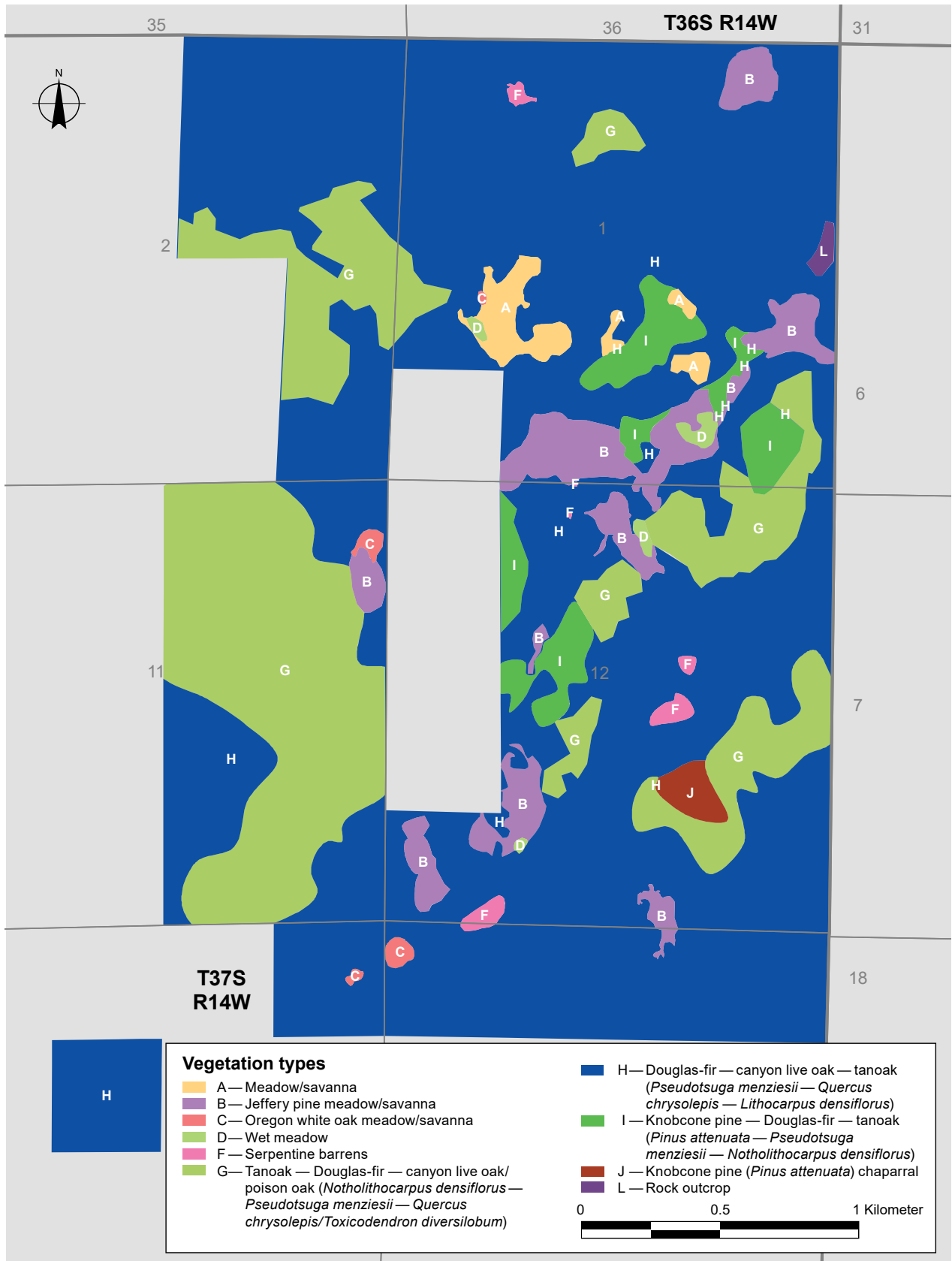


Figure 6—Vegetation communities of Hunter Creek area of critical environmental concern, North Fork Hunter Creek unit. Map courtesy of Bureau of Land Management Coos Bay District Office.

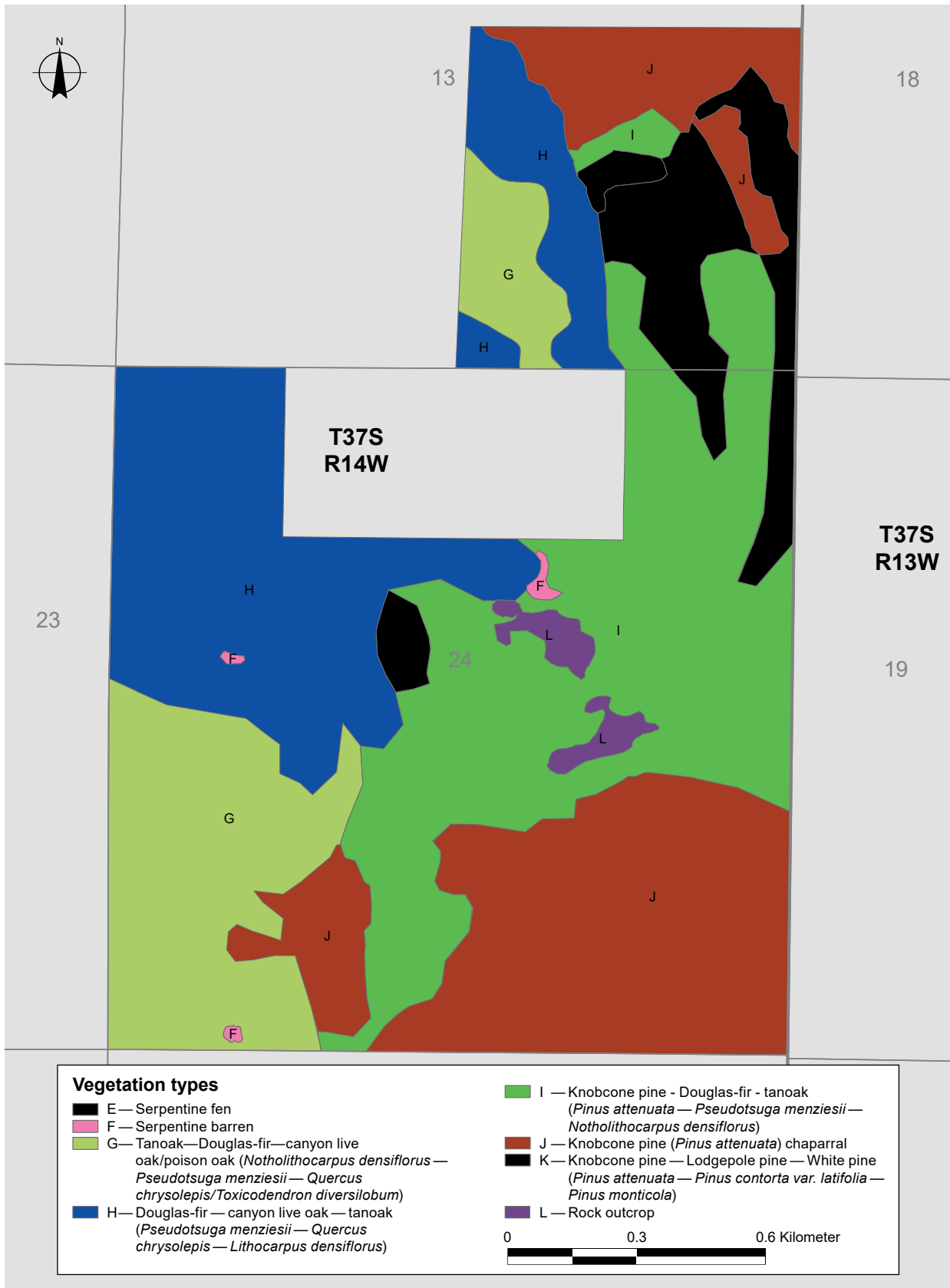


Figure 7—Vegetation communities of Hunter Creek area of critical environmental concern, Hunter Creek Bog unit. Map courtesy of Bureau of Land Management Coos Bay District Office.



Figure 8—Meadow vegetation fringed (background) by Oregon white oak savanna, Hunter Creek area of critical environmental concern. Photo courtesy of Bureau of Land Management Coos Bay District Office.

the meadows (fig. 8). The most common understory species include Lemmon's needlegrass (*Eriocoma lemmonii*), California brome (*Bromus sitchensis* var. *carinatus*), California oatgrass (*Danthonia californica*), California fescue (*Festuca californica*), Roemer's fescue (*F. roemeri*), prairie junegrass (*Koeleria macrantha*), and Geyer's oniongrass (*Melica geyeri*). Typical forbs associated with this habitat include many species of onion (*Allium* spp.) and lomatium (*Lomatium* spp.), leafy fleabane (*Erigeron foliosus*), Oregon sunshine (*Eriophyllum lanatum*), Del Norte County iris (*Iris innominata*), eppaw (*Perideridia oregana*), western buttercup (*Ranunculus occidentalis*), Idaho blue-eyed grass (*Sisyrinchium idahoense*), Bridge's triteleia (*Triteleia bridgesii*), and hookedspur violet (*Viola adunca*) (Blakeley-Smith 2008).

Meadow openings typically have sparse amounts of tree growth. However, meadow vegetation also occurs as a major groundcover in the savanna understory (Blakeley-Smith 2008).

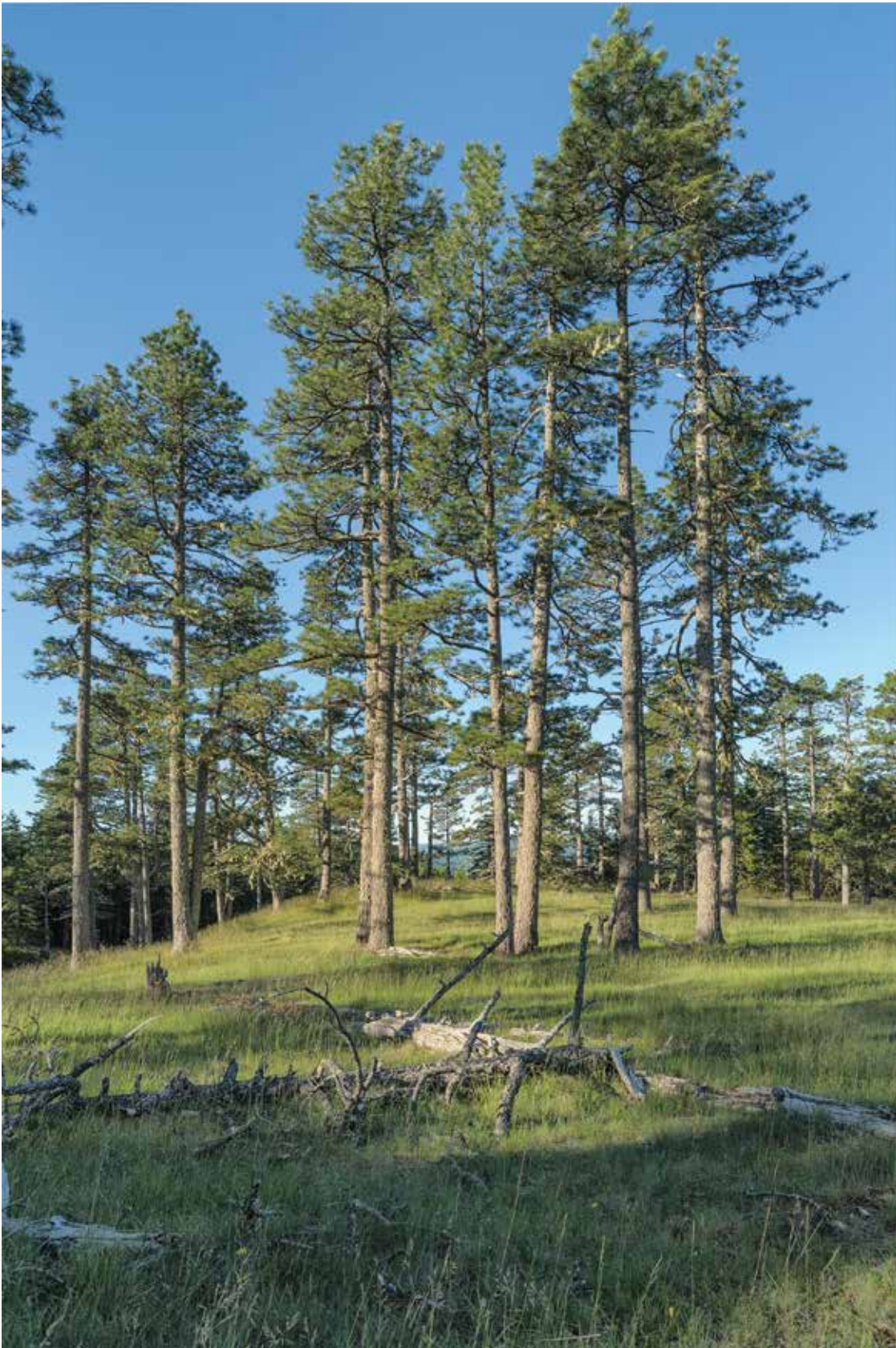


Figure 9—Jeffrey pine savanna, Hunter Creek area of critical environmental concern. Photo courtesy of Bureau of Land Management Coos Bay District Office.

Jeffrey Pine Meadow/Savanna (Map Unit B)

Jeffrey pine savanna is distinguished by a meadow understory accompanied by scattered individuals and groups of Jeffrey pine (*Pinus jeffreyi*) (fig. 9). The boundaries between meadow and savanna are often difficult to distinguish in the field and often intergrade into each other (Blakeley-Smith 2008).

Oregon White Oak Meadow/Savanna (Map Unit C)

Grass-dominated meadow vegetation is accompanied by stands of Oregon white oak (*Quercus garryana*) growing in the savanna overstory and near edges of meadows (fig. 10) (Blakeley-Smith 2008).

Wet Meadows (Map Unit D)

This type appears similar to the upland meadows (units A, B, and C above) but also includes species characteristic of slightly wetter habits, including: tufted hairgrass (*Deschampsia cespitosa*) as the dominant grass along with grass-like species such



Figure 10—Understory of Oregon white oak savanna, Hunter Creek area of critical environmental concern. Photo courtesy of Bureau of Land Management Coos Bay District Office.

as slough sedge (*Carex obnupta*), chamisso sedge (*C. pachystachya*), Bolander's rush (*Juncus bolanderi*), and common rush (*J. effusus*). Herbaceous species are also conspicuous throughout the area. Some of most common include: yarrow (*Achillea millefolium*), common monkeyflower (*Erythranthe guttata*), musk monkeyflower (*E. moschata*), curly dock (*Rumex crispus*), and native heal all (*Prunella vulgaris* var. *lanceolata*) (Blakeley-Smith 2008).

Serpentine Fen (Map Unit E)

The serpentine fen type (fig. 11) is underlain by serpentine-peridotite and is characterized by the abundance of California pitcher plant (*Darlingtonia californica*) (fig. 12). Many other fen species are also present in the fens, including: roundleaf sundew (*Drosera rotundifolia*), bog-asphodel (*Narthecium californicum*), western Labrador tea (*Rhododendron columbianum*) and elegant gentian (*Gentiana setigera*). Port Orford cedar (*Chamaecyparis lawsoniana*) and Jeffrey pine make up the overstory (when present) (Blakeley-Smith 2008).

The ACECs contain three fens: one at Hunter Creek Bog and two at Hunter Springs Bogs. All sites support a multitude of hydric plants, but do not include the presence of sphagnum moss (Blakely-Smith 2008, Bowen et al. 1982, Brian 2004, Vander Schaaf 1987). Schuller et al. (2016) has quantified the highly variable vegetation pattern within Hunter Creek Bog (table 2).



Figure 11—Serpentine fen. Area known as Hunter Creek Bog, Hunter Creek area of critical environmental concern. Photo courtesy of Bureau of Land Management Coos Bay District Office.

Frank Price



Figure 12—California pitcher plant (*Darlingtonia californica*) growing in Hunter Creek Bog, Hunter Creek area of critical environmental concern.

Serpentine Barrens (Map Unit F)

The barrens are underlain by shallow, well-drained soils derived from serpentine and occur predominantly on south-facing exposures. Piper's bluegrass (*Poa piperi*) is the characteristic native grass and California fescue (*Festuca californica*), Roemer's fescue (*F. roemerii*), Lemmon's needlegrass and Geyer's oniongrass, and other graminoids dominate the herb layer. Small invasive species populations occur in the meadows (Blakeley-Smith 2008). The most conspicuous are bristly dogtail (*Cynosurus echinatus*), hairy cat's ear (*Hypochaeris radicata*), and buckhorn plantain (*Plantago lanceolata*) (Bowen et al. 1982, Brian 2004). Serpentine affiliated plants in the Hunter Creek ACEC include Howell's horkelia (*Horkelia sericata*), Howell's biscuitroot (*Lomatium howellii*), bigseed lomatium (*L. macrocarpum*), shrubby pussytoes (*Antennaria suffrutescens*), leafy fleabane (*Erigeron foliosus* var. *confinis*), Jeffrey pine, knobcone pine, bear-grass (*Xerophyllum tenax*), western azalea (*Rhododendron occidentale*), California pitcher plant, and a serpentine moss, *Pseudoleskeella serpentiniensis* (Brooks 1987, Kruckeberg 1984, Rodenkirk 2016, Whittaker 1960). Additional ultramafic endemics include serpentine sedge (*Carex serpenticola*), nodding arnica (*Arnica cernua*), Nuttall's toothwort (*Cardamine nuttallii*), Piper's bluegrass (*Poa piperi*), Del Norte willow (*Salix delnortensis*), and wedgeleaf violet (*Viola cuneata*) (Zika et al. 1998).

Tanoak-Douglas-Fir-Canyon Live Oak/Pacific Poison Oak (Map Unit G)

This forest type is dominated by tanoak (*Notholithocarpus densiflorus*), Douglas-fir (*Pseudotsuga menziesii*), and canyon live oak (*Quercus chrysolepis*) occurring in the canopy or subcanopy as major dominants or minor associates. Typical shrubs include: California huckleberry (*Vaccinium ovatum*), hairy honeysuckle (*Lonicera hispidula*), poison oak (*Toxicodendron diversilobum*), whipplevine (*Whipplea modesta*), and Oregon grape (*Berberis* spp.). The forest understory has sparse herbaceous vegetation, composed mainly of leaf litter, moss, and large rocks (Blakeley-Smith 2008).

Douglas-Fir-Canyon Live Oak-Tanoak (Map Unit H)

This forest type is dominated by Douglas-fir, canyon live oak, and tanoak. Douglas-fir is often the dominant species regenerating in the understory and overstory. Canyon live oak, tanoak, and Pacific madrone (*Arbutus menziesii*) often have high cover values and form a dense subcanopy. Shrubs typically include baldhip rose (*Rosa gymnocarpa*) and Oregon grape (*Berberis nervosa*), while common forbs include giant rattlesnake plantain (*Goodyera oblongifolia*), western starflower (*Lysimachia borealis*), and common swordfern (*Polystichum munitum*) (Blakeley-Smith 2008).

Table 2—Hunter Creek Bog shrub and forb percentage of cover and frequency, July 2015

		Transect number =		474		475		476		477	
		n =		13		12		14		15	
Code ^a	Species name ^b	Cover	Frequency ^c	Cover	Frequency	Cover	Frequency	Cover	Frequency	Cover	Frequency
----- Percent -----											
Shrubs											
RHOC	<i>Rhododendron occidentale</i>	12	38	—	—	6	21	20	20		
GASH	<i>Gaultheria shallon</i>	13	15	8	33	24	29	1	7		
RHCA	<i>Rhamnus californica</i>	13	31	7	33	6	21	37	20		
RHCO18	<i>Rhododendron columbianum</i>	28	38	47	33	67	29	46	33		
MYGA	<i>Myrica gale</i>	1	8	1	8	6	7	—	—		
RHMA	<i>Rhododendron macrophyllum</i>	—	—	3	8	—	—	—	—		
QUVA	<i>Quercus vacciniifolia</i>	—	—	3	25	—	—	3	7		
ARCO3	<i>Arctostaphylos columbiana</i>	—	—	0.2	8	17	14	—	—		
NODEE	<i>Notholithocarpus densiflorus</i>	—	—	32	25	41	21	3	13		
VAPA	<i>Vaccinium parvifolium</i>	—	—	2	8	2	7	—	—		
VAOV2	<i>Vaccinium ovatum</i>	—	—	—	—	13	14	—	—		
Forbs											
CANU	<i>Calamagrostis nutkaensis</i>	—	—	1	50	3	29	—	—		
CAECP	<i>Carex echinata</i> ssp. <i>phyllomanica</i>	—	—	6	58	19	64	9	67		
CAME5	<i>Carex mendocinensis</i>	—	—	+	1	—	—	—	—		
CAOB3	<i>Carex obnupta</i>	+	15	—	—	5	21	—	—		
CYCA4	<i>Cypripedium californicum</i>	1	15	—	—	—	—	—	—		
DACA3	<i>Darlingtonia californica</i>	26	62	+	1	1	21	8	47		
ERCR4	<i>Eriophorum crinigerum</i>	—	—	+	1	+	21	—	—		
JUENM	<i>Juncus ensifolius</i> var. <i>montanus</i>	—	—	+	1	—	—	+	13		
NACA2	<i>Nartheceum californicum</i>	6	23	8	75	—	—	28	80		
PAPA8	<i>Parnassia palustris</i>	2	1	+	1	—	—	+	13		
POCA5	<i>Polygala californica</i>	+	1	—	—	—	—	—	—		
RUUR	<i>Rubus ursinus</i>	—	—	—	—	—	—	+	1		
RUGL7	<i>Rudbeckia glaucescens</i>	—	—	2	25	—	—	3	33		
TROC7	<i>Triantha occidentalis</i>	—	—	23	83	1	29	+	1		
XETE	<i>Xerophyllum tenax</i>	—	—	—	—	1	21	—	—		

* = recorded as a tree based on growth habit in transect 474.

+ = <0.5 percent of cover and is converted to 0.2 percent cover in estimating cover values.

— = not recorded.

^aPlant associations are named based on a combination of the dominant life form plus the characteristic or dominant plant species in the various plant layers (trees, shrubs, and herbs). Plant association acronyms are shorthand for communicating the plant association name. Each acronym is made up of the first two letters of the genus name of the dominant or characteristic species within a layer and combined with the first two letters of the specific epithet of the species (e.g., *Abies concolor* is shortened to ABCO). Plant associations are generally defined by the dominant or characteristic species that occupies or has the biological potential to occupy the uppermost vegetation layer. In forested plant associations, this is the tree layer. Additional names are used for understory layers when they contain dominant, characteristic, or diagnostic species (e.g., white fir/Cascade barberry/sweet after death (*Abies concolor*/*Berberis nervosa*/*Achlys triphylla*)). Life form layers are separated by a forward slash (/). Codominants within a layer are separated by a hyphen (-).

^bSee appendix 1 for a listing of scientific and common names.

^cFrequency is expressed as percentage of relative frequency cover is expressed as percentage of foliar cover. Zero values are not included.

Knobcone Pine-Douglas-Fir-Tanoak (Map Unit I)

This forest type is characterized by an overstory dominated by knobcone pine. Douglas-fir is often the dominant species regenerating in the understory, followed by tanoak and canyon live oak. Understory species include huckleberry oak (*Quercus vacciniifolia*), California coffeeberry (*Rhamnus californica* ssp. *occidentalis*) and Oregon grape. The herbaceous understory is often sparsely vegetated (Blakeley-Smith 2008).

The mixed evergreen forest located on the western margin of the watershed is situated on normal, nonultramafic soils. The lushness of this forest type contrasts markedly with adjacent forest occurring on ultramafic (serpentinized) parent material, where tree growth is sparse and shrub densities are high (McKee 1976, Vander Schaaf 1987).

Knobcone Pine Chaparral (Map Unit J)

Open, young knobcone pine stands with a chaparral type of understory containing manzanita (*Arctostaphylos* spp.) and loose rocks. Other common shrub species include tanoak, California huckleberry, huckleberry oak, California coffeeberry and Oregon grape. Past wildfire in this mixed-conifer type have created dense stands of knobcone pine and lodgepole pine (*Pinus contorta* var. *latifolia*) as well as contributing to the vigorous growth of shrub thickets. Shrub diversity in these areas is high, with 16 different species being identified (Bowen 1982, McKee 1976). The understory has sparse herbaceous vegetation (Blakeley-Smith 2008).

Knobcone Pine-Lodgepole Pine-Western White Pine (Map Unit K)

This forest type is characterized by knobcone pine, lodgepole pine, and western white pine (*Pinus monticola*) in the overstory. Understory species include tanoak, manzanita, azalea (*Rhododendron occidentale*), rhododendron (*R. macrophyllum*), California huckleberry, and salal (*Gaultheria shallon*). The understory herbaceous vegetation is sparse (Blakeley-Smith 2008).

Rock Outcrop (Map Unit L)

This type occurs in both ACECs. The type is sparsely vegetated and composed primarily of rock outcropping, possibly influenced by serpentine as well as other parent materials. The vegetation is characterized by low growing shrubs, including pinemat manzanita (*Arctostaphylos nevadensis*), huckleberries (*Vaccinium* spp.), and Oregon grape (*Berberis* spp.). Scattered trees can also be present and include Douglas-fir, knobcone pine, white pine, and Pacific madrone (Blakeley-Smith 2008). A list of scientific and common names for vascular plants known to occur within the ACECs appear in appendix 1. Fungi identified within the area are listed in appendix 2, lichens are in appendix 3, and bryophytes are in appendix 4.

Fauna

High habitat diversity provides for an array of special status species, including two butterflies, Johnson's hairstreak and the Mardon skipper (USDA FS 2015). This habitat diversity also provides potential habitat for several special status bird species: northern spotted owl (*Strix occidentalis caurina*), marbled murrelet (*Brachyramphus marmoratus*), peregrine falcon (*Falco peregrinus anatum*), and purple martin (*Progne subis*). Furthermore, the North Fork Hunter Creek ACEC supports high-quality hardwood riparian zones for resident trout and anadromous fish populations, such as fall chinook salmon (*Oncorhynchus tshawytscha*) and winter steelhead (*O. mykiss*) (USDI BLM 1996).

Amphibians, reptiles, birds, and mammals known or expected to occur within the ACECs are listed in appendix 5. These lists were derived from the experience of local biologists and species distribution, life history characteristics, and availability of habitat within the ACECs based on published literature (Csuti et al. 2001).

Human History

Cultural resources found within both ACECs include a prehistoric stone tool manufacturing site on a ridge top near Hunter Creek Bog and a temporary campsite on a riverside bench near North Fork Hunter Creek (USDI BLM 1996). When Europeans began exploring the region, Athapascan-speaking people called the Tututni probably occupied temporary camp sites along North Fork Hunter Creek while gathering and processing plants, such as acorns from Oregon white oak and roots of elegant brodiaea (*Brodiaea elegans*) and common camas (*Camassia quamash*). The main Tututni village was located on the Rogue River, about 5 miles to the north. Tututni people were killed, scattered, or removed to the Siletz Reservation following the Rogue Indian Wars (1855 and 1856). Today, the Confederated Tribes of Siletz Indians is the federally recognized tribe for descendants of Tututni people. Signal Butte, a high point to the north of the North Fork Hunter Creek ACEC, was named for the stone rings that were found there that early pioneers believed were remnants of signal fire pits. Some think that the stone circles were spirit quest sites where young Tututni men fasted in seclusion for several days (Curtis 1924).

During the late 1800s and the early 1900s, homesteaders came to the North Fork Hunter Creek area. Two cabin locations are documented (USDI BLM 1996). The Wren family built a cabin, grazed sheep and cattle, and dammed a small spring for livestock water, an impoundment now known as Wren Pond. Portions of several historic trails are still traceable, forming a network linking the homesteads along Hunter Creek to the Rogue River Valley. The Crook family grazed sheep

and cattle in the area until the 1960s. In past decades, trespass cattle have grazed the meadows and efforts are underway to remove them. McKinley Mine, on the western slope of Signal Butte on national forest land, is a copper, gold, silver, and iron mine dating from the 1930s and 1940s. Other nearby chromite mines were also active during that time (Brian 2004).

Disturbance History

Port Orford cedar root disease (*Phytophthora lateralis*) is well-established along the north fork and main stem of Hunter Creek. *Phytophthora lateralis* is highly contagious and its spores are naturally spread by free-flowing water. It can also be spread long distances through mechanical transport of soil (e.g., via human boots, vehicles) (Roth et al. 1987). The disease can be avoided by minimizing and isolating sources of infection and by preventing the movement of soil from infected to uninfected areas.

Sudden oak death (SOD) is caused by the water mold pathogen, *Phytophthora ramorum*, which kills a variety of vegetation (USDA APHIS, n.d.). *Phytophthora ramorum* was detected in Hunter Creek Bog in July 2019. It was determined to be the North America strain (NA 1), which causes twig and foliar dieback in a variety of plants and is nearly always fatal to tanoak. A treatment followed in which all tanoak within 300 ft was cut, piled, and burned to remove infected and exposed plant material. The area was replanted with Douglas-fir, knobcone pine, and sugar pine (*Pinus lambertiana*).

Fire suppression since the early 20th century has nearly eliminated fire as a disturbance process from the watershed. There are no significant fires recorded in the watershed during the 20th century (EA EST 1998).

Large-scale windthrow is a natural disturbance that has shaped forested landscapes throughout the Pacific Northwest. It likely has played a role over the centuries in modifying vegetation structure and composition within the Hunter Creek watershed (EA EST 1998).

Research History

Atzet et al. (1996) have classified and mapped forested stands within the ACEC into three forest plant associations:

- Tanoak-Douglas-fir-canyon live oak/poison oak (“mixed conifer”)
- Knobcone pine
- Douglas-fir-canyon live oak-tanoak

Four long-term vegetation monitoring transects were established in 2016 within Hunter Creek Bog ACEC (Schuller et al. 2016). Table 2 summarizes the vegetation

structure and composition representative of this site and is representative of the serpentine-influenced fens within the ACEC.

A vegetation map of the North Fork Hunter Creek and the Hunter Creek Bog ACECs was produced in 2017 (IAE 2017).

Maps

Topographic maps applicable to North Fork Hunter Creek and Hunter Creek Bog ACECs include the following: (1) Signal Butte, Oregon, 7.5 minute; 1:24,000 scale, 1986; (2) Sundown Mountain, Oregon, 7.5 minute; 1:24,000 scale, 1986; and Bureau of Land Management Coos Bay District/Siskiyou National Forest transportation map, scale 1/2" to a mile, including ownership 1997.

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U.S. Equivalents

When you know	Multiply by	To get:
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 (in)
Degrees Fahrenheit (°F) = 1.8 degrees Celsius (°C) + 32		

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Appendix 1: Plants

Scientific name	Common name
Trees	
<i>Acer macrophyllum</i> Pursh	Bigleaf maple
<i>Alnus rubra</i> Bong.	Red alder
<i>Arbutus menziesii</i> Pursh	Pacific madrone
<i>Chamaecyparis lawsoniana</i> (A. Murray bis) Parl.	Port Orford cedar
<i>Chrysolepis chrysophylla</i> (Douglas ex Hook.) Hjelmq.	Giant chinquapin
<i>Fraxinus latifolia</i> Benth.	Oregon ash
<i>Notholithocarpus densiflorus</i> (Hook. & Arn.) Manos, Cannon, & S. Oh var. <i>densiflorus</i>	Tanoak
<i>Pinus attenuata</i> Lemmon	Knobcone pine
<i>Pinus contorta</i> Douglas ex Loudon var. <i>latifolia</i> Engelm.	Lodgepole pine
<i>Pinus jeffreyi</i> Balf.	Jeffrey pine
<i>Pinus lambertiana</i> Douglas	Sugar pine
<i>Pinus monticola</i> D. Don	Western white pine
<i>Pseudotsuga menziesii</i> (Mirb.) Franco var. <i>menziesii</i>	Douglas-fir
<i>Quercus chrysolepis</i> Liebm.	Canyon live oak
<i>Quercus garryana</i> Douglas ex Hook. var. <i>garryana</i>	Oregon white oak
<i>Taxus brevifolia</i> Nutt.	Western yew
<i>Tsuga heterophylla</i> (Raf.) Sarg.	Western hemlock
<i>Umbellularia californica</i> (Hook. & Arn.) Nutt.	California laurel
Shrubs	
<i>Acer circinatum</i> Pursh	Vine maple
<i>Amelanchier alnifolia</i> (Nutt.) Nutt. ex M. Roem. var. <i>semiintegrifolia</i> (Hook.) C.L. Hitchc.	Pacific serviceberry
<i>Arctostaphylos columbiana</i> Piper	Hairy manzanita
<i>Arctostaphylos hispidula</i> Howell	Gasquet manzanita
<i>Arctostaphylos nevadensis</i> A. Gray	Pinemat manzanita
<i>Baccharis pilularis</i> ssp. <i>consanguinea</i> DC. C.B. Wolf	Chaparral broom
<i>Berberis aquifolium</i> Pursh	Shining Oregon grape
<i>Berberis nervosa</i> Pursh	Oregon grape
<i>Berberis repens</i> Lindl.	Oregon grape
<i>Ceanothus pumilus</i> Greene	Siskiyou mat
<i>Ceanothus thyrsiflorus</i> Eschsch.	Blue blossom
<i>Corylus cornuta</i> Marshall var. <i>californica</i> (A. DC.) W.M. Sharp	California hazel
<i>Ericameria nauseosa</i> (Pall. ex Pursh) G.L. Nesom & Baird var. <i>speciosa</i> (Nutt.) G.L. Nesom & G.I. Baird	Showy rabbitbrush
<i>Garrya buxifolia</i> A. Gray	Box leaved garrya

Note: Scientific nomenclature for vascular plants, ferns, and fern allies follows the Oregon Flora Project (Oregon Flora Project 2021). List is compiled from field surveys (Blakely-Smith 2008, Bowen et al. 1982, Brian 2004, Carex Working Group 2006, IAE 2017, Rittenhouse 1996, Rodenkirk 2016, Schuller et al. 2016).

Scientific name	Common name
<i>Garrya fremontii</i> Torr.	Bear brush
<i>Gaultheria shallon</i> Pursh	Salal
<i>Holodiscus discolor</i> (Pursh) Maxim.	Oceanspray
<i>Juniperus communis</i> L. var. <i>saxatilis</i> Pall.	Mountain juniper
<i>Lonicera ciliosa</i> (Pursh) Poir. ex DC.	Orange honeysuckle
<i>Lonicera hispidula</i> (Lindl.) Douglas ex Torr. & A. Gray	Hairy honeysuckle
<i>Myrica californica</i> Cham. & Schldtl.	Pacific wax myrtle
<i>Physocarpus capitatus</i> (Pursh) Kuntze	Pacific ninebark
<i>Quercus sadleriana</i> R. Br.	Deer oak
<i>Quercus vaccinifolia</i> Kellogg	Huckleberry oak
<i>Rhamnus californica</i> Eschsch. ssp. <i>occidentalis</i> (Howell) C.B. Wolf	California coffeeberry
<i>Rhamnus purshiana</i> DC.	Cascara
<i>Rhododendron columbianum</i> (Piper) Harmaja	Western Labrador tea
<i>Rhododendron macrophyllum</i> D. Don	Pacific rhododendron
<i>Rhododendron occidentale</i> (Torr. & A. Gray) A. Gray	Western azalea
<i>Ribes menziesii</i> Pursh	Coast prickly gooseberry
<i>Ribes roezlii</i> Regel var. <i>cruentum</i> (Greene) Rehder	Shinyleaf gooseberry
<i>Ribes sanguineum</i> Pursh	Red-flowering currant
<i>Rosa gymnocarpa</i> Nutt.	Baldhip rose
<i>Rubus leucodermis</i> Douglas. ex Torr. & A. Gray	Blackcap
<i>Rubus nutkanus</i> Moc. ex Ser.	Thimbleberry
<i>Rubus spectabilis</i> Pursh	Salmonberry
<i>Rubus ursinus</i> Cham. & Schldtl.	Pacific blackberry
<i>Salix delnortensis</i> C.K. Schneid.	Del Norte willow
<i>Salix sitchensis</i> Sanson ex Bong. var. <i>sitchensis</i>	Sitka willow
<i>Symphoricarpos albus</i> (L.) S.F. Blake var. <i>laevigatus</i> (Fernald) S.F. Blake	Black snowberry
<i>Toxicodendron diversilobum</i> (Torr. & A. Gray) Greene	Poison oak
<i>Vaccinium ovatum</i> Pursh	California huckleberry
<i>Vaccinium parvifolium</i> Sm.	Red huckleberry
<i>Whipplea modesta</i> Torr.	Whipplevine
Forbs	
<i>Achillea millefolium</i> L.	Common yarrow
<i>Achlys triphylla</i> (Sm.) DC. ssp. <i>triphylla</i>	Northern vanilla-leaf
<i>Acmispon parviflorus</i> (Benth.) D.D. Sokoloff	Desert deervetch
<i>Adelinia grande</i> (Douglas ex Lehm.) J.I. Cohen	Grand hound's tongue
<i>Adenocaulon bicolor</i> Hook.	Pathfinder
<i>Agoseris</i> sp. Raf.	Agoseris
<i>Allium amplexans</i> Torr.	Slim-leaf onion
<i>Allium bolanderi</i> S. Watson var. <i>bolanderi</i>	Bolander's onion

Scientific name	Common name
<i>Allium bolanderi</i> S. Watson var. <i>mirabile</i> (L.F. Hend.) McNeal	Bolander's onion
<i>Allium siskiyouense</i> Traub	Siskiyou onion
<i>Allium validum</i> S. Watson	Pacific swamp onion
<i>Allotropa virgata</i> Torr. & A. Gray	Candystick
<i>Anaphalis margaritacea</i> (L.) Benth. & Hook. f.	Pearly everlasting
<i>Anemone oregana</i> A. Gray var. <i>oregana</i>	Blue windflower
<i>Angelica arguta</i> Nutt.	Sharptooth angelica
<i>Anisocarpus madioides</i> Nutt.	Woodland tarweed
<i>Antennaria suffrutescens</i> Greene	Shrubby pussytoes
<i>Aphanes arvensis</i> L.	Field parsley piert
<i>Aphyllon purpureum</i> (A. Heller) Holub	Purple broomrape
<i>Apocynum androsaemifolium</i> L.	Spreading dogbane
<i>Aquilegia formosa</i> Fisch. ex DC.	Red columbine
<i>Aralia californica</i> S. Watson	California spikenard
<i>Arnica cernua</i> Howell	Nodding arnica
<i>Arnica cordifolia</i> Hook.	Heart-leaved arnica
<i>Asarum caudatum</i> Lindl.	Long-tailed wild ginger
<i>Bellis perennis</i> L.	English daisy
<i>Boykinia occidentalis</i> Torr. & A. Gray	Coastal boykinia
<i>Brodiaea elegans</i> Hoover	Elegant brodiaea
<i>Calochortus tolmiei</i> Hook. & Arn.	Tolmie's cat's ear
<i>Calypso bulbosa</i> (L.) Oakes var. <i>occidentalis</i> (Holz.) B. Boivin	Calypso orchid
<i>Calystegia atriplicifolia</i> Hallier f. ssp. <i>atriplicifolia</i>	Night-blooming morning-glory
<i>Calystegia occidentalis</i> (A. Gray) Brummitt ssp. <i>occidentalis</i>	Pale morning-glory
<i>Camassia quamash</i> (Pursh) Greene ssp. <i>Quamash</i>	Common camas
<i>Campanula prenanthoides</i> Durand	California bellflower
<i>Cardamine nuttallii</i> Greene	Nuttall's toothwort
<i>Castilleja attenuata</i> (A. Gray) T.I. Chuang & Heckard	Narrowleaf paintbrush
<i>Castilleja pruinosa</i> Fernald	Frosted paintbrush
<i>Centaureum erythraea</i> Rafn	Common centauray
<i>Cerastium arvense</i> L.	Field mouse-ear chickweed
<i>Chimaphila menziesii</i> (R. Br.) Spreng.	Little prince's pine
<i>Chimaphila umbellata</i> (L.) W.P.C. Barton	Pipsissewa
<i>Chrysosplenium glechomifolium</i> Nutt.	Golden saxifrage
<i>Cirsium arvense</i> (L.) Scop.	Canada thistle
<i>Cirsium remotifolium</i> (Hook.) DC. var. <i>rivulare</i> Jeps.	Klamath thistle
<i>Cirsium vulgare</i> (Savi) Ten.	Bull thistle
<i>Clarkia amoena</i> (Lehm.) A. Nelson & J.F. Macbr.	Farewell to spring

Scientific name	Common name
<i>Claytonia perfoliata</i> Donn ex Willd.	Miner's lettuce
<i>Claytonia sibirica</i> L.	Candyflower
<i>Clinopodium douglasii</i> (Benth.) Kuntze	Yerba buena
<i>Collinsia grandiflora</i> Douglas ex Lindl.	Large flowered blue eyed Mary
<i>Collinsia rattanii</i> A. Gray	Rattan's collinsia
<i>Collomia heterophylla</i> Hook.	Varied leaf collomia
<i>Coptis laciniata</i> A. Gray	Cutleaf goldthread
<i>Corallorhiza maculata</i> (Raf.) Raf.	Spotted coralroot
<i>Corallorhiza mertensiana</i> Bong.	Mertens' coralroot
<i>Corallorhiza striata</i> Lindl. var. <i>striata</i>	Striped coralroot
<i>Crepis pleurocarpa</i> A. Gray	Naked-stem hawksbeard
<i>Crocidium multicaule</i> Hook.	Gold star
<i>Cypripedium californicum</i> A. Gray	California lady's slipper
<i>Darlingtonia californica</i> Torr.	California pitcher plant
<i>Dicentra formosa</i> (Haw.) Walp. ssp. <i>formosa</i>	Pacific bleeding heart
<i>Dichelostemma congestum</i> (Sm.) Kunth	Ookow
<i>Digitalis purpurea</i> L.	Foxglove
<i>Dodecatheon hendersonii</i> A. Gray	Broadleaf shooting star
<i>Drosera rotundifolia</i> L.	Roundleaf sundew
<i>Epilobium brachycarpum</i> C. Presl	Autumn willowherb
<i>Epilobium minutum</i> Lindl. ex Lehm.	Small-flowered willowherb
<i>Erigeron eatonii</i> A. Gray var. <i>plantagineus</i> (Greene) Cronquist	Eaton's plantain-leaved fleabane
<i>Erigeron foliosus</i> Nutt. var. <i>confinis</i> (Howell) Jeps.	Leafy fleabane
<i>Eriodictyon californicum</i> (Hook. & Arn.) Torr.	Yerba santa
<i>Eriogonum nudum</i> Douglas ex Benth.	Naked buckwheat
<i>Eriogonum ternatum</i> Howell	Ternate buckwheat
<i>Eriophyllum lanatum</i> (Pursh) J. Forbes	Oregon sunshine
<i>Erodium cicutarium</i> (L.) L'Hér. ex Aiton	African filaree
<i>Erythranthe guttata</i> (Fisch. Ex DC.) G.L. Nesom	Common monkeyflower
<i>Erythranthe moschata</i> (Douglas ex. Lindl.) G.L. Nesom	Musk monkeyflower
<i>Erythronium oregonum</i> Applegate	Oregon fawn-lily
<i>Erythronium revolutum</i> Sm.	Pink fawn-lily
<i>Eurybia radulina</i> (A. Gray) G.L. Nesom	Rough-leaved aster
<i>Fragaria vesca</i> L.	Woodland strawberry
<i>Fragaria virginiana</i> Mill.	Broad petal strawberry
<i>Fritillaria affinis</i> (Schant.) Sealy	Checker-lily
<i>Galium ambiguum</i> W. Wight var. <i>siskiyouense</i> Ferris	Siskiyou bedstraw
<i>Galium aparine</i> L.	Cleavers
<i>Galium triflorum</i> Michx.	Fragrant bedstraw
<i>Gayophytum diffusum</i> Torr. & A. Gray	Spreading groundsmoke

Scientific name	Common name
<i>Gentiana affinis</i> Griseb.	Pleated gentian
<i>Gentiana setigera</i> A. Gray	Elegant gentian
<i>Gilia capitata</i> Sims ssp. <i>capitata</i>	Bluefield gilia
<i>Goodyera oblongifolia</i> Raf.	Giant rattlesnake plantain
<i>Grindelia nana</i> Nutt. var. <i>nana</i>	Idaho gumweed
<i>Hastingsia alba</i> (Durand) S. Watson	White-flowered rush-lily
<i>Heracleum maximum</i> W. Bartram	Common cow parsnip
<i>Hieracium albiflorum</i> Hook.	White-flowered hawkweed
<i>Hieracium bolanderi</i> A. Gray	Bolander's hawkweed
<i>Hieracium scouleri</i> Hook.	Scouler's hawkweed
<i>Horkelia sericata</i> S. Watson	Howell's horkelia
<i>Hosackia gracilis</i> Benth.	Seaside lotus
<i>Hypericum anagalloides</i> Cham. & Schltld.	bog St. John's wort
<i>Hypericum perforatum</i> L.	Common St. John's wort
<i>Hypochaeris radicata</i> L.	Hairy cat's ear
<i>Iris innominata</i> L.F. Hend.	Del Norte County iris
<i>Iris tenax</i> Douglas ex Lindl. var. <i>tenax</i>	Toughleaf iris
<i>Kopsiopsis strobilacea</i> (A. Gray) Beck	California groundcone
<i>Lactuca saligna</i> L.	Willow lettuce
<i>Lathyrus delnorticus</i> C.L. Hitchc.	Del Norte pea
<i>Lathyrus nevadensis</i> S. Watson var. <i>nevadensis</i>	Sierra Nevada pea
<i>Leptosiphon bicolor</i> Nutt.	Bicolored linanthus
<i>Leucanthemum maximum</i> (Ramond) DC.	Shasta daisy
<i>Leucanthemum vulgare</i> Lam.	Oxeye daisy
<i>Ligusticum apiifolium</i> (Nutt.) A. Gray	Celery-leaved licorice-root
<i>Lilium columbianum</i> Hanson	Columbia lily
<i>Lilium pardalinum</i> Kellogg ssp. <i>vollmeri</i> (Eastw.) M.W. Skinner	Vollmer's lily
<i>Linnaea borealis</i> L. var. <i>longiflora</i> Torr.	Western twinflower
<i>Linum bienne</i> Mill.	Narrow leaved flax
<i>Lomatium hallii</i> (S. Watson) J.M. Coult. & Rose	Hall's biscuitroot
<i>Lomatium howellii</i> (S. Watson) Jeps.	Howell's biscuitroot
<i>Lomatium macrocarpum</i> (Hook. & Arn.) J.M. Coult. & Rose	Bigseed lomatium
<i>Lomatium martindalei</i> (J.M. Coult. & Rose) J.M. Coult. & Rose	Cascade desert parsley
<i>Lomatium triternatum</i> (Pursh) J.M. Coult. & Rose	Broad-fruit lomatium
<i>Lomatium utriculatum</i> (Nutt. ex Torr. & A. Gray) J.M. Coult. & Rose	Common lomatium
<i>Luina hypoleuca</i> Benth.	Littleleaf luina
<i>Lupinus bicolor</i> Lindl.	Miniature lupine
<i>Lupinus</i> sp. L.	Lupine
<i>Lysimachia borealis</i> (Hook.) Cholewa	Western starflower

Scientific name	Common name
<i>Lysimachia europaea</i> (L.) U. Manns & Anderb.	Arctic starflower
<i>Madia exigua</i> (Sm.) A. Gray	Little tarweed
<i>Maianthemum racemosum</i> (L.) Link ssp. <i>amplexicaule</i> (Nutt.) LaFrankie	Large false Solomon's seal
<i>Maianthemum stellatum</i> (L.) Link	Small false Solomon's seal
<i>Marah oregana</i> (S. Watson) Howell	Oregon bigroot
<i>Medicago lupulina</i> L.	Black medic
<i>Micranthes howellii</i> (Greene) Small	Howell's saxifrage
<i>Micropus californicus</i> Fisch. & C.A. Mey.	Slender cotton-weed
<i>Microseris laciniata</i> (Hook.) Sch. Bip. ssp. <i>leptosepala</i> (Nutt.) K.L. Chambers	Slender-bracted microseris
<i>Microsteris gracilis</i> (Hook.) Greene	Slender phlox
<i>Mitella</i> sp. L.	Miterwort
<i>Moehringia macrophylla</i> (Hook.) Fenzl	Big-leaved sandwort
<i>Monotropa hypopitys</i> L.	Pinesap
<i>Montia parvifolia</i> (Moç. ex DC.) Greene	Littleleaf miners lettuce
<i>Myosotis discolor</i> Pers.	Changing forget-me-not
<i>Narthecium californicum</i> Baker	Bog-asphodel
<i>Nemophila menziesii</i> Hook. & Arn. var. <i>atomaria</i> (Fisch. & C.A. Mey.) H.P. Chandler	Baby blue eyes
<i>Nemophila parviflora</i> Douglas ex Benth. var. <i>parviflora</i>	Small flowered nemophila
<i>Neottia cordata</i> (L.) Rich.	Western heart-leaved twayblade
<i>Oenanthe sarmentosa</i> de Candolle	Water parsley
<i>Osmorhiza berteroi</i> DC.	Mountain sweet cicely
<i>Oxalis oregana</i> Nutt. ex Torr. & A. Gray	Oregon wood sorrel
<i>Oxalis suksdorfii</i> Trel.	Suksdorf's oxalis
<i>Packera bolanderi</i> (A. Gray) W.A. Weber & Á. Löve var. <i>bolanderi</i>	Bolander's groundsel
<i>Packera cana</i> (Hook.) W.A. Weber & Á. Löve	Woolly groundsel
<i>Packera macounii</i> (Greene) W.A. Weber & Á. Löve	Long-rayed groundsel
<i>Parnassia palustris</i> L.	California grass of Parnassus
<i>Penstemon anguineus</i> Eastw.	Tongue leaved penstemon
<i>Penstemon azureus</i> Benth. ssp. <i>azureus</i>	Azure penstemon
<i>Penstemon laetus</i> A. Gray	Gay penstemon
<i>Perideridia oregana</i> (S. Watson) Mathias	Eppaw
<i>Petasites frigidus</i> (L.) Fr. var. <i>palmatus</i> (Aiton) Cronquist	Sweet coltsfoot
<i>Phacelia bolanderi</i> A. Gray	Bolander's phacelia
<i>Phacelia corymbosa</i> Jeps.	Serpentine phacelia
<i>Phlox diffusa</i> Benth.	Spreading phlox
<i>Plantago lanceolata</i> L.	Buckhorn plantain
<i>Platanthera sparsiflora</i> (S. Watson) Schltr.	Few-flowered rein orchid
<i>Platanthera unalascensis</i> (Spreng.) Kurtz	Alaska rein orchid

Scientific name	Common name
<i>Plectritis ciliosa</i> (Greene) Jeps. ssp. <i>ciliosa</i>	Longspur plectritis
<i>Plectritis congesta</i> (Lindl.) DC.	Rosy plectritis
<i>Pleuricospora fimbriolata</i> A. Gray	Fringed pinesap
<i>Polygala californica</i> Nutt.	California milkwort
<i>Polygonum californicum</i> Meisn.	California knotweed
<i>Potamogeton</i> sp. L.	Pondweed
<i>Prosartes hookeri</i> Torr.	Drops-of-gold
<i>Prosartes smithii</i> (Hook.) Utech, Shinwari & Kawano	Fairy lanterns
<i>Prunella vulgaris</i> L. ssp. <i>lanceolata</i> (W.P.C. Barton) Fernald	Native heal all
<i>Prunella vulgaris</i> L. var. <i>vulgaris</i>	Heal all
<i>Pyrola picta</i> Sm.	White-veined wintergreen
<i>Ranunculus aquatilis</i> L.	Water buttercup
<i>Ranunculus californicus</i> Benth.	California buttercup
<i>Ranunculus occidentalis</i> Nutt.	Western buttercup
<i>Rorippa curvisiliqua</i> (Hook.) Besser ex Britton	Curvepod yellowcress
<i>Rudbeckia glaucescens</i> Eastw.	Waxy coneflower
<i>Rumex acetosella</i> L.	Sheep sorrel
<i>Rumex crispus</i> L.	Curly dock
<i>Sanguisorba officinalis</i> L.	Great burnet
<i>Sanicula bipinnatifida</i> Douglas ex Hook.	Purple sanicle
<i>Sanicula crassicaulis</i> Poepp. ex DC.	Pacific snakeroot
<i>Sedum laxum</i> (Britton) A. Berger ssp. <i>laxum</i>	Roseflower stonecrop
<i>Sedum spathulifolium</i> Hook.	Broadleaf stonecrop
<i>Senecio jacobaea</i> L.	Stinking willie
<i>Senecio triangularis</i> Hook.	Arrowleaf groundsel
<i>Senecio vulgaris</i> L.	Common groundsel
<i>Sherardia arvensis</i> L.	Blue fieldmadder
<i>Sidalcea malviflora</i> (DC.) A. Gray ex Benth. ssp. <i>patula</i> C.L. Hitchc.	Mallow sidalcea
<i>Silene campanulata</i> S. Wats. ssp. <i>glandulosa</i> C.L. Hitchc. & Maguire	Bell catchfly
<i>Silene gallica</i> L.	Small-flowered catchfly
<i>Sisyrinchium bellum</i> S. Watson	Beautiful blue-eyed grass
<i>Sisyrinchium californicum</i> (Ker Gawlowska) W.T. Aiton	Golden-eyed grass
<i>Sisyrinchium idahoense</i> E.P. Bicknell	Idaho blue-eyed grass
<i>Stachys rigida</i> Nutt. ex Benth.	Rigid betony
<i>Streptanthus tortuosus</i> Kellogg	Mountain jewelflower
<i>Taraxacum officinale</i> Weber ex F.H. Wigg.	Common dandelion
<i>Thermopsis gracilis</i> Howell	Slender goldenbanner
<i>Tolmiea diplomenziesii</i> Judd, Soltice & P. Soltice	Diploid piggyback plant
<i>Toxicoscordion micranthum</i> (Eastw.) A. Heller	Small-flowered zigadenus

Scientific name	Common name
<i>Triantha occidentalis</i> (S. Watson) R.R. Gates ssp. <i>occidentalis</i>	Western false-asphodel
<i>Trifolium dichotomum</i> Hook. & Arn.	Branched Indian clover
<i>Trifolium longipes</i> Nutt.	Longstalk clover
<i>Trifolium microcephalum</i> Pursh	Smallhead clover
<i>Trifolium subterraneum</i> L.	Subclover
<i>Trifolium willdenovii</i> Spreng.	Tomcat clover
<i>Trillium ovatum</i> Pursh	Western trillium
<i>Trillium rivale</i> S. Watson	Brook trillium
<i>Triphysaria pusilla</i> (Benth.) T.I. Chuang & Heckard	Dwarf owl clover
<i>Triteleia bridgesii</i> (S. Watson) Greene	Bridges' triteleia
<i>Triteleia hyacinthina</i> (Lindl.) Greene	Fool's-onion
<i>Typha latifolia</i> L.	Broad-leaf cattail
<i>Vancouveria hexandra</i> (Hook.) C. Morren & Decne.	Northern inside-out flower
<i>Vancouveria planipetala</i> Calloni	Redwood-ivy
<i>Veratrum</i> sp.	Corn lily
<i>Veronica americana</i> Schwein. ex Benth.	American brooklime
<i>Veronica regina-nivalis</i> M.M. Mart.Ort. & Albach	Snow queen
<i>Vicia americana</i> Muhl.	American vetch
<i>Vicia tetrasperma</i> (L.)	Lentil tare
<i>Viola adunca</i> Sm. ssp. <i>adunca</i>	Hookedspur violet
<i>Viola cuneata</i> S. Watson	Wedge leaf violet
<i>Viola glabella</i> Nutt.	Pioneer violet
<i>Viola lanceolata</i> L.	Lance leaved violet
<i>Viola sempervirens</i> Greene	Evergreen violet
<i>Wyethia angustifolia</i> (DC.) Nutt.	Narrow-leaved mule's ears
<i>Xerophyllum tenax</i> (Pursh) Nutt.	Bear-grass
Grasses, Sedges, and Rushes	
<i>Agrostis hallii</i> Vasey	Hall's bentgrass
<i>Agrostis microphylla</i> Steud.	Small-leaf bentgrass
<i>Aira caryophyllea</i> L. var. <i>caryophyllea</i>	Silver hairgrass
<i>Briza minor</i> L.	Little quaking grass
<i>Bromus hordeaceus</i> L.	Soft chess
<i>Bromus sitchensis</i> var. <i>carinatus</i> (Hook. & Arn.) R.E. Brainerd & Otting	California brome
<i>Bromus vulgaris</i> (Hook.) Shear	Columbia brome
<i>Calamagrostis nutkaensis</i> (J. Presl) Steud.	Pacific reedgrass
<i>Calliscirpus criniger</i> (A. Gray) C.N. Gilmour, J.R. Starr & Naczi	Fringed cottongrass
<i>Carex amplifolia</i> Boott	Ample-leaved sedge
<i>Carex concinnoides</i> Mack.	Northwestern sedge
<i>Carex echinata</i> Murray ssp. <i>echinata</i>	Star sedge

Scientific name	Common name
<i>Carex echinata</i> Murray ssp. <i>phyllomanica</i> (W. Boott) Reznicek	Coastal star sedge
<i>Carex hendersonii</i> L.H. Bailey	Timber sedge
<i>Carex leptalea</i> Wahlenb.	Bristle-stalked sedge
<i>Carex leptopoda</i> Mack.	Short-scaled sedge
<i>Carex mendocinensis</i> Olney ex W. Boott	Mendocino sedge
<i>Carex obnupta</i> L.H. Bailey	Slough sedge
<i>Carex pachystachya</i> Cham. ex Steud.	Chamisso sedge
<i>Carex rossii</i> Boott	Ross' sedge
<i>Carex scabriuscula</i> Mack.	Siskiyou sedge
<i>Carex serpenticola</i> Zika	Serpentine sedge
<i>Carex tumulicola</i> Mack.	Foothill sedge
<i>Cynosurus echinatus</i> L.	Bristly dogtail
<i>Dactylis glomerata</i> L.	Orchard grass
<i>Danthonia californica</i> Bol.	California oatgrass
<i>Deschampsia cespitosa</i> (L.) P. Beauv.	Tufted hairgrass
<i>Deschampsia elongata</i> (Hook.) Munro	Slender hairgrass
<i>Dichanthelium acuminatum</i> (Sw.) Gould & C.A. Clark var. <i>fasciculatum</i> (Torr.) Freckmann & LeLong	Hairy panicgrass
<i>Eleocharis</i> sp. R. Br.	Spikerush
<i>Elymus glaucus</i> Buckley ssp. <i>glaucus</i>	Blue wildrye
<i>Eriocoma lemmonii</i> (Vasey) Romasch. ssp. <i>lemmonii</i>	Lemmon's needlegrass
<i>Festuca californica</i> Vasey var. <i>californica</i>	California fescue
<i>Festuca roemerii</i> Yu.E. Alexeev var. <i>roemerii</i>	Roemer's fescue
<i>Festuca rubra</i> L.	Red fescue
<i>Glyceria striata</i> (Lam.) Hitchc.	Fowl mannagrass
<i>Hierochloa occidentalis</i> Buckley	California sweetgrass
<i>Hierochloa odorata</i> (L.) P. Beauv.	Hairy sweetgrass
<i>Holcus lanatus</i> L.	Velvetgrass
<i>Juncus bolanderi</i> Engelm.	Bolander's rush
<i>Juncus effusus</i> L. ssp. <i>pacificus</i> (Fernard & Wiegand) Piper & Beattie	Common rush
<i>Juncus ensifolius</i> Wikstr.	Dagger-leaved rush
<i>Juncus oxymetris</i> Engelm.	Pointed rush
<i>Koeleria macrantha</i> (Ledeb.) Schult.	Junegrass
<i>Lolium perenne</i> L.	Perennial ryegrass
<i>Luzula comosa</i> E. Mey.	Pacific woodrush
<i>Melica geyeri</i> Munro ex Bol. var. <i>geyeri</i>	Geyer's oniongrass
<i>Melica harfordii</i> Bol.	Harford melic
<i>Melica spectabilis</i> Scribn.	Purple oniongrass
<i>Melica subulata</i> (Griseb.) Scribn.	Alaska oniongrass
<i>Poa piperi</i> Hitchc.	Piper's bluegrass
<i>Poa pratensis</i> L.	Kentucky bluegrass

Scientific name	Common name
<i>Schedonorus arundinaceus</i> (Schreb.) Dumort.	Tall fescue
<i>Scirpus microcarpus</i> J. Presl. & C. Presl.	Small-fruited bulrush
<i>Trisetum canescens</i> Buckley	Tall trisetum
<i>Vulpia bromoides</i> (L.) Gray	Brome fescue
Ferns and Fern Allies	
<i>Adiantum aleuticum</i> (Rupr.) C.A. Paris var. <i>aleuticum</i>	Northern maidenhair fern
<i>Aspidotis densa</i> (Brack.) Lellinger	Indian's dream
<i>Athyrium filix-femina</i> (L.) Roth. var. <i>cyclosorum</i> Rupr.	Lady fern
<i>Equisetum arvense</i> L.	Common horsetail
<i>Equisetum telmateia</i> Ehrh. ssp. <i>braunii</i> (J. Milde) Hauke	Giant horsetail
<i>Myriopteris gracillima</i> (D.C. Eaton) J. Sm.	Lace fern
<i>Pentagramma triangularis</i> (Kaulf.) Yatsk., Windham, E. Wollenw. ssp. <i>triangularis</i>	Goldback fern
<i>Polypodium glycyrrhiza</i> D.C. Eaton	Licorice fern
<i>Polystichum imbricans</i> (D.C. Eaton) D.H. Wagner ssp. <i>imbricans</i>	Imbricate sword fern
<i>Polystichum munitum</i> (Kaulf.) C. Presl	Common sword fern
<i>Pteridium aquilinum</i> (L.) Kuhn var. <i>pubescens</i> Underw.	Bracken
<i>Selaginella wallacei</i> Hieron.	Wallace's selaginella
<i>Struthiopteris spicant</i> (L.) Weiss	Deer fern
<i>Woodwardia fimbriata</i> Sm.	Chain fern

Appendix 2: Fungi

Scientific name	Common name
<i>Amanita muscaria</i> (L.) Lam.	Fly agaric
<i>Amanita pachycolea</i> D.E. Stuntz	Western grisette
<i>Auricula</i> sp. Battarra ex Kuntze	Auricula mushroom
<i>Boletus</i> sp.	Bolete
<i>Boletus zelleri</i> (Murrill) Murrill	Zeller's bolete
<i>Cantharellus formosus</i> Corner	Red chanterelle
<i>Clavulina</i> sp. J. Schröt.	Coral mushroom
<i>Collybia</i> sp. (Fr.) Staude	Collybia mushroom
<i>Cortinarius</i> sp. (Pers.) Gray	Cortinarius mushroom
<i>Cortinarius traganus</i> (Fr.) Fr.	Lilac conifer cortinarius
<i>Craterellus cornucopioides</i> (L.) Pers.	Horn of plenty
<i>Craterellus tubaeformis</i> (Fr.) Quél.	—
<i>Crepidotus</i> sp. (Fr.) Staude	Crepidotus mushroom
<i>Dermocybe</i> sp. (Fr.) Wünsche	Dermocybe mushroom
<i>Galerina</i> sp. Earle	Galerina mushroom
<i>Gyromitra infula</i> (Schaeff.) Quél.	Hooded false morel
<i>Gomphidius</i> sp. Fr.	Gomphidius mushroom
<i>Hydnum repandum</i> L.	Hedgehog mushroom
<i>Hypholoma fasciculare</i> (Huds.) P. Kumm.	Sulphur tuft
<i>Leotia lubrica</i> (Scop.) Pers.	Jelly babies
<i>Marasmius</i> sp. Fr.	Marasmius mushroom
<i>Microglossum viride</i> (Schrad. ex J.F. Gmel.) Gillet	Green earth tongue
<i>Mycena epipterygia</i> (Scop.) Gray	Yellow-stemmed mycena
<i>Mycena haematopus</i> (Pers.) P. Kumm.	Bleeding mycena
<i>Mycena</i> sp. (Pers.) Roussel	Mycena mushroom
<i>Peziza</i> sp.	—
<i>Phaeocollybia</i> sp. R. Heim	Phaeocollybia mushroom
<i>Plectania milleri</i> Paden & Tylutki	Miller's plectania
<i>Polyporus badius</i> (Pers.) Schwein.	Black-leg
<i>Ramaria</i> sp. Fr. ex Bonord.	Coral mushroom
<i>Russula</i> sp. Pers.	Russula mushroom
<i>Sarcosoma mexicanum</i> (Ellis & Holw.) Paden & Tylutki	Starving man's licorice
<i>Schizophyllum commune</i> Fr.	Split-gill
<i>Strobilomyces</i> sp. Berk.	Strobilomyces mushroom
<i>Stropharia ambigua</i> (Peck) Zeller	Questionable stropharia
<i>Tremella mesenterica</i> Retz. and (Schaeff.)	Witch's butter
<i>Tremiscus helvelloides</i> (DC.) Donk	Apricot jelly mushroom

— = no common name provided.

Note: Scientific nomenclature follows the MycoBank Database (2016). Common names are from *Mushrooms Demystified* (Arora 1986). List (partial) based on field surveys in 2002 and 2003 by Mayor (2003). Extensive fungal surveys have not been undertaken at either ACEC to date.

Appendix 3: Lichens

Scientific name	Common name
<i>Alectoria sarmentosa</i> (Ach.) Ach. ssp. <i>sarmentosa</i>	Witch's hair lichen
<i>Bryoria fuscescens</i> (Gyelnik) Brodo & D. Hawksw.	Horsehair lichen
<i>Chrysothrix candelaris</i> (L.) J.R. Laundon	Gold dust lichen
<i>Cladonia cariosa</i> (Ach.) Sprengel	Split peg lichen
<i>Cladonia furcata</i> (Hudson) Schrader	Cup lichen
<i>Cladonia ochrochlora</i> Flörke	Smooth footed powderhorn
<i>Cladonia pyxidata</i> (L.) Hoffm.	Pebbled pixie cup
<i>Cladonia squamosa</i> (Scop.) Hoffm.	Dragon cladonia
<i>Cladonia</i> sp. P. Browne	—
<i>Collema furfuraceum</i> (Arnold) Du Rietz	Blistered jelly lichen
<i>Esslingeriana idahoensis</i> (Essl.) Hale & M.J. Lai	Tinted rag lichen
<i>Evernia prunastri</i> (L.) Ach.	Oakmoss lichen
<i>Fuscopannaria pacifica</i> P.M. Jørg.	—
<i>Graphis elegans</i> (Borrer ex Sm.) Ach.	—
<i>Graphis</i> sp. Adanson	—
<i>Hypogymnia enteromorpha</i> (Ach.) Nyl.	Tube lichen
<i>Hypogymnia imshaugii</i> Krog	Imshaug's tube lichen
<i>Hypogymnia inactiva</i> (Krog) Ohlsson	Inactive tube lichen
<i>Hypogymnia physodes</i> (L.) Nyl.	Monk's-hood lichen
<i>Hypogymnia tubulosa</i> (Schaerer) Hav.	Powder-headed tube lichen
<i>Hypotrachyna sinuosa</i> (Sm.) Hale	Green loop lichen
<i>Lecanora pacifica</i> Tuck.	Multi-colored rim lichen
<i>Lecanora</i> sp. Ach.	—
<i>Lobaria anomala</i> (Brodo & Ahti) T. Sprib. & McCune	Netted specklebelly
<i>Lobaria anthraxis</i> (Ach.) T. Sprib. & McCune	Dimpled specklebelly
<i>Lobaria oregana</i> (Tuck.) Müll. Arg.	Oregon lung lichen
<i>Lobaria pulmonaria</i> (L.) Hoffm.	Lung lichen
<i>Lobaria scrobiculata</i> (Scop.) DC.	Textured lungwort
<i>Loxosporopsis corallifera</i> Brodo, Henssen & Imshaug	Tiny tree-coral lichen
<i>Melanelixia subaurifera</i> (Nyl.) O. Blanco et al.	—
<i>Mycoblastus sanguinarius</i> (L.) Norman	Bloody heart lichen
<i>Nephroma helveticum</i> Ach. ssp. <i>helveticum</i>	Swiss kidney lichen
<i>Nephroma laevigatum</i> Ach.	Mustard kidney lichen
<i>Ochrolechia</i> sp. A. Massal.	Crabseye lichen
<i>Parmelia pseudosulcata</i> Gyelnik	—
<i>Parmelia saxatilis</i> (L.) Ach.	Salted shield lichen
<i>Parmelia sulcata</i> Taylor	Shield lichen
<i>Parmotrema perlatum</i> (Hudson) M. Choisy	Perforated ruffle lichen

— = no common name provided.

Note: Scientific nomenclature follows Esslinger (2018); common names are from *Lichens of North America* (Brodo et al. 2001) and USDA Plants Database (USDA NRCS 2015). List based on field surveys by Clinch (2003), Rodenkirk (2004), Rodenkirk (2015a), and Sperling and Rodenkirk (2016).

Scientific name	Common name
<i>Peltigera brittanica</i> (Gyelnik) Holt.-Hartw. & Tønsberg	Flaky freckle pelt
<i>Peltigera collina</i> (Ach.) Schrader	Felt lichen
<i>Peltigera membranacea</i> (Ach.) Nyl.	Membranous felt lichen
<i>Peltigera neopolydactyla</i> (Gyelnik) Gyelnik	Felt lichen
<i>Peltigera pacifica</i> Vitik.	Fringed pelt
<i>Peltigera praetextata</i> (Flörke ex Sommerf.) Zopf	Scaly-dog lichen
<i>Physcia phaea</i> (Tuck.) J.W. Thomson	Black-eyed rosette lichen
<i>Pilophorus acicularis</i> (Ach.) Th. Fr.	Devil's matchstick
<i>Placopsis lambii</i> Hertel & V. Wirth	Pink bull's-eye lichen
<i>Platismatia glauca</i> (L.) W.L. Culb. & C.F. Culb.	Ragged lichen
<i>Platismatia herrei</i> (Imshaug) W.L. Culb. & C.F. Culb.	Ragged lichen
<i>Platismatia stenophylla</i> (Tuck.) W.L. Culb. & C.F. Culb.	Ragged lichen
<i>Pseudocyphellaria citrina</i> (Gyeln.) Lücking, Moncada & S. Stenroos	Yellow specklebelly
<i>Psora nipponica</i> (Zahlbr.) Gotth. Schneider	Butterfly scale
<i>Rhizocarpon geographicum</i> (L.) DC.	Yellow map lichen
<i>Scytinium lichenoides</i> (L) Otálora, P.M. Jørg & Wedin	Tattered jellyskin
<i>Scytinium palmatum</i> (Hudson) Gray	Skin lichen
<i>Sphaerophorus tuckermanii</i> Räsänen	Globe ball lichen
<i>Spaerophorus venerabilis</i> Wedin, Högnabba & Goward	—
<i>Stenocybe clavata</i> Tibell	—
<i>Stereocaulon sterile</i> (Savicz) I.M. Lamb ex Krog	Snow lichen
<i>Sticta fuliginosa</i> (Hoffm.) Ach.	Spotted snow lichen
<i>Sticta limbata</i> (Sm.) Ach.	Spotted felt lichen
<i>Tuckermannopsis chlorophylla</i> (Willd.) Hale	Powdered wrinkle lichen
<i>Tuckermannopsis orbata</i> (Nyl.) M.J. Lai	Variable wrinkle lichen
<i>Umbilicaria torrefacta</i> (Lightf.) Schrader	Punctured rock tripe
<i>Usnea flavocardia</i> Räsänen	—
<i>Usnea scabrata</i> Nyl.	Straw beard lichen
<i>Usnea</i> sp. Dill. ex Adanson	Beard lichen
<i>Xanthoparmelia cumberlandia</i> (Gyelnik) Hale	Cumberland rock shield

Appendix 4: Bryophytes¹

Scientific name	Common name
Hornwort	
<i>Anthoceros fusiformis</i> Austin	Anthoceros hornwort
Mosses	
<i>Amphidium californicum</i> (Hampe ex Müll. Hal.) Broth.	California amphidium moss
<i>Andreaea rothii</i> F. Weber & D. Mohr	Roth's andreaea moss
<i>Antitrichia californica</i> Sull. ex Lesq.	California antitrichia moss
<i>Antitrichia curtispindula</i> (Hedw.) Brid. var. <i>gigantea</i> Sull. & Lesq.	Giant antitrichia moss
<i>Atrichum selwynii</i> Austin	Selwyn's atrichum moss
<i>Aulacomnium palustre</i> (Hedw.) Schwägr.	—
<i>Bartramia pomiformis</i> Hedw.	Bartramia moss
<i>Brachythecium albicans</i> (Hedw.) Schimp.	—
<i>Brachythecium frigidum</i> (Müller Hal.) Besch.	—
<i>Buckellia undulatum</i> (Hedw.) Ireland	Buckley undulatum
<i>Bucklandiella heterosticha</i> (Hedw.) Bednarek-Ochyra & Ochyra	—
<i>Ceratodon purpureus</i> (Hedw.) Bridel	Ceratodon moss
<i>Claopodium bolanderi</i> Best	Bolander's claopodium moss
<i>Claopodium crispifolium</i> (Hook.) Ren. & Cardot	Claopodium moss
<i>Claopodium whippleanum</i> (Sull.) Ren. & Cardot	Whipple's claopodium moss
<i>Dendroalsia abietina</i> (Hook.) Britt. ex Broth.	Dendroalsia moss
<i>Dichodontium pellucidum</i> (Hedw.) Schimp.	—
<i>Dicranoweisia cirrata</i> (Hedw.) Lindb.	—
<i>Dicranoweisia crispula</i> (Hedw.) Milde	—
<i>Dicranum fuscescens</i> Turn.	—
<i>Dicranum howellii</i> Ren. & Cardot	—
<i>Dicranum tauricum</i> Sapjegin	—
<i>Didymodon vinealis</i> (Bridel) R.H. Zander	—
<i>Ditrichum ambiguum</i> Best	—
<i>Epipterygium tozeri</i> (Greville) Lindberg	—
<i>Fissidens bryoides</i> Hedw.	Fissidens moss
<i>Fissidens limbatus</i> Sull.	—
<i>Grimmia montana</i> Bruch & Schimp.	—
<i>Grimmia pulvinata</i> (Hedwig) Smith	—
<i>Grimmia trichophylla</i> Greville	—
<i>Homalothecium fulgescens</i> (Mitt. ex Müll. Hal.) A. Jaeg.	—
<i>Homalothecium nuttallii</i> (Wils.) A. Jaeg.	—

— = no common name provided.

Note: Scientific nomenclature taken from Flora of North America, vols. 27 (2007) & 28 (2014). Common names are from the USDA Plants Database (USDA NRCS 2016). List compiled from field surveys (Clinch 2003), (Sperling and Rodenkirk 2016), and (Wagner 2000).

¹“Bryophyte” is a collective term for mosses, hornworts, and liverworts.

Scientific name	Common name
<i>Homalothecium pinnatifidum</i> (Sull. & Lesq.) E. Lawt.	—
<i>Hookeria lucens</i> (Hedw.) Sm.	Hookeria moss
<i>Hypnum circinale</i> Hook.	Hypnum moss
<i>Hypnum subimponens</i> Lesq.	Hypnum moss
<i>Imbribryum miniatum</i> (Lesq.) J.R. Spence	—
<i>Isothecium myosuroides</i> Brid.	Isothecium moss
<i>Kindbergia oregana</i> (Sull.) Ochyra	—
<i>Kindbergia praelongum</i> (Hedw.) Ochyra	—
<i>Leucolepis acanthoneura</i> (Schwaegr.) Lindb	Leucolepis umbrella moss
<i>Neckera douglasii</i> Hook.	Douglas' neckera moss
<i>Neckera menziesii</i> Drummond	Menzies' neckera moss
<i>Orthotrichum consimile</i> Mitten	—
<i>Orthotrichum lyellii</i> Hooker & Taylor	—
<i>Philonotis fontana</i> (Hedw.) Bridel	—
<i>Plagiomnium insigne</i> (Mitten) T. J. Koponen	—
<i>Plagiomnium venustum</i> (Mitten) T. J. Koponen	—
<i>Pohlia cruda</i> (Hedw.) Lindb.	—
<i>Pohlia longibracteata</i> Broth.	Longbract pohlia moss
<i>Polytrichastrum alpinum</i> (Hedw.) G.L. Sm.	Alpine polytrichastrum moss
<i>Polytrichum juniperinum</i> Hedw.	Juniper polytrichum moss
<i>Polytrichum piliferum</i> Hedw.	Polytrichum moss
<i>Porotrichum bigelovii</i> (Sull.) Kindb.	Bigelow's porotrichum moss
<i>Pseudobraunia californica</i> (Lesq.) Brotherus	—
<i>Pseudoleskeella serpentinensis</i> P.S. Wilson & D.H. Norris	—
<i>Pseudotaxiphyllum elegans</i> (Brid.) Z. Iwats.	Elegant pseudotaxiphyllum moss
<i>Ptychostomum pseudotriquetrum</i> (Hedwig) J.R. Spence & H.P. Ramsay ex Holyoak & N. Pedersen	—
<i>Racomitrium affine</i> F. Weber & D. Mohr	—
<i>Racomitrium elongatum</i> Frisvoll	—
<i>Racomitrium occidentale</i> (Ren. & Cardot) Ren. & Cardot	—
<i>Racomitrium pacificum</i> Ireland & J.R. Spence	—
<i>Rhizomnium glabrescens</i> (Kindb.) T. Kop.	Rhizomnium moss
<i>Racomitrium varium</i> (Mitt.)	—
<i>Rhytidiadelphus loreus</i> (Hedw.) Warnst.	Loreus racomitrium moss
<i>Rhytidiadelphus triquetrus</i> (Hedw.) Warnst.	—
<i>Rosulabryum capillare</i> (Hedw.) J.R. Spence	—
<i>Scleropodium obtusifolium</i> (Mitten) Kindberg	Scleropodium moss
<i>Scleropodium touretii</i> (Bridel) L.F. Koch	—
<i>Syntrichia princeps</i> (De Notaris) Mitten	—
<i>Tetraphis pellucida</i> Hedw.	Tetraphis mos
<i>Timmiella crassinervis</i> (Hampe) L.F. Koch	Timmiella moss
<i>Ulota megalospora</i> Venturi	—

Scientific name	Common name
<i>Weissia controversa</i> Hedw.	—
<i>Zygodon viridissimus</i> (Dickson) Bridel	Zygodon moss
Liverworts	
<i>Aneura pinguis</i> (Linn.) Dum.	—
<i>Calypogeia fissa</i> (L.) Raddi	—
<i>Calypogeia sphagnicola</i> (Arnell & J. Perss.) Warnsf. & Loeske	—
<i>Cephalozia bicuspidata</i> (L.) Dumort	—
<i>Cephaloziella divaricata</i> (Sm.) Schiffn.	—
<i>Cephalozia lunulifolia</i> (Dum.) Dum.	—
<i>Cephaloziella turneri</i> (Hook.) K. Müll. Frib.	—
<i>Chiloscyphus coadunatus</i> (Sw.) J. J. Engel & R. M. Schust.	—
<i>Chiloscyphus polyanthos</i> (L.) Corda	—
<i>Conocephalum conicum</i> (Linn.) Dum.	—
<i>Douinia ovata</i> (Dicks.) H. Buch.	—
<i>Fossombronia</i> sp. Raddi	—
<i>Frullania bolanderi</i> Austin	—
<i>Frullania californica</i> (Austin) Evans.	—
<i>Frullania nisquallensis</i> Sull.	—
<i>Gymnomitrium obtusum</i> Lindb.	—
<i>Gyrothyra underwoodiana</i> M. Howe	—
<i>Jungermannia</i> sp. L.	—
<i>Lepidozia reptans</i> (L.) Dum.	—
<i>Marchantia aquatica</i> (Nees) Burgeff.	—
<i>Metzgeria conjugata</i> Lindb.	—
<i>Plagiochila asplenioides</i> (L.) Dum.	—
<i>Plagiochila porelloides</i> (Torr. ex Nees) Lindenb.	—
<i>Porella navicularis</i> (Lehm. & Lindenb.) Pfeiff.	—
<i>Porella roellii</i> Steph.	—
<i>Radula bolanderi</i> Gottsche ex Steph.	—
<i>Radula complanata</i> (L.) Dum.	—
<i>Riccardia chamedryfolia</i> (With.) Grolle	—
<i>Riccardia multifida</i> (L.) A. Gray	—
<i>Scapania americana</i> Müll. Frib.	—
<i>Scapania bolanderi</i> Austin	—
<i>Scapania umbrosa</i> (Schrad.) Dum.	—
<i>Solenostoma rubrum</i> (Gott. ex Underw.) Schust.	—
<i>Targionia hypophylla</i> L.	—

Appendix 5: Amphibians, Reptiles, Birds, and Mammals

Family	Scientific name	Common name
Amphibians		
Ambystomatidae	<i>Ambystoma gracile</i>	Northwestern salamander
	<i>Ambystoma macrodactylum</i>	Long-toed salamander
Dicamptodontidae	<i>Dicamptodon tenebrosus</i>	Pacific giant salamander
Rhyacotritonidae	<i>Rhyacotriton variegatus</i>	Southern torrent salamander
Plethodontidae	<i>Aneides ferreus</i>	Clouded salamander
	<i>Ensatina eschscholtzii</i>	Ensatina
	<i>Plethodon dunni</i>	Dunn's salamander
	<i>Plethodon elongatus</i>	Del Norte salamander
	<i>Plethodon vehiculum</i>	Western redback salamander
Salamandridae	<i>Taricha granulosa</i>	Rough-skinned newt
Bufonidae	<i>Anaxyrus boreas</i>	Western toad
Hylidae	<i>Pseudacris regilla</i>	Pacific chorus frog
Leiopelmatidae	<i>Ascaphus truei</i>	Tailed frog
Ranidae	<i>Rana aurora</i>	Northern red-legged frog
	<i>Rana boylei</i>	Foothill yellow-legged frog
	<i>Lithobates catesbeiana</i>	American bullfrog
Reptiles		
Anguidae	<i>Elgaria coerulea</i>	Northern alligator lizard
	<i>Elgaria multicarinata</i>	Southern alligator lizard
Emydidae	<i>Actinemys marmorata</i>	Western pond turtle
Iguanidae	<i>Sceloporus graciosus</i>	Sagebrush lizard
	<i>Sceloporus occidentalis</i>	Western fence lizard
Scincidae	<i>Plestiodon skiltonianus</i>	Western skink
Boidae	<i>Charina bottae</i>	Northern rubber boa
Colubridae	<i>Coluber constrictor</i>	Western racer
	<i>Contia tenuis</i>	Sharptail snake
	<i>Diadophis punctatus</i>	Ring-necked snake
	<i>Lampropeltis zonata</i>	California mountain kingsnake
	<i>Pituophis catenifer</i>	Pacific gopher snake
	<i>Thamnophis atratus</i>	Aquatic gartersnake
	<i>Thamnophis elegans</i>	Terrestrial gartersnake
	<i>Thamnophis ordinoides</i>	Northwestern gartersnake
Viperidae	<i>Thamnophis sirtalis</i>	Common gartersnake
	<i>Crotalus oreganus</i>	Western rattlesnake

Note: Nomenclature taken from Crother (2017), Csuti et al. (1997), and The American Society of Mammalogists (n.d.). List is compiled from habitat descriptions and distribution maps in Csuti et al. (1997).

Family	Scientific name	Common name
Birds^{1,2}		
Anatidae	<i>Anas platyrhynchos</i>	Mallard
Odontophoridae	<i>Oreortyx pictus</i>	Mountain quail
Phasianidae	<i>Meleagris gallopavo</i>	Wild turkey
	<i>Bonasa umbellus</i>	Ruffed grouse
	<i>Dendragapus fuliginosus</i>	Sooty grouse
Columbidae	<i>Patagioenas fasciata</i>	Band-tailed pigeon
	<i>Zenaida macroura</i>	Mourning dove
Caprimulgidae	<i>Chordeiles minor</i>	Common nighthawk
Apodidae	<i>Chaetura vauxi</i>	Vaux's swift
Trochilidae	<i>Calypte anna</i>	Anna's hummingbird
	<i>Selasphorus rufus</i>	Rufous hummingbird
Charadriidae	<i>Charadrius vociferus</i>	Killdeer
Alcidae	<i>Brachyramphus marmoratus</i>	Marbled murrelet
Cathartidae	<i>Cathartes aura</i>	Turkey vulture
Accipitridae	<i>Circus hudsonius</i>	Northern harrier
	<i>Accipiter striatus</i>	Sharp-shinned hawk
	<i>Accipiter cooperii</i>	Cooper's hawk
	<i>Haliaeetus leucocephalus</i>	Bald eagle
	<i>Buteo jamaicensis</i>	Red-tailed hawk
Strigidae	<i>Megascops kennicottii</i>	Western screech-owl
	<i>Bubo virginianus</i>	Great horned owl
	<i>Glaucidium gnoma</i>	Northern pygmy-owl
	<i>Strix varia</i>	Barred owl
	<i>Aegolius acadicus</i>	Northern saw-whet owl
Alcedinidae	<i>Megaceryle alcyon</i>	Belted kingfisher
Picidae	<i>Melanerpes formicivorus</i>	Acorn woodpecker
	<i>Sphyrapicus ruber</i>	Red-breasted sapsucker
	<i>Dryobates pubescens</i>	Downy woodpecker
	<i>Dryobates villosus</i>	Hairy woodpecker
	<i>Colaptes auratus</i>	Northern flicker
	<i>Dryocopus pileatus</i>	Pileated woodpecker
Falconidae	<i>Falco sparverius</i>	American kestrel
	<i>Falco columbarius</i>	Merlin
	<i>Falco peregrinus</i>	Peregrine falcon
Tyrannidae	<i>Contopus cooperi</i>	Olive-sided flycatcher
	<i>Contopus sordidulus</i>	Western wood-peewee

¹Nomenclature and arrangement of bird orders follows the 7th edition of the American Ornithologists Union's checklist of North American birds (1998) up through the 61st supplement to the checklist (Chesser et al., n.d.).

²Compiled from field observations by Rodenkirk (2015b).

North Fork Hunter Creek and Hunter Creek Bog Areas of Critical Environmental Concern

Family	Scientific name	Common name
	<i>Empidonax traillii</i>	Willow flycatcher
	<i>Empidonax hammondii</i>	Hammond's flycatcher
	<i>Empidonax oberholseri</i>	Dusky flycatcher
	<i>Empidonax difficilis</i>	Pacific-slope flycatcher
	<i>Sayornis nigricans</i>	Black phoebe
Vireonidae	<i>Vireo huttoni</i>	Hutton's vireo
	<i>Vireo cassinii</i>	Cassin's vireo
	<i>Vireo gilvus</i>	Warbling vireo
Corvidae	<i>Cyanocitta stelleri</i>	Steller's jay
	<i>Aphelocoma californica</i>	California scrub-jay
	<i>Corvus corax</i>	Common raven
Hirundinidae	<i>Tachycineta bicolor</i>	Tree swallow
	<i>Tachycineta thalassina</i>	Violet-green swallow
	<i>Stelgidopteryx serripennis</i>	Northern rough-winged swallow
	<i>Progne subis</i>	Purple martin
	<i>Hirundo rustica</i>	Barn swallow
	<i>Petrochelidon pyrrhonota</i>	Cliff swallow
Paridae	<i>Poecile atricapillus</i>	Black-capped chickadee
	<i>Poecile rufescens</i>	Chestnut-backed chickadee
Aegithalidae	<i>Psaltriparus minimus</i>	Bushtit
Sittidae	<i>Sitta canadensis</i>	Red-breasted nuthatch
Certhiidae	<i>Certhia americana</i>	Brown creeper
Troglodytidae	<i>Troglodytes aedon</i>	House wren
	<i>Troglodytes pacificus</i>	Pacific wren
	<i>Thryomanes bewickii</i>	Bewick's wren
Cinclidae	<i>Cinclus mexicanus</i>	American dipper
Regulidae	<i>Regulus satrapa</i>	Golden-crowned kinglet
	<i>Regulus calendula</i>	Ruby-crowned kinglet
Sylviidae	<i>Chamaea fasciata</i>	Wrentit
Turdidae	<i>Sialia mexicana</i>	Western bluebird
	<i>Myadestes townsendi</i>	Townsend's solitaire
	<i>Catharus ustulatus</i>	Swainson's thrush
	<i>Catharus guttatus</i>	Hermit thrush
	<i>Turdus migratorius</i>	American robin
	<i>Ixoreus naevius</i>	Varied thrush
Bombycillidae	<i>Bombycilla cedrorum</i>	Cedar waxwing
Fringillidae	<i>Coccothraustes vespertinus</i>	Evening grosbeak
	<i>Haemorhous purpureus</i>	Purple finch
	<i>Loxia curvirostra</i>	Red crossbill
	<i>Spinus pinus</i>	Pine siskin
	<i>Spinus tristis</i>	American goldfinch

Family	Scientific name	Common name
Emberizidae	<i>Spizella passerina</i>	Chipping sparrow
	<i>Passerella iliaca</i>	Fox sparrow (sooty)
	<i>Junco hyemalis</i>	Dark-eyed junco
	<i>Zonotrichia leucophrys</i>	White-crowned sparrow
	<i>Zonotrichia atricapilla</i>	Golden-crowned sparrow
	<i>Melospiza melodia</i>	Song sparrow
	<i>Pipilo maculatus</i>	Spotted towhee
Icteridae	<i>Molothrus ater</i>	Brown-headed cowbird
Parulidae	<i>Leiothlypis celata</i>	Orange-crowned warbler
	<i>Leiothlypis ruficapilla</i>	Nashville warbler
	<i>Geothlypis tolmiei</i>	MacGillivray's warbler
	<i>Geothlypis trichas</i>	Common yellowthroat
	<i>Setophaga petechia</i>	Yellow warbler
	<i>Setophaga coronata</i>	Yellow-rumped warbler
	<i>Setophaga nigrescens</i>	Black-throated gray warbler
	<i>Setophaga townsendi</i>	Townsend's warbler
	<i>Setophaga occidentalis</i>	Hermit warbler
	<i>Cardellina pusilla</i>	Wilson's warbler
Cardinalidae	<i>Piranga ludoviciana</i>	Western tanager
	<i>Pheucticus melanocephalus</i>	Black-headed grosbeak
	<i>Passerina amoena</i>	Lazuli bunting
Mammals		
Didelphidae	<i>Didelphis virginiana</i>	Virginia opossum
Soricidae	<i>Sorex sonomae</i>	Fog shrew
	<i>Sorex vagrans</i>	Vagrant shrew
	<i>Sorex bendirii</i>	Pacific marsh shrew
	<i>Sorex trowbridgii</i>	Trowbridge's shrew
Talpidae	<i>Neurotrichus gibbsii</i>	Shrew-mole
	<i>Scapanus townsendii</i>	Townsend's mole
	<i>Scapanus orarius</i>	Coast mole
Vespertilionidae	<i>Myotis yumanensis</i>	Yuma myotis
	<i>Myotis lucifugus</i>	Little brown myotis
	<i>Myotis volans</i>	Long-legged myotis
	<i>Myotis thysanodes</i>	Fringed myotis
	<i>Myotis evotis</i>	Long-eared myotis
	<i>Lasionycteris noctivagans</i>	Silver-haired bat
	<i>Eptesicus fuscus</i>	Big brown bat
Leporidae	<i>Sylvilagus bachmani</i>	Brush rabbit
Aplodontidae	<i>Aplodontia rufa</i>	Mountain beaver
Sciuridae	<i>Neotamias siskiyou</i>	Siskiyou chipmunk
	<i>Sciurus griseus</i>	Western gray squirrel

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Family	Scientific name	Common name
	<i>Tamiasciurus douglasii</i>	Douglas' squirrel
	<i>Glaucomys oregonensis sabrinus</i>	Humboldt's flying squirrel
Castoridae	<i>Castor canadensis</i>	American beaver
Geomyidae	<i>Thomomys mazama</i>	Western pocket gopher
	<i>Thomomys mazama helleri</i>	Gold Beach pocket gopher
Muridae	<i>Peromyscus maniculatus</i>	Deer mouse
	<i>Neotoma fuscipes</i>	Dusky-footed woodrat
	<i>Neotoma cinerea</i>	Bushy-tailed woodrat
	<i>Myodes californicus</i>	Western red-backed vole
	<i>Arborimus albipes</i>	White-footed vole
	<i>Arborimus longicaudus</i>	Red tree vole
	<i>Microtus longicaudus</i>	Long-tailed vole
	<i>Microtus oregoni</i>	Creeping vole
Dipodidae	<i>Zapus trinotatus</i>	Pacific jumping mouse
Erethizontidae	<i>Erethizon dorsatum</i>	Common porcupine
Canidae	<i>Canis latrans</i>	Coyote
	<i>Urocyon cinereoargenteus</i>	Common gray fox
Ursidae	<i>Ursus americanus</i>	American black bear
Procyonidae	<i>Procyon lotor</i>	Common raccoon
	<i>Bassariscus astutus</i>	Ringtail
Mustelidae	<i>Lontra canadensis</i>	River otter
	<i>Martes caurina</i>	American marten
	<i>Pekania pennanti</i>	Fisher
	<i>Mephitis mephitis</i>	Striped skunk
	<i>Mustela erminea</i>	Ermine
	<i>Mustela frenata</i>	Long-tailed weasel
	<i>Neovison vison</i>	American mink
	<i>Spilogale gracilis</i>	Western spotted skunk
Felidae	<i>Puma concolor</i>	Mountain lion
	<i>Lynx rufus</i>	Bobcat
Cervidae	<i>Cervus canadensis</i>	Elk
	<i>Odocoileus hemionus ssp. columbianus</i>	Black-tailed deer

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