

**Subject: Biological Evaluation – Threatened, Endangered and Sensitive Plants
Newberry Volcano Enhanced Geothermal System Project.**

Date: August 9, 2010

This is a biological evaluation to document consideration of Threatened, Endangered, and Sensitive (TES) plants related to the Newberry Volcano Enhanced Geothermal System Project. It is prepared in compliance with the Forest Service Manual (FSM) 2672.4 and the Endangered Species Act of 1973 (Subpart B; 402.12, section 7 consultation).

Effects of this activity are evaluated for those TES plant species on the current Regional Forester's Sensitive Species List (January 31, 2008) that are documented or suspected to occur on the Deschutes National Forest.

Finding:

The proposed action will have no impact on Proposed, Endangered, Threatened, or Sensitive plant species.

Project Description The Newberry Volcano Enhanced Geothermal System Demonstration Project will develop an Enhanced Geothermal System (EGS) reservoir on the northwest flank of the Newberry Volcano.

The Project Operators are Davenport Newberry Holdings LLC and AltaRock Energy, Inc. The western flank of the Newberry Volcano is located approximately 30 miles south of Bend, Oregon and 3 miles north of La Pine, Oregon. It is located on USDA Forest Service land, within the Bend-Ft. Rock Ranger District of the Deschutes National Forest, Deschutes County, Oregon.

As part of the EGS Demonstration project, seismometers may be placed downhole, either in existing wells, or in newly drilled boreholes. Up to ten MSA boreholes would be drilled to a depth of up to 700 feet using a truck-mounted rotary drilling rig. All sites are accessible from existing USFS roads; no new roads will be necessary. Site dimensions for the drilling and completion operations are expected to average about 50 feet by 50 feet to accommodate a drill rig and water truck.

Locations for the proposed sites are:

Township 21 South, Range 12 East, Sections 16, 17, 19, 20, 21, 28, 29, 30, and 36.

Township 22 South, Range 12 East, Sections 4 and 6.

Prefield Review

Plant associations in the general area include ponderosa/bitterbrush-manzanita/needlegrass; mixed conifer/snowbrush-sedge; and mixed conifer/snowbrush-manzanita.

The elevation range is from 5200' to 6230'. The lowest, and westernmost, point, is in Section 36, just north of Road 21. The highest, and easternmost, point is in Section 21, about one mile northwest of Paulina Lake.

There are no known TES plant sites within the project boundary, nor is there high-probability habitat for TES plant species present. There is a low probability that the green-tinged paintbrush (*Castilleja chlorotica*) may occur, and a very low probability that pumice grape fern (*Botrychium pumicola*) may occur within the project.

Plant surveys were conducted in on July 26 and 27, 2010, at twelve proposed drilling sites. No TES plants were found.

No habitat for Threatened, Endangered, or Sensitive plant species exists within the project area.

Field Reconnaissance

A field survey was conducted for this project in July, 2010, at each of the twelve proposed drilling sites, covering four acres at each one. No TES plant species were found.

The field survey forms are on file at the Bend/Ft. Rock Ranger District.

Project Effects and Finding

NO ACTION

Direct, Indirect, and Cumulative Effects: None have been identified, because no activity would occur.

PROPOSED ACTION

Direct, Indirect, and Cumulative Effects: None have been identified, because the project area does not contain PETS plant species or high-probability PETS plant habitats.

Finding:

The proposed action will have no impact on Proposed, Endangered, Threatened, or Sensitive plant species.

PREPARED BY Kathleen A. Cooper
Kathleen A. Cooper, Botanist

DATE August 9, 2010

REFERENCES AND COMMUNICATIONS

Paul Stern, PLS Environmental, LLC, liason, Davenport Newberry Holdings LLC and AltaRock Energy, Inc. Personal communications, July and August, 2010.

Charmane (Levack) Powers, Botanist/Ecologist, Bend/Ft. Rock Ranger District, Deschutes National Forest. USDA Forest Service Plant Survey Field Forms, Bend/Ft. Rock weed maps, and personal communications, July, 2009.

_____. Biological Evaluation –Threatened, Endangered, and Sensitive Plants: Davenport Geothermal Exploration, July 2, 2007.

APPENDIX A

Deschutes and Ochoco National Forest Sensitive Plant Species List

List updated January 2008

D = Documented on the Forest; S = Suspected on the Forest

Bold = new species as of January 31, 2008

Scientific Name and Code	Common Name	DES	OCH & CRNG	Habitat
Vascular Plants				
<i>Achnatherum hendersonii</i>	Henderson's needlegrass		D	On dry, shallow, rocky soils of scabby ridges and openings in ponderosa pine forest or grassy steppe rangeland. Mostly on south to southwest aspect, gentle slopes at elevations of 3,400 to 5,400 feet. A regional endemic species. Often in association with <i>Poa sandbergii</i> , <i>Artemisia rigida</i> , and <i>Eriogonum</i> species.
<i>Achnatherum wallowaensis</i>	Wallowa needlegrass		D	On dry, shallow, rocky soils of scabby ridges and openings in ponderosa pine forest or grassy steppe rangeland. Mostly on south to southwest aspect, gentle slopes at elevations of 3,400 to 5,400 feet. Often in association with <i>Poa sandbergii</i> , <i>Artemisia rigida</i> , and <i>Eriogonum</i> species.
<i>Agoseris elata</i>	tall agoseris	D		Forest openings and forest edges adjacent to wet/moist meadows, lakes, rivers, streams. Ponderosa pine/bitterbrush/Idaho fescue plant associations; also with lodgepole pine, mixed conifer forests, and Englemann spruce.
<i>Arabis suffrutescens</i> var. <i>horizontalis</i>	horizontal woody rockcress	S		Meadows, woods; summits, ridges; steep, exposed rock outcrops. TNC records (as recent as 1993) only from Crater Lake NP, Lake of the Woods, and Mt. McLoughlin.
<i>Arnica viscosa</i>	Mt. Shasta arnica	D		Sparsely vegetated openings at high elevations. Scree, talus gullies and slopes w/ seasonal water runoff. Lava flows. May be w/in moraine lake basins or crater lake basins.
<i>Astragalus diaphanus</i> var. <i>diurnus</i>	transparent milkvetch		S	Western juniper woodlands along John Day River on thin, gravelly, well-drained soils in woodland openings.
<i>Astragalus peckii</i>	Peck's milkvetch	D	S	Basins, benches, gentle slopes, pumice flats. Generally a non-forest species but can occur in lodgepole pine openings. Mostly in sagebrush/grassland habitats.
<i>Astragalus tegetarioides</i>	bastard milkvetch		D	Big sagebrush and ponderosa pine plant communities and basalt outcrops.

Scientific Name and Code	Common Name	DES	OCH & CRNG	Habitat
<i>Botrychium ascendens</i>	trianglelobe moonwort		D	Partially shaded or open settings, primarily in sedge/forb communities associated with seeps, drainages and edges of wet meadows. Engelmann spruce and stands of grand fir, Douglas fir and lodgepole pine.
<i>Botrychium crenulatum</i>	scalloped moonwort		D	Partially shaded or open settings, primarily in sedge/forb communities associated with seeps, drainages and edges of wet meadows. Engelmann spruce and stands of grand fir, Douglas fir and lodgepole pine.
<i>Botrychium minganense</i>	Mingan moonwort		D	Partially shaded or open settings, primarily in sedge/forb communities associated with seeps, drainages and edges of wet meadows. Engelmann spruce and stands of grand fir, Douglas fir and lodgepole pine.
<i>Botrychium montanum</i>	mountain moonwort		D	Partially shaded or open settings, primarily in sedge/forb communities associated with seeps, drainages and edges of wet meadows. Engelmann spruce and stands of grand fir, Douglas fir and lodgepole pine.
<i>Botrychium paradoxum</i>	peculiar moonwort		D	Partially shaded or open settings, primarily in sedge/forb communities associated with seeps, drainages and edges of wet meadows. Engelmann spruce and stands of grand fir, Douglas fir and lodgepole pine.
<i>Botrychium pumicola</i>	pumice grape-fern	D		Alpine and subalpine ridges, slopes and meadows. Montane LP forest openings, open forest in basins containing frost pockets or pumice flats.
<i>Calamagrostis breweri</i>	Brewer's reedgrass	S		Alpine to subalpine habitats in meadows, open slopes, streambanks, and lake margins.
<i>Calochortus longebarbatus</i> var. <i>peckii</i>	Peck's mariposa lily		D	Vernally moist, low gradient draws and streambeds, and broad meadow basins where it is situated between the wettest parts of the meadow and the forested edge. Elevation = 4,300 – 5,200 feet.
<i>Camissonia pygmaea</i>	dwarf suncap		S	Sagebrush habitats.
<i>Carex abrupta</i>	abrupt-beaked sedge	S	S	Ponderosa forests, alpine fell fields, meadows, roadsides, and open slopes, usually in dry soil. From 1,400m to high elevations.
<i>Carex capitata</i>	capitate sedge	D		Usually in open, wet places, but sometimes in drier sites at high elevations. Known from five sites on the Sisters, Bend, and Crescent districts of the Deschutes National Forest.
<i>Carex diandra</i>	lesser panicle sedge	S	S	Lesser panicle sedge. Swamps, sphagnum bogs, lake margins, and wet, often calcareous meadows at moderate elevations.

Scientific Name and Code	Common Name	DES	OCH & CRNG	Habitat
<i>Carex lasiocarpa</i> <i>var. americana</i>	slender sedge	D	S	Swamps and wet meadows at mid elevations. Found on the Deschutes National Forest along the Deschutes River, south of Bend.
<i>Carex livida</i>	livid sedge	S		Occurs in all forest types in peatlands including fens and bogs; wet meadows with still or channelled water.
<i>Carex retrorsa</i>	retorse sedge	S	S	Wet meadows, bogs, swamps, and edges of streams, lakes, and rivers. Foothills and lowlands. ORNHIC data elevations range from 10' - 3,000'.
<i>Carex vernacula</i>	native sedge	S		Moist or wet places at high elevations, especially at the edges of melting snowfields and in meltwater streams. ORNHIC data elevations range from 7760' - 9110'.
<i>Castilleja chlorotica</i>	green-tinged paintbrush	D		Ponderosa pine, lodgepole pine, and mixed conifer forest openings.
<i>Cheilanthes feei</i>	Fee's lip-fern	S	S	Located in crevices on cliffs. Known from NE Oregon. It has not been found on the Deschutes National Forest.
<i>Collomia mazama</i>	Mt. Mazama collomia	S		Meadows (dry to wet, level to sloping); stream banks and bars; lakeshores and vernal pool margins; forest edges and openings; alpine slopes.
<i>Cyperus acuminatus</i>	short-pointed cyperus	D		On the Deschutes NF, located on damp mineral soil of a broad, low-gradient shore of reservoir, in a community just below the <i>Spiraea</i> community. Sites on Crane Prairie Reservoir, Davis Lake.
<i>Cyperus lupulinus</i> ssp. <i>lupulinus</i>	A cyperus	S	S	Upper shorelines. Known from NE Oregon.
<i>Elatine brachysperma</i>	short-seeded waterwort	S	S	In California, 164 - 1640 ft elev. Hitch. and Cron. says Cent. OR. Known sites in Grant, Lake, Malheur, Union, Wallowa Counties. In addition, Lucile Housley (BLM) reported (2004) Harney, Malheur Cos. One site says heavy horse, cattle use.
<i>Eleocharis bolanderi</i>	Bolander's spikerush		S	Alkaline w/ greasewood. Harney, Malheur, Union, Baker, Lake Cos.
<i>Eriogonum cusickii</i>	Cusick's buckwheat		S	Dry open; 4000 - 5300 ft elev Lake and Harney Cos. Not in Central OR (Halvorson 2008).

Scientific Name and Code	Common Name	DES	OCH & CRNG	Habitat
<i>Eucephalus gormanii</i> (formerly <i>Aster gormanii</i>)	Gorman's aster	S		Alpine or subalpine mixed conifer, open to partially closed canopy. Rocky ridges, outcrops, or rocky slopes.
<i>Gentiana newberryi</i> var. <i>newberryi</i>	alpine gentian	D		Alpine-subalpine mixed conifer openings. <i>Deschampsia cespitosa</i> meadows. Montane wet to dry meadows, sometimes adjacent to springs, streams, or lakes.
<i>Heliotropium curassavicum</i>	salt heliotrope	S	S	Alkaline w/ greasewood. Harney, Malheur, Union, Baker, Lake Cos.
<i>Lipocarpa aristulata</i>	aristulate lipocarpa	S	S	Documented in Washington with <i>Rorippa columbiae</i> and <i>Rotala ramosior</i> . Wallowa and Malheur Cos.
<i>Lobelia dortmanna</i>	Dortmann's cardinalflower	D		In water of lake, pond, slow river or stream, or wet meadow. Only one known location in Oregon on Deschutes National Forest.
<i>Lomatium ochocense</i>	Ochoco lomatium		D	Basaltic scablands on shallow basalt lithosoic soils. Restricted to terrain where there is exposed, fractured bedrock. Local endemic discovered in 1994. Known from 5 sites on south flank of Ochoco Mountains in Crook County.
<i>Lycopodiella inundata</i>	inundated clubmoss	D		Deflation areas in coastal back-dunes; montane bogs, including Sphagnum bogs; less often, wet meadows.
<i>Lycopodium complanatum</i>	ground cedar	S		Edges of wet meadows; dry, forested midslope with 25% canopy cover.
<i>Mimulus evanescens</i>	disappearing monkeyflower		S	Apparently associated with "drawdown" environments along lake; reservoir shores and banks/terraces of larger rivers. Historic site on Grizzly Mountain in Crook County, but no known extant sites in central Oregon.
<i>Muhlenbergia minutissima</i>	annual dropseed	S	S	Weathered lava soils in riparian; only ORNHIC site in Oregon is Jordan Crater, Malheur Co.
<i>Ophioglossum pusillum</i>	northern adderstongue	S		Dune deflation plains; marsh edges; vernal ponds and stream terraces in moist meadows.
<i>Penstemon peckii</i>	Peck's penstemon	D	D	Ponderosa pine forest openings, pine/mixed conifer openings; recovering fluvial surfaces (streambanks, overflow channels, inactive floodplains); seeps, rills, springs, vernal pools; draws, ditches, skid roads; dry or intermittent stream channels; moist-wet meadows.

Scientific Name and Code	Common Name	DES	OCH & CRNG	Habitat
<i>Pilularia americana</i>	American pillwort	S		Alkali and other shallow vernal pools; not recently used stock ponds; reservoir shores.
<i>Potamogeton diversifolius</i>	Rafinesque's pondweed	S	S	Lakes, ponds, including created habitat. Klamath, Harney and Lake Cos.
<i>Rorippa columbiae</i>	Columbia yellowcress	D	S	Wet to vernal moist sites; meadows, fields, playas, lakeshores, intermittent stream beds, banks of perennial streams, along irrigation ditches, river bars and deltas.
<i>Rotala ramosior</i>	lowland toothcup	S	S	In Oregon, low elevation (<2300 ft) below high water, including created habitat in wet, swampy places, lakes and pond margins, and free-flowing river reaches. Benton, Columbia, Marion, Hood River., Harney, Multnomah and Linn Cos.
<i>Salix wolfii</i>	wolf's willow		S	Riparian and wet meadows. At Fish Lake, Blitzen R., Wallowa Lk., Eagle Cap Wilderness. Harney and Wallowa Cos.
<i>Scheuchzeria palustris ssp. americana</i>	rannoch-rush	D		Open canopied bogs, fens, and other wetlands where often in shallow water.
<i>Schoenoplectus subterminalis</i> (formerly <i>Scirpus subterminalis</i>)	swaying bulrush	D		Generally submerged to emergent in quiet water 2-8 decimeters deep, in peatlands, sedge fens, creeks, ditches, ponds and lakes.
<i>Talinum spinescens</i>	spinescent fameflower		S	Scablands. Jefferson and Wasco Cos. CRNG has habitat.
<i>Thelypodium euosmum</i>	world thelypody		S	Moist, seepy areas on ashy-clay soils in Grant and Wheeler Counties. Sites include steep drainages along the John Day River.
<i>Utricularia minor</i>	lesser bladderwort	D	S	Occurs underwater in lowland and montane fens, sedge meadows, low-nutrient lakes and peatbog pools. Deschutes, Clackamas, Lane, Klamath, Jackson, Coos, Douglas, Harney, Marion and Linn Cos. There are documented populations on the Bend and Sisters districts of the Deschutes National Forest.
Bryophytes				

Scientific Name and Code	Common Name	DES	OCH & CRNG	Habitat
<i>Barbilophozia lycopodioides</i>	liverwort	S		Forming mats on peaty soil on damp ledges of rock outcrops and cliffs at higher elevations. Sites receive abundant snowfall. Elevations of known sites in Oregon and Washington range from 3400 to 7500 feet. Forest types include <i>Abies amabilis</i> , <i>Abies lasiocarpa</i> , <i>Abies procera</i> , <i>Abies lasiocarpa</i> , <i>Picea engelmannii</i> , <i>Pinus contorta</i> ssp. <i>latifolia</i> , and <i>Tsuga mertensiana</i> associations.
<i>Brachydontium olympicum</i>	moss	S		Forming loose mats on exposed acidic boulders or soil in rock crevices. In boulder fields, moraines, and ledges of cliffs, often in areas of late snowmelt. Subalpine to alpine elevations between 5,000 and 6,000 feet. On Oregon's Mt. Hood <i>Brachydontium</i> occurs above timberline at about 6,000 ft where the plant association is probably <i>Phyllodoce empetrififormis</i> and <i>Cassiope mertensiana</i> heath. Elsewhere in the Pacific Northwest, <i>Brachydontium</i> probably also occurs in <i>Pinus albicaulis</i> , <i>Tsuga mertensiana</i> , <i>Abies lasiocarpa</i> , and <i>Abies amabilis</i> associations.
<i>Chiloscyphus gemmiparus</i>	liverwort	S		Forming small turfs or clumps on rocks in beds of cold montane streams, submerged or emergent in the splash zone, full shade to partial sun. Some streams drain lakes with motorized boating access. Elevations in Oregon range from 5000-7000 feet. Known sites in the Pacific Northwest include <i>Abies amabilis</i> , <i>Abies lasiocarpa</i> , and <i>Tsuga mertensiana</i> associations.

Scientific Name and Code	Common Name	DES	OCH & CRNG	Habitat
<i>Conostomum tetragonum</i>	moss	S		Occurring as small sods or inconspicuous individual shoots intermixed with other bryophytes, on soil in rock crevices in boulder fields, moraines, and ledges of cliffs. Subalpine to alpine elevations, often in areas of late snowmelt. On Oregon's Mt. Hood, <i>Conostomum</i> occurs above timberline at about 6,500 ft, where the plant association is probably <i>Phyllodoce empetrififormis</i> and <i>Cassiope mertensiana</i> heath. Elsewhere in the Pacific Northwest, <i>Conostomum</i> probably also occurs in <i>Pinus albicaulis</i> , <i>Tsuga mertensiana</i> , <i>Abies lasiocarpa</i> , and <i>Abies amabilis</i> associations.
<i>Helodium blandowii</i>	moss	D	D	Forming mats and small hummocks in medium to rich montane fens with calcareous groundwater. Sometimes under sedges and shrubs around the edges of fens or along streamlets in fens. Elevations range from 5000-6000 feet. Forest types include <i>Abies amabilis</i> , <i>Abies concolor</i> , <i>Abies x shastensis</i> , and <i>Pinus contorta</i> ssp. <i>latifolia</i> associations. Accompanying vascular species include <i>Betula glandulosa</i> , <i>Salix geyeriana</i> , <i>Carex limosa</i> , <i>Eleocharis quinqueflora</i> and <i>Scheuchzeria palustris</i> . Associated mosses include <i>Aulacomnium palustre</i> , <i>Calliergon stramineum</i> , <i>Hamatocaulis vernicosus</i> , <i>Meesia triquetra</i> , and <i>Tomenthypnum nitens</i> . Found on the Bend district of the Deschutes National Forest and on the Ochoco NF.

Scientific Name and Code	Common Name	DES	OCH & CRNG	Habitat
<i>Polytrichum sphaerothecium</i>	moss	S		Forming green to brown sods on igneous rocks in exposed or sheltered sites, subalpine parkland to alpine krummholz. On Oregon's Mt. Hood, <i>Polytrichastrum sexangulare</i> var. <i>vulcanicum</i> occurs at or above timberline at about 6,500 ft elevation, where the plant association is probably <i>Phyllodoce empetrififormis</i> or <i>Cassiope mertensiana</i> heath. Elsewhere in the Pacific Northwest it probably also occurs in <i>Pinus albicaulis</i> , <i>Tsuga mertensiana</i> , <i>Abies lasiocarpa</i> , and possibly <i>Abies amabilis</i> associations. Associated bryophytes may include <i>Conostomum tetragonum</i> and <i>Gymnomitrium</i> .
<i>Pseudocalliergon trifarium</i>	moss	S		Forming lawns or inconspicuously intermixed with other bryophytes in medium to rich montane fens where it grows submerged to emergent in pools or on saturated ground, usually in full sunlight. Fen pools may dry up in late summer. Elevations range from 5000-6000 feet. Forest types include <i>Abies amabilis</i> , <i>Abies concolor</i> , <i>Abies x shastensis</i> , and <i>Pinus contorta</i> ssp. <i>latifolia</i> associations. <i>Calliergon trifarium</i> is one of several species of so-called "brown mosses" that occur in mineral-rich fens. Associated vascular plants in Oregon and Washington include <i>Eleocharis quinqueflora</i> , <i>Carex limosa</i> , <i>Scheuchzeria palustris</i> , and <i>Triglochin maritimum</i> . Associated bryophyte species include <i>Hamatocaulis vernicosus</i> , <i>Tomentypnum nitens</i> , <i>Meesia triquetra</i> and <i>Helodium blandowii</i> .

Scientific Name and Code	Common Name	DES	OCH & CRNG	Habitat
<i>Rhizomnium nudum</i>	rhizomnium moss	D		On humus or mineral soil in seepages, vernal (at least) wet depressions or intermittently wet, low gradient channels. Exposure varies from full sun to full shade. Coniferous forests, that include silver fir, western hemlock, mountain hemlock, western red cedar and Engelman spruce, and on Deschutes NF include lodgepole pine, Engelman spruce, mountain hemlock and western white pine.
<i>Schistostega pennata</i>	luminous moss	D		Usually on mineral soil in crevices on lower and more sheltered parts of root wads of fallen trees. A rare occurrence in a natural cave in upper bank of perennial creek. Often near steams or other wet areas. Canopy often full but as low as 20% at humid sites near water. Most commonly found within silver fir plant series but also common in western hemlock and mountain hemlock series. Also in lodgepole pine stands near water. Stand are typically late seral or old growth.
<i>Splachnum ampullaceum</i>	moss	S		Forming green sods on old dung of herbivores, or on soil enriched by dung, in peatlands or other wetlands. The sodden, decomposed dung will scarcely be visible, or may be completely humified. The two known sites for <i>Splachnum ampullaceum</i> in Oregon are at 5000 feet elevation, but Hutten et al. (2005) reported it from as low as 500 feet in Olympic National Park. Plants in Oregon occurred in fens dominated by <i>Eleocharis quinquefolia</i> , <i>Hamatocaulis vernicosus</i> , and <i>Pinus contorta</i> var. <i>latifolia</i> . <i>Splachnum ampullaceum</i> tends to outcompete <i>Tetraplodon mnioides</i> in wet habitats, indicating that wetlands are optimal habitat for this species (Studlar and Byers 2007).

Scientific Name and Code	Common Name	DES	OCH & CRNG	Habitat
<i>Tomentypnum nitens</i>	moss	D		Forming loose or dense sods or intermixed with other bryophytes in medium to rich montane fens where it favors slightly elevated sites such as logs, stumps, or hummocks formed by <i>Vaccinium uliginosum</i> and <i>Betula glandulosa</i> . Elevations range from 5000 to 6000 feet. Fens occur in openings in forest types that include <i>Abies amabilis</i> , <i>Abies concolor</i> , <i>Abies lasiocarpa</i> , and <i>Pinus contorta</i> ssp. <i>latifolia</i> associations. <i>Tomentypnum nitens</i> is one of the more conspicuous of several species of so-called "brown mosses" that occur in mineral-rich fens. Associated vascular plants in Oregon and Washington include <i>Eleocharis quinqueflora</i> , <i>Carex limosa</i> , <i>Carex aquatilis</i> ssp. <i>dives</i> , <i>Scheuchzeria palustris</i> , and <i>Triglochin maritimum</i> . Associated bryophyte species include <i>Hamatocaulis vernicosus</i> , <i>Pseudocalliogon trifarium</i> , <i>Meesia triquetra</i> and <i>Helodium blandowii</i> . Many sites on all three districts of the Deschutes National Forest.
<i>Tortula mucronifolia</i>	moss		S	Riparian <i>Populus</i> and montaine <i>Abies</i> . Higher elev (5000-7000 ft).
<i>Trematodon boasii</i>	moss	S		Forming loose mats on moist bare soil along the edges of trails, streams and ponds in the subalpine zone. Soils usually have some organic content and are irrigated by meltwater from late-season snowbeds. Little is known about associated species. Habitats probably include <i>Phyllodoce empetriformis</i> and <i>Cassiope mertensiana</i> heath and <i>Tsuga mertensiana</i> , <i>Abies lasiocarpa</i> , and <i>Abies amabilis</i> forest associations.

Scientific Name and Code	Common Name	DES	OCH & CRNG	Habitat
<i>Tritomaria exsectiformis</i>	liverwort	D		Within the Pacific Northwest this species is currently known from mid-elevational (3200-5200 feet) riparian zones. Typically open to shaded coniferous forest in association with low volume, perennial water flow at or near springs and seeps, along very gentle topographic gradients. Lodgepole pine (<i>Pinus contorta</i>) is present at nearly all sites of <i>T. exsectiformis</i> within the Oregon and Washington Cascades. Other tree species occurring at these sites include white fir, ponderosa pine, Engelmann spruce (<i>Picea engelmannii</i>), Douglas fir (<i>Pseudotsuga menziesii</i>), western hemlock (<i>Tusga heterophylla</i>), mountain hemlock (<i>Tusga mertensiana</i>), and subalpine fir (<i>Abies lasiocarpa</i>). Currently, all but one of the <i>T. exsectiformis</i> sites in the Oregon and Washington Cascades occur within spring-fed hydrologic systems.
Lichens				
<i>Dermatocarpon. Luridum</i>	silverskin lichen	D	D	Rocks or bedrock in streams or seeps, usually submerged or inundated for most of the year.
<i>Leptogium cyanescens</i>	skin lichen	S		Generally riparian but recently documented in upland settings on vine maple, big leaf maple and intermixed with moss on white oak.
<i>Texosporium sancti-jacobi</i>	lichen	S	D	Whitish soil crust lichen often found on old root clumps of <i>P. secunda</i> or scat. Documented on The Island and Canadian Bench, CRNG. Undocumented occurrences by R. Demmer on BLM along breaks of lower John Day R.
Fungi				

Scientific Name and Code	Common Name	DES	OCH & CRNG	Habitat
<i>Alpova alexsmithii</i>	fungus	D		Occurs principally on soil in Pacific Silver Fir (44%) and Mountain Hemlock (44%) series at elevations of 2742-5764 feet. A mycorrhizal associate of <i>Tsuga</i> . Associated species include Pacific silver fir, lodgepole pine, Engelmann spruce and mountain hemlock. Other woody associates include <i>Vaccinium membranaceum</i> and <i>Vaccinium scoparium</i> . Fruits August-December. Documented from the Mt. Jefferson Wilderness on the Deschutes National Forest.
<i>Gastroboletus vividus</i>	fungus	S		Found in association with the roots of <i>Abies magnifica</i> and <i>Tsuga mertensiana</i> above 5,000'. Fruits July-September. A known site at Crater Lake National Park.
<i>Helvella crassitunicata</i>	fungus	D		Occurs in montane forests containing <i>Abies</i> spp., from old growth and younger age groups, from low to high elevation in the fall and winter, occasionally on trails, or other moderately disturbed areas. Documented on the Sisters district of the Deschutes National Forest.
<i>Hygrophorus caeruleus</i>	fungus	D		Associated with roots of Pinaceae; may be restricted to <i>Abies</i> . Typically fruits in mid-elevation to montane conifer forests in the spring near melting snowbanks. Fruits May-July. Documented on the Deschutes National Forest.
<i>Ramaria amyloidea</i>	fungus	D		Humus or soil. Fruits in September and October. Found in Douglas fir, grand/white fir, and hemlock forests.

Deschutes and Ochoco National Forest Strategic Plant Species List

List updated January 31, 2008

D = Documented on the Forest; S = Suspected on the Forest

Scientific Name and Code	Common Name	DES	OCH & CRNG	Habitat
Vascular Plants				
<i>Carex eleocharis</i>	Involute-leaved sedge		S	
<i>Cicuta bulbifera</i>	Bulb-bearing water-hemlock	S		
<i>Myosurus sessilis</i>	sessile mousetail	S	S	
<i>Thelypodium howellii</i> ssp. <i>howellii</i>	Howell's thelypody	S	S	
Bryophytes				
<i>Anastrophyllum minutum</i>	Liverwort	S		
<i>Andreaea nivalis</i>	Moss	S		
<i>Anomobryum julaceum</i>	Moss	S		
<i>Bruchia bolanderi</i>	Moss	D		
<i>Buxbaumia aphylla</i>	Moss	D		
<i>Cephaloziella spinigera</i>	Liverwort	S		
<i>Cynodontium jeneri</i>	Moss	S		
<i>Grimmia anomala</i>	Moss	S		
<i>Haplomitrium hookeri</i>	Liverwort	S		
<i>Harpanthus flotovianus</i>	Liverwort	S		
<i>Marsupella sparsifolia</i>	Liverwort	S		
<i>Nardia japonica</i>	Liverwort	D		
<i>Pohlia ludwigii</i>	Moss		S	
<i>Pohlia tundrae</i>	Moss	S		
<i>Polytrichum sexangulare</i>	Moss	S		
<i>Scouleria marginata</i>	Moss	S	S	
<i>Thamnobryum neckeroides</i>	Moss	S		
Lichens				
<i>Collema curtisporum</i>	Lichen			
<i>Lecanora pringlei</i>	Lichen			
<i>Peltula euploca</i>	Lichen			
<i>Thelenella muscorum</i> var. <i>octospora</i>	Lichen			
<i>Usnea sphacelata</i>	Lichen			
Fungi				
<i>Albatrellus caeruleoporus</i>	Fungus	D		
<i>Arcangeliella crassa</i>	Fungus	S		
<i>Arcangeliella lactarioides</i>	Fungus	D		

Scientific Name and Code	Common Name	DES	OCH & CRNG	Habitat
<i>Balsamia platyspora</i>	Fungus	D		
<i>Brauniellula albipes</i>	Fungus	D		
<i>Choiromyces alveolatus</i>	Fungus	D		
<i>Cortinarius wiebeae</i>	Fungus	D		
<i>Elaphomyces anthracinus</i>	Fungus	D		
<i>Elaphomyces subviscidus</i>	Fungus	D		
<i>Fevansia aurantiaca</i>	Fungus	D		
<i>Hydnotrya inordinata</i>	Fungus	D		
<i>Plectania milleri</i>	Fungus	S		
<i>Ramaria coulterae</i>	Fungus	D		
<i>Ramaria maculatipes</i>	Fungus	S		
<i>Rhizopogon atroviolaceus</i>	Fungus	D		
<i>Rhizopogon flavofibrillosus</i>	Fungus	D		
<i>Rhizopogon semireticulatus</i>	Fungus	D		
<i>Rhizopogon semitectus</i>	Fungus	D		
<i>Rhizopogon subpurpurascens</i>	Fungus	D		