Appendix D

Biological Evaluation

for

Proposed Endangered, Threatened, and Sensitive (PETS)
Vascular Plants, Bryophytes, Lichens, and Fungi

2007 Plantation Thinning Project

Clackamas River Ranger District
Mt. Hood National Forest
USDA - Forest Service

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Introduction

U.S. Forest Service policy requires that all actions be taken to "assure that management activities do not jeopardize the continued existence of sensitive species or result in an adverse modification of their essential habitat" (FSM 2670.3). Section 7 of the Endangered Species Act of 1973 (as amended in 1978, 1979, and 1982) directs federal departments/agencies to assure that actions authorized, funded, and/or conducted by them are not likely to jeopardize the continued existence of any threatened or endangered species or result in destruction or adverse modification of their critical habitat. The Act also directs each federal agency to confer or consult with the appropriate Secretary on any action that is likely to jeopardize or affect the continued existence of any species or its habitat. All Forest Service projects, programs, and activities require review and documentation of possible effects on Proposed, Endangered, Threatened, or Sensitive (PETS) species (FSM 2672.4). To comply with these directions and policies, a biological evaluation must be performed for all ground-disturbing activities on federal lands.

A 5-step process is used to summarize assessment procedures for PETS species currently listed on the Regional Forester's Sensitive Species List for the Mt. Hood National Forest (FSM 2672.4). The PETS species addressed during this process were based on the Regional Forester's Sensitive Species List for Region 6 (last revised 07-21-2004) and the current U.S. Fish and Wildlife Service (USFWS) Federal Species List.

The 5-step process consists of (1) a pre-field review of existing information; (2) a field reconnaissance if listed species or habitats are determined to be present and potentially affected by the proposed action; (3) an evaluation of project effects on species and habitats; (4) an analysis of the significance of the project's effects on local and entire populations of PETS species; and (5), if needed (due to lack of information), a biological investigation.

A determination of No Impact for PETS species can be made at any step in the process, at which time the biological evaluation is complete. If the results of the biological evaluation indicate that there may be an effect to proposed or listed species, conferencing or informal/formal consultation with the USFWS, as outlined in FSM 2673.2, would be initiated.

Project Description and Location

The 2007 plantation thinning project is a proposal to commercially thin about 4,500 acres of young forest stands (50-70 years old) to increase stand health and vigor; to enhance stand growth with the production of larger wind-firm trees; to increase and/or restore biological diversity; and to provide forest products consistent with the Northwest Forest Plan goal of maintaining the stability of local and regional economies now and in the future. High tree density has led to reduced tree growth in some forest stands in the project area. The proposed project covers a large area (about 4,500 acres) including, from north to south, stands in the Fish Creek and Pup Creek areas, the Sandstone Creek and Big Creek areas, and the Collawash River area.

Step 1: Pre-field Review of Existing Information: Management proposals are investigated to determine whether potential PETS species habitat may exist within or adjacent to the project areas. Sources used include the Oregon Natural Heritage Database of rare species, the Mt. Hood National Forest sensitive species plant database, the Interagency Species Management System (ISMS), scientific literature, aerial photos, topographic maps, and knowledge provided by individuals familiar with the area. Appendix A lists the habitat and identification period for PETS botanical species documented from, or suspected to occur on, the Mt. Hood National Forest.

Table 1. PETS botanical species documented or suspected to occur on the Mt. Hood National Forest

Species

Vascular Plants	Common Name	Habitat in Project Area
Agoseris elata	Tall agoseris	No
Arabis sparsiflora var. *atrorubens*	Sicklepod rockcress	No
Aster gormanii	Gorman's aster	No
Astragalus tyghensis	Tygh Valley milkvetch	No
Botrychium lanceolatum	Lance-leaved grape fern	No
Botrychium minganense	Mingan moonwort	**Yes**
Botrychium montanum	Mountain grape fern	**Yes**
Botrychium pinnatum	Pinnate grape fern	**Yes**
Calamagrostis breweri	Brewer's reedgrass	No
Carex livida	Pale sedge	**Yes**
Castilleja thompsonii	Thompson's paintbrush	No
Cimicifuga elata	Tall bugbane	**Yes**
Coptis trifolia	3-leaflet goldthread	**Yes**
Corydalis aquae-gelidae	Cold-water corydalis	**Yes**
Diphasiastrum complanatum	Ground cedar	**Yes**
Erigeron howellii	Howell's daisy	No
Fritillaria camschatcensis	Indian rice	No
Howellia aquatilis var. howellia	Howellia	**Yes**
Lewisia columbiana var. columbiana	Columbia lewisia	No
Lycopodiella inundata	Bog club-moss	No
Montia howellii	Howell's montia	**Yes**
Ophioglossum pusillum	Adder's tongue	**Yes**
Phlox hendersonii	Henderson's phlox	No
Potentilla villosa	Villous cinquefoil	No
Ranunculus reconditus	Obscure buttercup	No
Romanzoffia thompsonii	Mistmaiden	No
Scheuchzeria palustris	Scheuchzeria	**Yes**
Sisyrinchium sarmentosum	Pale blue-eyed grass	**Yes**
Suksdorfia violacea	Violet suksdorfia	No
Taushia stricklandii	Strickland's taushia	**Yes**
Wolfia boralis	Dotted water-meal	**Yes**
Wolfia columbiana	Water-meal	**Yes**

Bryophytes

Rhizomnium nudum	moss	**Yes**
Schistostega pennata	Green goblin moss	**Yes**
Scouleria marginata	moss	No
Tetraphis geniculata	Bent-awn moss	**Yes**

Lichens

Chaenotheca subroscida	pin lichen	**Yes**
Dermatocarpon luridum	Brook lichen	**Yes**
Fuscopannaria rubiginosa	Brown-eyed shingle lichen	**Yes**
Hypgymnia duplicata	Ticker-Tape lichen	**Yes**
Leptogium burnetiae var. *hirsutum*	Jellyskin lichen	**Yes**
Leptogium cyanescens	Blue jellyskin lichen	**Yes**
Lobaria linita	Cabbage lungwort	**Yes**
Nephroma occultum	Cryptic kidney lichen	No
Peltigera neckeri	Black saddle lichen	**Yes**
Peltigera pacifica	Fringed pelt lichen	**Yes**
Pilophorus nigricaulis	Matchstick lichen	No
Pseudocyphellaria rainierensis	Specklebelly lichen	**Yes**
Ramalina pollinaria	Chalky ramalina	No
Tholurna dissimilis	Urn lichen	No
Usnea longissima	Methuselah's beard lichen	**Yes**

Fungi

Bridgeoporus nobilissmus	noble polypore	**Yes**
Cordyceps capitata	earthtongue	**Yes**
Cortinarius barlowensis	mushroom	**Yes**
Cudonia monticola	earthtongue	**Yes**
Gomphus kauffmanii	mushroom	**Yes**
Gyromitra californica	mushroom	**Yes**
Leucogaster citrinus	truffle	**Yes**
Mycena monticola	mushroom	**Yes**
Otidea smithii	cup fungi	**Yes**
Phaeocollybia attenuata	mushroom	**Yes**
Phaeocollybia californica	mushroom	**Yes**
Phaeocollybia olivacea	mushroom	No
Phaeocollybia oregonensis	mushroom	**Yes**
Phaeocollybia piceae	mushroom	**Yes**
Phaeocollybia pseudofestiva	mushroom	**Yes**
Phaeocollybia scatesiae	mushroom	**Yes**
Ramaria amyloidea	coral fungi	**Yes**
Ramaria gelatiniaurantia	coral fungi	**Yes**
Sowerbyella rhenana	cup fungi	**Yes**

PETS botanical species documented to occur within or adjacent to the project areas:

Corydalis aquae-gelidae (vascular plant)
Ophioglossum pusillum (vascular plant)
Peltigera pacifica (lichen)
Pseudocyphellaria rainierensis (lichen)
Sisyrinchium sarmentosum (vascular plant)
Usnea longissima (lichen)

Step 2: Field Reconnaissance and Surveys

The approximately 4,500-acre project area consists of young forest stands (50-70 years old) scattered in the Fish Creek, Pup Creek, Sandstone Creek, Big Creek, and Collawash River drainages. The project area includes a diversity of habitats: upland forest, riparian forest, meadows, wetlands/seeps, and beaver ponds. Intuitive-controlled field surveys were conducted for Region 6 Sensitive, Survey and Manage, and invasive plant species from June through mid-August 2006 by a three- to four-person crew that included the westside zone botanist, another Mt. Hood National Forest botanist, and two seasonal biological technicians experienced and proficient in plant identification.

The project area includes mesic, low- to mid-elevation forest stands with a mixture of western hemlock (*Tsuga heterophylla*), Douglas-fir (*Pseudostuga menziesii*), Pacific silver fir (*Abies amabilis*), western red cedar (*Thuja plicata*), noble fir (*Abies procera*) and red alder (*Alnus rubra*). Dominant understory shrubs and ferns include Oregon grape [*Mahonia* (= *Berberis) nervosa*], salal (*Gaultheria shallon*), sword fern (*Polystichum munitum*), western rhododendron (*Rhododendron macrophyllum*), Alaska huckleberry (*Vaccinium alaskaense*), ovalleaf huckleberry (*Vaccinium ovalifolium*), and bracken fern (*Pteridium aquilinum*). Within the large project area, understory vegetation varies from being dense with little unoccupied growing space on the forest floor to depauperate (sparse to no vegetation on the forest floor). Plant associations in the areas are primarily in the western hemlock and Pacific silver fir series (McCain and Diaz 2002). See the botany BE (biological evaluation) for a list/inventory of all plant species found during the surveys.

Botany surveys focused primarily on wetlands/meadows, seeps, and streamside habitats in the project area where plant diversity was expected to be—and indeed was--higher than in upland forest habitats. Because not all of the units were surveyed, surveyors could have missed (overlooked) rare plants; however, for the most part the forest stands/communities surveyed appeared to be relatively homogeneous and similar in plant

composition and diversity. Roughly 64% of the units were surveyed during the summer of 2006 (113 out of 176 units). The units (roughly 14 of them) in the Fish Creek drainage were surveyed by a Mt. Hood National Forest botanist (M. Boyll) in previous years, which brings the total number of surveyed units to about 74%, or ¾ of the total project area. Surveyed microhabitats

included tree boles and branches, the forest floor, litterfall, decaying logs, stumps, snags, edges of streams and beaver ponds, and wetlands, seeps, and meadows. The entire project area is rich in wetland-meadow habitat, seeps, streams, and beaver ponds. The intent is to protect as many of these wet habitat areas that were observed, noted, and mapped by agency specialists (botanists, hydrologists, soil scientists, wildlife biologists, fisheries biologists, and geologist), who conducted field surveys during the summer of 2006, from ground disturbance/timber harvest through their exclusion/removal from the thinning units, the use of skyline or helicopter logging to reduce or eliminate ground disturbance, and the use of "skips" (i.e., protection buffer areas) for special-status species or other species of concern.

Survey Results

About a half-dozen special-status botanical species were either already documented to occur within or adjacent to the project area or found during the 2006 surveys: *Ophioglossum pusillum* (vascular plant), *Peltigera pacifica* (lichen), *Pseudocyphellaria rainierensis* (lichen), *Sisyrinchium sarmentosum* (vascular plant), *Usnea longissima* (lichen), possibly *Fuscopannaria saubinetii* (lichen), and possibly *Leptogium cyanescens* (lichen).

There is one site for *Ophioglossum pusillum* (adder's-tongue), a vascular plant species on the Regional Forester's Sensitive Species list (Region 6), in the project area in unit 348. The site is a "scooped-out" wet depression about 0.25 acres in size along the 6340 road and was found prior to surveys conducted for the proposed project.

A number of locations (39) for *Peltigera pacifica,* a lichen on the Regional Forester's Sensitive Species list and the Northwest Forest Plan's Survey and Manage list, were found in the project area.

Peltigera pacifica is a foliose (leaflike) lichen that grows on soil, moss, rocks, decaying logs, and tree bases. This lichen is distinctive among species of *Peltigera* because of the abundant lobules (tiny lobes) on its thallus margins and glabrous (hairless) upper surface. The lichen can easily be overlooked during field surveys. There are probably many more populations (individuals) of *P. pacifica* in the project areas than were found. *P. pacifica* may be relatively common in some localities on the Mt. Hood National Forest although it is considered rare regionally. For example, a fairly large number (>40) of new sites of *P. pacifica* recently have been found in the summer home tracts along Highway 26 between Zigzag and Government Camp. Individuals found in the area were usually growing on rocks. Conservation of *P. pacifica* sites in the proposed project area would be provided by setting aside protection buffer areas around the soil, rocks, or decaying logs where the lichen was found.

One site for *Pseudocyphellaria rainierensis*, a lichen on the Regional Forester's Sensitive Species list and Northwest Forest Plan's Survey and Manage list, was found in an old-growth stand along the decommissioned road between units 134 and 136.

There are three sites for *Sisyrinchium sarmentosum* (pale blue-eyed grass), a vascular plant on the Regional Forester's Sensitive Species list, in the project area: two in unit 346 and one in unit 348. All of the sites are wet meadows.

Two sites for *Usnea longissima* (Methuselah's Beard), a lichen on both the Regional Forester's Sensitive Species list and the Northwest Forest Plan's Survey and Manage list, were found in the project area.

Fuscopannaria saubinetii is a small tightly-appressed foliose to crustose lichen that is found on hardwoods (e.g., vine maple, bigleaf maple, red alder, rhododendron). It is considered to be very rare with only about a half dozen documented sites in the Northwest Forest Plan area. *F. saubinetii* is distinguished from another closely related species, *Fuscopannaria pacifica,* by spore size. *F. pacifica* is not on the Regional Forester's Sensitive Species list or on the Northwest Forest Plan's Survey and Manage list. *Fuscopannaria* is common and widespread throughout the project area, especially on "older" vine maple [i.e., those draped with mosses and other cyanolichens (e.g., *Lobaria, Pseudocyphellaria, Sticta*)]. Collections were made throughout the project area and then apothecia from the collected lichens were thin-sectioned and spore size measured. Most of the collected specimens appear to be *F. pacifica*; however, some may be *F. saubinetii*. Those specimens thought to be possibly *F. saubinetii* must be sent to a regional expert for identification/verification.

"Isidiate" specimens of the lichen *Leptogium* were also observed and collected. Isidia are minute cylindrical to branching to opuntioid (cactus-like) projections on the upper surface and margins of the thallus (lichen body). Most of the collected specimens appear to be *Leptogium tacomae*, but a handful may be *Leptogium cyanescens*, a species on the Regional Forester's Sensitive Species list and the Northwest Forest Plan's Survey and Manage list. Specimens thought to be possibly *L. cyanescens* must be sent to a regional expert for identification/verification.

Invasive plant species were found along roads, in skid roads and old landings, and in forest openings with ground disturbed from previous timber harvest activities: e.g., tansy ragwort (*Senecio jacobaea*), St.-Johns-wort (*Hypericum perforatum*), Canada thistle (*Cirsium arvense*), bull thistle (*Cirsium vulgare*), common tansy (*Tanacetum vulgare*), scotch/Scot's broom (*Cytisus scoparius*), cats-ear (*Hypochaeris radicata*), spotted knapweed (*Centaurea biebersteinii*), and diffuse knapweed (*Centaurea diffusa*). See Appendix B for a list/inventory of plant species found during surveys.

Surveys to detect the presence of special-status species of fungi identified as having habitat within the proposed project areas (FEIS 2004), except *Bridgeoporus nobilissimus*, are not considered practical because of the variability in fruiting-body (mushroom, truffle) production from year to year of most fungi, necessitating multi-year surveys to detect a species' presence. Therefore, special-status fungi other than *B. nobilissimus* were not targeted during the field surveys. If surveys determined suitable habitat to be present in the project areas for a particular species, however, then it was assumed that the species is likely present. Surveys for *B. nobilissimus* are practical because it produces perennial fruiting bodies on stumps and, less commonly, on snags and live trees. The other special-status fungal species produce ephemeral, so-called fleshy, fruiting-bodies that decompose after a few weeks or more. Species of fleshy fungi are identified by aboveground or belowground fruiting bodies (e.g., mushrooms, truffles) that do not appear (i.e., fruit) each year. Belowground fruiting bodies are located by lightly raking or digging in the upper surface (organic horizon and immediate sub-horizon) of the forest

floor. For the 17 species of fungi on the Regional Forester's Sensitive Species list identified as having potential habitat in the project area, a one-time survey is usually insufficient to detect their presence.

PETS vascular plants, lichens, and bryophytes <u>found</u> within or adjacent to the project area:

Ophioglossum pusillum (adder's-tongue) (vascular plant)
Peltigera pacifica (lichen)
Pseudocyphellaria rainierensis (lichen)
Sisyrinchium sarmentosum (pale blue-eyed grass) (vascular plant)
possibly *Fuscopannaria saubinetii* (lichen)
possibly *Leptogium cyanescens* (lichen)

PETS species of fungi assumed present within or adjacent to the project area:

1. *Cordyceps capitata*
2. *Cortinarius barlowensis*
3. *Cudonia monticola*
4. *Gomphus kauffmanii*
5. *Gyromitra californica*
6. *Leucogaster citrinus*
7. *Mycena monticola*
8. *Otidea smithii*
9. *Phaeocollybia attenuata*
10. *Phaeocollybia californica*
11. *Phaeocollybia oregonensis*
12. *Phaeocollybia piceae*
13. *Phaeocollybia pseudofestiva*
14. *Phaeocollybia scatesiae*
15. *Ramaria amyloidea*
16. *Ramaria gelatiniaurantia*
17. *Sowerbyella rhenana*

<u>Step 3: Risk Assessment</u>

Table 3 displays the effect of the proposed action on PETS species of fungi that were not detected during the field survey but whose presence in the project areas is assumed.

1. *Cordyceps capitata* is a widespread but locally rare species documented from 38 sites in the western Cascade Range and Coast Range in Washington, Oregon, and northern California. Two sites are known from the Mt. Hood National Forest on the Zigzag Ranger District. The species is parasitic on the fruiting body of *Elaphomyces* spp., a genus of belowground-fruiting fungi in the truffle group. *Elaphomyces* are associated with the roots of conifers. The proposed action will not remove all host trees for *Elaphomyces,* and it is assumed that *C. capitata* will be able to persist. Soil compaction could have a localized negative impact on individuals. The proposed

action **May Impact Individuals but is not likely to lead to a trend toward federal listing for this species.**

2. *Cortinarius barlowensis* is widely distributed, known from 16 sites in the western Cascade Range, Coast Range, and Olympic Mountains of Washington and Oregon. There are two known sites from the Mt. Hood National Forest on the Zigzag Ranger District. Habitat is soil under conifers. Although some host trees might be removed, potentially impacting *C. barlowensis* individuals, other host trees will remain continuing to provide substrate for this species. Key elements of suitable habitat would still exist in the project areas, and similar habitat located in reserves adjacent to the project areas would presumably continue to provide undisturbed habitat for this species, if it is present. The proposed action **May Impact Individuals and habitat but is not likely to lead to a trend toward federal listing.**

3. *Cudonia monticola* is endemic to the Pacific Northwest and grows under conifers in the spring and summer. This earth tongue fungus is scattered to gregarious or grows in dense clusters in humus, soil, and on rotting wood. Key elements of suitable habitat would still exist in the project areas, and similar habitat located in reserves adjacent to the project areas would presumably continue to provide undisturbed habitat for this species, if it is present. The proposed action **May Impact Individuals and habitat but is not likely to lead to a trend toward federal listing.**

4. *Gomphus kauffmanii* is endemic to western North America and found in California, Oregon, and Washington along the Pacific coast or in the Cascade Range. There are 6 known sites for this mushroom on the Mt. Hood National Forest. Host trees for *G. kauffmanii* include true firs and pines. *G. kauffmanii* forms symbiotic associations with the fine-root systems of plants. Key elements of suitable habitat would still exist inside the project areas, and similar habitat located in reserves adjacent to the project areas would presumably continue to provide undisturbed habitat for this species, if it is present. The proposed action **May Impact Individuals and habitat but is not likely to lead to a trend toward federal listing.**

5. *Gyromitra californica* is found from British Columbia south to northern California and east to Colorado, Montana, and Nevada. It is known in Washington, Oregon, and northern California from 35 sites, one of which is on the Mt. Hood National Forest (Hood River Ranger District). *G.*

californica grows on well-rotted stumps and logs of conifers or in soil with rotted wood. Soil compaction could have a localized negative impact on individuals. Key elements of suitable habitat would still exist inside the project areas, and similar habitat located in reserves adjacent to the project areas would presumably continue to provide undisturbed habitat for this species, if it is present. The proposed action **May Impact Individuals but is not likely to lead to a trend toward federal listing.**

6. *Leucogaster citrinus* is endemic to the Pacific Northwest with 45 sites known from western Washington, western Oregon, and northern California. There are four sites on the Zigzag Ranger District on the Mt. Hood National Forest. This truffle (belowground-fruiting) species is associated with the roots of conifers. The proposed action will not remove all host trees, so it is assumed that *L. citrinus* will be able to persist. Soil compaction could have a localized negative

impact on individuals. Key elements of suitable habitat would still exist inside the project areas, and similar habitat located in reserves adjacent to the project areas would presumably continue to provide undisturbed habitat for this species, if it is present. The proposed action **May Impact Individuals but is not likely to lead to a trend toward federal listing for this species.**

7. ***Mycena monticola*** is endemic to the Pacific Northwest and is known from a number of sites in the Northwest Forest Plan area, scattered in the western and eastern Cascade Range, the Klamath Mountains, and the Olympic Mountains. On the Mt. Hood National Forest, one site has been documented (Bear Springs Campground, Barlow Ranger District). *M. monticola* is restricted to conifer forests above 1,000 meters in elevation, particularly those with *Pinus* spp. and usually found in gregarious, caespitose clusters in duff (Castellano et al. 1999). Key elements of suitable habitat would still exist in the project areas, and similar habitat located in reserves adjacent to the project areas would presumably continue to provide undisturbed habitat for this species, if it is present. The proposed action **May Impact Individuals and habitat but is not likely to lead to a trend toward federal listing.**

8. ***Otidea smithii*** is known from 10 scattered sites in western Washington, western Oregon, and northwestern California. One location is known from the Clackamas River Ranger District on the Mt. Hood National Forest. *O. smithii* grows in soil under Douglas-fir, western hemlock, and cottonwood. Although some host trees might be removed, potentially impacting *Otidea* individuals, other trees will remain continuing to provide substrate for this species. Key elements of suitable habitat would still exist in the project areas, and similar habitat located in reserves adjacent to the project areas would presumably continue to provide undisturbed habitat for this species, if it is present. The proposed action **May Impact Individuals and habitat but is not likely to lead to a trend toward federal listing.**

9. ***Phaeocollybia attenuata*** is endemic to the Pacific Northwest with 131 sites known from western Washington and western Oregon to northern California. One site is known from the Mt. Hood National Forest on the Zigzag Ranger District. *P. attenuata* grows in soil under conifers. Soil compaction could have a localized negative impact on individuals. Key elements of suitable habitat would still exist inside the project areas, and similar habitat located in reserves adjacent to the project areas would presumably continue to provide undisturbed habitat for this species, if it is present. The proposed action **May Impact Individuals but is not likely to lead to a trend toward federal listing.**

10. ***Phaeocollybia californica*** is endemic to the Pacific Northwest with 34 sites known from western Washington, western Oregon, and northern California. No sites are known to occur on the Mt. Hood National Forest; however, there is a site in the adjacent Columbia River Gorge National Scenic Area. *P. californica* is terrestrial and associated with the roots of Douglas-fir, western hemlock, and Pacific silver fir. The proposed action will not remove all host trees, so it is assumed that *P. californica* will be able to persist. Soil compaction could have a localized negative impact on individuals. Key elements of suitable habitat would still exist inside the project areas, and similar habitat located in reserves adjacent to the project areas would presumably continue to provide undisturbed habitat for this species, if it is present. The proposed action **May Impact Individuals but is not likely to lead to a trend toward federal listing for this species.**

11. ***Phaeocollybia oregonensis*** is endemic to the Pacific Northwest with 10 sites known from the Oregon Coast Range and the western Cascade Range. On the Mt. Hood National Forest, there are two sites known from the Zigzag Ranger District. This species is terrestrial and associated with the roots of Douglas-fir, western hemlock, and Pacific silver fir. The proposed action will not remove all host trees, so it is assumed that *P. oregonensis* will be able to persist. Soil compaction could have a localized negative impact on individuals. Key elements of suitable habitat would still exist inside the project areas, and similar habitat located in reserves adjacent to the project areas would presumably continue to provide undisturbed habitat for this species, if it is present. The proposed action **May Impact Individuals but is not likely to lead to a trend toward federal listing for this species.**

12. ***Phaeocollybia piceae*** is endemic to the Pacific Northwest with 49 sites known from western Washington, western Oregon, and northern California. There is one known site on the on the Zigzag Ranger District on the Mt. Hood National Forest. This species is terrestrial and associated with the roots of Douglas-fir, western hemlock, and Pacific silver fir. The proposed action will not remove all host trees, so it is assumed that *P. piceae* will be able to persist. Soil compaction could have a localized negative impact on individuals. Key elements of suitable habitat would still exist inside the project areas, and similar habitat located in reserves adjacent to the project areas would presumably continue to provide undisturbed habitat for this species, if it is present. The proposed action **May Impact Individuals but is not likely to lead to a trend toward federal listing for this species.**

13. ***Phaeocollybia pseudofestiva*** is endemic to the Pacific Northwest from British Columbia south through western Washington and western Oregon to California. There are 36 known sites in Washington, Oregon, and California, four of which are on the Zigzag Ranger District on the Mt. Hood National Forest. The species grows in soil under conifers. Soil compaction could have a localized negative impact on individuals. Key elements of suitable habitat would still exist inside the project areas, and similar habitat located in reserves adjacent to the project areas would presumably continue to provide undisturbed habitat for this species, if it is present. The proposed action **May Impact Individuals but is not likely to lead to a trend toward federal listing.**

14. ***Phaeocollybia scatesiae*** is endemic to the Pacific Northwest with 17 sites documented in the Northwest Forest Plan area, three on the Mt. Hood National Forest (Zigzag Ranger District). This species is associated with the roots of *Abies* spp., *Picea sitchensis*, and *Vaccinium* spp. from sea level to 1,250 meters in elevation (Castellano et al. 1999). Soil compaction could have a localized negative impact on individuals. Key elements of suitable habitat would still exist inside the project areas, and similar habitat located in reserves adjacent to the project areas would presumably continue to provide undisturbed habitat for this species, if it is present. The proposed action **May Impact Individuals but is not likely to lead to a trend toward federal listing.**

15. ***Ramaria amyloidea*** is endemic to the Pacific Northwest with 16 sites known from western Washington to northern California. Habitat for the species is soil on sites with true fir, Douglas-fir, and western hemlock. Soil compaction could have a localized negative impact on

individuals. Key elements of suitable habitat would still exist inside the project areas, and similar habitat located in reserves adjacent to the project areas would presumably continue to provide undisturbed habitat for this species, if it is present. The proposed action **May Impact Individuals but is not likely to lead to a trend toward federal listing.**

16. ***Ramaria gelatiniaurantia*** is endemic to the Pacific Northwest with 24 sites known from western Washington to northern California. Two sites are located on the Clackamas River Ranger District on the Mt. Hood National Forest. Habitat for the species is soil on sites with true fir, Douglas-fir, and western hemlock. Soil compaction could have a localized negative impact on individuals. Key elements of suitable habitat would still exist inside the project areas, and similar habitat located in reserves adjacent to the project areas would presumably continue to provide undisturbed habitat for this species, if it is present. The proposed action **May Impact Individuals but is not likely to lead to a trend toward federal listing.**

17. ***Sowerbyella rhenana*** is found in Europe, Japan, and northwest North America. In the Pacific Northwest, it is known from 55 sites in western Washington, western Oregon, and northern California, including two sites from the Mt. Hood National Forest on the Clackamas River and Zigzag Ranger Districts. Habitat for the species is soil under conifers. One collection was found under tanoak (*Lithocarpus densiflorus*). Soil compaction could have a localized negative impact on individuals. Key elements of suitable habitat would still exist inside the project areas, and similar habitat located in reserves adjacent to the project areas would presumably continue to provide undisturbed habitat for this species, if it is present. The proposed action **May Impact Individuals but is not likely to lead to a trend toward federal listing.**

Table 2 displays the effect of the proposed action for PETS species identified in Step 1 as having potential habitat in the project areas.

Table 2. Biological Evaluation Process Summary by Species

SPECIES	Step #1 Prefield Review Habitat present?	Step #2 Field Reconn. Species present?	Step #3 Conflict Determination Conflict?	Step #4 Analysis of Effects Important?	Step #5 Biological Investigation Needed?
Vascular Plants	Yes	No	No Impact	N/A	N/A
Botrychium minganense	Yes	No	No Impact	N/A	N/A
Botrychium montanum	Yes	No	No Impact	N/A	N/A
Botrychium pinnatum	Yes	No	No Impact	N/A	N/A
Carex livida	Yes	No	No Impact	N/A	N/A
Cimicifuga elata	Yes	No	No Impact	N/A	N/A
Coptis trifolia	Yes	No	No Impact	N/A	N/A
Corydalis aquae-gelidae	Yes	No	No Impact	N/A	N/A
Diphasiastrum complanatum	Yes	No	No Impact	N/A	N/A
Howellia aquatilis. var. *howellii*	Yes	No	No Impact	N/A	N/A
Montia howellii	Yes	No	No Impact	N/A	N/A
Ophioglossum pusillum	Yes	Yes	No impact	N/A	N/A

Scheuchzeria palustris	Yes	No	No Impact	N/A	N/A
Sisyrinchium sarmentosum	Yes	Yes	No impact	N/A	N/A
Taushia stricklandii	Yes	No	No Impact	N/A	N/A
Wolfia boralis	Yes	No	No Impact	N/A	N/A
Wolfia columbiana	Yes	No	No Impact	N/A	N/A
Bryophytes					
Rhizomnium nudum	Yes	No	No Impact	N/A	N/A
Schistostega pennata	Yes	No	No Impact	N/A	N/A
Tetraphis geniculata	Yes	No	No Impact	N/A	N/A
Lichens					
Chaenotheca subroscida	Yes	No	No Impact	N/A	N/A
Dermatocarpon luridum	Yes	No	No Impact	N/A	N/A
Fuscopannaria rubiginosa	Yes	No	No Impact	N/A	N/A
Fuscopannaria saubinetii	Yes	Possibly	MII	N/A	N/A
Hypogymnia duplicata	Yes	No	No Impact	N/A	N/A
Leptogium burnetaie var. *hirsutum*	Yes	Possibly	MII	N/A	N/A
Leptogium cyanescens	Yes	Possibly	No Impact	N/A	N/A
Lobaria linita	Yes	No	No Impact	N/A	N/A
Peltigera neckeri	Yes	No	No Impact	N/A	N/A
Peltigera pacifica	Yes	Yes	MII	N/A	N/A
Usnea longissima	Yes	No	No Impact	N/A	N/A
Fungi					
Bridgeoporus nobilissimus	Yes	No	MII	N/A	N/A
Cordyceps capitata	Yes	Assumed Presence	MII	N/A	N/A
Cortinarius barlowensis	Yes	Assumed Presence	MII	N/A	N/A
Cudonia monticola	Yes	Assumed Presence	MII	N/A	N/A
Gomphus kauffmanii	Yes	Assumed Presence	MII	N/A	N/A
Gyromitra californica	Yes	Assumed Presence	MII	N/A	N/A
Leucogaster citrinus	Yes	Assumed Presence	MII	N/A	N/A
Mycena monticola	Yes	Assumed Presence	MII	N/A	N/A
Otidea smithii	Yes	Assumed Presence	MII	N/A	N/A
Phaeocollybia attenuata	Yes	Assumed Presence	MII	N/A	N/A
Phaeocollybia californica	Yes	Assumed	MII	N/A	N/A

		Presence			
Phaeocollybia oregonensis	Yes	Assumed Presence	MII	N/A	N/A
Phaeocollybia piceae	Yes	Assumed Presence	MII	N/A	N/A
Phaeocollybia pseudofestiva	Yes	Assumed Presence	MII	N/A	N/A
Phaeocollybia scatesciae	Yes	Assumed Presence	MII	N/A	N/A
Ramaria amyloidea	Yes	Assumed Presence	MII	N/A	N/A
Ramaria gelatiniaurantia	Yes	Assumed Presence	MII	N/A	N/A
Sowerbyella rhenana	Yes	Assumed Presence	MII	N/A	N/A

MII = May Impact Individuals or Habitat, but will ***not*** likely contribute to a trend towards Federal listing or loss of viability to the population or species.

Implementation of the projects may **impact PETS vascular plant, bryophyte, or lichen species or their habitat, but will not likely contribute to a trend towards Federal listing or loss of viability to the population or species**.

____ No Impact

__X__ May Impact Individuals or Habitat, but will not likely contribute to a trend towards Federal listing or loss of viability to the population or species.

_____ Will Impact Individuals or Habitat with a consequence that the action may contribute to a trend towards Federal listing or cause a loss of viability to the population or species.

Implementation of the projects **may impact individuals or the habitat of fungi**, but will ***not*** likely contribute to a trend towards Federal listing or loss of viability to the population of the species.

_____ No Impact

__X__ May Impact Individuals or Habitat, but will ***not*** likely contribute to a trend towards Federal listing or loss of viability to the population or species.

_____ Will Impact Individuals or Habitat with a consequence that the action may contribute to a trend towards Federal listing or cause a loss of viability to the population or species.

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Appendix A

PETS botanical species that are known or suspected to occur on the Mt. Hood National Forest and have potential habitat within the proposed project areas are displayed in Table 2.

TABLE 2.

PETS Botanical Species Documented or Suspected from the Mt. Hood National Forest				
Vascular Plants				
Species	**Common Name**	**General Habitat**	**Survey Period**	**Potential Habitat?**
Agoseris elata	Tall agoseris	Moist-dry meadow	June-Aug	No
Arabis sparsiflora var. *atrorubens*	Sicklepod rockcress	Dry meadow, shrub-steppe	May-Aug	No
Aster gormanii	Gorman's aster	Dry cliffs, talus, rock slopes above 3,500 ft. elevation	June-Sept	No
Astragalus tyghensis	Tygh Valley milkvetch	Shrub-steppe grassland	May-Aug	No
Botrychium lanceolatum	Lance-leaved grape fern	Sub-alpine meadow, glacial till	July-Sept	No
Botrychium minganense	Mingan moonwort	Forested wetlands	June-Sept	**Yes**
Botrychium montanum	Mountain grape-fern	Forested wetlands	June-Sept	**Yes**
Botrychium pinnatum	Pinnate grape fern	Forested wetlands	June-Sept	**Yes**
Calamagrostis breweri	Brewer's reedgrass	Sub-alpine, moist–dry meadows	June- Sept	No
Carex livida	Pale sedge	Wet-dry meadow, fen	June-Sept	**Yes**
Castilleja thompsonii	Thompson's paintbrush	Rock outcrops east of the crest of the Cascade Range	July-Aug	No
Cimicifuga elata	Tall bugbane	Mesic mixed hardwood/ conifer forest	June-Sept	**Yes**
Coptis trifolia	3-leaflet goldthread	Edge of forested fens	June-July	**Yes**
Corydalis aquae-gelidae	Cold water corydalis	Forested seeps and streams	June-Sept	**Yes**
Diphasiastrum complanatum	Ground cedar	Open conifer forest	Apr-Nov	**Yes**
Erigeron howellii	Howell's daisey	Moist-dry cliffs, talus, rocky slopes	June-Sept	No

Howellia aquatilis var. howellia	Howellia	Low-elevation lakes and ponds	June- Sept	**Yes**
Lewisia columbiana var. *columbiana*	Columbia lewisia	Dry cliffs, talus, rocky Slopes	June-Sept	No
Lycopodiella inundata	Bog club-moss	Wet meadows and bogs	July-Sept	No
Montia howellii	Howell's montia	Moist-dry open lowland forest	April-July	**Yes**
Ophioglossum pusillum	Adder's tongue	Wet-moist meadow	June-Sept	**Yes**
Phlox hendersonii	Henderson's phlox	Sub-alpine, dry, rocky, Scree	July-Sept	No
Potentilla villosa	Villous cinquefoil	Sub-alpine, dry, rocky, scree	July-Sept	No
Ranunculus reconditus	Obscure buttercup	Shrub-steppe grasslands	April-June	No
Romanzoffia thompsonii	Mistmaiden	Vernally wet cliffs	April-June	No
Scheuchzeria palustris var.americana	Scheuchzeria	Wet meadow, bog, fen	June-Sept	**Yes**
Sisyrinchium sarmentosum	Pale blue-eyed grass	Moist-dry meadow	June-Aug	**Yes**
Suksdorfia violacea	violet suksdorfia	Moist cliffs, talus, rocky slopes	May-July	No
Taushia stricklandii	Strickland's taushia	Moist-dry meadow	June-Sept	**Yes**
Wolffia borealis	Dotted water-meal	Pond, lake, gently flowing water	May-Sept	**Yes**
Wolffia columbiana	Water-meal	Pond, lake, gently flowing water	May-Sept	**Yes**
Bryophytes				
Rhizomnium nudum	Moss	Moist mineral soil in forest 3,000 – 5,000 ft. in elevation	June - Oct	**Yes**
Schistostega pennata	Green goblin moss	Moist mineral soil on rootwads	June- Oct	**Yes**
Scouleria marginata	Moss	Rock and boulders in streams	May - Nov	No
Tetraphis geniculata	Bent-awn moss	Large downed wood in old-growth forest	May- Oct	**Yes**

Lichens				
Species	**Common Name**	**General Habitat**	**Survey Period**	**Potential Habitat?**
Chaenotheca subroscida	pin lichen	Boles of live trees and snags in moist forest	May-Nov	**Yes**
Dermatocarpon luridum	Brook lichen	Rock submerged in streams	May-Nov	No
Hypogymnia duplicata	Ticker-tape lichen	Conifer boles where > 90 inches of annual precipitation	May - Oct	**Yes**
Leptogium burnetiae var. *hirsutum*	Jellyskin lichen	Bark of deciduous trees, decaying logs, and moss on rock	May-Nov	**Yes**
Leptogium cyanescens	Blue jellyskin lichen	Moss and bark of deciduous trees	May-Nov	**Yes**
Lobaria linita	Cabbage lungwort	Lower bole of conifers /often mossy boulders	May-Nov	**Yes**
Nephroma occultum	Cryptic kidney lichen	Tree boles and branches in older forest habitat	May-Nov	No
Pannaria rubiginosa	Brown-eyed shingle lichen	Conifer/deciduous tree bark in moist forest habitat	May-Nov	**Yes**
Peltigera neckeri	Black saddle lichen	Many substrates in moist forest	May-Nov	**Yes**
Peltigera pacifica	Fringed pelt lichen	On moss in moist forest habitats	May-Nov	**Yes**
Pilophorus nigricaulis	Matchstick lichen	Rock on cool north-facing slopes	May-Nov	No
Pseudocyphellaria rainierensis	Specklebelly lichen	Boles of hardwoods and conifers in older forests	May-Nov	No
Ramalina pollinaria	Chalky ramalina	Bark in moist low-elevation habitats	May-Nov	No
Tholurna dissimilis	Urn lichen	Branches of krummolz at moderate to high elevation	Jun-Oct	No
Usnea longissima	Methuselah's beard lichen	Branches of conifers and hardwoods in moist forest	Apr-Nov	**Yes**
Fungi				
Bridgeoporus nobilissimus	noble polypore	Large true fir snags	May-Nov	**Yes**
Cordyceps capitata	Earthtongue	Parasitic on truffles (*Elaphomyces* spp.)	Sept-Oct	**Yes**
Cortinarius barlowensis	Mushroom	Montane coniferous forest to 4,000 ft. elevation	Sept-Nov	**Yes**
Cudonia monticola	Earthtongue	Spruce needles and coniferous debris	Aug-Nov	**Yes**

Gomphus kauffmanii	Mushroom	Terrestrial in deep humus under pine and true fir	Sep-Nov	**Yes**
Gyromitra californica	Mushroom	On/adjacent to rotted confer stumps/logs.	June	**Yes**
Leucogaster citrinus	Truffle	Associated with roots of conifers, up to 6,600 ft. elevation	Aug-Nov	**Yes**
Mycena monticola	Mushroom	Terrestrial in conifer forest above 3,300 ft. elevation	Aug-Nov	**Yes**
Otidea smithii	cup fungi	Under cottonwood, D-fir, and w. hemlock	Aug-Dec	**Yes**
Phaeocollybia attenuata	Mushroom	Terrestrial in conifer forest	Oct-Nov	**Yes**
Phaeocollybia californica	Mushroom	With silver fir, D-fir, and w. hemlock	May, Oct-Nov	**Yes**
Phaeocollybia olivacea	Mushroom	Terrestrial in low-elevation conifer forest	Oct-Nov	**Yes**
Phaeocollybia oregonensis	Mushroom	Associated with roots of silver fir, D-fir, and w. hemlock	Oct-Nov	**Yes**
Phaeocollybia piceae	Mushroom	Terrestrial with true fir, D-fir, and w. hemlock	Oct-Nov	**Yes**
Phaeocollybia pseudofestiva	Mushroom	Under mixed conifers and hardwoods	Oct-Dec	**Yes**
Phaeocollybia scatesiae	Mushroom	With true fir and *Vaccinium* spp	May, Oct-Nov	**Yes**
Ramaria amyloidea	coral fungi	Terrestrial under true fir, D-fir, and w. hemlock	Sep.-Oct.	**Yes**
Ramaria gelatiniaurantia	coral fungi	Terrestrial under true fir, D-fir, and w. hemlock	Oct.	**Yes**
Sowerbyella rhenana	cup fungi	Terrestrial under conifers	Oct.-Dec.	**Yes**

Invasive Plant Risk Analysis and Recommended Design Criteria

To Prevent the Introduction and Spread of Invasive Plants in the Proposed *2007 Plantation Thinning* Project Area

Mt. Hood National Forest, Clackamas River Ranger District

Due to ground disturbance resulting from timber harvest, road building, road reconstruction, skid roads, and landings, the risk of spreading invasive plants is moderate to high because of the presence of invasive species already in the project area and in neighboring areas. To minimize the introduction of new invasive plant species and the spread of existing invasive plant species in the proposed project area, the following project design criteria (PDC) are recommended:

Recommendations for Prevention of the Introduction and Spread of Invasive Plants

Design Criterion 1. Avoid or remove sources of weed seed and propagules to prevent new weed infestations and the spread of existing weeds.

Practice: Clean project equipment (i.e., log trucks, bulldozers, backhoes, Kabota, bobcat, or other equipment) before entering National Forest system lands. Remove mud, dirt, and plant parts; clean wheels, tires, undercarriage, radiator, and any other equipment parts that may harbor weed seed or seed carriers before moving it into a project area. This practice does not apply to service vehicles traveling frequently in and out of the project area that will remain on the roadway.

Design Criterion 2. Prevent the introduction and spread of weeds caused by moving infested sand, gravel, borrow, and fill material in Forest Service, contractor, and cooperator operations.

- Practice: Inspect material sources on site, and ensure that they are weed-free before use and transport. Treat weed-infested sources for eradication, and strip and stockpile contaminated material before any use of pit material.

- Practice: Inspect and document the area, where material from treated weed-infested sources is used, annually for at least three years after project completion to ensure that any weeds transported to the site are promptly detected and controlled.

- Practice: Maintain stockpiled, uninfested material in a weed-free condition.

Design Criterion 3. In those vegetation types with relatively closed canopies, retain shade to the extent possible to suppress weeds and prevent their establishment and growth.

- Practice: Retain native vegetation in and around project activity to the maximum extent possible consistent with project objectives.

Design Criterion 4. Avoid creating soil conditions that promote weed germination and establishment.

- Practice: Minimize soil disturbance to the extent practical, consistent with project objectives.

Design Criterion 5. Where project disturbance creates bare ground consistent with project objectives, re-establish vegetation to prevent conditions for the colonization of weeds.

- Practice: Revegetate disturbed soil (except travelways on surfaced projects) in a manner that optimizes plant establishment for that specific site.
-
- Practice: Revegetation may include topsoil replacement, planting, seeding, fertilization, liming, and weed-free mulching as necessary. Use native plant material from seed or stock originating from or near the area. Use wood strand or weed-seed-free hay or straw. Where practical, stockpile weed-seed-free topsoil and replace it on disturbed areas (e.g., road embankments or landings)

Design Criterion 6. Educate the contractor in simple techniques to avoid spreading weeds.

Practice: Give the flyer, *Simple Things You Can Do to Help Stop the Spread of Weeds,* to the contractor(s) who will implement this project.

David Lebo _____ September 26, 2006

David Lebo, Ecologist/Botanist
Westside Zone Botanist
Mt. Hood National Forest

Date

INVASIVE NONNATIVE PLANTS ARE A SERIOUS THREAT TO HEALTHY FOREST ECOSYSTEMS

SIMPLE THINGS YOU CAN DO TO HELP STOP THE SPREAD OF INVASIVE NONNATIVE PLANTS (WEEDS)

1. LEARN TO IDENTIFY WEEDS. (http://egov.oregon.gov/ODA/PLANT/weed_weedlistcommon.shtml and http://tncweeds.ucdavis.edu/)

2. CONTROL WEEDS WHERE YOU LIVE.

3. IF YOU'VE BEEN WALKING IN AN AREA WITH WEEDS, CHECK YOUR SOCKS, SHOES, AND PANTS FOR SEEDS AND DISPOSE OF THEM IN THE GARBAGE BEFORE LEAVING THE SITE AND BEFORE ENTERING THE NATIONAL FOREST.

4. KEEP VEHICLES AND EQUIPMENT OUT OF WEED PATCHES.

5. IF YOU DID DRIVE THROUGH WEEDS, WASH YOUR VEHICLE'S UNDERCARRIAGE, RADIATOR, TIRES, AND WHEELS, BEFORE ENTERING THE NATIONAL FOREST.

6. KEEP YOUR PETS AND PACK ANIMALS OUT OF WEED PATCHES.

7. FEED PACK ANIMALS PROCESSED FOOD PELLETS BEFORE AND DURING BACKCOUNTRY TRIPS.

8. CLEAN YOUR BOAT, MOTOR, TRAILER, TACKLE, AND GEAR BEFORE LEAVING A LAKE OR RIVER INFESTED WITH AQUATIC WEEDS.

9. BE AN INFORMED GARDENER AND DON'T BUY PLANTS THAT MAY MOVE OFF YOUR PROPERTY.