

Washington Status Factors

Elcode NFSM000126
Gname PHAEOCOLLYBIA PICEAE
Gcomname

Number of Occurrences

B = 6 - 20

Comments 7 known occurrences (represented by ~12 collections) are confirmed from Washington. (Norvell 1995, 1998a; Norvell & Exeter 2003; Castellano 1999; ISMS 2002 database)

Number of Occurrences with Good Viability

C = Few (4-12) occurrences with good viability

Comments There are 7 known extant occurrences.

Population Size

U = Unknown

Comments Records reflect only species occurrence, i.e. fruitbodies, not numbers of individuals. Genets of ectomycorrhizal fungi cannot be delimited without DNA sampling.

Range Extent

C = 250-1,000 km² (about 100-400 square miles)

D = 1,000-5,000 km² (about 400-2,000 square miles)

Comments In Washington, *Phaeocollybia piceae* is known only from Olympic National Park (Norvell 1995, Norvell 1998a; ISMS 2002 database and GIS map for *Phaeocollybia piceae*).

Area of Occupancy

U = Unknown

LU = Unknown

Comments Occupancy is highly spotty and cannot be extrapolated for this organism, which appears restricted to fairly complex environments, preferentially in Sitka spruce habitats. There are large areas of unsuitable habitat within the overall range. Area of occupancy can only be roughly approximated from fungal fruitbodies as the vegetative organism is hidden from sight within the substrate. Ectomycorrhizal fungi have unknown biological and ecological requirements that determine how and when symbiotic associations are formed with partners. (Norvell 1998ab).

Long-term Trend in Population Size, Extent of Occurrence, Area of Occupancy, and/or Number or Condition of Occurrences

E = Relatively Stable ($\pm 25\%$ change)

Comments Due to the spotty nature of the occurrences, it is difficult to project a long-term trend in population size, extent of occurrence, or the area of occupancy. Ectomycorrhizal fungal trends are closely tied to trends for the symbiotic partners (in this case trees). PHPI5 occurs most frequently in coniferous forests, apparently forming preferential symbiotic associations with *Picea sitchensis*. Current populations appear stable and are inferred to be long-lived; individuals are less

dependent upon spore dispersal than upon mycelial interactions with other individuals and their mycorrhizal partners. Absent human interference, the trend is considered to be stable over the long term. (Norvell 1998a, 2002 pers comm)

Short-term Trend in Population Size, Extent of Occurrence, Area of Occupancy, and/or Number or Condition of Occurrences

E = Stable. Population, range, area occupied, and/or number or condition of occurrences unchanged or remaining within $\pm 10\%$ fluctuation

Comments Ectomycorrhizal fungal trends are inextricably linked to the trends for the symbiotic partners, in this case trees. Road construction, hot fires, clearcutting, or development that displaces the tree partner will compromise both tree and fungus. Current occurrences of *Phaeocollybia piceae* are uncommon. 5 extant occurrences lie in currently and permanently protected forest reserves; therefore the species is believed to be secure over the short-term (Norvell 1998a, pers comm 2002; ISMS 2002 data).

Threats

G = Slightly threatened. Threats, while recognizable, are of low severity, or affecting only a small portion of the population, occurrences, or area. Ecological community occurrences may be altered in minor parts of range or degree of alteration falls within the natural variation of the type.

Scope	Low	Severity	Low	Immediacy	Low
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Comments Whatever threatens the extant forest will threaten the fungus. This species has been collected from late-successional and old growth forests. Populations are inferred to be long-lived, from the fact that collections have been made in the type locality in Oregon from 1970 to 1998 (Norvell 1995, 1998a; ISMS 2002 database). Like the forest, *Phaeocollybia piceae* is threatened by hot fires, road construction or other development, and clearcutting (Norvell pers comm 2002).

Number of Appropriately Protected and Managed Occurrences

C = Several (4-12) occurrences appropriately protected and managed

Comments ISMS (2002) and Norvell (1998a) cite a combined total of 5 occurrences in permanently protected preserves.

Intrinsic Vulnerability

A = Highly Vulnerable. Species is slow to mature, reproduces infrequently, and/or has low fecundity such that populations are very slow (> 20 years or 5 generations) to recover from decreases in abundance; or species has low dispersal capability such that extirpated populations are unlikely to become reestablished through natural recolonization (unaided by humans). Ecological community occurrences are highly susceptible to changes in composition and structure that rarely if ever are reversed through natural processes even over substantial time periods (> 100 years).

B = Moderately Vulnerable. Species exhibits moderate age of maturity, frequency of reproduction, and/or fecundity such that populations generally tend to recover from decreases in abundance over a period of several years (on the order of 5-20 years or 2-5 generations); or species has moderate dispersal capability such that extirpated populations generally become reestablished through natural recolonization (unaided by humans). Ecological community occurrences may be susceptible to changes in composition and structure but tend to recover through natural processes given reasonable time (10-100 years).

Comments Ectomycorrhizal fungal vulnerability is linked to that of the symbiotic partner (here preferentially *Picea sitchensis*). This fungus is thought to be long-lived, but also relatively slow-growing; with climax communities occur in older stands, such as the ancient forest in the lower Carmanah Valley, in Vancouver Island. (Norvell 1998ab). It is vulnerable to anything that threatens the forest habitat, including hot fires, road construction and development, and clearcutting.

Environmental Specificity

B = Narrow. Specialist or community with key requirements common.

Comments Phaeocollybia piceae is generally found in complex mid to late-successional or old-growth coniferous rainforests where it preferentially forms symbiotic partnerships with Sitka spruce and possibly western hemlock. Its precise biological and ecological requirements are unknown. It generally is found in sandy to well-drained humic soils at low to medium elevations along the Pacific coast and ~80 miles inland from BC to CA. Like all Phaeocollybias, it is extremely patchy in distribution. Young fruitbodies are thought to develop from senescing pseudorhizae buried deep within the soil (Norvell 1998ab).

Other Considerations

Phaeocollybia piceae There are no known synonyms. P piceae is known only from the northern spotted owl region. Distribution is patchy and unpredictable and all centered around the spruce reserves in Olympic National Park. Additional occurrences may be found in late-successional or unexplored old-growth forests containing Picea sitchensis or Tsuga heterophylla. Phaeocollybia piceae is uncommon, but there appear to be sufficient protected sites in its known Washington range. (Norvell 1998a, 2002 pers comm).

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Reasons

Phaeocollybia piceae is uncommon in Washington and is endemic and restricted to the western half of the spotted owl region in North America. There are 7 extant occurrences (represented by ~10 collections), of which ~5 lie in permanently protected forest reserves. Its patchy distribution precludes estimation of population size and area of occupancy. Current known populations are thought to be stable barring human interference or hot fires. Unprotected occurrences will be threatened moderately to highly by road construction & development and clearcutting or heavy thinning.

BCD Sources

New Sources

Norvell. 1998a. The biology and taxonomy of Pacific Northwest species of Phaeocollybia Heim. 391 pp. ALSO Norvell. 1998b. . Observations on the development, morphology, and biology of Phaeocollybia. Mycological Research 102:615-630. ALSO Norvell. 1995. ROD: Strategy 1 Fungal Species Evaluation (30 gilled and non-gilled Basidiomycete Strategy 1 species). Unpubl. report on file in the Regional Mycology Lab, Corvallis, Oregon. ALSO Norvell & Exeter. 2003 in press. Ectomycorrhizal epigeous basidiomycete diversity in Oregon's coast montane Pseudotsuga menziesii forests. New York Botanical Memoirs. ALSO Castellano et al. 1999. Handbook to Strategy 1 Fungal Species in the Northwest Forest Plan. USDA-FS PNWRS PNW-GTR-476. ALSO ISMS GIS map on PHPI5