

Oregon Status Factors

Elcode NFSM000126
Gname PHAEOLLYBIA PICEAE
Gcomname

Number of Occurrences

C = 21- 80

Comments 25 known occurrences (represented by ~51 collections) are confirmed from Oregon. (Norvell 1995, 1998a; Norvell & Exeter 2003; ISMS 2002 database)

Number of Occurrences with Good Viability

D = Some (13-40) occurrences with good viability

Comments There are 23 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

F = 20,000-200,000 km² (about 8,000-80,000 square miles)

Comments In Oregon, *Phaeocollybia piceae* ranges from from Oswald West State Park along the Pacific coast south to the Siuslaw National Forest and east to the southwest slope of Mt. Hood and south along the Willamette Valley fringe southeast of Corvallis (Norvell 1998a, Norvell & Exeter 2003; 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 as 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). *Phaeocollybia piceae* 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 in Oregon 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 to rare. Approximately 19 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

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 at or near the type locality in the Cascade Head Experimental Forest 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

Comments ISMS (2002), Norvell (1998a), and Norvell & Exeter (2003) cite 15-19 occurrences in protected areas: 2 in permanently protected preserves, 9 in late-successional reserves, and 2-8 in riparian reserves. If governmental management policies dictate opening late-successional and/or riparian reserves to clearcutting, road construction, or other development, the number of protected and managed occurrences could dramatically decrease to 2 (Rank B) or decrease additionally if there are no spruce-based forests to support viable populations. Additionally, many sites in temporary reserves may not be managed appropriately at the present time.

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

ORNHIC - List 4. There are no known synonyms. *Phaeocollybia piceae* is known only from the northern spotted owl region and is rare in California, with no protected occurrences. Distribution everywhere is patchy and unpredictable. Additional occurrences may be found in late-successional or unexplored old-growth forests containing *Picea sitchensis* or *Tsuga heterophylla*. (Norvell 1998a, 2002 pers comm; ISMS 2002 data). *Phaeocollybia piceae* is uncommon in Oregon, but there appear to be sufficient currently protected sites unless late-successional reserves are opened to development, road construction, or clearcutting. (Norvell 1998a, 2002 pers comm).

Edition 11/20/2002 **Edauthor** Lorelei L Norvell

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Reasons

Phaeocollybia piceae is uncommon in California and is endemic and restricted to the western half of the spotted owl region in North America. There are 23 extant occurrences represented by ~51 collections, of which 15-19 lie in currently protected forest reserves. Its patchy distribution precludes estimation of population size and area of occupancy. The current known populations are thought to be stable barring human interference. Unprotected occurrences will be moderately to highly threatened by road construction, development and clearcutting or heavy thinning. All occurrences are imperiled by hot fires.

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