

# California Status Factors

**Elcode** NFSM000126  
**Gname** PHAEOCOLLYBIA PICEAE  
**Gcomname**

## Number of Occurrences

A = 1 - 5

**Comments** 3 known occurrences (represented by 3 collections) are confirmed from California. (Norvell 1995, 1998a; Castellano 1999; ISMS 2002 database)

## Number of Occurrences with Good Viability

B = Very few (1-3) occurrences with good viability

**Comments** There are 2 known extant occurrences (the 1936 occurrence is now believed to lie in a non-forested zone; Norvell pers comm 2002).

## 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

E = 5,000-20,000 km<sup>2</sup> (about 2,000-8,000 square miles)

**Comments** In California, *Phaeocollybia piceae* is known only from the Arcata/Trinidad area and from one 1992 collection in Jackson State Forest near Mendocino. (Norvell 1998ab; ISMS 2002 database and map for *Phaeocollybia piceae*). The 1992 Jackson State Forest collection appeared far less vigorous than collections made from BC, WA, and OR. (Norvell pers comm 2002).

## 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

B = Large Decline (decline of 75-90%)

C = Substantial Decline (decline of 50-75%)

D = Moderate Decline (decline of 25-50%)

**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* forms preferential symbiotic associations with *Picea sitchensis*; the outlier small collection from Jackson State Forest occurred outside the spruce zone and seemingly at the southern extent of the range. Neither CA population is protected and so they appear at risk to human interference. Individuals are less dependent upon spore dispersal than upon mycelial interactions with other individuals and their mycorrhizal partners. (Norvell 1998a, 2002 pers comm; ISMS 2002 data; ONH reserve data )

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

C = Rapidly Declining. Decline of 30-50% in population, range, area occupied, and/or number or condition of occurrences

D = Declining. Decline of 10-30% in population, range, area occupied, and/or number or condition of occurrences

**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. *Phaeocollybia piceae* occurrences are rare in California with only 2 known extant occurrences, neither of which lie in protected forest reserves. The occurrence at the most extreme southern end of the known range for the species when last sampled in 1992, was not in good condition (although that may have been tied to the season). The species may be declining over the short term in California. It is also possible that additional occurrences will be located. (Norvell 1998a, pers comm 2002; ISMS 2002 data).

### **Threats**

B = Moderate and imminent threat. Threat is moderate to severe and imminent for a significant proportion (20-60%) of the population, occurrences, or area. Ecological community occurrences are directly impacted over a moderate area, either causing irreversible damage or requiring a long-term recovery.

Scope Moderate Severity Moderate Immediacy Moderate

**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). Given that neither of the two known extant occurrences lie within protected forest reserves, the species may be at risk in California.

### **Number of Appropriately Protected and Managed Occurrences**

A = None. No occurrences appropriately protected and managed

**Comments** ISMS (2002), and Norvell (1998a), and Norvell & Exeter (2003) cite only 3 occurrences (one no longer extant). Neither are in protected reserves.

### **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** PHPI5 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

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).

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## Reasons

*Phaeocollybia piceae* is rare in California where it is at the southern extreme of its overall range and is restricted to the western half of the spotted owl region in North America. There are 2 extant (out of 3 total) occurrences represented by 2 (3) collections, of which none (0) lie in protected forest reserves. Its patchy distribution precludes estimation of population size and area of occupancy. The current known populations may be stable, barring human interference, although the southernmost collection appeared "frail" when collected in 1992. Both extant occurrences are inferred to be imperiled by hot fires, 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