

## Heritage Rank Status Factors

**Elcode** NFSM000122  
**Gname** PHAEOLLYBIA KAUFFMANII

**Gcomname**

### Number of Occurrences

D = 81 - 300

**Comments** Approximately 150 verified occurrences have been confirmed for this organism, of which at least ~90 are believed extant (these include occurrences known to this contractor that have been collected since 1991). (Norvell 1998ac, pers. comm. 2002; Dreisbach et al. 2002; ISMS database 2002; Castellano 1999).

### Number of Occurrences with Good Viability

E = Many (41-125) occurrences with good viability

**Comments** At least 76 occurrences are believed by this author to still exist.

### 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 km<sup>2</sup> (about 8,000-80,000 square miles)

**Comments** Endemic to the northern spotted owl region within western North America. Known from Vancouver Island and the Vancouver area in British Columbia south along the Pacific coast to the Santa Cruz Mountains in California and east to Mt Baker and south along the western slope of the Cascades to southeast of Eugene. (Norvell 1995, 1998bc, ISMS map for *Phaeocollybia kauffmanii*). One isolated population was verified from Idaho in 1992. Excluded from the range estimate above is a questionable collection from Vermont, the only known specimen of which is immature.

### 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. It is only possible to estimate area of occupancy from fungal fruitbodies as the larger vegetative organism is hidden underground. The species has unknown biological and ecological requirements that determine how and when ectomycorrhizal associations are formed with coniferous partners. The fungus fruits sporadically (not annually).

### 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 stability in general is tied to the stability of the coniferous partner trees. It would be fair to estimate a long-term trend in population size based on the forest trend. The species appears restricted to mature (i.e. 65 year old) to late-successional/old-growth forests and has not been collected from disturbed habitats. It appears to grow slowly and is less dependent upon spore dispersal than on associations with mycorrhizal partners. (Norvell 1998ab)

### **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 stability in general is tied to the stability of the coniferous partner trees. It would be fair to estimate a short-term trend in population size based on the forest trend.

### **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** Ectomycorrhizal fungal stability depends on the stability of the coniferous partners, so that what threatens the extant forests threaten the organism. This species has been collected from 35 year old plantations and so does not appear restricted to late-successional/old-growth forests (Norvell 1998ab, Norvell 2000, Norvell pers comm. 2002). Nonetheless, the organism appears long-lived and appears to grow slowly (Norvell 1998ab, Norvell 2000, Norvell pers comm 2002). Would be threatened by hot fires, development, and heavy logging activities.

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

D = Many (13-40) occurrences appropriately protected and managed  
E = Very many (>40) occurrences appropriately protected and managed

**Comments** ISMS 2002 which includes historical occurrences with extant occurrences, cites 40 occurrences in non-protected areas, 14 in permanent protected preserves, 48 in late-successional reserves, and possibly 8 in riparian reserves. Extant occurrences lie in 40 permanent + late-successional reserves (Dreisbach et al. 2002; Norvell pers comm 2002). If governmental management policies dictate opening late-successional and/or riparian reserves to development or logging, the number of protected and managed occurrences would be ranked as "D". It is also not known whether the sites in the temporary reserves are managed sufficiently to ensure their survival.

### **Intrinsic Vulnerability**

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 generally is linked to that of the coniferous partner trees. Although *Phaeocollybia kauffmanii* has been found in 35-year old plantations (generally associated with legacy trees), the species is thought to be relatively slow-growing (Norvell 2000, pers comm 2002). It is vulnerable to anything that threatens the forest habitat, including hot fires, heavy logging (not moderate to light thinning) Norvell pers. Comm. 2002), and development.

### **Environmental Specificity**

C = Moderate. Generalist or community with some key requirements scarce.

**Comments** *Phaeocollybia kauffmanii* is restricted to moist mesic coniferous forests. It is associated with closed-canopy stands containing *Tsuga heterophylla*, *Picea sitchensis*, *Pseudotsuga*, *Abies* or mixed stands with *Sequoia*, *Lithocarpus*, *Tsuga*, *Abies*, and *Pseudotsuga* present. (Norvell 1998ab, Norvell 2000) It appears to grow slowly, but its precise biological and ecological requirements are not known.

## Other Considerations

NRANK - N4. Distribution is patchy and the organism can be difficult to identify when the fruitbody has aged (Norvell 2002). Additional occurrences are to be expected in late-successional or unexplored old-growth forests. There are numerous protected sites.

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## Reasons

Endemic to the northern spotted owl region within western North America. Known from Vancouver Island and the Vancouver area in British Columbia south along the Pacific coast to the Santa Cruz Mountains in California and east to Mt. Baker and south along the western slope of the Cascades to southeast of Eugene.

*Phaeocollybia kauffmanii* occurs in enough protected reserves that it should not be threatened by heavy logging or development. It remains vulnerable to hot fires. Total predicted occurrences is probably around ~350 within its overall range. Large areas within the overall range, however, lack the appropriate habitat. The sole Idaho collection was made from Couer d'Alene County in a very moist regime where the forest had developed the same complexity that this fungus requires. The spotty distribution and unpredictable phenology complicate ranking this organism.

## 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. 2000. *Phaeocollybia* in North America 1. *Can. J. Bot.* 78:1055-1076. 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 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 for PHKA5