

Washington Status Factors

Elcode NFSM000122
Gname PHAEOCOLLYBIA KAUFFMANII
Gcomname

Number of Occurrences

D = 81 - 300

Comments In Washington approximately 15 verified occurrences have been confirmed for this organism, of which at least 4-6 are probably still extant (these include occurrences known to this contractor that have been collected since 1991). (Norvell 1995, 1998a, Norvell 2000, pers. comm. 2002; Dreisbach et al. 2002; ISMS database 2002; Castellano 1999).

Number of Occurrences with Good Viability

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

Comments At least 4-6 occurrences are believed by this author still to 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 km² (about 8,000-80,000 square miles)

Comments Endemic to western North America, in Washington *P. kauffmanii* has been collected from the Washington border south along the Pacific coast to the Oregon border and east to Mt Baker and south along the western slope of the Cascades to north of Mt Hood. (Norvell 1998abc, Norvell 2000; ISMS map for PhKA5).

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. Area occupancy can only be estimated from fungal fruitbodies as the larger vegetative organism is hidden underground. The species has unknown biological and ecological requirements that determine how and when mycorrhizal associations are formed with its symbiotic 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 LSOG 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 LSOG 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

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

Comments ISMS 2002 which includes historical occurrences with extant occurrences, cites 4 occurrences in permanent protected preserves, 6 in late-successional reserves, and possibly 1 in riparian reserves. If governmental management policies dictate opening late-successional and/or riparian reserves to development or logging, the 11 protected and managed occurrences would be decreased to 4. 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 *P. 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 *P. 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

P. kauffmanii is perhaps the most widely distributed *Phaeocollybia* in the northern spotted owl region, but occurrences are uncommon to rare in Washington. However, its distribution and phenology are patchy and unpredictable (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

P. kauffmanii occurs in sufficient protected reserves that it should not be threatened by heavy logging or development. It still remains vulnerable to hot fires. Total predicted occurrences is probably around ~50 in Washington. Large areas within the overall range, however, lack the appropriate habitat to foster and preserve occurrences. 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.

Norvell. 1998b. . Observations on the development, morphology, and biology of *Phaeocollybia*. *Mycological Research* 102:615-630.

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

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.

Castellano et al. 1999. Handbook to Strategy 1 Fungal Species in the Northwest Forest Plan. USDA-FS PNWRS PNW-GTR-476.

ISMS GIS map for PHKA5