

California Status Factors

Elcode NFSM000118
Gname PHAEOCOLLYBIA CALIFORNICA
Gcomname

Number of Occurrences

A = 1 - 5

Comments The ISMS 2002 database erroneously cites 6 *P. californica* occurrences in the northern spotted owl region. When the current author evaluated herbarium collections, she accepted the synonymy of *P. scatesiae* with *P. californica* proposed in 1977. After formal recognition of two separate species in 1998, Norvell notified the Regional Mycology Lab regarding the change in taxonomic status, but correction to the existing database appears incomplete. Only 2 of the original 3 California citations submitted represent *P. californica*. The 2002 ISMS database and *P. californica* map both list 1 original *P. scatesiae* site in California. For the time being only 4 occurrences personally inspected by this author, are cited here. (Norvell 1995, 1998ab, pers. comm. 2002).

Number of Occurrences with Good Viability

A = No (A- or B- ranked) occurrences with good viability

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

Comments Due to taxonomic confusion between *P. californica* and *P. scatesiae* in the ISMS database, no occurrences can be recognized as extant in California, although the 1986 collection from Murray Road near McKinleyville may be extant (Norvell 1998a; not on the ISMS database). Although the fungus is very rare, it is likely that more occurrences are in California where *Quercus* (or possibly *Lithocarpus*) is found.

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 km² (about 2,000-8,000 square miles)

Comments Endemic to the northern spotted region in western North America, in California *Phaeocollybia californica* is historically known south from Jedediah Smith State Park to McKinleyville and east to Castle Crags State Park. The ISMS 2002 *Phaeocollybia californica* map shows two species: *P. californica* and *P. scatesiae*. From 1977 until 1998, the two species were considered synonymous.

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. For fungi one can only estimate the area of occupancy from fruitbodies as the vegetative organism is underground and has unknown biological and ecological requirements that determine how and when ectomycorrhizal associations are formed with coniferous host trees. The fungus fruits sporadically (not annually) and produces many small

scattered fruitbodies.

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%)

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 that contain *Quercus* or (possibly) *Lithocarpus*. The recent rise in sudden oak death in California means that in that state the populations are greatly imperiled (Norvell 2002 pers comm).

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 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. In this instance, the presumed mycorrhizal association with fagaceous partners and the recent appearance of the sudden oak death *Phytophthora* infection places this species at risk (Norvell 2002 pers comm). A few questionable collections have been confirmed by this author; two were reported from strictly coniferous forests.

Threats

A = Substantial, imminent threat. Threat is moderate to severe and imminent for most (> 60%) of the population, occurrences, or area. Ecological community occurrences are directly impacted over a widespread area, either causing irreversible damage or requiring long term recovery

Scope High

Severity High

Immediacy High

Comments Ectomycorrhizal fungal stability depends on the stability of the symbiotic partners, so that what threatens extant forests threaten the organism. This species appears restricted to late-successional/old-growth mixed coniferous-fagaceous forests (Norvell 1998ab, Norvell pers. comm. 2002). It also appears to grow slowly. (Norvell 1998ab) Would be threatened by hot fires, development, and heavy logging activities. The most immediate and serious threat is the rise of the *Phytophthora* pathogen in California forests associated with "sudden oak death", the presumed preferred mycorrhizal partner of *P. californica*.

Number of Appropriately Protected and Managed Occurrences

A = None. No occurrences appropriately protected and managed

B = Few (1-3) occurrences appropriately protected and managed

Comments Of the 4 verified historical occurrences of *Phaeocollybia californica* from California, 2 lie in permanently protected forests (Castle Crags State Park, Jedediah Smith State Park) that have not been logged or developed.

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 generally is linked to that of the coniferous partner trees. *P. californica* is thought by this author (Norvell pers comm 2002) to associate preferentially with *Quercus* (Norvell 1998a, pers comm 2002). It is therefore vulnerable with its associate to hot fires, heavy logging (not moderate to light thinning), and the *Phytophthora* causing "sudden oak death" in California and southern Oregon, Norvell pers. Comm. 2002).

Environmental Specificity

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

Comments The species appears to prefer habitats in which *Quercus* (or possibly *Lithocarpus*) is present, although a few questionable collections have been made from strictly coniferous forests. Precise biological and ecological requirements beyond moist forests are unknown at this time. (Norvell 1998ab, pers comm 2002).

Other Considerations

The onset of sudden oak death in California and southern Oregon threatens the presumed preferred mycorrhizal partner. There is confusion in the ISMS 2002 database resulting from dissolution of the 1977-1998 synonymy of the sympatric species, *P. californica* and *P. scatesiae*, (Norvell 1998a).

Edition 11/18/2002 **Edauthor** Lorelei L Norvell

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Reasons

No populations are confirmed as extant in California by this author, although a 1986 occurrence may still survive. More species may be found in areas where *Quercus* is more common and still healthy. There are 2 protected sites of historical occurrences. The species should be considered uncommon to rare and at risk. The most immediate threat is infection of its presumed preferred mycorrhizal partner by the *Phytophthora* species causing "sudden oak death". The populations are also at risk from hot fires, heavy logging, or development. Total predicted occurrences may be ~10 in the state and reinspection of recent collections may confirm some collections in the ISMS database as representing *P. californica*. The spotty distribution and unpredictable phenology common to all phaeocollybias 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. 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 2002 database with ISMS GIS PHCA40 map. [NOTE: the ISMS database and map are unreliable and need to be altered.]