

# Heritage Rank Status Factors

**Elcode** NFSM000183  
**Gname** STAGNICOLA PERPLEXA  
**Gcomname**

## Number of Occurrences

B = 6 - 20  
C = 21 - 80

**Comments** Data on the number of occurrences worldwide for STPE11 are unavailable, but the species is regarded rare and restricted to coniferous boreal forests (Laber & Marklund 1992); Watling et al. (1993) report 2 and Laber & Marklund (1992) report one known occurrence from Europe. Redhead & Smith (1986) list 19 collections from North America. In the northern spotted owl region of the US, 9 occurrences represented by 9 collections are known for Oregon (2) and Washington (9) (Redhead & Smith 1986, Norvell 1998, ISMS-ONH 2002, which cites only 7 of the data reported by Norvell 1998). No occurrences are confirmed for California. Continued fungal surveys may uncover more sites.

## Number of Occurrences with Good Viability

U = Unknown what number of occurrences with good viability

**Comments** Too few collections of the fungus have been made and many of the data are too fragmentary to estimate the number of extant occurrences, either worldwide or within the region of the northern spotted owl. In the US part of the region, 4 of the 9 known occurrences were collected since 1987, for which only 2 have sufficient site data to facilitate searching known sites for extant occurrences.

## Population Size

U = Unknown

**Comments** Records reflect only species occurrence, i.e. fruitbodies, not numbers of individuals. Fungal genets cannot be delimited without DNA sampling.

## Range Extent

H = > 2,500,000 km<sup>2</sup> (greater than 1,000,000 square miles)

**Comments** Known from scattered collections from the boreal forests of Europe (Scotland, Germany; cf Redhead & Smith 1986; Laber & Marklund 1992, Watling et al 1993), Canada (Newfoundland, Ontario, British Columbia; cf Redhead & Smith 1986) and the United States (New York, Michigan, Idaho, Washington, Oregon; cf Redhead & Smith 1986, Norvell 1998, ISMS Database 2002 and GIS map for STPE11).

## Area of Occupancy

U = Unknown

LU = Unknown

**Comments** Area occupancy can only be roughly approximated from fungal fruitbodies as the vegetative organism is hidden from site within the substrate. Saprophytic/bryophilous fungi have spotty distributions that are tied to the presence of appropriate substrates.

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

U = Unknown. Long-term trend in population, range, area occupied, or number or condition of occurrences unknown

**Comments** STPE11 is saprophytic on very rotten conifer wood in boggy or wet areas or recently dried depressions in boreal coniferous forests. Individuals are thought to reproduce through spore dispersal and mycelial interactions with other individuals. Longevity of individuals and populations is unknown. Incidental catastrophic events and/or removal of the substrate and habitat may have or may yet imperil known populations. Its rarity, spotty distribution and/or the lack of adequate information on its biological requirements & current habitats at historical preclude estimating long- or short-term trends for STPE11 (Norvell 2002 pers comm).

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

U = Unknown. Short-term trend in population, range, area occupied, and number and condition of occurrences unknown.

**Comments** See above. STPE11's rarity, spotty distribution and/or the lack of adequate information on its biological requirements & current habitats at historical preclude estimating long- or short-term trends for STPE11 (Norvell 2002 pers comm).

## Threats

U = Unknown. The available information is not sufficient to assign degree of threat as above. (Severity, scope, and immediacy are all unknown, or mostly [two of three] unknown or not assessed [null].)

|       |          |          |         |           |         |
|-------|----------|----------|---------|-----------|---------|
| Scope | Moderate | Severity | Unknown | Immediacy | Unknown |
|-------|----------|----------|---------|-----------|---------|

**Comments** STPE11 is known from primarily LSOG forested areas on rotten conifer wood and chips in boggy areas or wet depressions. Whatever threatens the substrate, microclimate, and/or general habitat can imperil the associated organism. All populations are at risk to incidental catastrophic events, such as hot fires, and unmonitored human interference. Unprotected occurrences are at risk from logging activities such as brush clearing or removal of the substrate and underlying soil. The rarity of known occurrences increases the scope of the estimated threat at this time (Norvell pers comm 2002).

## Number of Appropriately Protected and Managed Occurrences

U = Unknown whether any occurrences are appropriately protected and managed

**Comments** The number of protected occurrences outside the northern spotted owl region is unknown. Within the region in the US, ISMS-ONH (2002) places 7 known sites in protected areas: 4 in congressionally withdrawn forests and 3 in late-successional forest reserves. The opening of late-successional to logging, road construction, or development could decrease the protected occurrences to 4. In addition, the 2 supposedly protected sites in Oregon are only approximations of the actual occurrence sites (see Oregon). Presumably no protected site is managed specifically for STPE11 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** STPE11 is particularly vulnerable to removal of substrate and underlying soil, and destruction of habitat through incidental catastrophic events (climate change brought on by global warming, hot fires, drought) or human interference. It is particularly vulnerable to alteration of microhabitats and microclimate regimes caused by logging activities, stream diversion, road construction, and development (Norvell 2002 pers comm.).

## Environmental Specificity

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

**Comments** STPE11 is generally found in coniferous boreal forests where it produces gregarious fruitbodies on very rotten coniferous wood or chips in boggy areas or recently dried depressions. There is an inferred (but not statistically demonstrated) preference for late-successional to old-growth forests. Its precise biological and ecological requirements are unknown. It fruits in the late summer to early autumn in the northern spotted owl region, but its phenology is unpredictable and occurrence erratic.

## Other Considerations

NRANK - N1N2. *Stagnicola perplexa* (Orton Redhead & Smith Can J Bot. 64: 65. 1986.) is the type species for a monotypic genus molecularly shown to belong to *Euagarics Incertae Sedis*: within the *Euagarics* but well separated other the other 876 homobasidiomycete taxa tested in that paper (Moncalvo et al. 2002), including *Psilocybe*. Its previous synonym is *Phaeocollybia perplexa* Orton.

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## Reasons

STPE11, saprophytic on coniferous wood, is a rare species endemic to coniferous boreal forests. Collection data on historical and extant occurrences are not sufficient to demonstrate its rarity statistically. Within the northern spotted owl region only 9 sites have been documented, of which 7 collections provide locality data. 7 known sites currently lie in protected forest reserves. Its unknown biology precludes estimation of population size, area of occupancy, and long- and short-term trends. All populations are at risk to incidental catastrophic events such as wildfire and anything that removes or destroys the substrate and underlying soil and/or its surrounding habitat.

## BCD Sources

### New Sources

Norvell. 1998. ROD: Strategy 3 Fungal Species Evaluation (11 gilled Basidiomycete Strategy 3 species).

Unpubl. report on file at the Regional Mycology Lab, Corvallis, Oregon.

Redhead & Smith. 1986. Two new genera of agarics based on *Psilocybe corneipes* and *Phaeocollybia perplexa*. Can J Bot 64: 643-647.

Watling, Gregory, Orton. 1993. *Stagnicola*. IN British fungus flora Agarics & Boleti 7. Edingurgh: Royal Botanic Garden.

Laber & Marklund. 1992. *Stagnicola perplexa* (Orton) Redhead & Smith <- *Agaricus ciaris* var *minor* Fries, eine sehr seltene Art in Europa? Zeitschrift für Mykologie 58: 53-56 [German].

ISMS-ONH. 2002. ISMS data; ONH protection extrapolations; GIS map for STPE11.

Moncalvo, Vilgalys, Redhead + 11 other authors. 2002. One hundred and seventeen clades of euagarics. Molecular Phylogenetics and Evolution 23: 357-400.