

# Washington Status Factors

**Elcode** NFSM000042  
**Gname** CORTINARIUS OLYMPIANUS  
**Gcomname**

## Number of Occurrences

B = 6 - 20

**Comments** There are 17 reported occurrences represented by 26 collections of *Cortinarius olympianus* from Washington. Continued fungal surveys may uncover more sites. (Smith 1939; Norvell 1995; ISMS 2002/ONH data)

## Number of Occurrences with Good Viability

D = Some (13-40) occurrences with good viability

**Comments** 14 occurrences are believed extant of which 10 lie in currently protected reserves.

## 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** Restricted to the northern spotted owl region in Pacific Northwest North America. Known sites range from Bainbridge Island and the Olympic Peninsula east to Easy Pass in Okanagan County then south within the Cascade Mountains to the Oregon border. (Norvell 1995; ISMS Database 2002 and GIS map for *Cortinarius olympiana*).

## Area of Occupancy

U = Unknown

LU = Unknown

**Comments** Area of occupancy can only be roughly approximated from fungal fruitbodies as the vegetative organism is hidden from site within the substrate; its distribution is spotty and it appears restricted to fairly complex habitats. *Cortinarius olympiana* has unknown biological and ecological requirements that determine how and when symbiotic associations are formed with partners. (Norvell pers comm 2002)

## 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** *Cortinarius olympiana* is an ectomycorrhizal fungus dependent upon the health of its symbiotic partner for its existence. Spotty distribution and lack of sufficient data complicate projection of long-term trends for fungi. *Cortinarius olympiana* is symbiotic with *Abies*, *Picea*, and *Tsuga* and is historically reported from late-successional/old-growth forests. Individuals are less dependent

upon spore dispersal than upon mycelial interactions with other individuals and their mycorrhizal partners. Long-term trends of current populations are considered stable barring natural catastrophes (hot fires) or human interference (see threats). There are 10 currently protected occurrences in WA. (Norvell 1995, ISMS/ONH 2002 data)

### 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** Cortinarius olympiana is an ectomycorrhizal fungus dependent upon the health of its symbiotic partner/s (Tsuga, Picea, or Abies). Natural catastrophes or human activities that imperil the health of these conifers will compromise both tree and fungus. Current known occurrences of Cortinarius olympiana are uncommon but 10 occurrences lie in currently protected reserves. The species is believed to be stable over the short term (Norvell 1995; ISMS/ONH 2002 data).

### Threats

E = Localized substantial threat. Threat is moderate to severe for a small but significant proportion of the population, occurrences, or area. Ecological community occurrences are directly impacted over a small area, or in a small portion of their range, but threats require a long-term recovery.

Scope Low Severity Moderate Immediacy Low

**Comments** Cortinarius olympiana has been historically reported primarily from old-growth forests, where it is associated with Tsuga, Picea, and/or Abies. Populations are inferred to be long-lived: e.g. the type locality in Washington has been successfully sampled in 1935 and 1992. (Norvell pers comm 2002). Whatever threatens an extant forest and its symbiotic partners will threaten Cortinarius olympiana, which is imperiled by hot fires, road construction or other development, and clearcutting. (Norvell pers comm 2002). The age of the current successfully surveyed forests is not known; these data will help determine the forest age specificity of Cortinarius olympiana. Dr Joe Ammirati and/or Dr Michelle Seidl of the University of Washington should be contacted for additional information on Cortinarius olympiana populations.

### Number of Appropriately Protected and Managed Occurrences

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

**Comments** ISMS (2002) and Norvell (1995) together cite 10 occurrences in protected areas: 7 in permanent protected preserves and 3 in late-successional reserves. If late-successional reserves are opened to clearcutting, road construction, or other development, the number of protected and managed occurrences could decrease to 7.

### 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 health is linked to that of the symbiotic partner (here trees). Fungal populations appear to be relatively longlived in view of the two collections at the protected type

locality in 1935 and 1992 (Smith 1939, Norvell 1995). It is vulnerable to anything that threatens the forest habitat, including drought, insect infestations, hot fires, road construction and development, and clearcutting. More information is needed as to *Cortinarius olympiana*'s presence in early to mid-successional stands.

## Environmental Specificity

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

**Comments** *Cortinarius olympiana* is generally found in complex coniferous forests where it forms symbiotic partnerships with *Tsuga*, *Picea*, and/or *Abies*. Its precise biological and ecological requirements are unknown. It generally is restricted to the western hemlock zone in the northern spotted owl region (Norvell pers comm 2002).

## Other Considerations

No synonyms of *Cortinarius olympiana* A. H. Smith are known. The fruitbody is striking and likely to be noticed during surveys; its chemical responsivity to KOH facilitates identification. Additional extant occurrences are anticipated in Washington where there have been fewer Survey & Manage surveys than in Oregon and California. Dr Joe Ammirati and/or Dr Michelle Seidl of the University of Washington should be contacted for additional information on *Cortinarius olympiana* taxonomy and populations.

**Edition** 11/22/2002      **Edauthor** Lorelei L Norvell

**Grank** S4?      **Grank Date** 11/22/2002

## Greasons

*Cortinarius olympiana* is somewhat uncommon in Washington. There are 14 estimated extant occurrences, of which 10 lie in currently protected forest reserves. Its patchy distribution precludes estimation of population size and area of occupancy. *Cortinarius olympiana* is an ectomycorrhizal fungus dependent upon the health of its symbiotic partner (*Tsuga*, *Picea*, and/or *Abies* spp). Current known populations are believed relatively stable, barring natural catastrophe or human interference. Unprotected occurrences are at risk to road construction & development and clearcutting or heavy thinning. All occurrences are imperiled by hot fires.

## BCD Sources

## New Sources

Smith. 1939. Studies in the genus *Cortinarius* 1. Contrib. Univ. Michigan Herbarium, No 2: 13. ALSO Smith. 1942. New & unusual *Cortinarii* from Michigan with a key to the North American species of subgenus *Bulbopodium*. Bull. Torrey Bot. Club 69(1): 44-64. ALSO Norvell . 1995. ROD: Strategy 1 Fungal Species Evaluation (30 gilled and non-gilled Basidiomycete Strategy 1 species). Unpubl. report on file at the Regional Mycology Lab in in 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 GIS map for COOL4.