

# Heritage Rank Status Factors

**Elcode** NFSM000079

**Gname** GOMPHUS BONARII

**Gcomname**

## Number of Occurrences

D = 81 - 300

E = >300

**Comments** There are at least 134 verified occurrences of GOBO2 represented by at least 218 collections of *Gomphus bonarii*. Continuing fungal surveys may uncover more sites. (Petersen 1971, Dreisbach et al. 2002, ISMS 2002)

## Number of Occurrences with Good Viability

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

**Comments** At least 50 (ISMS-ONH 2002) - 80 (Dreisbach et al 2002) occurrences are believed extant and presumed viable (Norvell 2002 pers comm.)

## 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

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

**Comments** Endemic to western North America, GOBO2 ranges from British Columbia south to Mexico and east to Montana and south to New Mexico. (Petersen 1971; ISMS Database 2002 and GIS map for GOBO2).

## 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; its distribution is spotty and it appears restricted to fairly complex habitats. GOBO2 has unknown biological and ecological requirements that determine how and when symbiotic associations are formed with partners.

## 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** GOBO2 is an ectomycorrhizal fungus dependent upon the health of its symbiotic partners (*Abies*, *Tsuga*, and other conifers) for its existence. It has a spotty distribution in western North America, but most occurrences appear collected from LSOG forests. Individuals are less dependent upon spore dispersal than upon mycelial interactions with other individuals and their mycorrhizal

partners. Longevity of individuals is unknown; populations are inferred as relatively-lived. (Norvell pers comm 2002) Current populations are inferred as relatively stable. (Norvell 2002 pers comm).

## 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** GOBO2 is an ectomycorrhizal fungus dependent upon the health of its coniferous symbiotic partners and is commonly found in LSOG habitats. Natural catastrophes or human activities that imperil the health of Abies and other associated conifers will compromise both tree and fungus. Current occurrences of GOBO are moderately common in some parts of the range (California) to somewhat rare in others. At least 19-39 occur in currently protected reserves in the northern spotted owl region of the Pacific Northwest. The species is inferred to be relatively secure over the short term (Norvell 2002, Dreisbach et al 2002).

## 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** GOBO2 is commonly found in coniferous forests, where it is associated with Abies and other conifers in LSOG forests. Whatever threatens its habitat and symbiotic partners will threaten Gomphus bonarii. All populations are at risk to incidental catastrophic event, (such as hot fires that might extirpate the community) and unmonitored human interference. Unprotected populations are at risk to road construction or other development, and heavy logging (i.e. clean/or clearcutting or heavy thinning).

## Number of Appropriately Protected and Managed Occurrences

D = Many (13-40) occurrences appropriately protected and managed

**Comments** ISMS-ONH (2002) and Dreisbach et al (2002) respectively cite 19-29 & 17 occurrences in protected areas: 6 in permanent protected preserves, 8 in late-successional reserves, and between 5-25 in riparian reserves. If late-successional and/or riparian reserves are opened to clearcutting, road construction, or other development, the number of protected and managed occurrences could decrease to 14. It should be noted that some to many sites in temporary reserves may not be managed appropriately at the present time.

## 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 health is linked to that of the symbiotic partner (here Abies spp and other conifers). Preference for LSOG forests is inferred but not statistically demonstrated from the data (Dreisbach et al 2002). GOBO2 is thus inferred as long-lived, slow-growing. (Norvell), and vulnerable to anything that threatens the forest habitat, including drought, insect infestations, hot fires, road construction and development, and clearcutting.

## Environmental Specificity

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

**Comments** GOBO is preferentially found in complex LSOG coniferous forests where it forms symbiotic partnerships with Abies and other conifers. Its precise biological and ecological requirements are unknown. It generally is found only in western North America, and fruits in clusters and arcs usually in the autumn but sometimes in the spring (Petersen 1971).

### Other Considerations

NRANK - N3? *Cantharellus bonarii* Morse (1930. *Mycologia* 22:219) is a synonym. Petersen (1971) named several varieties; no attempt has been made to differentiate the species according to varieties in this evaluation (Norvell pers comm 2002). Dreisbach et al (2002) note: "Loss of CA populations could significantly decrease persistence in all or part of the range."

**Edition** 11/23/2002      **Edauthor** Lorelei L Norvell

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### Reasons

GOBO2 is an ectomycorrhizal fungus dependent upon the health of its symbiotic partner (Abies and other conifers). *Gomphus bonarii* is low to moderately rare throughout western North America, with 50-80 extant occurrences reported from the northern spotted owl zone, of which 17-39 lie in currently protected forest reserves. Its unknown biology precludes estimation of population size and area of occupancy. Extant populations are presumed stable over both the short- and the long-term. Unprotected occurrences will be threatened by road construction & development and clearcutting or heavy thinning. All occurrences are imperiled by hot fires and other incidental catastrophic events.

### BCD Sources

### New Sources

Petersen. 1971. The genera *Gomphus* and *Gloeocantharellus* in North America. *Nova Hedwigia* 2: 33-45. (for GOBO2)

Thiers. 1985. *Agaricales of California: 2. Cantharellaceae*. Mad River Press.

Dreisbach, Mueller, Exeter, McFarland, Cushman. 2002 Survey and Manage Step 2 Worksheet on GOBO2.

ISMS-ONH. 2002. ISMS data; ONH protection extrapolations; GIS map for GOBO2.