

Heritage Rank Status Factors

Elcode NFSM000050
Gname CRATERELLUS TUBAEFORMIS
Gcomname Winter craterelle (also winter chanterelle)

Number of Occurrences

D = 81 - 300
E = >300

Comments There are no data on occurrences of CRTU3 (the unnamed taxon with affinities to *Craterellus tubaeformis*; Norvell 2002 pers comm) outside the northern spotted region of PNW North America. Within the region it is not uncommon. The ISMS 2002 database for Washington, Oregon, and California cites 194 occurrences for that region. Continued fungal surveys may uncover more sites. It is frequently commercially harvested (Pilz et al, 2003).

Number of Occurrences with Good Viability

F = Very many (>125) occurrences with good viability

Comments The number of CRTU3 occurrences outside the region of the northern spotted owl are unknown. The ISMS 2002 database cites 193 extant occurrences of which 112-165 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

H = > 2,500,000 km² (greater than 1,000,000 square miles)

Comments *Craterellus tubaeformis* as recognized from Europe and eastern North America is considered distinct from the taxon growing on wood in ectomycorrhizal association with western hemlock in the northern spotted owl region. (Redhead 1979, Dahlman et al 2000, Trappe 2001, Pilz et al 2003). For that reason, only data from western North American northern spotted region are included here. (Norvell 2002). CRTU3 is believed to range from Alaska south to California and east to Idaho and possibly Colorado in western hemlock habitats. (Trappe 2001, Pilz et al 2003, Dreisbach et al 2002, ISMS Database 2002 and GIS map for CRTU3).

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. CRTU3 is known to occur within well rotted "coarse woody debris" (Trappe 2001) and demonstrated to associate with western hemlock. (Kroppe & Trappe 1982, Trappe 2001).

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 CRTU3 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. CRTU3 is symbiotic with *Tsuga heterophylla* (Trappe 2001) and is generally found in stands that also contain well-decomposed hemlock/woody debris (Trappe 2001). 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) including removal of the rotted wood interface (Trappe 2001).

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 CRTU3 is an ectomycorrhizal fungus dependent upon the health of its symbiotic partner (*Tsuga heterophylla*) and the presence of well-decomposed coarse woody debris. Natural catastrophes or human activities that imperil the health of western hemlock or remove the woody debris will compromise the fungus. Commercial harvesting could have an impact if the substrate is disturbed. Current occurrences of CRTU are relatively common (Oregon), to moderately common (California), and believed low (Washington) in areas where intensive surveys have not yet been conducted. 112-165 occur in currently protected reserves; therefore the species is believed to be secure over the short term (Trappe 2001, Pilz et al 2003, Norvell 2002).

Threats

H = Unthreatened. Threats if any, when considered in comparison with natural fluctuation and change, are minimal or very localized, not leading to significant loss or degradation of populations, occurrences, or area even over a few decades' time. (Severity, scope, and/or immediacy of threat considered Insignificant.)

Scope	Insignificant	Severity	Low	Immediacy	Low
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Comments CRTU has been found in all-age forests, where it is associated with western hemlock. Population longevity is unknown, although one individual has been sampled annually from 1998 (autumn) through 2002 (spring) without apparent ill effect (Norvell & Exeter 2003). Whatever threatens western hemlock and the woody substrate will threaten CRTU3, which is imperiled by hot fires, road construction or other development, and clearcutting. It appears to withstand light to moderate thinning (Trappe 2001, Norvell & Exeter 2003)

Number of Appropriately Protected and Managed Occurrences

E = Very many (>40) occurrences appropriately protected and managed

Comments ISMS (2002) cites 112-165 protected occurrences from WA, OR, CA and Dreisbach et al (2002) cite ~84 protected occurrences from WA & CA. ISMS (2002) notes 16 occurrences in permanently protected preserves, 79 from late-successional reserves, and 17-70 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 would decrease to 16 (Rank D).

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).

C = Not Intrinsically Vulnerable. Species matures quickly, reproduces frequently, and/or has high fecundity such that populations recover quickly (< 5 years or 2 generations) from decreases in abundance; or species has high dispersal capability such that extirpated populations soon become reestablished through natural recolonization (unaided by humans). Ecological community occurrences are resilient or resistant to irreversible changes in composition and structure and quickly recover (within 10 years).

Comments CRTU3 requires western hemlock to thrive and also requires a decomposed woody substrate (Trappe 2001). It is 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 SPECIFICITY: CRTU3 is found in all aged coniferous stands in which western hemlock and well decomposed wood is present. Western hemlock has been demonstrated to be the preferred mycorrhizal partner, but CRTU3 has also been found rarely in Doug-fir monocultures in the absence of western hemlock and even more rarely in sitka spruce stands when western hemlock is present. Fruitbodies begin fruiting in late autumn and early winter and can be also found in the spring. (Trappe 2001, Pilz et al 2003). One individual has been consistently sampled over four years in Oregon from the same rotten log. (Norvell & Exeter 2003, Norvell pers comm 2002).

Other Considerations

NRANK - N4? *Craterellus tubaeformis* as recognized from Europe has two synonyms: *Cantharellus tubaeformis* and *Cantharellus infunduliformis*. The taxon occurring within the northern spotted region of North America and growing on wood in ectomycorrhizal association with western hemlock is thought to represent an undescribed species. It is frequently commercially harvested in the PNW North America.

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

Grank G5? **Grank Date** 11/22/2002

Reasons

CRTU3 is an ectomycorrhizal fungus dependent upon the health of its symbiotic partner (*Tsuga heterophylla* -- western hemlock). CRTU3 is common (OR and possibly CA) to uncommon (WA where intensive surveys are lacking) in the northern spotted region. There are at least 215 extant occurrences, of which 112-165 lie in currently protected forest reserves. It may be endemic to the western hemlock forest zone in the PNW. The current known populations are stable. Unprotected occurrences will be threatened somewhat by road construction & development and clearcutting or heavy thinning. Moderate to light thinning is not considered a threat. All occurrences are imperiled by hot fires. Taxonomy of the endemic species is under investigation.

BCD Sources

New Sources

Trappe, M. 2001. The ecology of winter chanterelles (*Craterellus tubaeformis*) in western Oregon. Oregon SU MS thesis.

Kropp and Trappe, J. 1982. Ectomycorrhizal fungi of *Tsuga heterophylla*. *Mycologia* 74:479-488.

Dahlman, Danell, Spatafora. 2000. Molecular systematics of *Craterellus*: cladistic analysis of nuclear LSU rDNA sequence data. *Mycological research* 104:388-394.

Pilz, Norvell, Danell, Molina, 2003 (in final review). Ecology and management of commercially harvested chanterelle mushrooms. USDA-FS PNW-RS publication. Portland.

Redhead. 1979. A study of the sphagnicolous fleshy basidiomycetes in the eastern sections of the Canadian boreal forest. U of Toronto PhD dissertation.

Norvell & Exeter. 2003 in press. Ectomycorrhizal epigeous basidiomycete diversity in Oregon's coast montane

Pseudotsuga menziesii forests. New York Botanical Memoirs.
Dreisbach, Mueller, Exeter, McFarland, Cushman. 2002. 2002 Survey and Manage Step 2 Worksheet.
ISMS 2002 database and GIS map for CRTU3.