

Heritage Rank Status Factors

Elcode NLCAL00010
Gname MICROCALICIUM ARENARIUM
Gcomname rock broom

Number of Occurrences

E = >300

Comments Number of known occurrences worldwide is probably > 1000 (including many historic); Number of known occurrences in North America is ca. 52 ; Number of known occurrences in California = 0; Number of known occurrences in Oregon = 2; Number of known occurrences in Washington = 1; Number of known occurrences in British Columbia = 3. Although the number of extant occurrences worldwide is unknown, the North American occurrences (collections) are recent and are mostly extant.

Number of Occurrences with Good Viability

U = Unknown what number of occurrences with good viability

Comments

Population Size

U = Unknown

Comments

Range Extent

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

Comments Global distribution "Scattered and rather rare in Norway and Sweden. Also known from Finland [...] widely distributed in the Northern Hemisphere and known from the British Isles, Continental Europe, Asia and North America. Also occurring in Australasia and southernmost South America" (Tibell 1999). Within North America, known from several parts of the temperate and boreal regions; appropriate habitats are likely more frequent across the landscape in eastern North America.

Area of Occupancy

A = <0.4 km² (less than about 100 acres)

LA = <4 km (less than about 2.5 miles)

Comments Occupancy for this species, like epiphytic lichens and fungi, is difficult to estimate because it occurs sporadically as a paracite over a few lichen species that grow on a specialized substrate, with host lichens covering only a few square centimeters to an entire cliff face and then occurring again several hundred meters to many kilometers away. The occupancy is roughly estimated as the total worldwide distribution of the species; the actual coverage of the species condensed so as to be continuous may not be much more than a few of hectares.

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

C = Substantial Decline (decline of 50-75%)

Comments Although most calicioid lichens and fungi inhabit aged bark or wood in sheltered locations protected from direct rain interception, this species has the added restriction that it grows paracitically on a small selection of lichens that occur in such habitats. It appears to require host lichens that form farinose crusts and contain vulpinic acid (bright yellow). Primarily these are *Chaenotheca furfuracea* (another calicioid) and *Chrysothrix chlorina*. It grows on these lichens only in sheltered locations, such as in coves under the boles of large, old trees and on humid, rocky cliff faces. In the Pacific Northwest of North America, most occurrences are likely on cliffs within the Columbia Gorge, but some occurrences are known from old-growth forests outside of the gorge. Removal of old forests in North America and through the rest of the species' distribution has undoubtedly had significant impacts on the number of populations, population sizes, and average dispersal distance necessary to colonize new substrates.

Short-term Trend in Population Size, Extent of Occurrence, Area of Occupancy, 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 With advances in conservation, the removal of old-growth forests throughout the species range is slowing, but has not stopped.

Threats

B = Moderate and imminent threat. Threat is moderate to severe and imminent for a significant proportion (20-60%) of the population, occurrences, or area. Ecological community occurrences are directly impacted over a moderate area, either causing irreversible damage or requiring a long-term recovery.

Scope	Moderate	Severity	High	Immediacy	High
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Comments Worldwide, the species has declined since pre-industrial times. The Pacific Northwest, due to logging, has been no exception. However, the rate of loss in the Pacific Northwest has slowed. Although little is known about the reproductive and dispersal biology of this species, it is thought that the species can overcome some habitat fragmentation and, at this point, is secure from extirpation or extinction. However, given the unusual habitat requirements and frequent old-growth association of this species, it should not be ignored. That, combined with its strong association with old growth warrens significant consideration in conservation actions.

Number of Appropriately Protected and Managed Occurrences

U = Unknown whether any occurrences are appropriately protected and managed

Comments

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).

Comments Given high vulnerability rank because it will not return to a forest for a century or more after a stand-initiating disturbance. Although the species is limited to substrates that are very slow to develop and the maturation time required between colonization and reproduction is unknown, the species does demonstrate a remarkable ability to disperse to appropriate substrates once they are available, even when those substrates are rather isolated. This may be due to use of a dispersal vector such as birds or arthropods which target similar habitats.

Environmental Specificity

A = Very Narrow. Specialist or community with key requirements scarce.

Comments

Other Considerations

NRANK - N3N4. Recommended BC rank is S1.

Edition 2/20/2003 **Edauthor** Eric B. Peterson

Grank G4G5 **Grank Date** 12/5/2002

Greasons

Widely distributed in Europe, Asia, North America, Australasia and southernmost South America. The distribution and population sizes of this species are large enough to qualify for G5, the significant decline of the species since pre-industrial times may justify reducing the rank to G4. Appropriate habitat for this species is sparse in the Pacific Northwest, causing it to be much more rare there than in Scandinavia or northeastern North America.

BCD Sources

New Sources

ISMS (Interagency Species Management System). 5 August, 2002.

Peterson, E. B. (Search of personal herbarium on 1 November, 2002) Address: Nevada Natural Heritage Program, 1550 E. College Parkway, Carson City, NV

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Rikkinen, J. 2003. Calicioid lichens and fungi in the forests and woodlands of western Oregon. *Annales Botanici Fennici* (accepted, should come out in the first volume of 2003).

Selva, S., 7 November 2002. Personal communication. Address: Division of Natural and Behavioral Sciences, University of Maine at Fort Kent, Fort Kent, ME.

Tibell, L. 1975. The Caliciales of boreal North America. *Symbolae Botanicae Upsalienses* 21(2): 1-128.

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