

## Heritage Rank Status Factors

**Elcode** NBMUS6B020  
**Gname** RACOMITRIUM AQUATICUM  
**Gcomname** MOSS

### Number of Occurrences

C = 21- 80

**Comments** Most North American records for this species have been renamed *Racomitrium ryszardii* (Benarek-Ochyra 2000), but material from California and Oregon has not yet been annotated, and populations south of the Columbia River may belong to a different species and cannot be assumed to be the same as *R. ryszardii*. There are an estimated 50-75 occurrences worldwide, with about 41 reported by Benarek-Ochyra (2000). The University of Alberta database has the most complete listing (under the old name *R. aquaticum*), with 35 records representing about 27 localities from Alaska, British Columbia, Washington, and Oregon. The ISMS database contains 25 records, representing about 20 sites.

### Number of Occurrences with Good Viability

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

**Comments** Estimated 20 occurrences worldwide with good viability.

### Population Size

E = 2,500-10,000 individuals

**Comments** Estimated 2500-10,000 individuals worldwide.

### Range Extent

G = 200,000-2,500,000 km<sup>2</sup> (about 80,000-1,000,000 square miles)

**Comments** Endemic to northwestern North America (Alaska, British Columbia, Alberta, Washington, Oregon, California). Reports from New York were based on a misidentification (Bednarek-Ochyra 2000). Estimated range about 200,000 square miles worldwide.

### Area of Occupancy

A = <0.4 km<sup>2</sup> (less than about 100 acres)

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

**Comments** Estimated area of occupancy is 20 acres worldwide.

### 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** Long-term trends worldwide unknown.

## 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** Short-term trends worldwide unknown.

## Threats

D = Moderate, non-imminent threat. Threat is moderate to severe but not imminent for a significant portion of the population, occurrences, or area.

Scope Moderate Severity Moderate Immediacy Low

**Comments** Moderate, non-imminent threat. This species may just be rare instead of declining, but there is little information available. Presumably, its streamside habitat will become more and more degraded with ongoing development and population pressures worldwide. Upstream activities that cause excessive siltation could be detrimental to this species. Diversion or impoundment of water, recreational gold dredging, and recreational boating can damage mosses in splash zones by abrasion or removal of moss mats.

## Number of Appropriately Protected and Managed Occurrences

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

**Comments** Estimated 10 sites protected worldwide and managed appropriately.

## 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** Moderately vulnerable. Plants are small and fragile, but reproduce readily by spores and fragmentation of gametophytes. Most bryophytes in splash zone habitats are limited to vegetative reproduction, but tend to occur in large monotypic mats that produce many viable fragments for regeneration.

## Environmental Specificity

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

**Comments** Narrow environmental specificity. Forms mats on shaded, moist rocks and cliffs along shady streams or in forests, often in the splash zone, but never aquatic.

## Other Considerations

NRANK - N3Q. Most North American records for this species have been renamed *Racomitrium rysardii* (Benarek-Ochyra 2000), but material from California and Oregon has not yet been annotated, and populations south of the Columbia River may belong to a different species and cannot be assumed to be the same as *R. rysardii*. *R. aquaticum* has been restricted to the Old World. It has also been confused with *R. pacificum*, so its distribution in the Pacific Northwest is unclear. The identity of collections in smaller herbaria should be verified and annotated, to clarify the distribution. Whatever it is called, Lawton (1971) considered it rare in the Pacific Northwest.

**Edition** 2/20/2003 **Edauthor** John A. Christy and Judith Harpel

**Grank** G3Q

**Grank Date** 1/10/2003

## **Greasons**

Recent taxonomic revision makes the identity of some collections questionable. Estimated 50-75 occurrences worldwide. Estimated 20 occurrences worldwide with good viability. Estimated 2500-10,000 individuals worldwide. Estimated range about 200,000 square miles worldwide. Estimated area of occupancy 20 acres worldwide. Long-term and short-term trends worldwide unknown. Moderate, non-imminent threat. Estimated 10 sites protected worldwide. Moderately vulnerable. Narrow environmental specificity.

## **BCD Sources**

Howard, Lauren Davis. 1975. Moss Flora of New England, New York, and Southeastern Canada. The University of Vermont, Burlington, Vermont. 74 p.

Smith, A.J.E. 1978. The moss flora of Britain and Ireland. Cambridge University Press, Cambridge. 706 pp.

Elliott, J.C., and G.L. Moore. 1989. Additions to the moss flora of Montana. *The Bryologist* 92(2):194-197.

## **New Sources**

University of Alberta. 2002. Devonian Botanic Garden bryophyte database. Edmonton, Alberta.

<<http://www.devonian.ualberta.ca/devonian/bryosearch.cfm>>.

USDA Forest Service, USDI Bureau of Land Management, USDI Fish and Wildlife Service. 2002. Interagency Species Management System [ISMS] database. Portland, Oregon.

Lawton, E. 1971. Moss Flora of the Pacific Northwest. Hattori Botanical Laboratory, Nichinan, Japan. 362 pp.

Bednarek-Ochyra, H. 2000. *Racomitrium ryszardii* (Musci, Grimmiaceae), a new hydrophilous species from the Pacific Northwest with comments on *Racomitrium aquaticum* in North America. *Cryptogamie, Bryologie-Lichénologie* 21: 275-284.

Shevock, J.R. 2003. Personal communication. Expert on moss flora of California. Associate Regional Director for Resources, Partnerships and Science, National Park Service, Oakland. <Jim\_Shevock@nps.gov>