

# California Status Factors

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

## Number of Occurrences

D = 81 - 300

**Comments** Most North American records for this species have been renamed *Racomitrium ryszardii*, but Bednarek-Ochyra has not yet annotated material from California and Oregon, and populations south of the Columbia River may belong to a different species and cannot be assumed to be the same as *R. ryszardii*. The ISMS database contains records for about 5 sites in California.

## Number of Occurrences with Good Viability

B = Very few (1-3) occurrences with good viability

**Comments** Estimated 3 occurrences in California with good viability.

## Population Size

C = 250-1,000 individuals

**Comments** Estimated 500 individuals in California.

## Range Extent

F = 20,000-200,000 km<sup>2</sup> (about 8,000-80,000 square miles)

**Comments** Estimated range is 15,000-20,000 square miles in California. Known from Klamath and Siskiyou Mountains, Coast Range, and Shasta-Trinity.

## 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 10 acres in California.

## 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 trend in California 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 trend in California 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

B = Few (1-3) occurrences appropriately protected and managed

**Comments** Three sites protected in California 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

Most North American records for this species have been renamed *Racomitrium ryszardii*, and *R. aquaticum* has been restricted to the Old World (Benarek-Ochyra 2000). It has also been confused with *R. pacificum*, so its distribution in the Pacific Northwest is unclear. Furthermore, Benarek-Ochyra has not yet annotated material from California and Oregon, and populations south of the Columbia River may belong to a different species and cannot be assumed to be the same as *R. ryszardii*. 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.

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## Reasons

About 5 sites in California. Estimated 3 occurrences in California with good viability. Estimated 500 individuals in California. Estimated range 15,000-20,000 square miles in California. Estimated area of occupancy is 10

acres in California. Long-term and short-term trends in California are unknown. Moderate, non-imminent threat. Three sites protected in California. 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**

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.

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