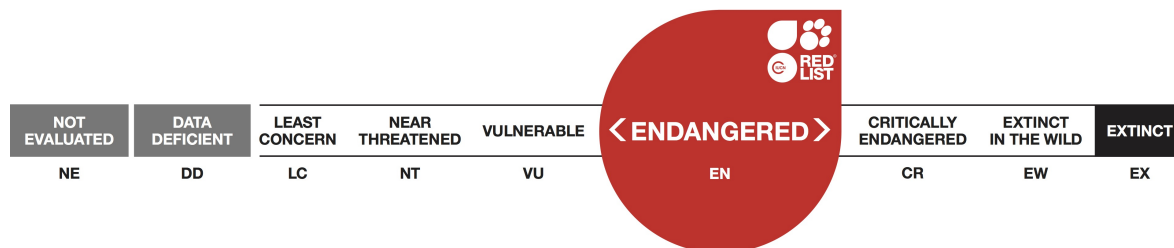


## *Sulcaria badia*

Assessment by: McMullin, T., Allen, J. & Lendemer, J.



View on [www.iucnredlist.org](http://www.iucnredlist.org)

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## Taxonomy

Kingdom	Phylum	Class	Order	Family
Fungi	Ascomycota	Lecanoromycetes	Lecanorales	Parmeliaceae

**Taxon Name:** *Sulcaria badia* Brodo & D.Hawksw.

## Assessment Information

**Red List Category & Criteria:** Endangered B2ab(i,ii,iii,iv,v) [ver 3.1](#)

**Year Published:** 2019

**Date Assessed:** August 30, 2017

### Justification:

This species warrants a rank of Endangered B2ab(i,ii,iii,iv,v) because its AOO is <500 km<sup>2</sup>, its population is severely fragmented, and its EOO and suitable habitat are under threat and are in decline. Only a few populations are in protected areas, and the population decline is thus ongoing.

## Geographic Range

### Range Description:

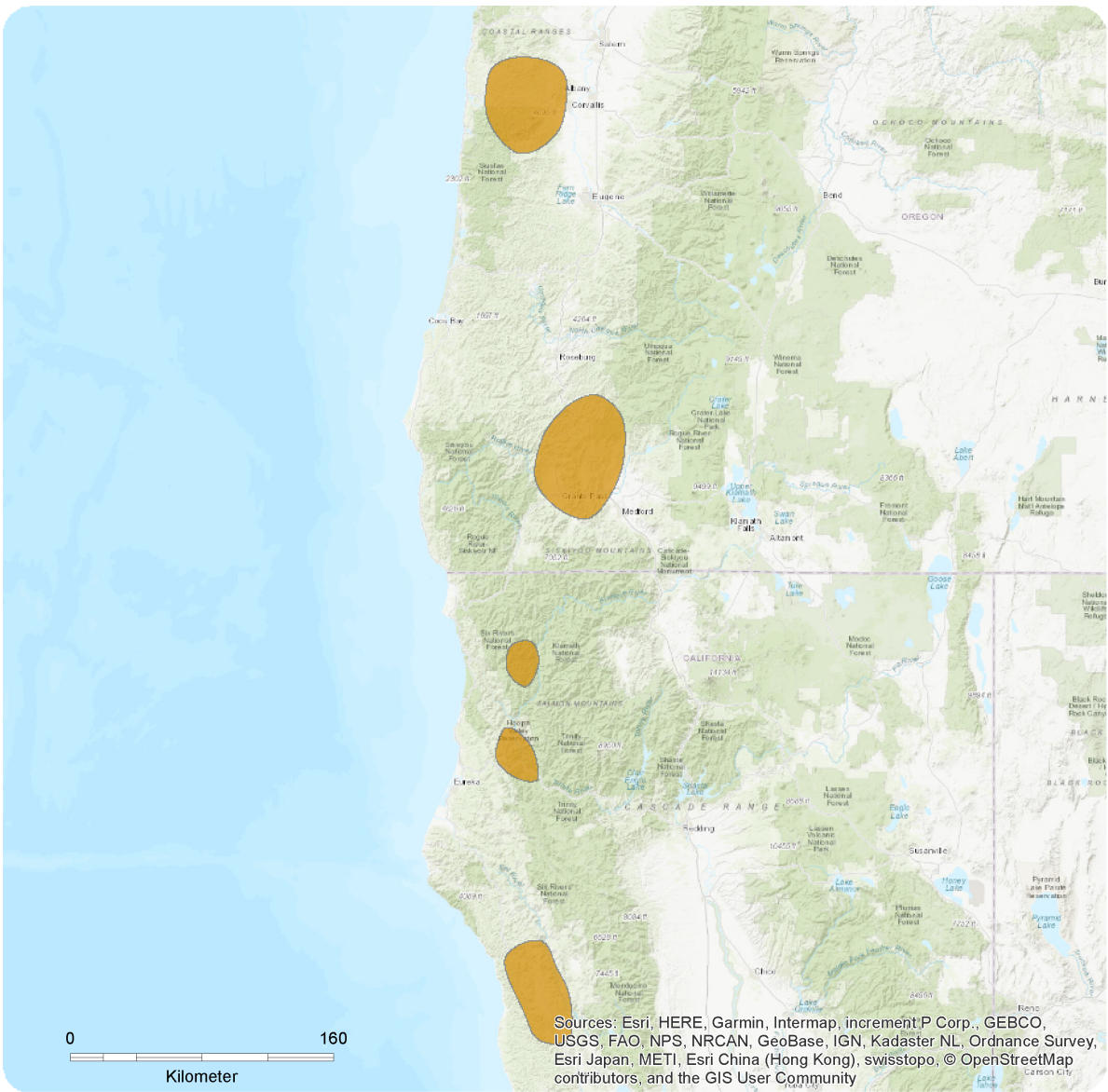
This species is endemic to the west coast of the United States and is found from Washington to northern California. There are very few known populations of *Sulcaria badia* and negative impacts to the species from increasing residential and agricultural development have been documented. Three populations have already been reported as extirpated.

### Country Occurrence:

**Native:** United States (California, Oregon, Washington - Possibly Extinct)

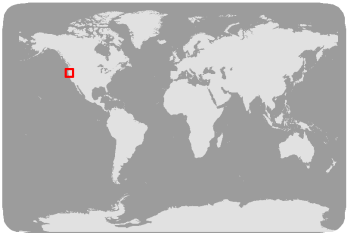
# Distribution Map

*Sulcaria badia*



Range  
■ Extant (resident)

Compiled by:  
IUCN



The boundaries and names shown and the designations used on this map do not imply any official endorsement, acceptance or opinion by IUCN.



## Population

This species was originally known from Washington, Oregon and California. However, the Washington population has not been successfully relocated (Peterson *et al.* 1998) and further searching did not result in any newly discovered populations in that area (Carlberg 2006). *Sulcaria badia* occurs at 11 localities that are presumed extant and 3 that are presumed to be extirpated (Carlberg and Toren 2006). At 7 of the 11 localities it is sparse, colonizing fewer than five trees (Carlberg and Toren 2009, McMullin 2015).

**Current Population Trend:** Decreasing

## Habitat and Ecology (see Appendix for additional information)

This species typically occurs in *Quercus garryana* grasslands or rarely in mature *Pseudotsuga menziesii* forests containing some *Quercus kelloggii* and one site is in a coastal dune forest (Brodo and Hawksworth 1977, Peterson *et al.* 1998, Carlberg and Toren 2006). It usually occurs on *Quercus garryana*, but it is also known to grow on *Acer macrophyllum*, *Fraxinus oregana*, *Malus* sp., *Pinus ponderosa*, *Pseudotsuga menziesii*, and *Rhododendron macrophyllum* (Brodo and Hawksworth 1977, Peterson *et al.* 1998, Carlberg and Toren 2006).

**Systems:** Terrestrial

## Threats (see Appendix for additional information)

Agricultural development is a major threat to localities in the *Quercus garryana* grasslands due to the removal of trees and drift from fertilizers and herbicides (Peterson *et al.* 1998, Carlberg and Toren 2006). An increase in development also threatens to reduce habitat and increase air pollution (Peterson *et al.* 1998, Carlberg and Toren 2006). Climate change is also predicted to create a warmer and drier habitat for *S. badia* (Peterson *et al.* 1998, Mote 2003).

## Conservation Actions (see Appendix for additional information)

Ensuring that populations of this species are not affected by any increasing human residential and agricultural development is essential. It should be listed in the United States as an endangered species. Education and training of land managers and local botanists to identify the species should be conducted, and contracted experts should be hired to conduct detailed monitoring at various time intervals (every 5 to 10 years).

Research on the population size and genetics would greatly enhance our understanding of this species. Long-term monitoring projects need to be conducted. In Washington State, *Sulcaria badia* is ranked as SH (possibly extinct) and G3 globally by the Washington Natural Heritage Program (<http://www1.dnr.wa.gov/nhp/refdesk/lists/lichens.html>). The Oregon Natural Heritage Program (2004) ranks *S. badia* as S2 in the state and G2 globally. In California, a rank of S2S3 in the state and G2G3 globally was recommended by Carlberg and Toren (2006).

## Credits

**Assessor(s):** McMullin, T., Allen, J. & Lendemer, J.

**Reviewer(s):** Scheidegger, C.

**Contributor(s):** Dahlberg, A. & Weerakoon, G.

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## External Resources

For [Images and External Links to Additional Information](#), please see the Red List website.

## Appendix

### Habitats

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Habitat	Season	Suitability	Major Importance?
1. Forest -> 1.4. Forest - Temperate	Seasonal occurrence unknown	Suitable	Yes

### Plant Growth Forms

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Plant Growth Forms
Lichen
Epiphyte

### Threats

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Threat	Timing	Scope	Severity	Impact Score
1. Residential & commercial development -> 1.1. Housing & urban areas	Ongoing	Majority (50-90%)	Rapid declines	Medium impact: 7
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.2. Species disturbance		
2. Agriculture & aquaculture -> 2.1. Annual & perennial non-timber crops -> 2.1.3. Agro-industry farming	Ongoing	Minority (50%)	Slow, significant declines	Low impact: 5
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.2. Species disturbance		
2. Agriculture & aquaculture -> 2.3. Livestock farming & ranching -> 2.3.3. Agro-industry grazing, ranching or farming	Ongoing	Minority (50%)	Slow, significant declines	Low impact: 5
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.2. Species disturbance		

### Conservation Actions in Place

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

<b>Conservation Actions in Place</b>
In-Place Research, Monitoring and Planning
Action Recovery plan: No
Systematic monitoring scheme: No
In-Place Land/Water Protection and Management
Conservation sites identified: Yes, over part of range
Occur in at least one PA: Yes
Percentage of population protected by PAs (0-100): 51-60
Invasive species control or prevention: Not Applicable
In-Place Species Management
Harvest management plan: No
Successfully reintroduced or introduced benignly: Yes
Subject to ex-situ conservation: No
In-Place Education
Subject to recent education and awareness programmes: No
Included in international legislation: No
Subject to any international management/trade controls: No

## Conservation Actions Needed

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

<b>Conservation Actions Needed</b>
2. Land/water management -> 2.1. Site/area management
5. Law & policy -> 5.2. Policies and regulations

## Research Needed

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

<b>Research Needed</b>
1. Research -> 1.2. Population size, distribution & trends
2. Conservation Planning -> 2.2. Area-based Management Plan
3. Monitoring -> 3.4. Habitat trends

## Additional Data Fields



<b>Distribution</b>
Estimated area of occupancy (AOO) (km <sup>2</sup> ): 44
Continuing decline in area of occupancy (AOO): Yes
Extreme fluctuations in area of occupancy (AOO): No
Estimated extent of occurrence (EOO) (km <sup>2</sup> ): 27347
Continuing decline in extent of occurrence (EOO): Yes
Extreme fluctuations in extent of occurrence (EOO): No
Number of Locations: 11
Continuing decline in number of locations: Yes
Extreme fluctuations in the number of locations: No
Lower elevation limit (m): 0
Upper elevation limit (m): 1000
<b>Population</b>
Continuing decline of mature individuals: Yes
Extreme fluctuations: No
Population severely fragmented: Yes
Continuing decline in subpopulations: Yes
Extreme fluctuations in subpopulations: No
All individuals in one subpopulation: No
<b>Habitats and Ecology</b>
Continuing decline in area, extent and/or quality of habitat: Yes
Movement patterns: Not a Migrant
Congregatory: Congregatory (year-round)

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