

***Bryoria spiralifera*, Sponsorship for the CALS Conservation Committee**

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Executive Summary

Bryoria spiralifera is endemic to the west coast of North America with a distribution from central California to southern Oregon (San Luis Obispo County, California north to Coos County, Oregon). It was once only known from the Samoa Peninsula in Humboldt County, but recent studies have discovered new sites. However these sites are few and disjunct. The two largest populations occurring in the dunes forests on the Samoa Peninsula in Humboldt County, California and on the Oregon Dunes in Coos County. This species is mostly found on conifers in coastal dunes. Because this species reproduces and disperses by fragmentation, it is likely dispersal limited. Coastal development, air pollution, and climate change are likely threats to this species.

TAXONOMY

Accepted scientific name: *Bryoria spiralifera* Brodo & Hawksworth.

Common name: none.

Type specimen and location: Manila [Samoa Peninsula], Humboldt Co., California (Dowty 137; CANL 38403).

Synonyms: none.

DESCRIPTION

From Brodo & Hawksworth (1977) and Glavich (2003): Thallus fruticose and hair-like, 5-7 cm long. Main branches mostly terete with no foveolate portions. Pseudocyphellae long (~3+ mm) and spiraling around branches. Color mostly reddish brown to brown but can be very pale brown. Spot tests Cortex K+ yellow changing to red, C-, KC-, P+ yellow. Secondary compounds norstictic and conorstictic acids and atranorin.

Similar species and distinguishing characteristics:

Several *Bryoria* or *Bryoria*-like species can be mistaken for *Bryoria spiralifera*. The distinguishing characteristic for *B. spiralifera* is the long, spiraling pseudocyphellae plus the spot test reactions. *Bryoria pseudocapillaris* has long pseudocyphellae, but they are linear with some wrapping around the thallus

branches; this lichen also differs in spot test reactions (K+ yellow, C+ pink, and KC+ pink). *Bryoria capillaris* differs in having short, usually less than 1 mm, pseudocyphellae.



Figure 1. *Bryonia spiralifera* from the Samoa Peninsula dune forest in Humboldt County, California. Characteristic spiraling pseudocyphellae are subtle in the inset.

Sulcaria badia differs in its more robust appearance; its branches often appear twisted with long pseudocyphellae in deep furrows.

BIOLOGICAL CHARACTERISTICS

Growth form: fruticose, filamentous.

Reproductive method: fragmentation.

Dispersal agents: gravity, wind, animals.

Substrate and specificity: it is not substrate specific, but it does appear mostly on conifers of the immediate coast: dominantly *Picea sitchensis* and *Pinus contorta* var. *contorta* and also *Pseudotsuga menziesii*, *Abies grandis*, and *Tsuga heterophylla*.

Habitat and specificity: hyper-maritime dune forests.

Pollution sensitivity: unknown.

Ecological function: unknown.

GEOGRAPHY

Global: Occurs only on the west coastline of North America and only in a few locations from central California (San Luis Obispo Co.) to central Oregon

(Coos County).

Local: The largest known population is on the Samoa Peninsula dunes in Humboldt Co., California, and the other few sites appear to have small populations (Geiser et al. 2004; Glavich et al. 2005b: Fig. 1). California sites include these collections. SAN LUIS OBISPO CO.: Baywood Park, *Riefner 87-336* (CANL)and Montaña de Oro State Park, *Riefner 87-142*. MONTEREY CO.: near Point Lobos, *Riefner 88-147*. SONOMA CO.: Stewart's Point Rd., *Riefner 88-128*. In OSC: HUMBOLDT CO.: Samoa Peninsula, BLM parcel, Glavich 524; Humboldt Bay NWR, Lanphere Dunes, Glavich 522. DEL NORTE CO.: Lake Earl State Park, Glavich 590.

POPULATION TRENDS

Actual population trends are unknown.

THREATS

History: It is likely that coastline development was the largest historical threat, and air pollution likely played a threatening role in highly populated areas.

Future: Although both coastal development and air pollution still play a threatening role, climate change may be the major future threat to *B. spiralifera* populations. Climate factors appear to be of major importance to *B. spiralifera* habitat; a habitat model suggests that a winter temperature increase of 1°C could negatively affect a site's suitability for this lichen. With the Mote et al. (2003) warming prediction upwards of 1.5 °C by 2050, climate change should be considered in the management of *B. spiralifera* populations.

PROTECTION

As of now, it is not known how many *B. spiralifera* populations exist on private lands, but northern California populations are likely protected by state or federal land parcels: Lake Earl State Park, Park, US Fish & Wildlife Lanphere Dunes, and Samoa Dunes (BLM)(Geiser et al. 2004; Glavich et al. 2005b). Little is known about the central California sites.

CONSERVATION SUMMARY

Although the distribution of *B. spiralifera* has been studied across northern California (Glavich et al. 2005b), a more site-level study assessing this lichen's local abundance has only occurred on the Samoa Peninsula of Humboldt Bay in northern California (Glavich 2003). Efforts should not only be made to document the size of populations at California State Parks identified in Glavich et al. (2005b), but also surveys should be conducted in areas with potential habitat not yet visited: e.g., Lost Coast of the BLM King Range Conservation area and the Sinkyone Wilderness State Park.

Not much is known about its southern populations. The areas of its central California sites—Baywood Park and Montaña de Oro State Park (San Luis Obispo Co.), near Point Lobos (Monterey Co.), and near Stewart's Point road (Sonoma Co.)(Riefner et al. 1995)—should be surveyed.

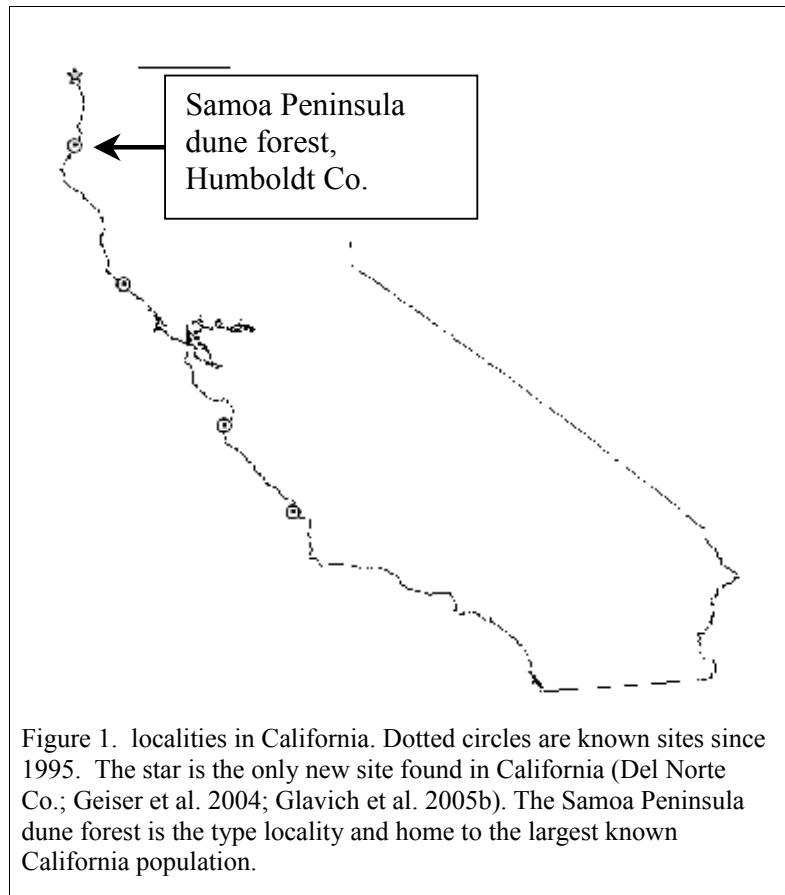


Figure 1. localities in California. Dotted circles are known sites since 1995. The star is the only new site found in California (Del Norte Co.; Geiser et al. 2004; Glavich et al. 2005b). The Samoa Peninsula dune forest is the type locality and home to the largest known California population.

SPECIFIC CONSERVATION RECOMMENDATIONS

Recommended Global Rarity Rank: G2

The two largest known populations occur on the Samoa Peninsula, Humboldt Co., CA and on the Oregon Dunes near Coos Bay, OR. Both populations have been assessed for those areas. Outside of these two areas, the populations appear to be very small. Although this species may occur in other coastal habitat types, its optimum habitat amplitude is very narrow: coastal dune forests.

Recommended Global Threat Rank: .1

Until more is known about the populations other than Humboldt Co., CA and Coos Bay, OR, it is reasonable to assume development and climate change would have a strong negative affect on this species.

Recommended Local Rarity Rank: S1S2

The bulk of thalli in California appear to occur on the Samoa Peninsula in Humboldt Co., CA, and all the populations appear to be disjunct.

Recommended Local Threat Rank: .1

Coastal development and climate change could impact this species.

Recommended List: 1B

Until populations outside the Samoa Peninsula in Humboldt Co., CA, can be assessed for size, this species should be considered rare.

Recommended conservation/management actions:

All sites, with the exception of the Samoa Peninsula, should be relocated and assessed for population size. More potential habitat should also be surveyed between sites do determine if populations are truly disjunct. Small populations should be identified and protected.

RELEVANT EXPERTS AND KNOWLEDGEABLE BOTANISTS

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STAKEHOLDERS FOR NOTIFICATION OF COMMENT PERIOD

USDI, Bureau of Land Management
Arcata Field Office
1695 Heindon Road
Arcata, California 95521

US Fish & Wildlife Service
Humboldt Bay National Refuge
(Lanphere and Ma-le'l Dunes Units)
6800 Lanphere Rd.
Arcata, CA 95521

Redwood National and State Parks
1111 Second Street
Crescent City, CA 95531

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