Management Recommendations for

Sticta arctica Degel.

version 2.0

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SUMMARY

Species: *Sticta arctica* Degel.
Taxonomic Group: Lichens (Rare Rock)
ROD Components: 1, 3

Other Management Status: The Nature Conservancy Oregon State Rank S1 (critically imperiled because of extreme rarity or because it is somehow especially vulnerable to extinction or extirpation, typically with 5 or fewer occurrences); The Nature Conservancy Global Rank G5 (demonstrably widespread, abundant, and secure); Oregon Natural Heritage Program List 2 (threatened with extirpation or presumed to be extirpated from the State of Oregon) (Oregon Natural Heritage Program 1998); and BLM Bureau Assessment Status in Oregon (USDI Bureau of Land Management 1998).

Range: *Sticta arctica* is known from Siberia, Kamchatka, and North America. Until recently its North American range only extended as far south as Juneau, Alaska. In the range of the Northwest Forest Plan there are two disjunct populations, neither on federal lands; Deception Pass State Park on Whidbey Island, Washington, and Saddle Mountain State Park, Oregon.

Specific Habitat: *Sticta arctica* is an arctic-alpine lichen that grows among mosses and on hummocks in dry and moist tundra in the northern part of its range. In its southern range, it is found on rocky ledges and mossy soil near the edges of marine beaches, and on a moss-covered basalt outcrop on a rocky mountain summit at 900 m (2950 ft) near the coast. It can be easily overlooked because it is small and grows intermingled with other species.

Threats: The major threat to *S. arctica* is loss of local populations resulting from activities that affect the population or its habitat, including collecting specimens, removing colonized substrate, and alter its microclimate. Because it is not yet known from old-growth and is found on coastal rocks and soil or on coastal mountain summits, recreation-related activities such as hiking, mountain biking, trail or shelter building would be most likely to threaten the species.

Management Recommendations:
- Maintain existing habitat conditions, including occupied substrate and associated microclimatic conditions, and restrict collecting of specimens, at any sites discovered on lands administered by the Forest Service or BLM.

Information Needs:
- Determine if *S. arctica* meets the criteria for close association with late-successional and old-growth forests.
- Determine distribution of local populations, species abundance and ecological requirements of *Sticta arctica* in the range of the Northwest Forest Plan on federal lands.

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Management Recommendations for *Sticta arctica*

I. NATURAL HISTORY

A. Taxonomy and Nomenclature

Sticta arctica Degel. was described by Degelius in 1937 (in Medd. Goteborgs Bot. Tradg. 12:108).

B. Species Description

1. Morphology

Sticta arctica is a small, dark brown foliose lichen with scattered cyphellae on the lower surface (Figure 1). These cyphellae are large, white, circular, recessed pores that resemble lunar craters. The upper side is smooth with somewhat crisped edges, the underside is pale at the edges, dark toward the center, and covered with a fine tomentum (woolly or felt-like hairs).

Technical Description: Thallus foliose, dorsiventral, the lobes small, to 30 mm long and 12 mm broad, the edges somewhat crisped and turned up, upper surface paraplectenchymous, smooth, brown; underside pale at the edges, dark centrally, covered with a fine tomentum and with scattered cyphellae, attached to substrate by simple or branched rhizines. Apothecia and pycnidia are not known. Cyanobacterium is *Nostoc* (Thomson 1984:432). Chemistry: K-, C-, KC-, P-, I-.

2. Reproductive Biology

Sexual reproductive structures are unknown for *S. arctica*. It reproduces asexually by producing lobules; migrating arctic birds may be a vector for distributing lobules (McCune *et al.* 1997). This species also reproduces by fragmentation when thalli are broken apart by animals or disrupted by rolling rocks or wind, and pieces become reestablished nearby.

3. Ecological Roles

Very little is known about the ecological roles of this species in the Pacific Northwest. It appears to have a geographic affinity with northeastern Asia and the maritime Arctic (McCune *et al.* 1997), and may have ecological ties with associated northeastern Asia and maritime Arctic plant and animal communities and habitats. The widely disjunct sites in Washington and Oregon may be relicts from a previous, colder climatic period.

C. Range and Known Sites

Sticta arctica is known from Siberia, Kamchatka, and North America (Krog 1968). Until 1993, its North America distribution was known to extend from arctic Alaska east to Baffin Island,

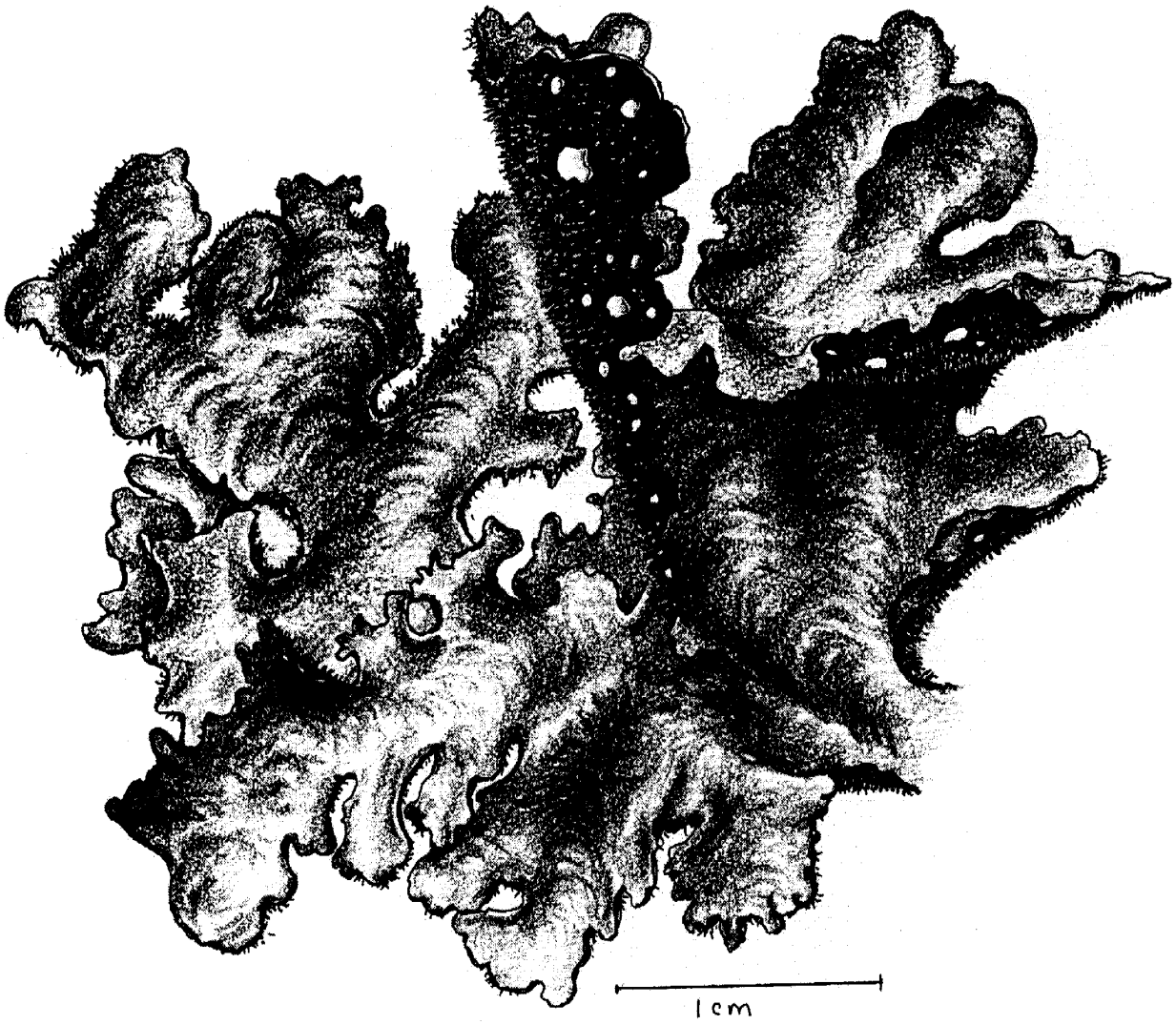

Figure 1. Line drawing of *Sticta arctica* by Alexander Mikulin.

Canada, and as far south as Juneau, Alaska (Krog 1968). In 1993, a single disjunct site was found near the summit of Saddle Mountain State Park in Clatsop County, Oregon (*Derr #881*), extending its range over 1000 km (600 miles) to the south (McCune *et al.* 1997). Recent herbaria searches provided information on two additional southern populations of *S. arctica*, one from the Queen Charlotte Islands, British Columbia, and one from Deception Pass State Park, Washington; they had been misidentified as *S. weigelii* (McCune *et al.* 1997). Only two sites are in the range of the Northwest Forest Plan: at Deception Pass State Park, Whidbey Island, Island County, Washington, and Saddle Mountain State Park, Clatsop County, Oregon. *Sticta arctica* is rare in the range of the Northwest Forest Plan, known from only two sites. *Sticta arctica* is not known to occur on federal land.

D. Habitat Characteristics and Species Abundance

Sticta arctica is an arctic-alpine species that grows among mosses and on hummocks in both dry and moist tundras in the northern part of its range (Thomson 1984). In British Columbia and Washington, it is known from rocky ledges, soil and rock at the edge of marine beaches (McCune *et al.* 1997). In Oregon, it is only known from a massive moss-covered basalt outcrop on the windswept ridge of an exposed rocky mountain summit of Saddle Mountain (elevation about 900 m (2950 ft)) near the coast, where only a few thalli were present (McCune *et al.* 1997). It can easily be overlooked because it is small and grows intermingled with bryophytes.

II. CURRENT SPECIES SITUATION

A. Why Species Is Listed Under Survey and Manage Standard and Guideline

Sticta arctica was considered at risk under the Northwest Forest Plan because of its presumed rarity in the range of the northern spotted owl, known from only one disjunct population (USDA and USDI 1994a,b). The concern for this species is still high, as there are only two known sites in the range of the northern spotted owl, and neither of these populations are on federal land.

B. Major Habitat and Viability Considerations

The major viability considerations for *S. arctica* are loss of local populations resulting from collecting specimens that could extirpate local populations, and management activities that adversely affect the individuals or their habitat. A warming climate may stress populations at the limits of a species range and could result in a decline in vigor and a more restricted distribution of *S. arctica*. If *S. arctica* relies to some extent on dispersal by migratory northern breeding birds that winter on the coast, ecological conditions in arctic nesting habitats could be important to this species.

C. Threats to the Species

Threats to *S. arctica* are actions that disrupt habitat conditions necessary for its survival, or

collecting specimens for scientific purposes from limited populations. Because this species is found on coastal rocks and soil or on coastal mountain summits, recreational activities like hiking, mountain biking, off-road vehicle use, and trail or shelter building could threaten this species.

D. Distribution Relative to Land Allocations

The two known sites of *S. arctica* in the range of the Northwest Forest Plan are on State Park land, one in Oregon and one in Washington.

III. MANAGEMENT GOAL AND OBJECTIVES

A. Management Goal for the Species

The goal for the managing *Sticta arctica* is to assist in maintaining species viability.

B. Objectives

Manage known sites if they are found on federal land administered by the Forest Service or BLM by maintaining existing habitat conditions associated with *S. arctica*.

IV. HABITAT MANAGEMENT

A. Lessons From History

No information on the history of *S. arctica* and management activities is available.

B. Identifying Habitat Areas for Management

Any known sites found on lands administered by Forest Service or BLM will contribute to maintaining this species in the range of the Northwest Forest Plan, and are identified as habitat areas where these management recommendations should be implemented.

C. Managing in Habitat Areas

If *S. arctica* is found on federal land, avoid any direct physical impact to the local population, and maintain the existing habitat conditions at each site. Manage population to restrict impacts from recreational activities that may directly harm the population. Given the rarity of this species in the range of the Northwest Forest Plan, voucher specimens should not be collected. A lichenologist should visit the site to verify identification.

D. Other Management Issues and Considerations

When requested, share information and expertise with appropriate state officials to further activities directed at conservation of *S. arctica* on nonfederal lands. Determine if this species meets the criteria for close association with late-successional and old-growth forests. Given the apparent rarity of this species, it should be considered for evaluation as a sensitive species in Oregon and Washington.

V. RESEARCH, INVENTORY, AND MONITORING NEEDS

The objective of this section is to identify opportunities to acquire additional information which could contribute to more effective species management. The content of this section has not been prioritized or reviewed as to how important the particular items are for species management. The inventory, research, and monitoring identified below are not required. These recommendations should be addressed by a regional coordinating body.

A. Data Gaps and Information Needs

- Determine if *S. arctica* meets the criteria for close association with late-successional and old-growth forests.
- Determine if *S. arctica* occurs on federal lands along the Washington, Oregon, and northern California coast or in other sites in the range of the Northwest Forest Plan by conducting surveys in areas identified as potential suitable habitat.
- Determine mechanisms and rates of reproduction, dispersal, and growth.

B. Research Questions

- Are the sites of *S. arctica* in the range of the Northwest Forest Plan glacial relicts?
- How do the genotypes of the disjunct southernmost local populations of *S. arctica* compare to populations in the center or more northern parts of its range?
- What are the dispersal distances of *S. arctica*?
- Are the habitat characteristics for *S. arctica* in the range of the Northwest Forest Plan similar to those of its arctic counterparts?

C. Monitoring Needs and Recommendations

Population trends should be monitored at any known sites discovered on Forest Service or BLM land in the range of the Northwest Forest Plan.

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