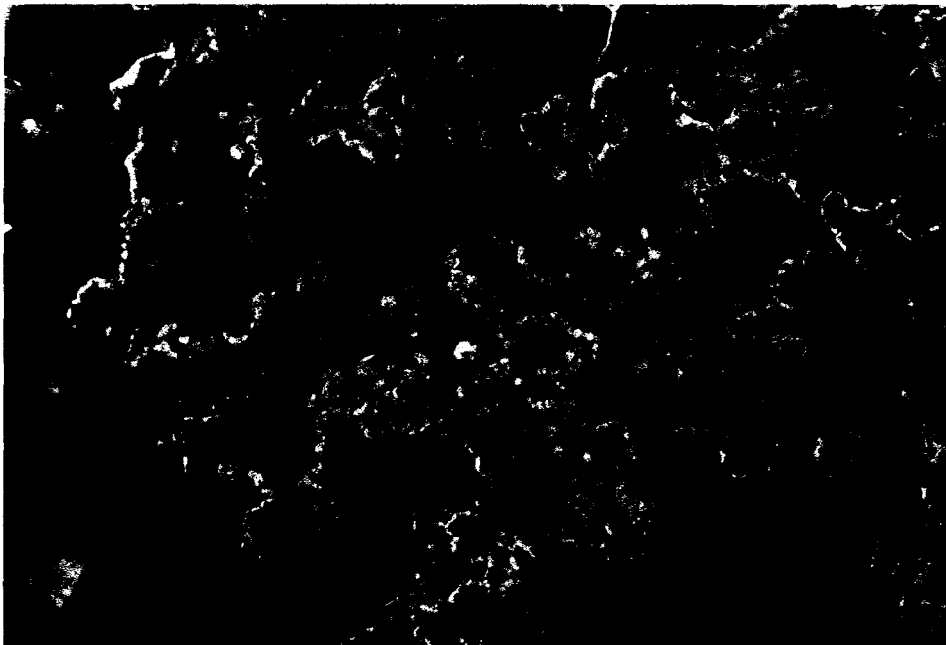


*R9 Species Conservation Assessment
for*

Pseudocyphellaria crocata (L.) Vain.

in

The Upper Great Lakes National Forests



Pseudocyphellaria crocata

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DISCLAIMER

This Conservation Assessment was prepared to compile the published and unpublished information on the subject species or community. It does not represent a management decision by the U.S. Forest Service. Though the best scientific information available was used and subject experts were consulted in preparation of this document, it is expected that new information will arise. In the spirit of continuous learning and adaptive management, if you have information that will assist in conserving the subject taxon, please contact the Eastern Region of the Forest Service Threatened and Endangered Species Program at 310 Wisconsin Avenue, Milwaukee, Wisconsin 53203.

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EXECUTIVE SUMMARY

Pseudocyphellaria crocata (L.) Vain. is designated as a Regional Forester Sensitive Species on the Superior National Forest in the Eastern Region of the Forest Service. The purpose of this document is to provide the background information necessary to prepare Conservation Approaches and a Conservation Strategy that will include management actions to conserve the species.

This conservation assessment provides available information on *Pseudocyphellaria crocata* (L.) Vain. and its distribution, habitat, range, status, life history, and ecology. *Pseudocyphellaria crocata* grows on trees and rocks in humid areas in both cool temperate and tropical regions of the world. In North America it occurs from Alaska to California and east to Quebec and from Maine to North Carolina. This species is listed as Vulnerable in many parts of Europe. In the Great Lakes area common habitat for this species is wet areas in bogs and near lakes. It is an R9 Sensitive Species on Superior National Forest in Minnesota. Threats to *Pseudocyphellaria crocata* are logging or local disturbance near lakeshores that would lower the humidity. This species is also very sensitive to air pollution.

ACKNOWLEDGEMENTS

Appreciation is extended to the curators of the herbaria for help in obtaining label data for collections of rare lichens and to Dr. James Bennett for assistance. Regional USFS personnel also provided maps and assistance in obtaining data for their forests and are thanked for their help.

INTRODUCTION

For this document a search was made of the printed literature, Internet (W-1), and other literature thought to have pertinent information. Distribution and ecological information was gathered along with range-wide status and threats. All collections of the species found in the University of Michigan Herbarium (MICH), University of Minnesota Herbarium (MIN), Michigan State University Herbarium (MSC), and University of Wisconsin Herbarium (WIS) were located and the labels copied and entered into species databases. From these records ecological information, land ownership, and distribution maps were prepared for the area covered in this report. The draft reports were then sent to reviewers for comments and additions.

Most lichens do not have common names that are widely known, although some attempts have been made to create them (Brodo et al. 2001). For most species there is little known about the detailed ecology and the historical distributions of these lichens but some data could be derived from the herbarium collections.

NOMENCLATURE AND TAXONOMY

Family: Lobariaceae

Scientific name: *Pseudocyphellaria crocata* (L.) Vain.

Common name: none

USDA plant code: PSCR60

Synonyms: *Sticta crocata* (L.) Ach.

Pseudocyphellaria mougeotiana (Delise) Vain.

DESCRIPTION OF SPECIES

“Thallus foliose, loosely appressed, free at the edges, to 10 (15) cm broad; lobes mostly 0.5-2 cm broad, upper surface light or dark brown (grayish in deep shade), sometimes with a shallow network of ridges; lower surface covered with light to dark brown tomentum with scattered white spots (pseudocyphellae)”; “soralia roundish to irregular, yellow, laminal and marginal; apothecia not seen; medulla white” (McCune & Geiser 1997).

This species is typically brownish when wet with distinctly yellow soredia on the surface and margins of the lobes with yellow spots on the lower surface. No other brownish broad lobed lichen with yellow soredia occurs in this area. *Sticta fuliginosa* also has spots on the lower surface but they are white and it has dark isidia instead of soredia. See color photo # 718 in Brodo et al. (2001) and McCune & Geiser (1997) p. 253.

LIFE HISTORY

Reproduction : This lichen reproduces asexually by soredia, which are rather abundant on the thallus.

Ecology : This lichen grows on mossy bark and wood or on moss on rocks in very humid places. It has been found in our area in old-growth *Thuja* bogs and near lakeshores. It is also very sensitive to air pollution.

Dispersal : Dispersal of this lichen is only asexually by soredia.

Obligate Associations : NA

HABITAT

Range-wide : In New Zealand this species is common in open grasslands and heaths on rocks or decorticate wood, on various kinds of rocks, in open habitats, and also on trees and shrubs (Galloway 1988). In Norway this species occurs mainly in humid and shady habitats like north-facing mossy rock walls and damp, sheltered woodlands, primarily in old-growth forests (Tønsberg et al. 1996). In South America it occurs on trees and shrubs, soil, and rocks and among mosses in many habitats from sea level to 1500 meters as well as (Galloway 1992). In North America it is found on bark and mossy rocks in humid sites (Brodo et al. 2001). In the Pacific Northwest it is found “in low to mid-elevation forests, usually in valley bottoms and foothills, often in riparian forests, ash swamps, and oak savanna” (McCune & Geiser 1997). In our region it can occur on mossy rocks or trees in shady humid situations in mature forests (Coffin & Pfannmuller 1988).

National Forests : There have been no recent collections from the regional National Forests.

Site Specific : Of the four records in our region, one was collected on a large boulder in partial shade within 50 feet of a lake (Wetmore 1981), one on a leaning yellow birch in an open *Ledum* bog (Wetmore 1988), and one on trees on a small rocky off-shore island of Lake Superior with black spruce, balsam fir, and mountain ash (Wetmore 1985). Another very recent collection was made in an old *Thuja* bog on a white cedar in northern Wisconsin.

DISTRIBUTION AND ABUNDANCE

Range-wide Distribution : This lichen is found throughout the world in cool temperate and tropical regions (Galloway 1992). It is common in South America (Galloway 1992), New Zealand (Galloway 1988), Australia (Filson 1996), present in China (Wei 1991), and in Europe known from Norway to Portugal (Poelt 1969) but rare in Norway (Tønsberg et al. 1996). In North America it is found from Alaska to California near the coast (McCune & Geiser 1997) and in the northeast from Quebec and Maine to New York with outliers in North Carolina and in the Lake Superior Region (Brodo et al. 2001).

Region-wide Distribution : This species is rare in our region and known from four recent collections (see Appendix 1). Fryday et al. (2001) reported it from Isle Royale in Michigan. In this region before 1970 it was known from 9 localities, and after 1970 it has been collected at four additional localities.

Population Trends : Range-wide this species is common in our Pacific Northwest (McCune & Geiser 1997). In our region it was previously more abundant but apparently has declined due to human activities (e.g. roadbuilding and logging).

RANGEWIDE STATUS

This species is listed as Vulnerable in Norway and Vulnerable to Rare in Europe and has decreased due to air pollution and forestry practices. In North America the western populations are not in danger but in our region many of the populations probably have been eliminated by logging. For definitions of ranks see Appendix 4.

U. S. Fish and Wildlife Rank: Not ranked

Global Heritage Status Rank : Not ranked
U. S. National Heritage Rank : Not ranked
U. S. Forest Service, R9 Sensitive Species: Sensitive on Superior National Forest .
See Appendix 2.
Michigan Rank : Not ranked
Minnesota Rank : Endangered
Wisconsin Rank : Not ranked
Ontario, Canada Rank : Not ranked

Forestry practices and air pollution are the main cause of the loss of this species in our region and throughout its range.

POPULATION BIOLOGY AND VIABILITY

This species reproduces mainly by soredia. It requires very humid habitats free from air pollution in old-growth forests. The populations in Europe and in our region are probably not viable but it is locally frequent in some hazel woods in northwest Scotland. The main secure area of its distribution in the Northern Hemisphere is the Pacific northwest and eastern North America.

POTENTIAL THREATS

Throughout most of the range of this species there has been a severe reduction in populations. The combination of requirements for humid old-growth forests and clean air has meant that it could no longer survive in most European areas of its former distribution. In New Zealand and in our Pacific Northwest these conditions are met and the species still thrives. In our region air quality is usually not the problem but the extensive logging of the northern forests has meant a drastic reduction in the population in the upper Great Lakes area. In this area, at the southern end of its North American distribution there has been a reduction to the point where it probably is no longer viable. Any loss of individual populations may mean a reduction in its total distribution.

Present or Threatened Risks to Habitat : This lichen would be damaged by air pollution because it has blue green algae (cyanobacteria) and is very sensitive to air quality. Because it grows in very moist localities it could be eliminated by logging or disturbance near where it is found.

Overutilization : NA

Disease or Predation : NA

Inadequacy of Existing Regulatory Mechanisms : Michigan and Wisconsin do not have official lists of protected lichens and are not monitoring them.

Other Natural or Human Factors : This lichen could be destroyed by extensive fires or blowdowns that would reduce the humidity. Climatic warming would probably eliminate the southern populations in our area.

SUMMARY OF LAND OWNERSHIP AND EXISTING HABITAT PROTECTION

Of the 13 known localities of this species 7 are in areas under state or federal ownership. See data base table for known localities in Appendix 3.

RESEARCH AND MONITORING

Existing Surveys, Monitoring, and Research : None

Research Priorities : A search for new localities should be done, especially in old *Thuja* bogs and on large rocks near water. An attempt should be made to locate the historical populations and obtain more detailed ecological information.

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- Wetmore, C. 1988. Lichens and air quality on Apostle Islands National Lakeshore. Report submitted to National Park Service.

INTERNET SOURCES

- W-1 Recent Literature on Lichens - http://www.toyen.uio.no/botanisk/botmus/lav/sok_rll.htm
- W-2 Plant name database: http://plants.usda.gov/cgi_bin/topics.cgi

LIST OF CONTACTS

Information Requests :

- Superior National Forest, Minnesota: Jack Greenlee (Forest Plant Ecologist) (218) 229-8817 (intercom 1217) jackgreenlee@fs.fed.us
- Huron-Manistee National Forests, Michigan: Alix Cleveland (Plant Ecologist) (231) 775-5023 x 8729 acleveland@fs.fed.us
- Chequamegon-Nicolet National Forest, Wisconsin: Linda R. Parker, (Forest Ecologist) (715) 762-5169 lrparker@fs.fed.us
- Hiawatha National Forest, Michigan: Jan Schultz (Forest Plant Ecologist) (906) 228-8491 jschultz@fs.fed.us

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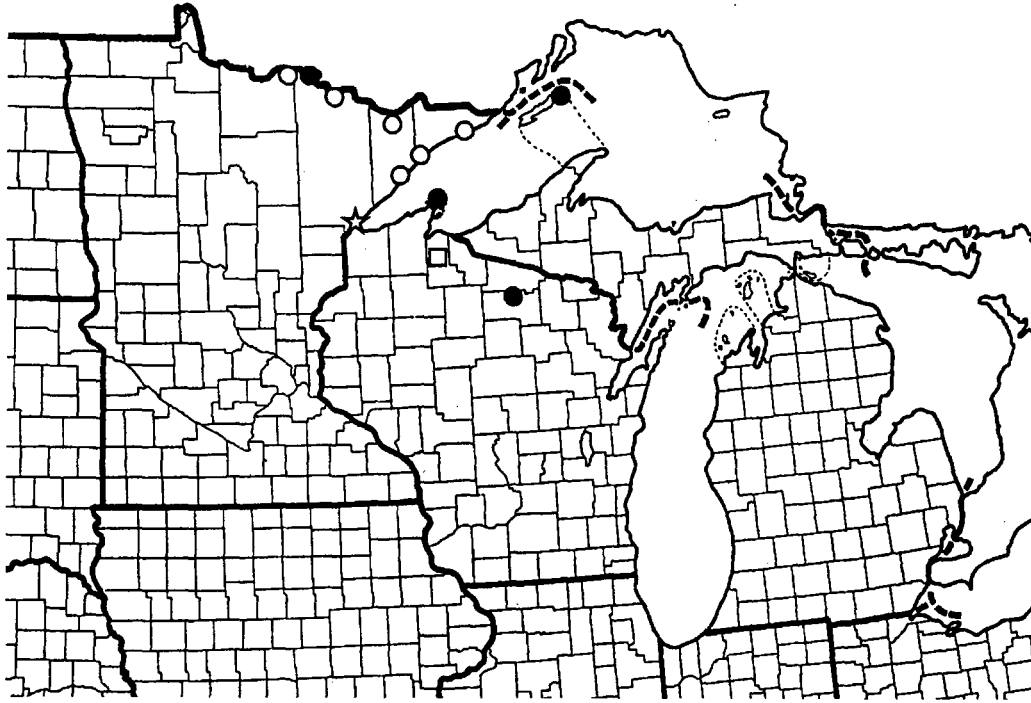
APPENDIX 1 Distribution of *Pseudocyphellaria crocata*.

APPENDIX 2 Lichens of conservation concern on the Lakes States National Forests.

APPENDIX 3 Locality data of *Pseudocyphellaria crocata*.

APPENDIX 4 Definitions of Ranks

APPENDIX 1 Distribution of *Pseudocyphellaria crocata*



Pseudocyphellaria crocata

- ☆ = MICH herbarium specimens before 1970
- ★ = MICH herbarium specimens after 1970
- = MIN herbarium specimens before 1970
- = MIN herbarium specimens after 1970
- ◇ = MSC herbarium specimens before 1970
- ◆ = MSC herbarium specimens after 1970
- = WIS herbarium specimens before 1970
- = WIS herbarium specimens after 1970

APPENDIX 2 Lichens of conservation concern on the Lakes States National Forests

Scientific Name	CN	CP	HI	HM	OT	SU
<i>Arctoparmelia centrifuga</i>						(X)
<i>Caloplaca parvula</i>						X
<i>Cetraria aurescens</i>			(X)	(X)	(X)	X
<i>Cetraria oakesiana</i>			(X)	(X)	(X)	X
<i>Cladonia wainioi</i>						X
<i>Lobaria quercizans</i>	(X)		(X)	(X)	(X)	X
<i>Peltigera venosa</i>						X
<i>Pseudocyphellaria crocata</i>						X
<i>Ramalina thrausta</i>						(X)
<i>Sticta fuliginosa</i>						X
<i>Usnea longissima</i>					(X)	X

X = present in the forest and listed as sensitive

(X)= present in the forest but not listed as sensitive

National Forest Codes

CN Chequamegon/Nicolet

CP Chippewa

HI Hiawatha

HM Huron/Manistee

OT Ottawa

SU Superior

APPENDIX 3 Locality data of *Pseudocyphellaria crocata*

<i>Area</i>	<i>State</i>	<i>County</i>	<i>Locality</i>	<i>Year</i>
	MN	St. Louis	Duluth	1897
	MN	Lake	Snowbank Lake	1897
	MN	Cook	Grand Marais	1902
	WI		Northern Wisc.	1931
	WI	Ashland	Mellen	1927
	MN	Lake	Beaver Bay	1897
Apostle Isl. NL	WI	Ashland	Devils Isl., high S middle	1987
Isle Royale NP	MI	Keweenaw	South Government Isl.	1984
Patterson Hemlocks SNA	WI	Oneida	7 mi W of Woodruff	2002
Superior NF	MN	Cook	Tofte, Carlton Peak	1897
Voyageurs NP	MN	St. Louis	Kettle Falls	1901
Voyageurs NP	MN	St. Louis	Anderson Bay, 2 mi E of	1979
Voyageurs NP	MN	Koochiching	Rainy Lake City	1901
Count = :		13		

APPENDIX 4 Definitions of Ranks

Definitions of Global Heritage Ranks

G3: Vulnerable—Vulnerable globally either because very rare and local throughout its range, found only in a restricted range (even if abundant at some locations), or because of other factors making it vulnerable to extinction or elimination. Typically 21 to 100 occurrences or between 3,000 and 10,000 individuals.

G4: Apparently Secure—Uncommon but not rare (although it may be rare in parts of its range, particularly on the periphery), and usually widespread. Apparently not vulnerable in most of its range, but possibly cause for long-term concern. Typically more than 100 occurrences and more than 10,000 individuals.

G5: Secure—Common, widespread, and abundant (although it may be rare in parts of its range, particularly on the periphery). Not vulnerable in most of its range. Typically with considerably more than 100 occurrences and more than 10,000 individuals.

Definitions of National and Subnational Heritage Ranks

N2, S2: Imperiled—Imperiled in the nation or subnation because of rarity or because of some factor(s) making it very vulnerable to extirpation from the nation or subnation. Typically 6 to 20 occurrences or few remaining individuals (1,000 to 3,000).

N3, S3: Vulnerable—Vulnerable in the nation or subnation either because rare and uncommon, or found only in a restricted range (even if abundant at some locations), or because of other factors making it vulnerable to extirpation. Typically 21 to 100 occurrences or between 3,000 and 10,000 individuals.

N4, S4: Apparently Secure—Uncommon but not rare, and usually widespread in the nation or subnation. Possible cause of long-term concern. Usually more than 100 occurrences and more than 10,000 individuals.

N5, S5: Secure—Common, widespread, and abundant in the nation or subnation. Essentially ineradicable under present conditions. Typically with considerably more than 100 occurrences and more than 10,000 individuals.

N?, S?: Unranked—Nation or subnation rank not yet assessed.

Minnesota Ranks

Endangered: A species is considered endangered if the species is threatened with extinction throughout all or a significant portion of its range within Minnesota.

Threatened: A species is considered threatened if the species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range within Minnesota.

Special Concern: A species is considered a species of special concern if, although the species is not endangered or threatened, it is extremely uncommon in Minnesota, or has unique or highly specific habitat requirements and deserves careful monitoring of its status. Species on the periphery of their range that are not listed as threatened may be included in this category along with those species that were once threatened or endangered but now have increasing or protected, stable populations.

Regional USDA Forest Service Ranks (USDA Forest Service. 1995. Forest Service Manual 2670.5. Washington, D.C.)

Sensitive Species: Those plant and animal species identified by a Regional Forester for which population viability is a concern, as evidenced by:

- a. Significant current or predicted downward trends in population numbers or density.
- b. Significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution.