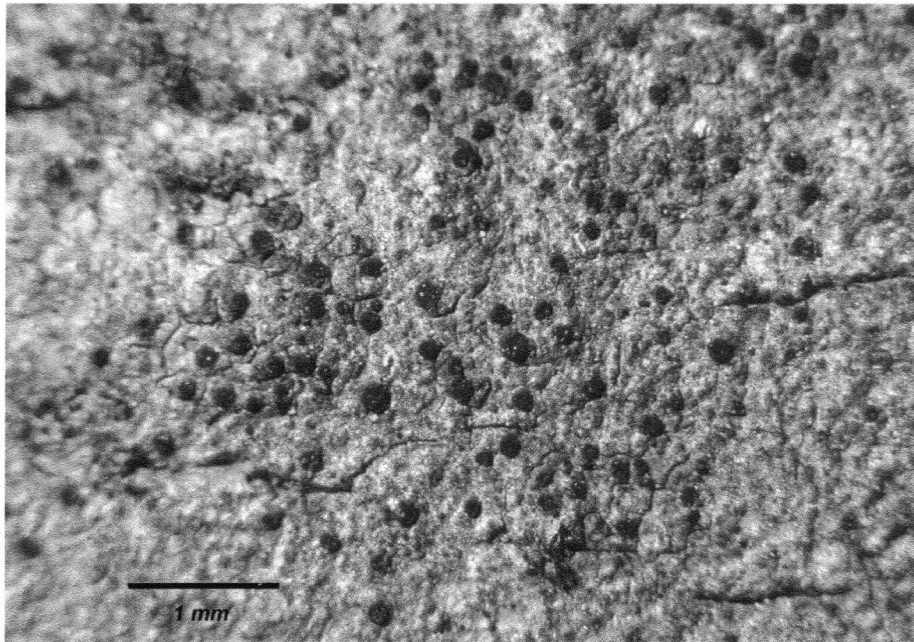


*R9 Species Conservation Assessment
for*

Caloplaca parvula Wetm.

in

The Upper Great Lakes National Forests



Caloplaca parvula

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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This Conservation Assessment was prepared to compile the published and unpublished information on the subject species or community.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.

Cover photo by C. Wetmore.

EXECUTIVE SUMMARY

Caloplaca parvula Wetm. 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 *Caloplaca parvula* Wetm. and its distribution, habitat, range, status, life history, and ecology. *Caloplaca parvula* grows on the bases of smooth barked trees in wet areas and is endemic to eastern North America with one collection as far east as Quebec. It is not known from Europe. In the Great Lakes area common habitat for this species is wet black ash bogs at the ends of lakes. It is an R9 Sensitive Species on Superior National Forest in Minnesota. Threats to *Caloplaca parvula* are drastic changes in water levels of the ash bogs and well as road construction or logging near the bogs.

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: Teloschistaceae

Scientific name: *Caloplaca parvula* Wetm.

Common name: none

USDA plant code: CAPA77

Synonyms: none

DESCRIPTION OF SPECIES

“Thallus dark gray, thin, continuous to areolate at margins, cyanotrophic, no prothallus. Apothecia very small (0.1-0.2 mm) diam., black, sessile, flat; margin thin to disappearing, black, no outer thalloid margin” (Wetmore 1994).

This is a crustose lichen that grows on smooth hardwood bark, usually at the base of young trees and resembles several other unrelated species with small black apothecia. The thallus is gray and the apothecia are black and very small (0.1-0.2 mm diam.). The only way to identify it is to make sections of the apothecia and check the spores and tissue reactions because *Caloplaca parvula* is the only black fruited species with polarilocular spores. The bluish green epithecium is KOH- and the spores are 10-12.5 X 4-5.5 μ m, isthmus 1.5 μ m.

LIFE HISTORY

Reproduction : This lichen reproduces sexually by spores and has no asexual propagules.

Ecology : This lichen grows on smooth bark at the bases of young hardwood trees (black ash, sugar maple). All Minnesota collections came from young black ash less than 6 inches diameter and within 1 foot of the base. It requires high humidity and probably can withstand short periods of submergence by high water.

Dispersal : Dispersal of this lichen is by spores because this species has no asexual propagules and has a thin crustose thallus.

Obligate Associations : NA

HABITAT

The habitats were all black ash bogs in bays of inland lakes and the bogs had pools of standing water. The ecology of the Michigan and Quebec collections are unknown. These open, wet black ash bogs in bayheads are fairly common in the northern Great Lakes area. Periodic slight fluctuations in water levels may occur. Probably there has been little human influence in recent times except drastic changes in water levels by construction or removal of dams. There are no known localities in black ash bogs away from larger lakes. The locality in Quebec, Canada may be an exception because the substrate is indicated as "on *Quercus* trunk" but the ecological description on the label is incomplete.

Range-wide : Probably the same

National Forests : Same

Site Specific : The Minnesota sites all are open black ash bogs with some standing water and without tall grasses, sedges, or brush.

DISTRIBUTION AND ABUNDANCE

Range-wide Distribution: This species is apparently endemic to North America and is known from a few localities in northern Minnesota, one locality in Michigan (Wetmore 1994), and one locality in Quebec, Canada.

Region-wide Distribution : In this region it was not known before 1970, but after 1970 it has been collected at five localities. This species has been found in 4 localities in St. Louis County, Minnesota and one locality in Mackinac County, Michigan (Wetmore 1994) (see Appendix 1). Two of the Minnesota localities are in Superior National Forest.

Population Trends: Because this species was only recently described there is no historical information on its distribution or abundance range-wide or regionally. Some older records may turn up in the future but because of its small size it may have never been collected in the past.

RANGEWIDE STATUS

This species is not listed outside of North America. 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

Ontario, Canada 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

The typical habitat would not be threatened except by activities that permanently and drastically change the water levels of the ends of the lakes or by activities that would change the humidity levels of the swamp.

POPULATION BIOLOGY AND VIABILITY

The few scattered known localities indicate that this species is rare throughout its range. The lichen reproduces by small spores so the potential of new colonizations

is possible but the sources of spores for new colonizations is quite limited. Present known populations should be protected and a search for new populations should be initiated. With only six known localities for this species a loss of any one would reduce its viability world-wide.

POTENTIAL THREATS

Any population change is unknown throughout its range and regionally. All Minnesota sites could be potentially threatened by permanent lake level changes caused by addition or removal of dams. It is unlikely that beaver activity in the lake bayheads would be a threat. Another threat could be from road construction or logging in or near these areas. This species probably requires very high humidity to survive and activities that reduce the humidity will probably eliminate this species for those localities. One of the sites in Superior National Forest at Echo Lake is probably secure because it is far removed from human activity but the site at Long Lake is near a summer camp and action should be taken to protect the swamp from human activity and trails.

Present or Threatened Risks to Habitat : Construction of roads or extensive logging in nearby areas could change the moisture conditions and threaten this species. Change in lake levels by removal of dams or construction of new dams would change the lake levels and might eliminate this species.

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 : There might be a potential threat to the survival of this species by climate warming. Not much detailed ecological information is available about this lichen but it apparently requires very humid conditions to grow and changes in precipitation or temperature might be a threat to its survival.

SUMMARY OF LAND OWNERSHIP AND EXISTING HABITAT PROTECTION

Two of the known Minnesota localities are in Superior National Forest and two are in Voyageurs National Park. The administrators of both areas are aware of the localities and need for protection. The ownership of the Michigan and Quebec localities is unknown. See data base table for known localities in Appendix 3.

RESEARCH AND MONITORING

Existing Surveys, Monitoring, and Research : A survey was made in Superior National Forest in 1999 to look for localities with rare lichens (Wetmore 2000) . This species was found at one new locality during this survey. In addition two pre-timber sales surveys have been made to look for rare species but this species was not found.

Survey Protocol : In the 1999 survey likely sites were chosen using USFS vegetation maps followed by low-level aerial flights to look for likely habitats. Ground checking was then done and total collections were made at interesting localities.

For the pre-timber sales surveys a lichenologist walked through parts of the sales area looking for rare lichens.

Research Priorities : Suitable habitats should be searched for, especially in the northern Great Lakes area. The present knowledge is inadequate for proper

management of this lichen. Known localities where this lichen occurs should be studied to determine population sizes and survival as well as the detailed ecology of the species.

REFERENCES

- Brodo, I., S. Sharnoff, & S. Sharnoff, 2001. Lichens of North America. Yale Univ. Press.
- Wetmore, C. 1994. The lichen genus *Caloplaca* in North and Central America with brown or black apothecia. *Mycologia* 86: 813-838.
- Wetmore, C. 2000. Rare Lichen Survey of Superior National Forest. Report submitted to USDA Forest 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 acleland@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
- Ottawa National Forest, Michigan: Susan Trull (Forest Botanist), (906).932.1330 ext. 312 strull@fs.fed.us
- Chippewa National Forest, Minnesota: Ray Newman, (Forest Botanist), rwnewman@fs.fed.us

Review Requests :

- Superior National Forest, Minnesota: Jack Greenlee (Forest Plant Ecologist) (218) 229-8817 (intercom 1217) jackgreenlee@fs.fed.us
- Dr. Alan Fryday, Herbarium, Michigan State University, East Lansing, MI (517) 355 4696 fryday@msu.edu
- Dr. James Bennett, Biological Resources Division, U. S. Geological Survey, Madison, WI (608) 262 5489 jpbennet@wisc.edu

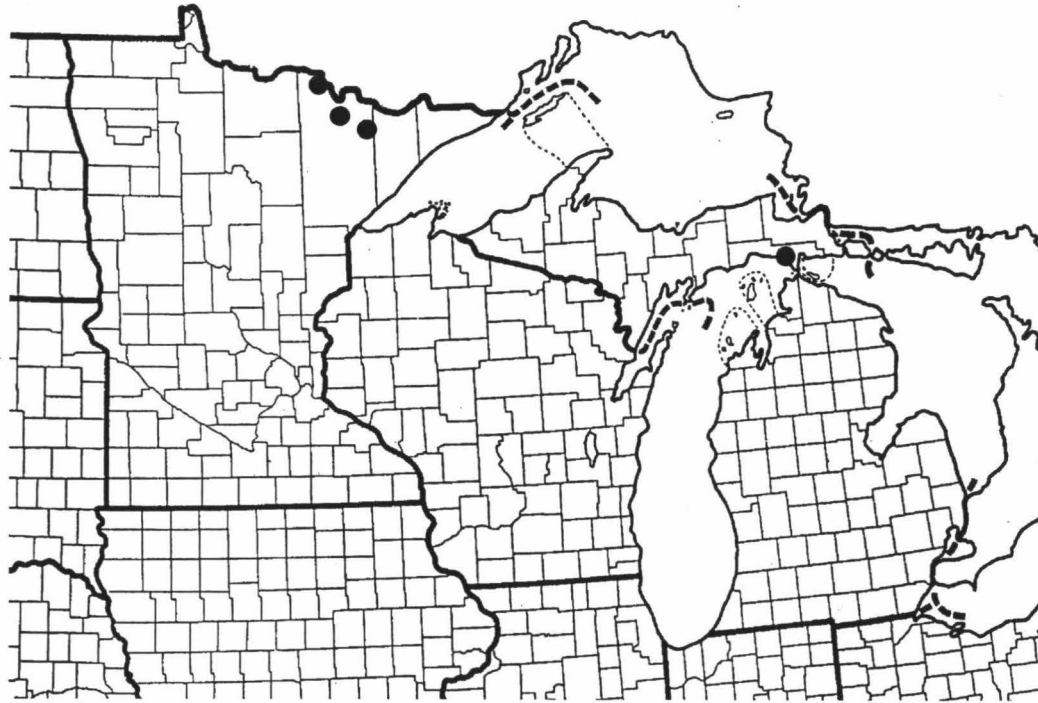
APPENDIX 1 Distribution of *Caloplaca parvula*.

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

APPENDIX 3 Locality data of *Caloplaca parvula*.

APPENDIX 4 Definitions of Ranks

APPENDIX 1 Distribution of *Caloplaca parvula*



Caloplaca parvula

- ☆ = 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 *Caloplaca parvula*

<i>Area</i>	<i>State</i>	<i>County</i>	<i>Locality</i>	<i>Year</i>
	QU	Gatineau	7 km NW of Ottawa	1982
	MI	Mackinac	Big Knob Road near US HWY 2	1977
Superior NF	MN	St. Louis	W end of Little Long Lake	1999
Superior NF	MN	St. Louis	SW end of Echo Lake	1996
Voyageurs NP	MN	St. Louis	Kettle Falls, N of	1978
Voyageurs NP	MN	St. Louis	Kettle Falls	1978
Count = :				6

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.