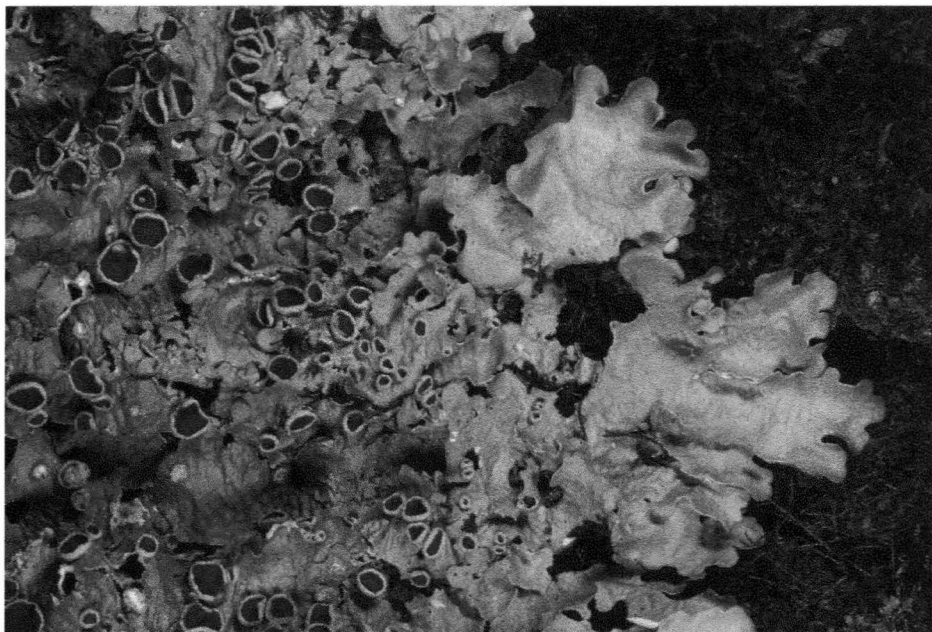


*R9 Species Conservation Assessment
for*

Lobaria quercizans Michx.

in

The Upper Great Lakes National Forests



Lobaria quercizans

*Prepared by
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November 2002

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This Conservation Assessment was prepared to compile the published and unpublished information on the subject species or community.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

Lobaria quercizans Michx. is designated as a Regional Forester Sensitive Species on the Superior National Forest in the Eastern Region of the Forest Service. The species occurs on the Chequamegon-Nicolet, Hiawatha, Huron-Manistee, and Ottawa National Forests. 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 *Lobaria quercizans* Michx. and its distribution, habitat, range, status, life history, and ecology. *Lobaria quercizans* grows on old-growth hardwood trees in eastern Asia and eastern North America. In North America it has an Appalachian-Great Lakes distribution. It is not found in Europe. In the Great Lakes area common habitat for this species is on old-growth sugar maple and black ash. Threats to *Lobaria quercizans* are large-scale logging that would eliminate areas of old-growth sugar maple and yellow birch.

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 : *Lobaria quercizans* Michx.

Common name : none

USDA plant code : LOQU4

Synonyms : none

DESCRIPTION OF SPECIES

“Thallus light brownish mineral gray, 6-20 cm broad; lower surface tan, felty, with some tufts of tomentum; apothecia common” (Hale 1979).

This species has a thallus that is bluish green when wet and gray when dry, without soredia and with abundant apothecia compared with *Lobaria pulmonaria* that is green when wet and has soredia. See color photo # 476 in Brodo et al. (2001).

LIFE HISTORY

Reproduction : This lichen reproduces only sexually by spores. The thallus is fairly thick so thallus fragments are probably rare.

Ecology : This lichen grows on deciduous trees, rarely on rocks. This species is important in fixation of nitrogen (Becker 1980) and is sensitive to air pollution. It is usually found in old-growth forests on old hardwood trees. The habitats in such places are humid most of the time.

Dispersal : Dispersal of this lichen is by spores that can blow significant distances within the stand but may have difficulty dispersing between woodlots because of the dense forest canopy where they grow.

Obligate Associations : NA

HABITAT

Range-wide : In Asia it grows on trees in deciduous forests (Yoshimura 1971). In North America it grows on deciduous trees, mainly sugar maple and sometimes on rock (Brodo et al. 2001). In New Brunswick, Canada, it occurs mainly on *Acer* but also rarely on *Abies balsamea* (Gowan & Brodo 1988). In Maine it was

listed as common on deciduous trees in damp mixed woods (Degelius 1940). In the southern Appalachians it is common on hardwood trees in all community types (Dey 1978, Degelius 1941), and on bark of deciduous trees in "open woods and roadsides" (Flenniken 1999). In the Upper Great Lakes it was found on trunks of fallen trees estimated as over 150 years old with the thalli 50-60 years old (Thomson 1990).

National Forests : Most of the reports from the regional National Forests are from old sugar maple or black ash. In Chequamegon National Forest it was found in black ash bogs and old sugar maple stands. All of these habitats provide higher humidity and habitat continuity because of their old-age.

Site Specific : Typical habitats in Superior National Forest are old-growth sugar maple stands, especially ones with old yellow birch, and also in undisturbed black ash bogs (Wetmore 2000). There are similar old-growth forests with *Lobaria quercizans* near Lake Superior in northern Wisconsin and Michigan.

DISTRIBUTION AND ABUNDANCE

Range-wide Distribution : This species occurs in eastern Asia as far south as Japan and in eastern North America (Yoshimura 1971, Jordan 1973, Thomson 2002). In North America it has an Appalachian-Great Lakes distribution with outliers in western Arkansas (Wetmore 2001, Jordan 1973). Degelius (1940) reported this to be common in Maine and abundant in the Smokey Mountains (Degelius 1941).

Region-wide Distribution : This species is known from Michigan, Minnesota, and Wisconsin (see Appendix 1). In Michigan Harris (1978) listed it as rather common in central and northern Lower Peninsula and in Upper Peninsula of Michigan. In this region before 1970 it was known from 111 localities, and after 1970 it has been collected at 136 additional localities.

Population Trends : Range-wide there is little trend information but there is no mention in the literature about population concerns. Region-wide there might be a slight population reduction due to previous logging. This may be true especially in the southern part of our region where populations may have been reduced because this species occurs on old-growth sugar maple and yellow birch and human activity in these areas has been more intense.

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 : G4G5

U. S. National Heritage Rank : N?

U. S. Forest Service, R9 Sensitive Species: Sensitive on Superior National Forest .
See Appendix 2.

Michigan Rank : Not ranked

Minnesota Rank : Special Concern

Wisconsin Rank : Not ranked

Ontario, Canada Rank : S4?

There are numerous known localities for this species, both historic and recent. When *Lobaria quercizans* was listed for Superior National Forest there were fewer known populations but recent surveys indicates that this species is more common than

previously thought. Because it requires old-growth forests to survive, past logging may have eliminated some localities but there are enough existing populations to provide spores for colonization of new habitats as the forests age.

POPULATION BIOLOGY AND VIABILITY

This species reproduces sexually by spores that can blow to new localities. It has no asexual propagules. The usual habitat is in old-growth sugar maple and yellow birch forests. The presence of numerous populations in protected areas means there probably is no threat to its continuing viability.

POTENTIAL THREATS

Range-wide this species is maintaining its distribution and faces no serious threat to its viability. The only serious concern would be wide-scale clearcutting of the old hardwood forests. The populations in northern Michigan, Minnesota, and Wisconsin are not presently threatened. The southernmost population in Manistee National Forest might still persist.

Present or Threatened Risks to Habitat : This species is fairly secure in all of our region providing there is no wide-scale logging of the old hardwood forests. This species requires humid old-growth forests to survive. Primitive small roads through these forests do not seem to alter the humidity significantly enough to eliminate the 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 : Widespread wind blowdown and major fires that destroy large areas of the old-growth hardwood forests could reduce the suitable habitats for this species. Air pollution could pose a threat because this lichen is sensitive to sulfur dioxide.

SUMMARY OF LAND OWNERSHIP AND EXISTING HABITAT PROTECTION

Of the 247 known localities of this species 151 are in areas under state or federal ownership but these may not be protected. 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 16 new localities 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 : For 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. In the pre-timber sales surveys a lichenologists walked through parts of the sales area looking for rare lichens.

Research Priorities : Known localities of this species have been documented but additional potential localities should be located and recorded to guide in future forest management if this species remains on the Sensitive List.

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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
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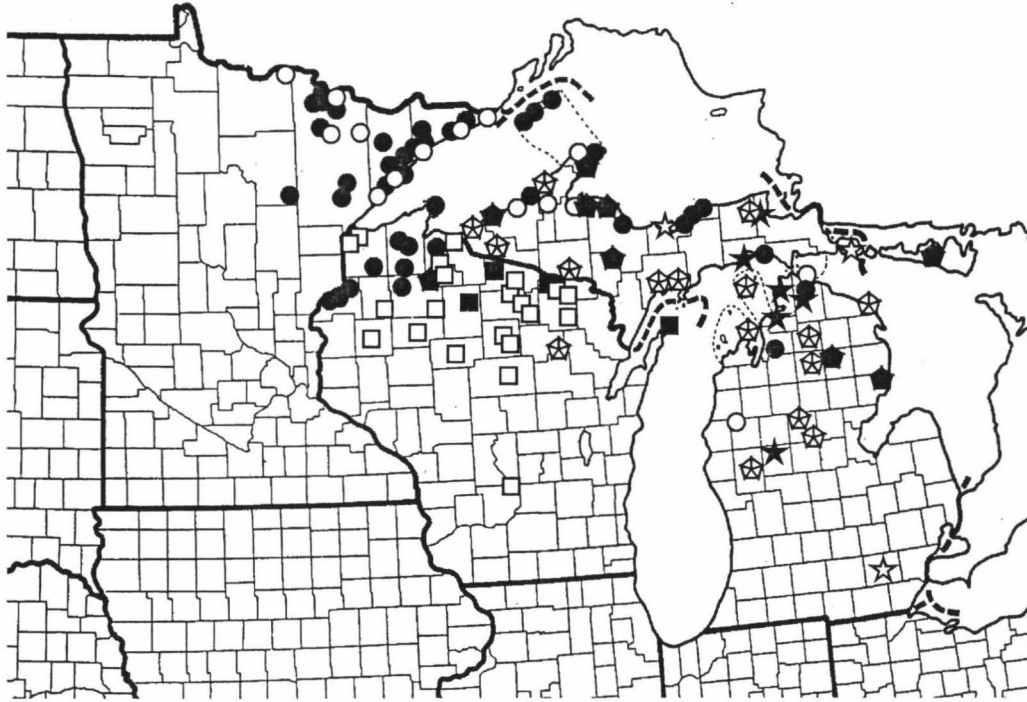
APPENDIX 1 Distribution of *Lobaria quercizans*.

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

APPENDIX 3 Locality data of *Lobaria quercizans*.

APPENDIX 4 Definitions of Ranks

APPENDIX 1 Distribution of *Lobaria quercizans*



Lobaria quercizans

- ☆ = MICH herbarium specimens before 1970
- ★ = MICH herbarium specimens after 1970
- = MIN herbarium specimens before 1970
- = MIN herbarium specimens after 1970
- ☆ (with cross) = MSC herbarium specimens before 1970
- ★ (with cross) = 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 *Lobaria quercizans*

<i>Area</i>	<i>State</i>	<i>County</i>	<i>Locality</i>	<i>Year</i>
	WI	Vilas	Star Lake	1948
	WI	Ashland	Lake Galilee near Mellen	1953
	WI	Marathon	NE of Mosinee paper mill	1970
	WI	Oneida	15 mi S of Rhinelander	1946
	WI	Oneida	Woodruff	1946
	WI	Douglas	Clear Creek S of Dewey	1942
	WI	Rusk		1921
	WI	Price	near Pike	1953
	WI	Vilas	western part of county	1995
	WI	Washburn	Long Lake	1953
	WI		Kilbourn City, Wisconsin Dells	1869
	WI	Vilas	Trout Lake	1933
	MN	St. Louis	Water Hen Creek, 11 mi SE of Aurora	1977
	WI	Ashland	3 mi NW of Glidden	1953
	MI	Otsego	Gaylord	1958
	WI	Douglas	E of Superior	1942
	MI	Marquette	Mountain Lake, Huron Mts.	1976
	MI	Presque Isle	Presque Isle Point	1958
	MI	Marquette	Cliff Lake, Huron Mts.	1949
	MI	Marquette	N of Mountain Lake, Huron Mts.	1949
	MI	Chippewa	Lake Vital Point	1975
	MI	Baraga	3 km SW of mouth of Huron River	1977
	WI	Door	Washington Isl., Door City	1971
	MI	Marquette	entrance, Huron Mts.	1976
	WI	Marathon	Wisconsin River at Lac Vieux Desert	1893
	MI	Marquette	Mt. Ida, Huron Mts.	1976
	MI	Marquette	Middle Falls, Salmon-Trout R, Huron	1976
	MI	Keweenaw	Central Creek	1976
	MI	Marquette	NW of Howe Lake, Huron Mts.	1976
	MI	Keweenaw	High Rock Bay, Lake Superior	1976
	WI	Oneida	E of Monico	1945
	MI	Keweenaw	11 km NW of South Point	1976
	MI	Keweenaw	Mt. Bohemia	1967
	WI	Rusk	Wilson Township	1953
	MI	Ontonagon	Ontonagon, at E edge of	1967
	MI	Ontonagon	Firesteel River	1967
	MI	Marquette	Marquette, Pioneer Pel. Plant	1978
	MI	Mackinac	St. Ignace, 20 mi W of	1977
	MN	Cook	Grand Marais	1902
	MI	Keweenaw	Rhyolite & Bohemia Col.	1968
	MN	Cook	Grand Portage	1897
	MI	Keweenaw	Copper Harbor, Clark mine	1972
	MI	Keweenaw	Copper Harbor, 5 mi SSE of	1968
	MI	Houghton	Lake Gerald, 2.5 mi SE of	1967
	MI	Cheboygan	N of Cheboygan, Levering Road	1977
	MI	Baraga	L'Anse, 11 mi NE of	1968
	MI	Mackinac	Bois Blanc Isl.	1949
	MI	Keweenaw	Trail to Baileys Pond	1965
	MN	St. Louis	Vermilion Lake	1886
	WI	Marathon	Wisconsin River at Granite Heights	1894
	WI		Wisconsin River at Conover	1893

<i>Area</i>	<i>State</i>	<i>County</i>	<i>Locality</i>	<i>Year</i>
	WI	Lincoln	Wisconsin River at Tomahawk Lake	1893
	WI	Taylor		1981
	WI	Barron	Barron	1890
	MI	Houghton	Twin Lakes, near	1967
	WI	Oneida	Wisconsin River near McNaughton	1893
	WI	Iron	near Gurney	1953
	MN	St. Louis	Harding	1901
	MN	Lake	Two Harbors	1897
	MN	St. Louis	Ely	1897
	MN	Lake	Beaver Bay	1897
	MN	Koochiching	Koochiching	1901
	MN	Itasca	Goodland, 3 mi E of	1985
	WI	Lincoln	4 mi N of Gleason	1945
	WI	Oneida	Rhineland	1946
	MI	Cheboygan	N of Levring Road	1973
	MI	Clare	N of Clare	1958
	MI	Houghton	Lake Superior shore	1958
	MI	Alger	Kingston Lake SE of Grand Marais	1964
	MN	Cook	Tofte, Carlton Peak	1897
	MI	Chippewa	Drummond Isl., S of Beaver Pond	1976
	MI	Iron	E of Lake Sixteen	1969
	MI	Clare	NW of Long Lake	1969
	MI	Antrim	8.5 mi N of Mancelona	1975
	MI	Charlevoix	Six Mile Lake 6 mi SW of E Jordan	1975
	MI	Keweenaw	Bear Creek, E of Bete Grise	1976
	MI	Mackinac	Rock River Road off Big Knob Rd	1977
	WI	Langlade	1.5 mi N of Langlade	1953
	MN	Lake	Encampment River	1951
	MI	Emmet	S end of Larks Lake	1972
	MI	Cheboygan	UM Biol. Station, Gorge	1970
	MI	Mackinac	Curtis	1949
	MI		Alnia	1892
	MI	Cheboygan	Iron Bridge, Biol Station	1931
	MI	Cheboygan	Reeses Bog, Biol Station	1949
	MI	Mackinac	Cedarville-Hassel	1949
	MI	Chippewa	W of Detour	1949
	MI	Chippewa	E of Cedarville	1949
	MI	Marquette	Mountain Stream Falls, Huron Mts.	1949
	MI	Mackinac	Cut River Bridge	1977
	MI	Keweenaw	S of Copper Harbor	1976
	MI		Grapevine	1924
	MI	Newaygo	White Cloud	1957
	MI	Charlevoix	Beaver Isl.	1961
	MI	Washtenaw	S of Ann Arbor	1893
	MI	Keweenaw	Estivant Pines, Copper Harbor	1976
Apostle Isl. NL	WI	Ashland	Outer Isl., W of lighthouse	1987
Apostle Isl. NL	WI	Ashland	Hermit Isl., SW side	1987
Apostle Isl. NL	WI	Bayfield	York Isl.	1976
Apostle Isl. NL	WI	Ashland	Outer Isl., 1 mi S of light	1987
Apostle Isl. NL	WI	Ashland	Manitou Isl., S tip	1987
Apostle Isl. NL	WI	Ashland	Rocky Isl., inland	1987
Apostle Isl. NL	WI	Ashland	South Twin Isl., Airstrip	1987
Apostle Isl. NL	WI	Ashland	Stockton Isl., Quarry Bay, E	1987

<i>Area</i>	<i>State</i>	<i>County</i>	<i>Locality</i>	<i>Year</i>
Apostle Isl. NL	WI	Bayfield	Mainland at Sand Point	1987
Apostle Isl. NL	WI	Bayfield	Raspberry Isl., W side	1987
Apostle Isl. NL	WI	Ashland	Otter Isl., SE tip	1987
Apostle Isl. NL	WI	Ashland	Stockton Isl.	1976
Apostle Isl. NL	WI	Bayfield	Sand Isl.	1976
Baraga SF	MI	Ontonagon	Misery Bay	1980
Chequamegon NF	WI	Price	17 mi E of Fifield	1986
Chequamegon NF	WI	Bayfield	near Drummond	1896
Chequamegon NF	WI	Bayfield	N of Clay Lake	1992
Chequamegon NF	WI	Bayfield	2 mi E of Drummond	1946
Chequamegon NF	WI	Bayfield	W side of Beaver Lake	1992
Chequamegon NF	WI	Bayfield	Lake Owen	1953
Chequamegon NF	WI	Bayfield	2 mi NE of Drummond	1953
Chequamegon NF	WI	Bayfield	S of Wishbone Lake	1992
Chequamegon NF	WI	Bayfield	S of Bellevue Lake	1992
Chequamegon NF	WI	Bayfield	NW of Wabigon Lake	1992
Chequamegon NF	WI	Price	17 mi E of Park Falls	1984
Chequamegon NF	WI	Bayfield	NW of Muck Lake	1992
Chequamegon NF	WI	Bayfield	NW of Bellevue Lake	1992
Chequamegon NF	WI	Bayfield	SW end of Clay Lake	1992
Copper Falls SP	WI	Ashland	Mellen, 3 mi N of	1965
Flambeau River SF	WI	Sawyer		1951
Flambeau River SF	WI	Sawyer		1951
Flambeau River SF	WI	Sawyer		1951
Hartwick Pines SP	MI	Crawford		1958
Haymarsh Lake Game	MI	Mecosta	3.5 mi NW of Chippewa Lake	1978
Hiawatha NF	MI	Alger	AuTrain Falls	1900
Hiawatha NF	MI	Delta	Chicago Lake N of Isabella	1969
Hiawatha NF	MI	Delta	NW of Isabella	1969
Hiawatha NF	MI	Delta	14 mile Bridge NW of Isabella	1969
Hiawatha NF	MI	Alger	AuTrain	1933
Hiawatha NF	MI	Alger	Rock River	1927
Hiawatha NF	MI	Schoolcraft	Lily Lake, 6 mi SE of Shingleton	2000
Hiawatha NF	MI	Delta	Bills Creek NE of Rapid River	1969
Huron NF	MI	Iosco	Iargo Springs, 18 mi W of Oscoda	1973
Isle Royale NP	MI	Keweenaw	Huginnin Cove, 1 mi S of	1984
Isle Royale NP	MI	Keweenaw	Checker Point	1983
Isle Royale NP	MI	Keweenaw	Duncan Bay, head of	1983
Isle Royale NP	MI	Keweenaw	Grace Creek Bog, SE of	1984
Isle Royale NP	MI	Keweenaw	Greenstone Ridge, Windigo	1958
Isle Royale NP	MI	Keweenaw	Minong Ridge Trail, W end	1984
Isle Royale NP	MI	Keweenaw	Brady Cove, S of	1983
Isle Royale NP	MI	Keweenaw	Monument Rock, Tobin Harbor	1930
Isle Royale NP	MI	Keweenaw	New Feldtman Tower, N slope	1983
Isle Royale NP	MI	Keweenaw	Huginnin Cove, SE	1984
Isle Royale NP	MI	Keweenaw	McCargo Cove	1930
Isle Royale NP	MI	Keweenaw	Tobin Harbor	1930
Isle Royale NP	MI	Keweenaw	Washington Harbor, SE of	1984
Isle Royale NP	MI	Keweenaw	Island Mine Trail	1959
Isle Royale NP	MI	Keweenaw	Siskiwit Bay CCC Camp	1958
Isle Royale NP	MI	Keweenaw	Lookout Louise, SE	1983
Isle Royale NP	MI	Keweenaw	NE of Windigo	1958
Isle Royale NP	MI	Keweenaw	Rainbow Cove, E of	1984
Isle Royale NP	MI	Keweenaw	Sugar Mountain	1984

<i>Area</i>	<i>State</i>	<i>County</i>	<i>Locality</i>	<i>Year</i>
Isle Royale NP	MI	Keweenaw	Grace Creek Trail	1958
Isle Royale NP	MI	Keweenaw	Grace Harbor, S shore	1984
Isle Royale NP	MI	Keweenaw	Island Mine, 1 mi N of	1984
Isle Royale NP	MI	Keweenaw	Brady Cove	1983
Isle Royale NP	MI	Keweenaw	New Feldtman Tower, S slope	1983
Isle Royale NP	MI	Keweenaw	Tallman Isl., N of	1983
Isle Royale NP	MI	Keweenaw	Wallace Lake	1983
Isle Royale NP	MI	Keweenaw	Hay Bay	1977
Isle Royale NP	MI	Keweenaw	Amygdaloid Isl.	1984
Isle Royale NP	MI	Keweenaw	Beaver Isl., NW of	1984
Isle Royale NP	MI	Keweenaw	Beaver Isl., SW of	1984
Isle Royale NP	MI	Keweenaw	Feldtman Ridge	1959
Lighthouse Pt. SP	MI	Leelanaw	Leelanaw Penin, Lighthouse Point	1957
Manistee NF	MI	Lake	Irons, W of	1968
Manistee NF	MI	Lake	Bear Track US Forest CG W of Irons	1968
N Highlands SF	WI	Vilas	Sayner	1941
Nicolet NF	WI	Forest		1995
Nicolet NF	WI	Forest	Bose Lake 13 mi E of Phelps	1986
Nicolet NF	WI	Florence	Fern at Popple River	1953
Nicolet NF	WI	Forest	Blackwell	1953
Nicolet NF	WI	Forest	NE of Alvin	1966
Nicolet NF	WI	Forest	Brule River NE edge of Alvin	1966
Nicolet NF	WI	Forest	Headwaters of Alvin Creek	1986
Nicolet NF	WI	Forest	Popple River	1968
Odauah Indian Res.	WI	Iron	Lake Superior 3 mi W Montreal River	1896
Ottawa NF	MI	Gogebic	Bobcat Lake CG 2 mi SE of Marenisco	1975
Ottawa NF	MI	Baraga	5 mi NE of Sidnaw	1972
Ottawa NF	MI	Gogebic	Lake Gogebic shore	1957
Ottawa NF	MI	Gogebic	Black River, Lake Superior	1957
Pattison SP	WI	Douglas	ravine of Black River	1942
Pictured Rocks NL	MI	Alger	Grand Sable Lake, E side	1987
Pictured Rocks NL	MI	Alger	Beaver Lake, S, at Lowney Creek	1987
Pictured Rocks NL	MI	Alger	Beaver Lake, S, on ridgetop	1987
Pictured Rocks NL	MI	Alger	Grand Portal Point, E side	1987
Pictured Rocks NL	MI	Alger	Grand Sable Dunes, S of	1987
Pictured Rocks NL	MI	Alger	Sevenmile Creek, Mouth	1987
Pictured Rocks NL	MI	Alger	Mosquito River Mouth	1987
Pictured Rocks NL	MI	Alger	Hurricane River CG, 0.5 mi SW	1987
Pictured Rocks NL	MI	Alger	Little Beaver Lake	1976
Pictured Rocks NL	MI	Alger	Log Slide, W of	1987
Porcupine Mts. SP	MI	Ontonagon	Lake of the Clouds	1976
Porcupine Mts. SP	MI	Ontonagon	Mirror Lake	1957
Porcupine Mts. SP	MI	Ontonagon	Union Falls	1957
Porcupine Mts. SP	MI	Ontonagon	Union River CG	1976
Porcupine Mts. SP	MI	Gogebic	Manabezno Falls, Big Presque Isle R	1976
Porcupine Mts. SP	MI	Ontonagon		1922
Porcupine Mts. SP	MI	Ontonagon		1922
Porcupine Mts. SP	MI	Ontonagon	Carp River Trail	1964
St. Croix NSR	WI	Bayfield	Cable, 1.5 mi SW	1990
St. Croix NSR	WI	Sawyer	Phipps Flowage, 2 mi N	1990
St. Croix NSR	WI	Douglas	Gordon Dam	1990
St. Croix NSR	WI	Burnett	Riverside at HWY 35 bridge	1990
St. Croix NSR	WI	Burnett	Norway Point Landing	1990
St. Croix NSR	WI	Burnett	Danbury, 3 mi W at hwy 77	1990

<i>Area</i>	<i>State</i>	<i>County</i>	<i>Locality</i>	<i>Year</i>
State Forest	WI	Washburn		1970
Sturgeon R. SF	MI	Dickinson	O'Neil Lake CG	1971
Sturgeon R. SF	MI	Dickinson	S of McGregor Creek NNW of Ralph	1971
Superior NF	MN	St. Louis	East of Bassett Lake	1999
Superior NF	MN	Cook	Heartbreak Hill	1999
Superior NF	MN	Lake	E of Hare Lake	1999
Superior NF	MN	Lake	14 mi NW of Silver Bay	1999
Superior NF	MN	Cook	SE of Trout Lake	1999
Superior NF	MN	Cook	Co. 60, 8 mi NE of Grand Marais	1999
Superior NF	MN	Cook	W of Cascade River on Co. 45	1999
Superior NF	MN	Cook	Oberg Mountain	1999
Superior NF	MN	Cook	Amenda Creek at USFS 342	1999
Superior NF	MN	Cook	2 mi S of 166, 8 mi W of Tofte	1999
Superior NF	MN	St. Louis	SW end of Echo Lake	1996
Superior NF	MN	Cook	N of Dyers Lake	1999
Superior NF	MN	Cook	Mt. Brittany, N of Tofte	1993
Superior NF	MN	Cook	Temperence River Road	1999
Superior NF	MN	St. Louis	Aurora, 11 mi SE of	1977
Superior NF	MN	Cook	Sawbill L CG, 0.75 mi E	1986
Superior NF	MN	Lake	S of Marble Lake in proposed SNA	1994
Superior NF	MN	Cook	Sawbill Trail above Temperence R.	1999
Superior NF	MN	Lake	SE end of Cloquet Lake	1996
Superior NF	MN	St. Louis	North of Pfeifer Lake	1999
Superior NF	MN	St. Louis	SE of Marion Lake	1999
Superior NF	MN	St. Louis	Marion Creek S of 203	1999
Superior NF	MN	Lake	Bald Eagle Lake, 1 mi S of S tip	1986
Taquamenon Falls SP	MI	Chippewa	1.5 mi E of Upper Falls	1983
Taquamenon Falls SP	MI	Chippewa	between upper and lower falls	1975
Taquamenon Falls SP	MI	Chippewa	Lower Falls	1957
Taquamenon Falls SP	MI	Luce	Upper Falls	1957
Thunder Bay R. SF	MI	Oscoda	E branch Big Creek	1973
Voyageurs NP	MN	St. Louis	Round Bear Isl.	1978
Voyageurs NP	MN	St. Louis	Old Dutch Bay, E of	1978
Voyageurs NP	MN	St. Louis	Cemetery Isl.	1978
Voyageurs NP	MN	St. Louis	Kettle Falls	1901

Count = : 247

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.