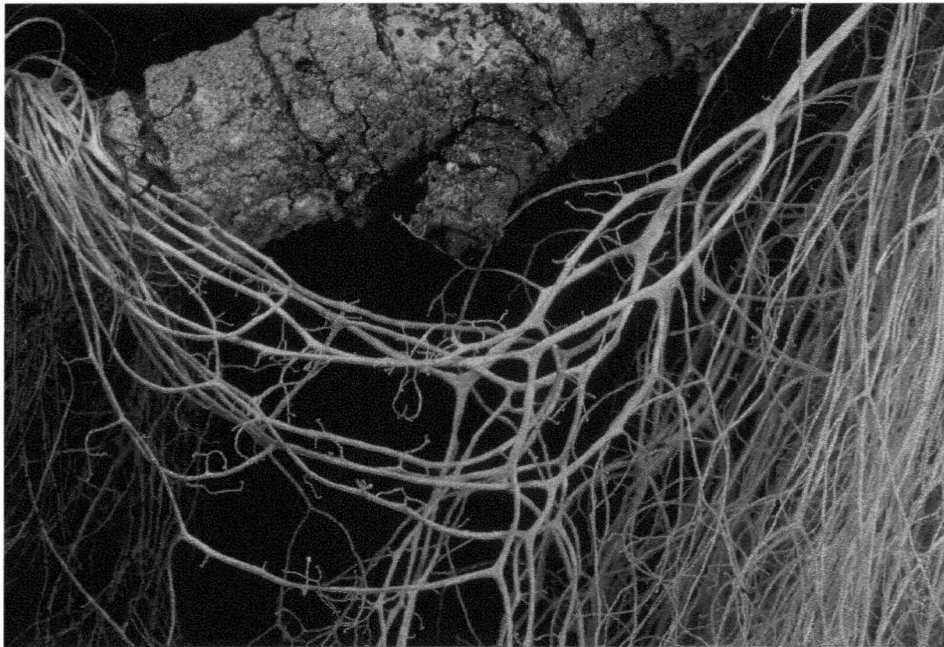


R9 Species Conservation Assessment
for
Ramalina thrausta (Ach.) Nyl.
in
The Upper Great Lakes National Forests



Ramalina thrausta

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This Conservation Assessment was prepared to compile the published and unpublished information on the subject species or community.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

Ramalina thrausta (Ach.) Nyl. is a candidate Regional Forester Sensitive Species on the Superior National Forest in the Eastern Region of the Forest Service. The species occurs on the Superior National Forest. 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 *Ramalina thrausta* (Ach.) Nyl. and its distribution, habitat, range, status, life history, and ecology. *Ramalina thrausta* grows on trees and occasionally on rocks in the circumboreal forests. This species is Vulnerable to Endangered in most of Europe. In the Great Lakes area common habitat for this species is *Thuja* and black spruce bogs. It is a candidate R9 Sensitive Species on Superior National Forest in Minnesota. Threats to *Ramalina thrausta* are removal of the old-growth forests and air pollution. This species is very sensitive to air quality.

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: Ramalinaceae

Scientific name: *Ramalina thrausta* (Ach.) Nyl.

Common name: none

USDA plant code: RATH2

Synonyms: *Alectoria thrausta* Ach.

DESCRIPTION OF SPECIES

“Thallus fruticose, pendulous, to 30 cm long, pale greenish; branches filamentous, mostly <0.5 (1) mm diam., the tip often hooked or curled and ending in a minute soralium; apothecia not seen” (McCune & Geiser 1997).

This lichen has long yellow green draping branches that are shiny and lack the central cord found in all species of *Usnea* that occur in our area. Some species of *Alectoria* are similar but do not occur in this area (*Alectoria sarmentosa*). The tips of the thallus strands are usually slightly curled with small areas of soredia at the tips. It can be confused with the common *Usnea cavernosa* in the field but that species has a solid central cord that can be seen when the branches are pulled while *R. thrausta* cleanly breaks when pulled and lacks the central cord. See color photo # 770 in Brodo et al. (2001) and McCune & Geiser (1997) p. 263.

LIFE HISTORY

Reproduction : This lichen reproduces asexually by soredia and thallus fragments. The thallus is very fragile when dry so thallus pieces can easily break off.

Ecology : This lichen grows on trees and bushes in wet habitats. It is found in the northern part of our area in humid old-growth habitats. It is also very sensitive to air pollution and human activities (Nimis 1993, McCune & Geiser 1997).

Dispersal : Dispersal of this lichen is by soredia and thallus fragments. The soredia could be blown some distance between forests but the thallus fragments would remain in the local area.

Obligate Associations : NA

HABITAT

Range-wide : This species is circumpolar in the boreal forest (Thomson 1984) including Europe, Asia, and North America and is “characteristic of montane, very humid, semi-natural forests” (Nimis 1993). In central Europe it is in cool to cold habitats and grows on conifer and deciduous trees in spruce-fir forests (Wirth 1995). In Norway it grows in sheltered and humid old-growth forests (Tønsberg et al. 1996). In North America it is found mainly on conifers in forests and habitats with high humidity and rarely on rock walls (Brodo et al. 2001) and may rarely be found on gravel (Bowler 1977). Its North American distribution is oceanic as well as boreal but, although abundant at some localities, it is generally rare (Bowler 1977). In our Pacific Northwest it is occasional in low elevation moist forests including old-growth douglasfir (McCune & Geiser 1997). In our region it has similar habitat requirements, being found mainly in old-growth white cedar swamps and in spruce-balsam fir stands.

National Forests : The two localities in our National Forests are in similar habitats.

Site Specific : Our two localities are both in old *Thuja* bogs and the lichens were found on black spruce and a dead balsam fir in Superior National Forest. The *Thuja* trees at one locality were 113 and 135 years old (Wetmore 2001).

DISTRIBUTION AND ABUNDANCE

Range-wide Distribution : This species is known from Norway where it is rare (Tønsberg et al. 1996) and in the mountains of Europe south to the Mediterranean (Poelt 1969, Krog & James 1977) and in the Iberian Peninsula (Llimona & Hladun 2001). In North America it is recorded from localities in the Arctic south to the upper Great Lakes area (Bowler 1977, Thomson 1984, Brodo et al. 2001).

Region-wide Distribution : In our region this species is known only from Michigan and Minnesota (see Appendix 1). Harris (1978) reported this species from the Upper Peninsula of Michigan and it has been reported from Isle Royale (Wetmore 1985) and the Keweenaw Peninsula (Fryday et al. 2001). In this region before 1970 it was known from seven localities, and after 1970 it has been collected at 33 additional localities.

Population Trends : Range-wide this species has decreased in many parts of Europe. In our region the lack of historical records compared with recent collections is probably due to more collecting being done than population expansion. This species requires old-growth forests and probably has been eliminated from many localities by logging.

RANGEWIDE STATUS

This species is Vulnerable in Norway, Endangered in Sweden, Vulnerable in the Mediterranean area and Endangered in the rest of Europe. Further north in North America this is still fairly common but at the southern end of its range in our region it is only common on Isle Royale. For definitions of ranks see Appendix 4.

U. S. Fish and Wildlife Rank: Not ranked
Global Heritage Status Rank : G3G5
U. S. National Heritage Rank : N?

U. S. Forest Service, R9 Sensitive Species: Not listed in Superior National Forest .
See Table.

Michigan Rank : S?

Minnesota Rank : Not ranked

Wisconsin Rank : Not ranked

Ontario, Canada Rank : S?

This species is very sensitive to air pollution and forestry practices that destroy the humid old-growth forests. Most places in our region air pollution is not a problem.

POPULATION BIOLOGY AND VIABILITY

This species reproduces asexually by fragmentation and soredia. The thallus produces a few soredia at the tips of the lobes and the thallus is fragile when dry, providing thallus fragments that can blow to new localities. These thallus fragments are frequently fairly large and do not disperse very far. The lichen requires humid old-growth forests. The species still has viable populations on Isle Royale but in Minnesota with only two known populations the species is probably not viable.

POTENTIAL THREATS

In much of Europe this species is now rare. In Norway the forestry practices have greatly reduced its abundance. It is also sensitive to air pollution. In some localities in our Pacific Northwest it is still abundant but in our region it is at the southern edge of its distribution. In this region it is only frequent on Isle Royale along shores of Lake Superior. The present localities in Minnesota are both within Superior National Forest and the localities need to be protected. There are no historical records from Minnesota so population trends are unknown.

Present or Threatened Risks to Habitat : This species requires abundant moisture, and activities that reduce this, such as logging, would be a threat. Because it disperses mainly by thallus fragments, it requires more continuous areas of suitable habitat to disperse. This lichen is sensitive to air pollution and reduction in air quality would damage 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 : Major fires, blowdowns, and climate warming would be potential threats to this lichen that requires areas of high humidity to survive.

SUMMARY OF LAND OWNERSHIP AND EXISTING HABITAT PROTECTION

Of the 40 known localities of this species 38 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 : A survey was made in Superior National Forest in 1999 to look for localities with rare lichens (Wetmore 2000) . This species was found at two new localities during this survey.

Another survey was made in 2000 to characterize the habitats of three of the rare species in Superior National Forest (Wetmore 2001). This species was one of those included. In addition two pre-timber sales surveys have been conducted 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 addition two pre-timber sales surveys have been conducted to look for rare species but this species was not found.

In the 2000 survey as many of the known localities as possible were revisited with a forest ecologist to describe the vegetation of the sites. Two sites where this lichen occurs were studied.

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

Research Priorities : Known localities where this species occurs should be monitored and new localities searched for. More detailed ecological information should be obtained to better manage the areas when it occurs or could colonize.

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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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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 :

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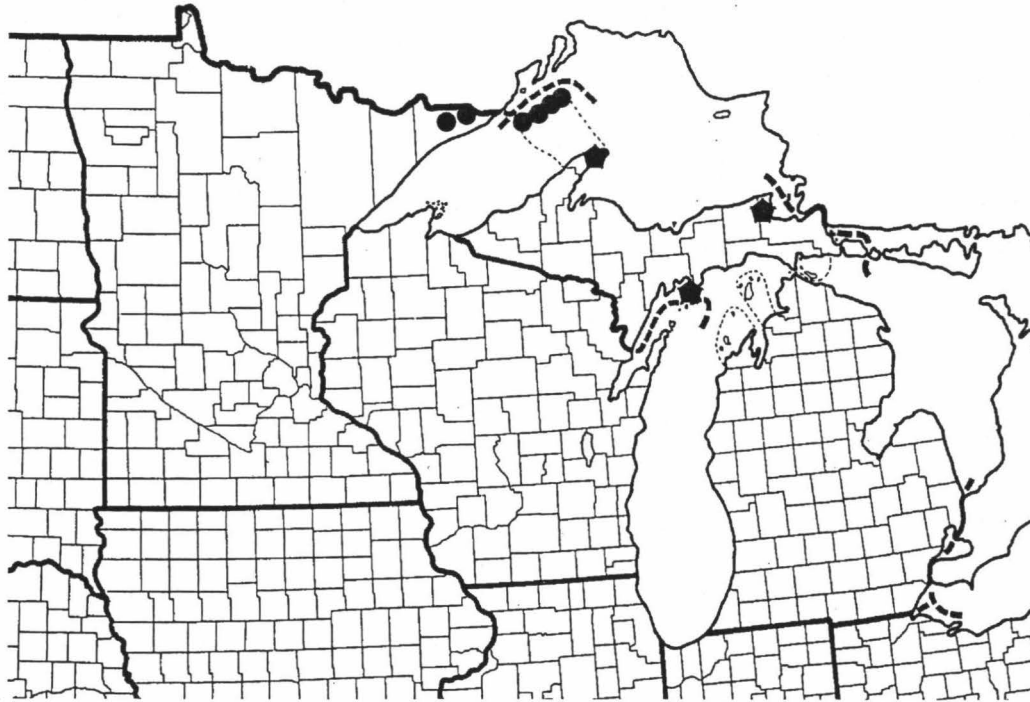
APPENDIX 1 Distribution of *Ramalina thrausta*.

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

APPENDIX 3 Locality data of *Ramalina thrausta*.

APPENDIX 4 Definitions of Ranks

APPENDIX 1 Distribution of *Ramalina thrausta*



Ramalina thrausta

- ☆ = 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 *Ramalina thrausta*

<i>Area</i>	<i>State</i>	<i>County</i>	<i>Locality</i>	<i>Year</i>
	MI	Keweenaw	Cliff Drive 3 km S of rt 41	1977
	MI	Keweenaw	S of Copper Harbor	1976
Isle Royale NP	MI	Keweenaw	Feldtman Ridge cliff	1984
Isle Royale NP	MI	Keweenaw	South Government Isl.	1980
Isle Royale NP	MI	Keweenaw	Rainbow Cove, E of	1984
Isle Royale NP	MI	Keweenaw	Moskey Basin, NE side	1983
Isle Royale NP	MI	Keweenaw	Middle Point SE of Wash. Isl.	1984
Isle Royale NP	MI	Keweenaw	Long Point, half mile E	1984
Isle Royale NP	MI	Keweenaw	Lane Cove	1983
Isle Royale NP	MI	Keweenaw	Huginnin Cove, SE	1984
Isle Royale NP	MI	Keweenaw	Hay Bay	1959
Isle Royale NP	MI	Keweenaw	Across from Clay Isl.	1983
Isle Royale NP	MI	Keweenaw	Grace Creek Bog, SE of	1984
Isle Royale NP	MI	Keweenaw	Todd Harbor, Green Isle	1983
Isle Royale NP	MI	Keweenaw	Duncan Bay, head of	1983
Isle Royale NP	MI	Keweenaw	Chippewa Harbor, W end	1983
Isle Royale NP	MI	Keweenaw	Checker Point	1983
Isle Royale NP	MI	Keweenaw	Brady Cove, S of	1983
Isle Royale NP	MI	Keweenaw	Beaver Isl., NW of	1984
Isle Royale NP	MI	Keweenaw	Bay N of Stockly Bay	1983
Isle Royale NP	MI	Keweenaw	Grace Harbor, S shore	1984
Isle Royale NP	MI	Keweenaw	Conglomerate Bay	1959
Isle Royale NP	MI	Keweenaw	Blake Point	1977
Isle Royale NP	MI	Keweenaw	McCargo Cove	1977
Isle Royale NP	MI	Keweenaw	Chippewa Harbor	1977
Isle Royale NP	MI	Keweenaw	Blueberry Cove	1977
Isle Royale NP	MI	Keweenaw	Grace Creek Trail	1958
Isle Royale NP	MI	Keweenaw	2 mi NE of Windigo	1958
Isle Royale NP	MI	Keweenaw	Spruce Point	1983
Isle Royale NP	MI	Keweenaw	Siskiwit Swamp	1959
Isle Royale NP	MI	Keweenaw	Tallman Isl., N of	1983
Isle Royale NP	MI	Keweenaw	Feldtman Ridge	1959
Isle Royale NP	MI	Keweenaw	Windigo, .5 mi E	1984
Isle Royale NP	MI	Keweenaw	Tonkin Bay, S side of	1980
Isle Royale NP	MI	Keweenaw	Todd Harbor, Wilson Point	1983
Isle Royale NP	MI	Keweenaw	Across from Clay Isl.	1959
Manistique R. SF	MI	Delta	Carboneau Lake CG	1976
Superior NF	MN	Cook	SW of Assinika Lake on 309	1999
Superior NF	MN	Cook	E of Tait Lake	1999
Taquamenon Falls SP	MI	Chippewa	between upper and lower falls	1975

Count = : 40

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.