Lichens of Ottawa National Forest

Purchase Order 43-54A7-4-0067

Prepared by
Clifford Wetmore

Dept. of Plant Biology
University of Minnesota
1445 Gortner Ave.
St. Paul, MN 55108
wetmore@umn.edu

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Introduction

During the summer of 2003 a survey of 22 selected sites on the Ottawa National Forest was made to locate rare lichens and compile a list of lichens from the Forest. The sites were selected by USFS personnel and 770 collections were made. The report (Wetmore 2004) listed 204 species and four rare species were found. Most of the sites were in older growth habitats and some of the lichens listed in the Sliwa & Wetmore report (2001) for the Forest were not found.

As a result, a new study was authorized to search for new or rare lichens and habitats where the missing species might occur. Many potential sites were located and collections were made at 22 of these in 2004. In a separate project by Alan Fryday, a search was made in the University of Michigan and Michigan State University herbaria for lichens collected in the Ottawa National Forest. This report gives the results of the field work done in 2004.

Methods

Potential localities were selected using the USFS GIS database in Bessemer, Michigan Between 9 July and 17 July many of these sites were visited and collections made at 22 localities. These sites included most of the vegetational types found on the Forest with emphasis on those areas that might have the species missed in the 2003 survey or additional localities where rare lichens might be found. All species of lichens found at each site were collected. Latitude and longitude readings were made with a
Garmin Map 76 GPS using WGS84 map datum. Most readings were accurate within 50 feet. Appendix I lists all of the localities where collections were made. Photos of the sites and the rare lichens are provided on a CD. The 2004 ONF Lichen Survey Contract included a list of selected rare lichens (Table 2). This list included all those identified as rare in Michigan or Wisconsin (Bennett & Wetmore 2004; Fryday & Wetmore 2002; Thomson & Will-Wolf 2000, List A only) or included on the Eastern Region RFSS list. Any of these found were to be collected, photographed, and have a MNFI form prepared. MNFI forms for those localities are included in Appendix VI.

Results

Between 9 July and 17 July these sites were visited and over 600 collections were made at 22 localities. These collections found 203 species including one rare lichen species on the proposed state list (Fryday & Wetmore 2002) and six of special concern to Ottawa National Forest. Appendix I lists all of the localities, Appendix II lists all species found on the Forest in 2004. Appendix III lists all species by site with additional notes on the site and lichens, the photos taken, and the rare species found. Appendix IV is a comparison of species lists from the 2003 study, the Fryday study, those found in the present study, and a total list of species confirmed for the Forest. Photos are in Appendix V (on the CD), and the MNFI forms are in Appendix VI. A map of all collection localities is in Appendix VII.

Discussion

The Sliwa and Wetmore report (2001) listed 304 taxa of lichens likely to be found on the Forest, however, this report included areas outside of the National Forest, such as the Porcupine Mts. In the report on the 2003 study (Wetmore 2004) there were 204
species recorded on the Forest but some of the species listed in the Sliwa and Wetmore report were not found. Since then, in a separate project, Alan Fryday has looked for lichens collected within the Ottawa National Forest in the Michigan State University Herbarium and in the University of Michigan Herbarium. A comparison of these species lists is given in Appendix IV.

The best lichen habitats are in a combination of ecological conditions. There are many uncommon species in old-growth forests and in wet Thuja or black ash swamps, however, there are numerous pioneer, or colonizing, species that are mainly found in young stands or along roadsides and abandoned gravel pits. Shady, moist north-facing rock cliffs and rock outcrops also have unusual species. In addition to moisture, adequate sunlight is necessary for good lichen growth. In many of the old hardwood forests there are few lichens lower on the trunks of the trees but the species and abundance of lichens is much greater in the tree canopy. In these forests some of these canopy species can be found on recently fallen trees and branches.

**Rare Species**

Some of the lichens listed as rare are found in the oldest wet forests but some are found on open dry sites such as sand barrens and rock ridges. The rare lichens are usually not found in young forests. In order for the perpetuation of these rare species suitable habitats must be maintained without disturbance within the dispersal radius of the known populations of the species. Within one climatic region much of the rarity is probably due to the rarity of suitable sites or disturbance that is too frequent.

Table 2 from the purchase order: Selected rare lichens. If any populations of these lichens are found during field surveys, please complete an MNFI Special Plant Survey Form. The lichens in this list are listed as rare for Michigan,
Wisconsin, or the USDA Forest Service Eastern Region (Bennett & Wetmore 2004; Fryday & Wetmore 2002; Thomson & Will-wolf 2000, List A only; USDA Forest Service 2003). Available literature was reviewed to attempt to identify which lichens may occur in our area (Brodo et al. 2001; Fryday et al. 2001; Hale 1979; Thomson 2003).

<table>
<thead>
<tr>
<th>Lichen Name</th>
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<tbody>
<tr>
<td>Anaptychia setifera</td>
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<tr>
<td>Anzia colpodes</td>
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<tr>
<td>Arctoparmelia centrifuga</td>
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<tr>
<td>Baeomyces rufus</td>
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<tr>
<td>Bryoria capillaris</td>
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<tr>
<td>Bryoria nadvornikiana</td>
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<tr>
<td>Caloplaca atroalba</td>
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<tr>
<td>Caloplaca parvula</td>
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<tr>
<td>Cetraria arenaria</td>
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<tr>
<td>Cetraria aurescens (=Ahtiana aurescens)</td>
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<tr>
<td>Cladonia arbuscula</td>
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<td>Cladonia cornuta</td>
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<td>Menegazzia terebrata</td>
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<td>Nephroma bellum</td>
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<tr>
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<tr>
<td>Physcia tenella</td>
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<tr>
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<td>Ramalina unifolia</td>
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<tr>
<td>Usnea longissima</td>
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<tr>
<td>Usnea trichodea</td>
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</tbody>
</table>

The following is a list of lichens found during this study that are on the proposed Michigan state rare list and those of specified as possibly rare on the Ottawa National Forest in the contract.

*Caloplaca parvula
*Cetraria aurescens (=Ahtiana aurescens)
#Cladonia cornuta
#Hypogymnia tubulosa
#Lopadium pezizoideum
#Menegazzia terebrata
#Pseudovernia consocians
@stereocaulon pileatum

@ = On proposed Michigan State list of rare lichens
* = On Regional Foresters list of rare lichens
# = Possibly rare in Ottawa National Forest as specified in the contract
Of these species only one species is on the proposed state rare list and two others are on the Regional Forester’s Sensitive Species list. Several others were selected as possibly rare as identified in the 2004 contract because they are rare in Wisconsin but based on herbarium records they are not rare in Michigan. This is why it is important for each Forest to develop its own list of rare species based on adequate collecting. This list of rare species cannot be based on rarity in other states (Bennett & Wetmore 2004).

Management

Some of the truly rare species might deserve special management for protection but the ecology of most lichens is poorly known. Specific management is difficult to recommend other than to avoid disturbance or ecological changes caused by logging, new roads, burning, thinning, or water level changes. The following are only brief attempts at suggestions for management of these selected species. See Appendix I for complete locality descriptions.

**Caloplaca parvula** – This species was found at one locality (Langford Lake Campground, Loc. 7) and occurs on the bases of living maples and black ash in swamps with standing water, usually near lakes. This species should be considered rare on the Ottawa National Forest and is known from two localities in Michigan and was found at one locality on the Forest during these studies. Management should include protection against disturbance of the ash swamps by any development and also the maintenance of normal water levels in the swamp. It is likely that death of the substrate trees would eliminate the species from those trees.

**Cetraria aurescens** (=Ahtiana aurescens) – This species was found at one locality (East of Heart Lake, Loc. 4) and occurs in moist conifer areas on the branches of trees.
This species is considered rare on the Ottawa National Forest and the region. It is known from 15 collections in Michigan in the University of Minnesota (MIN) and Michigan State University (MSC) herbaria. It was found at one locality during these studies. Management should include protection against disturbance and logging or forest thinning and the maintenance of water levels in the swamp.

*Cladonia cornuta* – This species was found at three localities (Yondota Falls N of Marenisco, Loc. 1; 5 mi N of Watersmeet, Loc. 9; 2.5 mi SW of Bob Lake, Loc. 18) and occurs on the ground in forested mesic sites with openings. It should not be considered rare on the Forest because in Michigan there are 31 known collections in the MIN and MSC herbaria and the species was collected six times during these studies. No special management is suggested.

*Hypogymnia tubulosa* – This species was found at three localities (3 miles W of Golden Lake, Loc. 11; South of Steusser Lake, Loc. 13; 8 miles NNE of Sidnaw on USFS 2243, loc. 20) and occurs on branches of conifers. It was also found at one locality in 2003. It was collected in both wet lowland and dry jack pines. This species is not rare in this part of Michigan and is known from 71 collections in the MIN and MSC herbaria. It was collected 4 times during these studies. No special management is suggested.

*Lopadium pezizoideum* – This species was found at one locality (SE of Foxpaw Lake, Loc. 3) and occurs in moist swamps, usually on *Thuja*. This species is not very rare in this part of Michigan and is known from 26 collections in MIN and MSC herbaria and was found at two sites during these studies. Protection of these habitats for other species will also protect this species.
**Menegazzia terebrata** – This species was found at three localities (SE of Foxpaw Lake, Loc. 3; East of Heart Lake, Loc. 4; Choate Creek swamp, Loc. 14) and occurs on the trunks of leaning Thuja in moist swamps. It was also found at two localities in 2003. Although it is somewhat uncommon and is not on the state list and is represented in the MIN and MSC herbaria by 29 collections and was found at five sites during these studies. Management might include prevention of disturbance (logging, thinning) and changes in water levels in the swamps.

**Pseudevernia consocians** – This species was found at one locality (SE of Foxpaw Lake, Loc. 3) and occurs on the branches of conifers in moist areas. It is not on the proposed state list and is not rare in this part of Michigan. It is represented in the MIN and MSC herbaria by 85 collections and was collected at two localities during these studies. No special management is suggested.

**Stereocaulon pileatum** – This species was found at one locality (Trap Hills on east end of ridge, Loc. 15) and occurs on rocks. This specimen was on a small stone but it also may occur on large rock outcrops. It is on the proposed Michigan state list and should be considered rare in the Forest. There are five state records in the MIN and MSC herbaria and it was found at one locality during these studies. Although this stone was found a little distance from the trail, the trail on the ridge in this area is not well marked or obvious and should be marked so foot traffic does not eliminate the species from this locality. A sign at the east end of the rock outcrop requesting people to stay on the trail might be advisable.

**Literature cited**


Appendix 1

Ottawa Collection Localities 2004

Lichen collection localities in 2004. Latitude and longitude were taken with a Garmin Map76 GPS using the WGS84 Map Datum. The collection numbers are those of C. Wetmore and are at the end of each locality. Vouchers are deposited in the University of Minnesota Herbarium.


Loc. 3. - Michigan, Gogebic County, Ottawa National Forest. SE of Foxpaw Lake (7 mi SW of Marenisco). Swamp with areas of Thuja and balsam fir and some alder, elev. 1540 ft. Bessemer District, Compartment, 211, Stand, 11. Sec. 9, T45N, R44W. WP3. 46°18'22"N, 89°48'26"W. 10 July 2004. #90819-90864.


Loc. 8. - Michigan, Gogebic County, Ottawa National Forest. SE corner of Sucker Lake. Small ash swamp near lake with black ash, red maple, yellow birch, Thuja and hemlock, elev. 1606 ft. [490 m]. Watersmeet District, Compartment, 94, Stand, 45. Sec. 13, T45N, R40W. WP8. 46°17′56″N, 89°14′43″W. 12 July 2004. #90974-90987

Loc. 9. - Michigan, Ontonagon County, Ottawa National Forest. 5 mi N of Watersmeet along Highway 45. Old jack pines with few red maple and along roadside, elev. 1508 ft. [460 m]. Watersmeet District, Compartment, 56, Stand, 58. Sec. 34, T46N, R39W. WP9. 46°20′40″N, 89°10′23″W. 12 July 2004. #90988-91019.

Loc. 10. - Michigan, Ontonagon County, Ottawa National Forest. 6 mi N of Watersmeet along USFS 5230. Hill with young aspen along logging road with quaking aspen, bigtooth aspen, and maples, elev. 1475 [450 m]. Watersmeet District, Compartment, 57, Stand, 7. Sec. 28, T46N, R39W. WP10. 46°21′34″N, 89°11′55″W. 12 July 2004. #91020-91028


Appendix II

2004 Species List

This list includes only those species collected during the 2004 project. See Appendix IV for a list of all species on the Forest. The nomenclature generally follows Esslinger & Egan (1995) with some exceptions.

Acarospora fuscata (Schrader) Am.
Anisomeridium biforme (Borrer) Harris
Arthonia caesia (Flotow) Körber
Arthonia patellulata Nyl.
Arthonia radiata (Pers.) Ach.
Aspicilia cinerea (L.) Körber
Bacidia polychroa (Th. Fr.) Körber
Bacidia rubella (Hoffm.) Massal.
Bacidia schweinitzii (Fr. ex Michener) A. Schneider
Bellemerea cinereorufescens (Ach.) Clauzade & Roux
Biatora sphaeroides (Dicks.) Körb.
Bryoria furcellata (Fr.) Brodo & Hawksw.
Bryoria trichodes (Michaux) Brodo & Hawksw.
Buellia arnoldii Servit & Nádv.
Buellia stillingiana J. Steiner
Caloplaca ahti@ Söchting
Caloplaca cerina (Ehrh. ex Hedwig) Th. Fr.
Caloplaca chrysophthalma Degel.
Caloplaca holocarpa (Hoffm. ex Ach.) Wade
Caloplaca lithophila Magn.
Caloplaca parvula Wetm.
Candelaria concolor (Dickson) Stein
Candelaria fibrosa (Fr.) Müll. Arg.
Candelariella efflorescens Harris & Buck
Candelariella vitellina (Hoffm.) Müll. Arg.
Cetraria americana (Spreng.) ined.
Cetraria aurescens Tuck.
Cetraria oakesiana Tuck.
Cetraria orbata (Nyl.) Fink
Cetraria pinastri (Scop.) Gray
Cetraria sepincola (Ehrh.) Ach.
Cetraria chicitae (Culb.) Culb. & C. Culb.
Cetraria olivetorum (Nyl.) Culb. & C. Culb.
Chaenotheca chrysocephala (Turner ex Ach.) Th. Fr.
Chaenotheca furfuracea (L.) Tibell
Chaenotheca laevigata Nádv.
Chaenotheca trichialis (Ach.) Th. Fr.
Chaenothecopsis savonica (Räs) Tibell
Chrysothrix candelaris (L.) Laund.
Cladonia borealis Stenroos
Cladonia caespiticia (Pers.) Flörke
Cladonia cariosa (Ach.) Sprengel
Cladonia cenotea (Ach.) Schærer
Cladonia cervicornis (Ach.) Flotow
Cladonia chlorophaea (Flörke ex Sommerf.) Sprengel
Cladonia coccifera (L.) Willd.
Cladonia coniocraea (Flörke) Sprengel
Cladonia cornuta (L.) Hoffm.
Cladonia crispata (Ach.) Flotow
Cladonia cristatella Tuck.
Cladonia cryptochlorophaea Asah.
Cladonia gracilis (L.) Willd.
Cladonia macilenta Hoffm.
Cladonia mitis Sandst.
Cladonia multiformis G. Merr.
Cladonia parasitica (Hoffm.) Hoffm.
Cladonia phyllophora Hoffm.
Cladonia pleurota (Flörke) Schærer
Cladonia pyxidata (L.) Hoffm.
Cladonia rangiferina (L.) Wigg.
Cladonia rei Schærer
Cladonia squamosa Hoffm.
Cladonia stellaris (Opiz) Pouzar & Vezda
Cladonia turgida Hoffm.
Cladonia uncialis (L.) F. Wigg.
Conotrema urceolatum (Ach.) Tuck.
Cresponea chloroconia (Tuck.) Egea & Torrente
Cyphelium tigillare (Ach.) Ach.
Dimerella lutea (Dickson) Trevisan
Diploschistes scruposus (Scop.) Sant.
Evernia mesomorpha Nyl.
Flavoparmelia caperata (L.) Hale
Flavopunctelia flaventior (Stirton) Hale
Flavopunctelia soredica (Nyl.) Hale
Fuscopannaria ahlneri (Jørg.) Jørg.
Fuscopannaria leucosticta (Tuck.) Jørg.
Graphis scripta (L.) Ach.
Heterodermia speciosa (Wulfen) Trevisan
Hypocenomyce anthracophila (Nyl.) James & Schneider
Hypocenomyce scalaris (Ach.) Choisy
Hypogymnia physodes (L.) Nyl.
Hypogymnia tubulosa (Schærer) Hav.
Imshaugia aleurites (Ach.) S. Meyer
Imshaugia placorodia (Ach.) S. Meyer
Ionaspis lacustris (With.) Lutzoni
Lecania naegelii (Hepp) Diederich & v. d. Boom
Lecanora albella (Pers.) Ach.
Lecanora allophana Nyl.
Lecanora argentata (Ach.) Malme
Lecanora caesiorubella Ach.
Lecanora circumborealis Brodo & Vitik.
Lecanora dispersa (Pers.) Sommerf.
Lecanora hybocarpa (Tuck.) Brodo
Lecanora impudens Degel.
Lecanora intricata (Ach.) Ach.
Lecanora meridionalis Magn.
Lecanora minutella Nyl.
Lecanora muralis (Schreber) Rabenh.
Lecanora pulicaris (Pers.) Ach.
Lecanora rugosella Zahlbr.
Lecanora symmicta (Ach.) Ach.
Lecanora thysanophora Harris in Harris & Tonsb.
Lecanora varia (Hoffm.) Ach.
Lecanora wisconsinensis Magn.
Lecidea nylanderi (Anzi) Th. Fr.
Lecidea plana (J. Lahm) Nyl.
Lecidella carpathica Körber
Lepraria caesioalba (B. de Lesd) Laund.
Lepraria lobificans Nyl.
Lepraria neglecta (Nyl.) Erichsen
Leptogium cyanescens (Rabenh.) Körber
Leptogium saturninum (Dickson) Nyl.
Leptorhaphis epidermidis (Ach.) Th. Fr.
Lithothelium hyalosporum (Nyl.) Aptroot
Lobaria pulmonaria (L.) Hoffm.
Lobaria quercizans Michaux
Lopadium pezizoideum (Ach.) Körber
Loxospora elatina (Ach.) Massal.
Loxospora pustulata (Brodo & Culb.) Harris
Melanelia olivacea (L.) Essl.
Melanelia septentrionalis (Lynge) Essl.
Melanelia subaurifera (Nyl.) Essl.
Menegazzia terebrata (Hoffm.) Massal.
Micarea melaena (Nyl.) Hedl.
Micarea misella (Nyl.) Hedl.
Mycobilimbia berengeriana (Massal.) Hafellner & Wirth
Mycoblastus sanguinarius (L.) Norman
Mycocalicium subtile (Pers.) Szat.
Myelochroa aurulenta (Tuck.) Elix & Hale
Myelochroa galbina (Ach.) Elix & Hale
Nephroma helveticum Ach.
Nephroma parile (Ach.) Ach.
Normandina pulchella (Borrer) Nyl.
Ochrolechia arborea (Kreyer) Almb.
Ochrolechia mexicana Vainio
Ochrolechia pseudopallescens Brodo
Ochrolechia trochophora (Vainio) Oshio
Pachyphiale fagicola (Hepp) Zwackh
Pannaria conoplea (Ach.) Bory
Parmelia squarrosa Hale
Parmelia sulcata Taylor
Parmeliopsis ambiguа (Wulfen) Nyl.
Parmeliopsis hyperoptа (Ach.) Arn.
Parmotrema crinitum (Ach.) Choisy
Peltigera aphthosa (L.) Willd.
Peltigera canina (L.) Willd.
Peltigera didactyla (With.) Laund.
Peltigera elisabethae Gyelnik
Peltigera horizontalis (Hudson) Baumg.
Peltigera leucophlebia (Nyl.) Gyelnik
Peltigera polydactylon (Necker) Hoffm.
Peltigera rufescens (Weiss) Humb.
Pertusaria alpina Hepp ex Ahles
Pertusaria amara (Ach.) Nyl.
Pertusaria consocians Dibben
Pertusaria macounii (Lamb) Dibben
Pertusaria multipunctoides Dibben
Pertusaria ophthalmiza (Nyl.) Nyl.
Pertusaria trachythallina Erichsen
Phaeophyscia chloantha (Ach.) Möberg
Phaeophyscia ciliata (Hoffm.) Möberg
Phaeophyscia hirtella Essl.
Phaeophyscia hispidula (Ach.) Essl.
Phaeophyscia orbicularis (Necker) Möberg
Phaeophyscia pusilloides (Zahlbr.) Essl.
Phaeophyscia rubropulchra (Degel.) Essl.
Phlyctis argena (Sprengel) Flotow
Physcia aipolia (Ehrh. ex Humb.) Fürnр.
Physcia stellaris (L.) Nyl.
Physconia detersа (Nyl.) Poelt
Physconia leucoleiptes (Tuck.) Essl.
Platismatia tuckermanii (Oakes) Culb. & C. Culb.
Polysporina simplex (Davies) Vezda
Porpidia albocaerulescens (Wulfen) Hertel & Knoph
Porpidia crustulata (Ach.) Hertel & Knoph
Porpidia herteliana Gowan
Porpidia macrocarpa (DC.) Hertel & A. J. Schwab
Pseudevernia consocians (Vainio) Hale & Culb.
Punctelia perreticulata (Räs.) Wilh. & Ladd
Punctelia rudecta (Ach.) Krog
Pyxine sorediata (Ach.) Mont.
Ramalina americana Hale
Ramalina intermedia (Delise ex Nyl.) Nyl.
Rhizocarpon geographicum (L.) DC.
Rhizocarpon grande (Flörke ex Flotow) Arnold
Rhizocarpon reductum Th. Fr.
Scoliciosporum chlorococcum (Stenh.) Vezda
Sphinctrina anglica (Nyl.) Triebel et al.
Sphinctrina turbinata (Pers. : Fr.) De Not.
Stenocybe major (Nyl.) Körber
Stereocaulon paschale (L.) Hoffm.
Stereocaulon pileatum Ach.
Stereocaulon saxatile Magn.
Strigula stigmatella (Ach.) Harris
Trapeliopsis flexuosa (Fr.) Coppins & James
Trapeliopsis granulosa (Hoffm.) Lumbsch
Umbilicaria deusta (L.) Baumg.
Usnea cavernosa Tuck.
Usnea hirta (L.) F. Wigg.
Usnea subfloridana Stirton
Xanthoparmelia conspersa (Ehrh. ex Ach.) Hale
Xanthoparmelia cumberlandia (Gyelnik) Hale
Xanthoria hasseana Räs.
Total: 203
Appendix III

Species at each locality

Complete collection locality descriptions for each site are listed in order by date followed by the species found at that locality. Species in bold are those considered rare in Michigan by Fryday and Wetmore (2002) or selected species that might be rare in Ottawa National Forest.

Reference is also given for Waypoints (WP) and photos taken at each locality (Appendix V).


Along north side of river on rocks and in old forest. Many lichens, especially on the older trees. Not so many on the rocks along the stream. Site photo lost; *Cladonia cornuta* photo 35.

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<th>Species Name</th>
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<td><em>Dimerella lutea</em></td>
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<td><em>Punctelia rudecta</em></td>
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<tr>
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<td><em>Leptogium cyanescens</em></td>
<td><em>Xanthoparmelia cumberlandia</em></td>
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<td><em>Lobaria pulmonaria</em></td>
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17

Old gravel pit with good lichens on the ground. Site photo 2.

- *Cladonia cariosa*
- *Cladonia cervicornis*
- *Cladonia chlorophaea*
- *Cladonia cristatella*
- *Cladonia gracilis*
- *Cladonia mitis*

Total: 11

Loc. 3. - Michigan, Gogebic County, Ottawa National Forest. **SE of Foxpaw Lake** (7 mi SW of Marenisco). Bog with areas of *Thuja* and balsam fir and some alder, elev. 1540 ft. Bessemer District, Compartment, 211, Stand, 11. Sec. 9, T45N, R44W. **WP3.** 46°18'22"N, 89°48'26"W. 10 July 2004. # 90819-90864.

Older *Thuja* 8-10" diam., a good habitat for lichens. site photo 4; *Menegazzia terebrata* photo 3; *Lopodium pezizoideum* photo 37; *Pseudevernia consocians* photo 38.

- *Arthonia radiata*
- *Bacidia schweinitzii*
- *Bryoria trichodes*
- *Buellia stillingana*
- *Cetrelia chicitae*
- *Cetrelia olivetorum*
- *Cladonia caespiticia*
- *Cladonia coniocraea*
- *Cladonia squamosa*
- *Dimerella lutea*
- *Evernia mesomorpha*
- *Flavoparmelia caperata*
- *Fuscopannaria ahlneri*
- *Graphis scripta*
- *Heterodermia speciosa*
- *Hypogymnia physodes*
- *Imshaugia aleurites*
- *Lecanora wisconsinensis*
- *Lobaria pulmonaria*
- *Lobaria quercizans*
- **Lopodium pezizoideum**

Total: 40

Loc. 4. - Michigan, Gogebic County, Ottawa National Forest. **East of Heart Lake** (2.5 mi SSW of Marenisco). Bog with balsam fir, *Thuja*, few black spruce and lots of
Very brushy swamp but some areas of good old Thuja. Site photo 5; Menegazzia terebrata photo 6; Cetraria aurescens photo 7, 8.

Bacidia schweinitzii
Biatora sphaeroides
Cetraria aurescens
Cetraria chiciae
Cetraria olivetorum
Cladonia cryptochlorophaea
Cladonia macilenta
Cladonia squamosa
Dimerella lutea
Flavoparmelia caperata
Heteroderma speciosa
Hypogymnia physodes
Imshaugia aleurites
Lecanora argentata
Lecanora circumborealis
Lobaria pulmonaria
Lobaria quercizans
Loxospora pustulata
Menegazzia terebrata
Mycoblastus sanguinarius
Total: 39


Area of young quaking aspen and some maple and spruce, poor for lichens. Site photo 9.

Arthonia patellulata
Caloplaca cerina
Caloplaca chrysophthalma
Caloplaca holocarpa
Lecania naegelii
Total: 9


Middle age quaking aspen and young white birch. Many of the usual lichens found on quaking aspen. Site photo 10.
**Arthonia caesia**  
**Buellia stillingiana**  
**Caloplaca ahtii**  
**Candelaria concolor**  
**Candelariella efflorescens**  
**Cetraria americana**  
**Evernia mesomorpha**  
**Hypogymnia physodes**  
**Lecanora pulicaris**  
**Lecanora symmicta**  
**Leptorhaphis epidermidis**  
Total: 22

**Arthonia radiata**  
**Bacidia polychroa**  
**Bacidia rubella**  
**Caloplaca parvula**  
**Candelaria concolor**  
**Cladonia chlorophaeae**  
**Flavoparmelia caperata**  
**Graphis scripta**  
**Heterodermia speciosa**  
Total: 17

Loc. 7. - Michigan, Gogebic County, Ottawa National Forest. **Langford Lake campground.** Ash swamp at lakeshore with black ash and standing water, elev. 1672 ft. [510 m]. Bessemer District, Compartment, 255, Stand, 1. Sec. 25, T45N, R42W. **WP7.** 46°16’16”N, 89°29’37”W. 11 July 2004. #90954-90973.

Open black ash swamp near lake, black ash 4-10” diam., a typical habitat for **Caloplaca parvula.** Site photo 12; **Caloplaca parvula** photo 13.

**Arthonia radiata**  
**Lecanora allophana**  
**Bacidia polychroa**  
**Lecanora thysanophora**  
**Bacidia rubella**  
**Lithothelium hyalosporum**  
**Caloplaca parvula**  
**Parmelia squarrosa**  
**Candelaria concolor**  
**Phaeophyscia hispidula**  
**Cladonia chlorophaeae**  
**Physcia aipolia**  
**Flavoparmelia caperata**  
**Physcionia detersa**  
**Graphis scripta**  
**Punctelia rudecta**  
**Heterodermia speciosa**

Loc. 8. - Michigan, Gogebic County, Ottawa National Forest. **SE corner of Sucker Lake.** Small ash swamp near lake with black ash, red maple, yellow birch. *Thuja* and hemlock, elev. 1606 ft. [490 m]. Watersmeet District, Compartment, 94, Stand, 45. Sec. 13, T45N, R40W. **WP8.** 46°17’56”N, 89°14’43”W. 12 July 2004. #90974-90987

Ash swamp poor for lichens because too many other trees and too shady. Site photo 14.
Loc. 9. - Michigan, Ontonagon County, Ottawa National Forest. **5 mi N of Watersmeet** along highway 45. Old jack pines with few red maple and along roadside, elev. 1508 ft. [460 m] Watersmeet District, Compartment, 56, Stand, 58. Sec. 34, T46N, R39W. **WP9.** 46°20'40"N, 89°10'23"W. 12 July 2004. #90988-91019.
The jack pines are old and dense with no lower branches except near road so it was not so good for lichens. Site photo15; *Cladonia cornuta* photo 35.

* Bryoria furcellata
* Buellia arnoldii
* Buellia stillingiana
* Cetraria americana
* Cladonia coccifera
* **Cladonia cornuta**
* Cladonia crispatata
* Cladonia cristatella
* Cladonia mitis
* Cladonia phyllophora
* Cladonia rangiferina
* Cladonia squamosa
* Cladonia uncialis
* Cyphelium tigillare
* Evernia mesomorpha
* Total: 30

* Flavoparmelia caperata
* Hypocenomyce anthracophila
* Hypocenomyce scalaris
* Hypogymnia physodes
* Lecanora albella
* Lecanora circumborealis
* Lecanora wisconsinensis
* Melanelia subaurifera
* Micarea melaena
* Ochrolechia mexicana
* Parmelia sulcata
* Platismatia tuckermanii
* Punctelia rudecta
* Stereocaulon paschale
* Usnea hirta

Loc. 10. - Michigan, Ontonagon County, Ottawa National Forest. **6 mi N of Watersmeet** along USFS 5230. Hill with young aspen along logging road with quaking aspen, bigtooth aspen, and maples, elev. 1475 [450 m] Watersmeet District, Compartment, 57, Stand, 7. Sec. 28, T46N, R39W. **WP10.** 46°21'34"N, 89°11'55"W. 12 July 2004. #91020-91028
Stand of young aspens but most trees not so good for lichens. Site photo 16.

* Arthonia patellulata
* Caloplaca cerina
* Caloplaca holocarpa
* Melanelia septentrionalis
* Parmelia sulcata
* Total: 9

* Phaeophyscia ciliata
* Physcia aipolia
* Ramalina americana
* Xanthoria hasseana

Very mixed forest that is too shady and brushy with alder for good lichen habitat. Site photo 17; *Hypogymnia physodes* photo 18; *Hypogymnia tubulosa* photo 36.

Anisomeridium biforme
Bryoria furcillata
Bryoria trichodes
Buellia stillingiana
Cetraria americana
Chaenotheca chrysocephala
Chaenotheca trichialis
Chaenothecopsis savonica
Cladonia cenotea
Cladonia chlorophaea
Cladonia squamosa
Creponea chloroconia
Heteroderma speciosa
Hypogymnia physodes
**Hypogymnia tubulosa**
Imshaugia aleurites
Total: 31

Lecanora meridionalis
Lecanora rugosa
Lecanora symmicta
Lecanora thysanophora
Loxospora pustulata
Ochrolechia trochophora
Parmelia sulcata
Pertusaria amara
Pertusaria consocians
Pertusaria multipunctoides
Phlyctis argena
Punctelia rudecta
Sphinctrina anglica
Sphinctrina turbinata
Usnea subfloridana


Too shady and not wet, most of *Thuja* not very old, poor for lichens. Site photo 19.

Bacidia schweinitzii
Cladonia squamosa
Lecanora rugosa
Lecanora wisconsinensis
Lepraria lobificans
Loxospora elatina
Loxospora pustulata
Mycocalicium subtile
Parmelia squarrosa
Phlyctis argena
Platismatia tuckermanii
Punctelia rudecta
Strigula stigmatella
Total: 13


Dense young jack pines with low branches but lichens were all small. Site photo 20; *Hypogymnia tubulosa* photo 36.

Arthonia patellulata
Caloplaea ahtii

22
Caloplaca cerina
Cetraria americana
Cetraria orbata
Cetraria sepincola
Cladonia chlorophaeae
Evernia mesomorpha
Flavoparmelia caperata
Hyogymnia physodes
Hyogymnia tubulosa
Imshaugia placorodia
Lecanora pulicaris

Total: 24


Large old *Thuja* about 200 years old and *Thuja* snags just as large but too dry for good lichens most places. Site photo 22; *Menegazzia terebrata* photo 21; lichen survey team photo 23.

Bacidia schweinitzii
Biatora sphaeroides
Chaenotheca furfuracea
Chaenotheca trichialis
Chrysothrix candelaris
Cladonia chlorophaeae
Cladonia coniocraea
Cladonia squamosa
Flavoparmelia caperata
Fuscopannaria leucosticta

Total: 20

Loc. 15. - Michigan, Ontonagon County, Ottawa National Forest. **Trap Hills on east end of ridge.** Rock area with red oak, few basswood, and ash, elev. 1440 ft. Sec. 9, T49N, R41W. **WP15. 46°39'30"N, 89°25'46"W.** 15 July 2004. #91124-91167.

First rock outcrop on east end. Many lichens on the scattered trees but less variety on the rocks. Site photo 24 & 25; *Stereocaulon pileatum* photo 39.

Acarospora fuscata
Bellemerea cinereorufescens
Buellia stillingiana
Caloplaca ahtii
Candelaria concolor

Candelaria fibrosa
Candelariella efflorescens
Cladonia chlorophaeae
Cladonia mitis
Cladonia rangiferina
Cladonia turgida

Hypocenomyce scalaris
Lecanora wisconsinensis
Menegazzia terebrata
Mycobilimbia berengeriana
Parmotrema crinitum
Peltigera elisabethae
Peltigera leucoplebia
Pertusaria consocians
Punctelia rudecta
Pyxine sorediata

23

The second rock outcrop going west along the ridge. Similar to the first but some different lichens, especially rocks on the shady western part. Site photo 26.

Acarospora fuscata
Arthonia radiata
Aspicilia cinerea
Candelaria fibrosa
Candelariella efflorescens
Candelariella vitellina
Cladonia crispata
Cladonia phyllophora
Cladonia pyxidata
Cladonia rangiferina
Cladonia uncialis
Diploschistes scroopus
Evernia mesomorpha
Flavoparmelia caperata
Flavopunctelia flaventior
Lecanora caesiumubella
Lecanora circumborealisis
Lecidea plana
Lepraria caesioalba
Melanelia septentrionalis
Melanelia subaurifera

Phaeophyscia rubropulchra
Physcia aipolia
Physcia stellaris
Physconia leucoleiptes
Pyxine sorediata
Ramalina americana
Rhizocarpon grande
Stereocaulon paschale
Stereocaulon pileatum
Xanthoparmelia conspersa
Xanthoparmelia cumberlandia
Xanthoria hasseana

Myelochroa galbina
Nephroma parile
Pachyphiale fagicola
Parmelia squarrosa
Parmelia sulcata
Peltigera canina
Peltigera polydactylon
Peltigera rufescens
Pertusaria alpina
Pertusaria macounii
Phaeophyscia pusilliloides
Physcia aipolia
Physconia detersa
Porpidia crustulata
Porpidia macrocarpa
Punctelia perreticulata
Punctelia rudecta
Pyxine sorediata
Ramalina americana
Rhizocarpon grande
Rhizocarpon reductum

Total: 36
Stereocaulon paschale
Stereocaulon saxatile
Usnea subfloridana
Total: 47

Young jack pines with openings and bracken fern. Site photo 27.

Buellia stillingiana
Caloplaca cerina
Cetraria americana
Cetraria orbata
Cladonia rangiferina
Cladonia turgida
Evernia mesomorpha
Flavoparmelia caperata
Hypogymnia physodes
Imshaugia placorodia
Lecanora minutella
Lecanora symmicta
Lecanora varia
Melanelia septentrionalis
Melanelia subaurifera
Myelochroa galbina
Ochrolechia arborea
Parmelia sulcata
Pertusaria trachythallina
Phaeophyscia ciliata
Physcia aipolia
Punctelia rudecta
Ramalina americana
Scoliciosporum chlorococcum
Usnea hirta
Usnea subfloridana
Xanthoria hasseana
Total: 27

This was a good black ash swamp with large trees but has been flooded by beaver. Now most trees dead and falling. Collected on those fallen to the shore and some on the surrounding maples, Thuja and hemlock. Abundant Cetraria oakesiana on the bases of the trees around the sides of the flooded area. Site photo 29; Cladonia cornuta photo 35.

Bacidia schweinitzii
Cetraria oakesiana
Cladonia chlorophaea
Cladonia cornuta
Conotrema urceolatum
Flavoparmelia caperata
Fuscopannaria leucosticta
Graphis scripta
Heterodermia speciosa
Lecanora albella
Lecanora caesiorubella
Lecanora rugosella
Lecanora thysanophora
Lecanora wisconsinensis
Leptogium saturninum
Lobaria pulmonaria
Lobaria quercizans
Micarea misella
Pertusaria ophthafmiza
Pertusaria amara
Pertusaria consocians

Total: 28


Dense balsam fir along the river but too shady. On the hillside there were few balsam fir. Collected some on the hillside and on top. Poor for lichens. Site photo 30.

Buellia stillingiana
Cetraria americana
Cladonia mitis
Cladonia rangiferina
Evernia mesomorpha
Flavoparmelia caperata
Hypogymnia physodes

Total: 13


Open jack pines 8-10” diam. with lower branches and many lichens on the ground. The best jack pine stand for lichens. Site photo 31; **Hypogymnia tubulosa** photo 36.
Final report

Loc. 21. - Michigan, Houghton County, Ottawa National Forest. **Silver Mountain N of Sidnaw.**
Rock hilltop with jack pine, white pine, and red oak, elev. 1279 ft. [390m]. Ontonagon District, Compartment, 102, Stand, 0/6/10. Sec. 1, T49N, R36W. **WP21. 46°40'08"N, 88°44'27"W. 17 July 2004. #91319-91370.**
Lots of rock surface but little lichen variety. Collected on trees and rocks. Site photo 32, 33.

- **Acarospora fuscata**
- **Arthonia radiata**
- **Buellia stillingiana**
- **Caloplaca lithophila**
- **Candelariella vitellina**
- **Cetraria americana**
- **Cladonia chlorophaea**
- **Cladonia crispata**
- **Cladonia gracilis**
- **Cladonia pleurota**
- **Cladonia pyxidata**
- **Cladonia rangiferina**
- **Cladonia stellaris**
- **Cladonia turgida**
- **Cladonia uncialis**
- **Evernia mesomorpha**
- **Flavoparmelia caperata**
- **Hypogymnia physodes**
- **Imshaugia aleurites**
- **Imshaugia placorodia**
- **Jonaspis lacustris**
- **Lecanora caesiorubella**
- **Lecanora circumborealis**
- **Lecanora dispersa**

*Total: 20*

Loc. 22. - Michigan, Houghton County, Ottawa National Forest. **N slope of Silver Mountain N of Sidnaw.**
Shady moist rocks along trail, elev. 1197 ft. [365m]. Ontonagon District, Compartment, 102, Stand, 6. Sec. 6, T49N, R35W. **WP22. 46°40'04"N, 88°44'17"W. 17 July 2004. #91371-91379.**
Collected a few lichens along the steps on the northeast side. The shady wet cliffs should be studied further for more lichens. Site photo 34.

- **Cetrelia olivetorum**
- **Leptogium cyanescens**
- **Lecanora hybocarpa**
- **Lecanora intricata**
- **Lecanora minutella**
- **Lepraria neglecta**
- **Melanelia subaurifera**
- **Myelochroa galbina**
- **Ochrolechia arborea**
- **Parmelia sulcata**
- **Pertusaria trachythallina**
- **Phaeophyscia pusilloides**
- **Phaeophyscia rubropulchra**
- **Porpidia crustulata**
- **Porpidia herteliana**
- **Punctelia rudecta**
- **Ramalina americana**
- **Rhizocarpon geographicum**
- **Rhizocarpon reductum**
- **Stereocaulon paschale**
- **Stereocaulon saxatile**
- **Trapeziopsis granulosa**
- **Umbilicaria deusta**
- **Usnea hirta**
- **Xanthoparmelia cumberlandia**
- **Xanthoria hasseana**

*Total: 48*
Nephroma parile
Peltigera elisabethae
Total: 7

Peltigera horizontalis
Appendix IV

Comparison of lichen lists

The following table compares the species lists from the 2003 collections (Wetmore 2004), the collections found by Fryday in the Michigan State University Herbarium and the University of Michigan Herbarium, and the collections made in 2004 by Wetmore (this report). All Wetmore collections are in the University of Minnesota herbarium. The last column lists the total species verified from the Ottawa National Forest. Some of the identifications of the two Michigan herbaria may need confirmation because some of the older species have recently been divided into several other species (e.g., Xanthoria fallax). This table does not include a comparison with the Sliwa and Wetmore report (2002).
**Appendix IV** Comparison of species lists

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<th>Fryday report 2004</th>
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Pyrrhospora elabens
Pyxine sorediata
Ramalina americana
Ramalina dilacerata
Ramalina intermedia
Rhizocarpon guminatum
Rhizocarpon lavatum
Rhizocarpon rubescens
Rhizoplaca subdiscrepans
Rinodina ascociscana
Sarea resinae
Scoliciosporum chlorococcum
Sphinctrina anglica
Sphinctrina pedata
Sphinctrina turbinata
Stenocybe pullatula
Stereocaulon paschale
Stereocaulon saxatile
Stereocaulon saxatile
Strigula stigmatella
Trapelia coarctata

Punctelia perreticulata
Punctelia rudecta
Pyrrhospora elabens
Pyxine sorediata
Ramalina americana
Ramalina dilacerata
Ramalina intermedia
Rhizocarpon disporum
Rhizocarpon geographicum
Rhizocarpon grande
Rhizocarpon reductum
Rhizocarpon rubescens
Rhizoplaca subdiscrepans
Rimularia caeca
Rinodina adirondackii
Rinodina degeliana
Rinodina glauca
Rinodina populicola
Sarea resinae
Scoliciosporum chlorococcum
Sphinctrina anglica
Sphinctrina pedata
Sphinctrina turbinata
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Appendix V

Photos of survey sites and rare lichens
Photos 35-39 were not taken in the field.

Photo 1 – WP 1 – Yondota Falls – photo lost
Photo 2 – WP 2 – S of Yondota Falls
Photo 3 – WP 3 – Menegazzia terebrata
Photo 4 – WP 3 – Thuja swamp (“ash bog”)
Photo 5 – WP 4 – Thuja S of Marenisco
Photo 6 – WP 4 – Menegazzia terebrata
Photo 7 – WP 4 – Cetraria aurescens
Photo 8 – WP 4 – Cetraria aurescens
Photo 9 – WP 5 – Young quaking aspen on hill
Photo 10 – WP 6 – Quaking aspen on hill
Photo 11 – near WP 6 – Amanita
Photo 12 – WP 7 – Langford Lake ash swamp
Photo 13 – WP 7 – Caloplaca parvula on base of black ash
Photo 14 – WP 8 – Poor ash swamp
Photo 15 – WP 9 – Jack pine
Photo 16 – WP 10 – Young quaking aspen
Photo 17 – WP 11 – Mixed conifer swamp
Photo 18 – WP 11 – Hypogymnia physodes
Photo 19 – WP 12 – Thuja swamp at county line
Photo 20 – WP 13 – Young jack pine
Photo 21 – WP 14 – Menegazzia terebrata
Photo 22 – WP 14 – Thuja swamp
Photo 23 – WP 14 – C. Wetmore and assistant
Photo 24 – WP 15 – East rock point
Photo 25 – WP 15 – East rock point
Photo 26 – WP 16 – West rock point
Photo 27 – WP 17 – Open jack pine
Photo 28 – WP 18 – Ash swamp and beaver kill
Photo 29 – WP 18 – Cetraria oakesiana
Photo 30 – WP 19 – Balsam fir hillside
Photo 31 – WP 20 – Best quality jack pine
Photo 32 – WP 21 – Silver Mt. glacial grooves
Photo 33 – WP 21 – Silver Mt.
Photo 34 – WP 22 – N side of Silver Mt.
Photo 35 – Cladonia cornuta
Photo 36 – Hypogymnia tubulosa
Photo 37 – Lopadium pezizoides
Photo 38 – Pseudevernia consocians
Photo 39 – Stereocaulon pileatum
Appendix VI

Michigan Special Plant Survey Forms

This index to MNFI forms is arranged by species.

*Caloplaca parvula* – F1
*Cetraria aurescens* – F2
*Cladonia cornuta* – F3, F4, F5
*Hypogymnia tubulosa* – F6, F7, F8
*Lopadium pezizoideum* – F9
*Menegazia terebrata* – F10, F11, F12
*Pseudevernia consocians* – F13
*Stereocaulon pileatum* – F14
SPECIAL PLANT SURVEY FORM

SURVEYOR INFORMATION
Survey date: -11 July- 2004 Time from: 12:00 ___ to: 1:30 ___ am or pm (circle) Sourcecode: F ____ __ M I US
Surveyors (principal surveyor first, include first & last name): Clifford Wetmore

Weather conditions:

Revisit to this EO needed? ___ yes _x_ no Why?: complete collections made here

EO refers to element occurrence i.e., the species this form is reporting on.

ELEMENT INFORMATION
Scientific name: Caloplaca parvula
Data sensitive? N Occ.# (if known):

FILING
QUADCODE:
QUADNAME: Thayer

LOCATIONAL INFORMATION
Was the Landowner contacted? Yes No Landowner Name:

Owner Type: ___ Ottawa National Forest

Note:
DIRECTIONS: Provide detailed directions to the observation (rather than the survey site). Include landmarks, roads, towns, distances, compass directions.

---

Township/Range/Section ___ Sec. 25, T45N, R42W
County ___ Gogebic
Managed area name:

Was GPS used? Yes _X_ No _____ Type of unit ___ Garmin 76 Map

Waypoint name/# (when using Garmin) ___ WP7

File name (when using Trimble)

OPTIONAL: Latitude _46°16'16"N_ Longitude _89°29'37"W_

FEATURE INFORMATION (mandatory) Point: <12.5 m in both dimensions, Line: >12.5 m in one dimension, Polygon: >12.5 m in both dimensions
Source Feature: Single Source EO _X_ Multi-Source EO _____ Conceptual Feature Type: Point _X_ Line _____ Polygon

TOPOGRAPHIC MAP (mandatory, the website topozone.com can be used as a source for these maps)
1. Attach a photocopy of the appropriate part of a USGS topographic map (1:24,000 scale if available) and write the map scale on the photocopy. Please do NOT enlarge or reduce the map.
2. Indicate on the map the exact location of the observation(s):
a. When the observed area is no larger than a pen point on the map (i.e., only a small number of individuals or extremely small patches), place small points on the map indicating the location(s) of the individuals or patches, and label each point with an arrow so they are more easily seen.
b. When the observed area is larger than a pen point on the map, (e.g., a population of plants, foraging birds):
   (1) Draw a thin solid boundary line showing the extent of the observed area occupied by the individuals.
   (2) Indicate disjunct patches (polygons) by drawing the boundary for each patch separately.
   (3) If the boundary follows the edge of a lake, stream, road, marsh or other feature, draw the boundary precisely on the edge of the feature.
   (4) Where needed, add notes to the map with instructions on where the boundary line is located or if the boundary is shared with other observations.
3. A hand drawn sketch may be included for finer details.

LOCATIONAL CERTAINTY
Is your depiction of the observed area on the map within 6.25 m (approximately 20ft) of its actual location on the ground? Y
If N, complete the following:
a. Estimate of uncertainty distance: based on landmarks, elevation, etc., the location of the observed area on the map is accurate to within ________ meters kilometers feet miles of its actual location on the ground.
b. Is the observed area known to be located within some feature(s) on the map (e.g., wetland boundary, lake, road, trail, highway, contour lines)? Y N
If Y, indicate the boundary within which the observed area is known to be located on the map line, and if applicable, identify the feature (e.g., marsh).
IDENTIFICATION
Photograph/slide taken? Yes If yes, will a copy be submitted to Heritage? No MNFI office: Added to collection? No (check)
Specimen collected? Yes no Collection # and repository: Wetmore # 90966 University of Minnesota Herbarium Identification problems? No (check)

SIZE AND PHENOLOGY
Size is a quantitative measure of the area and/or abundance of an occurrence. Components of this factor are 1) area of occupancy, 2) population abundance, 3) population density and 4) population fluctuation.
Abundance (total size of the occurrence): Type of measurement (check one)
- # Ramets (total # of individuals): 2 X precise count estimate
- # Genets (total # of groups): 2 X precise count estimate
Population density (i.e., widely scattered, dense clumps, evenly distributed throughout):

Area of occupancy (fill in one): meters yards acres Type of measurement (check one): Precise
Phenology: Indicate the number observed in each category (or check if numbers are unknown):
in leaf in bud in flower immature fruit mature fruit seed dispersing dormant seedlings

ASSOCIATED SPECIES
Ground cover: (0 % cover)
- sedges
- pools of water

Understory/Scrub Species: (0 % cover)
- alder

Overstory/Tree Species: (10 % cover)
- black ash

CONDITION: Condition is an integrated measure of the quality of biotic and abiotic factors, structures and processes within the occurrence, and the degree to which they affect the continued existence of the occurrence. Components of condition for species are: 1) reproduction and health, 2) ecological processes, 3) species composition and biological structure, 4) abiotic physical/chemical factors. Factors to consider: evidence of regular successful reproduction, habitat degradation, disturbance, presence of exotic species, the degree to which ecological processes are sustaining the habitat. Where possible include a comparison to other occurrences.

BIOLOGY and REPRODUCTION
EVIDENCE OF REPRODUCTION? Yes no unknown Explain: Apothecia present

EVIDENCE OF DISEASE OR PREDATION:

ANIMAL POLLINATORS observed on the plant (list species):

Do other members of this genus or look-alike plants co-occur at this survey site? Yes no If yes, list the species:

CONDITION (continued)
HABITAT DESCRIPTION: Describe the specific habitat or micro habitat where this plant occurs. Convey a mental image of the habitat and its features including: land forms, aquatic features, vegetation, slope, aspect, soils, associated plant and animal species, natural disturbances.

Landscape Condition: Describe the condition of the landscape surrounding the elements habitat (i.e., farmland, residential area, pristine forest)
CURRENT THREATS to this occurrence (i.e., grazing, logging, mining, plantations, ATVs, dumping, etc.) Discuss exotics in the next section.

POTENTIAL THREATS to this occurrence: ____ Some treat of disturbance from the campground. Also slight threat of later level changes.

EXOTICS PRESENT? ____ yes  ____ no. If yes, describe their impacts to the occurrence.

PAST IMPACTS to the occurrence (i.e., logging, etc.): ______ None known.

TOPOGRAPHY
Elevation: _1672 ft.
If elevation is a range:
Minimum: __________ ft.
Maximum: __________ ft.
Aspect: ______
Slope: ______
Light: ______
Position: ______
Moisture: ______

MANAGEMENT AND PROTECTION
MANAGEMENT, MONITORING AND RESEARCH NEEDS for this occurrence (e.g., burn periodically, open the canopy, ensure water quality, control exotics, keep out the ATVs, study effects of browsing)
____ Prevent any disturbance or drastic changes in water levels, prevent inroads by campground visitors

AREAS IN NEED OF PROTECTION: (e.g. the entire marsh, the slope and crest of slope, the fen and upland, etc.) __Entire bog

If you have any questions regarding this form and its methodology please contact MNFI at (517) 373-1552. P:\nfield forms\special_plant_form.doc
Rev. 07/2002
F2
SPECIAL PLANT SURVEY FORM

SURVEYOR INFORMATION
Survey date: 10 July 2004 Time from: 12:30 to: 2:30 am or pm (circle) Sourcecode: M I U S
Surveyors (principal surveyor first, include first & last name): Clifford Wetmore

Weather conditions:

Revisit to this EO needed? yes X no Why?: complete collections made here

EO refers to element occurrence i.e. the species this form is reporting on

ELEMENT INFORMATION
Scientific name: Cetraria aurescens
Data sensitive? N Occ.# (if known): 

FILING
QUADCODE:
QUADNAME: Stateline Lake

LOCATIONAL INFORMATION
Was the Landowner contacted? Yes X No Landowner Name:
Owner Type: Ottawa National Forest

Note:
DIRECTIONS: Provide detailed directions to the observation (rather than the survey site). Include landmarks, roads, towns, distances, compass directions.

Township/Range/Section Sec. 29, T46N, R43W Managed area name:
County Gogebic
County

Was GPS used? Yes X No Type of unit Garmin 76 Map Unit number 
Waypoint name/# (when using Garmin) WP4 File name (when using Trimble)

OPTIONAL: Latitude 46°21'21"N Longitude 89°42'23"W

FEATURE INFORMATION (mandatory) Point: <12.5 m in both dimensions, Line: >12.5 m in one dimension, Polygon: >12.5 m in both dimensions
Source Feature: Single Source EO X Multi-Source EO Conceptual Feature Type: Point X Line Polygon

TOPOGRAPHIC MAP (mandatory, the website topozone.com can be used as a source for these maps)
1. Attach a photocopy of the appropriate part of a USGS topographic map (1:24,000 scale if available) and write the map scale on the photocopy. Please do NOT enlarge or reduce the map.
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      (1) Draw a thin solid boundary line showing the extent of the observed area occupied by the individuals.
      (2) Indicate disjunct patches (polygons) by drawing the boundary for each patch separately.
      (3) If the boundary follows the edge of a lake, stream, road, marsh or other feature, draw the boundary precisely on the edge of the feature.
      (4) Where needed, add notes to the map with instructions on where the boundary line is located or if the boundary is shared with other observations.
3. A hand drawn sketch may be included for finer details.

LOCATIONAL CERTAINTY
Is your depiction of the observed area on the map within 6.25 m (approximately 20ft) of its actual location on the ground? Y
If N, complete the following:
   a. Estimate of uncertainty distance: based on landmarks, elevation, etc., the location of the observed area on the map is accurate to within _______ meters kilometers feet miles of its actual location on the ground.
   b. Is the observed area known to be located within some feature(s) on the map (e.g., wetland boundary, lake, road, trail, highway, contour lines)? Y N
   If Y, indicate the boundary within which the observed area is known to be located on the map line, and if applicable, identify the feature (e.g., marsh).
IDENTIFICATION
Photograph/slide taken? Yes No If yes, will a copy be submitted to Heritage? No MNFI office: Added to collection? No
Specimen collected? Yes No Collection # and repository: Wetmore # 90879 University of Minnesota Herbarium
Identification problems? No If necessary, describe the important plant characteristics you used for identification:

SIZE AND PHENOLOGY
Size is a quantitative measure of the area and/or abundance of an occurrence. Components of this factor are 1) area of occupancy, 2) population abundance, 3) population density and 4) population fluctuation.
Abundance (total size of the occurrence): Type of measurement (check one)
# Ramets (total # of individuals): 1 X Precise count Estimate
# Genets (total # of groups): 1 X Precise count Estimate
Population density (i.e., widely scattered, dense clumps, evenly distributed throughout):

Area of occupancy (fill in one): meters yards acres Type of measurement (check one): Precise Estimate
Phenology: Indicate the number observed in each category (or check if numbers are unknown):

ASSOCIATED SPECIES
Ground cover: (% cover)
Understory/Scrub Species: (% cover)
Overstory/Tree Species: (% cover)

CONDITION: Condition is an integrated measure of the quality of biotic and abiotic factors, structures and processes within the occurrence, and the degree to which they affect the continued existence of the occurrence. Components of condition for species are: 1) reproduction and health, 2) ecological processes, 3) species composition and biological structure, 4) abiotic physical/chemical factors. Factors to consider: evidence of regular successful reproduction, habitat degradation, disturbance, presence of exotic species, the degree to which ecological processes are sustaining the habitat. Where possible include a comparison to other occurrences.

BIOLOGY and REPRODUCTION
Evidence of reproduction? Yes No Unknown Explain: Apothecia present
Evidence of disease or predation:
Animal pollinators observed on the plant (list species):
Do other members of this genus or look-alike plants co-occur at this survey site? Yes No If yes, list the species:

CONDITION (continued)
Habitat description: Describe the specific habitat or microhabitat where this plant occurs. Convey a mental image of the habitat and its features including: land forms, aquatic features, vegetation, slope, aspect, soils, associated plant and animal species, natural disturbances.

LANDSCAPE CONDITION: Describe the condition of the landscape surrounding the elements habitat (i.e., farmland, residential area, pristine forest)
CURRENT THREATS to this occurrence (i.e., grazing, logging, mining, plantations, ATVs, dumping, etc.) Discuss exotics in the next section.  

(None observed)

POTENTIAL THREATS to this occurrence: None expected

EXOTICS PRESENT? yes no. If yes, describe their impacts to the occurrence.

(PAST IMPACTS to the occurrence (i.e., logging, etc.)) None known

TOPOGRAPHY

Elevation: 1540 ft.

If elevation is a range:  
Minimum:  
Maximum:  

Aspect:

Slope:

Light:

Position:

Moisture:

MANAGEMENT AND PROTECTION

MANAGEMENT, MONITORING AND RESEARCH NEEDS for this occurrence (e.g. burn periodically, open the canopy, ensure water quality, control exotics, keep out the ATV's, study effects of browsing)

AREAS IN NEED OF PROTECTION: (e.g. the entire marsh, the slope and crest of slope, the fen and upland, etc.)

If you have any questions regarding this form and its methodology please contact MNFI at (517) 373-1552.
F3
SPECIAL PLANT SURVEY FORM

SURVEYOR INFORMATION
Survey date: 9 July 2004 Time from: 1:30 to 3:30 am or pm (circle) Sourcecode: F M I U S
Surveyors (principal surveyor first, include first & last name): Clifford Wetmore

Weather conditions:

Revisit to this EO needed? _X__ no Why?: complete collections made here

EO refers to element occurrence i.e. the species this form is reporting on

ELEMENT INFORMATION
Scientific name: Cladonia cornuta
Data sensitive? N Occ. # (if known): __ __

FILING SURVEYSITE:
QUADCODE: Marenisco

LOCATIONAL INFORMATION
Was the Landowner contacted? Yes _X__ No __ Landowner Name:

Owner Type: _Ottawa National Forest ____________

Note:
DIRECTIONS: Provide detailed directions to the observation (rather than the survey site). Include landmarks, roads, towns, distances, compass directions.

Township/Range/Section _Sec. 33, T47N, R43W ____________
County __Goebic__ Managed area
name:

Was GPS used? Yes _X__ No Type of unit _Garmin 76 Map_ ____________ Unit number ________
Waypoint name/# (when using Garmin) WP# File name (when using Trimble) ________

OPTIONAL: Latitude __46°25'50"N__, Longitude __89°41'06"W__

FEATURE INFORMATION (mandatory) Point: <12.5 m in both dimensions, Line: >12.5 m in one dimension. Polygon: >12.5 m in both dimensions
Source Feature: Single Source EO _X__ Multi-Source EO ____ Conceptual Feature Type: Point _X__ Line ____ Polygon

TOPOGRAPHIC MAP (mandatory, the website topozone.com can be used as a source for these maps)
1. Attach a photocopy of the appropriate part of a USGS topographic map (1:24,000 scale if available) and write the map scale on the photocopy. Please do NOT enlarge or reduce the map.
2. Indicate on the map the exact location of the observation(s):
   a. When the observed area is no larger than a pen point on the map (i.e., only a small number of individuals or extremely small patches), place small points on the map indicating the location(s) of the individuals or patches, and label each point with an arrow so they are more easily seen.
   b. When the observed area is larger than a pen point on the map, (e.g., a population of plants, foraging birds):
      (1) Draw a thin solid boundary line showing the extent of the observed area occupied by the individuals.
      (2) Indicate disjunct patches (polygons) by drawing the boundary for each patch separately.
      (3) If the boundary follows the edge of a lake, stream, road, marsh or other feature, draw the boundary precisely on the edge of the feature.
      (4) Where needed, add notes to the map with instructions on where the boundary line is located or if the boundary is shared with other observations.
3. A hand drawn sketch may be included for finer details.

LOCATIONAL CERTAINTY
Is your depiction of the observed area on the map within 6.25 m (approximately 20 ft) of its actual location on the ground? Y
If N, complete the following:
   a. Estimate of uncertainty distance: based on landmarks, elevation, etc., the location of the observed area on the map is accurate to within ________ meters kilometers feet miles of its actual location on the ground.
   b. Is the observed area known to be located within some feature(s) on the map (e.g., wetland boundary, lake, road, trail, highway, contour lines)? Y N
If Y, indicate the boundary within which the observed area is known to be located on the map line, and if applicable, identify the feature (e.g., marsh).
IDENTIFICATION
Photograph/slide taken? No If yes, will a copy be submitted to Heritage? Yes MNFI office: Added to collection? (check)
Specimen collected? yes no Collection # and repository: Wetmore # 90770 University of Minnesota Herbarium
Identification problems? no If necessary, describe the important plant characteristics you used for identification:

SIZE AND PHENOLOGY Size is a quantitative measure of the area and/or abundance of an occurrence. Components of this factor are 1) area of occupancy, 2) population abundance, 3) population density and 4) population fluctuation.
Abundance (total size of the occurrence): Type of measurement (check one)
# Ramets (total # of individuals): _______ 1 _______ precise count X estimate
# Genets (total # of groups): _______ 1 _______ precise count X estimate
Population density (i.e., widely scattered, dense clumps, evenly distributed throughout):

Area of occupancy (fill in one): _______ meters _______ yards _______ acres Type of measurement (check one): Precise Estimate

Phenology: Indicate the number observed in each category (or check if numbers are unknown):
in leaf in bud in flower immature fruit mature fruit seed dispersing dormant seedlings

ASSOCIATED SPECIES
Ground cover: ( _____ % cover) Understory/Scrub Species: ( _____ % cover) Overstory/Tree Species: ( _____ 100 % cover)

Thuja
hemlock
balsam fir

CONDITION: Condition is an integrated measure of the quality of biotic and abiotic factors, structures and processes within the occurrence, and the degree to which they affect the continued existence of the occurrence. Components of condition for species are: 1) reproduction and health, 2) ecological processes, 3) species composition and biological structure, 4) abiotic physical/chemical factors. Factors to consider: evidence of regular successful reproduction, habitat degradation, disturbance, presence of exotic species, the degree to which ecological processes are sustaining the habitat. Where possible include a comparison to other occurrences.

BIOLOGY and REPRODUCTION
EVIDENCE OF REPRODUCTION? X yes X no unknown Explain: Soredia present, apothecia absent

EVIDENCE OF DISEASE OR PREDATION:

ANIMAL POLLINATORS observed on the plant (list species):

Do other members of this genus or look-alike plants co-occur at this survey site? yes no If yes, list the species:

CONDITION (continued)
HABITAT DESCRIPTION: Describe the specific habitat or micro habitat where this plant occurs. Convey a mental image of the habitat and its features including: land forms, aquatic features, vegetation, slope, aspect, soils, associated plant and animal species, natural disturbances.

Along north side of river and in forest in old growth forest. Shady and moist. This was growing on duff on the ground.

LANDSCAPE CONDITION: Describe the condition of the landscape surrounding the elements habitat (i.e., farmland, residential area, pristine forest)
CURRENT THREATS to this occurrence (i.e., grazing, logging, mining, plantations, ATVs, dumping, etc.) Discuss exotics in the next section.

_____ None observed

POTENTIAL THREATS to this occurrence: ________ Possible impact from hikers

EXOTICS PRESENT? ________ yes ______ no. If yes, describe their impacts to the occurrence.

PAST IMPACTS to the occurrence (i.e., logging, etc.): ________ None known

TOPOGRAPHY
Elevation: ___1440 ft.

If elevation is a range:
Minimum-ft: ___S___SE ___35+ Position: ___vertical
Maximum: ___SW ___35+ slope ______ upper Light: ___open
Slope: ___flat ___partial slope ___mid
Aspect: ___N___NE ___0-10 slope lower ___lower
___filtered shade ___lower
___ lower
___moist ___moist (mesic)
___ lower
___moist (mesic)
___ lower
___moist (mesic)
___ lower
___moist (mesic)

MANAGEMENT AND PROTECTION
MANAGEMENT, MONITORING AND RESEARCH NEEDS for this occurrence (e.g. burn periodically, open the canopy, ensure water quality, control exotics, keep out the ATV's, study effects of browsing)

AREAS IN NEED OF PROTECTION: (e.g. the entire marsh, the slope and crest of slope, the fen and upland, etc.)

If you have any questions regarding this form and its methodology please contact MNFI at (517) 373-1552. P:infifield forms\special_plant_form.doc
Rev. 07/2002
SPECIAL PLANT SURVEY FORM

SURVEYOR INFORMATION
Survey date: 12-July • 2004 Time from: 10:15_ to: _11:45_ am or pm (circle) Sourcecode: F _______ M IUS
Surveyors (principal surveyor first, include first & last name): Clifford Wetmore

Weather conditions:

Revisit to this EO needed? _______yes ____________ _X_no Why?: complete collections made here

EO refers to element occurrence i.e. the species this form is reporting on.

ELEMENT INFORMATION
Scientific name: Cladonia cornuta
Data sensitive? N Occ.# (if known): __ __

FILING
SURVEYSITE:
QUADCODE:
QUADNAME: Watersmeet

LOCATIONAL INFORMATION
Was the Landowner contacted? Yes ____________ _X_no Landowner Name:
Owner Type: _Ottawa National Forest

Note:
DIRECTIONS: Provide detailed directions to the observation (rather than the survey site). Include landmarks, roads, towns, distances, compass directions.

Township/Range/Section _Sec. 34, T46N, R39W _______ Managed area
County __Ontonagon name:
Was GPS used? Yes _X_ No _______ Type of unit __Garmin 76 Map__________ Unit number __________
Waypoint name/# (when using Garmin) __WP9__________ File name (when using Trimble)

OPTIONAL: Latitude _46°20'40"N__________ Longitude _89°10'23"W

FEATURE INFORMATION (mandatory) Point: <12.5 m in both dimensions, Line: >12.5 m in one dimension, Polygon: >12.5m in both dimensions
Source Feature: Single Source EO _X_ Multi-Source EO _______ Conceptual Feature Type: Point _X_ Line ___ Polygon

TOPOGRAPHIC MAP (mandatory, the website topozone.com can be used as a source for these maps)
1. Attach a photocopy of the appropriate part of a USGS topographic map (1:24,000 scale if available) and write the map scale on the photocopy. Please do
NOT enlarge or reduce the map.
2. Indicate on the map the exact location of the observation(s):
   a. When the observed area is no larger than a pen point on the map (i.e., only a small number of individuals or extremely small patches), place small
      points on the map indicating the location(s) of the individuals or patches, and label each point with an arrow so they are more easily
      seen.
   b. When the observed area is larger than a pen point on the map, (e.g., a population of plants, foraging birds):
      (1) Draw a thin solid boundary line showing the extent of the observed area occupied by the individuals.
      (2) Indicate disjunct patches (polygons) by drawing the boundary for each patch separately.
      (3) If the boundary follows the edge of a lake, stream, road, marsh or other feature, draw the boundary precisely on the edge of the
          feature.
      (4) Where needed, add notes to the map with instructions on where the boundary line is located or if the boundary is shared with
          other observations.
3. A hand drawn sketch may be included for finer details.

LOCATIONAL CERTAINTY
Is your depiction of the observed area on the map within 6.25 m (approximately 20ft) of its actual location on the ground? Y
If N, complete the following:
   a. Estimate of uncertainty distance: based on landmarks, elevation, etc., the location of the observed area on the map is accurate to within
      _______ meters kilometers feet miles of its actual location on the ground.
   b. Is the observed area known to be located within some feature(s) on the map (e.g., wetland boundary, lake, road, trail, highway, contour lines)? Y N
      If Y, indicate the boundary within which the observed area is known to be located on the map line, and if applicable, identify the feature (e.g., marsh).
### IDENTIFICATION

Photograph/slide taken? **No** If yes, will a copy be submitted to Heritage? **MNFI** office: Added to collection? (check) Specimen collected? **yes** no Collection # and repository: Wetmore # 91002 University of Minnesota Herbarium Identification problems? **no** If necessary, describe the important plant characteristics you used for identification:

### SIZE AND PHENOLOGY

Size is a quantitative measure of the area and/or abundance of an occurrence. Components of this factor are 1) area of occupancy, 2) population abundance, 3) population density and 4) population fluctuation.

**Abundance** (total size of the occurrence): Type of measurement (check one)

- # Ramets (total # of individuals): __2__ precise count _X_estimated
- # Genets (total # of groups): __1__ precise count _X_estimated

**Population density** (i.e., widely scattered, dense clumps, evenly distributed throughout): __

**Area of occupancy** (fill in one): _____ meters _____ yards _____ acres Type of measurement (check one): ___ Precise Estimate

**Phenology:** Indicate the number observed in each category (or check if numbers are unknown):

- _in leaf_ in bud _in flower_ _immature fruit_ _mature fruit_ _seed dispersing_ _dormant_ _seedlings_

### ASSOCIATED SPECIES

**Ground cover:** (_% cover)

- __

**Understory/Scrub Species:** (_% cover)

- __

**Overstory/Tree Species:** (_% cover)

- _jack pine_
- _red maple_

### CONDITION:

Condition is an integrated measure of the quality of biotic and abiotic factors, structures and processes within the occurrence, and the degree to which they affect the continued existence of the occurrence. Components of condition for species are: 1) reproduction and health, 2) ecological processes, 3) species composition and biological structure, 4) abiotic physical/chemical factors. Factors to consider: evidence of regular successful reproduction, habitat degradation, disturbance, presence of exotic species, the degree to which ecological processes are sustaining the habitat. Where possible include a comparison to other occurrences.

### BIOLOGY and REPRODUCTION

**EVIDENCE OF REPRODUCTION?** _X_ yes _no_ _unknown_ Explain: _Soredia present, apothecia absent_

**EVIDENCE OF DISEASE OR PREDATION:**

**ANIMAL POLLINATORS** observed on the plant (list species):

Do other members of this genus or look-alike plants co-occur at this survey site? **yes** no If yes, list the species:

### CONDITION (continued)

**HABITAT DESCRIPTION:** Describe the specific habitat or micro habitat where this plant occurs. Convey a mental image of the habitat and its features including: land forms, aquatic features, vegetation, slope, aspect, soils, associated plant and animal species, natural disturbances.

- **Upland above ridge made by road cut. Old jack pines with few low branches except near the road. Mostly just common lichens. This was growing on duff on the ground.**

### LANDSCAPE CONDITION:

Describe the condition of the landscape surrounding the elements habitat (i.e., farmland, residential area, pristine forest)
CURRENT THREATS to this occurrence (i.e., grazing, logging, mining, plantations, ATVs, dumping, etc.) Discuss exotics in the next section.

_____ None observed

POTENTIAL THREATS to this occurrence: none expected

EXOTICS PRESENT? yes no. If yes, describe their impacts to the occurrence.

PAST IMPACTS to the occurrence (i.e., logging, etc.): None known

TOPOGRAPHY

Elevation: 1508 ft.

If elevation is a range:
Minimum: ___ ft.
Maximum: ___ ft.
Aspect: ___ X flat
Slope: ___ open
Light: ___ partial
Position: ___ lower
Moisture: ___ dry
Slope: ___ upper
Light: ___ shade
Position: ___ mid slope
Moisture: ___ filtered
Slope: ___ horizontal
Position: ___ vertical
Moisture: ___ lower
Slope: ___ crest
Position: ___ bottom
Moisture: ___ dry
Slope: ___ lower
Position: ___ crest
Moisture: ___ dry
Slope: ___ upper
Position: ___ bottom
Moisture: ___ lower
Slope: ___ crest
Position: ___ bottom
Moisture: ___ dry
Slope: ___ lower
Position: ___ crest
Moisture: ___ dry
Slope: ___ upper

MANAGEMENT, MONITORING AND RESEARCH NEEDS for this occurrence (e.g. burn periodically, open the canopy, ensure water quality, control exotics, keep out the ATV's, study effects of browsing)

_____ Thinning might help but the trees have few lower branches left.

AREAS IN NEED OF PROTECTION: (e.g. the entire marsh, the slope and crest of slope, the fen and upland, etc.)

If you have any questions regarding this form and its methodology please contact MNFI at (517) 373-1552. P:\inf\field forms\special_plant_form.doc
Rev. 07/2002
F5
SPECIAL PLANT SURVEY FORM

SURVEYOR INFORMATION
Survey date: 16-July • 2004 Time from: ___10:30___ to: ___12:15___ am or pm (circle) Sourcecode: F
Surveyors (principal surveyor first, include first & last name): Clifford Wetmore

Weather conditions:

Revisit to this EO needed? ___yes ___no Why?: complete collections made here

EO refers to element occurrence i.e. the species this form is reporting on

ELEMENT INFORMATION
Scientific name: Cladonia cornuta
Data sensitive? N Occ.# (if known): ___

FILING
SURVEYSITE:
QUADCODE:
QUADNAME: Rousseau

LOCATIONAL INFORMATION
Was the Landowner contacted? Yes ___X___ No _____ Landowner Name:

Owner Type: ___Ottawa National Forest

Note:

DIRECTIONS: Provide detailed directions to the observation (rather than the survey site). Include landmarks, roads, towns, distances, compass directions.

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Township/Range/Section _Sec. 7, T49N, R37W_
County ___Houghton ___ Managed area

Was GPS used? Yes ___X___ No _____ Type of unit ___Garmin 76 Map ___ Unit number ___
Waypoint name/# (when using Garmin) ___WP18 ___ File name (when using Trimble)

OPTIONAL: Latitude ___48°39′14″N___ Longitude ___88°58′18″W___

FEATURE INFORMATION (mandatory) Point: <12.5 m in both dimensions, Line: >12.5 m in one dimension. Polygon: >12.5 m in both dimensions
Source Feature: Single Source EO ___X___ Multi-Source EO _____ Conceptual Feature Type: Point ___X___ Line ___ Polygon

TOPOGRAPHIC MAP (mandatory, the website topozone.com can be used as a source for these maps)
1. Attach a photocopy of the appropriate part of a USGS topographic map (1:24,000 scale if available) and write the map scale on the photocopy. Please do NOT enlarge or reduce the map.
2. Indicate on the map the exact location of the observation(s):
   a. When the observed area is no larger than a pen point on the map (i.e., only a small number of individuals or extremely small patches), place small points on the map indicating the location(s) of the individuals or patches, and label each point with an arrow so they are more easily seen.
   b. When the observed area is larger than a pen point on the map, (e.g., a population of plants, foraging birds):
      (1) Draw a thin solid boundary line showing the extent of the observed area occupied by the individuals.
      (2) Indicate disjunct patches (polygons) by drawing the boundary for each patch separately.
      (3) If the boundary follows the edge of a lake, stream, road, marsh or other feature, draw the boundary precisely on the edge of the feature.
      (4) Where needed, add notes to the map with instructions on where the boundary line is located or if the boundary is shared with other observations.
3. A hand drawn sketch may be included for finer details.

LOCATIONAL CERTAINTY
Is your depiction of the observed area on the map within 6.25 m (approximately 20ft) of its actual location on the ground? Y
If N, complete the following:
   a. Estimate of uncertainty distance: based on landmarks, elevation, etc., the location of the observed area on the map is accurate to within ___ meters kilometers feet miles of its actual location on the ground.
   b. Is the observed area known to be located within some feature(s) on the map (e.g., wetland boundary, lake, road, trail, highway, contour lines)? Y N
If Y, indicate the boundary within which the observed area is known to be located on the map line, and if applicable, identify the feature (e.g., marsh).
2

IDENTIFICATION
Photograph/slide taken? Yes If yes, will a copy be submitted to Heritage? No MNFI office: Added to collection? No (check)
Specimen collected? Yes No Collection # and repository: Wetmore # 91263 University of Minnesota Herbarium
Identification problems? No If necessary, describe the important plant characteristics you used for identification:

SIZE AND PHENOLOGY
Size is a quantitative measure of the area and/or abundance of an occurrence. Components of this factor are 1) area of occupancy, 2) population abundance, 3) population density and 4) population fluctuation.
Abundance (total size of the occurrence): Type of measurement (check one)
# Ramets (total # of individuals): 1 precise count X estimate
# Genets (total # of groups): 1 precise count X estimate
Population density (i.e., widely scattered, dense clumps, evenly distributed throughout):

Area of occupancy (fill in one): _______ meters _______ yards _______ acres Type of measurement (check one): Precise Estimate

Phenology: Indicate the number observed in each category (or check if numbers are unknown):
in leaf ___ in bud ___ in flower ___ immature fruit ___ mature fruit ___ seed dispersing ___ dormant ___ seedlings

ASSOCIATED SPECIES
Ground cover: (0__% cover) Understory/Scrub Species: (0__% cover) Overstory/Tree Species: (0__% cover)
black ash ___ red maple ___ sugar maple ___ Thuja ___ hemlock ___

CONDITION: Condition is an integrated measure of the quality of biotic and abiotic factors, structures and processes within the occurrence, and the degree to which they affect the continued existence of the occurrence. Components of condition for species are: 1) reproduction and health, 2) ecological processes, 3) species composition and biological structure, 4) abiotic physical/chemical factors. Factors to consider: evidence of regular successful reproduction, habitat degradation, disturbance, presence of exotic species, the degree to which ecological processes are sustaining the habitat. Where possible include a comparison to other occurrences.

BIOLOGY and REPRODUCTION
EVIDENCE OF REPRODUCTION? X yes No unknown Explain: Soredia present, apothecia absent

EVIDENCE OF DISEASE OR PREDATION:

ANIMAL POLLINATORS observed on the plant (list species):

Do other members of this genus or look-alike plants co-occur at this survey site? Yes No If yes, list the species:

3

CONDITION (continued)
HABITAT DESCRIPTION: Describe the specific habitat or micro habitat where this plant occurs. Convey a mental image of the habitat and its features including: land forms, aquatic features, vegetation, slope, aspect, soils, associated plant and animal species, natural disturbances.

Flooded old black ash bog surrounded by maples with some Thuja and hemlock. Collections made on fallen ash and trees on banks of swamp and the lichen was growing on moss on the ground.

LANDSCAPE CONDITION: Describe the condition of the landscape surrounding the elements habitat (i.e., farmland, residential area, pristine forest)
CURRENT THREATS to this occurrence (i.e., grazing, logging, mining, plantations, ATVs, dumping, etc.) Discuss exotics in the next section.

__________ None observed

POTENTIAL THREATS to this occurrence: __________ None expected

EXOTICS PRESENT? ___yes ___no. If yes, describe their impacts to the occurrence.

PAST IMPACTS to the occurrence (i.e., logging, etc.): __________ Flooding by beaver has destroyed all of the swamp for lichens.

TOPOGRAPHY
Elevation: ___1147 ft.
If elevation is a range: 
Minimum: 
Maximum: 
Aspect: 
Slope: 
Light: 
Position: 
Moisture: 

MANAGEMENT AND PROTECTION
MANAGEMENT, MONITORING AND RESEARCH NEEDS for this occurrence (e.g. burn periodically, open the canopy, ensure water quality, control exotics, keep out the ATV's, study effects of browsing)

AREAS IN NEED OF PROTECTION: (e.g. the entire marsh, the slope and crest of slope, the fen and upland, etc.)

If you have any questions regarding this form and its methodology please contact MNFI at (517) 373-1552.

Rev. 07/2002
F6
SPECIAL PLANT SURVEY FORM

SURVEYOR INFORMATION
Survey date: 13-July - 2004 Time from: _1:30_ to: _4:00_ am or pm (circle) Sourcecode: F ____ ____ ____ ____ M I U S
Surveyors (principal surveyor first, include first & last name): Clifford Wetmore

Weather conditions:

Revisit to this EO needed? ____yes _X__no Why?: complete collections made here

EO refers to element occurrence i.e. the species this form is reporting on

ELEMENT INFORMATION
Scientific name: Hypogymnia tubulosa
Data sensitive? N Occ.# (if known): ____

FILING
SURVEYSITE:

QUADCODE:
QUADNAME: Golden Lake

LOCATIONAL INFORMATION
Was the Landowner contacted? Yes _X__ No Landowner Name: ________________
Owner Type: Ottawa National Forest

Note:
DIRECTIONS: Provide detailed directions to the observation (rather than the survey site). Include landmarks, roads, towns, distances, compass directions.

To provide the location of the observed area on the map, please:
1. Attach a photocopy of the appropriate part of a USGS topographic map (1:24,000 scale if available) and write the map scale on the photocopy. Please do NOT enlarge or reduce the map.
2. Indicate on the map the exact location of the observation(s):
   a. When the observed area is no larger than a pen point on the map (i.e., only a small number of individuals or extremely small patches), place small points on the map indicating the location(s) of the individuals or patches, and label each point with an arrow so they are more easily seen.
   b. When the observed area is larger than a pen point on the map, (e.g., a population of plants, foraging birds):
      (1) Draw a thin solid boundary line showing the extent of the observed area occupied by the individuals.
      (2) Indicate disjunct patches (polygons) by drawing the boundary for each patch separately.
      (3) If the boundary follows the edge of a lake, stream, road, marsh or other feature, draw the boundary precisely on the edge of the feature.
      (4) Where needed, add notes to the map with instructions on where the boundary line is located or if the boundary is shared with other observations.
3. A hand drawn sketch may be included for finer details.

LOCATIONAL CERTAINTY
Is your depiction of the observed area on the map within 6.25 m (approximately 20 ft) of its actual location on the ground? N
If N, complete the following:
   a. Estimate of uncertainty distance: based on landmarks, elevation, etc., the location of the observed area on the map is accurate to within ___________ meters kilometers feet miles of its actual location on the ground.
   b. Is the observed area known to be located within some feature(s) on the map (e.g., wetland boundary, lake, road, trail, highway, contour lines)? Y N
   If Y, indicate the boundary within which the observed area is known to be located on the map line, and if applicable, identify the feature (e.g., marsh).
IDENTIFICATION
Photograph/slide taken? _No_ If yes, will a copy be submitted to Heritage? _MNFI office: Added to collection? (check)_ Specimen collected? _Yes_ no Collection # and repository: _Wetmore # 91040 University of Minnesota Herbarium Identification problems? _No_ If necessary, describe the important plant characteristics you used for identification:

SIZE AND PHENOLOGY Size is a quantitative measure of the area and/or abundance of an occurrence. Components of this factor are 1) area of occupancy, 2) population abundance, 3) population density and 4) population fluctuation. Abundance (total size of the occurrence): Type of measurement (check one)

# Ramets (total # of individuals): _______1__________ precise count _X__ estimate
# Genets (total # of groups): _______1__________ precise count _X__ estimate
Population density (i.e., widely scattered, dense clumps, evenly distributed throughout):

Area of occupancy (fill in one): _______ meters _______ yards _______ acres Type of measurement (check one): _Precise Estimate_

Phenology: Indicate the number observed in each category (or check if numbers are unknown):

_ in leaf _ in bud _ in flower _ immature fruit _ mature fruit _ seed dispersing _ dormant _ seedlings

ASSOCIATED SPECIES
Ground cover: (_) % cover) Understory/Scrub Species: (_) % cover) Overstory/Tree Species: (_) % cover)

__ alder
__ balsam fir
__ black spruce
__ Thuja
__ yellow birch

CONDITION: Condition is an integrated measure of the quality of biotic and abiotic factors, structures and processes within the occurrence, and the degree to which they affect the continued existence of the occurrence. Components of condition for species are: 1) reproduction and health, 2) ecological processes, 3) species composition and biological structure, 4) abiotic physical/chemical factors. Factors to consider: evidence of regular successful reproduction, habitat degradation, disturbance, presence of exotic species, the degree to which ecological processes are sustaining the habitat. Where possible include a comparison to other occurrences.

BIOLOGY and REPRODUCTION
EVIDENCE OF REPRODUCTION? _X_ yes _ no _ unknown Explain:_ Soredia present, apothecia absent

EVIDENCE OF DISEASE OR PREDATION:

ANIMAL POLLINATORS observed on the plant (list species):

Do other members of this genus or look-alike plants co-occur at this survey site? _Yes_ _ No_ If yes, list the species:

3

CONDITION (continued)
HABITAT DESCRIPTION: Describe the specific habitat or micro habitat where this plant occurs. Convey a mental image of the habitat and its features including: land forms, aquatic features, vegetation, slope, aspect, soils, associated plant and animal species, natural disturbances.

Mixed conifer lowland but very shady with some openings and some areas of water pools. Also quite brushy in many parts. This was growing on a black spruce branch.

LANDSCAPE CONDITION: Describe the condition of the landscape surrounding the elements habitat (i.e., farmland, residential area, pristine forest)
CURRENT THREATS to this occurrence (i.e., grazing, logging, mining, plantations, ATVs, dumping, etc.) Discuss exotics in the next section. None observed

POTENTIAL THREATS to this occurrence: None expected

EXOTICS PRESENT? yes no. If yes, describe their impacts to the occurrence.

PAST IMPACTS to the occurrence (i.e., logging, etc.): None known

TOPOGRAPHY
Elevation: 1270 ft.

If elevation is a range:
Minimum: ft.
Maximum: ft.
Aspect:

Slope:
Light:
Position:
Moisture:

MANAGEMENT AND PROTECTION
MANAGEMENT, MONITORING AND RESEARCH NEEDS for this occurrence (e.g. burn periodically, open the canopy, ensure water quality, control exotics, keep out the ATVs, study effects of browsing)

AREAS IN NEED OF PROTECTION: (e.g. the entire marsh, the slope and crest of slope, the fen and upland, etc.)

If you have any questions regarding this form and its methodology please contact MNFI at (517) 373-1552.
F7
SPECIAL PLANT SURVEY FORM
SURVEY INFORMATION
Survey date: 14-July-2004 Time from: 12:30 _ to: 3:00 _ am or pm (circle) Sourcecode: F __ __ __ __ __ __ M I U S
Surveyors (principal surveyor first, include first & last name): Clifford Wetmore

Weather conditions:

Revisit to this EO needed? _yes _X_no Why?: complete collections made here

EO refers to element occurrence i.e. the species this form is reporting on

ELEMENT INFORMATION
Scientific name: Hypogymnia tubulosa
Data sensitive? N Occ.# (if known): ___ __

FILING
SURVEYSITE:
QUADCODE:
QUADNAME: Paulding

LOCATIONAL INFORMATION
Was the Landowner contacted? Yes _X__ No ____ Landowner Name:

Owner Type: __Ottawa National Forest__
Note:
DIRECTIONS: Provide detailed directions to the observation (rather than the survey site). Include landmarks, roads, towns, distances, compass directions.

Township/Range/Section Sec. 36, T47N, R40W
County __Ontonagon___ Managed area

name:
Was GPS used? Yes _X__ No _____ Type of unit __Garmin 76 Map______ Unit number ___________
Waypoint name/# (when using Garmin) ___ WP13__ File name (when using Trimble)

OPTIONAL: Latitude _46°26'02"N_ Longitude _89°26'02"W_

FEATURE INFORMATION (mandatory) Point: <12.5 min both dimensions, Line: >12.5 m in one dimension, Polygon: >12.5m in both dimensions
Source Feature: Single Source EO _X__ Multi-Source EO ____ Conceptual Feature Type: Point _X__ Line ____ Polygon

TOPOGRAPHIC MAP (mandatory, the website topozone.com can be used as a source for these maps)
1. Attach a photocopy of the appropriate part of a USGS topographic map (1:24,000 scale if available) and write the map scale on the photocopy. Please do NOT enlarge or reduce the map.
2. Indicate on the map the exact location of the observation(s):
   a. When the observed area is no larger than a pen point on the map (i.e., only a small number of individuals or extremely small patches), place small points on the map indicating the location(s) of the individuals or patches, and label each point with an arrow so they are more easily seen.
   b. When the observed area is larger than a pen point on the map, (e.g., a population of plants, foraging birds):
      (1) Draw a thin solid boundary line showing the extent of the observed area occupied by the individuals.
      (2) Indicate disjunct patches (polygons) by drawing the boundary for each patch separately.
      (3) If the boundary follows the edge of a lake, stream, road, marsh or other feature, draw the boundary precisely on the edge of the feature.
      (4) Where needed, add notes to the map with instructions on where the boundary line is located or if the boundary is shared with other observations.
3. A hand drawn sketch may be included for finer details.

LOCATIONAL CERTAINTY
Is your depiction of the observed area on the map within 6.25 m (approximately 20ft) of its actual location on the ground? Y If N, complete the following:
   a. Estimate of uncertainty distance: based on landmarks, elevation, etc., the location of the observed area on the map is accurate to within ___ meters kilometers feet miles of its actual location on the ground.
   b. Is the observed area known to be located within some feature(s) on the map (e.g., wetland boundary, lake, road, trail, highway, contour lines)? Y N
   If Y, indicate the boundary within which the observed area is known to be located on the map line, and if applicable, identify the feature (e.g., marsh).
IDENTIFICATION
Photograph/slide taken? __No__ If yes, will a copy be submitted to Heritage? __MNFI office: Added to collection? (check) Specimen collected? __yes__ _no Collection # and repository: Wetmore # 91078 University of Minnesota Herbarium
Identification problems? __no__ If necessary, describe the important plant characteristics you used for identification:

SIZE AND PHENOLOGY Size is a quantitative measure of the area and/or abundance of an occurrence. Components of this factor are 1) area of occupancy, 2) population abundance, 3) population density and 4) population fluctuation.
Abundance (total size of the occurrence): Type of measurement (check one)
# Ramets (total # of individuals): _______ X __ precise count ______ estimate
# Genets (total # of groups): _______ X __ precise count ______ estimate
Population density (i.e., widely scattered, dense clumps, evenly distributed throughout):

Area of occupancy (fill in one): _______ meters ______ yards _______ acres Type of measurement (check one): __Precise Estimate
Phenology: Indicate the number observed in each category (or check if numbers are unknown):
in leaf in bud in flower immature fruit mature fruit seed dispersing dormant seedlings

ASSOCIATED SPECIES
Ground cover: (___ % cover) Understory/Scrub Species: (___ % cover) Overstory/Tree Species: (___ % cover)

CONDITION: Condition is an integrated measure of the quality of biotic and abiotic factors, structures and processes within the occurrence, and the degree to which they affect the continued existence of the occurrence. Components of condition for species are: 1) reproduction and health, 2) ecological processes, 3) species composition and biological structure, 4) abiotic physical/chemical factors. Factors to consider: evidence of regular successful reproduction, habitat degradation, disturbance, presence of exotic species, the degree to which ecological processes are sustaining the habitat. Where possible include a comparison to other occurrences.

BIOLOGY and REPRODUCTION
EVIDENCE OF REPRODUCTION? __X__ yes __no __unknown Explain: __Soredia present, apothecia absent

EVIDENCE OF DISEASE OR PREDATION:

ANIMAL POLLINATORS observed on the plant (list species):

Do other members of this genus or look-alike plants co-occur at this survey site? __yes __no If yes, list the species:

3 CONDITION (continued)
HABITAT DESCRIPTION: Describe the specific habitat or micro habitat where this plant occurs. Convey a mental image of the habitat and its features including: land forms, aquatic features, vegetation, slope, aspect, soils, associated plant and animal species, natural disturbances.

Above the road and a small shallow gully. Dense jack pine plantation with a small patch of quaking aspen at one side. Growing on a jack pine branch.

LANDSCAPE CONDITION: Describe the condition of the landscape surrounding the elements habitat (i.e., farmland, residential area, pristine forest)
CURRENT THREATS to this occurrence (i.e., grazing, logging, mining, plantations, ATVs, dumping, etc.) Discuss exotics in the next section.

_____ None observed

POTENTIAL THREATS to this occurrence: None expected

EXOTICS PRESENT? yes no. If yes, describe their impacts to the occurrence.

PAST IMPACTS to the occurrence (i.e., logging, etc.): None known

TOPOGRAPHY
Elevation: 1377 ft.

If elevation is a range: Minimum: _____ ft. Maximum: _____ ft.
Aspect: ___ flat ___ partial ___ open ___ mid ___ mid
Light: slope ___ upper ___ bottom ___ xerisatated ___ inundated ___ dry
Position: ___ vertical ___ lower ___ upper ___ crest ___ bottom ___ dry
Moisture: ___ dry ___ mesic ___ wet-mesic ___ mesic ___ dry

MANAGEMENT, MONITORING AND RESEARCH NEEDS for this occurrence (e.g. burn periodically, open the canopy, ensure water quality, control exotics, keep out the ATV's, study effects of browsing)

AREAS IN NEED OF PROTECTION: (e.g. the entire marsh, the slope and crest of slope, the fen and upland, etc.)

If you have any questions regarding this form and its methodology please contact MNFI at (517) 373-1552. P:\n\field\forms\special_plant_form.doc
Rev. 07/2002
F8
SPECIAL PLANT SURVEY FORM

SURVEYOR INFORMATION
Survey date: 17-July-2004 Time from: 8:00 to: 10:00 am or pm (circle) Sourcecode: F____ M I U S
Surveyors (principal surveyor first, include first & last name): Clifford Wetmore

Weather conditions:

Revisit to this EO needed? ___yes ___no Why?: complete collections made here

EO refers to element occurrence i.e. the species this form is reporting on

ELEMENT INFORMATION
Scientific name: Hypogymnia tubulosa
Data sensitive? N Occ.# (if known): _ _

FILING
SURVEYSITE:
QUADCODE:
QUADNAME: Sidnaw

LOCATIONAL INFORMATION
Was the Landowner contacted? Yes ___No ___ Landowner Name:

Owner Type: Ottawa National Forest

Note:
DIRECTIONS: Provide detailed directions to the observation (rather than the survey site). Include landmarks, roads, towns, distances, compass directions.

Township/Range/Section ___Sec. 25, T49N, R35W __________________________ Managed area
County __Baraga________________________ Managed area

name:
Was GPS used? Yes ___No ___ Type of unit ___Garmin 76 Map ____ File name (when using Trimble)
Waypoint name/# (when using Garmin) ___ WP20 ____

OPTIONAL: Latitude ___46°36’36”N ___Longitude ___88°37’46”W___
FEATURE INFORMATION (mandatory) Point: <12.5 m in both dimensions, Line: >12.5 m in one dimension, Polygon: >12.5 m in both dimensions
Source Feature: Single Source EO ___Multi-Source EO ___Conceptual Feature Type: Point ___Line ___Polygon

TOPOGRAPHIC MAP (mandatory, the website topozone.com can be used as a source for these maps)
1. Attach a photocopy of the appropriate part of a USGS topographic map (1:24,000 scale if available) and write the map scale on the photocopy. Please do
NOT enlarge or reduce the map.
2. Indicate on the map the exact location of the observation(s):
a. When the observed area is no larger than a pen point (i.e., only a small number of individuals or extremely small patches), place small
points on the map indicating the location(s) of the individuals or patches, and label each point with an arrow so they are more easily
seen.
b. When the observed area is larger than a pen point on the map, (e.g., a population of plants, foraging birds):
(1) Draw a thin solid boundary line showing the extent of the observed area occupied by the individuals.
(2) Indicate disjunct patches (polygons) by drawing the boundary for each patch separately.
(3) If the boundary follows the edge of a lake, stream, road, marsh or other feature, draw the boundary precisely on the edge of the
feature.
(4) Where needed, add notes to the map with instructions on where the boundary line is located or if the boundary is shared with
other observations.
3. A hand drawn sketch may be included for finer details.

LOCATIONAL CERTAINTY
Is your depiction of the observed area on the map within 6.25 m (approximately 20ft) of its actual location on the ground? Y
If N, complete the following:
a. Estimate of uncertainty distance: based on landmarks, elevation, etc., the location of the observed area on the map is accurate to
within _______ meters kilometers feet miles of its actual location on the ground.
b. Is the observed area known to be located within some feature(s) on the map (e.g., wetland boundary, lake, road, trail, highway,
contour lines)? Y N
If Y, indicate the boundary within which the observed area is known to be located on the map line, and if applicable, identify the
feature (e.g., marsh).
2

IDENTIFICATION
Photograph/slide taken? _No_ If yes, will a copy be submitted to Heritage? _MNFI office: Added to collection? (check)
Specimen collected? _yes_ Collection # and repository: Wetmore # 91315 University of Minnesota Herbarium
Identification problems? _no_ If necessary, describe the important plant characteristics you used for identification:

SIZE AND PHENOLOGY Size is a quantitative measure of the area and/or abundance of an occurrence. Components of this factor are 1) area of occupancy, 2) population abundance, 3) population density and 4) population fluctuation.
Abundance (total size of the occurrence): Type of measurement (check one)
  _# Ramets (total # of individuals):_ _____4______ _precise count _X__ estimate
  _# Genets (total # of groups):_ _____4______ _precise count _X__ estimate
Population density (i.e., widely scattered, dense clumps, evenly distributed throughout):

Area of occupancy (fill in one): ________ meters ________ yards ________ acres Type of measurement (check one): _Precise _Estimate
Phenology: Indicate the number observed in each category (or check if numbers are unknown):
  _ in leaf_ _ in bud_ _ in flower_ immature fruit_ mature fruit_ seed dispersing_ dormant_ seedlings

ASSOCIATED SPECIES
Ground cover: ( ___% cover) Understory/Scrub Species: ( ___% cover) Overstory/Tree Species: ( ___% cover)

  jack pine
  red pine
  red oak

 CONDITION: Condition is an integrated measure of the quality of biotic and abiotic factors, structures and processes within the occurrence, and the degree to which they affect the continued existence of the occurrence. Components of condition for species are: 1) reproduction and health, 2) ecological processes, 3) species composition and biological structure, 4) abiotic physical/chemical factors. Factors to consider: evidence of regular successful reproduction, habitat degradation, disturbance, presence of exotic species, the degree to which ecological processes are sustaining the habitat. Where possible include a comparison to other occurrences.

BIOLOGY and REPRODUCTION
EVIDENCE OF REPRODUCTION? _X_ _yes_ _no_ _unknown_ Explain:______ Soredia present, apothecia absent

EVIDENCE OF DISEASE OR PREDATION:

ANIMAL POLLINATORS observed on the plant (list species):__
Do other members of this genus or look-alike plants co-occur at this survey site? _yes_ _no_ If yes, list the species:

3

CONDITION (continued)
HABITAT DESCRIPTION: Describe the specific habitat or micro habitat where this plant occurs. Convey a mental image of the habitat and its features including: land forms, aquatic features, vegetation, slope, aspect, soils, associated plant and animal species, natural disturbances.

  Very good open jack pine stand on sandy soil with good lower branches. Many good lichens on the ground.
  This was growing on a jack pine branch.

LANDSCAPE CONDITION: Describe the condition of the landscape surrounding the elements habitat (i.e., farmland, residential area, pristine forest)
CURRENT THREATS to this occurrence (i.e., grazing, logging, mining, plantations, ATVs, dumping, etc.) Discuss exotics in the next section.

________ None observed

POTENTIAL THREATS to this occurrence: ______ Logging

EXOTICS PRESENT? __yes ___no. If yes, describe their impacts to the occurrence.

PAST IMPACTS to the occurrence (i.e., logging, , etc.): ______ None known

TOPOGRAPHY
Elevation: ___1246 ft.

If elevation is
a range: ______ N NE ___ 0-10 ___filtered ___lower ___moist
Minimum: ______ E NW ___10-35 ___shade slope ___bottom (mesic)
___ W ___35+ ___vertical ___crest ___dry-mesic
Maximum: ______ SW ___vertical ___ upper ___crested ___dry
________ ft. Slope: ______ X flat ___ X partial ___mid slope ___inundated (mesic)
Aspect: ______ X flat ___ X partial ___mid slope ___forested (mesic)

MANAGEMENT AND PROTECTION
MANAGEMENT, MONITORING AND RESEARCH NEEDS for this occurrence (e.g. burn periodically, open the canopy, ensure water quality, control exotics, keep out the ATV's, study effects of browsing)

AREAS IN NEED OF PROTECTION: (e.g. the entire marsh, the slope and crest of slope, the fen and upland, etc.)

If you have any questions regarding this form and its methodology please contact MNFI at (517) 373-1552.
P:\nfif\field forms\special_plant_form.doc
Rev. 07/2002
F9
SPECIAL PLANT SURVEY FORM
SURVEYOR INFORMATION
Survey date: 10 July 2004 Time from: 8:30 to 10:30 am or pm (circle) Sourcecode: F _______ M IUS
Surveyors (principal surveyor first, include first & last name): Clifford Wetmore

Weather conditions:

Revisit to this EO needed? _yes _X no Why?: complete collections made here

EO refers to element occurrence i.e. the species this form is reporting on

ELEMENT INFORMATION
Scientific name: Lopadium pezizoideum
Data sensitive? N Occ. # (if known): ___ __

FILING
QUADCODE: QUADNAME: Harris Lake

LOCALATIONAL INFORMATION
Was the Landowner contacted? Yes _X No _____ Landowner Name:
Owner Type: Ottawa National Forest
Note:
DIRECTIONS: Provide detailed directions to the observation (rather than the survey site). Include landmarks, roads, towns, distances, compass directions.

Township/Range/Section _Sec. 9, T45N, R44W ______________________ Managed area
County _Gogebic __________________________ Managed area
name:
Was GPS used? Yes _X No _____ Type of unit Garmin 76 Map ___________ Unit number ________
Waypoint name/# (when using Garmin) __ WP3 File name (when using Trimble)

OPTIONAL: Latitude 46°18'22"N Longitude 89°48'26"W
FEATURE INFORMATION (mandatory) Point: <12.5 m in both dimensions, Line: >12.5 m in one dimension, Polygon: >12.5m in both dimensions
Source Feature: Single Source EO _X Multi-Source EO ____ Conceptual Feature Type: Point _X Line _____ Polygon

TOPOGRAPHIC MAP (mandatory, the website topozone.com can be used as a source for these maps)
1. Attach a photocopy of the appropriate part of a USGS topographic map (1:24,000 scale if available) and write the map scale on the photocopy. Please do NOT enlarge or reduce the map.
2. Indicate on the map the exact location of the observation(s):
   a. When the observed area is no larger than a pen point on the map (i.e., only a small number of individuals or extremely small patches), place small points on the map indicating the location(s) of the individuals or patches, and label each point with an arrow so they are more easily seen.
   b. When the observed area is larger than a pen point on the map, (e.g., a population of plants, foraging birds):
      1. Draw a thin solid boundary line showing the extent of the observed area occupied by the individuals.
      2. Indicate disjunct patches (polygons) by drawing the boundary for each patch separately.
      3. If the boundary follows the edge of a lake, stream, road, marsh or other feature, draw the boundary precisely on the edge of the feature.
   4. Where needed, add notes to the map with instructions on where the boundary line is located or if the boundary is shared with other observations.
3. A hand drawn sketch may be included for finer details.

LOCALATIONAL CERTAINTY
Is your depiction of the observed area on the map within 6.25 m (approximately 20ft) of its actual location on the ground? Y If N, complete the following:
   a. Estimate of uncertainty distance: based on landmarks, elevation, etc., the location of the observed area on the map is accurate to within __________ meters kilometers feet miles of its actual location on the ground.
   b. Is the observed area known to be located within some feature(s) on the map (e.g., wetland boundary, lake, road, trail, highway, contour lines)? Y N
If Y, indicate the boundary within which the observed area is known to be located on the map line, and if applicable, identify the feature (e.g., marsh).
IDENTIFICATION
Photograph/slide taken? _No _ If yes, will a copy be submitted to Heritage? ______ MNFI office: Added to collection? (check)
Specimen collected? __yes ___no Collection # and repository: Wetmore # 90823 University of Minnesota Herbarium
Identification problems? ___ no ___ If necessary, describe the important plant characteristics you used for identification:

SIZE AND PHENOLOGY
Size is a quantitative measure of the area and/or abundance of an occurrence. Components of this factor are 1) area of occupancy, 2) population abundance, 3) population density and 4) population fluctuation.
Abundance (total size of the occurrence): Type of measurement (check one)
# Ramets (total # of individuals): __ 1 _X_precise count __ estimate
# Genets (total # of groups): __ 1 _X_precise count __ estimate
Population density (i.e., widely scattered, dense clumps, evenly distributed throughout):

Area of occupancy (fill in one): ______ meters ______ yards ______ acres Type of measurement (check one): _Precise __ Estimate
Phenology: Indicate the number observed in each category (or check if numbers are unknown):
__ in leaf _ in bud _ in flower _ immature fruit _ mature fruit _ seed dispersing _ dormant _ seedlings

ASSOCIATED SPECIES
Ground cover: ( ___% cover) Understory/Scrub Species: ( 30 % cover) Overstory/Tree Species: ( _60% cover)

CONDITION: Condition is an integrated measure of the quality of biotic and abiotic factors, structures and processes within the occurrence, and the degree to which they affect the continued existence of the occurrence. Components of condition for species are: 1) reproduction and health, 2) ecological processes, 3) species composition and biological structure, 4) abiotic physical/chemical factors. Factors to consider: evidence of regular successful reproduction, habitat degradation, disturbance, presence of exotic species, the degree to which ecological processes are sustaining the habitat. Where possible include a comparison to other occurrences.

BIOLOGY and REPRODUCTION
EVIDENCE OF REPRODUCTION? _X_yes ___no ___unknown Explain: ______ Apothecia present

EVIDENCE OF DISEASE OR PREDATION:

ANIMAL POLLINATORS observed on the plant (list species):_
Do other members of this genus or look-alike plants co-occur at this survey site? __ yes ___no If yes, list the species:

CONDITION (continued)
HABITAT DESCRIPTION: Describe the specific habitat or micro habitat where this plant occurs. Convey a mental image of the habitat and its features including: land forms, aquatic features, vegetation, slope, aspect, soils, associated plant and animal species, natural disturbances.

LANDSCAPE CONDITION: Describe the condition of the landscape surrounding the elements habitat (i.e., farmland, residential area, pristine forest).
CURRENT THREATS to this occurrence (i.e., grazing, logging, mining, plantations, ATVs, dumping, etc.) Discuss exotics in the next section.

____________________ None observed

POTENTIAL THREATS to this occurrence: __________________ None expected

EXOTICS PRESENT? __yes __no. If yes, describe their impacts to the occurrence.

____________________

PAST IMPACTS to the occurrence (i.e., logging, etc.): ____________ None known

____________________

TOPOGRAPHY
Elevation: ___1540 ft.

If elevation is a range:
Minimum: __________ ft. __________ ft.
Maximum: __________ ft. __________ ft.
Slope: ____________
Aspect: ____________

Position: ____________
Light: ____________
Moisture: ____________

MANAGEMENT AND PROTECTION
MANAGEMENT, MONITORING AND RESEARCH NEEDS for this occurrence (e.g. burn periodically, open the canopy, ensure water quality, control exotics, keep out the ATV's, study effects of browsing)

____________________

AREAS IN NEED OF PROTECTION: (e.g. the entire marsh, the slope and crest of slope, the fen and upland, etc.)

____________________

If you have any questions regarding this form and its methodology please contact MNFI at (517) 373-1552. P:\nfiforms\special_plant_form.doc

Rev. 07/2002
F10
SPECIAL PLANT SURVEY FORM
SURVEYOR INFORMATION
Survey date: -10 July - 2004 Time from: 8:30 am to: 10:30 am or pm (circle) Sourcecode: F __ __ __ __ __ M I U S
Surveyors (principal surveyor first, include first & last name): Clifford Wetmore

Weather conditions:

Revisit to this EO needed? __ yes __ no Why?: complete collections made here

EO refers to element occurrence i.e. the species this form is reporting on

ELEMENT INFORMATION
Scientific name: Menegazzia terebrata
Data sensitive? N Occ.# (if known): __ __

FILING
SURVEY SITE:
QUADCODE:
QUADNAME: Harris Lake

LOCATIONAL INFORMATION
Was the Landowner contacted? Yes _X__ No ___ Landowner Name:
Owner Type: _Ottawa National Forest

Note:
DIRECTIONS: Provide detailed directions to the observation (rather than the survey site). Include landmarks, roads, towns, distances, compass directions.

Township/Range/Section __Sec. 9, T45N, R44W __ Managed area
County __Gogebic
name: ____________________________
Was GPS used? Yes _X__ No ___ Type of unit __Garmin 76 Map ___ Unit number __________
Waypoint name/# (when using Garmin) __WP3 ___ File name (when using Trimble)

OPTIONAL: Latitude __46°18'22"N Longitude __89°48'26"W
FEATURE INFORMATION (mandatory) Point: <12.5 m in both dimensions, Line: >12.5 m in one dimension, Polygon: >12.5 m in both dimensions
Source Feature: Single Source EO _X__ Multi-Source EO ___ Conceptual Feature Type: Point _X__ Line ___ Polygon

TOPOGRAPHIC MAP (mandatory, the website topozone.com can be used as a source for these maps)
1. Attach a photocopy of the appropriate part of a USGS topographic map (1:24,000 scale if available) and write the map scale on the photocopy. Please do NOT enlarge or reduce the map.
2. Indicate on the map the exact location of the observation(s):
- When the observed area is no larger than a pen point on the map (i.e., only a small number of individuals or extremely small patches), place small points on the map indicating the location(s) of the individuals or patches, and label each point with an arrow so they are more easily seen.
- When the observed area is larger than a pen point on the map, (e.g., a population of plants, foraging birds):
  1. Draw a thin solid boundary line showing the extent of the observed area occupied by the individuals.
  2. Indicate disjunct patches (polygons) by drawing the boundary for each patch separately.
  3. If the boundary follows the edge of a lake, stream, road, marsh or other feature, draw the boundary precisely on the edge of the feature.
  4. Where needed, add notes to the map with instructions on where the boundary line is located or if the boundary is shared with other observations.
3. A hand drawn sketch may be included for finer details.

LOCATIONAL CERTAINTY
Is your depiction of the observed area on the map within 6.25 m (approximately 20ft) of its actual location on the ground? Y
If N, complete the following:
a. Estimate of uncertainty distance: based on landmarks, elevation, etc., the location of the observed area on the map is accurate to within __________ meters kilometers feet miles of its actual location on the ground.
b. Is the observed area known to be located within some feature(s) on the map (e.g., wetland boundary, lake, road, trail, highway, contour lines)? Y N
If Y, indicate the boundary within which the observed area is known to be located on the map line, and if applicable, identify the feature (e.g., marsh).
IDENTIFICATION
Photograph/slide taken? Yes No If yes, will a copy be submitted to Heritage? No MNFI office: Added to collection? No
Specimen collected? Yes No Collection # and repository: Wetmore # 90861 University of Minnesota Herbarium Identification problems? No

SIZE AND PHENOLOGY Size is a quantitative measure of the area and/or abundance of an occurrence. Components of this factor are 1) area of occupancy, 2) population abundance, 3) population density and 4) population fluctuation.
Abundance (total size of the occurrence): Type of measurement (check one)
# Ramets (total # of individuals): 22 X precise count estimate
# Genets (total # of groups): 19 X precise count estimate
Population density (i.e., widely scattered, dense clumps, evenly distributed throughout):

Area of occupancy (fill in one): meters yards acres Type of measurement (check one): Precise Estimate
Phenology: Indicate the number observed in each category (or check if numbers are unknown):
in leaf in bud in flower immature fruit mature fruit seed dispersing dormant seedlings

ASSOCIATED SPECIES
Ground cover: (___ % cover) Understory/Scrub Species: (___ % cover) Overstory/Tree Species: (___ % cover)

ALDER

Balsam fir

Black ash

CONDITION: Condition is an integrated measure of the quality of biotic and abiotic factors, structures and processes within the occurrence, and the degree to which they affect the continued existence of the occurrence. Components of condition for species are: 1) reproduction and health, 2) ecological processes, 3) species composition and biological structure, 4) abiotic physical/chemical factors. Factors to consider: evidence of regular successful reproduction, habitat degradation, disturbance, presence of exotic species, the degree to which ecological processes are sustaining the habitat. Where possible include a comparison to other occurrences.

BIOLOGY and REPRODUCTION
EVIDENCE OF REPRODUCTION? X yes No unknown Explain: Soredia present, apothecia absent

EVIDENCE OF DISEASE OR PREDATION:

ANIMAL POLLINATORS observed on the plant (list species):
Do other members of this genus or look-alike plants co-occur at this survey site? Yes No If yes, list the species:

CONDITION (continued)
HABITAT DESCRIPTION: Describe the specific habitat or micro habitat where this plant occurs. Convey a mental image of the habitat and its features including: land forms, aquatic features, vegetation, slope, aspect, soils, associated plant and animal species, natural disturbances.
Scattered areas of alder with Thuja 8-20" diam. Growing on trunk of Thuja.

LANDSCAPE CONDITION: Describe the condition of the landscape surrounding the elements habitat (i.e., farmland, residential area, pristine forest)
CURRENT THREATS to this occurrence (i.e., grazing, logging, mining, plantations, ATVs, dumping, etc.) Discuss exotics in the next section.

None observed

POTENTIAL THREATS to this occurrence: None expected

EXOTICS PRESENT? yes no. If yes, describe their impacts to the occurrence.

PAST IMPACTS to the occurrence (i.e., logging, etc.): None known

TOPOGRAPHY
Elevation: 1540 ft.

If elevation is a range:
Minimum: ft.
Maximum: ft.
Aspect: X flat

Slope: open
Light: filtered
Position: bottom
Moisture: inundated

MANAGEMENT AND PROTECTION
MANAGEMENT, MONITORING AND RESEARCH NEEDS for this occurrence (e.g. burn periodically, open the canopy, ensure water quality, control exotics, keep out the ATVs, study effects of browsing)

AREAS IN NEED OF PROTECTION: (e.g. the entire marsh, the slope and crest of slope, the fen and upland, etc.)

If you have any questions regarding this form and its methodology please contact MNFI at (517) 373-1552. P:\inf\field forms\special_plant_form.doc

Rev. 07/2002
F11
SPECIAL PLANT SURVEY FORM

SURVEYOR INFORMATION
Survey date: 10 July 2004 Time from: 12:30 to 2:30 am or pm (circle) Sourcecode: FMIUS
Surveyors (principal surveyor first, include first & last name): Clifford Wetmore

Weather conditions:

Revisit to this EO needed? yes X no Why?: complete collections made here

EO refers to element occurrence i.e. the species this form is reporting on

ELEMENT INFORMATION
Scientific name: Menegazzia terebrata
Data sensitive? N Occ.# (if known): ___

FILING
SURVEYSITE:
QUADCODE:
QUADNAME: Stateline Lake

LOCATIONAL INFORMATION
Was the Landowner contacted? Yes X No Landowner Name:

Owner Type: Ottawa National Forest

Note:

DIRECTIONS: Provide detailed directions to the observation (rather than the survey site). Include landmarks, roads, towns, distances, compass directions.

---

Township/Range/Section Sec. 29, T46N, R43W __________________ Managed area
County Gogebic __________________________ Managed area name:

Was GPS used? Yes X No Type of unit Garmin 76 Map _________ Unit number _______
Waypoint name/# (when using Garmin) WP4 File name (when using Trimble)

OPTIONAL: Latitude 46°21'21"N __________________ Longitude 89°42'23"W

FEATURE INFORMATION (mandatory) Point: <12.5 m in both dimensions, Line: >12.5 m in one dimension, Polygon: >12.5 m in both dimensions
Source Feature: Single Source EO X Multi-Source EO Conceptual Feature Type: Point X Line Polygon

TOPOGRAPHIC MAP (mandatory, the website topozone.com can be used as a source for these maps)
1. Attach a photocopy of the appropriate part of a USGS topographic map (1:24,000 scale if available) and write the map scale on the photocopy. Please do NOT enlarge or reduce the map.
2. Indicate on the map the exact location of the observation(s):
a. When the observed area is no larger than a pen point on the map (i.e., only a small number of individuals or extremely small patches), place small points on the map indicating the location(s) of the individuals or patches, and label each point with an arrow so they are more easily seen.
b. When the observed area is larger than a pen point on the map, (e.g., a population of plants, foraging birds):
   (1) Draw a thin solid boundary line showing the extent of the observed area occupied by the individuals.
   (2) Indicate disjunct patches (polygons) by drawing the boundary for each patch separately.
   (3) If the boundary follows the edge of a lake, stream, road, marsh or other feature, draw the boundary precisely on the edge of the feature.
   (4) Where needed, add notes to the map with instructions on where the boundary line is located or if the boundary is shared with other observations.
3. A hand drawn sketch may be included for finer details.

LOCATIONAL CERTAINTY
Is your depiction of the observed area on the map within 6.25 m (approximately 20 ft) of its actual location on the ground? Y If N, complete the following:
a. Estimate of uncertainty distance: based on landmarks, elevation, etc., the location of the observed area on the map is accurate to within ___ meters kilometers feet miles of its actual location on the ground.
b. Is the observed area known to be located within some feature(s) on the map (e.g., wetland boundary, lake, road, trail, highway, contour lines)? Y N
If Y, indicate the boundary within which the observed area is known to be located on the map line, and if applicable, identify the feature (e.g., marsh).
IDENTIFICATION
Photograph/slide taken? Yes No If yes, will a copy be submitted to Heritage? No MNFI office: Added to collection? No (check)
Specimen collected? Yes No Collection # and repository: Wetmore # 90904 University of Minnesota Herbarium
Identification problems? No (check) If necessary, describe the important plant characteristics you used for identification:

SIZE AND PHENOLOGY
Size is a quantitative measure of the area and/or abundance of an occurrence. Components of this factor are 1) area of occupancy, 2) population abundance, 3) population density and 4) population fluctuation.

Abundance (total size of the occurrence): Type of measurement (check one)
# Ramets (total # of individuals): ___ 16 ___ X precise count ___ estimate
# Genets (total # of groups): ___ 6 ___ X precise count ___ estimate
Population density (i.e., widely scattered, dense clumps, evenly distributed throughout):

Area of occupancy (fill in one): ________ meters ________ yards ________ acres Type of measurement (check one): ___ Precise ___ Estimate

Phenology: Indicate the number observed in each category (or check if numbers are unknown):

____ in leaf ______in bud ______in flower ______immature fruit ______mature fruit ______seed dispersing ______dormant ______seedlings

ASSOCIATED SPECIES
Ground cover: ( ___% cover) Understory/Scrub Species: ( ___% cover)

Thuja

balsam fir

few black spruce

CONDITION: Condition is an integrated measure of the quality of biotic and abiotic factors, structures and processes within the occurrence, and the degree to which they affect the continued existence of the occurrence. Components of condition for species are: 1) reproduction and health, 2) ecological processes, 3) species composition and biological structure, 4) abiotic physical/chemical factors. Factors to consider: evidence of regular successful reproduction, habitat degradation, disturbance, presence of exotic species, the degree to which ecological processes are sustaining the habitat. Where possible include a comparison to other occurrences.

BIOLOGY and REPRODUCTION
EVIDENCE OF REPRODUCTION? X yes No Unknown Explain: Soredia present, apothecia absent

EVIDENCE OF DISEASE OR PREDATION:

ANIMAL POLLINATORS observed on the plant (list species):

Do other members of this genus or look-alike plants co-occur at this survey site? Yes No If yes, list the species:

3

CONDITION (continued)
HABITAT DESCRIPTION: Describe the specific habitat or micro habitat where this plant occurs. Convey a mental image of the habitat and its features including: land forms, aquatic features, vegetation, slope, aspect, soils, associated plant and animal species, natural disturbances.

Very brushy in most parts with lots of alder. Few good open Thuja areas. Growing on trunk of leaning Thuja.

LANDSCAPE CONDITION: Describe the condition of the landscape surrounding the elements habitat (i.e., farmland, residential area, pristine forest)
CURRENT THREATS to this occurrence (i.e., grazing, logging, mining, plantations, ATVs, dumping, etc.) Discuss exotics in the next section. 

--- None observed

POTENTIAL THREATS to this occurrence: None expected

EXOTICS PRESENT? yes no. If yes, describe their impacts to the occurrence.

PAST IMPACTS to the occurrence (i.e., logging, etc.): None known

TOPOGRAPHY

Elevation: 1540 ft.

If elevation is a range: Minimum: _____ ft. Maximum: _____ ft. Aspect: ______
Slope: ______ Light: ______
Position: ______
Moisture: ______

MANAGEMENT AND PROTECTION

MANAGEMENT, MONITORING AND RESEARCH NEEDS for this occurrence (e.g. burn periodically, open the canopy, ensure water quality, control exotics, keep out the ATVs, study effects of browsing)

AREAS IN NEED OF PROTECTION: (e.g. the entire marsh, the slope and crest of slope, the fen and upland, etc.)

If you have any questions regarding this form and its methodology please contact MNFI at (517) 373-1552. P:\infifield forms\special_plant_form.doc
Rev. 07/2002
F12
SPECIAL PLANT SURVEY FORM
SURVEYOR INFORMATION
Survey date: 14 July 2004 Time from: 1:30 to: 3:30 am or pm (circle) Sourcecode: F MI US
Surveys (principal surveyor first, include first & last name): Clifford Wetmore

Weather conditions:

Revisit to this EO needed? ___yes X__no Why?: complete collections made here

EO refers to element occurrence i.e. the species this form is reporting on

ELEMENT INFORMATION
Scientific name: Menegazzia terebrata
Data sensitive? N Occ.# (if known): __

FILING
SURVEYSITE:
QUADCODE:
QUADNAME: Choate

LOCATIONAL INFORMATION
Was the Landowner contacted? Yes _X__ No __ Landowner Name: 
Owner Type: Ottawa National Forest

Note:
DIRECTIONS: Provide detailed directions to the observation (rather than the survey site). Include landmarks, roads, towns, distances, compass directions.

Township/Range/Section Sec. 3, T46N, R40W
County __Ontonagon__ Managed area name:
Was GPS used? Yes ____ No ____ Type of unit __Garmin 76 Map__ Unit number ________
Waypoint name/# (when using Garmin) __WP14__ File name (when using Trimble)

OPTIONAL: Latitude __46°24'35"N__ Longitude __89°17'16"W__

FEATURE INFORMATION (mandatory) Point: <12.5 m in both dimensions, Line: >12.5 m in one dimension, Polygon: >12.5 m in both dimensions
Source Feature: Single Source EO _X__ Multi-Source EO ___ Conceptual Feature Type: Point _X__ Line ___ Polygon

TOPOGRAPHIC MAP (mandatory, the website topozone.com can be used as a source for these maps)
1. Attach a photocopy of the appropriate part of a USGS topographic map (1:24,000 scale if available) and write the map scale on the photocopy. Please do NOT enlarge or reduce the map.
2. Indicate on the map the exact location of the observation(s):
   a. When the observed area is no larger than a pen point on the map (i.e., only a small number of individuals or extremely small patches), place small points on the map indicating the location(s) of the individuals or patches, and label each point with an arrow so they are more easily seen.
   b. When the observed area is larger than a pen point on the map, (e.g., a population of plants, foraging birds):
      (1) Draw a thin solid boundary line showing the extent of the observed area occupied by the individuals.
      (2) Indicate disjunct patches (polygons) by drawing the boundary for each patch separately.
      (3) If the boundary follows the edge of a lake, stream, road, marsh or other feature, draw the boundary precisely on the edge of the feature.
      (4) Where needed, add notes to the map with instructions on where the boundary line is located or if the boundary is shared with other observations.
3. A hand drawn sketch may be included for finer details.

LOCATIONAL CERTAINTY
Is your depiction of the observed area on the map within 6.25 m (approximately 20ft) of its actual location on the ground? Y
If N, complete the following:
   a. Estimate of uncertainty distance: based on landmarks, elevation, etc., the location of the observed area on the map is accurate to within _______ meters kilometers feet miles of its actual location on the ground.
   b. Is the observed area known to be located within some feature(s) on the map (e.g., wetland boundary, lake, road, trail, highway, contour line)? Y N
   If Y, indicate the boundary within which the observed area is known to be located on the map line, and if applicable, identify the feature (e.g., marsh).
IDENTIFICATION
Photograph/slide taken? Yes If yes, will a copy be submitted to Heritage? No MNFI office: Added to collection? No (check)
Specimen collected? Yes no Collection # and repository: Wetmore # 91115 University of Minnesota Herbarium
Identification problems? No If necessary, describe the important plant characteristics you used for identification:

SIZE AND PHENOLOGY
Size is a quantitative measure of the area and/or abundance of an occurrence. Components of this factor are 1) area of occupancy, 2) population abundance, 3) population density and 4) population fluctuation.
Abundance (total size of the occurrence): Type of measurement (check one)
# Ramets (total # of individuals): 9 X precise count estimate
# Genets (total # of groups): 3 X precise count estimate
Population density (i.e., widely scattered, dense clumps, evenly distributed throughout):

Area of occupancy (fill in one): ______ meters _______ yards _______ acres Type of measurement (check one): __ Precise Estimate
Phenology: Indicate the number observed in each category (or check if numbers are unknown):
____ in leaf ____ in bud ____ in flower ____ immature fruit ____ mature fruit ____ seed dispersing ____ dormant ____ seedlings

ASSOCIATED SPECIES
Ground cover: (_% cover) Understory/Scrub Species: (_% cover)

some places with alder and mountain maple

Thuja black spruce balsam fir few birch

CONDITION: Condition is an integrated measure of the quality of biotic and abiotic factors, structures and processes within the occurrence, and the degree to which they affect the continued existence of the occurrence. Components of condition for species are: 1) reproduction and health, 2) ecological processes, 3) species composition and biological structure, 4) abiotic physical/chemical factors. Factors to consider: evidence of regular successful reproduction, habitat degradation, disturbance, presence of exotic species, the degree to which ecological processes are sustaining the habitat. Where possible include a comparison to other occurrences.

BIOLOGY and REPRODUCTION
EVIDENCE OF REPRODUCTION? X yes no unknown Explain: Soredia present, apothecia absent

EVIDENCE OF DISEASE OR PREDATION:

ANIMAL POLLINATORS observed on the plant (list species):

Do other members of this genus or look-alike plants co-occur at this survey site? yes no If yes, list the species:

CONDITION (continued)

HABITAT DESCRIPTION: Describe the specific habitat or micro habitat where this plant occurs. Convey a mental image of the habitat and its features including: land forms, aquatic features, vegetation, slope, aspect, soils, associated plant and animal species, natural disturbances.

Low area with very old Thuja over 200 years old. Little too dry for good lichens. Growing on trunk of leaning Thuja.

LANDSCAPE CONDITION: Describe the condition of the landscape surrounding the elements habitat (i.e., farmland, residential area, pristine forest)
CURRENT THREATS to this occurrence (i.e., grazing, logging, mining, plantations, ATVs, dumping, etc.) Discuss exotics in the next section.

None observed

POTENTIAL THREATS to this occurrence:

None expected

EXOTICS PRESENT? 

Yes  No. If yes, describe their impacts to the occurrence.

PAST IMPACTS to the occurrence (i.e., logging, etc.): None known

TOPOGRAPHY

Elevation: 1230 ft.

If elevation is

a range:

Minimum: ft.

Maximum: ft.

Aspect: 

Slope:

Light:

Position:

Moisture:

If you have any questions regarding this form and its methodology please contact MNFI at (517) 373-1552.
F13
SPECIAL PLANT SURVEY FORM
SURVEYOR INFORMATION
Survey date: 10 July 2004 Time from: 8:30 am or pm (circle) Sourcecode: M I US
Surveyors (principal surveyor first, include first & last name): Clifford Wetmore

Weather conditions:

Whether to this EO needed? yes _X__ no Why?: complete collections made here

ELEMENT INFORMATION
Scientific name: Pseudevernia consocians Data sensitive? N Occ. # (if known): ___

FILING
SURVEYSITE:
QUADCODE:
QUADNAME: Harris Lake

LOCATIONAL INFORMATION
Was the Landowner contacted? Yes _X__ No _____ Landowner Name:

Owner Type: Ottawa National Forest

Note:
DIRECTIONS: Provide detailed directions to the observation (rather than the survey site). Include landmarks, roads, towns, distances, compass directions.

Township/Range/Section Sec. 9, T45N, R44W County _Goerge_ Managed area
Managed area

Was GPS used? Yes _X__ No _____ Type of unit __Garmin 76 Map___________ Unit number _______
Waypoint name/# (when using Garmin) __WP3___________ File name (when using Trimble)

OPTIONAL: Latitude __46°18'22"N Longitude __89°48'26"W

FEATURE INFORMATION (mandatory) Point: <12.5 m in both dimensions, Line: >12.5 m in one dimension, Polygon: >12.5 m in both dimensions
Source Feature: Single Source EO _X__ Multi-Source EO _____ Conceptual Feature Type: Point _X__ Line _____ Polygon

TOPOGRAPHIC MAP (mandatory, the website topozone.com can be used as a source for these maps)
1. Attach a photocopy of the appropriate part of a USGS topographic map (1:24,000 scale if available) and write the map scale on the photocopy. Please do NOT enlarge or reduce the map.
2. Indicate on the map the exact location of the observation(s): a. When the observed area is no larger than a pen point on the map (i.e., only a small number of individuals or extremely small patches), place small points on the map indicating the location(s) of the individuals or patches, and label each point with an arrow so they are more easily seen.
   b. When the observed area is larger than a pen point on the map, (e.g., a population of plants, foraging birds):
      (1) Draw a thin solid boundary line showing the extent of the observed area occupied by the individuals.
      (2) Indicate disjunct patches (polygons) by drawing the boundary for each patch separately.
      (3) If the boundary follows the edge of a lake, stream, road, marsh or other feature, draw the boundary precisely on the edge of the feature.
      (4) Where needed, add notes to the map with instructions on where the boundary line is located or if the boundary is shared with other observations.
3. A hand drawn sketch may be included for finer details.

LOCATIONAL CERTAINTY
Is your depiction of the observed area on the map within 6.25 m (approximately 20ft) of its actual location on the ground? Y If N, complete the following:
   a. Estimate of uncertainty distance: based on landmarks, elevation, etc., the location of the observed area on the map is accurate to within _______ meters kilometers feet miles of its actual location on the ground.
   b. Is the observed area known to be located within some feature(s) on the map (e.g., wetland boundary, lake, road, trail, highway, contour lines)? Y N
   If Y, indicate the boundary within which the observed area is known to be located on the map line, and if applicable, identify the feature (e.g., marsh).
IDENTIFICATION
Photograph/slide taken? _No_ If yes, will a copy be submitted to Heritage? _____ MNFI office: Added to collection? (check)
Specimen collected? _yes_ _no_ Collection # and repository: _Wetmore # 90846_ University of Minnesota Herbarium
Identification problems? _no_ If necessary, describe the important plant characteristics you used for identification:

SIZE AND PHENOLOGY Size is a quantitative measure of the area and/or abundance of an occurrence. Components of this factor are 1) area of occupancy, 2) population abundance, 3) population density and 4) population fluctuation.
Abundance (total size of the occurrence): Type of measurement (check one)
# Ramets (total # of individuals): ___ 4 _______ _precise count _X_estimate
# Genets (total # of groups): ___ 2 _______ _precise count _X_estimate
Population density (i.e., widely scattered, dense clumps, evenly distributed throughout):

Area of occupancy (fill in one): ___ meters _____ yards _____ acres Type of measurement (check one): ___ Precise Estimate
Phenology: Indicate the number observed in each category (or check if numbers are unknown):
___ in leaf ___ in bud ___ in flower ___ immature fruit ___ mature fruit ___ seed dispersing ___ dormant ___ seedlings

ASSOCIATED SPECIES
Ground cover: ( _% cover) Understory/Scrub Species: ( _% cover) Overstory/Tree Species: ( _% cover)

CONDITION: Condition is an integrated measure of the quality of biotic and abiotic factors, structures and processes within the occurrence, and the degree to which they affect the continued existence of the occurrence. Components of condition for species are: 1) reproduction and health, 2) ecological processes, 3) species composition and biological structure, 4) abiotic physical/chemical factors. Factors to consider: evidence of regular successful reproduction, habitat degradation, disturbance, presence of exotic species, the degree to which ecological processes are sustaining the habitat. Where possible include a comparison to other occurrences.

BIOLOGY and REPRODUCTION
EVIDENCE OF REPRODUCTION? _X_yes _no _unknown Explain: _______ Isidia present, apothecia absent

EVIDENCE OF DISEASE OR PREDATION:

ANIMAL POLLINATORS observed on the plant (list species):_____
Do other members of this genus or look-alike plants co-occur at this survey site? _yes _no If yes, list the species:

CONDITION (continued)

HABITAT DESCRIPTION: Describe the specific habitat or micro habitat where this plant occurs. Convey a mental image of the habitat and its features including: land forms, aquatic features, vegetation, slope, aspect, soils, associated plant and animal species, natural disturbances.

___Scattered areas of alder with Thuja 8-20" diam. Growing on branches of Thuja.

LANDSCAPE CONDITION: Describe the condition of the landscape surrounding the elements habitat (i.e., farmland, residential area, pristine forest)
CURRENT THREATS to this occurrence (i.e., grazing, logging, mining, plantations, ATVs, dumping, etc.) Discuss exotics in the next section.

None observed

POTENTIAL THREATS to this occurrence: None expected

EXOTICS PRESENT? yes no. If yes, describe their impacts to the occurrence.

PAST IMPACTS to the occurrence (i.e., logging, etc.): None known

TOPOGRAPHY

Elevation: 1540 ft.

If elevation is a range: N NE 0-10 X filtered lower moist

Minimum: E NW 10-35 shade slope (mesic)

Maximum: S SE 35+ vertical crest dry-mesic

Aspect: W slope

Light: X filtered open slope

Position: X bottom upper slope

Moisture: X saturated inundated dry (xeric)

Slope: X flat mid slope

MANAGEMENT AND PROTECTION

MANAGEMENT, MONITORING AND RESEARCH NEEDS for this occurrence (e.g. burn periodically, open the canopy, ensure water quality, control exotics, keep out the ATVs, study effects of browsing)

AREAS IN NEED OF PROTECTION: (e.g. the entire marsh, the slope and crest of slope, the fen and upland, etc.)

If you have any questions regarding this form and its methodology please contact MNFI at (517) 373-1552. P:\nfield\forms\special_plant_form.doc

Rev. 07/2002
F14
SPECIAL PLANT SURVEY FORM
SURVEYOR INFORMATION
Survey date: -15 July - 2004 Time from: _9:45 _to: _12:00 _am or pm (circle) Sourcecode: F
Surveyors (principal surveyor first, include first & last name): Clifford Wetmore

Weather conditions:

Revisit to this EO needed? __yes _X_no Why?: complete collections made here

EO refers to element occurrence i.e. the species this form is reporting on

ELEMENT INFORMATION
Scientific name: Stereocaulon pileatum
Data sensitive? N Occ. # (if known): __

FILING
SURVEYSITE:
QUADCODE:
QUADNAME: Matchwood NW

LOCATIONAL INFORMATION
Was the Landowner contacted? Yes _X__ No ______ Landowner Name:
Owner Type: _Ottawa National Forest

Note:
DIRECTIONS: Provide detailed directions to the observation (rather than the survey site). Include landmarks, roads, towns, distances, compass directions.

Township/Range/Section _Sec. 9, T49N, R41W
County _Ontonagon Managed area
name:
Was GPS used? Yes _X__ No ______ Type of unit _Garmin 76 Map ______ Unit number ______
Waypoint name/# (when using Garmin) ______ File name (when using Trimble) ______

OPTIONAL: Latitude _46°39'30"N ______ Longitude _89°25'46"W

FEATURE INFORMATION (mandatory) Point: <12.5 m in both dimensions, Line: >12.5 m in one dimension, Polygon: >12.5m in both dimensions
Source Feature: Single Source EO _X__ Multi-Source EO ______ Conceptual Feature Type: Point _X__ Line ______ Polygon

TOPOGRAPHIC MAP (mandatory, the website topozone.com can be used as a source for these maps)
1. Attach a photocopy of the appropriate part of a USGS topographic map (1:24,000 scale if available) and write the map scale on the photocopy. Please do NOT enlarge or reduce the map.
2. Indicate on the map the exact location of the observation(s):
a. When the observed area is no larger than a pen point on the map (i.e., only a small number of individuals or extremely small patches), place small points on the map indicating the location(s) of the individuals or patches, and label each point with an arrow so they are more easily seen.
b. When the observed area is larger than a pen point on the map, (e.g., a population of plants, foraging birds):
(1) Draw a thin solid boundary line showing the extent of the observed area occupied by the individuals.
(2) Indicate disjunct patches (polygons) by drawing the boundary for each patch separately.
(3) If the boundary follows the edge of a lake, stream, road, marsh or other feature, draw the boundary precisely on the edge of the feature.
(4) Where needed, add notes to the map with instructions on where the boundary line is located or if the boundary is shared with other observations.
3. A hand drawn sketch may be included for finer details.

LOCATIONAL CERTAINTY
Is your depiction of the observed area on the map within 6.25 m (approximately 20 ft) of its actual location on the ground? Y
If N, complete the following:
a. Estimate of uncertainty distance: based on landmarks, elevation, etc., the location of the observed area on the map is accurate to within _______ meters kilometers feet miles of its actual location on the ground.
b. Is the observed area known to be located within some feature(s) on the map (e.g., wetland boundary, lake, road, trail, highway, contour lines)? Y N
If Y, indicate the boundary within which the observed area is known to be located on the map line, and if applicable, identify the feature (e.g., marsh).
IDENTIFICATION
Photograph/slide taken? _No_ If yes, will a copy be submitted to Heritage? _MNFI office: Added to collection? (check)
Specimen collected? _Yes_ _No_ Collection # and repository: _Wetmore # 91162_ _University of Minnesota Herbarium_
Identification problems? _No_ If necessary, describe the important plant characteristics you used for identification:

SIZE AND PHENOLOGY
Size is a quantitative measure of the area and/or abundance of an occurrence. Components of this factor are:
1) area of occupancy, 2) population abundance, 3) population density and 4) population fluctuation.
Abundance (total size of the occurrence): Type of measurement (check one)
# Ramets (total # of individuals): _______1________ X _precise count _ estimate
# Genets (total # of groups): _______1________ X _precise count _ estimate
Population density (i.e., widely scattered, dense clumps, evenly distributed throughout):

Area of occupancy (fill in one): _______meters _______yards _______acres Type of measurement (check one): _Precise Estimate
Phenology: Indicate the number observed in each category (or check if numbers are unknown):
____ in leaf ____ in bud ____ in flower ____ immature fruit ____ mature fruit ____ seed dispersing ____ dormant ____ seedlings

ASSOCIATED SPECIES
Ground cover: (_% cover) Understory/Scrub Species: (_% cover) Overstory/Tree Species: (_% cover)
__________________________ ____________________________ ____________________________
__________________________ ____________________________ ____________________________
__________________________ ____________________________ ____________________________
__________________________ ____________________________ ____________________________
__________________________ ____________________________ ____________________________

CONDITION: Condition is an integrated measure of the quality of biotic and abiotic factors, structures and processes within the occurrence, and the degree to which they affect the continued existence of the occurrence. Components of condition for species are: 1) reproduction and health, 2) ecological processes, 3) species composition and biological structure, 4) abiotic physical/chemical factors. Factors to consider: evidence of regular successful reproduction, habitat degradation, disturbance, presence of exotic species, the degree to which ecological processes are sustaining the habitat. Where possible include a comparison to other occurrences.

BIOLOGY and REPRODUCTION
EVIDENCE OF REPRODUCTION? _X_ _Yes_ _no_ _unknown_ Explain: ____________ Soredia present, apothecia absent

EVIDENCE OF DISEASE OR PREDATION:

ANIMAL POLLINATORS observed on the plant (list species):
Do other members of this genus or look-alike plants co-occur at this survey site? _Yes_ _No_ If yes, list the species:

CONDITION (continued)
HABITAT DESCRIPTION: Describe the specific habitat or micro habitat where this plant occurs. Convey a mental image of the habitat and its features including: land forms, aquatic features, vegetation, slope, aspect, soils, associated plant and animal species, natural disturbances.

____ Rock outcrop with areas of trees with good lichens but less variety on the rocks. The Stereocaulon was at the east end just to the north of the presumed trail growing on a small stone shaded from the south by some trees.

LANDSCEP conditioner: Describe the condition of the landscape surrounding the elements habitat (i.e., farmland, residential area, pristine forest)
CURRENT THREATS to this occurrence (i.e., grazing, logging, mining, plantations, ATVs, dumping, etc.) Discuss exotics in the next section.

Possible damage by hikers of the trail

POTENTIAL THREATS to this occurrence:

Possible damage by hikers of the trail

EXOTICS PRESENT? _yes __no. If yes, describe their impacts to the occurrence.

PAST IMPACTS to the occurrence (i.e., logging, etc.): None known

TOPOGRAPHY
Elevation: __1440 ft.

If elevation is a range:
   Minimum: __N __NE
   Maximum: __W __SW

Aspect:
   _N_N
   _S_SE
   _E_NW
   _W_SW

Slope:
   _flat
   _X_0-10
   _X_10-35
   _X_35+

Position:
   _X_crest
   _upper
   _lower

Light:
   _X_open
   _X_mid slope

Moisture:
   _X_dry
   _X_dry-mesic
   _X_wet-mesic
   _X_mesic
   _X_moist

MANAGEMENT AND PROTECTION
MANAGEMENT, MONITORING AND RESEARCH NEEDS for this occurrence (e.g. burn periodically, open the canopy, ensure water quality, control exotics, keep out the ATVs, study effects of browsing)

This is off the trail but mark the trail better to prevent accidental damage by foot traffic straying off the trail. Perhaps a sign asking people to stay on the trail.

AREAS IN NEED OF PROTECTION: (e.g. the entire marsh, the slope and crest of slope, the fen and upland, etc.) NE side of crest in rock area N of trail

If you have any questions regarding this form and its methodology please contact MNFI at (517) 373-1552.

P:/mnfield forms/special_plant_form.doc
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Appendix VII

Lichen surveys 2003 & 2004

- 2004 Lichen Survey Sites
- 2003 Lichen Survey Sites
- Main roads
- Lake
- Wild & Scenic River
- District boundaries

(0, 0) 25 50 Miles