Lichen Inventory of Ottawa National Forest

Purchase Order 43-54A7-3-0096

Prepared by

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Introduction.

During August 2003 a survey was made of 22 sites on Ottawa National Forest for lichens. The purpose of the study was to provide a lichen checklist for the different vegetation types on the forest and to look for lichens on the proposed rare lists. The site list included sites where rare lichens had been reported previously. Two extra sites on the forest were also studied and one site just outside of the forest. These sites were added because they represented conditions not represented by the designated sites.

At each site all species of lichens were collected while especially looking for the 24 rare lichens likely to be found (Table 1). Over 770 collections were made and the vouchers were deposited in the University of Minnesota herbarium. GPS readings were taken at the sites at the time of collecting with a Garmin Map76 using NAD83 Map Datum.

Results.

A total of 204 lichen species were found in these 22 sites (Appendix II). One species (*Cladina arbuscula*) was found on the site outside of the designated USFS land that was not found within the forest. The lichen names with authorities mostly following Esslinger & Egan (1995) and updated for the URL on North American Checklist (http://www.ndsu.nodak.edu/instruct/esslinge/chcklst/chcklst7.htm). The total species list was

compared with the literature report by Sliwa & Wetmore (2001) and 72 new records for Ottawa National Forest are indicated with a "*" in Appendix II. In Sliwa & Wetmore (2001) there were 304 species reported for the counties where the Ottawa NF is located. The lichens in the Sliwa & Wetmore list that are not in Appendix II may not occur within the Ottawa National Forest boundaries or are based on misidentifications.

Appendix I lists all sites visited with locality information and additional habitat notes.

Appendix III lists the lichen species found at each site. The rare lichens found are also indicated in bold on these site lists.

Appendix IV provides the Special Plant Survey Forms (Michigan Natural Heritage Inventory) for those sites where lichens on the proposed threatened and endangered list for lichens in Michigan. This rare list (Table 1) includes only those foliose and fruticose lichens on the proposed lists for Michigan (Fryday & Wetmore, 2002) and Wisconsin (Bennett & Wetmore, 2004). Although these lists are not official, they were used as a guide for this study.

Table 1. Candidate rare species.

These species are on one or both the proposed rare lists for Michigan or Wisconsin or on the Regional Forester's Sensitive in upper Great Lakes (RFSS) list.

Anzia colpodes
Arctoparmelia centrifuga
Arctoparmelia subcentrifuga
Caloplaca parvula
Cetraria aurescens
Cetraria oakesiana
Dermatocarpon moulinsii
Heterodermia leucomela
Hypogymnia vittata
Hypotrachyna revoluta
Lobaria quercizans
Melanelia panniformis
Melanelia tominii

Menegazzia terebrata
Punctelia stictica
Peltigera venosa
Physia phaea
Protopannaria pezizoides
Psora decipiens
Ramalina farinacea
Ramalina thrausta
Stereocaulon pileatum
Sticta beauvoisii
Usnea longissima

Four of these species were found in this study. Table 2 lists all rare lichens found by site. In some cases rare lichens previously reported for a site could not be found in the present survey. This may have been because the original locality was not described in enough detail to be able to relocate it or forest succession may have altered the site so the rare lichens do not presently occur there. Adequate time was allowed for each site to make as complete collections as possible but it is also possible that some rare lichens were missed. Often these rare lichens are only on a single tree and if that tree is not inspected the rare lichen will be missed. The site with largest number of rare lichens was the Dead Stream site (Site 10) with four rare species.

Table 2 Sites of rare lichens

Cetraria oakesiana Tuck.
Site 2 Lathrop Creek
Site 4 Paint Lake
Site 10 Dead Stream

Hypotrachyna revoluta (Flörke) Hale
Site 10 Dead Stream

Lobaria quercizans Michaux
Site 1 Trap Hills on top
Site 2 Lathrop Creek
Site 4 Paint Lake
Site 5 West of Golden Lake on highway 2
Site 7 Ellis Creek
Site 8 Jake Creek

Site 9 Banner Creek
Site 10 Dead Stream
Site 11 Sucker Lake Road

Menegazzia terebrata (Hoffm.) Massal.
Site 10 Dead Stream
Site 18 Bobcat Lake

Site conditions

The best site conditions for foliose and fruticose lichens must have adequate moisture and also light. The Dead Stream site (Site 10) is a good example of this. Crustose lichens require open areas with little vascular plant competition. The Wolf Mt. site (Site 15) and both the Steusser Lake (Site 21) and Highway 2 roadside (Site 23) are good examples. Old age of the stand (both old trees and time since disturbance) is also important.

Good *Thuja* bogs must have lots of moisture and few hardwood trees. In these sites there are many leaning trees providing light openings and many lichens. In Minnesota studies most of these habitats had *Thuja* trees over 200 years old. One likely locality in Ottawa National Forest that was not included in this study is on highway 28 in Ontonagon near the Gogebic county line.

Good alder swamps have dense alders usually growing in standing water with occasional black spruce or tamarack trees. These alders have a few crustose lichens that are much less common in poorer sites. These sites might be in very wet boggy areas or along lakes.

Good black ash bogs are usually in bays of lakes with streams. In these areas the ash are wide-spaced and usually have a good mix of old and young ash trees. The area should not have much woody undergrowth and should have lots of standing water.

The best sites for lichens in jack pines are the middle-aged stands where the trees are spaced apard in almost a savanna. These sites are often found on sand barrens. In the older stands the branches are to high to reach in collections but the open-growth younger stands have lower branches with many lichens.

In the Ottawa National Forest the balsam fir stands studied in 2003 were mixed forests and not pure balsam fir. A good old pure balsam fir forest will have many lichens. Many of the pure balsam fir stands are damaged by the budworms so there may be few good ones in the Ottawa National Forest. These stands often occur at the edge of streams or lakes.

In hardwoods there are usually few lichens lower on the trees because of the dense shade. In old stands (100-200 years old) of sugar maple and yellow birch the trees are usually more open and these old trees have more lichens. The fact that there are more lichens on the tops of the trees than the base was shown in comparing the two Trap Hills sites (Site 1 and Site 22).

There are usually good lichens in open sand areas where the soil is poor and there are few or wide-spaced trees and less vascular plant competition. Some ridgetops may provide these conditions if the soil is not too deep. These areas are often found in the open jack pine stands too.

Rock outcrops are very important for lichens, either wet or dry. There are usually many crustose species on these. These habitats are apparently rare in Ottawa National Forest but study of air photos or a plane flight might turn up more.

General Recommendations

The present list of rare candidate species includes some species that are not rare within the Ottawa National Forest. Inclusion of these uncommon but not rare species greatly increases the time and cost of studies of rare lichens in the forest.

Recommendation 1.: A reevaluation of the candidate rare species list should be done, perhaps with visits to the Michigan herbaria. This should be done before the other recommendations.

With the large number of new lichen records for Ottawa National Forest it is likely that additional species can be found. Some good lichen habitats were seen during the present study but had not bee designated for study. With access to air photos and the GIS vegetation type maps new sites could be located and visited. It is likely that new locations of rare lichens will be found.

Recommendation 2: Search should be made for lichen sites that may have rare lichens or new forest records.

There are still about 100 species on the Sliwa & Wetmore list (2001) that are not accounted for and further research is necessary to reconcile these two lists. Some of these can be discounted because the Sliwa & Wetmore report was based on reports for the counties and that included the Porcupine Mts. Most of the lichen vouchers for these reports are probably in the University of Michigan Herbarium, the Michigan State University Herbarium, or the University of Minnesota Herbarium. There probably are only duplicates in the University of Wisconsin Herbarium. By visiting these herbaria most of the 100 names could probably be rectified with the present list.

Recommendation 3.: Visits should be made to the University of Michigan and Michigan State University herbaria to verify localities and correct the identifications of the species on the Sliwa & Wetmore list but not on the present list. This should be done after Recommendation 2 has been completed.

Some of the best sites with rare lichens probably should receive additional protection by the Ottawa National Forest to protect the rare lichens there.

Recommendation 4.: Evaluation of the sites with three or more rare lichens should be done toward establishing additional protection measures. This should be done after Recommendation 2.

Rare Habitat Recommendations

These recommendations are for the sites where rare lichens were found. They are arranged by species and then by site. RFSS = Regional Forester's Sensitive Species in upper Great Lakes.

Protection. Protection means protection against logging and road building in or near the site (within 200 ft.). This includes cutting and removal of trees that open the canopy and change the humidity and light conditions. All of the rare lichens found grow on trees so soil disturbance is of less concern. This also includes any activity that changes the water flow through the site. It does not mean that normal human access should be limited unless it threatens to become frequent or excessive.

Management. The detailed ecology of all of these rare lichens is unknown. One can only guess shade and moisture requirements based on where they are found. In some wet sites selective removal of some trees might create openings to provide more light for the lichens. However, it might hinder the survival of the lichens by lowering the humidity. Maybe if there is abundant soil moisture and water pools the removal of some trees would not be damaging. In management of sites for openings in dry areas, removal of trees to open the canopy would not be enough because, unless the soils is poor enough to slow the invasion of vascular plants, the vascular plants would quickly out-compete the slow growing lichens.

Cetraria oakesiana In general old growth forests are important for this species. In all cases the trees where this species was found were old. This species probably requires moderate light and high humidity. Although this species is on the Minnesota list and the RFSS list it is not on the Michigan or Wisconsin lists and needs no protection in Ottawa National Forest. In Minnesota this species is at the western edge of its range and is rare but in Wisconsin and Michigan there are many sites where this species can be found.

Site 2 – old hemlock forest: No protection necessary for lichens alone. Possibly removal of some of the younger hardwoods to open the canopy and increase the light would allow other rare species to invade.

Site 4 – old white pine forest: No protection necessary for lichens alone. Possibly removal of some of the younger hardwoods to open the canopy and increase the light would allow other rare species to invade.

Site 10 – mixed conifer swamp: This site needs protection because four listed species occur there. Special management is not recommended.

Hypotrachyna revoluta In general this species occurs on trees and rocks in very humid sites. This species probably requires more light and high humidity. It is on the Michigan list and the site (Site 10) needs protection.

Site 10 – mixed conifer swamp: This site needs protection because four listed species occur there. Special management is not recommended.

Lobaria quercizans This occurs in old growth forests and is found mainly on old maples and yellow birch and sometimes on conifers. This species can grow in fairly shady places in sites with high humidity. It is on the Minnesota and RFSS lists but not on the Michigan or Wisconsin lists. It is at the western edge of its range in Minnesota and is rare there but in Wisconsin and

Michigan it is more common,. It does not need protection in Ottawa National Forest because there were many sites where this species was found in the 2003 study.

Site 1 – old hardwood forest: Site is being opened by logging. The only specimen seen was in poor condition but growing near an old logging road where there was more light. The site is damaged beyond repair now. If a similar site (Site 22) is logged more of the oldest trees should be left uncut.

Site 2 – old hemlock forest: No protection necessary for lichens alone but possibly removal of some hardwoods.

Site 4 – old white pine forest: No protection necessary for lichens alone but possibly removal of some hardwoods.

Site 5 – mixed conifer lowland: This site is very poor and needs no protection or management.

Site 7 – mixed upland *Thuja*: These upland *Thuja* stands rarely have rare lichens because of the low humidity. No protection or management necessary.

Site 8 – mixed *Thuja* swamp: No management or protections necessary.

Site 9 – mixed *Thuja* swamp: No management or protections necessary.

Site 10 – mixed conifer swamp: This site needs protection because four listed species occur there. Special management is not recommended.

Site 11 – mixed black ash swamp: Not the best site for black ash because not enough water and many trees other than black ash. No management or protection needed.

Menegazzia terebrata This species is found in very old (200 years) *Thuja* bogs with lots of water. This often grows on leaning old *Thuja* but can tolerate fairly shady places. It is on the Wisconsin list and the RFSS but not on the Michigan or Minnesota lists.

Site 10 – mixed conifer swamp: This site needs protection because four listed species occur there. This had the greatest number of thalli of this species of any site indicating that the habitat

is well suited to what this species needs. Special management is not recommended, protection is recommended against activities that would alter the ecology.

Site 18 – mixed conifer swamp: This forest is a little too dense and shady for other rare species and maybe too dry for leaning *Thuja*. The shade probably is not too great for *Menegazzia* but other rare species might colonize with more openings. No protection recommended.

Literature Cited

Sliwa, L. & C. Wetmore. 2001. Lichens of the Ottawa National Forest region. Report submitted to Ottawa National Forest.

Esslinger, T. & R. Egan. 1995. A sixth checklist of the lichen-forming, lichenicolous, and allied fungi of the continental United States and Canada. Bryologist 98: 467-549.

Fryday, A. & C. Wetmore. 2002. Proposed list of rare and/or endangered lichens in Michigan. Mich. Botanist 41: 89-93.

Bennett, J. & C. Wetmore. 2004. Proposed list of extinct, rare and/or endangered macrolichens in Wisconsin. Mycotaxon 89: 169-180.

Appendix I

Localities in Ottawa National Forest

The numbers at the end of each locality are C. Wetmore collection numbers at that site.

Site 1. **Trap Hills: District** 1, **Compartment** 71, **Stand** 6, **Forest type** 81, **Size density** 9. **Target Habitat:** Mixed northern hardwoods.

Ontonagon County, Michigan, Ottawa National Forest. Trap Hills on top of high point (15 mi SSW of Ontonagon). Logged areas with isolated sugar maple, basswood, yellow birch, and oak, elev. 1450 ft. Sec. 4, T49N, R41W. 46°39'56"N, 89°26'39"W. 11 Aug. 2003. 90024 – 90053

Site 1. Notes: recent logging (last year?) and continuing while I collected. Collected on remaining trees and on tree tops left after logging. The Trap Hills East site (Extra Site) has not been cut and is similar but no fallen trees or tops for lichens in the upper branches. This area has more lichens than the Trap Hills East because I could get the lichens on the tree tops. The lower trunks were originally too shady.

Site 2. **Lathrop Creek, District** 5, **Compartment** 142, **Stand** 15, **Forest type** 5, **Size density** 9. **Target Habitat:** Hemlock hardwoods.

Ontonagon County, Michigan, Ottawa National Forest. Lathrop Creek (5.7 mi N of Bruce Crossing). Hemlock stand with hardwoods of red maple, sugar maple, oak, and some yellow birch, elev. 1150 ft. Sec. 26, T48N, R39W. 10 Aug. 2003. 46°36'56"N, 89°08'58"W. 9 Aug. 2003. 89932 – 89968

Site 2. Notes: Good old hemlocks with many other hardwoods. Generally pretty shady for lichens because most of the hemlock openings are filled with hardwoods.

Site 3. **Robbins Pond, District** 6, **Compartment** 34, **Stand** 42, **Forest type** 1, **Size density** 9. **Target Habitat:** Jack pine.

Ontonagon County, Michigan, Ottawa National Forest. Near Robbins Pond (7.5 mi N of Watersmeet). Old jack pines with balsam fir and spruce, thinned in strips between pines, elev. 1210 ft. Sec. 18, T46N, R39W. 46°22'58"N, 89°13'39"W. 4 Aug. 2003. 89459 – 89485

Site 3. Notes: 3. Scattered old jack pines with many other trees and closed canopy, too shady because there are no openings. The strip thinning will provide more light in the future.

Site 4. **Paint Lake, District** 3, **Compartment** 10, **Stand** 4, **Forest type** 3, **Size density** 9. **Target Habitat:** White pine woods.

Iron County, Michigan, Ottawa National Forest. NE of Paint Lake (16.6 mi NE of Watersmeet). Old white pine forest on rolling hills and low areas with red maple, yellow birch, balsam fir (mostly dead), and few quaking aspen, elev. 1600 ft. Sec. 30, T46N, R36W. 46°21'09"N, 88°51'10"W. 7 Aug. 2003. 89682 – 89714

Notes: Site 4. Scattered old white pines on rolling terrain with hardwoods. Low areas and pine openings are filled with young hardwoods making it too shady in most places. This site may have been selectively logged in the past 10 years.

Site 5. **US 2, east of FR 3920, District** 3, **Compartment** 101, **Stand** 12, **Forest type** 11, **Size density** 6. **Target Habitat:** Balsam fir.

Iron County, Michigan, Ottawa National Forest. West of Golden Lake on highway 2 at USFS 3918 (12.7 mi SE of Watersmeet). Lowland with mixed forest of balsam fir, old yellow birch, quaking aspen, and red and sugar maple with few *Thuja*, elev. 1730 ft. Sec. 28, T44N, R37W. 46°10'31"N, 88°56'42"W. 6 Aug. 2003. 89638 – 89681

Site 5. Notes: Small area with scattered trees and few balsam fir, not very wet, very poor for lichens.

Site 6. **Redlight Creek, District** 6, **Compartment** 21, **Stand** 35, **Forest type** 91, **Size density** 9. **Target Habitat:** Aspen.

Ontonagon County, Michigan, Ottawa National Forest. Redlight Creek (12 mi N of Watersmeet). Old quaking aspen stand on lowland with balsam fir, and red maple, elev. 1245 ft. Sec. 36, T47N, R40W. 46°25'49"N, 89°14'40"W. 4 Aug. 2003. 89486 – 89502

Site 6. Notes: Scattered old quaking aspen with some alder and other hardwoods. The area was probably previously wetter but no water now. Most lichens were dying or dead.

Site 7. **Ellis Creek, District** 5, **Compartment** 127, **Stand** 31, **Forest type** 19, **Size density** 9. **Target Habitat:** Upland cedar.

Ontonagon County, Michigan, Ottawa National Forest. **Ellis Creek** (11 mi NE of Bruce Crossing). Gentle slope with stream in upland *Thuja*, hemlock, balsam fir, yellow birch, and red maple, elev. 920 ft. Sec. 10 & 11, T49N, R38W. 46°39'23'N, 89°01'53'W. 10 Aug. 2003. 89969 – 90009

Site 7. Notes: Gentle slope with scattered patches of *Thuja*, also hardwoods and conifers in places. The site was not very good for lichens, maybe because of dry conditions. I did not get down to the main Ellis Creek.

Site 8. **Jake Creek, District** 4, **Compartment** 168, **Stand** 33, **Forest type** 14, **Size density** 5. **Target Habitat:** Cedar swamp #1.

Iron County, Michigan, Ottawa National Forest. Jake Creek (14.7 mi NE of Watersmeet). Mixed bog forest with *Thuja*, black ash, black spruce, tamarack, balsam fir, and alder, elev. 1540 ft. Sec. 9, T46N, R37W. 46°24'11"N, 88°56'51"W. 8 Aug. 2003. 89767 - 89820

Site 8. Notes: Too may other trees for a good *Thuja* stand.

Site 9. **Banner Creek, District** 2, **Compartment** 160, **Stand** 35, **Forest type** 14, **Size density** 9. **Target Habitat:** Cedar swamp #2.

Gogebic County, Michigan, Ottawa National Forest. Banner Creek 4.6 mi E of Marenisco. Bog along small stream with *Thuja*, yellow birch, hemlock, balsam fir, and alder, elev. 1490 ft. Sec. 19, T46N, R42W. 46°22'20"N, 89°36'00"W. 3 Aug. 2003. 89394 - 89458

Site 9. A small area with too many other trees for a good *Thuja* swamp.

Site 10. **Dead Stream, District** 4, **Compartment** 122, **Stand** 3, **Forest type** 18, **Size density** 9. **Target Habitat:** Mixed conifer swamp.

Baraga County, Michigan, Ottawa National Forest. Dead Stream swamp (27.6 mi NE of Watersmeet). Mixed forest swamp with *Thuja*, balsam fir, black ash, red maple and patches

of alder, elev. 1510 ft. Sec. 22, T47N, R35W. 46°27'12"N, 88°40'02"W. 8 Aug. 2003. 89821 – 89874

Site 10. Notes: Mixed conifers along underground water with pools on top. Occasional open areas. The abundant moisture and openings among old trees provided a good lichen habitat.

Site 11. **Sucker Lake Road, District** 2, **Compartment** 189, **Stand** 7, **Forest type** 71, **Size density** 9. **Target Habitat:** Black ash swamp.

Gogebic County, Michigan, Ottawa National Forest. Sucker Lake Road 12 mi NW of Watersmeet. Ash bog along stream (no running water) with black ash, yellow birch, balsam fir, and few *Thuja*, hemlock and red maple, elev. 1600 ft. Sec. 26, T46N, R41N. 46°21'21"N, 89°23'32"W. 5 Aug. 2003. 89559 – 89600

Site 11. Notes: Black ash, some old trees but mostly mixed conifer swamp. Not very good for lichens probably because it was too dry.

Site 12. **Gallagher Lake, District** 6, **Compartment** 119, **Stand** 10, **Forest type** 15, **Size density** 6. **Target Habitat:** Black spruce/tamarack swamp.

Gogebic County, Michigan, Ottawa National Forest. Gallagher Lake swamp (3 mi NE of Watersmeet). Black spruce and tamarack swamp with few red maple and *Thuja*, elev. 1700 ft. Sec. 19, T45N, R38W. 46°16'35"N, 89°06'53"W. 5 Aug. 2003. 89517 – 89558

12. Notes: Good mixed wet black ash and tamarack with adequate openings and stumps and logs providing many substrates. Good lichens.

Site 13. **Curry Lake, District** 3, **Compartment** 14, **Stand** 84, **Forest type** 97, **Size density** 0. **Target Habitat:** Bog/Muskeg.

Iron County, Michigan, Ottawa National Forest. Curry Lake bog (11.5 mi NE of Watersmeet). Open black spruce bog with tamarack and *Sphagnum*, elev. 1640 ft. Sec. 29, T46N, R37W. 46°20'53"N, 88°58'07"W. 6 Aug. 2003. 89614 – 89637

Site 13. Notes: Good open black spruce and tamarack open bog with scattered trees but fairly young.

Site 14. **Papoose Lake, District** 4, **Compartment** 193, **Stand** 28, **Forest type** 97, **Size density** 0. **Target Habitat:** Alder swamp.

Iron County, Michigan, Ottawa National Forest. South side of Papoose Lake (18.8 mi NE of Watersmeet). Swamp with tamarack, black spruce, alder and some balsam fir, elev. 1600 ft. Sec. 21, T46N, R36W. 46°22'24"N, 88°49'07"W. 7 Aug. 2003. 89715 – 89737

Site 14. Notes: Patches of alder in mixed conifer swamp. Not a typical dense, wet alder swamp.

Site 15. **Wolf Mountain, District** 2, **Compartment** 99, **Stand** 0, **Forest type** 81, **Size density** 6. **Target Habitat:** Dry rock outcrop / cliff.

Gogebic County, Michigan, Ottawa National Forest. Wolf Mt. 8 mi SE of Wakefield. On rock outcrops on top with white pine, oak and *Thuja* and on cliffs on W side, elev. 1826 ft. Sec. 26, T47N, R44W. 46°26'28"N, 89°46'16"W. 2 Aug. 2003. 89315 – 89356

Site 15. West facing cliffs and some rocks on top among pines, oaks and hardwoods. Good lichens on top of the cliff and a few on the rocks in the woods on top of the cliff. The open sunny rocks provided many lichens. Did not collect on trees.

Site 16 **Gorge Falls, District** 2, **Compartment** 3, **Stand** 1, **Forest type** 5, **Size density** 9. **Target Habitat:** Wet cliff.

Gogebic County, Michigan, Ottawa National Forest. Gorge Falls on Black River, 12 mi N of Bessemer. Along river below falls on rock walls (conglomerate), elev. 770 ft. Sec. 15, T49N, R46W. 46°38'28"N, 90°02'59"W. 2 Aug. 2003. 89282 – 89314

Site 16. East facing rock face (conglomerate) next to stream below falls. Many lichens on rock walls and isolated rock outcrops along the stream. Lots of light and moisture provide a good habitat.

Site 17. **Baraga Plains, District** 4, **Compartment** 20, **Stand** 19, **Forest type** 49, **Size density** 8. **Target Habitat:** Upland opening.

Baraga County, Michigan, Ottawa National Forest. Baraga Plains (33.4 mi NE of Watersmeet). Ridge and level land with oak, red and sugar maple, red pine, and quaking aspen, elev. 1260 ft. Sec. 2, T48N, R35W. 46°34'46"N, 88°38'59"W. 9 Aug. 2003. 89875 – 89905

Site 17. Collected on ridge and on east side down into the lowland but found few *Cladonia*. Trees of pines, oaks and maples. Lichens are poor competitors and more open areas with thin soil would make a better habitat for these groups.

Site 18. **Bobcat Lake, District** 2, **Compartment** 179, **Stand** 1, **Forest type** 18, **Size density** 6. **Target Habitat:** Mixed conifer swamp.

Gogebic County, Michigan, Ottawa National Forest. Bobcat Lake, 2 mi SE of Marenisco. North of lake in mixed forest of *Thuja*, hemlock, yellow birch, dead balsam fir, and black spruce, elev. 1570 ft. Sec. 27, T46N, R43W. 46°21'41"N, 89°40'00"W. 3 Aug. 2003. 89357 – 89393

Site 18. The site is a dense conifer swamp with many *Thuja* but generally too shady for best lichens because of the lack of openings and leaning *Thuja*.

Site 19. **Sturgeon River Campground, District** 4, **Compartment** 20, **Stand** 24, **Forest type** 11, **Size density** 6. **Target Habitat:** Swamp and pine/aspen woods.

Baraga County, Michigan, Ottawa National Forest. Sturgeon River Campground (32.8 MI NE of Watersmeet). Across from campground in swamp with *Thuja*, hemlock, black ash, and balsam fir, elev. 1015 ft. Sec. 1, T48N, R35W. 46°34'11"N, 88°39'14"W. 89906 – 89931

Site 19. Collected in *Thuja* swamp across from campground all along the small stream but too shady and few lichens. Could not find the aspens mentioned by Harris.

Site 20. **Tepee Lake Campground, District** 4, **Compartment** 196, **Stand** 14, **Forest type** 81, **Size density** 9. **Target Habitat:** Mixed northern hardwoods.

Iron County, Michigan, Ottawa National Forest. Tepee Lake Campground (16.6 mi NE of Watersmeet). Maple woods in hill above lake with sugar maple, red maple and along lake with hemlock, elev. 1600 ft. Sec. 13, T46N, R37W. 46°23'17"N, 88°52'51"W. 7 Aug. 2003. 89738 – 89766

Site 20. Collected along lake, on hillside facing the lake and on the upper level area, including a low spot with black ash. Many old trees but more lichens were found on trees in the lawn and around the parking lot where there is more light. No rare lichens found.

Site 21. **Steusser Lake** Gravel Pit, **District** 6, **Compartment** 20, **Stand** 21, **Forest type** 99, **Size density** 0. **Target Habitat:** Gravel pit.

Ontonagon County, Michigan, Ottawa National Forest. South of Steusser Lake (13 mi N of Watersmeet). Abandoned sandy gravel pit with some stones, elev. 1345 ft. Sec. 25, T47N, R40W. 46°26'33"N, 89°14'57"W. 4 Aug. 2003. 89503 - 89516

Site 21. Notes: (extra). Open area on side of a low hill in old abandoned gravel pit. The best lichen areas were on the upper edges of the diggings.

Site 22. **Trap Hills East, District** 1, **Compartment** 71, **Stand** 6, **Forest type** 81, **Size density** 9. **Target Habitat:** Gravel pit.

Ontonagon County, Michigan, Ottawa National Forest. Trap Hills East on east side of high point (15 mi SSW of Ontonagon). East facing hillside with sugar maple, hemlock, oak, and yellow birch, unlogged, elev. 1200 ft. Sec. 4, T49N, R41W. 46°40'13"N, 89°26'03"W. 11 Aug. 2003. 90010 - 90023

Site 22. Notes: (extra).This area was selected for comparison with the logged area on top. There were probably more lichens on the tops of the trees but it was too shady at ground level.

Site 23. [(Not USFS) **US 2 roadside, District** 6, **Compartment** 113, **Stand** 0, **Forest type** private, **Size density** private. **Target Habitat:** Sandy roadside with abundant lichens.

Gogebic County, Michigan, 5.3 mi W of Watersmeet along highway 2. Level sandy roadside with abundant lichen cover, elev. 1710 ft. Sec. 26, T45N, R40W. 46°16'29"N, 89°17'14"W 5 Aug. 2003. 89601 - 89613]

Site 23. Notes: (extra). A broad open gravely area south of the road with no trees. Lichens covered the ground to near 100% cover but low species diversity.

Appendix II

Ottawa National Forest Species List

This is a list of the 204 species were found during the 2003 survey. New records for Ottawa National Forest (72) are indicated by "*" before the name.

Acarospora fuscata (Schrader) Arn.
Anaptychia palmulata (Michaux) Vainio
**Anisomeridium nyssaegenum* (Ellis & Everh.) Harris
**Arthonia byssacea* (Weigel) Almq.
Arthonia caesia (Flotow) Körber
**Arthonia fuliginosa* (Schaerer) Flotow
Arthonia radiata (Pers.) Ach.
Aspicilia cinerea (L.) Körber
Bacidia polychroa (Th. Fr.) Körber
**Bacidia rosella* (Pers.) De Not.
**Bacidia rubella* (Hoffm.) Massal.
Bacidia schweinitzii (Fr. ex Michener) A. Schneider
Bacidia suffusa (Fr.) A. Schneider
Bacidina inundata (Fr.) Vezda
**Biatora helvola* (Körber) Hellbom
Biatora sphaeroides (Dicks.) Körb.
Bryoria furcellata (Fr.) Brodo & Hawksw.
**Bryoria trichodes* (Michaux) Brodo & Hawksw.
**Buellia arnoldii* Servít & Nádv.
**Buellia dialyta* (Nyl.) Tuck.
Buellia disciformis (Fr.) Mudd
Buellia stillingiana J. Steiner
**Calicium glaucellum* Ach.
Calicium trabinellum (Ach.) Ach
**Caloplaca flavovirescens* (Wulfen) Dalla Torre & Sarnth.
Candelaria concolor (Dickson) Stein
Candelaria fibrosa (Fr.) Müll. Arg.
Candelariella aurella (Hoffm.) Zahlbr.
Cetraria americana (Spreng.) ined.
Cetraria oakesiana Tuck.
Cetraria pinastri (Scop.) Gray
Cetraria sepincola (Ehrh.) Ach.
Cetrelia chicitae (Culb.) Culb. & C. Culb.
Cetrelia olivetorum (Nyl.) Culb. & C. Culb.
**Chaenotheca brunneola* (Ach.) Müll. Arg.
Chaenotheca chrysocephala (Turner ex Ach.) Th. Fr.
**Chaenotheca ferruginea* (Turner & Borrer) Mig.
Chaenotheca laevigata Nádv.
**Chaenotheca stemonea* (Ach.) Müll. Arg.

Chaenotheca trichialis (Ach.) Th. Fr.
**Chaenothecopsis debilis* (Turner & Borrer ex Sm.) Tibell
Chrysothrix candelaris (L.) Laund.
Cladina mitis (Sandst.) Hustich
Cladina rangiferina (L.) Nyl.
**Cladina stygia* (Fr.) Ahti
Cladonia acuminata (Ach.) Norrlin
Cladonia amaurocraea (Flörke) Schaerer
Cladonia cenotea (Ach.) Schaerer
Cladonia cervicornis (Ach.) Flotow
Cladonia chlorophaea (Flörke ex Sommerf.) Sprengel
Cladonia coniocraea (Flörke) Sprengel
Cladonia cornuta (L.) Hoffm.
Cladonia cristatella Tuck.
Cladonia cryptochlorophaea Asah.
**Cladonia decorticata* (Flörke) Sprengel
Cladonia digitata (L.) Hoffm.
Cladonia fimbriata (L.) Fr.
Cladonia gracilis (L.) Willd.
**Cladonia macilenta* Hoffm.
**Cladonia merochlorophaea* Asah.
Cladonia multiformis G. Merr.
Cladonia pyxidata (L.) Hoffm.
Cladonia rei Schaerer
Cladonia scabriuscula (Delise) Nyl.
Cladonia squamosa Hoffm.
Cladonia turgida Hoffm.
Cladonia uncialis (L.) F. Wigg.
**Collema bachmanianum* (Fink) Degel.
**Collema conglomeratum* Hoffm.
Collema subflaccidum Degel.
Conotrema urceolatum (Ach.) Tuck.
**Cresponea chloroconia* (Tuck.) Egea & Torrente
Dermatocarpon luridum (With.) Laund.
**Dimerella lutea* (Dickson) Trevisan
**Diploschistes muscorum* (Scop.) R. Sant.
Eopyrenula intermedia Coppins
Evernia mesomorpha Nyl.
Flavoparmelia caperata (L.) Hale
Flavopunctelia flaventior (Stirton) Hale
Flavopunctelia soredica (Nyl.) Hale
Fuscopannaria leucophaea (Vahl) Jørg.
Fuscopannaria praetermissa (Nyl.) Jørg.
Graphis scripta (L.) Ach.
Heterodermia speciosa (Wulfen) Trevisan
Hypocenomyce anthracophila (Nyl.) James & Schneider (as *Biatora anthracophila* in

Sliwa & Wetmore (2001)
Hypocenomyce scalaris (Ach.) Choisy
Hypogymnia physodes (L.) Nyl.
Hypogymnia tubulosa (Schaerer) Hav.
**Hypotrachyna revoluta* (Flörke) Hale
Imshaugia aleurites (Ach.) S. Meyer
Julella sericea (Massal.) Coppins
**Lasallia papulosa* (Ach.) Llano
**Lecanora albella* (Pers.) Ach.
**Lecanora caesiorubella* subsp. *caesiorubella* Ach.
Lecanora circumborealis Brodo & Vitik.
**Lecanora hybocarpa* (Tuck.) Brodo
Lecanora impudens Degel.
**Lecanora intricata* (Ach.) Ach.
Lecanora muralis (Schreber) Rabenh.
**Lecanora pulicaris* (Pers.) Ach.
Lecanora rugosella Zahlbr.
Lecanora symmicta (Ach.) Ach.
Lecanora thysanophora Harris in Harris & Tonsb.
**Lecanora wisconsinensis* Magn.
**Lecidea nylanderi* (Anzi) Th. Fr.
**Lecidea plebeja* Nyl.
**Lepraria caesioalba* (B. de Lesd) Laund.
**Lepraria lobificans* Nyl.
**Lepraria neglecta* (Nyl.) Erichsen
Leptogium cyanescens (Rabenh.) Körber
**Leptogium hirsutum* Sierk
**Leptogium lichenoides* (L.) Zahlbr.
**Leptogium saturninum* (Dickson) Nyl.
**Leptogium teretiusculum* (Wallr.) Arn.
Lobaria pulmonaria (L.) Hoffm.
Lobaria quercizans Michaux
Lopadium pezizoideum (Ach.) Körber
Loxospora cismonica (Beltr.) Hafellner
**Loxospora elatina* (Ach.) Massal.
**Loxospora pustulata* (Brodo & Culb.) Harris
Melanelia septentrionalis (Lynge) Essl.
Melanelia sorediata (Ach.) Goward & Ahti
Melanelia subargentifera (Nyl.) Essl.
Melanelia subaurifera (Nyl.) Essl.
Menegazzia terebrata (Hoffm.) Massal.
Mycobilimbia sabuletorum (Schreb.) Hafelln.
**Mycobilimbia tetramera* (De Not.) W. Brunnbauer
Mycoblastus sanguinarius (L.) Norman
Mycocalicium subtile (Pers.) Szat.
Myelochroa aurulenta (Tuck.) Elix & Hale

Myelochroa galbina (Ach.) Elix & Hale
Nephroma bellum (Sprengel) Tuck.
**Ochrolechia arborea* (Kreyer) Almb.
Ochrolechia trochophora (Vainio) Oshio
**Opegrapha varia* Pers.
Pannaria conoplea (Ach.) Bory
**Parmelia fraudans* (Nyl.) Nyl.
Parmelia squarrosa Hale
Parmelia sulcata Taylor
**Parmeliopsis ambigua* (Wulfen) Nyl.
Parmeliopsis hyperopta (Ach.) Arn.
**Parmotrema crinitum* (Ach.) Choisy
Peltigera canina (L.) Willd.
Peltigera elisabethae Gyelnik
Peltigera evansiana Gyelnik
Peltigera horizontalis (Hudson) Baumg.
Peltigera lepidophora (Vainio) Bitter
Peltigera polydactylon (Necker) Hoffm.
Peltigera rufescens (Weiss) Humb.
Pertusaria amara (Ach.) Nyl.
**Pertusaria consocians* Dibben
Pertusaria macounii (Lamb) Dibben
**Pertusaria ophthalmiza* (Nyl.) Nyl.
Pertusaria trachythallina Erichsen
Pertusaria velata (Turner) Nyl.
Phaeophyscia hispidula (Ach.) Essl.
Phaeophyscia imbricata (Vain.) Essl.
Phaeophyscia rubropulchra (Degel.) Essl.
Phaeophyscia sciastra (Ach.) Moberg
Physcia adscendens (Fr.) H. Olivier
Physcia aipolia (Ehrh. ex Humb.) Fürnr.
Physcia subtilis Degel.
Physconia detersa (Nyl.) Poelt
**Physconia leucoleiptes* (Tuck.) Essl.
**Placynthiella dasaea* (Stirton) Tønsberg
**Placynthium nigrum* (Hudson) Gray
Platismatia tuckermanii (Oakes) Culb. & C. Culb.
**Porpidia albocaerulescens* (Wulfen) Hertel & Knoph
Porpidia crustulata (Ach.) Hertel & Knoph
**Protoblastenia rupestris* (Scop.) J. Steiner
**Pseudevernia consocians* (Vainio) Hale & Culb.
**Psora globifera* (Ach.) Massal.
Punctelia perreticulata (Räs.) Wilh. & Ladd (as *Punctelia subrudecta* in Sliwa & Wetmore (2001)
Punctelia rudecta (Ach.) Krog
Pyrrhospora elabens (Fr.) Hafellner

Pyxine sorediata (Ach.) Mont.
Ramalina americana Hale
**Ramalina dilacerata* (Hoffm.) Hoffm.
Ramalina intermedia (Delise ex Nyl.) Nyl.
**Rhizocarpon geminatum* Körber
**Rhizocarpon lavatum* Hazsl.
**Rhizocarpon rubescens* Th. Fr.
**Rhizoplaca subdiscrepans* (Nyl.) R. Sant.
**Rinodina ascociscana* Tuck.
**Sarea resinae* (Fr.) Kuntze
**Sphinctrina turbinata* (Pers. : Fr.) De Not.
**Stenocybe pullatula* (Ach.) Stein
Stereocaulon paschale (L.) Hoffm.
Stereocaulon saxatile Magn.
Strigula stigmatella (Ach.) Harris
**Trapeliopsis flexuosa* (Fr.) Coppins & James
Trapeliopsis granulosa (Hoffm.) Lumbsch
Trapeliopsis viridescens (Schrader) Coppins & James
**Umbilicaria deusta* (L.) Baumg.
**Umbilicaria muehlenbergii* (Ach.) Tuck.
Usnea cavernosa Tuck.
Usnea filipendula Stirton
Usnea hirta (L.) F. Wigg.
Usnea subfloridana Stirton
Xanthoparmelia cumberlandia (Gyelnik) Hale
**Xanthoparmelia plittii* (Gyelnik) Hale
Xanthoparmelia somloënsis (Gyelnik) Hale
Xanthoria hasseana Räs.
**Xanthoria ulophyllodes* Räs.

204 species

Appendix III

Species lists by localities.

See the total species list for authorities. Rare species are in **bold**.

Species at Site 1 TRAP HILLS

Ontonagon County, Michigan, Ottawa National Forest. Trap Hills on top of high point (15 mi SSW of Ontonagon). Logged areas with isolated sugar maple, basswood, yellow birch, and oak, elev. 1450 ft. Sec. 4, T49N, R41W. 46°39'56"N, 89°26'39"W. 11 Aug. 2003. 90024 – 90053

Arthonia radiata
Bacidia suffusa
Candelaria fibrosa
Cladonia chlorophaea
Cladonia coniocraea
Eopyrenula intermedia
Evernia mesomorpha
Flavoparmelia caperata
Flavopunctelia flaventior
Graphis scripta
Julella sericea
Lecanora thysanophora
Lobaria pulmonaria
Lobaria quercizans
Melanelia septentrionalis
Melanelia subaurifera
Myelochroa aurulenta
Parmelia sulcata
Phaeophyscia imbricata
Phaeophyscia rubropulchra
Physcia aipolia
Physconia detersa
Punctelia rudecta
Pyxine sorediata
Ramalina americana
Usnea hirta

Count of species: 26

Species at Site 2: LATHROP CREEK

Ontonagon County, Michigan, Ottawa National Forest. Lathrop Creek (5.7 mi N of Bruce Crossing). Hemlock stand with hardwoods of red maple, sugar maple, oak, and some yellow birch, elev. 1150 ft. Sec. 26, T48N, R39W. 10 Aug. 2003. 46°36'56"N, 89°08'58"W. 9 Aug. 2003. 89932 – 89968

Arthonia fuliginosa
Bacidia polychroa
Bacidia schweinitzii
Bryoria furcellata
Buellia arnoldii
Buellia disciformis
Cetraria oakesiana
Cetrelia olivetorum
Cladonia chlorophaea
Cladonia coniocraea
Cladonia squamosa
Conotrema urceolatum
Flavoparmelia caperata
Graphis scripta
Hypogymnia physodes
Lecanora caesiorubella

Lecanora thysanophora
Lobaria pulmonaria
Lobaria quercizans
Loxospora elatina
Myelochroa aurulenta
Parmelia squarrosa
Peltigera polydactylon
Pertusaria amara
Pertusaria macounii
Pertusaria velata
Physconia detersa
Punctelia rudecta
Pyxine sorediata
Rinodina ascociscana
Count of Species: 30

Species at Site 3: ROBBINS POND

Ontonagon County, Michigan, Ottawa National Forest. Near Robbins Pond (7.5 mi N of Watersmeet). Old jack pines with balsam fir and spruce, thinned in strips between pines, elev. 1210 ft. Sec. 18, T46N, R39W. 46°22'58"N, 89°13'39"W. 4 Aug. 2003. 89459 – 89485

Bryoria furcellata
Cetraria americana
Cladonia coniocraea
Cladonia merochlorophaea
Evernia mesomorpha
Heterodermia speciosa
Hypogymnia physodes
Lecanora impudens
Lecanora pulicaris
Lecidea nylanderi
Loxospora pustulata
Melanelia septentrionalis
Melanelia subaurifera
Parmelia squarrosa
Peltigera rufescens
Physcia aipolia
Physconia leucoleiptes
Platismatia tuckermanii
Punctelia perreticulata
Punctelia rudecta
Ramalina americana
Usnea hirta
Xanthoria hasseana
Count of Species:23

Species at Site 4: PAINT LAKE

Iron County, Michigan, Ottawa National Forest. NE of Paint Lake (16.6 mi NE of Watersmeet). Old white pine forest on rolling hills and low areas with red maple, yellow birch, balsam fir (mostly dead), and few quaking aspen, elev. 1600 ft. Sec. 30, T46N, R36W. 46°21'09"N, 88°51'10"W. 7 Aug. 2003. 89682 – 89714

Biatora helvola
Bryoria furcellata
Calicium trabinellum
Cetraria americana
Cetraria oakesiana
Cetrelia olivetorum
Cladonia cenotea
Cladonia squamosa
Evernia mesomorpha

Flavoparmelia caperata
Heterodermia speciosa
Hypogymnia physodes
Lecanora thysanophora
Lecanora wisconsinensis
Lobaria pulmonaria
Lobaria quercizans
Loxospora pustulata
Melanelia subaurifera
Mycoblastus sanguinarius
Parmelia squarrosa
Parmelia sulcata
Peltigera canina
Pertusaria ophthalmiza
Platismatia tuckermanii
Punctelia rudecta
Pyxine sorediata
Ramalina dilacerata
Usnea subfloridana
Count of Species: 28

Species at Site 5 : WEST OF GOLDEN LAKE ON HIGHWAY 2

Iron County, Michigan, Ottawa National Forest. West of Golden Lake on highway 2 at USFS 3918 (12.7 mi SE of Watersmeet). Lowland with mixed forest of balsam fir, old yellow birch, quaking aspen, and red and sugar maple with few *Thuja*, elev. 1730 ft. Sec. 28, T44N, R37W. 46°10'31"N, 88°56'42"W. 6 Aug. 2003. 89638 – 89681

Arthonia byssacea
Bacidia schweinitzii
Buellia stillingiana
Cetraria americana
Cetrelia olivetorum
Chaenothecopsis debilis
Chrysothrix candelaris
Cladonia cornuta
Cladonia squamosa
Collema subflaccidum
Cresponea chloroconia
Dimerella lutea
Evernia mesomorpha
Flavoparmelia caperata
Graphis scripta
Heterodermia speciosa
Hypogymnia physodes
Lecanora thysanophora
Leptogium hirsutum
Lobaria pulmonaria
Lobaria quercizans
Myelochroa aurulenta
Opegrapha varia
Parmelia squarrosa
Parmelia sulcata
Peltigera canina
Peltigera elisabethae
Peltigera polydactylon
Pertusaria amara
Pertusaria macounii
Pertusaria ophthalmiza
Pertusaria velata
Phaeophyscia rubropulchra
Physcia adscendens
Physcia aipolia
Physconia detersa
Punctelia rudecta
Pyxine sorediata
Ramalina americana
Ramalina intermedia
Usnea cavernosa
Usnea subfloridana
Count of Species: 42

Species at Site 6: REDLIGHT CREEK

Ontonagon County, Michigan, Ottawa National Forest. Redlight Creek (12 mi N of Watersmeet). Old quaking aspen stand on lowland with balsam fir, and red maple, elev. 1245 ft. Sec. 36, T47N, R40W. 46°25'49"N, 89°14'40"W. 4 Aug. 2003. 89486 – 89502

Buellia stillingiana
Cladonia cryptochlorophaea
Collema subflaccidum
Evernia mesomorpha
Flavoparmelia caperata
Hypogymnia physodes
Lecanora thysanophora
Myelochroa galbina
Parmelia squarrosa
Parmelia sulcata
Physconia leucoleiptes
Punctelia rudecta
Ramalina americana
Usnea subfloridana
Xanthoria hasseana
Count of Species: 15

Species at Site 7 : ELLIS CREEK

Ontonagon County, Michigan, Ottawa National Forest. Ellis Creek (11 mi NE of Bruce Crossing). Gentle slope with stream in upland *Thuja*, hemlock, balsam fir, yellow birch, and red maple, elev. 920 ft. Sec. 10 & 11, T49N, R38W. 46°39'23'N, 89°01'53'W. 10 Aug. 2003. 89969 – 90009

Bacidia schweinitzii
Bryoria furcellata
Buellia stillingiana
Chaenotheca stemonea
Cladonia coniocraea
Cladonia squamosa
Cresponea chloroconia
Evernia mesomorpha
Flavoparmelia caperata
Graphis scripta
Hypogymnia physodes
Lecanora caesiorubella
Lecanora symmicta
Lecanora thysanophora
Lobaria pulmonaria
Lobaria quercizans
Loxospora cismonica
Loxospora pustulata
Mycocalicium subtile
Myelochroa galbina
Opegrapha varia
Parmelia squarrosa
Parmelia sulcata
Peltigera elisabethae
Peltigera horizontalis
Pertusaria amara
Pertusaria macounii
Punctelia rudecta
Pyxine sorediata
Ramalina dilacerata
Trapeliopsis flexuosa
Usnea cavernosa
Usnea subfloridana
Count of Species: 33

Species at Site 8 : JAKE CREEK

Iron County, Michigan, Ottawa National Forest. Jake Creek (14.7 mi NE of Watersmeet). Mixed bog forest with *Thuja*, black ash, black spruce, tamarack, balsam fir, and alder, elev. 1540 ft. Sec. 9, T46N, R37W. 46°24'11"N, 88°56'51"W. 8 Aug. 2003. 89767 - 89820

Bacidia polychroa
Bacidia rosella
Bacidia rubella
Bacidia schweinitzii
Bryoria furcellata
Bryoria trichodes
Calicium glaucellum
Calicium trabinellum
Cetraria americana
Cetraria pinastri
Cetrelia olivetorum
Chaenotheca chrysocephala
Chaenothecopsis debilis
Evernia mesomorpha
Flavoparmelia caperata
Graphis scripta
Heterodermia speciosa
Hypogymnia physodes
Lecanora rugosella
Lecanora symmicta
Lecanora thysanophora
Lecanora wisconsinensis
Leptogium saturninum
Leptogium teretiusculum
Lobaria pulmonaria
Lobaria quercizans
Lopadium pezizoideum
Loxospora elatina
Loxospora pustulata
Mycobilimbia sabuletorum
Myelochroa aurulenta
Ochrolechia trochophora
Parmelia sulcata
Peltigera elisabethae
Peltigera evansiana
Pertusaria amara
Pertusaria trachythallina
Phaeophyscia hispidula
Phaeophyscia rubropulchra
Physcia aipolia
Physconia leucoleiptes
Platismatia tuckermanii
Punctelia rudecta
Pyxine sorediata
Ramalina americana
Ramalina intermedia
Strigula stigmatella
Usnea cavernosa
Usnea filipendula
Usnea subfloridana
Count of Species:50

Species at Site 9 : BANNER CREEK

Gogebic County, Michigan, Ottawa National Forest. Banner Creek 4.6 mi E of Marenisco. Bog along small stream with *Thuja*, yellow birch, hemlock, balsam fir, and alder, elev. 1490 ft. Sec. 19, T46N, R42W. 46°22'20"N, 89°36'00"W. 3 Aug. 2003. 89394 - 89458

Anaptychia palmulata
Arthonia byssacea
Arthonia caesia
Bacidia schweinitzii
Biatora sphaeroides
Bryoria trichodes
Buellia disciformis
Buellia stillingiana
Cetraria americana
Cetrelia chicitae
Chaenotheca chrysocephala
Chaenothecopsis debilis
Chrysothrix candelaris
Cladina rangiferina
Cladonia cenotea
Cladonia chlorophaea
Cladonia cristatella
Cladonia gracilis
Cladonia macilenta
Cladonia squamosa
Dimerella lutea
Evernia mesomorpha
Flavoparmelia caperata
Fuscopannaria praetermissa
Graphis scripta
Hypogymnia physodes
Lecanora symmicta
Lecanora thysanophora
Lecanora wisconsinensis
Lobaria pulmonaria
Lobaria quercizans
Melanelia septentrionalis
Melanelia subaurifera
Mycoblastus sanguinarius
Ochrolechia trochophora
Pannaria conoplea
Parmelia squarrosa
Parmotrema crinitum
Peltigera evansiana
Peltigera polydactylon
Pertusaria amara
Pertusaria ophthalmiza
Physconia detersa
Punctelia rudecta
Pyxine sorediata
Ramalina americana
Ramalina dilacerata
Ramalina intermedia
Stenocybe pullatula
Strigula stigmatella
Trapeliopsis granulosa
Trapeliopsis viridescens
Usnea cavernosa
Usnea subfloridana
Count of Species: 54

Species at Site 10 :DEAD STREAM

Baraga County, Michigan, Ottawa National Forest. Dead Stream swamp (27.6 mi NE of Watersmeet). Mixed forest swamp with *Thuja*, balsam fir, black ash, red maple and patches of alder, elev. 1510 ft. Sec. 22, T47N, R35W. 46°27'12"N, 88°40'02"W. 8 Aug. 2003. 89821 – 89874

Bacidia schweinitzii
Bryoria furcellata
Bryoria trichodes
Cetraria americana
Cetraria oakesiana
Cetraria pinastri

Cetrelia chicitae
Chaenotheca brunneola
Chaenotheca trichialis
Cladina rangiferina
Cladonia chlorophaea
Cladonia coniocraea
Cladonia squamosa
Cresponea chloroconia
Dimerella lutea
Evernia mesomorpha
Flavoparmelia caperata
Heterodermia speciosa
Hypogymnia physodes
Hypotrachyna revoluta
Lecanora albella
Lecanora hybocarpa
Lecanora rugosella
Lecanora thysanophora
Lecanora wisconsinensis
Lobaria pulmonaria
Lobaria quercizans
Loxospora elatina
Menegazzia terebrata
Mycobilimbia sabuletorum
Mycobilimbia tetramera
Ochrolechia trochophora
Parmelia squarrosa
Parmotrema crinitum
Peltigera elisabethae
Peltigera horizontalis
Pertusaria amara
Pertusaria consocians
Pertusaria ophthalmiza
Pertusaria trachythallina
Physconia detersa
Platismatia tuckermanii
Pseudevernia consocians
Punctelia rudecta
Pyxine sorediata
Ramalina intermedia
Trapeliopsis viridescens
Usnea subfloridana
Count of Species: 48

Species at Site 11 : SUCKER LAKE ROAD

Gogebic County, Michigan, Ottawa National Forest. Sucker Lake Road 12 mi NW of Watersmeet. Ash bog along stream (no running water) with black ash, yellow birch, balsam fir, and few *Thuja*, hemlock and red maple, elev. 1600 ft. Sec. 26, T46N, R41N. 46°21'21"N, 89°23'32"W. 5 Aug. 2003. 89559 – 89600

Anisomeridium nyssaegenum
Bacidia schweinitzii
Buellia stillingiana
Cetrelia olivetorum
Cladonia chlorophaea
Cladonia coniocraea
Collema subflaccidum
Flavoparmelia caperata
Graphis scripta
Heterodermia speciosa
Lecanora circumborealis
Lecanora thysanophora
Leptogium cyanescens
Lobaria pulmonaria
Lobaria quercizans
Mycocalicium subtile
Myelochroa aurulenta
Parmelia squarrosa
Peltigera canina

Peltigera elisabethae
Peltigera polydactylon
Pertusaria amara
Pertusaria consocians
Pertusaria macounii
Pertusaria velata
Phaeophyscia rubropulchra
Physconia detersa
Punctelia rudecta
Pyxine sorediata
Rinodina ascociscana
Strigula stigmatella
Count of species: 31

Species at Site 12 : GALLAGHER LAKE

Gogebic County, Michigan, Ottawa National Forest. Gallagher Lake swamp (3 mi NE of Watersmeet). Black spruce and tamarack swamp with few red maple and *Thuja*, elev. 1700 ft. Sec. 19, T45N, R38W. 46°16'35"N, 89°06'53"W. 5 Aug. 2003. 89517 – 89558

Biatora helvola
Bryoria furcellata
Bryoria trichodes
Buellia arnoldii
Calicium trabinellum
Cetraria americana
Cetraria pinastri
Chaenotheca ferruginea
Cladina rangiferina
Cladina stygia
Cladonia cenotea
Cladonia coniocraea
Cladonia gracilis
Cladonia macilenta
Cladonia squamosa
Evernia mesomorpha
Flavoparmelia caperata
Hypocenomyce scalaris
Hypogymnia physodes
Hypogymnia tubulosa
Imshaugia aleurites
Lecanora albella
Lecanora thysanophora
Lecanora wisconsinensis
Lecidea plebeja
Loxospora pustulata
Parmelia squarrosa
Parmelia sulcata
Parmeliopsis ambigua
Parmeliopsis hyperopta
Platismatia tuckermanii
Punctelia rudecta
Pyrrhospora elabens
Sarea resinae
Usnea filipendula
Usnea hirta
Count of Species: 36

Species at Site 13 : CURRY LAKE BOG

Iron County, Michigan, Ottawa National Forest. Curry Lake bog (11.5 mi NE of Watersmeet). Open black spruce bog with tamarack and *Sphagnum*, elev. 1640 ft. Sec. 29, T46N, R37W. 46°20'53"N, 88°58'07"W. 6 Aug. 2003. 89614 – 89637

Bryoria furcellata
Cetraria americana
Cetraria pinastri
Cetraria sepincola
Cladonia merochlorophaea
Evernia mesomorpha
Flavoparmelia caperata
Flavopunctelia soredica
Hypogymnia physodes
Imshaugia aleurites
Lecanora albella
Melanelia subaurifera
Mycoblastus sanguinarius
Ochrolechia arborea
Parmeliopsis ambigua
Parmeliopsis hyperopta
Platismatia tuckermanii
Punctelia perreticulata
Punctelia rudecta
Usnea hirta
Count of Species: 20

Species at Site 14 : PAPOOSE LAKE

Iron County, Michigan, Ottawa National Forest. South side of Papoose Lake (18.8 mi NE of Watersmeet). Swamp with tamarack, black spruce, alder and some balsam fir, elev. 1600 ft. Sec. 21, T46N, R36W. 46°22'24"N, 88°49'07"W. 7 Aug. 2003. 89715 – 89737

Arthonia caesia
Bryoria trichodes
Buellia stillingiana
Cetraria americana
Chaenotheca ferruginea
Cladonia chlorophaea
Cladonia coniocraea
Evernia mesomorpha
Flavoparmelia caperata
Hypocenomyce scalaris
Hypogymnia physodes
Lecanora pulicaris
Lecanora symmicta
Loxospora pustulata
Melanelia septentrionalis
Ochrolechia arborea
Parmelia squarrosa
Parmelia sulcata
Platismatia tuckermanii
Stenocybe pullatula
Usnea cavernosa
Usnea subfloridana
Count of Species: 22

Species at Site 15 : WOLF MT.

Gogebic County, Michigan, Ottawa National Forest. Wolf Mt. 8 mi SE of Wakefield. On rock outcrops on top with white pine, oak and *Thuja* and on cliffs on W side, elev. 1826 ft. Sec. 26, T47N, R44W. 46°26'28"N, 89°46'16"W. 2 Aug. 2003. 89315 – 89356

Acarospora fuscata
Aspicilia cinerea
Cetraria pinastri
Cladina mitis

Cladina rangiferina
Cladonia amaurocraea
Cladonia chlorophaea
Cladonia pyxidata
Diploschistes muscorum
Hypogymnia physodes
Imshaugia aleurites
Lasallia papulosa
Lecanora intricata
Lepraria caesioalba
Lepraria neglecta
Melanelia sorediata
Parmelia fraudans
Parmelia sulcata
Peltigera polydactylon
Physcia subtilis
Rhizocarpon geminatum
Rhizocarpon rubescens
Rhizoplaca subdiscrepans
Stereocaulon paschale
Stereocaulon saxatile
Trapeliopsis granulosa
Umbilicaria deusta
Umbilicaria muehlenbergii
Xanthoparmelia cumberlandia
Xanthoparmelia plittii
Xanthoparmelia somloensis
Count of Species: 31

Species at Site 16 : GORGE FALLS

Gogebic County, Michigan, Ottawa National Forest. Gorge Falls on Black River, 12 mi N of Bessemer. Along river below falls on rock walls (conglomerate), elev. 770 ft. Sec. 15, T49N, R46W. 46°38'28"N, 90°02'59"W. 2 Aug. 2003. 89282 – 89314

Bacidina inundata
Caloplaca flavovirescens
Candelariella aurella
Cladonia acuminata
Cladonia chlorophaea
Collema bachmanianum
Collema subflaccidum
Dermatocarpon luridum
Fuscopannaria leucophaea
Lecanora muralis
Lepraria lobificans
Leptogium lichenoides
Peltigera elisabethae
Peltigera lepidophora
Peltigera polydactylon
Phaeophyscia sciastra
Placynthium nigrum
Porpidia albocaerulescens
Protoblastenia rupestris
Psora globifera
Ramalina intermedia
Rhizocarpon lavatum
Xanthoria ulophyllodes
Count of Species: 23

Species at Site 17 : BARAGA PLAINS

Baraga County, Michigan, Ottawa National Forest. Baraga Plains (33.4 mi NE of Watersmeet). Ridge and level land with oak, red and sugar maple, red pine, and quaking aspen, elev. 1260 ft. Sec. 2, T48N, R35W. 46°34'46"N, 88°38'59"W. 9 Aug. 2003. 89875 – 89905

Buellia stillingiana
Cladina rangiferina
Cladonia coniocraea
Cladonia cristatella
Cladonia digitata
Cladonia merochlorophaea
Cladonia squamosa
Conotrema urceolatum
Evernia mesomorpha
Flavoparmelia caperata
Flavopunctelia soredica
Hypocenomyce anthracophila
Hypocenomyce scalaris
Hypogymnia physodes
Julella sericea
Lecanora caesiorubella
Lecanora hybocarpa
Lecanora thysanophora
Melanelia subaurifera
Myelochroa galbina
Parmelia squarrosa
Pertusaria trachythallina
Placynthiella dasaea
Punctelia rudecta
Pyxine sorediata
Trapeliopsis granulosa
Trapeliopsis viridescens
Usnea subfloridana
Count of Species: 28

Species at Site 18 : BOBCAT LAKE

Gogebic County, Michigan, Ottawa National Forest. Bobcat Lake, 2 mi SE of Marenisco. North of lake in mixed forest of *Thuja*, hemlock, yellow birch, dead balsam fir, and black spruce, elev. 1570 ft. Sec. 27, T46N, R43W. 46°21'41"N, 89°40'00"W. 3 Aug. 2003. 89357 – 89393

Anisomeridium nyssaegenum
Bacidia schweinitzii
Chaenotheca chrysocephala
Cladonia chlorophaea
Cladonia cornuta
Cladonia squamosa
Collema conglomeratum
Evernia mesomorpha
Flavoparmelia caperata
Graphis scripta
Heterodermia speciosa
Lecanora rugosella
Lecanora thysanophora
Leptogium cyanescens
Lobaria pulmonaria
Loxospora elatina
Loxospora pustulata
Menegazzia terebrata
Mycocalicium subtile
Myelochroa aurulenta
Parmelia squarrosa
Parmotrema crinitum
Peltigera elisabethae
Pertusaria consocians
Pertusaria macounii
Phaeophyscia rubropulchra
Punctelia rudecta
Pyxine sorediata
Strigula stigmatella
Count of Species: 29

Species at Site 19 : STURGEON RIVER CAMPGROUND

Baraga County, Michigan, Ottawa National Forest. Sturgeon River Campground (32.8 MI NE of Watersmeet). Across from campground in swamp with *Thuja*, hemlock, black ash, and balsam fir, elev. 1015 ft. Sec. 1, T48N, R35W. 46°34'11"N, 88°39'14"W. 89906 – 89931

Bryoria furcellata
Cetraria americana
Collema subflaccidum
Evernia mesomorpha
Flavoparmelia caperata
Hypogymnia physodes
Lobaria pulmonaria
Nephroma bellum
Parmelia squarrosa
Parmotrema crinitum
Peltigera horizontalis
Peltigera polydactylon
Punctelia rudecta
Pyxine sorediata
Usnea cavernosa
Count of Species:15

Species at Site 20 :TEPEE LAKE CAMPGROUND

Iron County, Michigan, Ottawa National Forest. Tepee Lake Campground (16.6 mi NE of Watersmeet). Maple woods in hill above lake with sugar maple, red maple and along lake with hemlock, elev. 1600 ft. Sec. 13, T46N, R37W. 46°23'17"N, 88°52'51"W. 7 Aug. 2003. 89738 – 89766

Buellia dialyta
Candelaria concolor
Cladonia chlorophaea
Cladonia coniocraea
Cladonia fimbriata
Cladonia squamosa
Evernia mesomorpha
Flavoparmelia caperata
Flavopunctelia soredica
Graphis scripta
Hypogymnia physodes
Julella sericea
Lecanora caesiorubella
Lecanora thysanophora
Lecanora wisconsinensis
Lobaria pulmonaria
Melanelia subargentifera
Myelochroa aurulenta
Parmelia squarrosa
Parmelia sulcata
Phaeophyscia rubropulchra
Physcia aipolia
Physconia detersa
Physconia leucoleiptes
Punctelia perreticulata
Punctelia rudecta
Sphinctrina turbinata
Usnea subfloridana
Xanthoria ulophyllodes
Count of Species: 29

Species at Extra Site 1 : STEUSSER LAKE

Ontonagon County, Michigan, Ottawa National Forest. South of Steusser Lake (13 mi N of Watersmeet). Abandoned sandy gravel pit with some stones, elev. 1345 ft. Sec. 25, T47N, R40W. 46°26'33"N, 89°14'57"W. 4 Aug. 2003. 89503 - 89516

Cladina mitis
Cladina rangiferina
Cladonia cervicornis
Cladonia chlorophaea
Cladonia cristatella
Cladonia decorticata
Cladonia gracilis
Cladonia multiformis
Cladonia rei
Cladonia scabriuscula
Cladonia turgida
Cladonia uncialis
Peltigera rufescens
Porpidia crustulata
Stereocaulon paschale
Count of Species: 15

Species at Extra Site 2 :TRAP HILLS ON E SIDE

Ontonagon County, Michigan, Ottawa National Forest. Trap Hills East on east side of high point (15 mi SSW of Ontonagon). East facing hillside with sugar maple, hemlock, oak, and yellow birch, unlogged, elev. 1200 ft. Sec. 4, T49N, R41W. 46°40'13"N, 89°26'03"W. 11 Aug. 2003. 90010 - 90023

Anisomeridium nyssaegenum
Collema subflaccidum
Flavoparmelia caperata
Graphis scripta
Lecanora caesiorubella
Lecanora thysanophora
Lobaria pulmonaria
Myelochroa aurulenta
Parmelia sulcata
Pertusaria macounii
Physconia detersa
Physconia leucoleiptes
Punctelia rudecta
Count of Species:13

Species at Extra outside NF (Not USFS)

Gogebic County, Michigan, 5.3 mi W of Watersmeet along highway 2. Level sandy roadside with abundant lichen cover, elev. 1710 ft. Sec. 26, T45N, R40W. 46°16'29"N, 89°17'14"W 5 Aug. 2003. 89601 - 89613

Cladina arbuscula (not found in NF)
Cladina mitis
Cladina rangiferina
Cladonia cervicornis
Cladonia cornuta
Cladonia cristatella
Cladonia multiformis
Stereocaulon paschale
Trapeliopsis flexuosa
Trapeliopsis granulosa
Count of species : 10

Appendix IV

Special Plant Survey Forms

The following forms are for the rare lichens found during the survey. The forms are arranged alphabetically by species and then by site number.

SPECIAL PLANT SURVEY FORM

SURVEYOR INFORMATION

Survey date: **10-Aug. - 2003** Time from: **8:30_** to: **_11__ am** (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?:
_____
EO refers to element occurrence i.e. the species this form is reporting on

ELEMENT INFORMATION

Scientific name: ***Cetraria oakesiana***
Data sensitive? Y **N** Occ.# (if known): _ _ _

FILING

SURVEYSITE: **2**
SITENAME: **Lathrop Creek**
QUADCODE:
QUADNAME: **Bruce Crossing**

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.
__ **See Wetmore (2004) Lichen Inventory of Ottawa National Forest. Use GPS.**_____
_____
Township/Range/Section _____**Sec 26, T48N, R39W**_____
County _____**Ontonagon**_____ Managed area **Ottawa National Forest** name:_____
Was GPS used? Yes __**X**____ No _____ Type of unit ___**Garmin 76 Map**_____ Unit number _____
Waypoint name/# (when using Garmin) ____**WP 20**_____ File name (when using Trimble)
_____
OPTIONAL: Latitude, Longitude ___46°36'56"N, 89°08'58"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 _____ 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*** 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? **yes** (check)

Specimen collected? ___**yes** ___no Collection # and repository: **Wetmore # 89937 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): ____**43**_____ __precise count _**X**_estimate

Genets (total # of groups): _____**4**_____ __**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)
_____	_____	**__hemlock**_____
_____	_____	**__red maple**_____
_____	_____	**__sugar maple**_____
_____	_____	**__red oak**_____
_____	_____	**__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? ___yes ___no ___unknown

Explain:_____

_____

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.

____Old hemlock stand on gentle slope to north with scattered hemlocks but generally shady because the openings were closed in by hardwoods. The *Cetraria oakesiana* was growing on the mossy base of an old hemlock._____

_____

_____

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:

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

PAST IMPACTS to the occurrence (i.e., logging, , etc.):

TOPOGRAPHY

Elevation: __**1150**___ ft.

If elevation is a range: Minimum: -_____ft. Maximum: _____ ft.	_**N**_N ___NE ___E ___NW ___S ___SE ___W ___SW	**X**_0-10 ___10-35 ___35+ ___vertical	___filtered _**X**_shade Position: ___crest ___upper slope	___lower slope ___bottom	_**X**_moist (mesic) ___dry-mesic ___dry (xeric)
Aspect:	Slope: ___flat	Light: ___open ___partial	_**X**_mid slope	Moisture: __Inundated ___saturated (wet-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:\nfi\field forms\special_plant_form.doc
Rev. 07/2002

SPECIAL PLANT SURVEY FORM

SURVEYOR INFORMATION

Survey date: **7-Aug. - 2003** Time from: **_8:30_** to: **_12__ am** (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?:

_____

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

ELEMENT INFORMATION

Scientific name:***Cetraria oakesiana***

Data sensitive? Y **N** Occ.# (if known): _ _ _

FILING

SURVEYSITE: **4**

SITENAME: **Paint Lake**

QUADCODE:

QUADNAME: **Winslow Lake**

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.

___ **See Wetmore (2004) Lichen Inventory of Ottawa National Forest. Use GPS.**_____

_____

Township/Range/Section ____**Sec 30, T46N, R36W**_____

County _____**Iron**_____ Managed area **Ottawa National Forest** name:_____

Was GPS used? Yes __**X**____ No _____ Type of unit ___**Garmin 76 Map**_____ Unit number _____

Waypoint name/# (when using Garmin) ____**WP 13**_____ File name (when using Trimble)

_____

OPTIONAL: Latitude, Longitude _____46°21'09"N, 88°51'10"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 _____ 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*** 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? **yes** (check)

Specimen collected? ___**yes** ___no Collection # and repository: **Wetmore # 89701 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): ___**167**_____ ____precise count **X**__estimate

Genets (total # of groups): _____**8**_____ _**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)

___white pine_____

__dead and living balsam fir_____

__few old quaking aspen_____

__red maple in low areas_____

__few old 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? ___yes ___no ___unknown

Explain:_____

_____

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.

____Old open white pine forest on upland rolling hills with scattered old white pines. Some low wet areas and most of the openings were shaded by young hardwoods. *Cetraria oakesiana* was growing on an old yellow birch. _____

_____

_____

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:

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

PAST IMPACTS to the occurrence (i.e., logging, , etc.):

TOPOGRAPHY

Elevation: __**1600** __ ft.

If elevation is a range: Minimum: - _____ft. Maximum: _____ ft.	___N ___NE ___E ___NW ___S ___SE ___W ___SW	___0-10 ___10-35 ___35+ ___vertical	___filtered ___shade Position: ___crest ___upper slope ___mid slope	___lower slope ___bottom Moisture: __Inundated ___saturated (wet-mesic)	_**X**_moist (mesic) ___dry-mesic ___dry (xeric)
Aspect:	Slope: **X**_flat	Light: ___open _**X**_partial			

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:\nfi\field forms\special_plant_form.doc
Rev. 07/2002

SPECIAL PLANT SURVEY FORM

SURVEYOR INFORMATION

Survey date: **8-Aug. - 2003** Time from: **_1_** to: **_3:30__ 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?:
_____
EO refers to element occurrence i.e. the species this form is reporting on

ELEMENT INFORMATION

Scientific name: ***Cetraria oakesiana***
Data sensitive? Y **N** Occ.# (if known): _ _ _

FILING

SURVEYSITE: **10**
SITENAME: **Dead Stream**
QUADCODE:
QUADNAME: **Marten Lake**

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.
___ **See Wetmore (2004) Lichen Inventory of Ottawa National Forest. Use GPS.**_____
_____
Township/Range/Section ___**Sec 22, T47N, R35W**_____
County _____**Baraga**_____ Managed area **Ottawa National Forest** name:_____
Was GPS used? Yes __**X**____ No _____ Type of unit ___**Garmin 76 Map**_____ Unit number _____
Waypoint name/# (when using Garmin) ____**WP 17**_____ File name (when using Trimble)
_____
OPTIONAL: Latitude, Longitude _____46°27'12"N, 88°40'02"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 _____ 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*** 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? **yes** (check)

Specimen collected? ___**yes** ___no Collection # and repository: **Wetmore # 89864 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**_____ _**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)
_____	_____	__***Thuja***_____
_____	_____	__**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? ___yes ___no ___unknown

Explain:_____

_____

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.

____A mixed swamp with old trees and patches of alder with pools of water and underground water with broken canopy with open areas. This was the best site for rare lichens. The *Cetraria oakesiana* was growing on a fallen dead balsam fir._____

_____

_____

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:

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

PAST IMPACTS to the occurrence (i.e., logging, , etc.):

TOPOGRAPHY

Elevation: __**1510**__ ft.

If elevation is a range: Minimum: - _____ft. Maximum: _____ ft.	___N ___NE ___E ___NW ___S ___SE ___W ___SW	___0-10 ___10-35 ___35+ ___vertical	___filtered ___shade Position: ___crest ___upper slope ___mid slope	___lower slope _**X**_bottom	___moist (mesic) ___dry-mesic ___dry (xeric)
Aspect:	Slope: _**X**_flat	Light: ___open _**X**_partial		Moisture: __Inundated _**X**_saturated (wet-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:\nfi\field forms\special_plant_form.doc
Rev. 07/2002

SPECIAL PLANT SURVEY FORM

SURVEYOR INFORMATION

Survey date: **8-Aug. - 2003** Time from: **_1_** to: **_3:30__ 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?:
_____
EO refers to element occurrence i.e. the species this form is reporting on

ELEMENT INFORMATION

Scientific name: ***Hypotrachyna revoluta***
Data sensitive? Y **N** Occ.# (if known): _ _ _

FILING

SURVEYSITE: **10**
SITENAME: **Dead Stream**
QUADCODE:
QUADNAME: **Marten Lake**

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.
___**See Wetmore (2004) Lichen Inventory of Ottawa National Forest. Use GPS.**_____
_____
Township/Range/Section ___**Sec 22, T47N, R35W**_____
County _____**Baraga**_____ Managed area **Ottawa National Forest** name:_____
Was GPS used? Yes __**X**____ No _____ Type of unit ___**Garmin 76 Map**_____ Unit number _____
Waypoint name/# (when using Garmin) ____**WP 17**_____ File name (when using Trimble)
_____
OPTIONAL: Latitude, Longitude _____46°27'12"N, 88°40'02"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 _____ 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*** 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? **yes** (check)

Specimen collected? ___**yes** ___no Collection # and repository: **Wetmore # 89831, 89858 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**_____ _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 ___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)
		__***Thuja***
		__**balsam fir**
		__**black ash**

CONDITION

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:_____

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.

____ A mixed swamp with old trees and patches of alder with pools of water and underground water with broken canopy with open areas. This was the best site for rare lichens. The *Hypotrachyna revoluta* was growing on the trunk and also branches of a dead balsam fir._____

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:

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

PAST IMPACTS to the occurrence (i.e., logging, , etc.):

TOPOGRAPHY

Elevation: __**1510**__ ft.

If elevation is a range: Minimum: - _____ft. Maximum: _____ ft.	___N ___NE ___E ___NW ___S ___SE ___W ___SW	___0-10 ___10-35 ___35+ ___vertical	___filtered ___shade Position: ___crest ___upper slope ___mid slope	___lower slope _**X**_bottom	___moist (mesic) ___dry-mesic ___dry (xeric)
Aspect:	Slope: _**X**_flat	Light: ___open _**X**_partial		Moisture: __Inundated _**X**_saturated (wet-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:\nfi\field forms\special_plant_form.doc
Rev. 07/2002

SPECIAL PLANT SURVEY FORM

SURVEYOR INFORMATION

Survey date: **11-Aug. - 2003** Time from: **_1_** to: **4___ 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?:
_____
EO refers to element occurrence i.e. the species this form is reporting on

ELEMENT INFORMATION

Scientific name: ***Lobaria quercizans***
Data sensitive? Y **N** Occ.# (if known): _ _ _

FILING

SURVEYSITE: **1**
SITENAME: **Trap Hills**
QUADCODE:
QUADNAME: **Matchwood NW**

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.
___ **See Wetmore (2004) Lichen Inventory of Ottawa National Forest. Use GPS.**_____
_____
Township/Range/Section _____**Sec 4, T49N, R41W**_____
County _____**Ontonagon**_____ Managed area **Ottawa National Forest**
name:_____
Was GPS used? Yes __**X**____ No _____ Type of unit ___**Garmin 76 Map**_____ Unit number _____
Waypoint name/# (when using Garmin) ____**WP 23**_____ File name (when using Trimble)
_____
OPTIONAL: Latitude, Longitude ____46°39'56"N, 89°26'39"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 _____ 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*** 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? **yes** (check)

Specimen collected? ___**yes** ___no Collection # and repository: **Wetmore #90024 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)
_____	_____	___**sugar 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? ___yes ___no ___unknown

Explain:_____

_____

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.

____On top of hill in recently logged area; collected on isolated trees and cut tree tops left by loggers. *L. quercizans* was found on an old isolated sugar maple near an old logging road below the top of the hill. _____

_____

_____

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:

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

PAST IMPACTS to the occurrence (i.e., logging, , etc.): _____**recently logged**_____

TOPOGRAPHY

Elevation: _**1450**___ ft.

If elevation is a range: Minimum: - _____ft. Maximum: _____ ft.	___N ___NE ___E ___NW ___S ___SE ___W ___SW	_**X**_0-10 ___10-35 ___35+ ___vertical	___filtered ___shade Position: _**X**_crest _**X**_upper slope ___mid slope	___lower slope ___bottom Moisture: __Inundated ___saturated (wet-mesic)	_**X**_moist (mesic) ___dry-mesic ___dry (xeric)
Aspect:	Slope: ___flat	Light: _**X**_open ___partial			

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:\nfi\field forms\special_plant_form.doc
Rev. 07/2002

SPECIAL PLANT SURVEY FORM

SURVEYOR INFORMATION

Survey date: **10-Aug. - 2003** Time from: **8:30_** to: **_11__ am** (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?:
_____
EO refers to element occurrence i.e. the species this form is reporting on

ELEMENT INFORMATION

Scientific name: ***Lobaria quercizans***
Data sensitive? Y **N** Occ.# (if known): _ _ _

FILING

SURVEYSITE: **2**
SITENAME: **Lathrop Creek**
QUADCODE:
QUADNAME: **Bruce Crossing**

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.
___ **See Wetmore (2004) Lichen Inventory of Ottawa National Forest. Use GPS.**_____
_____
Township/Range/Section _____**Sec 26, T48N, R39W**_____
County _____**Ontonagon**_____ Managed area **Ottawa National Forest** name:_____
Was GPS used? Yes __**X**____ No _____ Type of unit ___**Garmin 76 Map**_____ Unit number _____
Waypoint name/# (when using Garmin) ____**WP 20**_____ File name (when using Trimble)
_____
OPTIONAL: Latitude, Longitude _____46°36'56"N, 89°08'58"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 _____ 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*** 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? **yes** (check)

Specimen collected? ___**yes** ___no Collection # and repository: **Wetmore # 89946 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): ____**10**_____ **X**__precise count ____estimate

Genets (total # of groups): _____**4**_____ __**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)
_____	_____	**__hemlock**_____
_____	_____	**__red maple**_____
_____	_____	**__sugar maple**_____
_____	_____	**__red oak**_____
_____	_____	**__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? ___yes ___no ___unknown

Explain:_____

_____

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.

____ Old hemlock stand on gentle slope to north with scattered hemlocks but generally shady because the openings were closed in by hardwoods. The *Lobaria quercizans* was growing on a red maple._____

_____

_____

_____

_____

_____

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:

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

PAST IMPACTS to the occurrence (i.e., logging, , etc.):

TOPOGRAPHY

Elevation: __**1150**___ ft.

If elevation is a range: Minimum: - _____ft. Maximum: _____ ft.	_**N**_N ___NE ___E ___NW ___S ___SE ___W ___SW	**X**_0-10 ___10-35 ___35+ ___vertical	___filtered _**X**_shade Position: ___crest ___upper slope	___lower slope ___bottom	_**X**_moist (mesic) ___dry-mesic ___dry (xeric)
	Slope:	Light:	_**X**_mid	Moisture:	
Aspect:	___flat	___open ___partial	slope	__Inundated ___saturated (wet-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:\nfi\field forms\special_plant_form.doc
Rev. 07/2002

SPECIAL PLANT SURVEY FORM

SURVEYOR INFORMATION

Survey date: **7-Aug. - 2003** Time from: **_8:30_** to: **_12__ am** (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?:
_____
EO refers to element occurrence i.e. the species this form is reporting on

ELEMENT INFORMATION

Scientific name: ***Lobaria quercizans***
Data sensitive? Y **N** Occ.# (if known): _ _ _

FILING

SURVEYSITE: **4**
SITENAME: **Paint Lake**
QUADCODE:
QUADNAME: **Winslow Lake**

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.
___ **See Wetmore (2004) Lichen Inventory of Ottawa National Forest. Use GPS.**_____
_____
Township/Range/Section ____**Sec 30, T46N, R36W**_____
County _____**Iron**_____ Managed area **Ottawa National Forest** name:_____
Was GPS used? Yes __**X**____ No _____ Type of unit ___**Garmin 76 Map**_____ Unit number _____
Waypoint name/# (when using Garmin) ____**WP 13**_____ File name (when using Trimble)
_____
OPTIONAL: Latitude, Longitude _____46°21'09"N, 88°51'10"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 _____ 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*** 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? **yes** (check)

Specimen collected? ___**yes** ___no Collection # and repository: **Wetmore # 89683 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): ___**36**_____ ____precise count **X**__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)	Overstory/Tree Species: (___% cover)
_____	_____	___**white pine**_____
_____	_____	__**dead and living balsam fir**_____
_____	_____	__**few old quaking aspen**_____
_____	_____	__**red maple in low areas**_____
_____	_____	__**few old 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? ___yes ___no ___unknown

Explain:_____

_____

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.

____ **Old open white pine forest on upland rolling hills with scattered old white pines. Some low wet areas and most of the openings were shaded by young hardwoods. The *Lobaria quercizans* was growing on an old red malpe.**_____

_____

_____

_____

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:

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

PAST IMPACTS to the occurrence (i.e., logging, , etc.):

TOPOGRAPHY

Elevation: __**1600** __ ft.

If elevation is a range: Minimum: - _____ft. Maximum: _____ ft.	___N ___NE ___E ___NW ___S ___SE ___W ___SW	___0-10 ___10-35 ___35+ ___vertical	___filtered ___shade Position: ___crest ___upper slope ___mid slope	___lower slope ___bottom Moisture: __Inundated ___saturated (wet-mesic)	_**X**_moist (mesic) ___dry-mesic ___dry (xeric)
Aspect:	Slope: **X**_flat	Light: ___open _**X**_partial			

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:\nfi\field forms\special_plant_form.doc
Rev. 07/2002

SPECIAL PLANT SURVEY FORM

SURVEYOR INFORMATION

Survey date: **6-Aug. - 2003** Time from: **_1_** to: **_4__ 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?:
_____
EO refers to element occurrence i.e. the species this form is reporting on

ELEMENT INFORMATION

Scientific name: ***Lobaria quercizans***
Data sensitive? Y **N** Occ.# (if known): _ _ _

FILING

SURVEYSITE: **5**
SITENAME: **Highway 2 E of USFS 3918**
QUADCODE:
QUADNAME: **Golden Lake**

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.
_____ **See Wetmore (2004) Lichen Inventory of Ottawa National Forest. Use GPS.**_____
_____
Township/Range/Section ____**Sec 28, T44N, R37W**_____
County _____*Iron*_____ Managed area **Ottawa National Forest** name:_____
Was GPS used? Yes __**X**____ No _____ Type of unit ___**Garmin 76 Map**_____ Unit number _____
Waypoint name/# (when using Garmin) ____**WP 12**_____ File name (when using Trimble)
_____
OPTIONAL: Latitude, Longitude _____46°10'31"N, 88°56'42"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 _____ 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*** 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? **yes** (check)

Specimen collected? ___**yes** ___no Collection # and repository: **Wetmore # 89642 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): __**10**_____ _**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 ___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)
___**Cornus canadensis**_____		___**balsam fir**_____
		___**old red maple**_____
		___**old quaking aspen**_____
		___**black spruce**_____
		___**sugar maple**_____
		___**old 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? ___yes ___no ___unknown

Explain:_____

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.

____**Lowland with mixed forest of balsam fir, old yellow birch, quaking aspen, and red and sugar maple with few *Thuja*_area was probably wetter in the past than now. The *Lobaria quercizans* was growing on an old red maple.**

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:

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

PAST IMPACTS to the occurrence (i.e., logging, , etc.):

TOPOGRAPHY

Elevation: __**1730**__ ft.

If elevation is a range: Minimum: - _____ft. Maximum: _____ ft.	___N ___NE ___E ___NW ___S ___SE ___W ___SW	___0-10 ___10-35 ___35+ ___vertical	___filtered ___shade Position: ___crest ___upper slope ___mid slope	___lower slope _**X**_bottom Moisture: __Inundated ___saturated (wet-mesic)	_**X**_moist (mesic) ___dry-mesic ___dry (xeric)
Aspect:	Slope: _**X**_flat	Light: ___open _**X**_partial			

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:\nfi\field forms\special_plant_form.doc
Rev. 07/2002

SPECIAL PLANT SURVEY FORM

SURVEYOR INFORMATION

Survey date: **10-Aug. - 2003** Time from: **_1_** to: **_3:30_ 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?:
_____
EO refers to element occurrence i.e. the species this form is reporting on

ELEMENT INFORMATION

Scientific name: ***Lobaria quercizans***
Data sensitive? Y **N** Occ.# (if known): _ _ _

FILING

SURVEYSITE: **7**
SITENAME: **Ellis Creek**
QUADCODE:
QUADNAME:

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.
_____ **See Wetmore (2004) Lichen Inventory of Ottawa National Forest. Use GPS.**_____
_
_____
Township/Range/Section ___**Sec 10 & 11, T49N, R38W**_____
County ___**Ontonagon**_____ Managed area **Ottawa National Forest** name:_____
Was GPS used? Yes __**X**____ No _____ Type of unit ___**Garmin 76 Map**_____ Unit number _____
Waypoint name/# (when using Garmin) ____**WP 21**_____ File name (when using Trimble)
_____
OPTIONAL: Latitude, Longitude _____46°39'23'N, 89°01'53'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 _____ 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*** 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? **yes** (check)
Specimen collected? ___**yes** ___no Collection # and repository: **Wetmore # 89969 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): ____**25**_____ ____precise count _**X**__estimate
Genets (total # of groups): _____**5**_____ __**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)
		__***Thuja***
		__**hemlock**
		__**balsam fir**
		__**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? ___yes ___no ___unknown
Explain:_____

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.
___**On gentle slope in upland with scattered conifers but mostly hardwoods. No standing water but deep gullies with streams. The *Lobaria querrcizans* was growing on an old red maple.** _____

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:

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

PAST IMPACTS to the occurrence (i.e., logging, , etc.):

TOPOGRAPHY

Elevation: __**1150**___ ft.

If elevation is a range: Minimum: - _____ft. Maximum: _____ ft.	___N ___NE ___E ___NW ___S ___SE ___W _**X**_SW	_**X**_0-10 ___10-35 ___35+ ___vertical	___filtered _**X**_shade Position: ___crest ___upper slope ___mid slope	_**X**_lower slope ___bottom Moisture: __Inundated ___saturated (wet-mesic)	_**X**_moist (mesic) ___dry-mesic ___dry (xeric)
Aspect:	Slope: ___flat	Light: ___open ___partial			

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:\nfi\field forms\special_plant_form.doc
Rev. 07/2002

SPECIAL PLANT SURVEY FORM

SURVEYOR INFORMATION

Survey date: **8-Aug. - 2003** Time from: **_9_** to: **_12__ am** (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?:
_____
EO refers to element occurrence i.e. the species this form is reporting on

ELEMENT INFORMATION

Scientific name: ***Lobaria quercizans***
Data sensitive? Y **N** Occ.# (if known): _ _ _

FILING

SURVEYSITE: **8**
SITENAME: **Jake Creek**
QUADCODE:
QUADNAME: **Kenton**

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.
__ **See Wetmore (2004) Lichen Inventory of Ottawa National Forest. Use GPS.**_____
_____
Township/Range/Section ____**Sec 9, T46N, R37W**_____
County _____**Iron**_____ Managed area **Ottawa National Forest** name:_____
Was GPS used? Yes __**X**____ No _____ Type of unit ___**Garmin 76 Map**_____ Unit number _____
Waypoint name/# (when using Garmin) ____**WP 16**_____ File name (when using Trimble)
_____
OPTIONAL: Latitude, Longitude _____46°24'11"N, 88°56'51"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 _____ 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*** 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? **yes** (check)

Specimen collected? ___**yes** ___no Collection # and repository: **Wetmore # 89798 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): __**6**_____ _**X**_precise count ____estimate

Genets (total # of groups): ____**5**_____ _**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 in places___	____***Thuja***_____
		___black spruce_____
		___tamarack_____
		__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? ___yes ___no ___unknown

Explain:_____

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.

___Mixed bog forest *Thuja*, black ash, black spruce, tamarack, balsam fir and alder. The *Lobaria quercizans* was growing on an old *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.

POTENTIAL THREATS to this occurrence:

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

PAST IMPACTS to the occurrence (i.e., logging, , etc.):

TOPOGRAPHY

Elevation: __**1540**___ ft.

If elevation is a range: Minimum: - _____ft. Maximum: _____ ft.	___N ___NE ___E ___NW ___S ___SE ___W ___SW	___0-10 ___10-35 ___35+ ___vertical	___filtered ___shade Position: ___crest ___upper slope ___mid slope	___lower slope _**X**_bottom	___moist (mesic) ___dry-mesic ___dry (xeric)
Aspect:	Slope: _**X**_flat	Light: ___open _**X**_partial		Moisture: __Inundated _**X**_saturated (wet-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:\nfi\field forms\special_plant_form.doc
Rev. 07/2002

SPECIAL PLANT SURVEY FORM

SURVEYOR INFORMATION

Survey date: **3-Aug. - 2003** Time from: **1**_ to: __**3**__ **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?:
_____
EO refers to element occurrence i.e. the species this form is reporting on

ELEMENT INFORMATION

Scientific name: ***Lobaria quercizans***
Data sensitive? Y **N** Occ.# (if known): _ _ _

FILING

SURVEYSITE: **9**
SITENAME: **Banner Creek**
QUADCODE:
QUADNAME: **Gogebic**

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.
__ **See Wetmore (2004) Lichen Inventory of Ottawa National Forest. Use GPS.**_____
_____
Township/Range/Section ____**Sec 19, T46N, R42W**_____
County ___**Gogebic**_____ Managed area **Ottawa National Forest** name:_____
Was GPS used? Yes __**X**____ No _____ Type of unit ___**Garmin 76 Map**_____ Unit number _____
Waypoint name/# (when using Garmin) ____**WP 4**_____ File name (when using Trimble)
_____
OPTIONAL: Latitude, Longitude _____46°22'20"N, 89°36'00"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 _____ 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*** 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? **yes** (check)

Specimen collected? ___**yes** ___no Collection # and repository: **Wetmore # 89453 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): __**15-20**_____ ____precise count _**X**_estimate

Genets (total # of groups): _____**9**_____ _**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)

__***Thuja***_____

__**balsam fir most dead**_____

__**yellow birch**_____

__**red maple**_____

__**few hemlock**_____

__**alder in places**_____

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:_____

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.

_____**A bog along small stream with conifers, hardwoods, and alder. Site probably too small and not wet enough for other rare lichens. The *Lobaria quercizans* was growing on an old *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.

POTENTIAL THREATS to this occurrence:

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

PAST IMPACTS to the occurrence (i.e., logging, , etc.):

TOPOGRAPHY

Elevation: _**1490**____ ft.

If elevation is a range: Minimum: - _____ft. Maximum: _____ ft.	___N ___NE ___E ___NW ___S ___SE ___W ___SW	___0-10 ___10-35 ___35+ ___vertical	___filtered ___shade Position: ___crest ___upper slope ___mid slope	___lower slope _**X**_bottom Moisture: __Inundated _**X**_saturated (wet-mesic)	___moist (mesic) ___dry-mesic ___dry (xeric)
Aspect:	Slope: _**X**__flat	Light: ___open _**X**_partial			

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:\nfi\field forms\special_plant_form.doc
Rev. 07/2002

SPECIAL PLANT SURVEY FORM

SURVEYOR INFORMATION

Survey date: **8-Aug. - 2003** Time from: **_1_** to: **_3:30__ 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?:
_____
EO refers to element occurrence i.e. the species this form is reporting on

ELEMENT INFORMATION

Scientific name: ***Lobaria quercizans***
Data sensitive? Y **N** Occ.# (if known): _ _ _

FILING

SURVEYSITE: **10**
SITENAME: **Dead Stream**
QUADCODE:
QUADNAME: **Marten Lake**

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.
____ **See Wetmore (2004) Lichen Inventory of Ottawa National Forest. Use GPS.**_____
_____
Township/Range/Section ___**Sec 22, T47N, R35W**_____
County _____**Baraga**_____ Managed area **Ottawa National Forest** name:_____
Was GPS used? Yes __**X**____ No _____ Type of unit ___**Garmin 76 Map**_____ Unit number _____
Waypoint name/# (when using Garmin) ____**WP 17**_____ File name (when using Trimble)
_____
OPTIONAL: Latitude, Longitude ____46°27'12"N, 88°40'02"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 _____ 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*** 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? **yes** (check)

Specimen collected? ___**yes** ___no Collection # and repository: **Wetmore # 89821 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**_____ _**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 ___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)
		__***Thuja***_____
		__**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? ___yes ___no ___unknown

Explain:_____

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.

____ **A mixed swamp with old trees and patches of alder with pools of water and underground water with broken canopy with open areas. This was the best site for rare lichens. The *Lobaria quercizans* was found on a 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.

POTENTIAL THREATS to this occurrence:

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

PAST IMPACTS to the occurrence (i.e., logging, , etc.):

TOPOGRAPHY

Elevation: __**1510**__ ft.

If elevation is a range: Minimum: - _____ft. Maximum: _____ ft.	___N ___NE ___E ___NW ___S ___SE ___W ___SW	___0-10 ___10-35 ___35+ ___vertical	___filtered ___shade Position: ___crest ___upper slope ___mid slope	___lower slope _**X**_bottom	___moist (mesic) ___dry-mesic ___dry (xeric)
Aspect:	Slope: _**X**_flat	Light: ___open _**X**_partial		Moisture: __Inundated _**X**_saturated (wet-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:\nfi\field forms\special_plant_form.doc
Rev. 07/2002

SPECIAL PLANT SURVEY FORM

SURVEYOR INFORMATION

Survey date: **5-Aug. - 2003** Time from: **_1__** to: **_3:30_ 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?:
_____
EO refers to element occurrence i.e. the species this form is reporting on

ELEMENT INFORMATION

Scientific name: ***Lobaria quercizans***
Data sensitive? Y **N** Occ.# (if known): _ _ _

FILING

SURVEYSITE: **11**
SITENAME: **Sucker Lake Road**
QUADCODE:
QUADNAME: **Thayer**

LOCATIONAL INFORMATION

Was the Landowner contacted? Yes _____ No _____ Landowner Name:
_____
Owner Type: _____
Note:_____
DIRECTIONS: Provide detailed directions to the observation (rather than the survey site). Include landmarks, roads, towns, distances, compass directions.
_____
_____
_____
Township/Range/Section ___Sec 26, T46N, R41W_____
County __**Gogebic**_____ Managed area
name:_____
Was GPS used? Yes __**X**____ No _____ Type of unit ___**Garmin 76 Map**_____ Unit number _____
Waypoint name/# (when using Garmin) ____**WP 9**_____ File name (when using Trimble)
_____
OPTIONAL: Latitude, Longitude _____46°21'21"N, 89°23'32"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 _____ 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*** 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? **yes** (check)

Specimen collected? ___**yes** ___no Collection # and repository: **Wetmore # 89563 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): __**5**_____ _**X**__precise count ____estimate

Genets (total # of groups): ____**1**_____ _**X**__precise count ____estimate

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

_____

_____

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)

___**horsetails**_____

Understory/Scrub Species: (___% cover)

Overstory/Tree Species: (___% cover)

___**black ash**_____

___***Thuja***_____

___**yellow birch**_____

___**red maple**_____

__**balsam fir**_____

__**few 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? ___yes ___no ___unknown

Explain:_____

_____

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.

_____**A lowland along small stream/bog area with some few old trees but too young. Mostly mixed conifers and other hardwoods. No flowing water. The *Lobaria quercizans* was growing on a black ash.**_____

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:

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

PAST IMPACTS to the occurrence (i.e., logging, , etc.):

TOPOGRAPHY

Elevation: __**1600**___ ft.

If elevation is a range: Minimum: - _____ft. Maximum: _____ ft.	___N ___NE ___E ___NW ___S ___SE ___W ___SW	___0-10 ___10-35 ___35+ ___vertical	___filtered ___shade Position: ___crest ___upper slope ___mid slope	___lower slope _**X**_bottom Moisture: __Inundated **X**_saturated (wet-mesic)	___moist (mesic) ___dry-mesic ___dry (xeric)
Aspect:	Slope: _**X**_flat	Light: ___open _**X**_partial			

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:\nfi\field forms\special_plant_form.doc
Rev. 07/2002

SPECIAL PLANT SURVEY FORM

SURVEYOR INFORMATION

Survey date: **8-Aug. - 2003** Time from: **_1_** to: **_3:30__ 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?:
_____
EO refers to element occurrence i.e. the species this form is reporting on

ELEMENT INFORMATION

Scientific name: ***Menegazzia terebrata***
Data sensitive? Y **N** Occ.# (if known): _ _ _

FILING

SURVEYSITE: **10**
SITENAME: **Dead Stream**
QUADCODE:
QUADNAME: **Marten Lake**

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.
___ **See Wetmore (2004) Lichen Inventory of Ottawa National Forest. Use GPS.**_____
_____
Township/Range/Section ___**Sec 22, T47N, R35W**_____
County _____**Baraga**_____ Managed area **Ottawa National Forest** name:_____
Was GPS used? Yes __**X**____ No _____ Type of unit ___**Garmin 76 Map**_____ Unit number _____
Waypoint name/# (when using Garmin) ____**WP 17**_____ File name (when using Trimble)
_____
OPTIONAL: Latitude, Longitude _____46°27'12"N, 88°40'02"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 _____ 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*** 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? **yes** (check)

Specimen collected? ___**yes** ___no Collection # and repository: **Wetmore # 89868 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): __**48**_____ _X_precise count ____estimate

Genets (total # of groups): ____**14**_____ _**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)
		__***Thuja***_____
		__**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? ___yes ___no ___unknown

Explain:_____

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.

____ A mixed swamp with old trees and patches of alder with pools of water and underground water with broken canopy with open areas. This was the best site for rare lichens. There were many thalli of *Menegazzia terebrata* at this locality, the one collected was growing on an old *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.

POTENTIAL THREATS to this occurrence:

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

PAST IMPACTS to the occurrence (i.e., logging, , etc.):

TOPOGRAPHY

Elevation: __**1510**__ ft.

If elevation is a range: Minimum: - _____ft. Maximum: _____ ft.	___N ___NE ___E ___NW ___S ___SE ___W ___SW	___0-10 ___10-35 ___35+ ___vertical	___filtered ___shade Position: ___crest ___upper slope ___mid slope	___lower slope _**X**_bottom	___moist (mesic) ___dry-mesic ___dry (xeric)
Aspect:	Slope: _**X**_flat	Light: ___open _**X**_partial		Moisture: __Inundated _**X**_saturated (wet-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:\nfi\field forms\special_plant_form.doc
Rev. 07/2002

SPECIAL PLANT SURVEY FORM

SURVEYOR INFORMATION

Survey date: **3 -Aug. - 2003** Time from: **9**___ to: __**11:30**___ **am** (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?:
_____
EO refers to element occurrence i.e. the species this form is reporting on

ELEMENT INFORMATION

Scientific name: ***Menegazzia terebrata***
Data sensitive? Y **N** Occ.# (if known): _ _ _

FILING

SURVEYSITE: **18**
SITENAME: **Bobcat Lake**
QUADCODE:
QUADNAME: **Stateline Lake**

LOCATIONAL INFORMATION

Was the Landowner contacted? Yes _____ No _____ Landowner Name:
_____
Owner Type: _____
Note:_____
DIRECTIONS: Provide detailed directions to the observation (rather than the survey site). Include landmarks, roads, towns, distances, compass directions.
_____
_____
_____
Township/Range/Section _____**Sec. 27, T46N, R43W**_____
County _____**Gogebic**_____ Managed area
name:_____
Was GPS used? Yes __**X**____ No _____ Type of unit ___**Garmin 76 Map**_____ Unit number _____
Waypoint name/# (when using Garmin) ____**WP 3**_____ File name (when using Trimble)
_____
OPTIONAL: Latitude, Longitude _____46°21'41"N, 89°40'00"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 _____ 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*** 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? **yes** (check)

Specimen collected? ___**yes** ___no Collection # and repository: **Wetmore # 89378 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**_____ _**X**_precise count ____estimate

Genets (total # of groups): ____**2**_____ _**X**_precise count ____estimate

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

_**widely scattered** _____

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 red maple seedlings**_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Overstory/Tree Species: (___% cover)

_ ***Thuja*** _____
__ **hemlock**_____
___ **yellow birch** _____
___ **black spruce** _____
____**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:_____

_____

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.

__**A mixed lowland conifer forest with many *Thuja*, balsam fir, red maple and patches of alder. Generally too shady because of lack of leaning Thuja and hardwoods. The *Menegazzia terebrata* was only seen twice and the one collected was on a *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.

POTENTIAL THREATS to this occurrence:

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

PAST IMPACTS to the occurrence (i.e., logging, , etc.):

TOPOGRAPHY

Elevation: **_1570**_____ ft.

If elevation is a range: Minimum: - _____ft. Maximum: _____ ft.	___N ___NE ___E ___NW ___S ___SE ___W ___SW	___0-10 ___10-35 ___35+ ___vertical	___filtered **X**_shade Position: ___crest ___upper slope ___mid slope	___lower slope **X**_bottom Moisture: __Inundated ___saturated (wet-mesic)	**X**_moist (mesic) ___dry-mesic ___dry (xeric)
Aspect:	Slope: **_X**_flat	Light: ___open ___partial			

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:\nfi\field forms\special_plant_form.doc
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