

Date of Evaluation: 5/5/99
Surveyor: David Schmoller
Site Number: 0-307

CHEQUAMEGON-NICOLET NATIONAL FOREST BIOLOGICAL SURVEY PROJECT EVALUATION

GENERAL

NAME OF PROJECT: BAILEY LAKE BOG LAD COMPLEX
LEGAL DESCRIPTION: T39N, R12E, S10, 15-17, 19-22, 28-32, T39N, R11 E, S24, 25
QUAD NAME: Julia Lake, Alvin NW, Alvin SW
COUNTY: Forest and Oneida
AERIAL PHOTOS: High Altitude #303-25, 303-26, Low Altitude #793-191, 1193-25, 1193-62
LOCATION OF SITE/ACCESS: Hwy 32 south from Three Lakes to FR2178 to FR2182 to FR 2176

ECS PROVINCE: 212 - Laurentian Mixed Forest Province
SECTION: 212J - Southern Superior Upland
SUBSECTION: 212J1 - Brule and Paint Rivers drumlinized ground moraine
LAND TYPE ASSOCIATION: 102 - Argonne Plains. Loamy Inter-drumlin Outwash
INCLUDED ECOLOGICAL LAND TYPES: *Not applicable*
INCLUDED ECOLOGICAL LAND PHASES: *Cannot find map*

CURRENT PROTECTION STATUS: None.
RECOMMENDED PROTECTION STATUS: RNA or SMA
CURRENT LAND USE: Mainly timber and recreation
SURROUNDING LAND USE: Federal, for timber, recreation, wilderness (bordering on east), some private
APPROXIMATE ACREAGE IN SITE: Total @4160 acres; @600 upland, @3560 lowland
OWNERSHIP: USDA Chequamegon-Nicolet National Forest
DISTRICT/OPPORTUNITY AREA: Eagle River
OWNERSHIP COMMENTS IF PRIVATE: N/A
ADMINISTRATIVE ACTION: Pending

SIGNIFICANCE

ECOLOGICAL SIGNIFICANCE OF PROJECT AREA: This is the one of the largest peat land complexes on the forest. The complex has a wide variety of wetland communities within one contiguous 4160-acre swath. The site is relatively undisturbed. The wetlands display a somewhat smooth gradient from one community to the next, assumedly in approximation to the gradient the complex displayed prior to settlement. Along the perimeter and on drumlin islands within the complex are several stands of trees that have some characteristics of the old growth forest. This site is relatively remote. Both the wetland character and the relative lack of maintained roads limit access to this site. The entire site is in Federal ownership and is surrounded by Federal Lands excepting one 40-acre private parcel that borders on the northwestern edge.
Please see "Commentary" section for more details.

ECOLOGY

STANDS

Biologically Significant Stands in Complex:

Bailey Lake. The Scientific and Natural Area Data Sheet compiled by Eric Epstein of the WIDNR in 1982 stated that this area was "very scenic and wild and would make a good PUNA."
208/31 - A 4.0 acre stand with 16"DBH *Tsuga canadensis*. Stand originated in 1821.
209/36 - A 6.0 acre stand with 1 0"DBH *Pinus strobus*. Stand originated in 1914.

210/18 - An 5.2 acre old growth stand with *Pinus strobus*, *Pinus resinosa*, and *Tsuga canadensis* of 20"DBH and higher. Stand originated in 1864. It was thinned in 1991 resulting in large canopy gaps and an abundance of *Rubus idaeus*. ATM to AVIO habitat type.

216/10 - A 15.7 acre stand with *Pinus strobus* at 20" DBH and higher. Stand originated in 1878. Compartment records show that 7 acres of this stand were thinned in 1979.

217/26 - A 9.9 acre old growth stand with *Pinus strobus*, *Pinus resinosa*, and *Tsuga canadensis* of 20"DBH and higher. Stand originated in 1867. Compartment records show that 12 acres of this stand was thinned in 1991.

217/27 - A 14.5 acre old growth stand with *Pinus strobus*, *Pinus resinosa*, and *Tsuga canadensis* of 20"DBH and higher. Stand originated in 1864. Compartment records show that 18 acres of this stand was thinned in 1991.

Marginal Stands in Complex:

183/53

207/16, 34

208/1-5, 8, 10, 11, 24, 26, 27, 29, 31, 32, 43, 47, 48, 62

209/5, 20, 22-26, 29, 30, 33-36, 38

210/1, 2, 3-6, 8, 11, 12, 13, 15, 16, 19, 35, 36, 37, 39, 40, 45, 47, 52, 53, 55, 57, 61, 62

211/9, 10, 13, 26, 29, 46

216/30

217/7, 8, 9, 15, 17, 18, 24, 28, 29, 49

Additional Stands to be Included in Complex:

None

All Stands in Complex:

183/24, 25, 30, 36, 53

207/6, 15, 16, 34-36, 54, 1 01

208/1-5, 8-10, 24, 26-29, 31-40, 43, 48, 50-53, 60-62, 130

209/18, 22-28, 30-32, 34-36, 46, 102, 103

210/3, 5, 6, 12-23, 30-40, 42-62, 104

211/4, 6, 7, 8, 12, 16, 19, 27, 39, 47, 48, 51, 53

216/4, 8, 10, 19, 20, 21, 26, 30, 34, 104, 107

217/6, 9, 16, 19, 25, 26, 27

SPECIES

Rare Plants in Complex/Status: None encountered.

Rare Animals in Complex/Status: *Gavia immer* / G5 - S3, S4, SZN - SC/M. On Bailey Lake.

Other Notable Species: None encountered.

COMMUNITIES

List of Community Occurrences in Complex:

In common terms, Bailey Lake LAD site is a 4160-acre wetland complex containing several lakes and several dry islands and perimeter uplands.

In terms of Curtis' community classification, these communities were found:

1. Northern wet-mesic forest
2. Northern wet forest
3. Alder thicket
4. Open bog
5. Northern sedge meadow
6. Slow soft cold creeks
7. Ephemeral ponds
8. Soft bog lakes
9. Shallow soft seepage lakes
10. Northern dry forest
11. Northern mesic forest

Notably, the following wetland communities were not evident: Northern hardwood swamp, Southern hardwood swamp (a general rarity of hardwood within these wetlands), Northern wet forest relict (this site

is above the tension zone), Floodplain forest, Northern Wet forest (which are characterized by *Pinus strobus*), Emergent aquatic, (while not evident, it may be tucked away within the site), and Southern scrub carr.

Plant Community Description Table:

NATURAL COMMUNITY	DOMINANT PLANTS	COVER CLASS	HABITAT TYPE	SITE RANK
1. Northern wet mesic forest	<i>Sphagnum sp.</i>	7		B-
	<i>Thuja occidentalis</i>	6		
	<i>Coptis groenlandicum</i>	4		
	<i>Picea mariana</i>	4		
	<i>Ledum groeniandicum</i>	3		
	<i>Gaultheria hispidula</i>	3		
2. Northern wet forest	<i>Picea mariana</i>	7		B
	<i>Sphagnum sp.</i>	7		
	<i>Larix laricina</i>	6		
	<i>Ledum groenlandicum</i>	5		
	<i>Vaccinium macrocarpon</i>	3		
	<i>Gaultheria hispidula</i>	3		
	<i>Coptis groenlandica</i>	3		
	<i>Andromeda glaucophylla</i>	3		
3. Alder thicket	<i>Alnus rugosa</i>	7		B/A
	<i>Calamagrostis canadensis</i>	5		
	<i>Impatiens capensis</i>	3		
4. Open bog	<i>Sphagnum sp.</i>	7		A
	<i>Carex lasiocarpa</i>	6		
	<i>Chamaedaphne calyculata</i>	5		
	<i>Vaccinium macrocarpon</i>	3		
	<i>Carex lacustris</i>	3		
	<i>Picea mariana</i>	3		
	<i>Andromeda glaucophylla</i>	3		
	<i>Eriophorum spissum</i>	3		
	<i>Sarricenia purpurea</i>	3		
	<i>Ledum groeniandicum</i>	3		
	<i>Glyceria borealis</i>	2		
	<i>Larix laricina</i>	2		
5. Northern sedge meadow	<i>Carex stricta</i>	7		A
	<i>Carex lacustris</i>	4		
	<i>Calamagrostis canadensis</i>	4		
	<i>Scirpus atrovirens</i>	4		
6. Slow soft cold creek	<i>Carex stricta</i>	5		B
7. Ephemeral ponds				A
8. Soft bog lakes				A
9. Shallow soft seepage lakes				A

10. Northern dry forest	<i>Pinus resinosa</i>	7	PMV	D+
	<i>Betula papyrifera</i>	4		
	<i>Corylus comuta</i>	3		
	<i>Gaultheria procumbens</i>	3		
	<i>Maianthemum canadense</i>	3		
	<i>Amelanchier laevis</i>	3		
	<i>Lycopodium obscurum</i>	3		
	<i>Lycopodium complanatum</i>	3		
	<i>Lycopodium clavatum</i>	3		
11. Northern mesic forest	<i>Acer saccharum</i>	7	AViO	C-
	<i>Betula alleghaniensis</i>	3		
	<i>Tsuga canadensis</i>	3		
	<i>Tilia Americana</i>	2		

Plant Community Description Narrative:

1. Northern wet-mesic forest: This forest corresponds with what is commonly called the "White cedar forest" or "Cedar swamp". It is not as prevalent as the Northern wet forest in this complex. Generally speaking, it is found on the eastern and western edge of the complex, as scattered stands within the greater acreages of Northern wet forest. It is often found nearer to creeks. This forest type, along with the Northern wet forest below, possesses the greatest potential for rare plants out of all community types found in this complex.

2. Northern wet forest: This forest corresponds with what is called the "Black spruce-tamarack forest" or "Spruce bog". This is by far the most common community type present within this complex. The Compartment Records show most of these stands originating at least 49 years ago, some of them dating back to 1884. While these records reveal no logging episodes within these forest types, aerial photographs show that they are crossed by many logging roads. In original Government Survey Notes of 1859, the witness trees within these wet forests, whether of Spruce or Tamarack, averaged 6 to 10 inches in diameter. This survey found the average diameter of the trees to be about the same. Excepting where it abutted an upland site, there was usually no clear demarcation of this forest type. The Black spruce and Tamarack would gradually diminish in size until they gave way to Open bog or would increase in size and density and blend into Northern wet-mesic forest.

3. Alder thicket: These were found throughout the wetland complex, usually around beaver ponds, along creek banks, or buried within the forested swamps. They were not as common as most of the other community types.

4. Open bog: These are located mostly in the immediate vicinity of Wolf Lake and toward the northeastern reaches of the complex. At the water's edge, on Wolf Lake, the bog becomes floating mat. The evidence of disturbance is slight. Aerial photographs show some remnants of logging roads crisscrossing the bogs and wet forests. One narrow gauge railroad grade remains intact, presently in use as a snowmobile and horse trail. Where it crosses the open bog it has apparently altered the hydrology such that there is a slight damming of water to the north of the grade. This could account for the fact that the populations of *Picea mariana* and *Larix laricina* to the north of the grade are both more numerous and larger in stature than those to the south.

5. Northern sedge meadow: This community type was encountered along creek floodplains and behind beaver dams.

6. Slow soft cold creeks: Two small creeks of this sort wind through this complex, Fourmile Creek and a tributary to Kimball Creek. Fourmile Creek is Class 1 trout stream inhabited by Brown trout. The water is very soft, medium brown, with a pH of 5.9, and drains a watershed of 6.1 square miles. Both creeks have beaver dams along their length with attendant beaver ponds. Wood ducks, Canada geese, Mallards, and other waterfowl were observed on some of these impoundments during this survey.

7. Ephemeral ponds: Just a few of these were encountered on this survey, all located within the larger island units.

8. Soft bog lakes: Wolf Lake is of this type. Wolf Lake may be of the same limnology as Bailey Lake below, but research did not uncover any detailed descriptions. It is surrounded by bog mat on approximately 85% of its shoreline.

9. Shallow soft seepage lakes: Bailey Lake is of this type. It has sparse aquatic vegetation; limited fish resources, occasional winterkill, and are used by ducks and loons on spring and fall migrations. One common loon was observed on Bailey Lake during this survey.

10. Northern dry forest: This forest type is found on islands within the wetlands and along the perimeter of the wetlands. The islands are scattered throughout the wetlands, ranging in size from about one acre to about 100 acres. They number from 20 to 40, with indistinct borders. Many are covered with *Pinus resinosa*. The Compartment Records describe many of these islands as Old Growth, with the stand origins dating to 1912. The trees have DBH's commonly in the 12 to 18 inch range. The Old Growth designation could be questioned. Perhaps these pines have been planted, that is to say, are Red pine plantations. The pines have been thinned in the past, records showing some of the most recent thinning in 1981 by Louisiana Pacific. Along the southeast perimeter of the wetlands lays one stand, number 216/10, that was established in 1878. The stand measures 16 acres and contains *Pinus strobus* that have an average DBH of 20 inches as of 1981. The remainder of these sites are in second growth hardwoods dominated by *Acer saccharum* or in *Pinus banksiana* plantation.

11. Northern mesic forest: This forest type is found along the shores of the wetlands and larger islands, especially on the western edge of Wolf Lake and on the northeast end of the complex. At these locations there are scattered, remnant *Tsuga canadensis* groves with *Betula allegheniensis* and *Tilia americana*. The groves increase in numbers with approach to the wetland boundary.

Emergent aquatic: While none of this sort of habitat was encountered on the field surveys, it is suspected that it would be seen somewhere in the wider floodplains around the creeks.

DISTURBANCE

Past Disturbances: Three sorts of disturbances are evident. First, nearly all uplands, whether the dry islands or the perimeter uplands, have experienced logging. The logging removed the original vegetation. The vast majority of the uplands are in second growth hardwoods or Red or Jack pine plantation. The logging also established logging roads, which cross uplands and some lowlands. And the logging established a narrow gauge railroad whose grade still crosses the site. It appears that this railroad grade has altered the hydrology of the open bog such that water level on the south side of the grade is higher than that on the north side resulting in a marked increase in the density and size of Black spruce on the north side of the grade. Whether or not the wetlands themselves ever experienced logging is difficult to determine. Second, there is a snowmobile trail, which follows an abandoned railroad grade and crosses the bog mat. Where the trail crosses the bog mat it has matted and torn the vegetation. Where the trail intersects with other branches of the snowmobile trail system or logging roads there is usually an accumulation of trash such as beer cans, pop bottles, batteries, cigarette cartons, broken snowmobile parts, coffee cups, and food wrappers. A third form of disturbance was a 1100 acre fire in 1985, called the Spring Lake Fire, that swept through portions of the north and western edges of the wetlands, in places crowning out and burning off the overstory.

Threats/Urgency Comments: No great immediate threats appear to impact this wetland system. There are lesser threats in the snowmobile trail mentioned above as well some logging operations along the edges of the site. Logging has occurred within unique stands such as 210/18, 216/10, 217/26, and 217/27. Most of the upland sites within the complex have been eyed for timber management in recent years. A 5.2 acre gravel pit is in operation in stand 100. Spruce budworm has killed most of the older *Abies balsamea* throughout the complex.

OTHER

Original Vegetation: Original vegetation derived from Government Survey Notes of 1859 for T39N, R12E, S19, 20, 29-32 describe wetland species such as Tamarack and Spruce and "land unfit for cultivation" with "3rd Rate Soil". Upland species described include Yellow Pine, White Pine, Aspen, Maple and Birch. Most tree species cited had diameters from 6 to 12 inches. Soil was described as "3rd Rate Soil".

Soils: All wetland soils are acidic peat or muck. Wetland soil series include: Carbondale, Lupton, and Markey mucks and Greenwood. Loxley, and Dawson peats. Drumlin islands and upland perimeters are acidic loamy sands to sandy loams. Soil series include Pence, Padus, Sayner, and Vilas.

Topography: The topography is mostly level with scattered drumlins. All wetland slopes are level, with 0-1% slopes. Drumlin islands and upland perimeters are 0-45% slopes.

Drainage Class: All wetland soils are very poorly drained. Drumlin islands and upland perimeters are well to moderately to excessively drained soils.

Landform: Deposits of glacial meltwater stream sand and gravel and lacustrine sand overlain by organic sediments, mainly peat, in bogs, swamps, and marshes. Also glacial till and till-like sediments in areas of streamlined topography with scattered drumlins.

RECOMMENDATIONS

MANAGEMENT NEEDS: This site does have qualities that could justify some special status. The wetlands are relatively intact, relatively remote, relatively inaccessible, and have relatively less disturbance than other sites. Also, the potential for rare species is there, although not as high were this to be a trackless Cedar swamp, where most of the rare species are found. It is easy to picture *Platanthera*, *Cyrtopodium*, and *Amerorchis* in this sort of wetland. With the expanded list of rare plant species occurring on this forest, the likelihood of encountering a rare plant in these wetlands increases. Most of the uplands included within this stand, whether the supposed Red pine plantations or the hardwoods, in themselves do not display qualities that warrant special status. They are generally lacking in old growth or original forest characteristics. There are several exceptions, most of these being listed under the heading "Biologically Significant Stands in Complex". They are old growth stands of *Pinus strobus*, *Pinus resinosa*, and *Tsuga canadensis*. However, while lacking these qualities, these uplands may be vital in relation to the entire wetland system, as in runoff retention, habitat for species that frequent the wetlands, and the likes. So it may be said that the value of the uplands is in question. This value is also relative. Were any other sites to be under consideration, which are of the same land type and are considered of higher quality than this site, this would affect the evaluation of this entire site and the upland subsites.

Three alternative boundaries can be presented for this wetland complex.

Alternative 1: A first alternative is to have boundaries that *include all of the upland sites*, both island and perimeter. If the Red pine islands and perimeters are in fact a post settlement phenomenon, and a return to original forest conditions is desired, then perhaps a proviso could be admitted that would manage the Red pine plantations with an aim of returning them to presettlement conditions. As a result, the first alternative would include all Compartments and Stands listed earlier.

Alternative 2: This would be to *eliminate some of the upland sites*, both island and perimeter, from the complex. It is conceivable that the some of these uplands could be struck from the LAD complex without affecting the future quality of the wetlands. The second alternative would exclude the following island and perimeter upland Stands:

183/53

207/16, 34

208/1-5, 8, 10, 11, 24, 26, 27, 29, 31, 32, 43, 47, 48, 62

209/5, 20, 22-26, 29, 30, 33-36, 38

210/1, 2, 3-6, 8, 11, 12, 13, 15, 16, 19, 35, 36, 37, 39, 40, 45, 47, 52, 53, 55, 57, 61, 62

211/9,10,13, 26,29, 46

216/30

217/7, 8, 9, 15, 17, 18, 24, 28, 29, 49

Alternative 3: This would be to *include only the upland sites that are of an island nature*, in deference to the potential wetland and hydrologic impacts from roads and traffic were the islands to be excluded from the LAD site and harvested. These three alternatives are illustrated on the attached map.

In all three alternatives the Biologically Significant Stands would be included in the LAD.

In all three alternatives it would best was the management of surrounding lands be kept to a minimum in proximity to the LAD site. The third alternative would exclude the following perimeter upland Stands:

183/53

207/34

208/1-5, 8, 10, 11, 31, 32, 43, 47, 48, 62

209/5, 20, 22-27, 29, 30, 33-36, 38, 46, 48, 49

210/3-6, 8, 11, 35, 47, 52

216/30

217/ 8, 15, 18, 49

Additionally, something might be done about the snowmobile trails. Perhaps the branch that crosses the open bog could be retired. And "No Littering" signs could be posted at trail junctions in the faint hope that some passersby would oblige, should they be able to read.

Further surveys for rare plant and animal species would be warranted. Entangled, impenetrable watersheds such as this often cradle the frail remains of plant civilizations thought to be long extinct.

CONSERVATION PRIORITY: Moderate. Largely based upon the existence of other, similar wetland complexes within the Nicolet that benefit from some sort of special status and the quality of those wetland complexes in comparison to Bailey Lake LAD.

MISCELLANEOUS

INFORMATION SOURCES/SOURCE OF LEAD: WIDNR

FIELD SURVEY INFORMATION: Natural Heritage Evaluation of selected plant communities, field observations from this survey transcribed and summarized herein.

RARE FEATURES SUMMARY ATTACHED: No

OTHER ATTACHMENTS: One Site Map. See the map for proposed boundaries, survey routes, vegetation types.