

UNITED STATES DEPARTMENT OF AGRICULTURE

FOREST SERVICE

ESTABLISHMENT RECORD FOR MARBLE LAKE  
LOOKOUT RESEARCH NATURAL AREA WITHIN  
SUPERIOR NATIONAL FOREST  
LAKE COUNTY, MINNESOTA



Marble Lake Lookout

DESIGNATION ORDER

By virtue of the authority vested in me by the Secretary of Agriculture under regulations 7 CFR 2.60(a) and 36 CFR 251.23, I hereby designate as the Marble Lake Lookout Research Natural Area the lands described in the following establishment record prepared by Dean N. Zeitz and Norman F. Koller, dated April 15, 1988. These lands shall hereafter be administered as a research natural area subject to the above regulations and instructions issued thereunder.

  
\_\_\_\_\_  
Chief

  
\_\_\_\_\_  
Date

Barbara Cof

## PHOTOGRAPHIC RECORD

Superior Nat'l Forest

Isabella Ranger

November 1, 1987

District

INSTRUCTIONS: Submit to Washington Office in quadruplicate. Permanent numbers will be assigned and the forms will be distributed as follows: (1) Washington Office, (2) RO or Station, (3) Forest or Center and (4) Photographer.

TEMP. NO. (1)	PERMANENT NO. (To be filled in by the FO) (2)	SELECTED FOR W.O. PHOTO LIBRARY (3)	DATE OF EXPOSURE (4)	LOCATION (State and National Forest or County) (5)	DESCRIPTION OF VIEW (6)
1.			6/83	Marble Lake Lookout RNA	1. Marble Lake Lookout Northern Hardwoods: view of old-growth maple with frost crack and abundant maple regeneration in all age classes.
2.			6/83	Superior National Forest Lake County Sec. 32, T56N, R10W	2. Marble Lake Lookout Northern Hardwoods: view of old-growth maple with frost crack and abundant maple regeneration in all age classes.
3.			6/83		3. Marble Lake Lookout Northern Hardwoods.
4.			6/83		4. Marble Lake Lookout Northern Hardwoods
5.			6/83		5. White Baneberry ( <u>Actaea pachypoda</u> )
6.			7/80		6. White Baneberry ( <u>Actaea pachypoda</u> ), close-up of thick red pedicels that distinguish this species from the white-berried variety of red baneberry.
7.			6/83		7. Marble Lake Lookout Northern Hardwoods, view of cut stump.
8.			6/83		8. Broad-leaved Spring Beauty ( <u>Claytonia caroliniana</u> ).



Photo No. 1



Marble Lake Lookout Northern Hardwoods:  
view of old-growth maple with frost  
crack and abundant maple regeneration  
in all age classes.

Photo No. 2



Photo No. 3: Marble Lake Lookout  
Northern Hardwoods

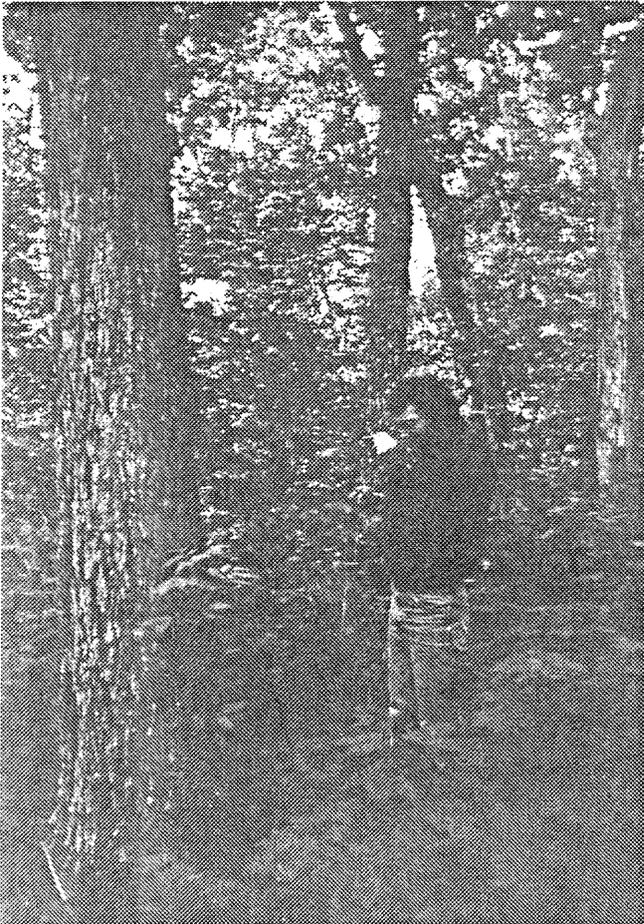


Photo No. 4: Marble Lake Lookout  
Northern Hardwoods



Photo No. 5: White Baneberry (Actaea pachypoda)

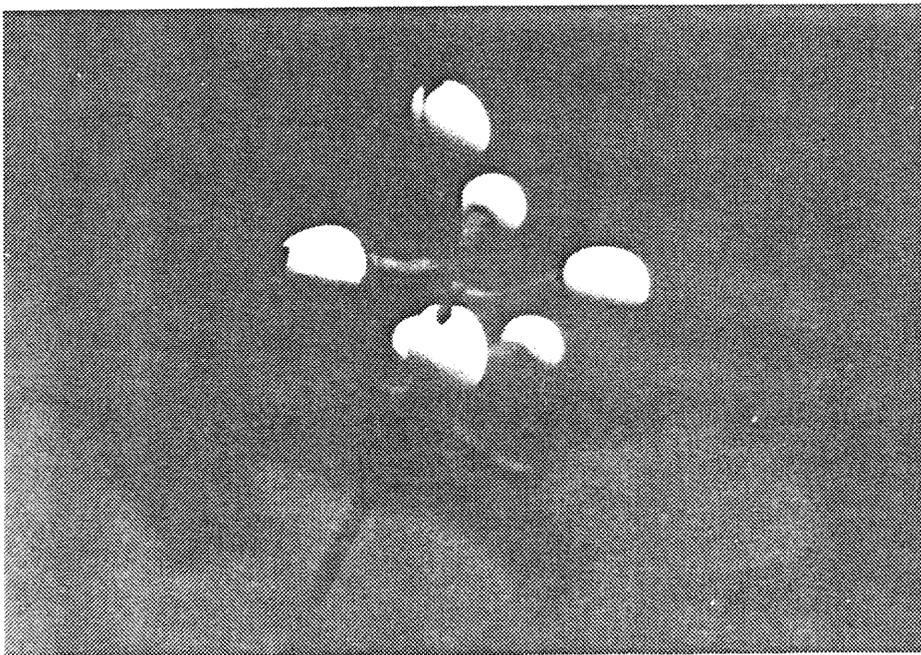


Photo No. 6: White Baneberry (Actaea pachypoda), close-up of thick red pedicel that distinguish this species from the white-berried variety of red baneberry.

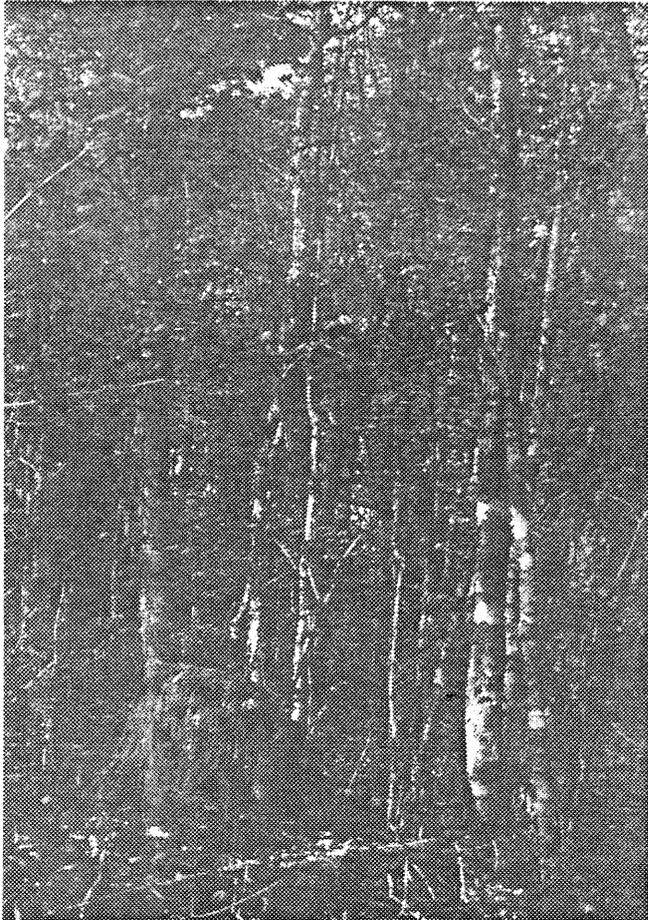


Photo No. 7: Marble Lake Lookout  
Northern Hardwoods, view of  
cut stump.

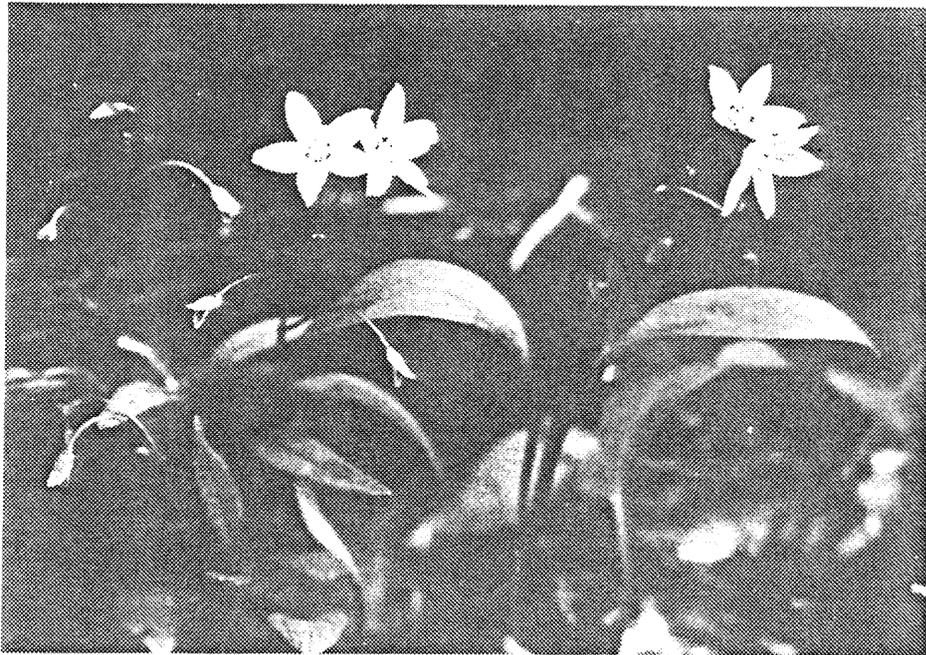


Photo No. 8: Broad-leaved  
Spring Beauty  
(Claytonia  
caroliniana).

SIGNATURE PAGE

for

RESEARCH NATURAL AREA ESTABLISHMENT RECORD

Marble Lake Lookout Research Natural Area

Superior National Forest

Lake County, Minnesota

The undersigned certify that all applicable land and resource management planning and environmental analysis have been met in arriving at this recommendation.

Prepared by Dean N. Zeitz Date April 15, 1988  
Dean N. Zeitz, RNA Coordinator,  
Isabella Ranger District

Prepared by Norman F. Koller Date April 15, 1988  
Norman F. Koller, RNA Coordinator,  
Superior National Forest

Recommended by Michael R. Herth Date May 16, 1988  
Michael R. Herth, District Ranger, Isabella Ranger District  
Superior National Forest

Recommended by Clay G. Beal Date May 26, 1988  
Clay G. Beal, Forest Supervisor, Superior National Forest

Recommended by Larry Payne Date 6/29/88  
for Floyd J. Maritz, Regional Forester, Eastern Region, R-9

Recommended by Thomas W. Hoehle Date 7/12/88  
for Ronald Lindmark, Station Director, North Central Forest Experiment Station

TITLE PAGE

Establishment Record for the Marble Lake Lookout  
Research Natural Area within Superior  
National Forest, Lake County, Minnesota

**ESTABLISHMENT RECORD FOR THE  
MARBLE LAKE LOOKOUT RESEARCH NATURAL AREA (RNA)  
WITHIN THE SUPERIOR NATIONAL FOREST  
LAKE COUNTY, MINNESOTA**

**a. INTRODUCTION**

The Marble Lake Lookout Research Natural Area (RNA) is located entirely on National Forest administered land within the Superior National Forest. The area is 120 acres (49 ha) located in the Arrowhead Region of northeastern Minnesota approximately 20 miles (32 km) north of Two Harbors, Minnesota (Map 1).

A primary interest is the historical value of preserving an example of the presettlement landscape--the northern hardwood community. An additional interest is the historical-cultural use of the area as a lookout for wildfires. The Civilian Conservation Corp (CCC) built a 100-foot (30 m) fire tower, log cabin and log garage in the 1930's. Although the tower and buildings were dismantled in the 1960's, the foundations remain. The 1 acre (0.4 ha) tower site is an officially recorded Cultural Resource Site of the Superior National Forest. (Zeitz, 1986).

The first recorded use of this area dates back to the original survey of 1891. The surveyors mentioned in their notes that there were a number of Indian trails but hard to follow. There was a good portage trail to Kane and Marble Lakes from the south. There were no known settlers within the RNA in 1891. This stand is not without the influence of man. The virgin white pine was harvested from this area in the early 1900's. (Zeitz, 1986). Old pine stumps, scattered throughout this northern hardwood forest. Many old-growth northern hardwood trees over 150 years old are an outstanding feature of the RNA.

The ownership of the property changed hands many times. The State of Minnesota originally acquired this land from the United States in the late 1890's. In the early 1900's the Duluth and Iron Range Railroad bought the land from the State except for one acre (0.4 ha) which the State kept to build and staff a fire lookout tower. In 1949, the State exchanged this one acre (0.4 ha) to the United States as part of the Superior National Forest. The State did reserve water power rights on the one acre (0.4 ha). The NESE of Section 32 was owned by numerous owners until sold to the United States in December 1936 by Mr. Mendenhall. In 1935, the Duluth and Iron Range Railroad sold the SESE and NWSE of Section 32 to the United States. All mineral rights to the 120-acre (49 ha) RNA are reserved to the Duluth and Iron Range Railroad.

(1) Land Management  
Planning

The Superior National Forest Land and Resource Management Plan (Forest Plan) was completed in May 1986.

Pages 3-52 and 3-53 (Appendix A) recognize Marble Lake Lookout as a candidate RNA as submitted by the National Heritage Program of Minnesota Department of Natural Resources. The Forest Plan recognized 80 acres (32 ha) in the SE 1/4 of Section 32 that would need further study. On December 10 and 11, 1986, an out-service committee of 6 experts met to discuss 11 proposed Research Natural Areas and Special Interest Areas on the Forest (Appendix B). Of the 11 areas, the committee recommended to the Forest Supervisor that the Marble Lake Lookout RNA be the first priority for further study.

On March 5, 1987, a contract was entered into between the USDA-Forest Service and the Nature Conservancy to collect additional data on the Marble Lake Lookout Area through the Minnesota Natural Heritage Program. The contract was completed on December 17, 1987. Part of that data is used to prepare the Establishment Record. (Coffin, 1987).

In the Forest Plan, the Marble Lake Lookout Area is in Management Area 1.3, which is a net acreage of 687,793 acres (278,340 ha) managed primarily as moose habitat with young forests of aspen and hardwood and providing recreational opportunities in natural settings. When established as an RNA, the Marble Lake Lookout RNA would be changed from Management Area 1.3 to Management Area 8.1. Presently, the Forest has 3 established Research Natural Areas in Management Area 8.1 with net area of 2,083 acres (842 ha) (Appendix A).

(2) Objectives

The objectives for establishing the Marble Lake Lookout RNA are:

- (a) Scientific study in old-growth northern hardwoods at its northern and westernmost range. (Appendix C).
- (b) Preserve identified candidate sensitive plants. (Minnesota DNR, 1986).
- (c) Enhance diversity.
- (d) Preserve historical lookout site.
- (e) This will not interfere with research in the area, per FSM 4063.3.

**b. JUSTIFICATION**

The Marble Lake Lookout RNA is Nationally significant for ecological study and research because of the old-growth sugar maple (Acer saccharum), yellow birch (Betula alleghaniensis), and basswood (Tilia americana), which are at the northern and westernmost edge of the Upper Great Lakes Hardwood Forest Type. (Little, 1979). Although the RNA is only 120 acres (49 ha), it is one of just a few remaining remnants of this northern and westernmost hardwood type. It is growing in one of the severest climates found within the United States for this sugar maple type, Society of American Foresters (SAF) Type 27, which is also Kuchler Type 90. (SAF, 1980) (Kuchler, 1966).

Two plants of significance in Minnesota occur within the boundaries of the proposed RNA. These are:

<u>Name</u>	<u>Minnesota Status*</u>
Broad-leaved Spring Beauty ( <u>Claytonia caroliniana</u> )	Special Concern
White Baneberry ( <u>Actaea</u> <u>pachypoda</u> )	Watch

\* These are Regional Forester's candidate sensitive species.

**c. PRINCIPAL  
DISTINGUISHING  
FEATURES**

The main distinguishing feature of this RNA is the old-growth (150+ years) northern hardwood trees that are at the westernmost and northernmost range of the Upper Great Lakes Hardwood Forest Type. This RNA is an excellent example of the presettlement character of a northern hardwoods community.

The second feature is that two sensitive plant species occur in relative abundance in the ground layer vegetation of Marble Lake Lookout RNA. These two plants are the Broad-leaved Spring Beauty and the White Baneberry. (Lakela, 1965).

**d. LOCATION**

The Marble Lake Lookout RNA is located on the Isabella Ranger District of the Superior National Forest in northeastern Minnesota. The area is described as follows:

- (1) Legal description - Lake County, Minnesota, 4th P.M., T.56N., R.10W., Sec. 32, NWSE, NESE, and SESE.
- (2) Latitude of Lookout Site - 47° 17' 23"
- (3) Longitude of Lookout Site - 91° 37' 41"
- (4) Area - 120 acres (49 ha)
- (5) Elevation of Lookout Site - 1,765 feet (538 m)

(6) Access to Marble Lake Lookout RNA is as follows: From City of Two Harbors, Minnesota, take County Road 2 north 20 miles (32 km) to County Road 203 (Forest Road, FR-107). Go east 2 miles (3 km) to FR-836. Go south 1 1/4 mile (2 km) to dead end of FR-836 near old fire lookout site. (See Maps 1 and 2).

e. AREA BY COVER TYPES:

SAF Type	Kuchler Type	Acres	Hectares	*Stand No.
12	85	12	5	8
18	98	8	3	55
** 27	90	60	24	53
37	85	4	2	58
37	85	3	1	52
37	85	5	2	57
39	None	<u>28</u>	<u>12</u>	54
		120	49	

\* Refer to Map 3 - Cover Type Map.

\*\* This is the principal area of interest in the Marble Lake Lookout RNA which is old-growth northern hardwoods and two sensitive plant species.

f. PHYSICAL AND CLIMATIC DATA

Of the 120-acre (49 ha) RNA, the main interest is the 60 acres (24 ha) of old-growth northern hardwoods that also contains two sensitive plant species. The topography is fairly flat although there are defineable drainages.

The RNA is affected by three main air masses. Continental polar and arctic air masses forming north of the Saskatchewan Plains flow south over the area and bring severe winter weather. Maritime tropical air masses forming in the Gulf Coast area move up the Mississippi Valley and supply the area with most of its precipitation. Air masses moving east from the Rocky Mountains and Plains usually bring mild, dry weather.

Climatological data has been obtained from the weather station in Two Harbors, Minnesota, which is located 18 air miles (29 km) south of the Marble Lake Lookout RNA. Records have been kept at Two Harbors from 1894 to present time. These records show the annual average precipitation as 28.73 inches (73 cm) and average annual temperature of 40.6°F (4.8°C) (Garn, 1975).

Of the 28.73 inches (73 cm) of average annual precipitation, 40 percent is snow between November 1 and April 1. The average annual snowfall is about 65 inches (1.7 m) with a duration of about 153 days of one inch (2.54 cm) or more.

The annual growing season is 112 days. The last killing frost in the spring can be expected between May 22 and June 5, and the first in the fall occurs between September 10 and 27. Annual cumulative growing degree days F is 2,900. Summer temperatures higher than 90°F (32°C) and winter temperatures lower than -40°F (-40°C) are not uncommon (Prettyman, 1978).

Minnesota averages 30 thunderstorm days per year. (A thunderstorm day is any type precipitation for a day.) Minnesota averages two tornados per year per 10,000 square miles (2,589,992 ha). Because most of the tornados in Minnesota occur south and west of the Superior National Forest, a reasonable expectation for a tornado to occur within the boundaries of the Forest is one per year. ~~It is not likely that the old-growth northern hardwoods in the Marble Lake Lookout RNA would be severely damaged by a tornado.~~ A severe ice storm could occur about once every three years. (Koller, 1982). Deleted  
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D.G. from  
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(R-3)

**g. DESCRIPTION OF VALUES**

(1) Flora

A partial floristic list and a semi-quantitative vegetation sampling of the Marble Lake Lookout Northern Hardwoods stand was conducted by Coffin and Engstrom during their survey of old-growth northern hardwoods of the North Shore Highland in 1982 and 1984. Two plots (20x20 meters) (65.6 ft x 65.6 ft) were sampled using the Braun-blauquet Releve' system. The results of this sampling method provides a list of plants found in the stand, describes the percent cover and abundance of each species, and summarizes the structural layers of the vegetation. In addition to the releves', silvicultural measurements were taken in each of the plots. The data is as follows:

Releve' Plot No. 18 (SE1/4, Sec. 32, T.56N., R.10.W)  
 Plot Size: 400 square meters (one-tenth acre)  
 Date: June 5, 1983

DBH Measurements in centimeters and (inches)

<u>Acer saccharum:</u> (sugar maple)	8.5(3.3)	11.0(4.3)	11.5(4.5)	37.0(14.6)	# of Saplings ( $\leq 7$ cm (2.8))
	51.0(20.0)	42.0(16.5)	8.0(3.1)	25.0(9.8)	
	22.0(8.7)	30.0(11.8)	11.0(4.3)	35.0(13.8)	
	9.0(3.5)	19.5(7.7)	61.0(24.0)	14.0(5.5)	525
	9.0(3.5)	8.0(3.1)	30.0(11.8)	26.0(10.2)	
	37.0(14.6)				
<u>Tilia americana:</u> (basswood)	25.0(9.8)	29.0(11.4)	50.5(19.9)	44.0(17.3)	1
	48.0(18.9)	(dead standing)			
<u>Abies balsamea:</u> (balsam fir)	10.0(3.9)	10.5(4.1)	11.0(4.3)		6
	10.0(3.9)	(dead standing)			

Prunus virginiana:  
(chokecherry)

8

Sambucus pubens:  
(red-berried elder)(Lakela, 1965)

1

Two plants of significance in Minnesota occur within the boundaries of the proposed RNA. These are:

<u>Name</u>	<u>Minnesota Status</u>
Broad-leaved Spring Beauty ( <u>Claytonia caroliniana</u> )	Special Concern
White Baneberry ( <u>Actaea pachypoda</u> )	Watch

(2) Fauna

The proposed RNA was not recommended for designation based on its faunal composition. However, old-growth forests are important to many species and a necessary component if we are to provide habitat for diversity of species. Listed here are State and Federal species which are known to occur in Lake County. Of these species only the Bald Eagle, Gray Wolf and Marten use or depend on northern hardwoods as a component of their habitat.

- \* Nomenclature Authority for shrubs and herbs:  
Fernald, M.L., 1950, Grays Manual of Botany 8th ed.  
4m. Book Co., NY. 1632pp

<u>Animal Name</u>	<u>Status</u>
<b>Birds:</b>	
<u>Botaurus lentiginosus</u> , American Bittern	State Special Concern
<u>Falco peregrinus</u> , Peregrine Falcon	State Endangered
** <u>Haliaeetus leucocephalus</u> , Bald Eagle	Federally & State Threatened
<u>Pandion haliaetus</u> , Osprey	State Special Concern
<b>Mammals:</b>	
** <u>Canis lupus</u> , Gray Wolf	Federally & State Threatened
** <u>Martes americana</u> , Marten	State Special Concern
<u>Microtus chrotorrhinus</u> , Rock Vole	State Special Concern
<u>Phenacomys intermedius</u> , Heather Vole	State Special Concern
<u>Rangifer tarandus</u> , Caribou	State Special Concern
<b>Herps:</b>	
<u>Chelydra serpentina</u> , Snapping Turtle	State Special Concern
<b>Butterflies:</b>	
<u>Clossiana freiija</u> , Freiija Fritillary	State Special Concern
<u>Clossiana frigga saga</u> , Frigga Fritillary	State Special Concern
<u>Epidemia dorcas dorcas</u> , Dorcas Copper	State Special Concern
<u>Erebia disa mancinus</u> , Disa Alpine	State Special Concern
<u>Erebia discoidalis discoidalis</u> , Red-disked Alpine	State Special Concern
<u>Oeneis jutta ascerta</u> , Jutta Arctic	State Special Concern
<u>Proclossiana eunomia dawsoni</u> , Bog Fritillary	State Special Concern
<b>Tiger Beetles:</b>	
<u>Cicindela denikei</u>	State Proposed Endangered

Birds make up the major faunal component of the Marble Lake Lookout RNA, and a high percentage of the sensitive species (i.e., rare and/or requiring special habitat). Scarlet tanager (Piranga olivacea) and black-throated blue warbler (Dendroica caerulescens) are examples. The scarlet tanager is being used on the Superior National Forest as an indicator of the mature/old-growth maple type. Black-throated blue warblers use the same habitat. Both birds may be found on the Marble Lake tract but the probability is low due to the small size of the tract. Better potential exists where the majority of the type occurs near Lake Superior. (Russ, 1987).

**\*\* Authorities for Nomenclature used in this Record:**

**Vertebrates:** R.C. Banks, R.W. McDiarmid, A.L. Gardner, 1987, Checklist of vertebrates of the U.S., The U.S. Territories, and Canada, Resources Publ. 166, Fish and Wildlife Service USDI. 88pp.

**Insects:** Sutherland, D.W.S., 1978, Common names of Insects and related organisms, Entomologic Soc. of Am. 132p

**(3) Geology**

The glacially-scoured bedrock that dominates the landscape of northeastern Minnesota forms a rugged, almost mountainous terrain compared with that of the rest of the State. Elevations in Minnesota reach their lowest level (183 meters, 602 feet above sea level on the shore of Lake Superior) and highest level (701 meters, 2,301 feet above sea level at Eagle Mountain in Cook County) in this region, all within a distance of only a few miles. Here, repeated glacial scour has exposed resistant Precambrian rocks, and water action from streamflow and wave action has continued the modification of the bedrock surface.

The northern hardwoods occur along the Highland Moraine, a glacial landform that runs parallel to the north shore of Lake Superior. This moraine, formed along the western flank of the Superior Lake Lobe, is composed of "a mantle of reddish brown, strongly acid, loamy till which is 20 feet or more in thickness" (Minnesota Soil Atlas: Misc. Report 177-1981). This moraine left a relatively flat topography in the Marble Lake Lookout RNA Area.

**(4) Soils**

The soils in the Marble Lake Lookout vicinity are classified as SSWL--sandy over sandy, well-drained, light-colored soils on the Two Harbors sheet of the Minnesota Soil Atlas. According to the Ecological Landtype Classification of the Superior National Forest, the area is classified as a Landtype UDLM - Upland Deep Medium Loamy Dry - UDLDM-14. A more detailed analysis of the soils within the RNA are presented below. These data were collected by DNR soil scientist Brian Hargrave as a part of the old-growth northern hardwoods study.

Marble Lake Lookout (SESE Sec. 32, T.56.N, R.10W.)

Particle Size: loamy skeletal (>35% coarse fragments)  
Texture: gravelly sandy loam  
Weighted Average Coarse Fragments Total Profile (%): 24  
Weighted Average Coarse Fragments Control Section (%): 42  
Depth to Rock: 60+ inches (152+ cm)  
Depth to Compacted Layer or Rock (inches): 60+ inches  
(152+ cm)  
Drainage: well-drained  
Depth of A Horizon: 3 inches (8 cm)

(5) Lands

All 120 acres (49 ha) of the Marble Lake Lookout RNA have been acquired by the United States. Each of the three 40-acre parcels contains a full 40 acres (16 ha). The following table describes the land acquisitions:

<u>Legal Description (all in T.56N.,R.10W.)</u>	<u>Date Acquired and Name of Seller</u>	<u>Reservations or Outstanding Rights</u>
Sec. 32 NESE (40 acres, 16.2 ha)	12/26/36, Austin Mendenhall. Acquired by purchase.	Third party reservation (outstanding right) to all minerals to Duluth and Iron Range Railroad.
Sec. 32 NWSE (39 acres, 15.8 ha)	10/24/35, Duluth and Iron Range Railroad sold 39 acres to U.S. There was a 1 acre exception for fire tower (see below).	Reserves all oils, natural gas, iron ore, ores, fossils, and mineral deposits to Duluth and Iron Range Railroad.
Sec. 32 NWSE (1 acre) (1 acre, 0.4 ha)	10/2/49, Acquired one acre fire tower site by exchange from State of Minnesota.	Third party reservation (outstanding right) of all oils, natural gas, iron ore, ores, fossils, and minerals to Duluth and Iron Range Railroad. State of Minnesota reserves water power rights. (This water power right should not be a future conflict to RNA. It is a standard type reservation for Minnesota.)
Sec. 32 SESE (40 acres, 16.2 ha)	10/24/35, Duluth and Iron Range Railroad sold 40 acres (16.2 ha) to U.S.	Reserves all oils, natural gas, iron ore, ores, fossils, and mineral deposits to Duluth and Iron Range Railroad.

(6) Cultural

Of primary interest is the historical value of preserving an example of the presettlement landscape--the northern hardwood community. Of added interest is the historical-cultural use of the area as a lookout. The Civilian Conservation Corp built a 100-foot fire tower, log cabin and log garage in the 1930's. Although the tower and buildings were dismantled in the 1960's, the foundations remain. The tower site is an officially recorded Cultural Resource Site of the Superior National Forest. The entire area has been inventoried for other cultural resources and only the tower site is of significance.

**h. IMPACTS AND  
POSSIBLE  
CONFLICTS**

The Superior National Forest Land Management Plan (LMP) contains Standards and Guidelines for Management Area 8.1 (M.A.). Upon establishment as the Marble Lake Lookout RNA, the area will be reclassified from M.A. 1.3 to 8.1 which is a classification for RNA. These Standards and Guidelines provide the basis for conflict resolution and are the framework for the following areas of concern:

- (1) Mineral Resources \* Most of northeastern Minnesota, including the Marble Lake Lookout RNA, has a high potential for future gold, silver, copper, nickel, iron, lead, and zinc; however, it is unlikely the RNA area will be mined.
- Within the RNA, all of the mineral rights are reserved by the Duluth and Iron Range Railroad. After establishment as an RNA, the U.S. should acquire the mineral rights by purchase or perhaps a donation could be arranged. The Forest Geologist is Stuart Behling located in Duluth, Minnesota.
- (2) Grazing This area has no grazing potential. There are no conflicts that would result when the RNA is withdrawn from grazing use.
- (3) Timber One hundred twenty acres (49 ha) of commercial forest land will be withdrawn from timber-producing land base. The total volume of timber products on this area is 600 Mbf (3,148 cubic meters).
- (4) Watershed Values There is no open water within the RNA. The nearest open water is Kane Lake located 1/2 mile (0.8 km) northeast and Marble Lake located 1 mile (1.6 km) north of the area. Drainage of the area would flow south into Gooseberry River and then eastward to Lake Superior for 18 miles (29 km). The State of Minnesota reserves the water power rights on the one-acre (0.4 ha) parcel of the old lookout site in NWSE of Section 32. This should be no future conflict.
- (5) Recreation Values \*\* There are no recreational developments in the RNA. Dispersal use, like hiking, does occur mainly in the autumn color season. Hunting occurs in the fall grouse and deer season. There are currently no off-road vehicle or horse travel conflicts. No "Notice of Closure" will be made for the area as currently there are no conflicts. If conflicts such as camping, man-made fires, horses, and off-road vehicle use do occur in the future, then a closure order can be established. Foot travel which is compatible with research and education needs will be allowed

\* Based on conversations with Stuart Behling, Forest Geologist.

\*\* Based on discussions with David P. Tucci, Recreation staff assistant, SNF.

(6) Wildlife and  
Plant Values

\* There are three animals on the Department of Interior list of endangered and threatened wildlife that occur on the Superior National Forest. These are:

- (1) Bald Eagle (Haliaeetus leucocephalus), threatened;
- (2) Peregrine Falcon (Falco peregrinus), endangered; and
- (3) Gray Wolf (Canis lupus), threatened.

There are no bald eagle nests in the RNA. The nearest nest is 16 miles (26 km) northwest of the RNA. There are no peregrine falcons in the area. The falcons are being reintroduced on the cliffs of Lake Superior located 40 miles (64 km) northeast of the RNA. The gray wolf does occasionally travel through the RNA. Through the Forest Plan, the Forest is guided by having no more than 0.9 mile (1.4 km) of road per square mile (259 ha) of land in the vicinity of the RNA. This guide is made for the concern of the wolf.

There are no Federally-designated threatened or endangered species of plants in the RNA. Two candidate sensitive plant species are found in the area. These are the Broad-leaved Spring Beauty and the White Baneberry. (Minnesota DNR, 1986).

(7) Wilderness, Wild  
and Scenic River  
or National  
Recreation Area  
Values

No part of the RNA has been proposed for Wilderness, Wild and Scenic River or National Recreation Areas. Establishment of the RNA would not impact the purposes of any Congressionally-designated areas.

(8) Transportation  
Plans

Designation as an RNA would not adversely affect the Forest Transportation Plan. Although FR-836 has been used for many years for access to the lookout site, there is no existing, formal right-of-way across the SWNE of Section 32 which is privately owned by Jan L. Brod of Mundelein, Illinois. The Forest has started to acquire right-of-way across this parcel. Fr-836 is on the Forest Transportation Plan as a maintenance level 2 which means rare maintenance. FR-836 is a woods road open to traffic. County Road 203 (FR-107) is under jurisdiction of Lake County and it is a narrow, 2-lane gravel road.

\* Edward L. Lindquist, Forest Biologist, assisted in the preparation of this section.

**i. MANAGEMENT PLAN**

The management objectives of the Marble Lake Lookout Research Natural Area are:

- (1) To provide an area for scientific study, research, and observation in old-growth northern hardwoods at its northern and westernmost range.
- (2) Preserve and protect two candidate sensitive plant species.
- (3) Enhance diversity by maintaining old-growth northern hardwoods.
- (4) Preserve historical lookout site.
- (5) Provide outdoor recreational experience of a type which is complimentary to the previous 4 objectives per FSM 4063.3. This will not threaten research or educational use of the RNA.

The management of the RNA will be guided by these 5 objectives and the Forest-wide Standards and Guidelines and the Standards and Guidelines of Management Area 8.1 of the Forest Plan. (USDA-Forest Service, 1986). In addition, the following guides can be accomplished for management of the RNA:

1. The exterior boundary will be marked with metal sign #40-4, size 7"x10" (18cm x 25cm), black wording on yellow background stating: "Boundary, Research Natural Area." These will be nailed at eye level to trees along the boundary at about 200 foot spacing. Boundary trees can also be marked with white paint.
2. A 4-car parking area and turnaround will be provided on the north boundary of the RNA where FR-836 enters the RNA. The existing road then south of the future parking area will be obliterated and made into a foot trail to the lookout site.
3. FR-836 will be kept as a low standard "woods road" and maintained only for safety and access during snow-free periods.

(1) Vegetation Management

No direct management is needed to maintain ecological conditions. There is no need for prescribed fire as a management tool. There is no need for the use of herbicides to manage vegetation.

(2) Fences

There is no need for fences to control animals in the RNA.

(3) Law Enforcement

No special enforcement is currently needed. If future use of the area becomes a detriment to the objectives of the area, then Forest Supervisor's or Regional Forester's closure orders may be needed.

**j. ADMINISTRATION  
RECORDS AND  
PROTECTION**

The Administrator and Protector of this area is:

District Ranger  
USDA-Forest Service  
Isabella, Minnesota

The Research Coordinator is:

Director  
North Central Forest Experiment Station  
1992 Folwell Ave.  
St. Paul, MN 55108

Administrative records and copies of research data and publications are deposited at the North Central Forest Experiment Station, and the Isabella Ranger District Office.

**k. REFERENCES**

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APPENDIX

<u>Content</u>	<u>Section</u>
Excerpts of Forest Plan (USDA-Forest Service, 1986) (USDA-Forest Service, 1977)	A
RNA Committee Members for Superior National Forest	B
Map of Range of Upper Great Lakes Hardwood Forest Type	C
Ecological Landtype Description	D

Appendix A

Excerpts of Forest Plan

- The applicant must comply with all State natural resource permit requirements.

MINERAL ACQUISITION - Encourage the donation of minerals or mineral interests to either the Federal or State Governments.

Purchase minerals or mineral interests subject to appropriate funding and discount for fraudulent patenting, if that be the case.

#### 3400 FOREST PEST MANAGEMENT

INTEGRATED PEST MANAGEMENT - Integrated pest management is a systematic decision making process and the resultant management actions that derive from the detection and identification of a pest, evaluation of host and pest condition, values at risk, environmental constraints, and alternatives available for attaining management objectives.

Integrated pest management methods will emphasize techniques that include selection of rotation ages, species mix, stand densities, suitable sites, and stand acreages that are least conducive to pest outbreaks. Harvesting and timber stand improvement projects will be conducted with care to prevent injury to residual trees that will form the next crop. The major pests on the Forest are native to the area and will always be present to some population level. Periodic outbreaks are expected and cannot be avoided over large areas where harvesting is not part of management plans. When large outbreaks occur, an analysis of the outbreak will be conducted, alternatives to control the outbreak will be developed, and the decision will be implemented.

#### 4000 RESEARCH

A memorandum of understanding with Minnesota Department of Natural Resources, Superior and Chippewa National Forest, National Forest Research, U.S. Department of Interior, the Nature Conservancy, and other interested parties will be developed to establish procedures for identifying, nominating, and selecting research natural areas.

Research natural areas should represent unmodified conditions. Forest, shrubland, grassland, alpine, geologic, and aquatic situations that have special or unique characteristics of scientific educational interest, such as outliers of grass or forest types, unique aquatic associations, clusters of endangered or threatened species, or unusual combinations of flora and fauna also may be set aside. Animal life should be present in representative conditions.

The following areas, submitted by the National Heritage Program of Minnesota Department of Natural Resources as having potential as Research Natural Areas, will be protected until the procedures are established:

<u>Name</u>	<u>Location</u>	<u>Size</u>
Marble Lake Lookout Northern Hardwoods	SE $\frac{1}{4}$ , Section 32, T56N, R10W	80 acres
Lake Agnes Northern Hardwoods	W $\frac{1}{2}$ SW $\frac{1}{4}$ , Section 11, T60N, R3W	80 acres
Bogus Lake Northern Hardwoods	SWNW, Section 13 T62N, R2E	120 acres

### 5100 FIRE MANAGEMENT

#### SUPPRESSION

Annual operating plans required in cooperative agreement with Minnesota Department of Natural Resources will define detection and suppression tactics and techniques to be followed on National Forest lands within State protection boundaries.

Fires will be controlled within the management prescription for the area. Operations under permit will be required to provide adequate fire protection. Protection of lives and property will have priority during all suppression efforts. Nest trees for bald eagle will be protected when possible. *Forest Plan prohibits use of heavy equipment to control fires in natural areas.*

*DR Niemi  
Deven Nelson  
(R-5) 11 Aug 58*

#### PRESCRIBED FIRE

All prescribed fires will have an approved plan. Examples of areas addressed in this plan include: Control lines, weather restrictions, control forces, air and water quality, and seasonal restrictions. Fire history and ecological adaptations to fire will be considered in developing fire management plans.

During prescribed fires, special consideration will be given to smoke-sensitive areas that lie downwind of the burn. Contingency plans will be developed to assure impacts are minimized and legal requirements are met. Examples of sensitive areas are:

- Major highways (i.e. Hwys. 53, 1, 169, 61)
- Hospitals, rest homes
- Airfields
- Nest trees for bald eagles

Residents within one-quarter mile of prescribed fires will be notified of the location and time of the ignition. Preference will be given to times when wind direction is away from neighboring residences and sensitive areas.

Prescribed fire should be accomplished in the absence of air inversions. To assure that smoke is dispersed before the onset of stable nighttime conditions, it should generally be completed by 6:00 pm, although safety and control needs may necessitate a later completion time.



#### MANAGEMENT AREA 8.1

**PURPOSE** - This area will emphasize land and resource conditions that will provide Research Natural Areas, which are areas with unique forest, aquatic, or geologic resources, for nonmanipulative research, observation, and study of undisturbed ecosystems.

**DESIRED CONDITION OF THE LAND** - Land and resource conditions that will provide for maintenance of undisturbed ecosystems and that will provide habitat for downy woodpeckers, red squirrels, and other native species requiring older forests.

Natural forces and site conditions will determine size, shape, and composition of forest stands. These areas have unique land, water, or rock formations or vegetative types that are worth studying in an undisturbed state.

The area may contain trails, one lane roads surfaced with soil or aggregate, and small structures for gathering data, such as water monitoring stations, rain gauges, and instrument shelters.

**TYPICAL MANAGEMENT PRACTICES** - Management practices that would change the natural surroundings or interfere with natural processes are not appropriate.

TABLE 4-22. Scheduled Management Practices for Management Area 8.1

Total Area: 2,162 Acres	National Forest Land: 2,083 Acres	Federal Ownership: 96%
Land Suitable For Timber Production: 0 Acres (0%)		
Land Unsuitable For Timber Production: 2,083 Acres (100%)		
Management Emphasis:		
Hardwood Fiber - 0 Acres	Hardwood Sawtimber - 0 Acres	
Softwood Fiber - 0 Acres	Softwood Sawtimber - 0 Acres	
Ruffed Grouse - 0 Acres	Protection - 2083 Acres	

SCHEDULED MANAGEMENT PRACTICES

Management Practices PC = Productivity Class	Unit of Measure	Planned 1986 to 1995			Projected 1996 to 2005
		Regular Program	BWCA Program	Total	

No Activities Scheduled

STANDARDS AND GUIDELINES2100 ENVIRONMENTAL MANAGEMENT

AIR QUALITY - Areas where redesignation to Class I is necessary to protect unique Forest resources will be recommended to the Regional Forester.

PESTICIDE USE - Pest control is generally not appropriate to this management area. Pesticides will be used only to prevent the loss of significant aspects of the area or to prevent significant resource losses on adjacent public or private lands.

2200 RANGE MANAGEMENT

Range allotments and forage management are not provided.

2300 RECREATION MANAGEMENT

The management areas indicated on the map may be larger than the officially designated boundaries of the Research Natural Areas. Established Research Natural Areas are:

Schroeder Hardwood Research Natural Area - Size: 360 acres. Significance: 40 acres of mature virgin sugar maple; northern-most natural community. An additional 320 acres surrounds this 40 acres.

Keeley Creek Research Natural Area and National Natural Landmark The Research Natural Area encompasses 640 acres. The remainder of the area (640 acres) is a National Natural Landmark. Significance: Mature jackpine and black spruce, two streams and a lake; similar to many areas in the northern half of the Forest. Adjacent managed lands provide a contrast to the RNA and increase its research value. Adjacent lands should be allocated to intensive Forest management in order to retain a high degree of contrast.

Lac LaCroix Research Natural Area and National Natural Landmark - This area is within the BWCA and is an inclusion in Management Area 5.2. Size: 973 acres. Significance: Virgin, old aged red and white pine. The Shipstead-Newton-Nolan (SNN) Act applies to most of the area. Designated campsites are not permitted.

Opportunities for additional research natural areas are displayed in Section 4000 of the Forest-wide Standards and Guidelines.

CANDIDATES FOR NATIONAL NATURAL LANDMARKS - Candidate areas for National Natural Landmarks include Bass and Dry Lakes and Eagle Mountain.

RECREATION OPPORTUNITY CLASS - Recreation use of these areas is de-emphasized. The existing recreation opportunity class will be maintained. The recreation opportunity class is semiprimitive motorized for the Schroeder Hardwood Research Natural Area and Keeley Creek Research Natural Area. The recreation opportunity class is semiprimitive nonmotorized for the Lac LaCroix Research Natural Area.

DEVELOPED SITES - Developed recreation sites are not provided.

DISPERSED SITES - Dispersed recreation sites are generally not appropriate to the purpose of these areas.

Only day hiking trails are appropriate and only if needed to accomplish research activities or to protect the area by concentrating human use. Where possible, trails will avoid the area.

Trail density will not normally exceed 1.5 miles per 1000 acres. Trails will generally be maintained at Maintenance Level 1 or 2.

VISITOR MANAGEMENT - Picnicking, camping, collecting plants, gathering nuts and herbs, picking berries, hunting, fishing, trapping, and other public uses which contribute to the modification or degradation of a research area are unsuitable.

VISUAL QUALITY OBJECTIVE (VQO) - Management activities will maintain a VQO of preservation.

CULTURAL RESOURCES - Each cultural resource site will be evaluated for National Register significance. After the evaluation is completed a decision will be made as to the disposition of the site.

On-site cultural resource interpretation is not provided.

#### 2400 TIMBER MANAGEMENT

Timber management activities may occur adjacent to the officially designated boundaries of Research Natural Areas.

#### 2500 WATERSHED

Modification of water levels is not permitted.

Control measures to mitigate erosion will be commensurate with the soil characteristics, expected use, and management objectives of the area.

#### 2600 WILDLIFE AND FISHERIES MANAGEMENT

Vegetative manipulation for wildlife and fish habitat must be consistent with the research objectives for the area.

#### 2700 LAND USES

Special uses are not permitted.

#### 2800 MINERALS

Gravel pits are not permitted.

Exploration activities that do not disturb the surface are permitted.

USDA consent to plans for mineral extraction will be determined individually, based on the relative value of the surface/subsurface resources and on consistency with the standards and guidelines for this management area.

#### 4000 RESEARCH

Research may be conducted in <sup>Compassionally designated</sup> ~~these~~ areas with approval of the Regional Forester, or in non-Compassionally designated areas with approval of the Director of the North Central Forest Experiment Station.

See DG  
from Devon  
Nelson dated  
11 Aug 88 and  
FSM 7063

#### 5100 FIRE MANAGEMENT

**SUPPRESSION** - Fires endangering natural areas will be extinguished as quickly as possible. Fires within the area that are destroying the uniqueness of the area, threatening persons or property, or that do not meet research goals will be suppressed.

Use of heavy equipment for fire suppression is not permitted. Snags, fire scarred trees, or other damage resulting from the fire will not be cleaned up nor will any fire hazard reduction take place.

**PRESCRIBED FIRE** - Fires will be managed under established burning prescriptions that are designed to maintain natural conditions.

#### 5400 LAND OWNERSHIP ADJUSTMENT

This management area has the following priorities for land adjustment:

- a) Acquisition - Priority 1
- b) Exchange - None Permitted
- c) Donation - Priority 1

Additional guidelines are provided in Section 5400 of the Forest-wide Standards and Guidelines.

#### 7300 BUILDINGS AND STRUCTURES

Buildings, structures, and other improvements are provided only if needed for research purposes. Buildings, structures or other improvements are not permitted in the Lac LaCroix Research Natural Area.

#### 7400 PUBLIC HEALTH AND POLLUTION CONTROL FACILITIES

Drinking water may be provided. If provided, it must meet Federal and State regulations and be protected to ensure quality.

Solid waste disposal sites are not provided in these areas.

#### 7500 WATER STORAGE AND TRANSMISSION

Dams and impoundments are not permitted.

7700 TRANSPORTATION SYSTEM

Roads are not appropriate in the Lac LaCroix Research Natural Area.

Only local roads are permitted in the other areas and only if needed to fulfill research needs. Roads will be soil or aggregate surface, one lane, and closed to general public. Road density will be less than one mile per square mile. Roads will be maintained at level 2.

Appendix B

RNA Committee Members for Superior National Forest

RNA Committee for Superior National Forest

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Duluth, MN 55802-1679

# THE NATURE CONSERVANCY



1313 5th Street SE / Minneapolis, Minnesota 55414-1524 / (612) 379-2134

MINNESOTA CHAPTER

January 6, 1987

Clay Beal  
Superior National Forest  
515 West 1st Street  
P.O. Box 338  
Duluth, MN 55801

Dear Clay,

My compliments to you and your staff for the good Research Natural Areas Evaluation meetings held Nov. 10 and 11. I was impressed with the open discussion, materials available on the areas and the enthusiasm of your staff.

I will look forward to a successful Research National Area system on the Superior National Forest.

Sincerely,

Margaret A. Kohring  
Executive Director

MAK:sf

cc: Norman Kohler  
John Humke

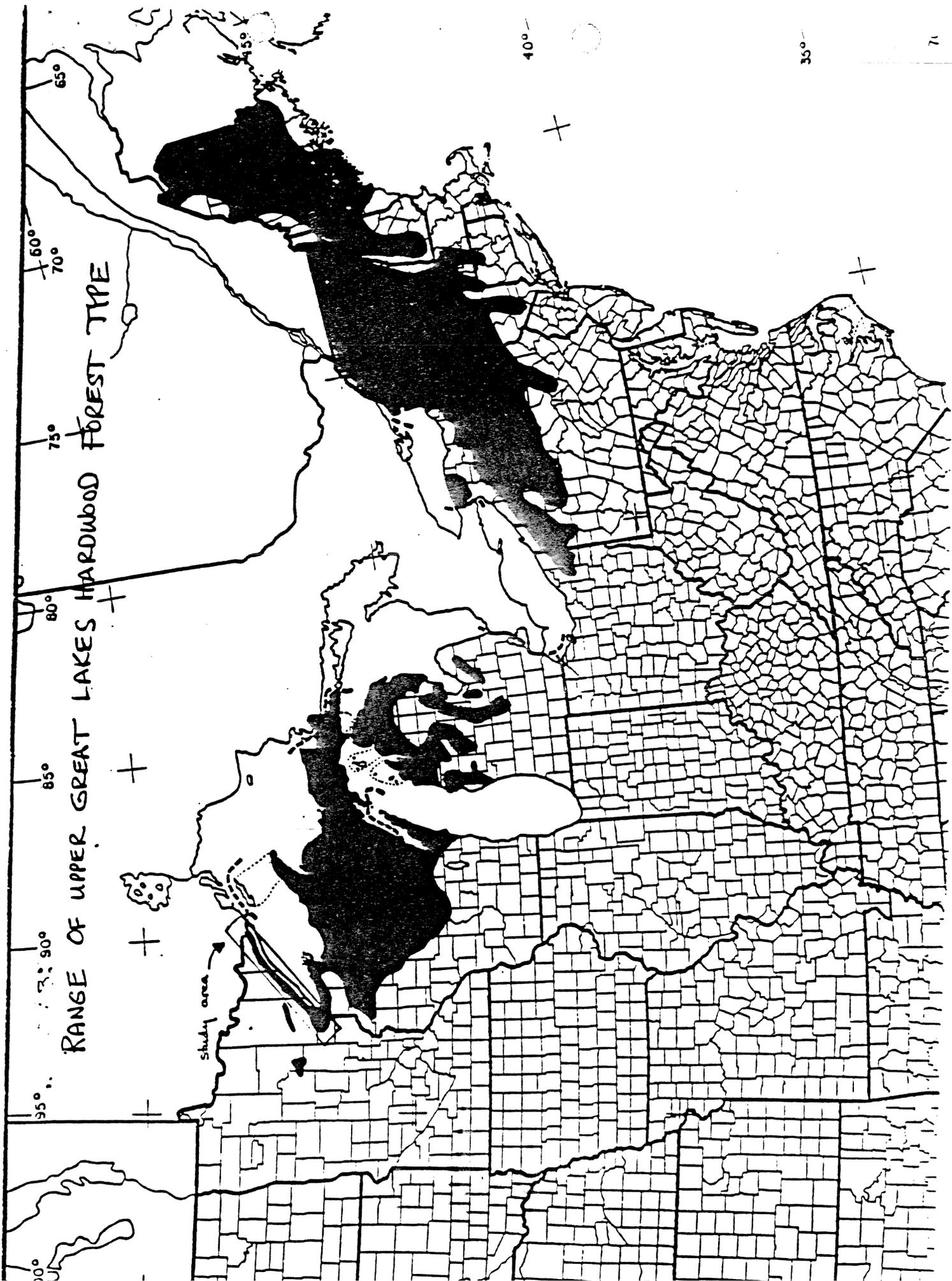


National Office 1800 North Kent Street / Arlington, Virginia 22209

Appendix C

Map of Range of Upper Great Lakes Hardwood Forest Type

RANGE OF UPPER GREAT LAKES HARDWOOD FOREST TYPE



Appendix D

Ecological Landtype Description

ECOLOGICAL LANDTYPE  
Upland Deep Medium Loamy Dry-UDLDM-14

Background

This Ecological Landtype (ELT) is widespread in the Forest and occupies about 11 percent of the land. Landtype UDLDM is comprised of Landtype Phase (LTP) 10, 17, 29, 31, 55, and 65. It is classified as nonriparian and according to wetland classification is Upland.

Terrain and Geology

Landtype UDLDM occurs on convex slopes that have gradients that range from 6 to 35 percent and is associated with Rainy and Superior ground moraines and recessional moraines. Landscape positions include ridges and side slopes. Depth to bedrock is more than 5 feet. The local relief ranges from 5 to 30 feet.

Soil

The population of mineral soils associated with UDLDM has developed in deep, well drained, yellowish brown and redish brown, sandy loam, tills with a surface texture ranging from fine sandy loam to silt loam. The depth to a water table and bedrock are more than 5 feet. These soils are classified as Typic Dystrochrepts. These soils commonly have fine textures at the surface and somewhat coarser textures in the subsoil. Typically less than 5 percent of the ground surface is occupied by boulders. In the soil the content of gravel and cobbles is about 10 percent and ranges to 35 percent. In some locations there is a continuous pan that detains water long enough to create temporarily saturated soil in the upper 30 inches.

Water

This ELT yields water to underground water systems. It also yields water to lower slope positions occupied by LLM, LLW, and LPN through seeps, springs, and intermittent streams. There is no surface runoff or ponding while the ground is free of frost.

Vegetation

Landtype UDLDM supports plant communities that have relatively high requirements for nutrients and moisture. Overstory species include aspen, paper birch, pines, spruces, and fir. Less frequently occurring trees are sugar maple, red maple, elm, cedar and yellow birch. Common shrubs are mountain maple and hazel and of less common are gray dogwood, thimbleberry, mountain ash and elderberry.

Forbs are comprised of broadleaves, but grasses are common in some openings. The potential structure and density are:

Watershed: Landtype UDLDLDM yields water to adjacent lowlands through seeps and springs and to ground water systems. The infiltration and permeability rates are moderate and there is a moderate water holding capacity. There is a limited potential for an aquifer.

Wildlife: The diversity is high as a result of the variety in plants and the well developed density and structure common to plant communities. Landtype UDLDLDM has a good potential for managed food plots. It is unsuited for developed wildlife ponds.