

MAF: H-M N.F.

AIR PHOTOS R13:40-42 (6-19-78)  
R13:91-93 "

BEAR SWAMP  
CANDIDATE RESEARCH NATURAL AREA

HURON-MANISTEE NATIONAL FOREST

421 S. MITCHELL ST.

CADILLAC, MI 49601

SUBMITTED BY:

MICHIGAN NATURAL FEATURES INVENTORY

DENNIS ALBERT

ASSOCIATE ECOLOGIST

14 NOVEMBER 1986

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Dennis Albert  
13 November 1986

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## A. Background

### 1. Historical setting

General Land Office Surveyors (General Land Office, 1838) described several vegetation communities within the proposed RNA, including Rich Conifer Swamp (Michigan Natural Features Inventory, 1986), Southern Hardwood Swamp (more aptly called merely Hardwood Swamp in this case), Mesic Northern Forest, and Dry Northern Forest. The southern portion of the swamp was conifer-dominated (Rich Conifer Swamp), while the northern portion was hardwood-dominated. Typical conifers were hemlock, northern white cedar, balsam fir, tamarack, and white pine. Typical hardwood swamp species were elm, soft maple, and black ash. To the west of the swamp hemlock, white pine, and beech dominated the Mesic Northern Forest. North of the mesic forest, along the presently abandoned railroad line, burnt over Dry Northern Forest was dominated by jack pine.

The 1938 aerial photos (Appendix 1) indicate that both the Mesic Northern Forest and the Dry Northern Forest had been clearcut and still remained relatively unforested. By this time hemlock, white pine, and northern white cedar had been removed from the swamps in selective cuts, as indicated by the remains of large, highly decomposed stumps.

The 1978 aerial photos (Appendix 2) indicate partial reforestation, but also flooded portions of swamp forest due to drainage changes caused by the railroad line and logging roads. Most of the Mesic Northern Forest and Dry Northern Forest remained open on the 1978 photos.

Map 1 shows present vegetation in broad terms. The field survey conducted during the summer of 1986 indicated that most of the land previously dominated by Mesic Northern Forest has been planted to jack pine or red pine plantation

or it has regenerated to graminoid dominated wet swales and white and black oak-dominated small dry ridges. Some of the swales, presently dominated by Spartina pectinata (slough grass), have well developed muck soils, indicating a long history of poor drainage and dominance by wetland vegetation. Further investigation will be necessary to determine whether the vegetation was herbaceous or swamp forest.

## 2. Description of physical characteristics

The tract is located within the Newaygo District of the Northern Lower Peninsula (Albert, Denton, and Barnes, 1986), a district characterized by broad outwash channels. The sandy soils and flat topography of most of the tract agree with the interpretation of the area as outwash. Fine-textured ground moraine is present directly to the south of the tract and may underly the sandy outwash sands and account for the large area of swamp and wet swales.

## B. Justification and features

### 1. Geographical significance

The plant communities found within the RNA are typical of the geographic region. The RNA location is north of the tension zone and contains species typical of a northern climate.

### 2. Importance to RNA program objectives

With the exception of the hardwood swamp at the northern edge of the tract, small portions of the Rich Conifer Swamp, and possibly the Spartina pectinata dominated wet meadow, the tract has undergone major changes due to human disturbance which make it unsuitable for consideration as an RNA. The portions of the tract with high quality communities should probably be considered for some alternative form of protection, such as protection as "special interest" areas.

### 3. Impact of alternative designation

Probably little, since disturbance levels have been high in the past.

### 4. Historical activity/interest in the area

No knowledge of historic interest in the area.

C. Significant elements (natural features)

1. Natural communities

- a. Southern Hardwood Swamp
- b. Wet Meadow/Coastal Plain Marsh
- c. Rich Conifer Swamp (small portions)

2. Special Plants

- a. Juncus vasevi (species of margin of wetlands with fluctuating water levels)
- b. Juncus brachycarpus (coastal plain species)

3. Special animals

None noted.

4. Geologic features

None of special significance.

5. Aquatic features

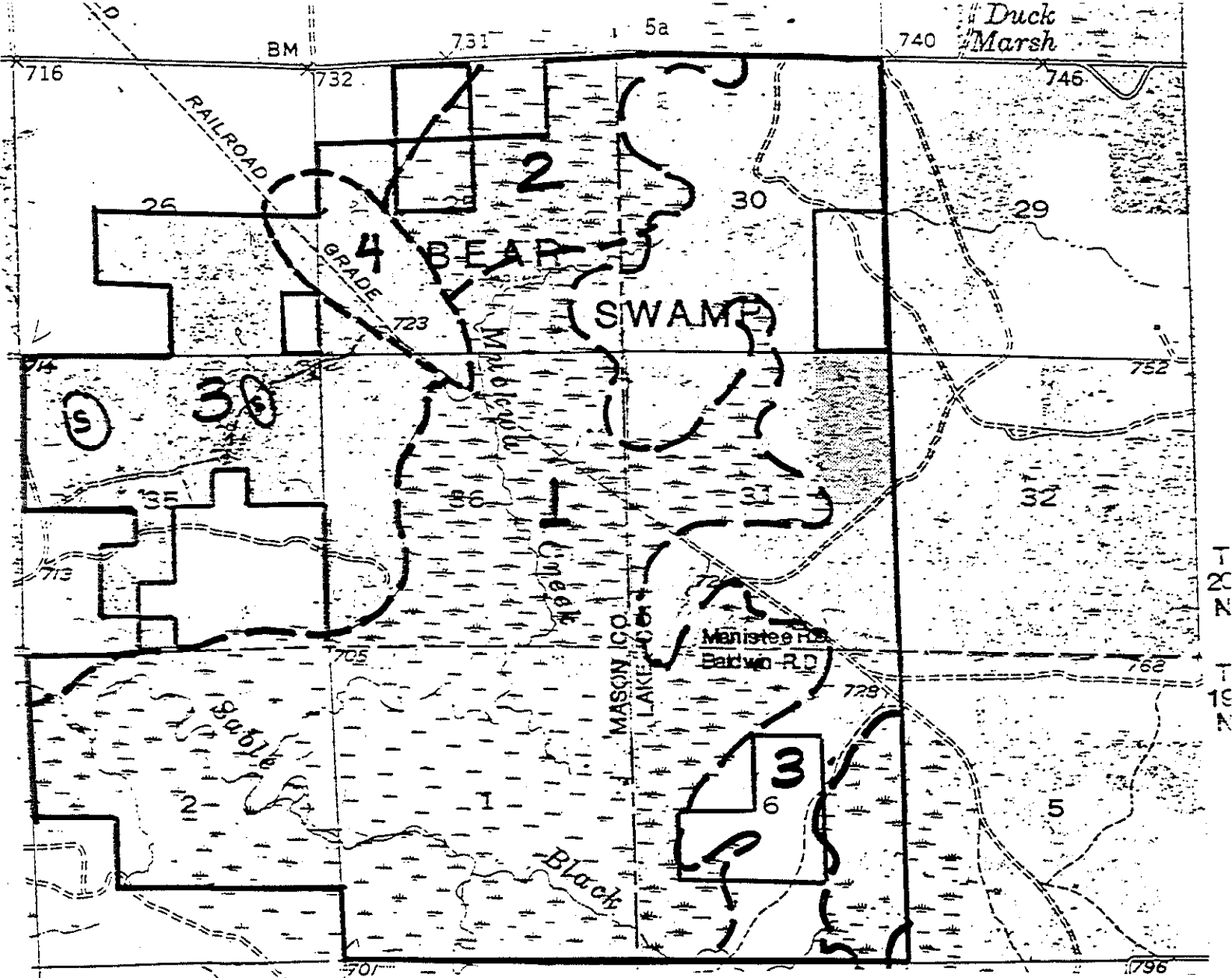
None noted.

6. Other special features

None noted.

#### D. Area of natural communities

Map 1 shows the present natural communities. This map is based on 1978 aerial photos and field reconnaissance. The large size of the tract and the high levels of disturbance require that the mapping be quite general, except in special cases such as the locations of wet swales containing, or possibly containing, coastal plain species.

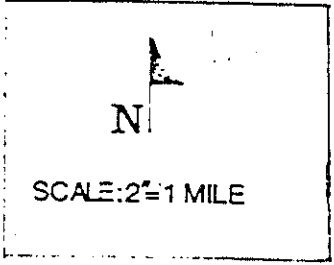


MAP KEY

- 1= RICH CONIFER SWAMP (HARDWOOD CONIFER DOMINATED ALONG CREEKS IN MANY PLACES. ALSO FLOODING OF SWAMP COMMON DUE TO BEAVER DAMS AND LOGGING ROADS)
- 2= SOUTHERN HARDWOOD SWAMP
- 3= HEAVILY CUT MESIC NORTHERN HARDWOOD (INCLUDES RED PINE AND JACK PINE PLANTATION). LOCALLY SPARTINA PECTINATA DOMINATED SWALES.
- 4= DRY NORTHERN FOREST (RECENTLY CUT)

Mason/Lake Co.

Map 1. Plant community map. Note: units broadly defined due to heavy disturbance and subtle mosaic of differing adjacent drainage classes.



#### E. Climatic conditions

The climate is intermediate in severity between the harsh High Plains District to the east and the lake-moderated Manistee District to the west (Albert, Denton, Barnes, 1986). There is a good chance of late spring frosts.

## F. Flora

## 1. Plant communities

## a. Rich Conifer Swamp

Thuja occidentalis, Larix laricina, and Tsuga canadensis dominant.

## b. Southern Hardwood Swamp

Acer saccharinum, Fraxinus nigra, Fraxinus pensylvanica, Ulmus Americana dominant.

## c. Dry Northern Forest

Pinus banksiana dominant.

## d. Mesic Northern Forest

Tsuga canadensis, Pinus strobus, Fagus grandifolia dominant.

## e. Wet Meadow/Wet Prairie/Coastal Plain Marsh

Unusual wet swales. More research necessary.

Spartina pectinata dominant.

## 2. Natural quality and condition

The Southern Hardwood Forest is large enough to warrant protection.

The Wet Meadow needs further study. It may be a highly significant community.

## 3. Methods

Aerial photos were consulted before doing field reconnaissance. A route was chosen to maximize coverage of different plant community types. Grading was done by comparison to other natural quality samples of the same community types. A species list was produced (Appendix 3), combining in-field identification and collection and subsequent identification of less common plant species.

G. Fauna

No survey was done on the fauna.

H. Wildlife and plant values

1. Habitat/management

Not included in report.

2. Population trends

Not applicable.

## I. Management needs

Present management is adequate, especially for the majority of the tract which is highly degraded. The Southern Hardwood Swamp could be degraded by flooding, especially if high water levels combine with the negative effects of the poorly culverted railroad bed to the south.

The wet swales containing Spartina have been partially damaged by ORV's and need protection.

J. Administrative records

The Michigan Natural Features Inventory will maintain information on the Southern Hardwood Swamp and the Spartina swales.

## K. References

### 1. Literature cited

Albert, D. A., S. R. Denton, and B. V. Barnes. 1986. Regional Landscape Ecosystems of Michigan. School of Natural Resources, University of Michigan.

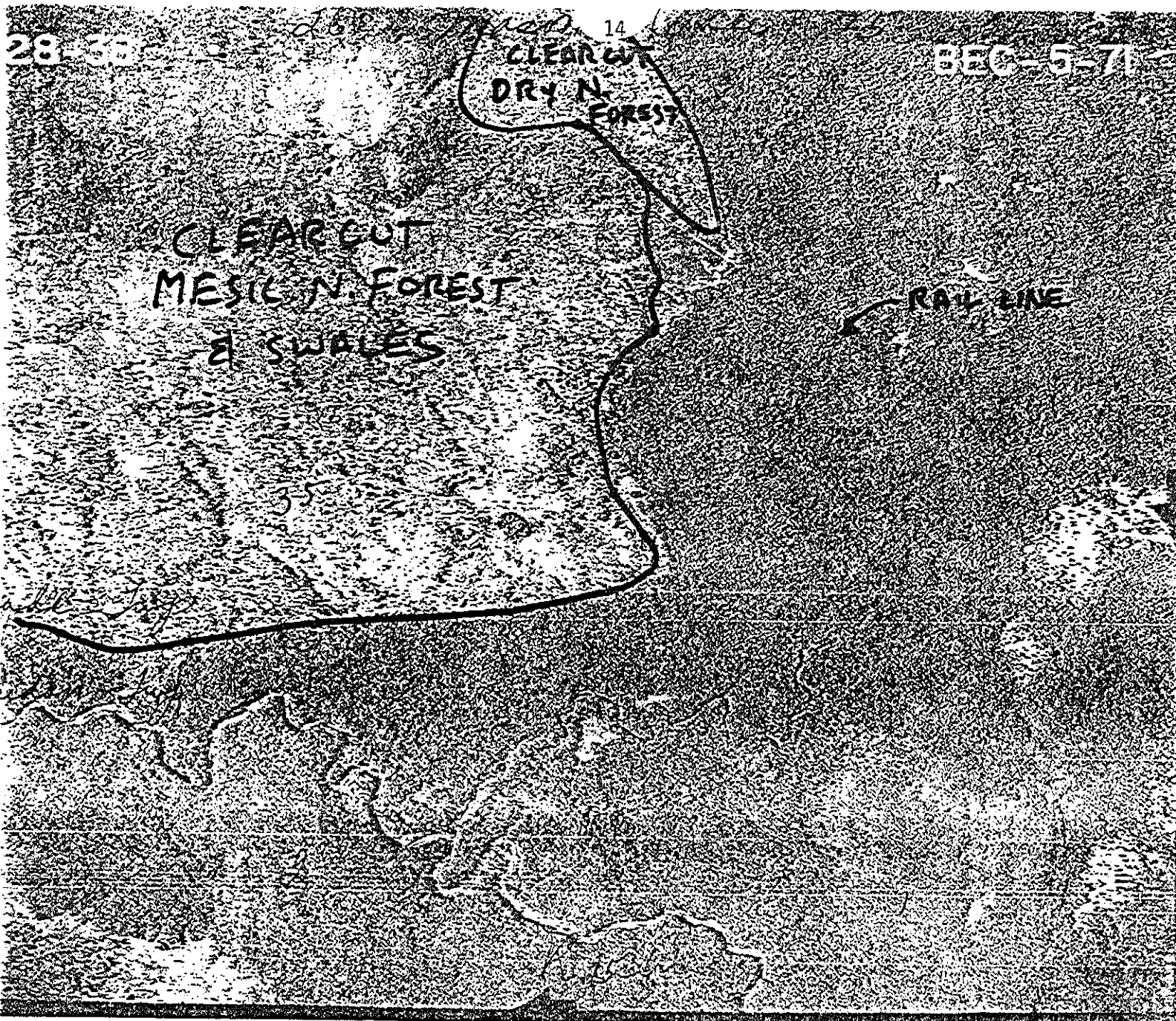
Michigan Natural Features Inventory. 1986. Draft description of Michigan natural community types. (Unpublished manuscript, revised 6 March 1986).

U. S. General Land Office. 1838. Field notes 59 and 60.

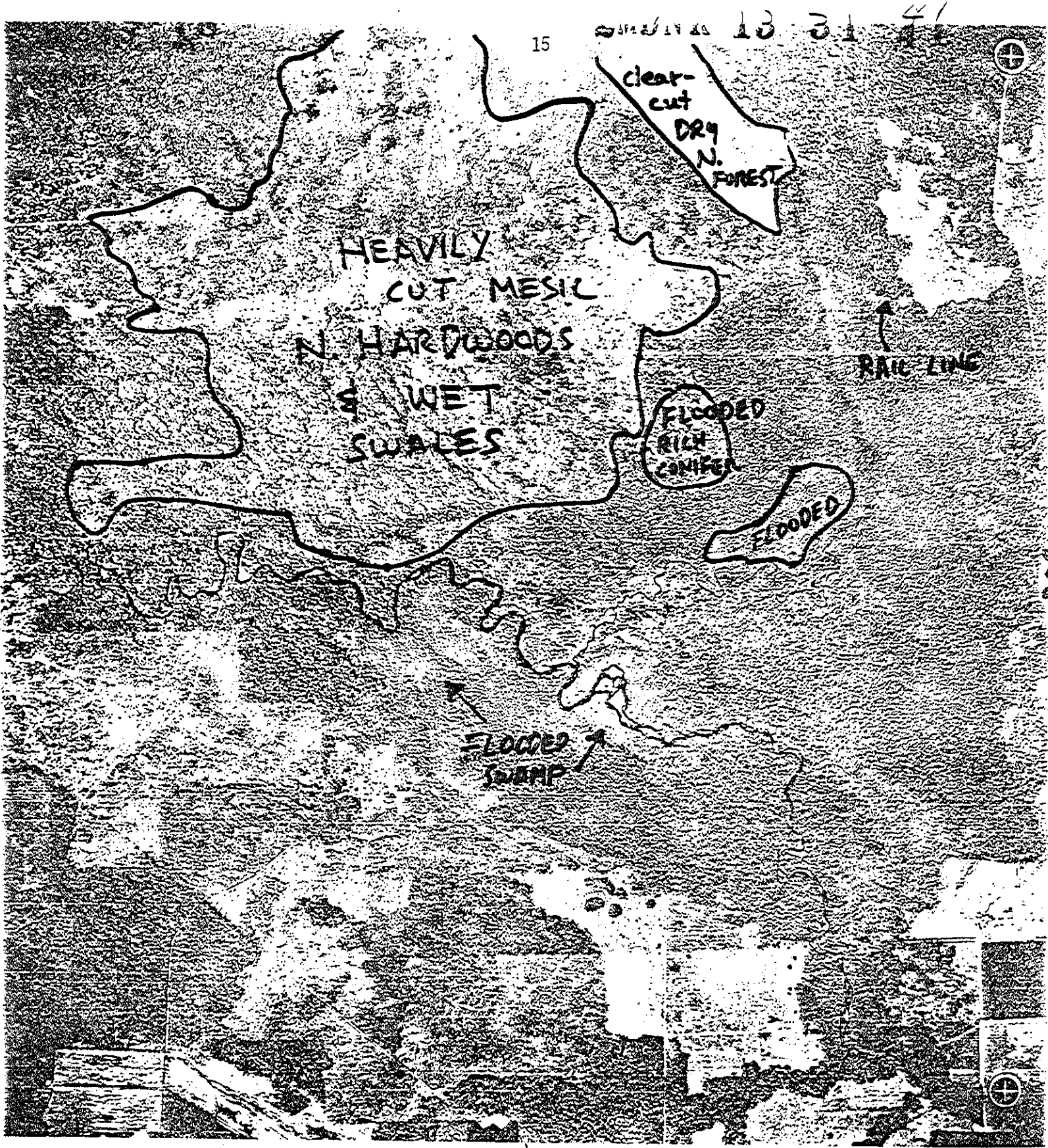
### 2. Additional references

L. Appendices

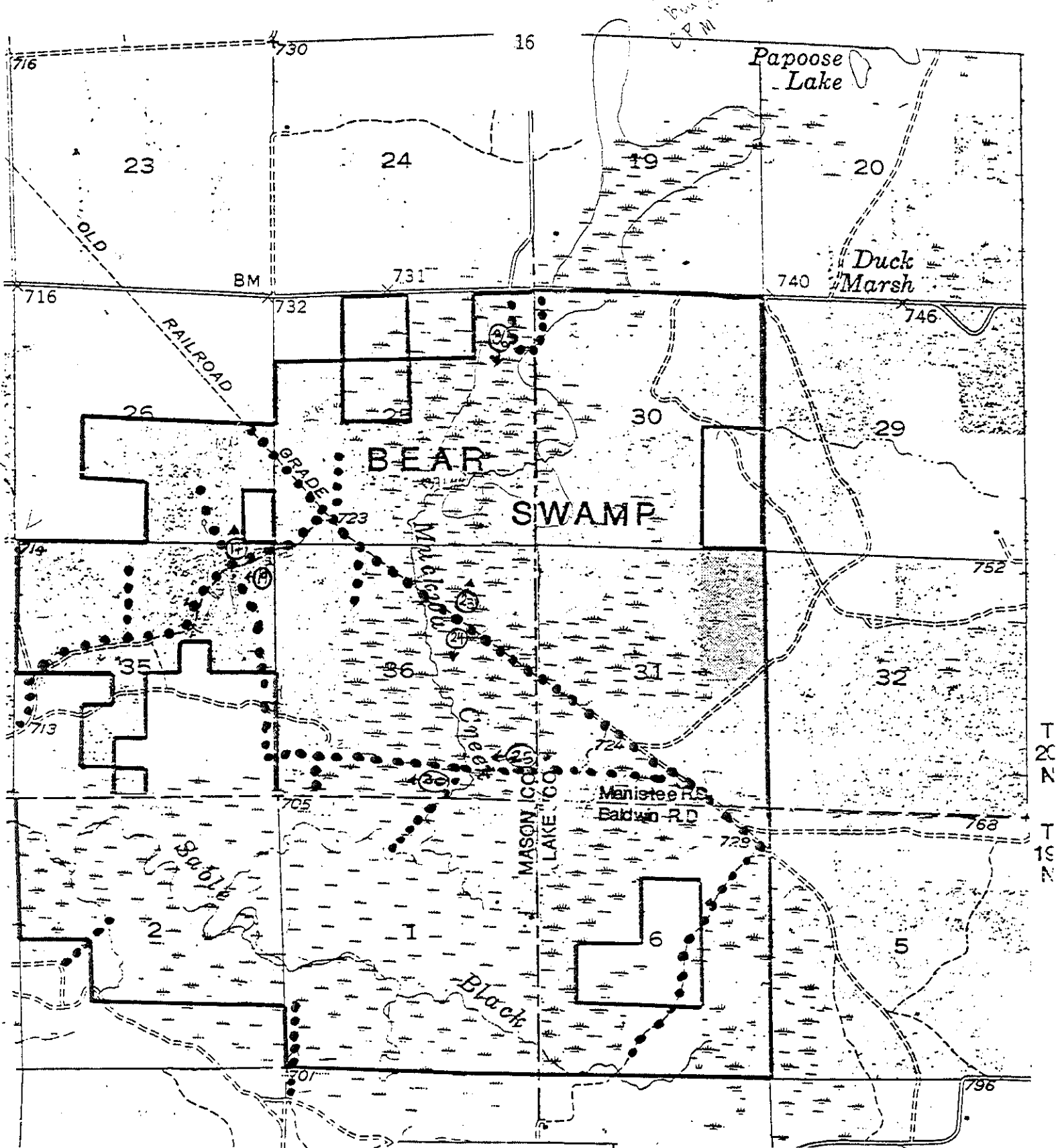
1. 1938 aerial photo showing vegetation communities and disturbance.
2. 1978 aerial photo showing vegetation communities and disturbance.
3. Plant lists for each plant community surveyed.



Appendix 1. 1938 aerial photo showing disturbance to vegetation.



Appendix 2. 1978 aerial photo showing vegetation communities with disturbance.



Appendix 3. Photo points and route taken on survey of Bear Swamp RNA.



SCALE: 2" = 1 MILE

MAP KEY

●●● Route taken

⊙ Photo Point

R15 W R 14 W

Manistee/Baldwin R.D.

T 20 N  
T 19 N



J. affinis  
 J. tenuis  
 J. torreyi  
 J. canadensis  
 J. effusus  
 J. greenel  
 J. allertaris  
 J. nodosus  
 J. pelocarpus  
 J. tenuis  
 J. torreyi  
 Juncus  
 Justicia agrifolia  
 Kalimeris angustifolia  
 K. polifolia  
 Laportea canadensis  
 Larix laricina  
 Lathyrus palustris  
 Lecus grandlandicus  
 Leucis arizoides  
 L. virginica  
 L. minor

Glyceria canadensis	L. trisulca	H. mexicana	P. obtusata	P. secunda
G. striata	Lepidium densiflorum	H. richardsonii	P. psycodes	F. uniflora
Gymnocarpium dryopteris	Liatris spicata	H. lindenbergia	Poa aioides	Quercus bicolor
Helianthus autumnalis	Lilium philadelphicum	Hylica gale	P. coarctata	Q. macrocarpa
Helianthus giganteus	Lindera benzoin	Hydrophyllum farwellii	P. patungena	Q. palustris
H. grosseserratus	Lindernia anagalifolia	H. heterophyllum	P. palustris	Quercus
H. tuberosus	Linnaea borealis	H. spicata	P. patensis	Ranunculus abortivus
Heraclium lanatum	Liparis loeselii	H. tenellum	Poa	R. arvensis
Hesperis richardsonii	Liriodendron tulipifera	H. verticillatum	Pogonia ophioglossoides	R. adspersus
Hieracium odorata	Listera cordata	Hydrophyllum	Polemonium reptans	R. aquatilis
Hydrocotyle americana	Lobelia cardinalis	Hales flexilis	Polygala cruciata	R. flabellaris
Hypericum boreale	L. Dortmannia	Hasturium officinale	P. sanguinea	R. hispidus
H. canadense	L. kalmii	Helianthus luteus	Polygona aspidium	R. pensylvanicus
H. ellipticum	L. siphilitica	Hemipanthus mucronata	P. hydroperoides	R. sceleratus
H. kalmianum	L. spicata	Hemiphaea odorata	Polygonum	R. septentrionalis
H. nuttallianum	L. spicata	Hysa sylvatica	Pontederia cordata	Ranunculus
H. punctatum	Lobelia	Hyssopus perennis	Papaver balsamifera	Ranunculus
Hypoxis hirsuta	Lonicera canadensis	Oenothera perennis	P. deltoides	R. frangula
Hyssopus verticillata	Ludwigia alternifolia	Oenothera	P. heterophylla	Rhynchospora alba
Hyssopus verticillata	L. palustris	Osmunda cinnamomea	O. claytoniana	R. capillaris
I. pallida	Luzula acuminata	O. regalis	O. regalis	R. fusa
Iris versicolor	Lycopodium annotinum	Oxypholis rigidior	Panicum capillare	Rhynchospora
L. virginica	L. inundatum	Panicum capillare	P. clandestinum	Ribes americanum
Isoetes verticillata	L. lucidulum	P. virgatum	P. virgatum	R. glandulosum
Juncus alpinus	L. obscurum	Panicum	Panicum	R. lacustre
J. balticus	Lycopodium	Parnassia glauca	Pedicularis lanceolata	R. triste
J. biflorus	Lycopodium americanum	Pentstemon digittalis	Pellandria virginica	Rorippa islandica
J. brachycephalus	L. uniflorum	Pentstemon digittalis	Pentstemon digittalis	Rosa acicularis
J. canadensis	Lythraea ciliata	Petasites frigidus	Petalasites frigidus	R. palustris
J. effusus	L. nummularia	Petalasites frigidus	Petalasites frigidus	R. setigera
J. greenel	L. quadriflora	Petalasites frigidus	Petalasites frigidus	Rosa
J. allertaris	L. terrestris	Petalasites frigidus	Petalasites frigidus	Rubus acutis
J. nodosus	Lythraea	Petalasites frigidus	Petalasites frigidus	R. allegheniensis
J. pelocarpus	Lythraea alata	Physocarpus opulifolius	Physostegia virginiana	R. hispidus
J. tenuis	L. salicaria	Picea glauca	Picea glauca	R. pubescens
J. torreyi	Maianthemum canadense	P. mariana	P. mariana	Rubus
Juncus	Maianthemum canadense	P. punilla	Pinguicula vulgaris	R. sullivantii
Justicia agrifolia	Maianthemum canadense	P. salicaria	Platanthera blepharoglossis	R. alliissicus
Kalimeris angustifolia	Maianthemum canadense	Mitella repens	P. dilatata	R. orbiculatus
K. polifolia	Maianthemum canadense	Mitella repens	P. x clavellata	R. verticillatus
Laportea canadensis	Maianthemum canadense	Mitella repens	P. x clavellata	R. virginianus
Larix laricina	Maianthemum canadense	Mitella repens	P. x clavellata	R. virginianus
Lathyrus palustris	Maianthemum canadense	Mitella repens	P. x clavellata	R. virginianus
Lecus grandlandicus	Maianthemum canadense	Mitella repens	P. x clavellata	R. virginianus
Leucis arizoides	Maianthemum canadense	Mitella repens	P. x clavellata	R. virginianus
L. virginica	Maianthemum canadense	Mitella repens	P. x clavellata	R. virginianus
L. minor	Maianthemum canadense	Mitella repens	P. x clavellata	R. virginianus

Appendix 4.1 cont. RICH CONIFER SWAMP Bear Swamp Dennis Albert 9-3-86





<i>Glyceria canadensis</i>	<i>L. tristis</i>	<i>H. mexicana</i>	<i>P. obtusata</i>	<i>P. secunda</i>
<i>G. striata</i>	<i>Lepidogon densiflorum</i>	<i>H. richardsonii</i>	<i>P. obtusata</i>	<i>P. uniflora</i>
<i>Gymnocarpium dryopteris</i>	<i>Liatris spicata</i>	<i>H. ruberbergia</i>	<i>P. psycodes</i>	<i>Quercus bicolor</i>
<i>Helianthus autumnale</i>	<i>Lilium philadelphicum</i>	<i>H. r. gale</i>	<i>Poa alodes</i>	<i>Q. macrocarpa</i>
<i>Helianthus giganteus</i>	<i>Lindera benzoin</i>	<i>H. heterophyllum (arwellii)</i>	<i>P. compressa</i>	<i>Q. palustris</i>
<i>H. grosseserratus</i>	<i>Lindernia anagallidea</i>	<i>H. heterophyllum</i>	<i>P. palustris</i>	<i>Quercus</i>
<i>H. tuberosus</i>	<i>Linnaea borealis</i>	<i>H. spicatum</i>	<i>P. pratensis</i>	<i>Ranunculus abortivus</i>
<i>Hieracium lanatum</i>	<i>Liparis loeselii</i>	<i>H. tenellum</i>	<i>Poa</i>	<i>R. acris</i>
<i>Hieracium richardsonii</i>	<i>Liriodendron tulipifera</i>	<i>H. verticillatum</i>	<i>Pogonia opitiplosoides</i>	<i>R. abigenus</i>
<i>Hieracium odorata</i>	<i>Listera cordata</i>	<i>H. rhyophyllum</i>	<i>Polygonum reptans</i>	<i>R. aquatilis</i>
<i>Hydrocotyle americana</i>	<i>Lobelia cardinalis</i>	<i>H. flexilis</i>	<i>Polygonum cruciata</i>	<i>R. flabellaris</i>
<i>Hypericum boreale</i>	<i>L. dorcaema</i>	<i>Hasturtium officinale</i>	<i>P. sanguinea</i>	<i>R. hispidus</i>
<i>H. canadense</i>	<i>L. kalmii</i>	<i>Helianthus lutea</i>	<i>Polygonum amphibium</i>	<i>R. pensylvanicus</i>
<i>H. ellipticum</i>	<i>L. signilliticum</i>	<i>Hemipanthus mucronata</i>	<i>P. hydropteroides</i>	<i>R. sceleratus</i>
<i>H. kalmianum</i>	<i>L. spicata</i>	<i>Hypochaeris odorata</i>	<i>Polygonum</i>	<i>R. septentrionalis</i>
<i>H. nuttiana</i>	<i>Lobelia</i>	<i>Hyssea sylvatica</i>	<i>Pontederia cordata</i>	<i>Ranunculus</i>
<i>H. punctatum</i>	<i>Lonicera canadensis</i>	<i>Denothera perennis</i>	<i>Populus balsamifera</i>	<i>Rhaenus alnitollis</i>
<i>Hypericum</i>	<i>L. oblongifolia</i>	<i>Genothera</i>	<i>P. deltoides</i>	<i>R. franula</i>
<i>Hypoxis hirsuta</i>	<i>Ludwigia alternifolia</i>	<i>Onoclea sensibilis</i>	<i>P. heterophylla</i>	<i>Rhynchospora alba</i>
<i>Ilex verticillata</i>	<i>L. palustris</i>	<i>Osunda cinnamomea</i>	<i>Portulaca oleracea</i>	<i>R. capillarea</i>
<i>L. C</i>	<i>Luzula acuminata</i>	<i>O. claytoniana</i>	<i>Potamogeton amplifolius</i>	<i>R. capitellata</i>
<i>L. pallida</i>	<i>Lycopodium annotinum</i>	<i>O. regalis</i>	<i>P. ephedrus</i>	<i>R. tacea</i>
<i>L. versicolor</i>	<i>L. clavatum</i>	<i>Oxypholis rigidior</i>	<i>P. filiformis</i>	<i>Rhynchospora</i>
<i>L. virginica</i>	<i>L. inundatum</i>	<i>Panicum capillare</i>	<i>P. foliosum</i>	<i>Ribes americanum</i>
<i>Isotria verticillata</i>	<i>L. lucidulum</i>	<i>P. clandestinum</i>	<i>P. friesii</i>	<i>R. glandulosum</i>
<i>Juncus alpinus</i>	<i>L. obscurum</i>	<i>P. virgatum</i>	<i>P. graebnium</i>	<i>R. hirtellum</i>
<i>J. balticus</i>	<i>Lycopodium</i>	<i>Panicum</i>	<i>P. illinoensis</i>	<i>R. lacustre</i>
<i>J. biflorus</i>	<i>Lycopodium americanum</i>	<i>Parnassia glauca</i>	<i>P. natalis</i>	<i>R. triste</i>
<i>J. brachycephalus</i>	<i>L. uniflorum</i>	<i>Pedicularis lanceolata</i>	<i>P. nodosus</i>	<i>Ribes</i>
<i>J. canadensis</i>	<i>Lysichiton ciliata</i>	<i>Peltandra virginica</i>	<i>P. perfoliatus</i>	<i>Rorippa islandica</i>
<i>J. effusus</i>	<i>L. nummularia</i>	<i>Pentstemon digitalis</i>	<i>P. praelongus</i>	<i>Rosa acicularis</i>
<i>J. Greenei</i>	<i>L. quadriflora</i>	<i>Penthorum sedoides</i>	<i>P. richardsonii</i>	<i>R. palustris</i>
<i>J. illitarsis</i>	<i>L. terrestris</i>	<i>Peltastis frigidus</i>	<i>P. robbinsii</i>	<i>R. setigera</i>
<i>J. nodosus</i>	<i>Lysichiton</i>	<i>Phalaris arundinacea</i>	<i>P. strictifolius</i>	<i>Rosa</i>
<i>J. pelocarpus</i>	<i>Lytichon alatum</i>	<i>Phragmites australis</i>	<i>P. zosterifolius</i>	<i>Rubus acutis</i>
<i>J. tenuis</i>	<i>L. salicaria</i>	<i>Physocarpus opulifolius</i>	<i>Potamogeton</i>	<i>R. allegheniensis</i>
<i>J. torreyi</i>	<i>Mattuccia struthiopteris</i>	<i>Physostegia virginiana</i>	<i>Potamogeton</i>	<i>R. hispidus</i>
<i>Juncus</i>	<i>Mentha arvensis</i>	<i>Picea glauca</i>	<i>Potentilla anserina</i>	<i>R. pubescens</i>
<i>Justicia americana</i>	<i>Menyanthes trifoliata</i>	<i>P. mariana</i>	<i>P. fruticosa</i>	<i>Rubus</i>
<i>Kalmia angustifolia</i>	<i>Mertensia virginica</i>	<i>P. pumila</i>	<i>P. norvegica</i>	<i>Rudbeckia laciniata</i>
<i>K. ciliifolia</i>	<i>Mimulus alatus</i>	<i>Pinguicula vulgaris</i>	<i>P. palustris</i>	<i>R. sullivanti</i>
<i>Laportea canadensis</i>	<i>M. ringens</i>	<i>Platanthera blephariglossis</i>	<i>P. ciliaris</i>	<i>Ranunculus racemosus</i>
<i>Larix laricina</i>	<i>Mitchella repens</i>	<i>P. x clavellata</i>	<i>P. dilatata</i>	<i>Rosmarinaceae palustris</i>
<i>Lathyrus palustris</i>	<i>Mitella nuda</i>	<i>P. flava</i>	<i>P. hyperborea</i>	<i>R. verticillatus</i>
<i>Ledum groenlandicum</i>	<i>Monarda fistulosa</i>	<i>P. lacera</i>	<i>P. minor</i>	<i>R. rotundifolius</i>
<i>Lacina oxylobes</i>	<i>Muhlenbergia frondosa</i>	<i>P. leucophaeus</i>		
<i>L. virginica</i>				
<i>Lernae minor</i>				

**SOUTHERN SWAMP**

D=dominant, codominant  
A=abundant  
C=common

U=uncommon  
R=rare  
I=characteristic

LD=locally dominant  
LC=locally common  
E=exotic

Date: 9-3-86

<i>Salix acydaloides</i>		<i>S. mucronatum</i>	<i>I. rydbergii</i>	<i>V. sagittata</i>
<i>S. bebbiana</i>		<i>Sium suave</i>	<i>I. vernix</i>	<i>V. striata</i>
<i>S. candida</i>		<i>Solidago racemosa</i>	<i>Iridaea fraseri</i>	<i>Viola</i>
<i>S. cordata</i>		<i>S. stellata</i>	<i>I. virginicum</i>	<i>Vitis riparia</i>
<i>S. discolor</i>		<i>S. trifolia</i>	<i>I. borealis</i>	<i>Hoffia columbiana</i>
<i>E. S. fragilis</i>	E	<i>Solidax hispida</i>	<i>I. virginicum</i>	<i>Knopferdia virginica</i>
<i>S. glaucophylloides</i>		<i>Solanum dulcicastrum</i>	<i>I. palustre</i>	<i>Xanthium strumarium</i>
<i>S. interior</i>		<i>Solidago altissima</i>	<i>I. virginicum</i>	<i>Xyris difformis</i>
<i>S. lucida</i>		<i>S. canadensis</i>	<i>Irisetia spicata</i>	<i>X. montana</i>
<i>S. nigra</i>		<i>S. gigantea</i>	<i>Typa angustifolia</i>	<i>X. toris</i>
<i>S. pedicularis</i>		<i>S. graefiiifolia</i>	<i>T. x glauca</i>	<i>Zizadenus glaucus</i>
<i>S. petiolaris</i>		<i>S. ohioensis</i>	<i>T. latifolia</i>	<i>Zizania aquatica</i>
<i>S. rigida</i>		<i>S. patula</i>	<i>Ulmus americana</i>	<i>Zizia aurea</i>
<i>S. sericea</i>		<i>S. riddellii</i>	<i>U. rubra</i>	<i>Zosterella dubia</i>
<i>S. serotina</i>		<i>S. rigida</i>	<i>U. thomasii</i>	
<i>Salix</i>		<i>S. rugosa</i>	<i>Urtica dioica</i>	
<i>Salix canadensis</i>		<i>S. uliginosa</i>	<i>Urticularia cornuta</i>	
<i>Salix parviflorus</i>		<i>Solidago</i>	<i>U. gibba</i>	
<i>Sanguisorba canadensis</i>		<i>Sorbus americana</i>	<i>U. intermedia</i>	
<i>Sarracenia purpurea</i>		<i>Sorghastrum nutans</i>	<i>U. purpurea</i>	
<i>Saururus cernuus</i>		<i>Sparganum americanum</i>	<i>Urticularia</i>	
<i>Saxifraga pennsylvanica</i>		<i>S. chlorocarpum</i>	<i>Uvularia sessilifolia</i>	
<i>Scheuchzeria palustris</i>		<i>S. eurycarpum</i>	<i>Vaccinium corymbosum</i>	
<i>Schizachne purpurascens</i>		<i>S. fluviatans</i>	<i>V. macrocarpon</i>	
<i>Scirpus acutus</i>		<i>S. alpinus</i>	<i>V. myrtilloides</i>	
<i>S. americanus</i>		<i>Sparanium</i>	<i>V. oxycoccus</i>	
<i>S. atrovirens</i>		<i>Spartina pectinata</i>	<i>Vallisneria americana</i>	
<i>S. cepitulosus</i>		<i>Spiraea alba</i>	<i>Verbena hastata</i>	
<i>S. cyperinus</i>		<i>S. tomentosa</i>	<i>V. urticifolia</i>	
<i>S. expansus</i>		<i>Spiranthes cernua</i>	<i>Verbesina alternifolia</i>	
<i>S. fluitans</i>		<i>S. roanensis</i>	<i>Veronica missurica</i>	
<i>S. microcarpus</i>		<i>Spirodela polytricha</i>	<i>Veronica americana</i>	
<i>S. olneyi</i>		<i>Stachys hispida</i>	<i>V. peregrina</i>	
<i>S. setibii</i>		<i>S. hypnoides</i>	<i>V. serpyllifolia</i>	
<i>S. subterminalis</i>		<i>S. tenuifolia</i>	<i>Veronicastrum virginicum</i>	
<i>S. torreyi</i>		<i>Staphylea trifolia</i>	<i>Viburnum cassinoides</i>	
<i>S. validus</i>		<i>Stellaria longifolia</i>	<i>V. lentago</i>	
<i>Scirpus</i>		<i>Streptopus amplexifolius</i>	<i>V. recognitum</i>	
<i>Scieria trigloperata</i>		<i>Strophostyles helveola</i>	<i>V. trilobum</i>	
<i>S. verticillata</i>		<i>Syedocarpus foetidus</i>	<i>Viola adunca</i>	
<i>Scutellaria galericulata</i>		<i>Thalictrum dasycarpum</i>	<i>V. affinis</i>	
<i>S. lateriflora</i>		<i>T. dioicum</i>	<i>V. blanda</i>	
<i>Salicaria apoda</i>		<i>Thelypteris hexagonoptera</i>	<i>V. conspersa</i>	
<i>S. selaginoides</i>		<i>T. noveboracensis</i>	<i>V. cucullata</i>	
<i>Senecio aureus</i>		<i>T. palustris</i>	<i>V. missouriensis</i>	
<i>S. pauperculus</i>		<i>Thuja occidentalis</i>	<i>V. nephrophylla</i>	
<i>Silphium perfoliatum</i>		<i>Tirolia cordifolia</i>	<i>V. pallens</i>	
<i>Sisyrinchium angustifolium</i>		<i>Tolmiea glauca</i>	<i>V. prinnifolia</i>	
<i>S. montanum</i>		<i>Troscodendron radicans</i>	<i>V. renifolia</i>	

D-U *Tsuga canadensis*



Glyceria canadensis	L. trisulca	H. mexicana	P. obtusata	P. secunda
G. striata	Lepidium densiflorum	H. richardsonii	P. psychodes	P. unillora
Gymnocarpium dryopteris	Liatris spicata	Muhlenbergia	Poa alpodes	Quercus bicolor
Helianthus autumnale	Lilium philadelphicum	Myrica gale	P. compressa	Q. macrocarpa
Helianthus giganteus	Lindera benzoin	Myriophyllum farwellii	P. palustris	Q. palustris
H. grosseserratus	Lindernia anagallidea	M. heterophyllum	P. palustris	Quercus
H. tuberosus	Linnæa borealis	M. spicatum	P. pratensis	Ranunculus abortivus
Heracleum lanatum	Liparis loeselii	H. tenellum	Poa	R. acris
Heuchera richardsonii	Liriodendron tulipifera	H. verticillatum	Pogonia ophioglossoides	R. abigens
Hieracium odorata	Listera cordata	Myriophyllum	Polygonum reptans	R. aquatilis
Hydrocotyle americana	Lobelia cardinalis	Najas flexilis	Polygala cruciata	R. flabellaris
Hypericum boreale	L. Dortmann	Nasturtium officinale	P. sanguinea	R. hispidus
H. canadense	L. Kalmii	Nelumbo lutea	Polygonum amphibium	R. pennsylvanicus
H. ellipticum *	L. siphilitica	Nemophanthus macronata *	P. hydropiperoides	R. sceperatus
H. Kalmianum *	L. spicata	Nympheaea odorata	Polygonum	R. septentrionalis
H. nuttallii	Lobelia	Nyssa sylvatica	Pontederia cordata	Ranunculus
H. punctatum	Lonicera canadensis	Oenothera perennis	Populus balsamifera	Rhaenus alnifolia
Hypericum	L. oblongifolia	Oenothera	P. <del>del</del> fremontii	R. frangula
Hypoxis hirsuta	Ludwigia alternifolia	Onoclea sensibilis	P. heterophylla	Rhynchospora alba
Ilex verticillata	L. palustris	Osmunda cinnamomea	Portulaca oleracea	R. capillacea
Japatisens capensis	Luzula acuminata	U. claytoniana	Potamogeton amplifolius	R. capitellata
J. pallida	Lycopodium annotinum	U. regalis	P. ephedrus	R. fusca
Iris versicolor	L. clavatum	Oxyopsis rigidior	P. filiformis	Rhynchospora
J. virginica	L. inundatum	Panicum capillare	P. foliosum	Ribes aericarum
Isotria verticillata	L. lucidulum	P. clandestinum *	P. friesii	R. glandulosum
Juncus <del>del</del> acuminatus	L. obscurum	P. virgatum	P. gramineus	R. hirtellum
J. balticus	Lycopodium	Panicum	P. illinoensis	R. lacustre
J. biflorus *	Lycopus aericarum	Parnassia glauca	P. natans	R. triste
J. brachycephalus	L. uniflorus	Pedicularis lanceolata	P. nodosus	Ribes
J. canadensis	Lysimachia ciliata	Peltandra virginica	P. pectinatus	Rorippa islandica
J. effusus	L. nummularia	Pentstemon digitalis	P. praeflongus	Rosa acicularis
J. Greenei	L. quadriflora	Penthorum sedoides	P. richardsonii	R. palustris
J. zillitarsis	L. terrestris	Petasites frigidus	P. robbinsii	R. setigera
J. nodosus	Lysimachia	Phalaris arundinacea	P. strictifolius	Rosa
J. pelocarpus	Lythrum alatum	Phragmites australis	P. zosterifolius	Rubus aculeis
J. tenuis	L. salicaria	Physocarpus opulifolius	Potamogeton	R. allegheniensis
J. torreyi	Maianthemum canadense	Physostegia virginiana	Potamogeton	R. hispidus *
Juncus vaseji	Matteuccia struthiopteris	Picea glauca	Potentilla anserina	R. pubescens
Juncus brachycarpus	Mentha arvensis	P. mariana	P. fruticosa	Rubus
Justicia americana	Mentha trifoliata	Pilea pumila	P. norvegica	Rudbeckia laciniata
Kalmia angustifolia	Mertensia virginica	Pinguicula vulgaris	P. palustris	R. sullivanti
K. polifolia	Mimulus alatus	Platanthera blephariglotis	Prenanthes racemosa	Rubus altissimus
Laportea canadensis	M. ringens	P. ciliaris	Proserpinaca palustris	R. orbiculatus
Larix laricina	Mitchella repens	P. x clavellata	Prunella vulgaris	R. verticillatus
Lathyrus palustris	Mitella nuda	P. dilatata	P. virginiana	Rosa
Ledum groenlandicum	Monarda fistulosa	P. flava	P. virginiana	Sagittaria cuneata
Leersia oryzoides	Morus rubra	P. hyperborea	Pyrola asarifolia	S. graamea *
L. virginica	Muhlenbergia frondosa	P. lacera	P. minor	S. latifolia
Lesna minor	M. glomerata	P. leucophaea	P. rotundifolia	Sagittaria

D=dominant, codominant U=uncommon LD=locally dominant Date: 9-3-86  
 A=abundant R=rare LC=locally common  
 C=common I=characteristic E=exotic

<i>Salix amygdaloides</i>		<i>S. euconatua</i>	<i>I. rydbergii</i>	<i>V. sagittata</i>
<i>S. babiana</i>		<i>Sua suave</i>	<i>I. vernix</i>	<i>V. striata</i>
<i>S. candida</i>		<i>Sollacina racemosa</i>	<i>Tridax fraseri</i>	<i>Viola</i>
<i>S. cordata</i>		<i>S. stellata</i>	<i>I. virginicum</i>	<i>Vitis riparia</i>
<i>S. discolor</i>		<i>S. trifolia</i>	<i>Trientalis borealis</i>	<i>Koeleria columbiana</i>
<i>S. fragilis</i>		<i>Salix hispida</i>	<i>Triglochin maritimum</i>	<i>Woodwardia virginica</i>
<i>S. glaucophylloides</i>	E	<i>Solanum dulcicaera</i>	<i>I. palustre</i>	<i>Xanthoxylum strumarium</i>
<i>S. interior</i>		<i>Solidago altissima</i>	<i>Trillium cernuum</i>	<i>Xyris difformis</i>
<i>S. lucida</i>		<i>S. canadensis</i>	<i>Trisetum spicatum</i>	<i>X. montana</i>
<i>S. nigra</i>		<i>S. gigantea</i>	<i>Typha angustifolia</i>	<i>X. torti</i>
<i>S. pedicellaris</i>		<i>S. graefii</i>	<i>T. x glauca</i>	<i>Zigadenus glaucus</i>
<i>S. petiolaris</i>		<i>S. ohioensis</i>	<i>T. latifolia</i>	<i>Zizania aquatica</i>
<i>S. rigida</i>		<i>S. patula</i>	<i>Ulmus americana</i>	<i>Zizia aurea</i>
<i>S. sericea</i>		<i>S. riddellii</i>	<i>U. rubra</i>	<i>Zosterella dubia</i>
<i>S. serotina</i>		<i>S. rigida</i>	<i>U. thomasi</i>	<i>Prunus pennsylvanica</i>
<i>S. sp.</i>		<i>S. rugosa</i>	<i>Urtica dioica</i>	<i>Lilium, medium</i>
<i>Salix canadensis</i>		<i>S. uliginosa</i>	<i>Urticularia cornuta</i>	<i>Aster tenuifolius</i>
<i>Salix parviflorus</i>		<i>Solidago</i>	<i>U. gibba</i>	<i>Viola lanceolata</i>
<i>Sambucus canadensis</i>		<i>Sorbus americana</i>	<i>U. intermedia</i>	<i>Pinus banksiana</i>
<i>Sambucus racemosa</i>		<i>Sorghastrum nutans</i>	<i>U. purpurea</i>	<i>Smile just west of spot where railroad meets</i>
<i>Saxifraga pennsylvanica</i>		<i>Sparaganium americanum</i>	<i>Urticularia</i>	<i>N.W. cedars swamp, recently logged area</i>
<i>Scheuchzeria palustris</i>		<i>S. chlorocarpum</i>	<i>Uvularia sessilifolia</i>	
<i>Schizachne purpurascens</i>		<i>S. eurycarpum</i>	<i>Vaccinium corymbosum</i>	
<i>Scirpus acutus</i>		<i>S. fluviatilis</i>	<i>V. macrocarpon</i>	
<i>Scirpus americanus</i>		<i>S. setchii</i>	<i>V. mytilloides</i>	
<i>Scirpus atrovirens</i>		<i>S. subterminalis</i>	<i>V. oxycoccus</i>	
<i>Scirpus cephalanthus</i>	LC	<i>Scirpus longifolius</i>	<i>V. pennsylvanicus</i>	
<i>Scirpus cyperinus</i>		<i>Spiraea alba</i>	<i>Vallisneria spiralis</i>	
<i>Scirpus expansus</i>		<i>S. tomentosa</i>	<i>Verbena hastata</i>	
<i>Scirpus fluviatilis</i>		<i>S. virginiana</i>	<i>V. urticifolia</i>	
<i>Scirpus microcarpus</i>		<i>Spiranthes cernua</i>	<i>Verbesina alternifolia</i>	
<i>Scirpus olneyi</i>		<i>Spiranthes polyantha</i>	<i>Vernonia missurica</i>	
<i>Scirpus setchii</i>		<i>S. rotundifolia</i>	<i>Veronica americana</i>	
<i>Scirpus subterminalis</i>		<i>S. tenuifolius</i>	<i>V. peregrina</i>	
<i>Scirpus torreyi</i>		<i>Stachys hispida</i>	<i>V. serpyllifolia</i>	
<i>Scirpus validus</i>		<i>S. tenuifolia</i>	<i>Veronicastrum virginicum</i>	
<i>Scirpus virgatus</i>		<i>Stachys trifolia</i>	<i>Viburnum cassinoides</i>	
<i>Scleria triglochorata</i>		<i>Stellaria longifolia</i>	<i>V. lentago *</i>	
<i>S. verticillata</i>		<i>Streptopus aplexifolius</i>	<i>V. recognita</i>	
<i>Scutellaria galericulata</i>		<i>Strophostyles helveola</i>	<i>V. trilobus</i>	
<i>S. lateriflora</i>		<i>Symplocarpus foetidus</i>	<i>Viola adunca</i>	
<i>Salicetia apoda</i>		<i>Thalictrum dasycarpum</i>	<i>V. affinis</i>	
<i>S. selaginoides</i>		<i>T. dioica</i>	<i>V. blanda</i>	
<i>Senecio aureus</i>		<i>Thelypteris hexagonoptera</i>	<i>V. conspersa</i>	
<i>S. pauperculus</i>		<i>T. noveboracensis</i>	<i>V. cucullata</i>	
<i>Silphium perfoliatum</i>		<i>T. palustris</i>	<i>V. elaeagnifolia</i>	
<i>Sisyrinchium angustifolium</i>		<i>Thuja occidentalis</i>	<i>V. nephrolepis</i>	
<i>S. montanum</i>		<i>Thiarella cordifolia</i>	<i>V. pallens</i>	
		<i>Thiarella glutinosa</i>	<i>V. prairiifolia</i>	
		<i>Thymus radicans</i>	<i>V. rotundifolia</i>	

PHOTOGRAPHIC RECORD

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 WO) (2)	SELECTED FOR W.O. PHOTO LIBRARY (3)	DATE OF EXPOSURE (4)	LOCATION (State and National Forest or County) (5)	DESCRIPTION OF VIEW (6)
17			9-3-1986	Bear Swamp RNA, Mason-Lake Co., MI	Dry-Mesic Northern Forest. (Black and White Oak) in area previously dominated by Mesic Northern Forest (Beech, Hemlock, White Pine).
19			" "	" "	Wet Meadow/Wet Prairie/Coastal Plain Marsh dominated by <u>Spartina pectinata</u> , and containing two threatened species: <u>Juncus vaseyi</u> and <u>J. brachycarpus</u> .
23			" "	" "	Rich Conifer Swamp on north side of railroad grade. Drainage has been retarded and hardwoods have estab.
24			" "	" "	Rich Conifer Swamp on 'dry' side of railroad grade.
25			" "	" "	Rich Conifer Swamp in area with unchanged drainage.
30			" "	" "	Rich Conifer Swamp, drainage destroyed by logging road.
33			" "	" "	Southern Hardwood Swamp. Excellent quality.