

# MATURE RED PINE FOREST WITH DECIDUOUS UNDERSTORY

[Appendix 2]

Matt Collier, Philip Johns, and Marlys Reuvers

IBS # 1941-D

**Location:** Minnesota; Clearwater Co.; Itasca State Park Wilderness Sanctuary; 47° 13'N, 95° 12'W; Itasca State Park Quadrangle, USGS. **Continuity:** New. **Size:** 10.0 ha.

**Description:** The mature forest consists of Red Pine and White Pine that form a 20-25 m canopy. Maple and Quaking Aspen comprise a fairly dense subcanopy up to 10 m. A 1 ha sedge meadow is on the east edge of the plot. As part of a state park and a wilderness sanctuary, fire has been controlled for nearly a century. The following results come from a quantitative vegetation survey following the method described by F. C. James and H. H. Shugart, Jr. (1970. *Aud. Field Notes* 24: 727-736) as corrected by James (1980. *American Birds* 34: 22-23): Trees, 7.6 cm diameter and over, based on 10, 0.04-ha circular samples, 590/ha; total basal area 36.5 m<sup>2</sup>/ha. Species comprising 90% of the total number of trees [figures after each are trees/ha, relative density (%), relative dominance (%), and frequency (%)]:

Species	trees/ha	relative density (%)	relative dominance (%)	frequency (%)
Dead	112.5	18.8	18.6	60
Red Pine	100	16.7	37.3	80
Sugar Maple	95	15.9	7.7	60
White Pine	70	11.7	19.2	70
Quaking Aspen	65	10.9	10.1	30
Red Oak	37.5	6.3	2.1	30

Trees by diameter size class [figures after each are trees/ha, relative density (%), basal area in m<sup>2</sup>/ha, and relative dominance (%)]:

Size Class (cm)	trees/ha	relative density (%)	basal area (m <sup>2</sup> /ha)	relative dominance (%)
A (7.6-15.2)	152.5	25.5	0.137	0.4
B (15.2-22.9)	157.5	26.4	4.25	11.7
C (22.9-38.1)	120	20.1	6.45	17.8
D (38.1-53.3)	60	10.4	5.4	14.8
E (53.3-68.6)	82.5	13.8	13.4	36.3
F (>68.6)	25	4.2	7.8	19.1

Shrub stems/ha, 6445; ground cover, 55%; canopy cover 77%; average canopy height, 21 m. **Edge:** Bordered on W, N, and E by similar forest; three of five columns on south side buffered by a 50 m zone, remaining two columns abut a road. **Topography and Elevation:** Flat with scattered inclines, especially near sedge meadow. **Elevation** 449 m. **Weather:** Average temperature, 12°C

(range 7-24°C). Clear to overcast, slight winds (0-3 mph). **Coverage:** 111 h; 8 visits (7 mornings, 1 evening); 23, 26, 29, 30 June; 3, 5, 7, 11 July. **Census:** Ovenbird 23.5 territories (94/40 ha); Black-throated Green Warbler 14 (56); Red-eyed Vireo 13 (52); Pine Warbler 11 (44); Chestnut-sided Warbler 7.5 (30), Nashville Warbler 6.5 (26); Eastern Wood Pewee 5.5 (22); Brown Creeper 5 (20); Yellow-bellied Sapsucker 3.5 (14); Hermit Thrush 3 (12); Common Yellowthroat 3 (12); Canada Warbler 3 (12); Northern Parula 2.5 (10); Scarlet Tanager 1.5 (6); Winter Wren 1 (4); Ruffed Grouse 1 (10); American Robin . **Total:** 17 species, 105 territories (420/40 ha). **Visitors:** Broad-winged Hawk, Hairy Woodpecker, Black-backed Woodpecker, Gray Jay, Blue Jay, Common Raven, White-breasted Nuthatch, Red-breasted Nuthatch, Pine Siskin, Black-capped Chickadee, Mourning Warbler, Purple Finch, Evening Grosbeak. **Remarks:** Common yellowthroats were found in close proximity to the sedge meadow. Unlike previous years, few white pine seedlings were observed. This year is the first year Nashville Warblers have been observed on the red pine plot. **Acknowledgements:** David Blockstein, Don Graves, Gloria Peterson, Bethany Woodworth.

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# BREEDING BIRD CENSUS DATA FORM

Cornell Laboratory of Ornithology

Resident Bird Counts

159 Sapsucker Woods Road

Ithaca, New York 14850

(607) 254-2441

Publ. #: \_\_\_\_\_

Access #: \_\_\_\_\_

Site #: \_\_\_\_\_

Date Rec'd: \_\_\_\_\_

Year: \_\_\_\_\_

Deadline: Submit by 10 September

This is the standard data form for annual Breeding Bird Census (BBC) counts. This form is new for 1991. Older data forms should be discarded. Participants establishing new plots are required to complete a **Habitat Classification Form**, which may be obtained from the above address. Completed BBC forms and habitat data should be submitted to the above address by 10 September.

All applicable data fields below must be filled out in order for your results to be considered for publication. Type or print clearly. Please use metric units. A conversion table is provided for your convenience.

## Metric Conversion Units

Acres to Hectares: divide by 2.47      Feet to Meters: divide by 3.28  
Fahrenheit to Centigrade:  $(^{\circ}\text{F} - 32)/1.8$       Inches to Centimeters: multiply by 2.54

Compiler(s) Name & Address (as it should appear in print):

Phone: (      ) \_\_\_\_\_ - \_\_\_\_\_

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Plot Name (e.g., Longleaf Pine Forest): W. ONE RD. PINE FOREST

Site Name (e.g., Sapsucker Woods): W. ONE RD. PINE FOREST

State/Prov.: MIN County: CLEARWATER City/Town: LAKE ITASCA

Latitude: 47 °, \_\_\_\_\_ ', \_\_\_\_\_ " N Longitude: 95 °, \_\_\_\_\_ ', \_\_\_\_\_ " W

U.S.G.S. Quad: LAKE ITASCA Plot Size: 10 ha

First Year Results were Published: 1990 Most Recent Year Results have been Published: 1991

Number of Years Plot has been Censused: 3

Please reference the journal, volume, page numbers, and year for the most recently published, complete habitat description:

J. FIELD ORNITHOLOGY

VOL 62, NO. 1 PP. 41-42 1991

# Coverage and Weather Summary

Visit #	Date	Start Time	End Time	Total Hours	Temperature at		Wind*
					Start (°C)		
1	23 JUNE	0515	1200	6.75	10		41
2	26 JUNE	0500	1100	6.0	10		41
3	29 JUNE	0500	1100	6.0	18		1-3
4	30 JUNE	0510	0930	4.15	7		1-3
5	3 JULY	0515	0930	4.25	10		1-3
6	5 JULY	0500	0830	3.5	10		1-3
7	7 JULY	0500	1000	5.0	14		1-3
8	11 JULY	1910	2120	2.15	24		1-3

\* Beaufort Wind Scale

scale

0 1 2 3 4

mph

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60

smoke rises vertically  
wind direction shown by smoke  
wind felt on face, leaves rustle  
leaves, small twigs in constant motion  
raises dust and loose paper

Total # visits: 8 Maximum # of Observers/Trip: 3

Total # Hours Censusing Plot (do not sum observer or party hours): 37.80

Number of Visits Started: within 1.5 hrs of sunrise: 7 within 3 hrs of sunset: 1

Mean temperature for census days: 13.4 °C Minimum: 7 °C Maximum: 24 °C

Summarize weather below noting deviations in temperature and precipitation from long-term averages (please provide data and source), and any conditions that might have affected detectability.

UNUSALLY RAINY AND COOL WEATHER

Office use: JSD: \_\_\_\_\_ JED: \_\_\_\_\_ TD: \_\_\_\_\_ R#: \_\_\_\_\_

office use

## List Species in order of Abundance

Number of Territories \*

Number of Nests Fledg

1.	Ovenbird	23.5	
2.	Black-throated GREEN Warbler	14.	
3.	Red-eyed Vireo	13.	
4.	Pine Warbler	11.	
5.	Chestnut-sided Warbler	7.5	
6.	Nashville Warbler	6.5	
7.	Eastern Wood Pewee	5.5	
8.	Brown Creeper	5.	
9.	Yellow-bellied Sapsucker	3.5	2
10.	Hermit Thrush	3.	
11.	Common Yellowthroat	3.	
12.	Canada Warbler	3.	
13.	Northern Parula	2.5	
14.	Scarlet Tanager	1.5	
15.	Winter Wren	1.	
16.	Ruffed Grouse	1.	
17.	American Robin	0.5	
18.		.	
19.		.	
20.		.	
21.		.	
22.		.	
23.		.	
24.		.	
25.		.	
26.		.	
27.		.	
28.		.	
29.		.	
30.		.	
31.		.	
32.		.	
33.		.	
34.		.	
35.		.	
36.		.	
37.		.	
38.		.	

\* Round territories to nearest 0.5; use a "+" if  $\leq$  25% of a species' territory is included within plot.

**Visitors** (list only those species that potentially could nest on the study site, not migrants or vagrants. Please list visitors in AOU checklist order, sixth edition):

Broad-winged Hawk, Black-backed Woodpecker, Hairy Woodpecker,  
Blue Jay, Gray Jay, Common Raven, Black-capped Chickadee,  
Red-breasted Nuthatch, White-breasted Nuthatch, Mourning Warbler,  
Evening Grosbeak, Pine Siskin, Purple Finch

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Has the plot's size, shape, location, or habitat changed since the last census? NO

If "yes" please describe the changes in the space provided below.

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**Remarks** (please keep remarks concise, and in a form suitable for publication):

Common Yellowthroats were found in close proximity to the  
sedge meadow. Nashville Warblers were reported in the  
plot for the first time in the three years of censusing.

Blue Jays, Gray Jays, Black-capped Chickadees, and  
Red-breasted Nuthatches probably nested on the plot  
earlier in the season because they were observed  
in flocks.

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**Other Observers to be Acknowledged:**

DAVID BLOCKSTEIN, BETHANY WOODWORTH, ELORIA PETERSON,  
AND DONALD GRAVES

**Acknowledgements** (as they should appear in print):



RESIDENT BIRD COUNTS HABITAT CLASSIFICATION  
For Breeding Bird Census & Winter Bird Population Study

Red Pine

Cornell Laboratory of Ornithology  
Resident Bird Counts  
159 Sapsucker Woods Road  
Ithaca, New York 14850  
(607) 254-2441

Publ. #: \_\_\_\_\_  
Site #: \_\_\_\_\_  
Year: \_\_\_\_\_

Access #: \_\_\_\_\_

Date Rec'd: \_\_\_\_\_

Deadline: Submit with WBPS data by 1 June, with BBC data by 10 September.  
Please Type or Print Clearly.

Compiler(s) Name & Address (as it should appear in print):

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Plot Name (e.g., Longleaf Pine Forest): MATURE RED PINE FOREST

State/Prov.: MN County: Clearwater City/Town: Lake Itasca

Latitude: 47°, ', " N Longitude: 95°, ', " W USGS Quad: Lake Itasca

Metric Conversion Units

Acres to Hectares:	divide by 2.47	Feet to Meters:	divide by 3.28
Miles to Kilometers:	multiply by 1.61	Feet <sup>2</sup> to Meters <sup>2</sup> :	divide by 10.76

PLOT DESCRIPTION

Plot Size: 10 ha Minimum Elevation: \_\_\_\_\_ m Maximum Elevation: 449 m

Plot Shape: (circle one)

1 = Square

2 = Rectangular

3 = Circular

4 = Other \_\_\_\_\_

Plot Slope: (circle one)

1 =  $\leq 5\%$

2 = 6 - 10%

3 = 11 - 16%

4 =  $> 16\%$

Slope Class: (circle one)

1 = Nearly Level

2 = Sloped

3 = Undulating/Hilly

Aspect (compass direction plot faces; specify one - N, NE, E, SE, S, SW, W, NW,  
or NA for level plots):

N

Dimensions: Longest Side: 400 m Shortest Side: 250 m If Circular, give Diameter: \_\_\_\_\_

ge: (circle one for each part)

Percentage of plot's perimeter  
bordered by same habitat:

1 =  $\leq$  25%

2 = 26 - 50%

3 = 51 - 75%

4 =  $>$  75%

If your study site is part of a larger tract of the same  
habitat, what is the size of the whole tract?

1 =  $\leq$  25 ha

2 = 26 - 50 ha

3 = 51 - 100 ha

4 = 101 - 500 ha

5 =  $>$  500 ha

### HYDROLOGY

Circle appropriate descriptor for numbered data fields, fill in the blank for all others.

Number of Streams/Rivers  
that Flow Year Round:

0 = None

1 = 1

2 = 2 - 3

3 =  $>$  3

Number of Ephemeral or  
Intermittent Streams:

0 = None

1 = 1

2 = 2 - 3

3 =  $>$  3

Maximum Width of  
Streams/Rivers: 6 m

Maximum Depth: 6 m

Number of Ponds on Plot: 0

Maximum Diameter:      m

Maximum Depth:      m

Does the Plot Contain Isolated, Ephemeral  
Pools During the Breeding Season?

1 = No

2 = Yes

Is the Plot Within a River Floodplain?

1 = No

2 = Yes

Maximum Percentage of Surface that is Covered by Standing Water (excluding ponds, streams, or rivers):

During Breeding Season

0 = 0%

1 =  $\leq$  25%

2 = 26 - 50%

3 =  $>$  50%

During Winter Season

0 = 0%

1 =  $\leq$  25%

2 = 26 - 50%

3 =  $>$  50%

Is the Plot Influenced  
by Tidal Water?:

1 = No

2 = Yes

Categorize Salinity Level:

0 = Not applicable

1 = Salt

2 = Brackish

3 = Fresh

Maximum Frequency of  
Flooding:

0 = Not applicable

1 =  $\leq$  15 days/month

2 =  $>$  15 days/month



Distribution/Patchiness of Vegetation (circle one for each stratum occurring on the plot):

Canopy (> 5m)

1. Canopy closed (crowns mostly touching)
2. Tree crowns separate, but  $\leq 10m$  apart
3. Tree crowns > 10m apart

Understory (1 - 5m)

1. Coverage nearly continuous
2. Plants in groups  $\leq 5m$  diameter
3. Plants in groups > 5m diameter
4. Plants occur singly

Ground Cover (< 1m)

1. Coverage nearly continuous
2. Plants in groups  $\leq 5m$  diameter
3. Plants in groups > 5m diameter
4. Plants occur singly with bare ground between individuals

Stand Age, if known, for Dominant Tree Layer:

1 =  $\leq 30$  yrs

2 = 31 - 60 yrs

(3) = 61 - 100 yrs

4 = > 100 yrs

Canopy Height:

Minimum \_\_\_\_\_ m

Maximum 10 m

Mean \_\_\_\_\_ m

List dominant plant species (% relative cover) for each stratum.

Common Name

Scientific Name

Canopy (> 5m):

- |                         |                            |
|-------------------------|----------------------------|
| 1. <u>Red pine</u>      | <u>Pinus resinosa</u>      |
| 2. <u>White pine</u>    | <u>Pinus strobus</u>       |
| 3. <u>Quaking aspen</u> | <u>Populus tremuloides</u> |

Understory (1 - 5m):

- |                             |                           |
|-----------------------------|---------------------------|
| 1. <u>Sugar maple</u>       | <u>Acer saccharum</u>     |
| 2. <u>BEAKED HAZEL</u>      | <u>Corylus cornuta</u>    |
| 3. <u>Red-berried elder</u> | <u>Sambucus pubescens</u> |

Ground Cover (< 1m):

- |                              |                            |
|------------------------------|----------------------------|
| 1. <u>large-leaved aster</u> | <u>Aster macrophyllus</u>  |
| 2. <u>bracken fern</u>       | <u>Pteridium aquilinum</u> |
| 3. <u>early meadow-rue</u>   | <u>Thalictrum dioicum</u>  |

Use an additional sheet of paper to describe plot characteristics not summarized on this form including: unique features, the vegetation and composition of riparian habitats and surrounding edge habitats, and the degree to which the plot is isolated from similar habitat. Keep narrative description concise and in a form suitable for publication.

# HABITAT CLASSIFICATION

Land Use Type (circle one):

- |                                |                      |                          |
|--------------------------------|----------------------|--------------------------|
| 1. Urban/Suburban/Residential  | 6. Recreational      | 11. Rangeland/Ungrazed   |
| (2) Conservation Land/Preserve | 7. Pasture/Idle      | 12. Mining               |
| 3. Wildlife Refuge             | 8. Cropland          | 13. Industrial/Utilities |
| 4. Forestry/Unmanaged          | 9. Orchard           | (14) Other (describe) -  |
| 5. Forestry/Managed            | 10. Rangeland/Grazed |                          |

Itasca State Park

Ownership (circle one):

- |            |           |            |                       |
|------------|-----------|------------|-----------------------|
| 1. Private | (2) State | 3. Federal | 4. Local Municipality |
|------------|-----------|------------|-----------------------|

Land Cover Type (circle one; Refer to instruction sheet for cover type definitions):

- |                      |                                       |                                  |                               |
|----------------------|---------------------------------------|----------------------------------|-------------------------------|
| (4) Upland Forest    | 7. Successional Field                 | 12. Chaparral                    | 17. Tundra                    |
| 2. Forested Wetland  | 8. Non-Desert Shrubland               | 13. Desert Scrub/Shrub           | (18) Mixed Habitat (describe) |
| 3. Shrub Wetland     | 9. Grassland/Prairie Spring Green-Up  | 14. Desert Succulent             |                               |
| 4. Bog               | 10. Grassland/Prairie Summer Green-Up | 15. Desert Woodland/Non-Riparian |                               |
| 5. Fresh Water Marsh | 11. Savannah                          | 16. Desert Woodland/Riparian     | 19. Other (describe)          |
| 6. Salt Marsh        |                                       |                                  |                               |

Dominant Life Form of Vegetation (circle one for each part):

A dominant group comprises > 60% relative cover. For plots with co-dominants or mixed habitats, circle the two most appropriate descriptors for Part A. Parts B and C are for plots dominated by trees or shrubs. Part D is for plots dominated by shrubs, grasses, grass-like plants, or forbs.

## Part A

- (1) Trees (> 5m in height)
2. Saplings (< 5m)
- (3) Tall shrubs (> 2 - 5m)
4. Dwarf shrubs (< 2m)
5. Tall Grasses or Grass-like Plants (> 1m)
6. Short Grasses or Grass-like Plants (< 1m)
7. Forbs
8. Tall Grasses/Forbs
9. Short Grasses/Forbs
10. Moss-lichen
11. Succulent

## Part B

0. Not applicable
1. Broadleaf
2. Needleleaf
- (3) Mixed Broadleaf/Needleleaf
4. Dead

## Part C

0. Not applicable
1. Deciduous
2. Evergreen
- (3) Mixed Evergreen/Deciduous

## Part D

- (0) Not Applicable
1. Perennial
2. Annual