A COMPARISON OF BREEDING BIRD

CENSUS RESULTS FROM A CONIFEROUS

AND HARDWOOD FOREST.

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IN FULFILLMENT OF CREDIT FOR

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Independent only, and Field Ornithdogy course Very vice job. FCS distributional theories, construct tables illustrating both the original and present species frequencies of the park.

Investigations of historic journals and land survey records indicate that the presettlement forests of Itasca were composed primarily of aspen (Populus tremloides) and white birch (Betula papyrifera) with red, (Pinus resinosa) white, (Pinus strobus) and jack pine stands (Pinus banksiana). (Frissell 1971). The distribution was approximately 65% coniferous and 35% hardwood stands. In contrast the present distribution is approximately 25% coniferous and 75% hardwood (Frissell 1973).

Since the park has representatives of both original forest stands and AS information on the parks original vegetation is available, the method of censusing was decided upon to determine how such factors as fire and logging have altered the bird species distribution of Itasca State Park.

## Methods

Two stands were selected to represent the parks coniferous and hardwood forests. The first was a 12.75 hectare portion of the Wilderness Sanctuary located west of Lake Itasca on wilderness drive. The stand originated after a major fire in 1712 (Frissell 1973), was acquired by the park in 1892 (Aasang 1976), and contains primarily red pine (53%), balsam fir (12.9%) and white birch (7.6%). The second site, located on Bear Paw Point, was originally a red pine forest when acquired by the park in 1892, but was clear cut during logging operations in 1912. The 8.75 hectare plot chosen contains primarily elm(31.8%), black ash (22%)

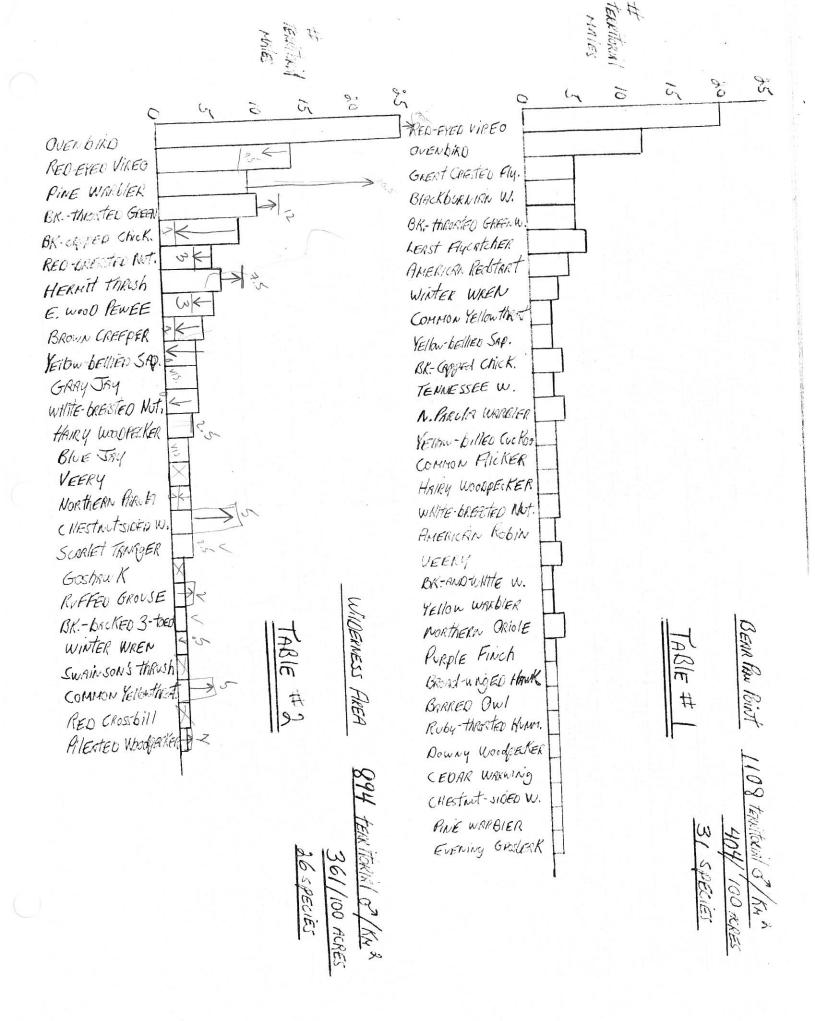
and white birch (13%).

Both of the areas were gridded according to the guidelines set by the National Audubon Societys' breeding bird census (American Birds 1972). Teams of 4, using a tripod mounted Brunton pocket transit, set stakes at 50 meter intervals until the desired acreage was established.(appendix A) The red pine stand was gridded specifically for this study by the author and members of the field ornithology class from June 19-25. The actual census dates were June 29,30,July 2,3,5,9-11 between 0500-0900 and 1830-2130 hours. The hardwood stand was originally gridded in June 1979 by the FOR A CENSUS field ornithology class conducted July 1979 (IBS 1307-B). The data used for this study was collected by B.Bell and M. Candee for a census conducted July 1-13 between 0500-1000, 1330-1530 and 1900-2300 hours.

## Results

Frequency tables 1 and 2 list the species found in the two censused areas. Table 3 lists the species unique to each area while table 4 lists the species common to both. The comparative information of tables 3 and 4 is given in # of territorial males/km.<sup>2</sup> rather than the original # of territorial males/ area censused. This conversion provides uniformity for comparing forest stands of equivalent acreage.

All of the frequency variation among the species can be dicussed in terms of the habitat similarities and differences between the two areas. For example, the nearly identical % ground cover and shrub cover(coniferous 79.3% gc, 48.5% sc; hardwood 77.5 gc, 49.5%sc) accounts for the similarities of the ovenbird



Species: Goshawk RED PINE Species MAPS. (BEAR PAN PT. MAPS FILED SEPERATION) in Caudee, Bell report 4 6 8 12.75 HECTARES 31.4 ACRES 51 SOURCES 10 50 M.

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MATURE PINE-FIR-BIRCH FOREST .-- Location: Minnesota; Clearwater Co., University of Minnesota Forestry and Biological Station, Itasca State Park Wilderness Sanctuary; 47°13' N, 95°12'W, USGS Itasca State Park Quadrangle. Continuity: New. Size: 12.75 ha= 31.5 acres(250x 550 m rectangle minus 110 sq. m of NWcorner, surveyed). Description of Plot: The dominant canopy tree is Red Pine (Pinus Resinosa). Most prominent in the understory are Balsum Fir (Abies Balsamea) White Birch (Betula Papyrifera). The ground cover is primarily Beaked Hazelnut (\_Corylus cornuta), Early Meadow Rue (Thalictrum dioicum), Bracken Fern (Pteridium aquilinum), Wild Lily of-the-Valley (Maianthenum canadense) and Large Leaf Aster (Aster macrophyllus). A quantitative survey of the vegetation gave the following results: Trees 3- inches diameter and over, based on ten 0.1-acre circular samples, 263/acre; total basal area 242.2 ft. 2/acre. Species comprising 90% of the total number of trees: (figures after each give number of trees/ acre, relative density (%), relative dominance (%), frequency (%).) Red Pine, 142, 53, 80, 100; dead trees, 52, 19.7, 6.6, 100; Balsam Fir, 34,12.9, 3.4,90; White Birch, 20,7.6,2.0, 90, Trees by diameter size class: (figures after each size class give number of trees/ acre, relative density (%), basal area ( sq. ft./acre), relative dominance (%).) A(3-6in.) 57, 21.6, 5.7,2.3; B(6-9in.) 52,19.7, 15.6,6.4; C(9-15in.) 79,30,59.7,24.6; D(15-21in.) 59,2.2,106.2, 43.8; E(21-27in.) 13,4.9,40.3,16.6; F(27-33in.) 3,1.1,14.7,6.0.

Shrub cover,48.5% (shrub stem count not taken); ground cover 79.3%; canopy cover 64.5%; average canopy height 80 ft. (range 45-110 ft.); average shrub height 6.8 ft. Plant names are from H. Gleason and A. Cronquist, Manual of Vascular Plants, 1963. Edge: Bordered on all sides by similar forest except for a 100 m bog on the NW portion. Topography: One small rise of approximately 25 ft. at NE end. Elevation: 1475 ft. Weather: 81° to 93° F. Wind, Beaufort 0-10 mph. Clear to overcast, no precipitation. Coverage: June 29-30, July 2,3,5,9-11 between 0500-0900 and 1830-2130 hours. Total man hours 26. Census: Ovenbird, 25 (196,79); Red-eyed Vireo, 13 (101,41); Black-throated Green Warbler,10 (78,32); Pine warbler, 9 (70,28); Black-capped Chickadee, 8 (63,25); Hermit Thrush, 6 (47,19); Eastern Wood Pewee, 5 (39,16); Red-breasted Nuthatch, 5 (39,16); Brown Creeper, 4 (31,12); Yellow-bellied Sapsucker, 3 (23,9); Gray Jay, 3 (23,9); White-breasted Nuthatch, 3 (23,9); Hairy Woodpecker, 2.5 (19,8); Blue Jay,2; Veery,2; Northern Parula Warbler, 2; Chestnut-sided Warbler, 2; Scarlet Tanager, 2; Goshawk, 1; Ruffed Grouse, 1; Black-backed Three-toed Woodpecker,1; Winter Wren,1; Swainson's Thrush,1; Common Yellowthroat,1; Red Crossbill,1; Pileated Woodpecker, 0.5,+. Total: 26 species; 114 territorial males (894/km.2, 361/100 acres). Visitors: Bald Eagle, Broad-winged Hawk, Common Raven, Evening Grosbeak. Remarks: Many birds had finished nesting and territorial boundaries were breaking down. The following species

Were feeding young that had fledged: Goshawk, Hairy Woodpecker,
Yellow-bellied Sapsucker, Gray Jay, Blue Jay, Red-breasted Nuthatch,
Black-capped Chickadee and Chestnut-sided Warbler. High % of ground
and shrub cover and complete lack of pine seedlings indicate
succession to a hardwood forest. Most of the dead trees were
young Balsam Firs with diameters less than 10 in.. Red Squirrels
(Tamiasciurus hudsonicus), White-tailed Deer (Odocoileus
virginianus) and Wood Frogs (Rana sylvatica) were frequently seen.
Special thanks to Barb Bell, Mary Candee, Laura Greffenius, Roberta
Sorensen and Mindy Bell for assistance in surveying and habitat
description, -- Paul J.J. Mills, 6800 16th Ave. 8. Richfield,
Mn. 55423.