

BOG BIRDS OF CHEBOYGAN COUNTY

by

Oscar M. Root

A report of an original field study conducted as a
requirement for Advanced Ornithology (Zoology 119)
and Advanced Zoological Studies (Zoology 231),
University of Michigan
Biological Station

Submitted August 21, 1941

TABLE OF CONTENTS

	Page
I. Preface	
II. Introduction - - - - -	1
A. Description - - - - -	1
B. Methods - - - - -	3
C. Identification - - - - -	3
D. Temperature - - - - -	3
III. Mud Lake, Inverness Township - - - - -	5
A. Aquatic Association - - - - -	5
B. Bog Mat Association - - - - -	5
C. Cedar Bog Association - - - - -	5
D. Summary - - - - -	6
IV. Reese's Bog - - - - -	6
V. Reese's Bog, East of Carp Creek - - - - -	10
A. Description - - - - -	10
B. Summary - - - - -	10
VI. Reese's Bog, West of Carp Creek - - - - -	10
A. Description - - - - -	10
B. Summary - - - - -	11
VII. Mud Lake, Grant Township - - - - -	11
A. Description - - - - -	11
B. Aquatic and Bog Mat Associations - - - - -	11
C. Cedar Bog Association - - - - -	12
D. Summary - - - - -	12
VIII. Blanchard Lake - - - - -	12
A. Description - - - - -	12
B. Aquatic and Bog Mat Associations - - - - -	14
C. Lowland Thicket Associations - - - - -	14

Contents (Continued)							Page
D. Dead Tree Association	-	-	-	-	-	-	14
E. Cedar Bog Association	-	-	-	-	-	-	15
F. Summary	-	-	-	-	-	-	15
IX. Discussion	-	-	-	-	-	-	22
A. General	-	-	-	-	-	-	22
B. Aquatic Association	-	-	-	-	-	-	22
C. Bog Mat Association	-	-	-	-	-	-	23
D. Lowland Thicket Association	-	-	-	-	-	-	29
E. Dead Tree Association	-	-	-	-	-	-	29
F. Cedar Bog Association	-	-	-	-	-	-	29
G. Warblers	-	-	-	-	-	-	30
H. Green Heron Nesting in Cheboygan County, Michigan	-	-	-	-	-	-	35
I. Crested Flycatcher	-	-	-	-	-	-	36
J. Olive-sided Flycatcher	-	-	-	-	-	-	37
K. Hermit Thrush	-	-	-	-	-	-	38
L. Wood Thrush Nesting in the Coniferous Bogs of							
Canadian Zone	-	-	-	-	-	-	39
X. Summary	-	-	-	-	-	-	40
XI. Bibliography							

Preface

I wish to express to Dr. O. S. Pettingill, Jr., my appreciation of his many helpful suggestions in the preparation of this paper. To Dr. Theodora Nelson is due my sincerest thanks for her kindly and sympathetic advice in many matters concerned with the survey of the bogs and the writing of the report. Much of the results achieved is due to her presence in the field with me on many occasions. I am indebted to Dr. F. C. Gates for the use of his manuscript on Blanchard Lake and the records of his meteorological observations at the Biological Station.

The authority used for the scientific names of birds mentioned in this paper is the A. O. U. Check-List of North American Birds, Fourth Edition 1931; and for the plants Gray's New Manual of Botany, 1908. The order of species used in the A. O. U. Check-List has been followed wherever tables have been compiled.

T.38N.

T.37N.

T.36N.

T.35N.



MAC K I N A W

H E R O N

B E A U G R A N D

M U N R O I N V E R N E S S

M U L L E T

B U R T

B U R T

L A K E

T U S C A R O R A

O P I N A B E E

M U L L E T

O P I N A B E E

K O E H L

INTRODUCTION

Description

During the summer of 1941 I conducted an investigation of the resident birds of four bog areas in Cheboygan County. The areas studied were: Mud Lake in Inverness Township, Reese's Bog in Burt Township, Mud Lake in Grant Township, and Blanchard Lake in Hebron Township, known as Mud Lake on County maps. (See Map 1)P2.)

The purpose of the investigation was twofold: (1) to survey the birds inhabiting these regions and (2) to discover, if possible, any infiltration, either from the north or from the south, of birds new to Cheboygan County.

The dominant tree growth in the wooded portions of the bogs is white cedar (Thuja occidentalis). With it are found in varying proportions black spruce (Picea mariana), white spruce (Picea canadensis), balsam fir (Abies balsamea), and tamarack (Larix laricina). Three of these wooded areas surround a typical bog lake¹ with a floating mat on its borders. Dr. F. C. Gates has told me that bog lakes are not limited to Michigan, but are circumpolar in distribution, occurring mainly in glaciated areas. They are known as far south as North Carolina, and have been found on mountain tops.

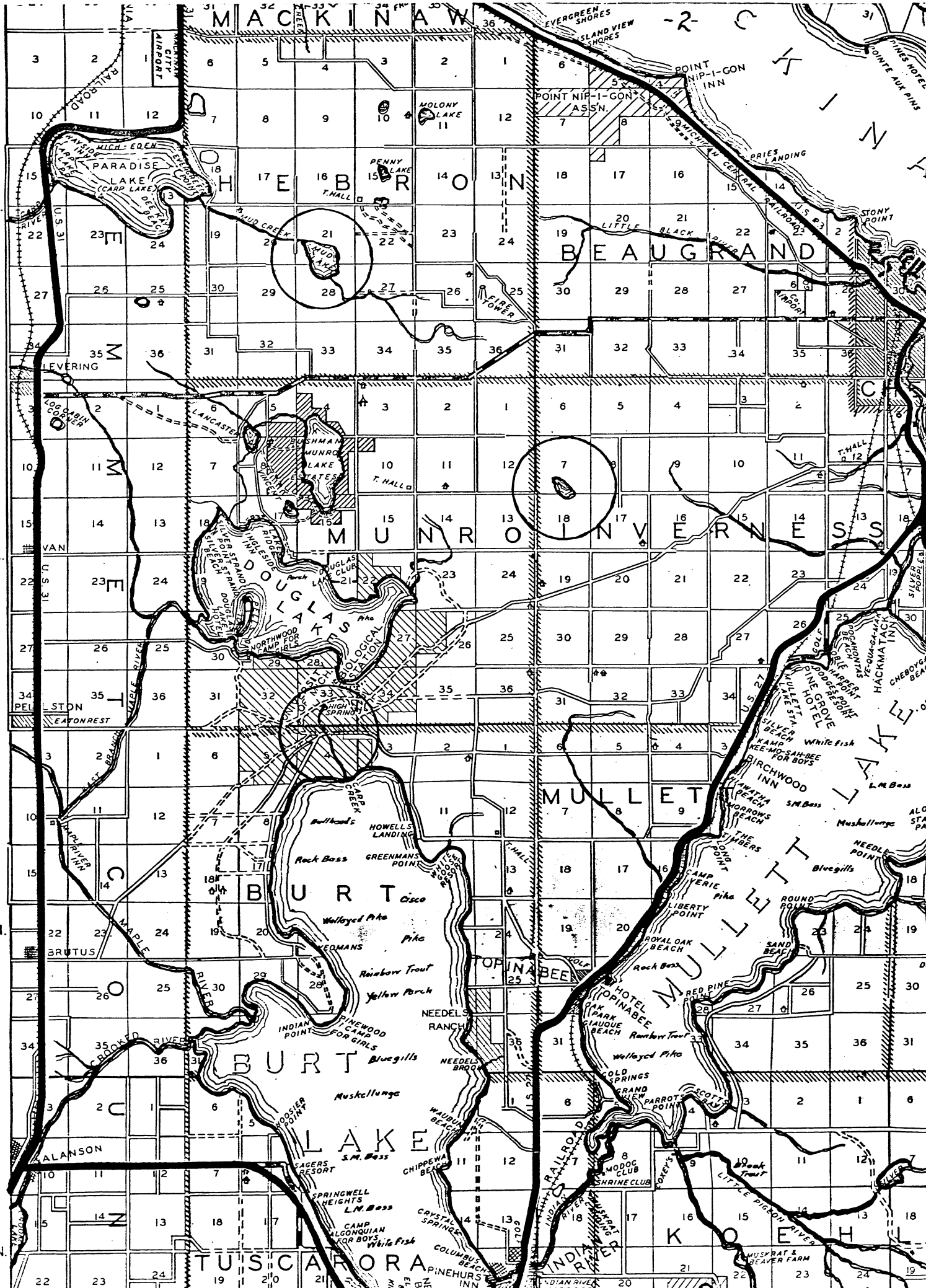
¹ Welch (1936, p.728) has defined a bog lake as follows: an area of open water, commonly surrounded, either wholly or in large part, by true bog margins; possessing peat deposits either about the margins or in the bottom, or both; usually with a false bottom composed mostly of very finely divided, flocculent vegetable matter; containing considerable amounts of colloidal materials; and usually so constituted genetically that at some future time it may become completely occupied by the higher vegetations so characteristic of those bogs which have lost all open water previously possessed.

T.38N.

T.37N.

T.36N.

T.35N.



MACKINAW

HERBORN

BEAUGRAND

MUNROE

MULLETT

BURT

BURT

TUSCARORA

MULLETT

KOEH

-2-

C K I N A

L A Y L L

M U L L E T T

K O E H

PARADISE LAKE (CARP LAKE)

MOLONY LAKE

PENNY LAKE

YUON LAKE

DOUGLAS LAKE

DOUGLAS LAKE

BURT LAKE

BURT LAKE

POINT NIP-I-GON ASSN.

POINT NIP-I-GON ASSN.

POINT NIP-I-GON ASSN.

POINT NIP-I-GON ASSN.

POINT NIP-I-GON ASSN.

POINT NIP-I-GON ASSN.

POINT NIP-I-GON ASSN.

POINT NIP-I-GON ASSN.

POINT NIP-I-GON ASSN.

POINT NIP-I-GON ASSN.

POINT NIP-I-GON ASSN.

POINT NIP-I-GON ASSN.

POINT NIP-I-GON ASSN.

POINT NIP-I-GON ASSN.

POINT NIP-I-GON ASSN.

POINT NIP-I-GON ASSN.

POINT NIP-I-GON ASSN.

POINT NIP-I-GON ASSN.

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

PARADISE LAKE (CARP LAKE)

Methods

A total of twenty day time and one night time visits was made to the bogs between the dates of June 24 and August 4, inclusive. Time spent in the field ranged from three to eight hours. The daily average was 5.2 hours. Detailed notes were taken in the field and entered in a pocket-sized notebook. Upon returning from the field an exact copy of the notes was entered in a journal. The record of each trip was kept on consecutive pages of the journal, and all birds identified were classified according to the different ecological associations in which they were found.

Identification

Birds were identified both by sight and by song. Enumerations of birds in this paper represent numbers of different individuals recorded. In wooded areas such as Reese's Bog, where the same area was traversed more than once, there existed the possibility of seeing or hearing the same individuals on different days. Under these circumstances it was necessary to estimate the number of individuals present. At all times, however, a conservative estimate was made, and I do not feel that the figures presented in this paper err on the side of overstatement.

Temperature

Temperatures were recorded in three of the bog woods by means of a Tycos maximum-minimum thermometer. The Fahrenheit scale was used in all instances. At Mud Lake, Inverness Township, over a period of approximately 24 hours from 6:10 A.M. on June 24 to 6:20 A.M. on June 25 the maximum temperature was 79° and the minimum 51°. The temperature on the open bog mat at 11:00 A.M. on June 25 was 115°. No temperatures at Douglas Lake for this period

are available for comparison, as the Summer Session had not yet opened.

From July 3 to July 5 the maximum temperature in the dense coniferous woods of Reese's Bog was 69° and the minimum temperature was 42°. During the same period the temperatures recorded by Dr. F. C. Gates at the Biological Station were: maximum 77° and minimum 52°. At Mud Lake, Grant Township, from July 11 to July 14 the maximum temperature recorded was 90° and the minimum was 43°. Readings made by Dr. Gates for the same period were: maximum 88°, minimum 49°.

The month of July, 1941, was hotter and drier than the average for the years 1937 to 1941 inclusive. (See Table I.) The mean temperature was 71.0° while the five-year average was 67.8°. The total rainfall for the month was 1.27 inches compared to an average precipitation of 2.24 inches from 1937 to 1941.

Table I

Weather Summaries for the month of July, Biological Station.

Observer, F. C. Gates

Year	Temperature					Precipitation
	Abs. max	Av. max	Abs. min.	Av. min.	Mean	Total in Inches
1937	95	81.5	47	59.1	70.3	4.68
1938	89	80.1	43	56.6	58.3	1.31
1939	94	81.7	58.1	58.1	69.9	1.03
1940	93	81.0	47	57.7	69.3	2.90
1941	99	83.1	46	59.0	71.0	1.27
Average	94	81.5	48.2	58.1	67.8	2.24

MUD LAKE, INVERNESS TOWNSHIP

Aquatic Association

Mud Lake is situated in the northwestern part of Inverness Township. (See Map II, p.7) According to Welch (1936, p.727) it is a strongly basic peat bog lake about three tenths of a mile wide and twice as long, extending in a northwest-southwest direction. The open water of the lake is what I have termed the "Aquatic Association" (See Plate I Fig. 2.). Here I have included those birds which either make their home on the lake or feed over it. In visits to Mud Lake on June 24, ²⁵~~24~~, and August 4 I recorded on or over the lake 32 individuals distributed among seven species. (See Table II, p.8.)

Bog Mat Association

On the northeast and east shores of the lake is an acid-forming, quaking mat (See Plate I, Fig. 1). As pointed out by Goe, Erickson, and Woollett (1924, p.304), the mat is overgrown by characteristic bog vegetation such as sedge (Carex filiformis), leather leaf (Chamaedaphne calyculata), mountain holly (Nemopanthus mucronata), hoary alder (Alnus incana), and several species of sphagnum. In addition, there is a considerable mingling of young tamarack, cedar, and black spruce. This mat extends to the east for almost a mile. I have termed it the "Bog Mat Association".

The mat affords nesting or feeding facilities for a wide variety of birds. Here I recorded 84 individuals distributed among 23 species. To my list of species may be added one Sora seen by Dr. F. C. Gates on July 23.

Cedar Bog Association

The southern and western shores of the lake are bordered by a narrow forest belt of lowland Thuja-Picea-Larix type (See Plate II, Fig. 2.). This forest extends in a northeasterly direction for about

five miles to Blanchard Lake and embraces an area of approximately four square miles. In places the trees are large and close together. In others, they are smaller, with intrusions of aspens and alders. The scarcity of trails and the large number of trees blown down during the severe storm in the autumn of 1940 limited study of this area to the woods in the immediate vicinity of the lake. On July 31 the woods were entered by way of a trail leading a short distance southward from the Levering-Cheboygan highway. I have termed this area the "Cedar Bog Association".

In the bog woods at Mud Lake I listed 34 species and 137 individuals. In addition to these, on July 23, Dr. F. C. Gates identified one Pileated Woodpecker in the woods.

Summary

The total number of birds identified in the three associations at Mud Lake was 255 and the total number of species was 54.

(See Table II, p. 8 and ^{vii}p. 24.)

REESE'S BOG

Reese's Bog is located on the north shore of Burt Lake, Burt Township, Sections 3 and 4. (See Map III, p. 9) The area studied extends two and three fourths miles westward from the road leading southward to Burt Lake from the Hogback Road. It extends north of Burt Lake for an average distance of about five eighths of a mile.

The bog is much older than is the bog of Mud Lake, Inverness Township. Formerly it contained beach pools, cut off by sand bars from Burt Lake. These have long since been filled, and the area is now heavily forested. (See Plate II, Fig. 1.) The bog is cut into two parts by Carp Creek which flows southward through it to Burt Lake. Because of some differences in the forest cover, I have studied the habitats east and west of Carp Creek as two different areas.

MAP II
MUD LAKE, INVERNESS TOWNSHIP
From Farm-Forest Map Cheboygan County 1932

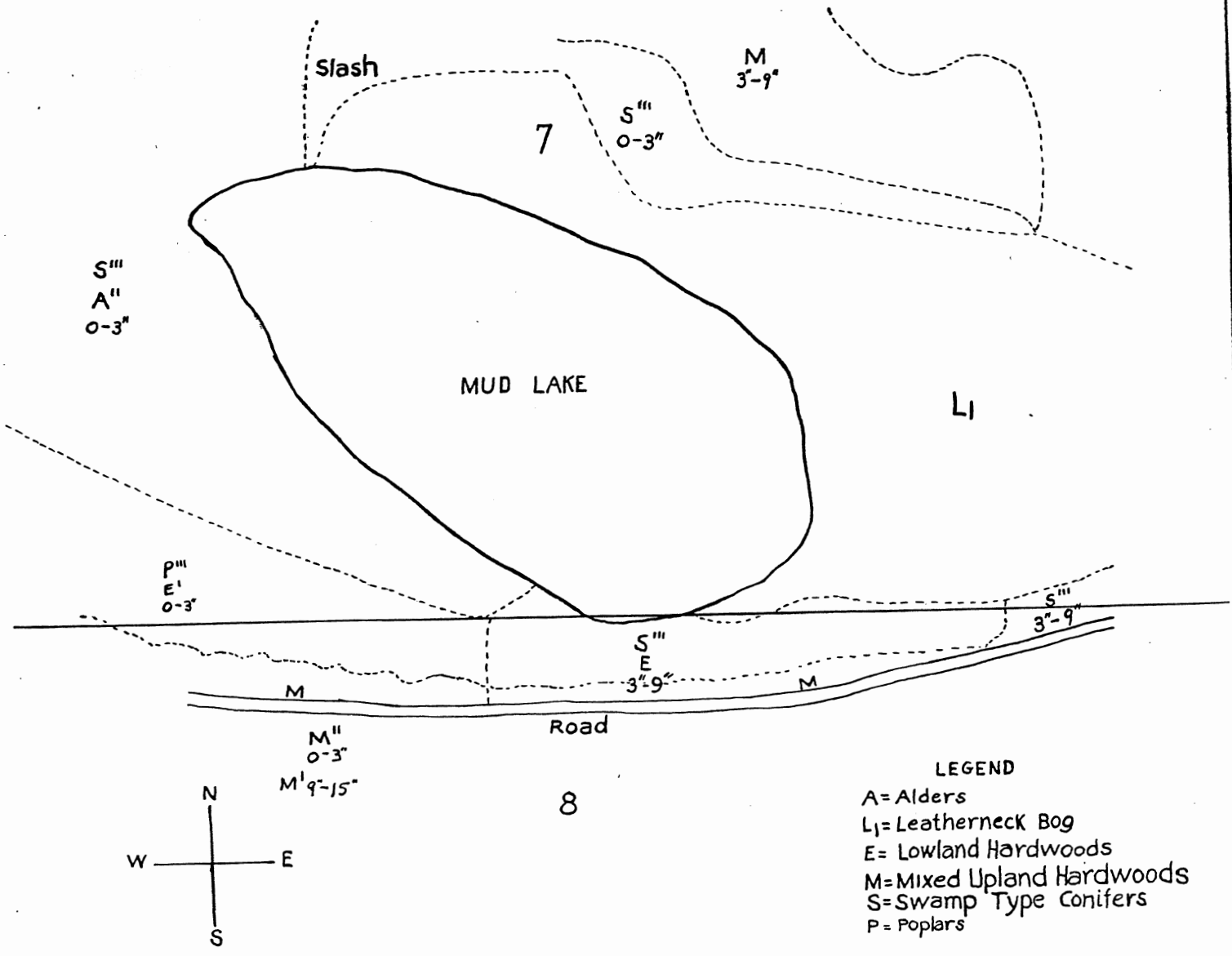


Table II

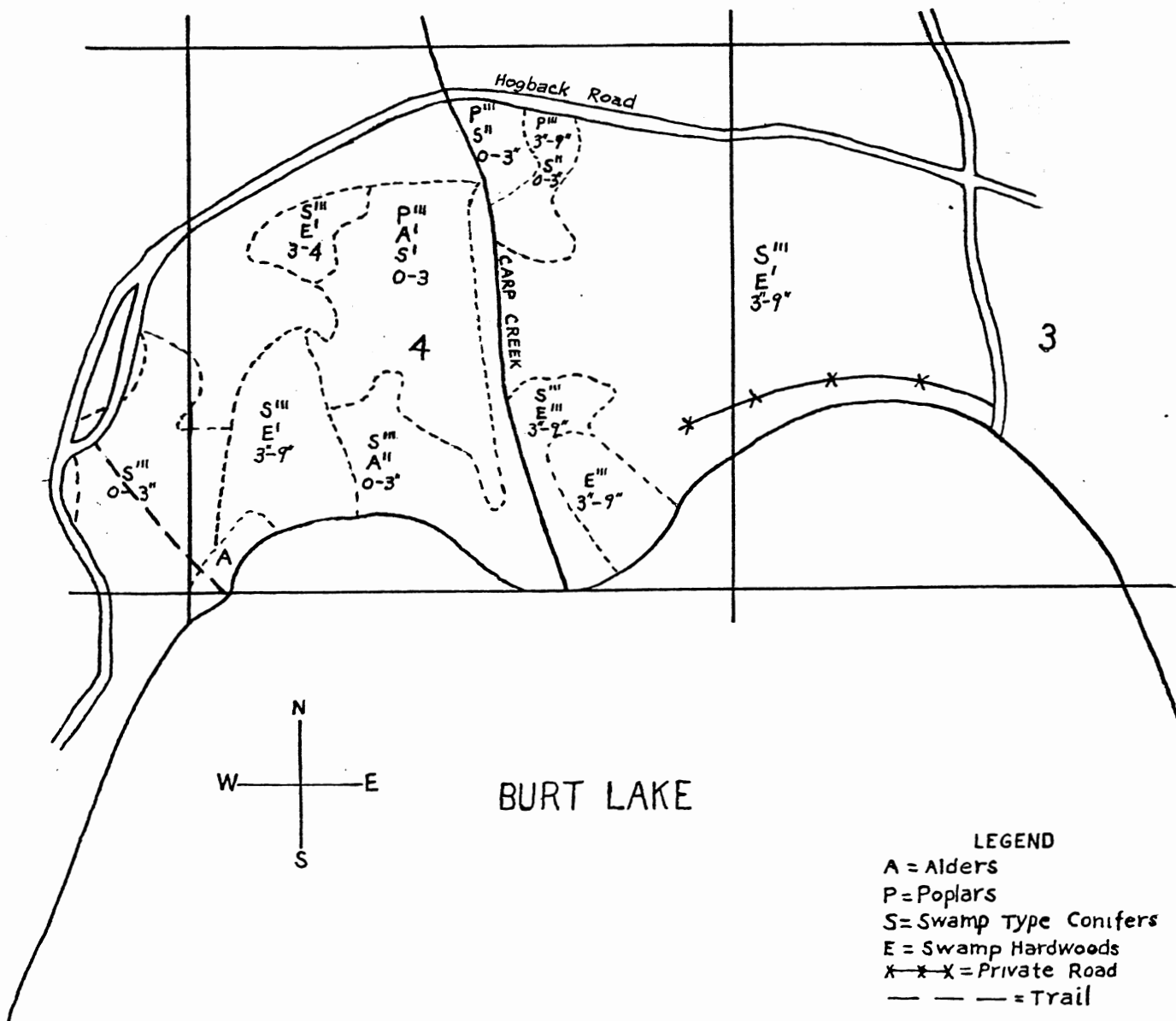
Birds Identified at Mud Lake (Inverness Township)
June 24, 25, July 23, 25, 31, 1941.

<u>Aquatic Association</u>		<u>Cedar Bog Association</u>	
Pied-billed Grebe	1	Ruffed Grouse (2ads, 8young)	10
Black Duck (8ads, 8juv)	16	Woodcock	1
Ring-billed Gull (In flight)	1	Mourning Dove	2
Belted Kingfisher	1	Nighthawk	3
Tree Swallow	2	Flicker	4
Barn Swallow	6	Pileated Woodpecker (Ident. by F.C. Gates)	1
Purple Martin	5	Hairy Woodpecker	1
Total Species	7	Downy Woodpecker	2
Total Individuals	32	Kingbird	1
		Crested Flycatcher	1
		Wood Peewee	1
<u>Bog Mat Association</u>		Olive-sided Flycatcher	1
Great Blue Heron	1	Blue Jay	5
American Bittern	2	Crow	6
Marsh Hawk	3	Black-capped Chickadee	7
Sora Rail (Ident. by F.C. Gates)	1	Red-breasted Nuthatch	2
Black-billed Cuckoo (?)	1	Winter Wren	1
Kingbird	2	Catbird	2
Blue Jay	1	Robin	2
Black-capped Chickadee	2	Wood Thrush	1
Cedar Waxwing	2	Veery	3
Red-eyed Vireo	1	Cedar Waxwing	5
Black and White Warbler	3	Red-eyed Vireo	7
Myrtle Warbler	1	Black and White Warbler	15
Chestnut-sided Warbler	1	Nashville Warbler	1
Ovenbird	1	Black-throated Green Warbler	9
Northern Yellowthroat	13	Chestnut-sided Warbler	1
Redwing	3	Ovenbird	13
Cowbird	2	American Redstart	4
Indigo Bunting	1	Scarlet Tanager	1
Purple Finch	7	Indigo Bunting	3
Goldfinch	11	Purple Finch	2
Red-eyed Towhee	2	Red-eyed Towhee	11
Chipping Sparrow	2	White-throated Sparrow	3
Swamp Sparrow	3	Song Sparrow	6
Song Sparrow	19		
Total Species	24	Total Species	35
Total Individuals	85	Total Individuals	138

Grand Total of Species, Mud Lake 54
Grand Total of Individuals, Mud Lake 255

MAP III REESE'S BOG

From Farm-Forest Map Cheboygan County 1932



REESE'S BOG, EAST OF CARP CREEK

Description

This area extends about one and three eights miles in an east-west direction and averages about three fourths of a mile in depth. Its acreage is approximately one square mile. It is heavily forested with Thuja and Abies, with a scattering of swamp hardwoods, including red maples (Acer rubrum), linden (Tilia americana), and some hemlocks (Tsuga canadensis), especially near the lower course of Carp Creek. At the mouth of Carp Creek are a few alders which I have designated the "Lowland Thicket Association". The trees are larger and closer together than those described at Mud Lake, and little light reaches the forest floor.

A private road and trail near the shore of Burt Lake extend westward to Carp Creek, and farther north a trail extends westward through the cedars almost to Carp Creek. These, with two cross trails connecting them, make the bog fairly accessible. Burt Lake and its shore were not included in the present study.

Summary

Visits were made to this territory on June 26, 27, 28, 29 and on July 2, 3, 4, 1941. A total of forty species and 186 individuals was recorded in Reese's Bog east of Carp Creek (See Table III, p. 16 and ^{vii}p. 24.).

REESE'S BOG, WEST OF CARP CREEK

Description

This area (See Map III, p. 9) is about one and three eights miles long, with an average ^{width} ~~depth~~ of about one half mile. The total area is in the neighborhood of two thirds of a square mile. Like the region east of Carp Creek, there is no bog lake here. The

territory is not so heavily forested. The trees are smaller, more widely spaced, and there are more swamp hardwoods and alders to be found among the swamp type conifers. Alders in particular are found along the shore of Burt Lake.

I visited this area on July 4 and July 6. The nature of the territory did not make more visits seem advisable.

Summary

In the Cedar Bog Association were found 35 species and 175 individuals. Five species and eight individuals were identified in the Lowland Thicket Association. The totals for the entire bog west of Carp Creek are: species 38; individuals 183.

(See Table IV, p.17 and ^{VII}_^p.24.)

MUD LAKE, GRANT TOWNSHIP

Description

Mud Lake is a bog lake located in Sections 20 and 21 of Grant Township, about one half mile west of the northwest shore of Black Lake. Much of the bog woods adjacent to the lake is owned by Mr. George Harrison, whose farm is across the road from the territory which I studied. The lake is about three eighths of a mile long and one fourth of a mile wide, extending in a north-south direction. Mud Lake is twenty-five miles distant from the Biological Station. (See Map I, p.2) Mr. Harrison describes the lake as being shallow and muddy, and states that it is exceedingly difficult to row a boat in it. Daytime visits to this lake were made on July 10, 11, 14, and 17. On two occasions I stayed over night at the home of Mr. Harrison. On the night of July 16 I stayed beside the lake until 9:00 p.m. but heard no owls.

Aquatic and Bog Mat Associations

A narrow leather leaf quaking type of mat surrounds the lake. (See Map IV, p.18) The inner border of this will not support a person.

The border adjacent to the woods is covered by a dense, practically impenetrable, growth of Sweet Gale, (Myrica Gale) and wild rose (Rosa carolina) over most of its area. There are also a few patches of cat tails, (Typha sp.) on the mat. In most of the open water there is an abundant growth of what appears to be bulrush (Scirpus sp.)

Cedar Bog Association

Bog conifers surround the lake in a ring averaging about one eighth of a mile in width. A variety of this type of cover was noticed, including white cedar, balsam fir, black spruce, white spruce, and tamarack. Interspersed among the evergreens are a few white birches, (Betula alba), large-toothed aspens (Populus grandidentata), black ash (Fraxinus nigra), and alders. The woodland is more open than is Reese's Bog on the east side of Carp Creek, and there is a sprinkling of tall dead trees present. Study here is difficult, as, with the exception of a path leading from the road to the north end of the lake, the woods are devoid of trails and roads. The ground is quite soft, making progress difficult.

Summary

Within the aquatic association were found eight species and thirty individuals (See Table V, p. 19) The bog mat association yielded six species and thirty-four individuals. In the cedar woods were identified 29 species and 164 individuals. The number of individuals recorded within the Mud Lake area totaled 261 and the number of species was 46. (See Table V, p. 19 and ^{VII} p. 24.)

BLANCHARD LAKE

Description

Blanchard Lake is located in Section 21 and 28 of Hebron Township. It is about one half mile long and three eighths of a

mile wide, but in 1941, owing to scarcity of rainfall, there was a noticeable recession of the water from its normal margin. It is drained at its northwest end by Mud Creek which flows into Paradise Lake (Carp Lake). I visited Blanchard Lake on July 23, 25, 31, and on August 1 and 4. On all my trips to this region I was accompanied by Dr. Theodora Nelson.

Professor Frank C. Gates, who took his classes in Ecology to Blanchard Lake from 1929 to 1935, has described the bog as follows (1941, M.S.):

"Blanchard Lake, known as Mud Lake on County maps, is an extension in the Cheboygan-Cecil bog. The main body of the Lake is relatively shallow with Scirpus occidentalis and S. validus mostly around the edges but also to a limited extent in the center as well. A rather broad mat is present on either side, extending up into the woods at either end of the lake. Carex lasiocarpa was the principal species, although on a mat were a few more species than one usually finds on a Carex mat. The mat was loosely grounded for the most part with many areas quaking. Over the deepest part of the basin discovered was a firmly grounded mat which supported a dense growth of bog shrubs and a single tall rapidly growing Pinus Strobus about 45 years old.

Bog shrubs lined the mat landward, giving place to the Larix association or a Larix-Picea-Thuja mixture, except where a heavy growth of aspens proclaimed previous fire.

In 1933 beavers built a dam across Mud Creek below the lake. The subsequent rise in water level loosened great masses of the mat from the bottom, restoring it to quaking. However, the large outstanding pine was too firmly rooted to ride up on the water and drowned. The same fate was in store for the many trees of Larix, most of which were about 130 years of age.

Subsequent lowering of the lake with the extinction of the dam has left a general mixture of various bog elements without the former most interesting features."

Aquatic and Bog Mat Associations

The water in the center of the lake is deep enough to provide fish in sufficient size and quantity to attract fish-eating birds. I identified 15 species and 64 individuals in the aquatic area. On the mat were recorded 9 species and 49 individuals.

(See Table VI, p. 20.)

Lowland Thicket Association

Burning of a portion of the bog woods, raising of the lake level by the beavers, with consequent killing of tamaracks, and subsequent lumbering operations have resulted in some interesting associations of both plant and animal life.

Lumbering of the fine stand of tamaracks had commenced in 1932 before the construction of the beaver dam, and this was continued after the death of the trees due to drowning, as I learned from conversation with Dr. F. C. Gates. As a result, along the northeast shore and extending about two hundred yards eastward from the east end of the lake and about one hundred yards north and south, there is an area of alder thickets, interspersed with other species of shrubs and young trees (See Map V, p. 21.)

Dead Tree Association

To the east and south of the alder area there still exists a considerable stand of tall dead trees, mostly tamaracks.

(See Plate III Fig. 1.) Extending westward along the north shore of the lake and along both banks of Mud Creek is an area of dead aspens which apparently were killed by the rise of water in 1933. There are also some tall dead trees at various points in the coniferous

woods. Across the lake to the south and west there seem to be many trees, probably an aspen association, but due to its inaccessibility this area was not studied. The tops of dead trees provided an interesting habitat worth studying separately. Eleven different species and forty-five individuals were identified in this association. (See Table VI, p. 20.)

Cedar Bog Association

In the coniferous bog which I studied on the northeast shore of the lake the white cedar is the dominant species. There is a considerable number of black spruce trees, and also some small tamaracks. (See Plate III, Fig. 2.) In places alders are growing among the conifers, and in some parts where lumbering has been done the cut over areas are covered with alders and other shrubs. The bog woods is a Thuja-Picea-Larix mixture, similar in general density to that described around Mud Lake in Inverness Township. In fact, as pointed out on Page 6, the Blanchard Bog is a continuation of the Mud Lake Bog.

This cedar bog was studied on July 25 and on August 1 and 4. Twenty-six species and one hundred twelve individuals were identified. (See Table VI, p. 20.) It is fair to state that all three visits to these woods were made fairly late in the summer, and on two of the occasions very few bird songs were audible.

Summary

The Blanchard Lake area proved to be the most fertile field for birds with a total of 63 species and 366 individuals recorded. (See Table VI, p. 20 and Table VII p. 24.)

Table III

Birds Identified at Reese's Bog East of Carp Creek
June 26, 27, 28, 29, July 2, 3, 4, 1941

Aquatic Association

Black Duck (1ad, 2juv)	3
Bald Eagle im.	1
Kingfisher	1
Total Species	3
Total Individuals	5

Lowland Thicket Association

Northern Yellowthroat	1
-----------------------	---

Cedar Bog Association

Sparrow Hawk (?) (Overhead)	1	Wood Thrush	2
Ruffed Grouse (1 ad, 7juv)	8	Veery	1
Mourning Dove	2	Golden-crowned Kinglet	4
Ruby-throated Hummingbird (n)	1	Cedar Waxwing	6
Flicker	6	Red-eyed Vireo (n)	4
Yellow-bellied Sapsucker	4	Black and White Warbler	8
Hairy Woodpecker	7	Parula Warbler	3
Downy Woodpecker	2	Myrtle Warbler	8
Kingbird	1	Black-throated Green Warbler	10
Crested Flycatcher	7	Blackburnian Warbler	3
Wood Pewee	3	Ovenbird	5
Blue Jay	7	Waterthrush (?)	1
Crow	4	Scarlet Tanager	2
Black-capped Chickadee	33	Rose-breasted Grosbeak	1
Red-breasted Nuthatch	8	Purple Finch	4
Winter wren	3	Goldfinch (Overhead)	6
Brown Thrasher	1	Chipping Sparrow	4
Robin	6	Song Sparrow	4

Total Species 36
Total Individuals 180

Grand Total of Species, Reese's Bog East of Carp Creek 40
Grand Total of Individuals, Reese's Bog East of Carp Creek 186

Table IV

Birds Identified in Reese's Bog West of Carp Creek
July 4, 6, 1941

Lowland Thicket Association

Hairy Woodpecker	1
Catbird	1
Brown Thrasher	2
Northern Yellowthroat	1
Song Sparrow	3
Total Species	5
Total Individuals	8

Cedar Bog Association

Ruffed Grouse (1 ad, 7y)	8	Cedar Waxwing	5
Mourning Dove	3	Red-eyed Vireo	7
Night Hawk (In flight)	3	Black and White Warbler	11
Flicker	4	Nashville Warbler	2
Yellow-bellied Sapsucker	1	Black-throated Blue Warbler	3
Hairy Woodpecker	5	Myrtle Warbler	3
Downy Woodpecker	4	Black-throated Green Warbler	22
Crested Flycatcher	1	Blackburnian Warbler	1
Wood Peewee	4	Ovenbird	12
Blue Jay	8	Canada Warbler	2
Crow	5	American Redstart	1
Black-capped Chickadee	18	Scarlet Tanager	2
Red-breasted Nuthatch	1	Rose-breasted Grosbeak	3
Winter Wren	3	Purple Finch	1
Robin	3	Goldfinch	14
Wood Thrush	1	Chipping Sparrow	1
Veery	1	Song Sparrow	5
Golden Crowned Kinglet	7		

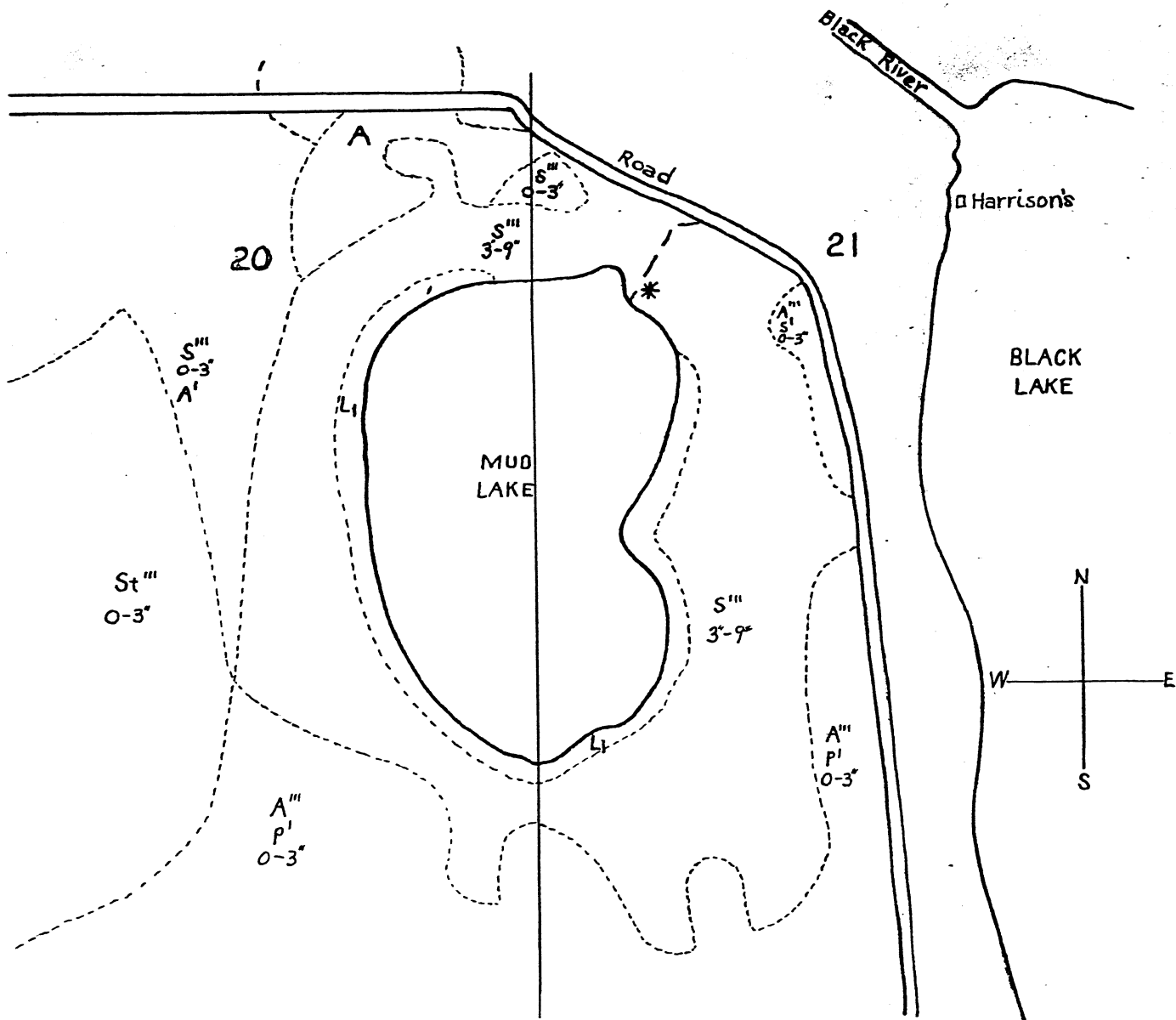
Total Species 35
Total Individuals 175

Grand Total of Species, Reese's Bog West of Carp Creek 38
Grand Total of Individuals, Reese's Bog West of Carp Creek 183

MAP IV

MUD LAKE, GRANT TOWNSHIP

From Farm-Forest Map Cheboygan County 1932



LEGEND

- L₁ = Leatherneck Bog
- A = Alders
- S = Swamp Type Conifers
- St = Swamp Type, Tamaracks Predominant
- P = Poplars, Aspens
- * = Nest of Green Heron
- - - = Trail

Table V

Birds Identified at Mud Lake (Grant Township)
July 10, 11, 14, 17 1941

<u>Aquatic Association</u>		<u>Cedar Bog Association</u>	
Pied-billed Grebe (3ad,7juv)	10	Mourning Dove	3
Mallard	1	Whip-poor-will	3
Black Duck	2	Flicker	2
Red-breasted Merganser (1 ad,4juv)	5	Downy Woodpecker	2
Nighthawk	4	Kingbird	2
Belted Kingfisher	2	Crested Flycatcher	5
Tree Swallow	4	Blue Jay	2
Purple Martin	2	Crow	10
		Black-capped Chickadee	46
Total Species	8	White-breasted Nuthatch	2
Total Individuals	30	Red-breasted Nuthatch	1
		Robin	8
		Wood Thrush	1
<u>Bog Mat Association</u>		Veery	7
Great Blue Heron	2	Golden-crowned Kinglet	16
Green Heron (2ad,5juv)n	7	Cedar Waxwing	6
American Bittern	2	Red-eyed Vireo	1
Marsh Hawk	1	Black and White Warbler	4
Redwing	3	Myrtle Warbler	6
Goldfinch (In flight)	19	Black-throated Green Warbler	2
		Blackburnian Warbler	3
Total Species	6	Ovenbird	1
Total Individuals	34	American Redstart	18
		Rose-breasted Grosbeak	1
<u>Lowland Thicket Association</u>		Purple Finch	3
Catbird	1	Red-eyed Towhee	1
Northern Yellowthroat	14	Chipping Sparrow	3
Swamp Sparrow	11	White-throated Sparrow	3
Song Sparrow	7	Song Sparrow	2
		Total Species	29
Total Species	4	Total Individuals	164
Total Individuals	33		
		Grand Total of Species	46
		Grand Total of Individuals	261

Table VI

Birds Identified at Blanchard Lake (Hebron Township)
July 23, 25, 31, August 1, 4, 1941.

<u>Aquatic Association</u>		<u>Cedar Bog Association</u>	
Common Loon	1	Red-tailed Hawk, im(?)	1
Pied-billed Grebe	1	Mourning Dove	2
Mallard	1	Ruby-throated Hummingbird	1
Black Duck	10	Hairy Woodpecker	1
American Pintail	3	Downy Woodpecker	1
Green-winged Teal	1	Crested Flycatcher	4
Blue-winged Teal	5	Least Flycatcher	1
Bald Eagle	1	Blue Jay	11
Osprey	1	Crow	6
Common Tern	2	Black-capped Chickadee	38
Caspian Tern	2	Red-breasted Nuthatch	6
Nighthawk	3	Winter Wren	1
Tree Swallow	16	Brown Thrasher	1
Barn Swallow	2	Robin	6
Purple Martin	15	Veery	1
		Red-eyed Vireo (2 ad. 4 im.)	6
Total Species	15	Black and White Warbler	6
Total Individuals	64	Myrtle Warbler (Im.)	2
		Black-throated Green Warbler	1
		Ovenbird	1
<u>Bog Mat Association</u>		Canada Warbler	2
Great Blue Heron	6	Rose-breasted Grosbeak (3ad, 2im)	5
American Bittern	2	Purple Finch	1
Marsh Hawk	2	Red-eyed Towhee	4
Virginia Rail	1	White-throated Sparrow	2
Wilson's Snipe	1	Song Sparrow	1
Killdeer	8		
Bobolink	1	Total Species	26
Redwing	4	Total Individuals	112
Goldfinch (In flight)	24		
		<u>Tops of Dead Trees</u>	
Total Species	9	Flicker	9
Total Individuals	49	Downy Woodpecker	3
		Kingbird	8
<u>Lowland Thicket Association</u>		Crested Flycatcher	1
Alder Flycatcher	5	Phoebe	1
Catbird	3	Olive-sided Flycatcher	2
Yellow Warbler	3	House Wren	1
Chestnut-sided Warbler	1	Robin	5
Northern Yellowthroat	32	Cedar Waxwing	11
Red-eyed Towhee	5	Baltimore Oriole	1
Swamp Sparrow	21	Purple Finch	3
Song Sparrow	26		
		Total Species	11
Total Species	8	Total Individuals	45
Total Individuals	96		
		Grand Total of Species, Blanchard Lake	63
		Grand Total of Individuals, Blanchard Lake	366

Additional Birds Identified at Blanchard Lake by O.M. Root
June 29, 1942

Aquatic Association

Belted Kingfisher 1

Dead Tree Association

Bluebird, 1 pair

Cedar Bog Association

Wood Pewee

Nashville Warbler, common

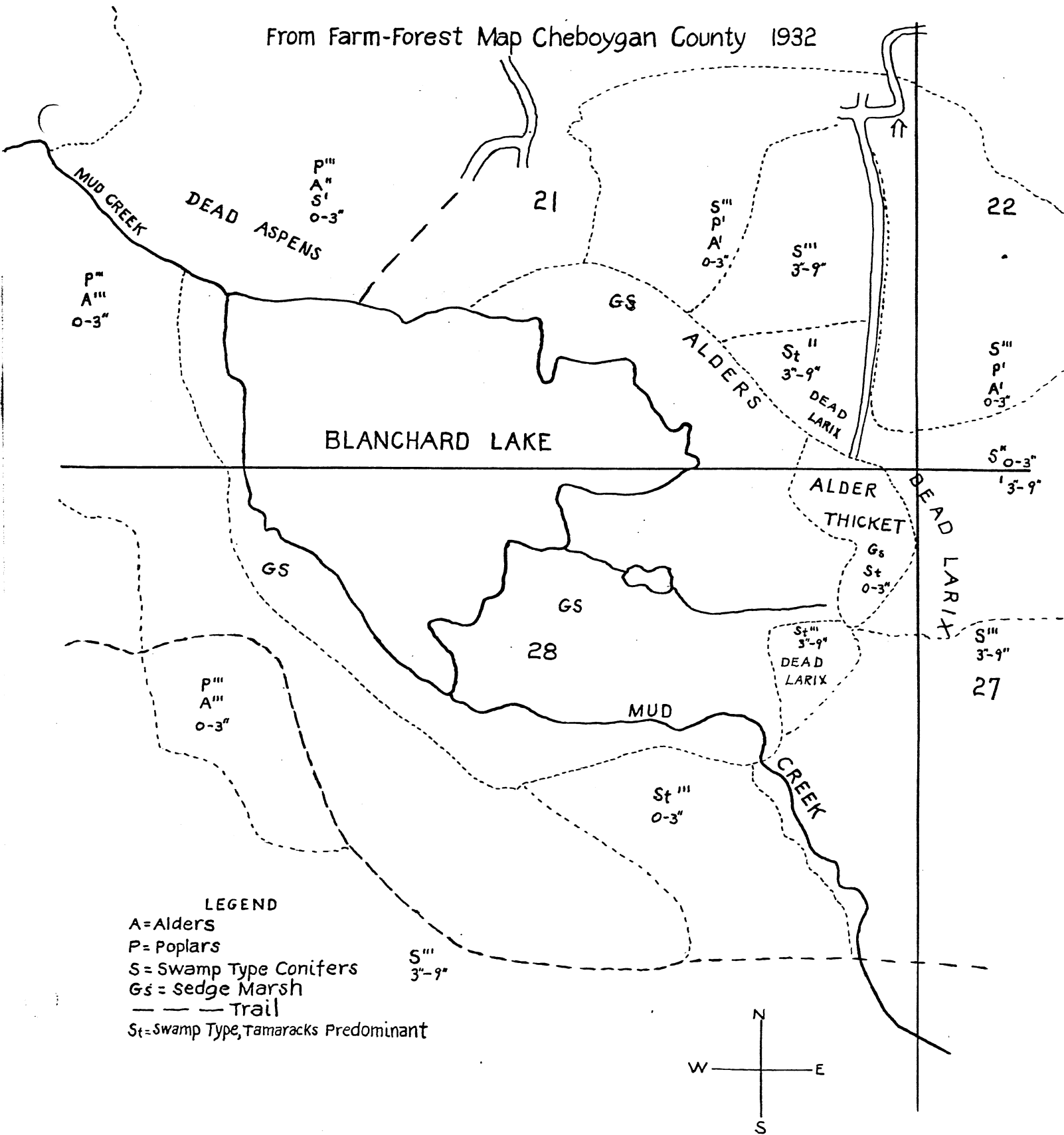
Black-throated Blue Warbler 1

Cowbird 5

Scarlet Tanager 1 male

MAP V BLANCHARD LAKE

From Farm-Forest Map Cheboygan County 1932



DISCUSSION

General

~~Ninety~~ ^{Eighty-nine} different species and ~~1,251~~ ^{1,245} individuals were recorded during my survey. Approximately 60 per cent of all species and individuals observed were seen in the bog woods. (See Table VII, p.24.) The Blanchard Lake region was most prolific, yielding 63 species and 366 individuals. This is explained by the greater variety of habitats found here.

Nineteen species were seen at least once in each of the five geographical areas. (See Table VIII, p.25.) There were 33 species each of which was seen in only one region. (See Table IX, p.26.) These were distributed as follows: Blanchard Lake 18, Mud Lake (Inverness Twp.) 7, Mud Lake (Grant Twp.) 4, Reese's Bog East 3, Reese's Bog West 1.

Four nests were discovered as follows:

Green Heron 1, Ruby-throated Hummingbird 1, Cedar Waxwing 1, Red-eyed Vireo 1. Evidence of nesting from the observation of juvenile birds was:

Pied-billed Grebe 2, Black Duck 2, Red-breasted Merganser 1, Ruffed Grouse 3, Red-eyed Vireo 1, Northern Yellowthroat 1, Myrtle Warbler 1, Rose-breasted Grosbeak 1, Chipping Sparrow 1, Swamp Sparrow (numerous), Song Sparrow (numerous).

Aquatic Association

Blanchard Lake had more species and individuals on or over it than any of the other areas. (See Table X, p.27.) The water here is deep enough to contain fish which attract such fish-eating birds as the Loon, Osprey, and Common and Caspian Terns. On one occasion an Osprey was observed to dive into the lake and come up clasping a fish fully ten inches long. The absence of the Kingfisher at Blanchard Lake was surprising. This may possibly be explained by the absence in the neighborhood of sand banks suitable for nesting sites.

Six species of ducks were observed. The commonest was the Black Duck, recorded in all the areas where there were any considerable bodies of water. The Mallard was the only other duck seen in more than one area. A female Red-breasted Merganser with four young was observed at Mud Lake in Grant Township.

At Blanchard Lake, in addition to the Black Ducks, a female Mallard, Blue-winged Teal, and the rare American Pintail and Green-winged Teal were recorded. It is interesting to learn from conversation with Dr. Nelson that the Ornithology Class of the Biological Station visited Blanchard Lake several times from 1929 to 1935, and that ducks were seen only on August 6, 1929, when over two dozen Black Ducks were observed and one was collected.

The total number of species observed in all four aquatic associations (including Carp Creek) was 18, and the total number of individuals was 131. The species seen on each of the three lakes were: Pied-billed Grebe, Black Duck, Tree Swallow, and Purple Martin. The bird seen in largest numbers was the Black Duck.

Bog Mat Association

Because of the greater extent of the mat and great variety of vegetation on it at Mud Lake (Inverness Twp.), more individuals and species were seen here than at any of the other lakes. (See Table XI, p.28.) Five species of birds were seen at least once at each lake as follows: Great Blue Heron, American Bittern, Marsh Hawk, Red-wing, and Goldfinch. Twenty-nine species and 168 individuals were recorded in the Bog Mat Associations studied.

The rare Sora (See p. 5.) was recorded at Mud Lake, (Inverness Twp.) and a detailed account of the discovery of the Green Herons at Mud Lake (Grant Twp.), is given on pages 35-36. The commonest bird in this association was the Goldfinch.

Table VII

Totals of Species and Individuals Recorded by Associations in
Five Bog Areas 1941.

	Aquatic		Mat		Lowland Thicket		Dead Trees		Bog Woods		Total	
	Spec	Indvl	Spec	Indvl	Spec	Indvl	Spec	Indvl	Spec	Indvl	Spec	Indv
ud Lake, Inverness	7	32	24	85					35	138	54	255
eeese's Bog, East	3	5			1	1			36	180	40	186
eeese's Bog West					5	8			35	175	38	183
ud Lake, Grant	8	30	6	34	4	33			29	164	46	261
lanchar'd Lake	15	64	9	49	8	96	11	45	26	112	63	366
Total	19	131	29	168	10	138	11	45	53	769	90 89	1251

Table VIII

Birds Recorded in Each of the Bog Areas Studied in 1941

	Blanchard Lake	Reese's Bog East	Reese's Bog West	Mud Lake Inverness	Mud Lake Grant	Total
Mourning Dove	2	2	3	2	3	12
Flicker	9	6	4	4	2	25
Downy Woodpecker	4	2	4	2	2	14
Crested Flycatcher	5	7	1	1	5	19
Blue Jay	11	7	8	6	2	34
Crow	6	4	5	6	10	31
Chickadee	38	33	18	9	46	144
Red-breasted Nuthatch	6	8	1	2	1	18
Robin	11	6	3	2	8	30
Veery	1	1	1	3	7	13
Cedar Waxwing	11	6	5	7	6	35
Red-eyed Vireo	6	4	7	8	1	26
Bl. and W. Warbler	6	8	11	18	4	47
Myrtle Warbler	2	8	3	1	6	20
Bl. Thr. Green Warbler	1	10	22	9	2	44
Ovenbird	1	5	12	13	1	32
No. Yellowthroat	32	1	1	13	14	61
Purple Finch	4	4	1	9	3	21
Song Sparrow	27	4	5	25	2	63
Total (Species 19)	183	126	115	140	125	689

Table IX

Birds Recorded in Only One of the Five Bog Areas Studied in 1941.

	Blanchard Lake	Reese's Bog East	Reese's Bog West	Mud Lake Inverness	Mud Lake Grant
Loon	1				
Green Heron					7
American Pintail	3				
Gr-winged Teal	1				
Bl-winged Teal	5				
Red-br. Merganser					5
Red-tailed Hawk (?)	1				
Osprey	1				
Sparrow Hawk (?)		1			
Virginia Rail	1				
Sora				1	
Killdeer	8				
Woodcock				1	
Wilson's Snipe	1				
Ring-billed Gull				1	
Common Tern	2				
Caspian Tern	2				
Bl-billed Cuckoo (?)				1	
Whip-poor-will					3
Pileated Woodpecker				1	
Phoebe	1				
Alder Flycatcher	5				
Least Flycatcher	1				
W-br. Nuthatch					2
House Wren	1				
Parula Warbler		3			
Yellow Warbler	2				
Bl. Thr. Blue Warbler			2		
Waterthrush (?)		1			
Bobolink	1				
Baltimore Oriole	1				
Cowbird				2	
Indigo Bunting				3	
Total (Species 33)	38	5	2	10	17

Table X

Birds Recorded in the Aquatic Associations in Four Bog Areas 1941

	Blanchard Lake	Reese's Bog Carp Creek	Mud Lake Inverness	Mud Lake Grant	Total
Loon	1				1
Pied-billed Grebe	1		1	10	12
Mallard	1			1	2
Black Duck	10	3	16	2	31
American Pintail	3				3
Green-winged Teal	1				1
Blue-winged Teal	5				5
Red-breasted Merganser				5	5
Bald Eagle	1	1			2
Osprey	1				1
Ring-billed Gull			1		1
Common Tern	2				2
Caspian Tern	2				2
Nighthawk	3			4	7
Belted Kingfisher		1	1	2	4
Tree Swallow	16		2	4	22
Barn Swallow	2		6		8
Purple Martin	15		5	2	22
Total (Species 18)	64	5	32	30	131

Table XI

Birds Recorded in the Bog Mat Associations in Three Bog Areas 1941

	Blanchard Lake	Mud Lake Inverness	Mud Lake Grant	Total
Great Blue Heron	6	1	2	9
Green Heron			7	7
American Bittern	2	2	2	6
Marsh Hawk	2	3	1	6
Virginia Rail	1			1
Sora		1		1
Killdeer	8			8
Wilson's Snipe	1			1
Black-billed Cuckoo (?)		1		1
Kingbird		2		2
Blue Jay		1		1
Black-capped Chickadee		2		2
Cedar Waxwing		2		2
Red-eyed Vireo		1		1
Black & White Warbler		3		3
Myrtle Warbler		1		1
Chestnut-sided Warbler		1		1
Ovenbird		1		1
Northern Yellowthroat		13		13
Bobolink	1			1
Red-wing	4	3	3	10
Cowbird		2		2
Indigo Bunting		1		1
Purple Finch		7		7
Goldfinch	24	11	19	54
Red-eyed Towhee		2		2
Chipping Sparrow		2		2
Swamp Sparrow		3		3
Song Sparrow		19		19
Total (Species 29)	49	85	34	168

Lowland Thicket Association

The bird seen most frequently in the thickets was the Northern Yellowthroat, which was also the only bird seen in the thickets in each of the bog areas. (See Table XII, p.32.) Swamp Sparrows and Song Sparrows were also seen commonly. Because of the extensive thicket area on the margin of Blanchard Lake, more birds were found here than in any other thicket area. Here were identified the only Yellow Warblers and Alder Flycatchers. Dr. Nelson has told me that from 1929 to 1935, when the Ornithology Class visited Blanchard Lake on several occasions, no Alder Flycatchers were seen in the area now covered by the alder thickets, although on August 6, 1929, a nest containing three eggs was found low in an alder on Mud Creek. The presence of this flycatcher in 1941 can safely be attributed to the development of the lowland thicket association described on page 14. A total of 10 species and 138 individuals was identified in the four thicket associations studied.

Dead Tree Association

The only extensive dead tree association was found at Blanchard Lake. (See Table VI, p.20.) Here 11 species and 45 individuals were listed. The commonest bird was the Cedar Waxwing. The Phoebe, House Wren, and Baltimore Oriole were found in this association and in no other place. The Olive-sided Flycatcher, identified here, is described in detail on page 37.

Cedar Bog Association

A total of 53 species and 769 individuals was recorded in the bog woods. (See Table XIII, p.33.) The coniferous woods of Reese's Bog east of Carp Creek yielded 36 species and 180 individuals, more species and individuals than were seen in any other cedar bog association. The Black-capped Chickadee was by far the most numerous bird of the bog

woods. The following fifteen birds were recorded at least once in each of the five cedar bog areas studied: Mourning Dove, Downy Woodpecker, Crested Flycatcher, Blue Jay, Crow, Black-capped Chickadee, Red-breasted Nuthatch, Robin, Veery, Red-eyed Vireo, Black and White Warbler, Black-throated Green Warbler, Ovenbird, Purple Finch, and Song Sparrow.

Hawks were noticeably scarce in the bog woods. Only two were seen, and their identification was questionable. The Whip-poor-will was recorded only once, when the only night-time visit to the bogs was made, at Mud Lake (Grant Twp.). Reference to the only Pileated Woodpecker recorded has already been made. (See p. 6.) The Least Flycatcher was seen but once, at Blanchard Lake. The Crested Flycatcher and Olive-sided Flycatcher have been considered in some detail on pages 36-38.

Two White-breasted Nuthatches were identified at Mud Lake (Grant Twp.), the only place they were found. Possibly they were wanderers from the nearby hardwoods at the source of the lower Black River, where they were abundant. The present status of the Wood Thrush is described on page 39.

The White-throated Sparrow was found as an uncommon resident of the cedar bogs. It was not present in the dense woods of Reese's Bog but was found at Blanchard Lake and the two Mud Lakes, where more dead trees are present and the cover is not too dense.

Warblers

Two hundred and fifty-two warblers were recorded in the five bog areas. (See Table XIV, p. 34.) These were distributed among 14 species. Ten species were identified in Reese's Bog west of Carp Creek, more than in any one of the other four bog areas studied. The warbler listed most frequently was the Northern Yellowthroat, while a Waterthrush, whose identity was uncertain, was recorded but once.

Three Parula Warblers were identified in Reese's Bog east of

Carp Creek, but no Parula's nest was found, and I assume that the nest of this warbler still remains to be found. (Van Tyne, 1938, p.32) The only Yellow Warblers were seen in the Lowland Thicket Association at Blanchard Lake. The Black-throated Blue Warbler was seen only in the western part of Reese's Bog, where three were recorded. The Myrtle Warbler was found to be a not uncommon resident of the cedar woods. A surprising number of Black-throated Green Warblers was identified in the western part of Reese's Bog. At Mud Lake (Grant Twp.) I found the cedar woods teeming with Redstarts at the northern end of the lake. Possibly the more open nature of the woods at this point accounts for the large number of these warblers here.

Table XII

Birds Recorded in the Lowland Thicket Associations in Four Bog Areas 1941

	Blanchard Lake	Reese's Bog East	Reese's Bog West	Mud Lake Grant	Total
Hairy Woodpecker			1		1
Alder Flycatcher	5				5
Catbird	3		1	1	5
Brown Thrasher			2		2
Yellow Warbler	3				3
Chestnut-sided Warbler	1				1
Northern Yellowthroat	32	1	1	14	48
Red-eyed Towhee	5				5
Swamp Sparrow	21			11	32
Song Sparrow	26		3	7	36
Total (Species 10)	96	1	8	33	138

Table XIII
Birds Recorded in Cedar Bog Association in Five Bog Areas 1941.

	Blanchard Lake	Reese's Bog East	Reese's Bog West	Mud Lake Inverness	Mud Lake Grant	Total
Red-tailed Hawk (?)	1					1
Sparrow Hawk (?)		1				1
Ruffed Grouse		8	8	10		26
Woodcock				1		1
Mourning Dove	2	2	3	2	3	12
Whip-poor-will					3	3
Nighthawk			3	3		6
Ruby-throated Hummingbird	1	1				2
Flicker		6	4	4	2	16
Pileated Woodpecker				1		1
Yellow-bellied Sapsucker		4	1			5
Hairy Woodpecker	1	7	5	1		14
Downy Woodpecker	1	2	4	2	2	11
Kingbird		1		1	2	4
Crested Flycatcher	4	7	1	1	5	18
Least Flycatcher	1					1
Wood Peewee		3	4	1		8
Olive-sided Flycatcher				1		1
Blue Jay	11	7	8	5	2	33
Crow	6	4	5	6	10	31
Black-capped Chickadee	38	33	18	7	46	142
White-breasted Nuthatch					2	2
Red-breasted Nuthatch	6	8	1	2	1	18
Winter Wren	1	3	3	1		8
Catbird				2		2
Brown Thrasher	1	1				2
Robin	6	6	3	2	8	25
Wood Thrush		2	1	1	1	5
Veery	1	1	1	3	7	13
Golden-crowned Kinglet		4	7		16	27
Cedar Waxwing		6	5	5	6	22
Red-eyed Vireo	6	4	7	7	1	25
Black and White Warbler	6	8	11	15	4	44
Nashville Warbler			2	1		3
Parula Warbler		3				3
Black-throated Blue Warbler			3			3
Myrtle Warbler	2	8	3		6	19
Black-throated Green Warbler	1	10	22	9	2	44
Blackburnian Warbler		3	1		3	7
Chestnut-sided Warbler				1		1
Ovenbird	1	5	12	13	1	32
Water-thrush (?)		1				1
Canada Warbler	2		2			4
American Redstart			1	4	18	23
Scarlet Tanager		2	2	1		5
Rose-breasted Grosbeak	5	1	3		1	10
Indigo Bunting				3		3
Purple Finch	1	4	1	2	3	11
Gold Finch		6	14			20
Red-eyed Towhee	4			11	1	16
Chipping Sparrow		4	1		3	8
White-throated Sparrow	2			3	3	8
Song Sparrow	1	4	5	6	2	18
Total (Species 53)	112	180	175	138	164	769

Table XIV

Warblers Recorded in Five Bog Areas 1941

	Blanchard Lake	Reese's Bog East	Reese's Bog West	Mud Lake Inverness	Mud Lake Grant	Total
Black & White	6	8	11	15	4	44
Nashville			2	1		3
Parula		3				3
Yellow	3					3
Black-throated Blue			3			3
Myrtle	2	8	3	1	6	20
Black-throated Green	1	10	22	9	2	44
Blackburnian		3	1		3	7
Chestnut-sided	1			2		3
Waterthrush (?)		1				1
Ovenbird	1	5	12	14	1	33
Northern Yellowthroat	32	1	1	13	14	61
Canada	2		2			4
American Redstart			1	4	18	23
Total (Species 14)	48	39	58	59	48	252

Birds Recorded in Four Bogs in Cheboygan County, Michigan, June 24-
August 4, 1941.

	Aquatic Associ- ation	Bog Mat Associ- ation	Lowland Thicket Associ- ation	Dead Tree Associ- ation	Cedar Bog Associ- ation	Total
Common Loon	1					1
Pied-billed Grebe	12					12
Great Blue Heron		9				9
Green Heron		7				7
American Bittern		6				6
Common Mallard	2					2
Black Duck	31					31
American Pintail	3					3
Green-winged Teal	1					1
Blue-winged Teal	5					5
Red-breasted Merganser	5					5
Red-tailed Hawk(?)					1	1
Bald Eagle	2					2
Marsh Hawk		6				6
Osprey	1					1
Sparrow Hawk(?)					1	1
Ruffed Grouse					26	26
Virginia Rail		1				1
Sora		1				1
Killdeer		8				8
Woodcock					1	1
Wilson's Snipe		1				1
Ring-billed Gull	1					1
Common Tern	2					2
Caspian Tern	2					2
Mourning Dove					12	12
Black-billed(?) Cuckoo		1				1
Whip-poor-will					3	3
Nighthawk	7				6	13
Ruby-throated Hummingbird					2	2
Belted Kingfisher	4					4
Flicker				9	16	25
Pileated Woodpecker					1	1
Yellow-bellied Sapsucker					5	5
Hairy Woodpecker			1		14	15
Downy Woodpecker				3	11	14
Kingbird		2		8	4	14
Crested Flycatcher				1	18	19
Phoebe				1		1
Alder Flycatcher			5			5
Least Flycatcher					1	1
Wood Pewee					8	8
Olive-sided Flycatcher				2	1	3
Tree Swallow	12			10		22
Barn Swallow	2	6				8
Purple Martin	19	3				22
Blue Jay		1			33	34
Crow					31	31
Black-capped Chickadee		2			142	144

	Aquatic Associ- ation	Bog Mat Associ- ation	Lowland Thicket Associ- ation	Dead Tree Associ- ation	Cedar Bog Associ- ation	Total
White-breasted Nuthatch					2	2
Red-breasted Nuthatch					18	18
House Wren				1		1
Winter Wren					8	8
Catbird			5		2	7
Brown Thrasher			2		2	4
Robin				5	20	25
Wood Thrush					4	4
Veery					13	13
Golden-crowned Kinglet					27	27
Cedar Waxwing		2		11	22	35
Red-eyed Vireo		1			25	26
Black and White Warbler		3			44	47
Nashville Warbler					3	3
Parula Warbler					3	3
Yellow Warbler			3			3
Black-throated Blue Warbler					3	3
Myrtle Warbler		1			19	20
Black-throated Green Warbler					44	44
Blackburnian Warbler					7	7
Chestnut-sided Warbler		1	1		1	3
Ovenbird		1			32	33
Water-thrush(?)					1	1
Northern Yellowthroat		13	48			61
Canada Warbler					4	4
American Redstart					23	23
Bobolink		1				1
Redwing		10				10
Baltimore Oriole				1		1
Cowbird		2				2
Scarlet Tanager					5	5
Rose-breasted Grosbeak					10	10
Indigo Bunting		1			3	4
Purple Finch		7		3	11	21
Goldfinch		54			20	74
Red-eyed Towhee		2	5		16	23
Chipping Sparrow		2			8	10
White-throated Sparrow					8	8
Swamp Sparrow		3	32			35
Song Sparrow		19	36		18	73
Total(Species 89)	112	177	138	55	763	1245

Green Heron Nesting in Cheboygan County, Michigan

Early on the morning of July 11, 1941, I discovered two adult Green Herons on the shore of Mud Lake, Grant Township.

On July 14 Dr. O. S. Pettingill Jr, and I discovered the nest of the herons in a black spruce tree about fifty feet from the shore of the lake. The nest was in the angle formed by a branch and the trunk of the tree, about fifteen feet from the ground, and contained five young herons. The condition of the plumage indicated the youngest to be about a week old. The young were removed temporarily from the nest for purposes of photography and banding. (See Plate II, Fig. 3.) They were marked with Biological Survey bands issued to me, Numbers 39-520671 to 39-520675, inclusive.

Three of the nestlings were placed in the tips of the lower branches of the spruce and immediately began climbing toward the nest in a surprising fashion. They would seize a twig firmly with their bills and wrap their toes entirely around a branch. Using their alulae as hooks, they would pull themselves upward and rise at a rapid rate. On July 17, when I again visited the region, the three young herons were alive and in the nest, and one adult was observed flying nearby along the shore.

Two of the young birds were taken by Dr. Theodora Nelson to Blanchard Laboratory to be raised in captivity. At first the birds were fed by opening the mandibles and forcing frogs, pieces of common water snake (Natrix sipedon) and common garter snake (Thamnophis sirtalis) far down into their gullets. The regurgitative reflex was somewhat active during the first few days only. After a week the birds began to pick up their own food whether alive and moving or freshly killed.

On August 3 they were in excellent health and had a luxuriant juvenal plumage. Immediately after feeding, Rafinesque, the larger of the two birds, weighed 245.10 grams while Lucien Bonaparte weighed 179.80 grams. Their backs were of a glossy green color, while the feathers on their crowns were still unsheathing and had down on their tips. The birds were placed in the outdoors aviary on August 12 and they soon began to consume more food than they had done while in ^{close} captivity. Their weights on August 14, before feeding were: Rafinesque 193.3 grams, Lucien Bonaparte 182.2 grams.

The discovery of the Green Heron's nest constituted a new Cheboygan County record for both the species and the nest, and, as far as I have been able to ascertain, this is the northernmost nesting record for the Green Heron in Michigan. Barrows (1912, P.142) reports five nests in Kalamazoo County in May, 1878. Bent (1926, p.192) describes the bird as breeding north to Grand Rapids, Kent County. Van Tyne (1938, p.3) describes the Green Heron as a common summer resident in the southern three tiers of counties, uncommon in Saginaw Bay, and probably an uncommon late summer visitant north of that point. In a letter to me dated August 11, 1941, Dr. Van Tyne cited two nesting records, one at Hess Lake, Newaygo County, 1922 by E. R. Ford; the other in Gladwin County, Gladwin Refuge, 1934 by Verne Dockham. Mr. Lawrence H. Walkinshaw on August 9, 1941, wrote me that Bernard W. Baker of Marne, Michigan has found a number of Green Heron nests, with which he has done considerable work right beside his house northwest of Grand Rapids, in Ottawa County.

Crested Flycatcher

The Crested Flycatcher has changed its status from rare to common in the region of the Biological Station. During my study

of the bogs I recorded nineteen Crested Flycatchers. Clark and Denman (MS 1941, Fig. 8) listed ~~three~~ at North Fishtail Bay, and White (MS 1941, p.) recorded six individuals in tall aspens and poplars between the Biological Station and North Fishtail Bay.

Compton (1914, p.178) reported this flycatcher as rare in the hardwoods, and Wood, Smith, and Gates (1916, p.13) reported it as a rare breeder. Linsdale (1936, p.162) gave it a percentage frequency of twelve in 1924. Blanchard and Nelson (MS) listed from one to four records per year up to and including 1925. Since then they have reported the bird as more common. It seems evident, then, that the Crested Flycatcher is now one of our common birds. The probable explanation is that as the trees in the region have grown taller, more Crested Flycatchers have been attracted to this vicinity.

Olive-sided Flycatcher

The Olive-sided Flycatcher has become a rare bird in the Douglas Lake region after having enjoyed a period of relative abundance from 1923 to 1930. Compton (1914, p.178) reported it as rare in the hardwoods, and Wood, Smith, and Gates (1916, p.13) reported the bird as having been reported but three times. Linsdale's paper (1936, p.162) gave the bird a percentage frequency of four in 1924. Blanchard and Nelson (MS) described it as numerous and abundant from 1923 to 1930, with from two to six records annually. On July 9, 1928 a nest was found by Dr. A. O. Gross at Fontinalis Run in a spruce tree in a coniferous bog. The nest was about twenty-five feet above the ground and contained one, well-fledged young. From 1931 to 1940 there was an average of one sight record per year.

I found three Olive-sided Flycatchers this year. Two were in the tall dead trees at Blanchard Lake on July 31, and one was

heard in the Mud Lake bog, Inverness Township, on the same day. Dr. Theodora Nelson recorded a small flock of three or four juvenals flying among the dead tree tops near Grass Bay on August 13, 1941.

It is important to note that from 1923 to 1930 the Olive-sided Flycatcher was identified in at least eight different areas where were present dead trees killed by previous fires. Such a habitat is attractive to the Olive-sided, hence their presence in the dead trees at Blanchard Lake. In recent years there has been better forest management and consequently, fewer fires. It follows, therefore, that in this region, at least, fewer dead trees are to be found and accordingly, fewer Olive-sided Flycatchers.

Hermit Thrush

The fact that I did not record the Hermit Thrush in the coniferous bogs in 1941 is of interest to me. I heard only three or four males singing during my investigation. These were in the aspens north of the Hogback Road. This bird was found in all three types of habitat, cut-over hardwoods, Reese's Bog, and aspens, studied by Compton (1914, p.177). According to Wood, Smith, and Gates (1916, p.21) it was the most common thrush of the region, and was found in hardwoods, birches, aspens, and at the edge of the bogs. Linsdale (1936, p.161) reported the Hermit Thrush as the ninth most abundant species of one hundred and six species studied in 1924. He described it as singing all summer in the aspens and bog forests. Blanchard and Nelson (MS) describe twenty-five nests of the Hermit Thrush found in the vicinity of the Biological Station from 1916 to 1935. Every one of these occurred in an open aspen or open aspen-birch association.

Clark and Denman (MS 1941, p.11) heard only one Hermit Thrush in an area of about one third square mile near Fish Tail Bay. It

was singing on the border between an aspen and a conifer association. White (MS 1941, p.) recorded two singing males in the aspens between the Biological Station and North Fishtail Bay.

From the above considerations it seems apparent to me that the Hermit Thrush is much less common in the region of the Biological Station than it formerly was. It is found here almost exclusively in the aspen association. Since this thrush nests on the ground where there are openings in the woods, it perhaps is finding our aspens less to its liking because the aspens are growing up and the pines are coming in in numbers. This conclusion supports Saunders (1929, p.363) who writes: "Probably the original habitat of the Hermit Thrush, when the country was in a primeval condition, was the swamps of tamarack, balsam, and black spruce; but now it is quite common in old burns - where the chief growth is aspen and fire cherry with a little spruce and balsam appearing - amid old stumps and logs of the former forest."

Wood Thrush Nesting in the Coniferous Bogs of Canadian Zone

The Wood Thrush was first found nesting in the vicinity of the University of Michigan Biological Station, by Dr. Frank N. Blanchard on July 4, 1930 along Carp Creek. On July 2, 1941 Dr. O. S. Pettingill, Jr. found a nest at North Fishtail Bay. Both nests were found in balsam fir in low cedar-spruce-fir bogs. The first nest was twelve feet above the ground and contained three well-developed young. The second was eight feet from the ground, saddled on a horizontal branch two feet from the main trunk. It contained one young bird which left the nest when approached. Both nests were lined with mud.

Since 1911 the Wood Thrush has been reported sporadically in the vicinity of the Biological Station (F. N. Blanchard and Theodora Nelson, MS). In all instances the birds were found in bogs. In 1941 while making my survey of the bird life in the coniferous bogs of Cheboygan County, I identified five singing male Wood Thrushes.

The bog woods in which the Wood Thrushes were found are frequented by such birds as the Black and White Warbler, Black-throated Green Warbler, Winter Wren, and Red-breasted Nuthatch,-- birds which clearly designate these areas as being typical of the Canadian Zone. Eaton (1910, p.41) has indicated that in New York State the Wood Thrush is a nesting bird of the Canadian Zone as well as the Alleghanian and Carolinian Zones, and Roberts (1932, p.122) has noted the northward spread of this bird, in recent years, into the coniferous woods of Minnesota. These conclusions are supported by observations in Cheboygan County where the Wood Thrush has shown a decided preference for the Canadian with no tendency to inhabit the Alleghenian Zone which is present in much of the County.

SUMMARY

1. During the summer of 1941 a survey was made of the resident birds of five bog areas in Cheboygan County, Michigan.
2. These areas ^{were} observed to include five major types of habitat.
3. A total of ~~1251~~¹²⁴⁵ individuals distributed among ~~90~~⁸⁹ species was recorded.
4. Nineteen species were identified at least once in each of the five bog areas studied.
5. The commonest bird was the Black-capped Chickadee.
6. One new nesting record for Cheboygan County was made.

7. The lowland cedar bog woods studied represent intrusions of typical Canadian Zone habitat into a region principally Transitional.
8. The Wood Thrush tends to nest only in the coniferous bogs in Cheboygan County.

Plate I

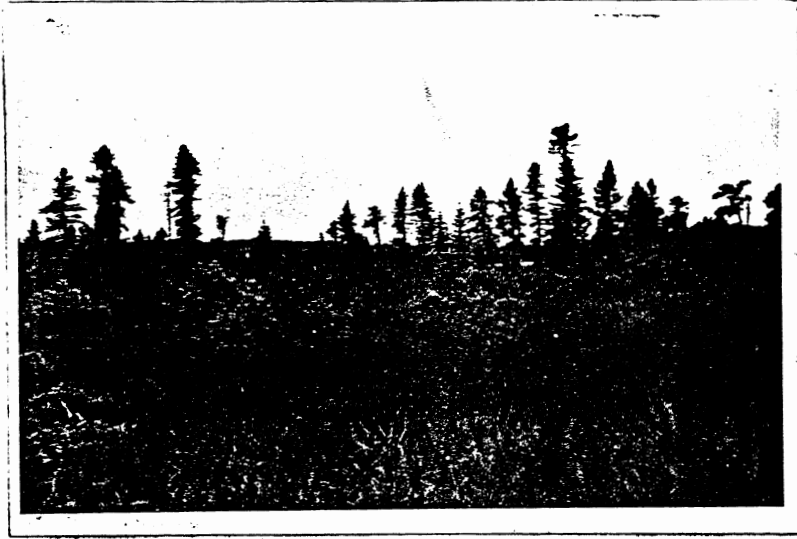


Fig.1. Bog Mat at Mud Lake, Inverness.
Photo by R.D.Wood

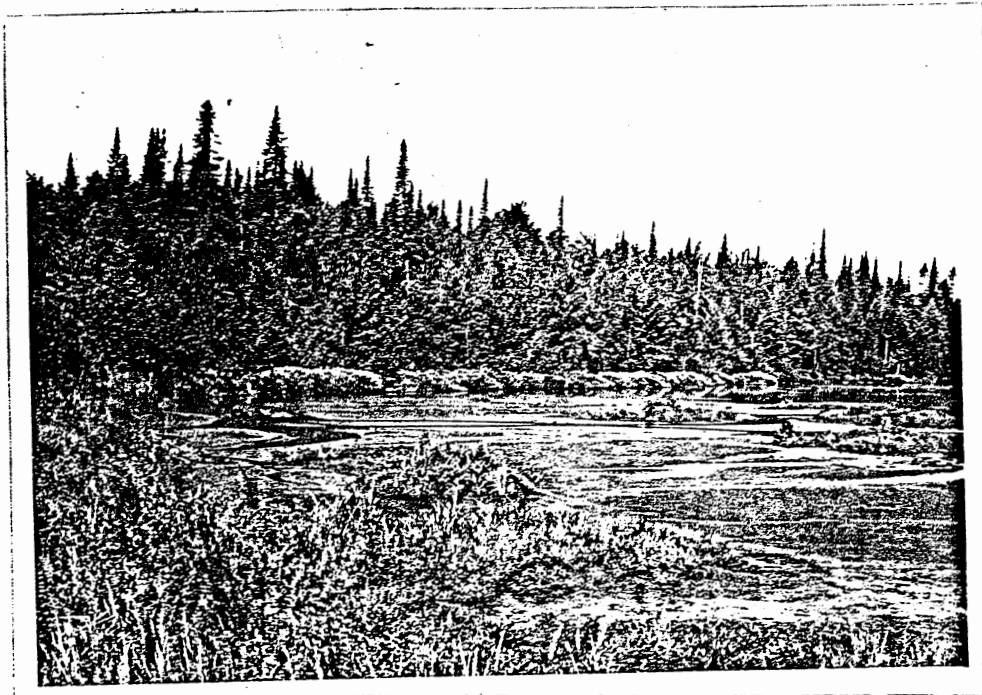


Fig.2. Mud Lake, Inverness, showing false bottom;
cedar woods in the background.
Photo by C.H.Blair

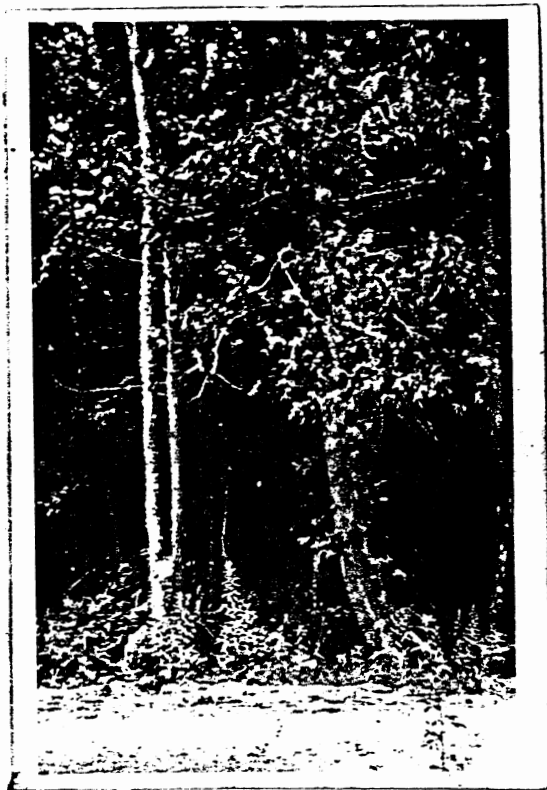


Fig.1. Cedar Woods at
Reese's Bog. Photo. by
R.D.Wood



Fig.2. Cedar Bog at Mud Lake, Inverness
Photo by R.D.Wood



Fig.3. Green Herons. Photo. by
O.S.Pettingill, Jr. July 14, 1941.



Fig. 1. Dead Tamaracks at Blanchard Lake. Photo. by T.Nelson



Fig. 2. Cedar Bog at Blanchard Lake. Photo. by T.Nelson

BIBLIOGRAPHY

- Adams, Charles C. 1923. Notes on the Relation of Birds to Adirondack Forest Vegetation. Roosevelt Wild Life Bull., 1 (4): 487-520
- Allen, A. A. 1930. The Book of Bird Life. New York.
- Barrows, Walter B. 1912. Michigan Bird Life. Lansing.
- Bent, Arthur C. 1926. Life Histories of North American Marsh Birds. Washington, D. C.
- Blanchard, Frank N., and Nelson, Theodora. A Summary of the Bird Records of the University of Michigan Biological Station 1909-1941. MS
- Brooks, Maurice. 1940. The Breeding Warblers of the Central Allegheny Mountain Region. Wilson Bull., 52: 249-266.
- Chapman, Frank M. 1940. Handbook of Birds of Eastern North America. New York.
- Clark, Eugenie and Denman, Norma W. 1941. A Study of the Birds of North Fishtail Bay. MS
- Cleghorn, J. D. 1940. Woodthrush Nesting in Montreal. Auk, 57: 114.
- Compton, James S. 1914. The Birds of the Douglas Lake Region. Wilson Bull., 89: 173-180
- Cowles, Raymond B. 1937. Avian Habits in the Thorn-Bush Areas of Natal. Auk, 54: 55-61.
- Eaton, Elon H. 1910. Birds of New York, Vol. 1. Albany, N. Y.
- Farm-Forest Map Cheboygan County. 1932. Michigan Department of Conservation. Lansing.
- Forbush Edward H. 1929. Birds of Massachusetts and Other New England States, Vol. 3. Boston.
- Fortner, Harry C. and Metcalf, Z. P. 1929. Additions to the List of Birds of the Douglas Lake Region. Wilson Bull., 41: 249-250.
- Gates, Frank C. 1941. Blanchard Bog. MS
- Goe, Louise, Erickson, Elsie, and Woollett, Edith. 1924. An Ecological Study of Mud Lake Bog, Cheboygan County, Michigan. Papers of the Michigan Academy of Science, Arts and Letters, IV: 297-310.
- Gray's New Manual of Botany. 1908. (Seventh Edition) Illustrated. New York.
- Hussey, Roland F. 1917. A Study of the Reactions of Certain Birds to Sound Stimuli. Journal of Animal Behavior, 7: 207-219.

- Jewell, Minna E., and Brown, Harold W. 1929. Studies on Northern Michigan Bog Lakes. Ecology, X: 427-475.
- Kendeigh, S. Charles. 1934. The Role of Environment in the Life of Birds. Ecological Monographs, 4.
- Linsdale, Jean M. 1936. Frequency of Occurrence of Summer Birds in Northern Michigan. Wilson Bull., 48: 158-163.
- McCreary, Otto. 1908. The Ecological Distribution of the Birds in the Porcupine Mountains, Michigan. Lansing.
- McCreary, Otto. 1908. The Ecological Distribution of the Birds of Isle Royale, Lake Superior. Lansing.
- Pearson, George G. Birds of America. Garden City, N. Y.
- Poole, Earl L. 1938. Weights and Wing Areas in North American Birds. Auk, 55: 511-517.
- Roberts, Thomas S. 1932. The Birds of Minnesota, Vol. 2. Minneapolis.
- Saunders, Aretas A. 1936. Ecology of the Birds of Quaker Run Valley, Allegheny State Park, New York. Albany.
- Saunders, Aretas A. 1923. The Summer Birds of the Allegheny State Park. Roosevelt Qild Life Bull., 1: 239-386.
- Saunders Aretas A. 1929. The Summer Birds of the Northern Adirondack Mountains. Roosevelt Wild Life Bull., 5: 323-504.
- Silloway, Perley M. 1923. Relation of Summer Birds to the Western Adirondack Forest. Roosevelt Wild Life Bull., 1: 397- 486.
- Soil Map Cheboygan County, Michigan. 1934. Bureau of Chemistry and Soils. Lansing.
- Taverner, P. A. 1926. Birds of Western Canada. Ottawa
- Todd, W. E. C. 1940. Birds of Western Pennsylvania. Pittsburg.
- United States Department of Agriculture. Aerial Photographs BDH-2-57, BDH-3-50, BDH-8-56, BDH-8-88.
- Van Tyne, Josselyn. 1938. Check List of the Birds of Michigan. Occasional Papers of the Museum of Zoology, 379. Ann Arbor.
- Weaver, Florence G. 1939. Studies in the Life History of the Wood Thrush. Bird-Banding, X: 16-22.
- Welch, Paul S. 1936. Limnological Investigation of a Strongly Basic Bog Lake Surrounded by an Extensive Acid-Forming Bog Mat. Papers of the Michigan Academy of Science, Arts and Letters, XXI: 727-751.

- White, Katherine A. 1941. Frequency of Occurrence of Summer Birds in the Vicinity of the Biological Station. MS.
- Wilcox, Harry H., Jr. and Brunson, Royal Bruce. 1940. An Ecological Survey of Reese's Bog. MS.
- Wood, Norman A. 1905. Some New and Rare Bird Records for Michigan. Auk, XXII; no.2.
- Wood, Norman A., Smith, Frank, and Gates, Frank C. 1916. The Summer Birds of the Douglas Lake Region. Occasional Papers of the Museum of Zoology, 27: 1-21.