

**BIRD COMMUNITIES**

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## TABLE OF CONTENTS

	Page
Introduction	1
Location	1
Climatic Factors	2
The Communities	2
Biological Relationships	3
Summary	7
References	7
Appendix	Table 1

## INTRODUCTION

This study was undertaken to learn something about the ecological relationship between birds and plants. The Indian River Marsh proved to be a good area for such a study and the time of year selected appropriate. The field work was done on June 28th 1947 from 6:15 A.M. to 11:00 A.M. The area was explored by row-boat and by wading in areas not navigable. The study was undertaken by the Advanced Bird Class and those who are doing special problems in ornithology. The study was under the direction of Dr. Olin S. Pettingill.

## LOCATION

The area studied was the Indian River Marsh, Cheboygan Co., Mich. Indian River is a short stream of about five miles in length which connects Burt Lake and Mullet Lake; through this stream Burt Lake empties into Mullet Lake. These lakes were formed by melting ice from Lake Huron during the great glacier; they originated from the glacial lake known as Lake Nippissing.

Extensive cutting and burning of surrounding virgin forests resulted in a great increase in sedimentation which eventually resulted in the marsh area. Extensive deposits from the Sturgeon River which formerly emptied into Indian River impeded the flow of water from Burt Lake so that it gradually encroached on the surrounding shore line creating the present marsh. It is hardly recognizable as a river in the area where the study was conducted. In order to stop or at least slow up this advance the Sturgeon River has been diverted so that it now empties directly into Burt Lake.

## CLIMATIC FACTORS

The weather conditions during the study were fairly good except for a brief interruption by a thunderstorm. The humidity was high, the sky overcast to clear, wind four to six miles per hour and the temperature ranged from 70 to 80 degrees.

## THE COMMUNITIES

Because of the many winding channels and variations in depth, mixed communities were in evidence. Two fairly well defined ecotones were present; the Cattail-Bulrush and the Sedge-Shrub. The Open Water Community was fairly well defined too.

The Cattail-Bulrush ecotone was the most extensive. The water varied from two to three feet in depth; in some places cattails predominated, in others bulrushes. Spots of open water and some islands of sedges were intermingled. This community bordered the open water.

Somewhat less extensive and lying between the above community and the shrubs was the Sedge Community. The water was very shallow here, less than one foot; a few islands of shrubs (*Myrica gale*) were scattered about.

The Open Water Community ran to about 12 feet in depth and the area probably equalled that of the Cattail-Bulrush .

A narrow, somewhat irregular Floating Plant Community lay between the Cattail-Bulrush and open water; in some cases it was not in evidence at all. The dominant plants here were water lilies (*Nymphaea*) and submerged plants (*Potamogeton*).

The overlap between the Shrub Community and the Sedge Community also represented an ecotone. It was wet enough to soak through your shoes in most places. *Carex*, *Salix*, *Myrica gale*, and alders were intermingled.

A narrow but distinct belt paralleling the shore line represented the Shrub Community. It was composed of the shrubs mentioned in the paragraph above.

Paralleling the Shrub Community was a narrow strip of Climax Forest typical of a wet situation; it was composed principally of cedar, balsam, and spruce. On the higher ground back of this was a mixed community, the aspen association of *Populus grandidentata*, *Populus tremuloides*, and scattered conifers.

#### BIOLOGICAL RELATIONSHIPS

The plant and animal life of the marsh are closely interrelated. The birds find the marsh communities a ready source of food, nesting material and protective cover; it is rich in insect life, amphibians and small fishes which afford an excellent source of food.

Red-wings, Black Terns, and Pied-billed Grebes were found nesting in the same ecotone, the Cattail-Bulrush. A good example of interspecific relationship was the baby grebe which had been pecked and injured by a black tern into whose territory it had wandered.

Male red-wings were seen chasing other males from their territory, an example of intraspecific relationship. Redwing's nests were found quite close (30ft.) from the Black Tern's, but we found the terns' nests no closer than 75 feet in any case thus showing more tolerance of a bird of another species than of its own.

Seven Black Terns' nests were found; they were placed well in from the edge of the Cattail-Bulrush ecotone. Six of the nests contained three eggs each; the eggs were of a greenish to a dark sooty buff in color with scattered blotches of all shades of brown; they were pear-shaped. All of the nests were on floating debris and the nest material had been pulled from the immediate area. One nest was found on a floating log.

The nest is very loosely constructed. Some were found in scirpus, some in typha-scirpus but in all situations where the vegetation was fairly well scattered and not dense at all. The water averaged two feet in depth in the nesting area. Since they are floating, the nesting materials are always wet. When investigating the nests, the terns would congregate in great numbers and dive at the intruders' heads ; as they swooped over they would deprecate, and in more than one instance found the target.

The Black Terns range over the marsh and open water in search of their food which is principally insectivorous. The vegetation of the marsh supplies plenty of such food.

Three Pied-billed Grebes' nests were found in the same situation as the Black Terns'. The grebe's nest is much more compact and better constructed; it is a floating nest but contains some material which has been brought up from the bottom. It is much thicker than the tern's nest. The nest is anchored to the surrounding plants. The young had hatched and one adult was seen with her two young. The nest showed evidence of being used for brooding purposes and for resting at night. One egg was found floating; it was a greenish color but stained from the rotting vegetation. The injured baby grebe was retrieved but died later. The major part of the grebes' food is aquatic insects of which there is a plentiful supply in the marsh. Bent states that dragon fly nymphs are often fed to the young.

Red-wings were common in the same area with the Black Terns. The first nest, which we found, was in the process of being built. Dead typha, which was constantly dipped into the water to keep it pliable, was being used; we saw the adult bird going through this activity. The nest was anchored to the old cattail stalks. Grasses and sedges were used for a lining. . Another nest about 40 feet away contained three light green eggs with chocolate string like mark-

ings on the large end. The water was three feet in depth. The nest was 14 inches above the water; the nest cavity was three inches deep. About 30 feet away was another nest containing young; there were four of them with eyes open and downy patches and feather tracts distinct.

The Long-billed Marsh Wren was also found nesting in the Cattail Bulrush ecotone. A cylindrical ball of sedges about seven inches in diameter with a side entrance about one inch in diameter and a lining of down from the cattails completed the nest. A complete nest which is built by the female is known as a "female nest". The false nests of which three were found in the immediate area are built by the male and are called "cock nests". These are built by the male before the female arrives and seem to serve as a release for pent up energy and a means of establishing his territorial rights. (Welter-1931) One nest with young was found by another group.

The adult male came quite close and scolded at us; he was a handsome little bird in his dark coat with white eye stripe, light throat, and short tail which he held erect or inclined forward in a jaunty manner. Several were heard singing; the song resembles that of a house wren with a sore throat.

We were fortunate in getting to observe an American Bittern's nest which was discovered by Dr. Pettingill. It was located about 500 feet from shore in the Cattail Bulrush ecotone but the cattails seemed to predominate. The nest was a thick platform of typha and scirpus securely anchored among the reeds and cattails. The female refused to leave the nest and angrily pecked at any intruder within reach. She would make a harsh buzzing sound and raise her feathers as she drew her head back defiantly; the sound resembled a buzz saw cutting through a large stick of wood. and reminded one of the rep-

tilian ancestry of birds. She was incubating four greenish buff eggs, one of which was already pipped; a recheck later by Bob Lea revealed that the first arrival had hatched. While dragging our boat through a shallow area on the way to see this nest we saw a large green frog, one of the bittern's favorite foods.

A Least Bittern was flushed in this same area but no nests of this species were found.

Two Northern Yellow Throats' nests were found in the Sedge-shrub ecotone, one by Hazel Bradley and one by myself. The nests were about 10 inches above the water which was very shallow. Both were about 40 feet from the wooded shore line. They were in small crotches of isolated Myrica gale shrubs though Carix predominated in the area. The outside was woven of sedgs and the inside lined with fine grasses. The inside diameter was two and one half inches, the outside four inches. There were four small eggs with a white background and some delicate sweet and bitter chocolate colored splotches. The nest cavity was two inches deep. A Swamp

A Swamp Sparrow's nest was found in the same habitat though farther out from shore. It was empty though probably this year's nest from which the young had flown. It was located in a clump of Myrica gale somewhat higher above the water and much easier to detect than the warblers'. It was a much bulkier nest than that of the warbler.

An Eastern Kingbird's nest was found on top of an old piling two feet above the water and about 30 feet off shore. The area was a small patch of open water near an old boat dock. It contained three eggs with white background and chocolate splotches.

Black and White Warblers predominated in the Spruce-Cedar shore line as they were heard frequently. A Veery was also heard here. Rose-breasted Grosbeaks were heard and seen in this area; their



behavior suggested nesting in the area but none was discovered.

A Winter Wren was heard singing in the Cedar Swamp just back of the Modoc Camp.

The majority of communities studied were of the mixed type or ecotones. The number of birds seen and studied suggests that in this case such overlapping or mixed communities are perhaps richer in bird life and in providing the essentials for an ideal environment for birds of the marsh than a typical succession would provide.

#### SUMMARY

1. This study of Bird Communities was undertaken by the Advanced Ornithology Class and those students doing special problems in Ornithology; it was under the direction of Dr. O. S. Pettingill.
2. The Indian River Marsh, Cheboygan Co., Mich. was the site for the study.
3. The ecotone and mixed type of community predominated.
4. The purpose of the study was to learn something of the ecology of bird and plant communities.
5. In the Cattail -Bulrush ecotone we found the richest bird life; Nests of Black Terns, Pied-billed Grebes, American Bittern and Red-wing Blackbirds were found there.
6. Interspecific relationships by the Black Terns and the baby Pied-billed Grebe.
7. Intraspecific relationship was demonstrated by the Red-wings.

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