

1947

**A STUDY OF THE BIRD COMMUNITIES  
IN THE  
INDIAN RIVER MARSH REGION**

**By**

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## TABLE OF CONTENTS

	Page
Introduction . . . . .	1
Location . . . . .	1
Climatic Factors . . . . .	2
The Communities . . . . .	3
Open water . . . . .	3
Floating plant . . . . .	3
Bulrush . . . . .	4
Cattail . . . . .	4
Sedge . . . . .	4
Shrub . . . . .	5
Forest. . . . .	5
The Ecotones . . . . .	5
Bulrush-Cattail . . . . .	5
Sedge-Shrub. . . . .	6
Biological Relationships . . . . .	6
Discussion . . . . .	10
Summary . . . . .	10

## INTRODUCTION

On June 28, 1947, a trip was undertaken by the members of the advanced ornithology class of the University of Michigan Biological Station to the Indian River Marsh in Cheboygan County, Michigan. A survey of the various zones of the marsh was made from 6:00 to 11:00 A.M., interrupted only by a thunder shower of short duration at about 9:00 A.M.

In this survey we attempted to locate the bird communities, to discover the nature of the habitats, and to become acquainted with some of the other factors influencing or resulting from the birds' relationship to their environment.

Since the time spent in the field was of necessity limited this work was done by rowing through open areas or searching on foot for the nests of the birds. When found, the depth of the water was measured, the size and construction of the nests ascertained, as well as their positions in relation to vegetation and coverage, and the occupants observed.

## LOCATION

Indian River, in Cheboygan County, Michigan, drains the southeastern end of Burt Lake and flows north and east into the southern end of Mullet Lake. Near Burt Lake a sandbar which has been built up through the action of both Indian River and Sturgeon River has caused the backing up

of water, resulting in the production of an expanse of reasonably shallow water. After a number of years, the action of climatic and biological factors has caused a rise in the land through filling in and the gradual encroachment of hydrophytic vegetation into the expanse of water. This process is actively taking place at present.

#### CLIMATIC FACTORS

The sky during the first part of the study was cloudy to overcast, the temperature about seventy-five degrees Fahrenheit, the wind velocity about two miles per hour. A moderate thunder storm, accompanied by a slight rise in wind, interrupted the study at nine A.M. By nine-thirty A.M. the sky cleared, the wind dropped to almost zero, and the temperature rose to about eighty degrees Fahrenheit.

#### THE COMMUNITIES

##### Open Water Community.

Although a sample of the open water area was not taken, it is probable that algae, plankton material, insects, fish, and crustaceans might be found here. An adult and ten young Black Ducks were seen swimming in the open water, while overhead were seen the Herring Gull, Common Tern, Black Tern, and the Great Blue Heron.

##### Floating Plant Community.

This community bordered the open water and was of a depth not exceeding eight feet. Water lilies (Nymphaea or

Castalia) were noted covered with brown spots and holes indicating the probability of the presence of insect life. No birds were noted in this region.

Bulrush Community.

Characteristic of the bulrush community were the tall bulrushes (Scirpus), found bordering the open water and floating plant communities on all sides, in water six feet in depth or less. In addition to aquatic insects, flying insects were seen, as well as minnows, tadpoles, and water snakes. The only nesting birds seen in this zone were the Black Terns.

Cattail Community.

The cattail community (Typha) was a poorly defined area usually inland of the bulrush community, although not necessarily so. Since the criterion for the location of plants seemed to be water depth, the cattails usually growing in water less than four feet deep, the presence of shallow water in the bulrush region was often accompanied by patches of cattail here as well. Leeches were noted among the cattails as well as the fauna listed for the bulrush community. Birds nesting here were the Redwing, Pied-billed Grebe, and American Bittern. Seen in the area were the Sora and the Virginia Rail.

Sedge Community.

Inland from the cattail community, in water a foot in depth or less, was the sedge (Carex) community. In addition to the several species of sedge there were other species of

small rushes. Flying, saltatorial, and shore insects were found in abundance as well as some terrestrial forms; mosquitoes were breeding in shallow pools. A few snakes were found and everywhere were frogs and toads. Three nests of the Long-billed Marsh Wren were found in the sedge zone.

#### Shrub Community.

Growing in wet soil between the sedge community and the forest was a narrow strip of shrub consisting mainly of alder (Alnus), shrubby willow (Salix), and Myricagale. Little investigation was made of this area, and no birds were found nesting here.

#### Forest.

No work was done with the forest community.

### THE ECOTONES

#### Bulrush-Cattail Ecotone.

A large portion of the area inland from the outer border of rushes was composed of an extensive region of ecotone, in which the rushes and cattails were mixed more or less indiscriminately. Where the ground was at varying levels, the mixing of the two species was probably due to the uneven filling in of soil, because of shifting, water flow, climatic conditions, or variations in the original level of the land. Although many nests were noted either in the cattail or the bulrush communities, they were often so close to the ecotone area that it was difficult to ascertain whether they were actually in the community or in the ecotone. Undoubtedly, one of the advantages to breeding in or close to this ecotone would be the ready availability of the two types of plant material for nest-building and for food. The species of

insects living in or on or laying their eggs in the two types of plants would be double (or nearly so) the number found on one type. The appearance of the nymphal instars would also be at varying times during the season, thus providing a constant food supply. This would hold true for the fish as well. Heard in this ecotone was the Coot, and seen was the Least Bittern.

#### Sedge-Shrub Ecotone.

Where a few islands of shrub, always Myricagale, invaded the sedge zone, the nest of a Swamp Sparrow was found well-hidden within the bush. The bush was used for concealment, while the sedges were used partially to support the nest from the side and partially in the building of the nest. Here was an excellent example of the use to which the bird put the ecotone. In small patches of higher ground in the sedge community were found Myricagale growing with sedge and sometimes coarse grasses. Not far away, in a similar habitat, were found two nests of the Northern Yellow -throat. Other animals nesting in these dryer islands were large field mice, which might also be found in the sedge itself.

#### BIOLOGICAL RELATIONSHIPS

Although the Black Ducks were seen swimming in the open water, no conclusions may be drawn, since they obviously do not nest here. They probably feed on the aquatic life to be found, however. Although the Herring Gull, Common Tern, Black Tern, and Great Blue Heron were observed overhead, no

conclusions can be drawn concerning their feeding habits.

**The Black Tern:**

Seven nests of the Black Tern were found in the Bulrush Community. These were built in water of a depth of about two feet upon a solid mass of debris and dead plant material. The body of the nest was usually floating an inch or two above the surface of the water and was about two feet in diameter, although the main part of the nest was only about one foot across. The body of the nest was mainly constructed of rushes along with some cattails. Only one nest was found that differed from this general pattern, and this was found on a floating log. These nests were built where good cover was available, seeming to prefer the vicinity of muskrat houses for nest sites. This fact seems to be explained by the ready availability of trash for nest-building and protection.

**The Pied-billed Grebe:**

Although the Grebe prefers to build its nests in the bulrush-cattail ecotone, the nests found in the Indian River Marsh were within but near the edge of the cattail (Typha) zone. Three Grebe nests were located, floating in about two feet of water. They were built of water-soaked, decaying vegetation, mostly cattail debris. The diameter of the nests was about fifteen inches. It seems that the parent Grebe habitually covers over the eggs upon leaving the nest during incubation in order to insure warmth supplied by the decaying vegetation. The use of the Grebes of the



available material for nest-building was obvious. No conclusions could be drawn regarding food habits.

#### The Redwing:

Two Redwing nests were found hanging among dead cattails about fourteen inches above the water. Sedges were the main material of the nest, and cattails of two different species were used as supports. The redwing probably avails himself of the insects found among the cattails. Since the Redwing probably goes far afield to find sedge material for his nest it is possible that his nesting site is secondarily adapted to the cattail community because of the abundance of food here.

#### American Bittern:

Probably the greatest "find" of the trip was the nest of the American Bittern, carefully camouflaged deep within a large section of cattails, resting on the surface of the water. Here there was no "effect of the edge"; the bird preferred to build in the very center of the community, which helped to decrease the chances of its being found, as was demonstrated by the difficulty the class had in finding it.. An extremely stubborn bird sat incubating four large white eggs. In trying to discover the eggs and measure the nest she refused to flush and made a hoarse grating sound from time to time when one of us threatened to approach too close. Her camouflage was almost perfect, and even within a few feet of her, she was seen with difficulty, her brown and tan stripes matching almost perfectly the brown stalks

of the cattails. The Bittern probably finds food quite close to the nest or in a habitat similar to it; since it does not swim it cannot find food in the deep water, but its bill is suited for large aquatic animals, and not insects. It may be that it feeds on amphibians or reptiles on the higher ground, however.

The Sora and the Virginia Rail were seen in the cattail community, but no conclusions may be drawn regarding their habits.

Swamp Sparrow:

The nest of the Swamp Sparrow was an excellent example of the utilization of the bird of the ecotone between the sedge and the shrub, as mentioned previously.

Northern Yellow-throat:

Similarly concealed, but in a slightly dryer habitat were found the nests of the Northern Yellow-throat.

Long-billed Marsh Wren:

In the sedge community itself were found three nests of the Long-billed Marsh Wren, none of which contained eggs. The nests were spherical and were composed of coarse grasses on the outside, and were lined with cattail down. These nests were supported in the sedges about a foot above the water. Several false nests were found nearby one of these.

Although the group did not attempt to penetrate the forest behind the shrub community, the Winter Wren was heard in the region, as well as the Black and White Warbler, and the Northern Yellow-Throat.

## DISCUSSION

The difficulty in ascribing a species of bird to a particular plant community is probably due to the fact that most of the nests seen were located along the edge of that community or in a poorly defined ecotone. Wherever the bird was found along the edge, however, it was consistently found here. Thus, the Marsh Wren and the Yellow-throat consistently built their nests in the ecotone between the sedges and the shrubs. Despite this similarity in habitat, the two birds were not found nesting in the near vicinity of each other, each seeming to maintain its own territory.

Too little time was spent in the region to discover any of the interspecific or intraspecific relationships among the birds, but it is very likely that there is much preying on the young terns by the gulls.

I am at a loss to try to discuss a region so superficially reviewed as this one was.

## SUMMARY

### Nest and egg measurements: (average)

- Black Tern: Nest: 2 feet diam., in two feet water, floating but anchored; eggs: tan or grayish-blue, speckled with brown, 1.5" by 1"
- Pied-billed Grebe: Nest: 15" diam., in two feet of water, floating; eggs: whitish symmetrical 1.75" by 1"
- Redwing: Nest: Hanging 14" above water, 5" diam., eggs: pale blue scrawled with brown, 1" by .75"
- American Bittern: Nest: 15" diam, in one foot of water; Eggs: white, about two inches long

Long-billed Marsh Wren: Nest: 12" above water, 6" diam., opening from the side, of course grasses, lined with cattail down

Swamp Sparrow: Nest: 14" above water, diam. outer 4", inner  $2\frac{1}{4}$ ",  $2\frac{1}{4}$ " deep

Northern Yellow-throat: Nest: diam. outside 4", inside  $2\frac{1}{2}$ ",  $2\frac{1}{2}$ " deep, eggs white speckled, or coral pink speckled, about  $\frac{1}{8}$ " across.

