

BIRD COMMUNITIES OF INDIAN  
RIVER MARSH

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## INTRODUCTION

In order to determine the relationship of birds to different successional marsh communities, a survey of a section of Indian River Marsh was undertaken on June 26, 1948. The study occurred in the morning between the hours of 6:30 and 11:30.

The marsh area to be studied was surveyed by a party consisting of five members. Open water was negotiated by the use of row boats, and the unnavigable vegetation areas were covered by wading. Records were kept of the location of birds in respect to each community type, and the location, structure and occupancy status of their nests.

## LOCATION

The area studied was located on the eastern shore of Indian River Marsh approximately one mile from its outlet at Mullet Lake and two miles northeast of the town of Indian River, Cheboygan Co., Michigan.

The general physiography of this area is assumed to be the direct result of glaciation and subsequent erosion. Scott (1921) describes Indian River as leaving Burt Lake at the southeastern corner and extending to Mullet Lake through the north side of a break in the upland which is about one mile in width. The channel thus formed is flanked by cliffs, and its bed rises gradually to a sand bar which extends in a regular concave curve to the west. This bar grew from the west, separated the basins of the two lakes, and formed the outlet to the north. Indian River flows through this swampy mud-flat, and as the drop from Burt to Mullet Lake is less than one foot - its movement is

sluggish.

### CLIMATIC FACTORS

At the beginning of the study the sky was clear, the temperature about 45° F., and a wind velocity of an estimated 0-5 miles per hour. Gradually during the course of the investigation the sky became overcast and by 10:45 it was raining steadily. The temperature at this time was about 55° F.

### THE COMMUNITIES AND ECOTONES

#### Open Water Community

The open water community consisted largely of the general open surface of Indian River, and the channels and pools between the dense growths of marsh vegetation. The submerged flora and aquatic fauna provide food for many marsh birds. Insectivorous birds such as Black Terns and Tree Swallows feed from the insects hovering over the surface of the water. Among the other birds seen either swimming or hovering over this area were the Black Duck, Common Tern, Coot, Pied-billed Grebe, Kingfisher and Herring Gull. Minnows and larval stages of amphibia probably provide the greatest source of food for the fishing birds. Although the water depth was not actually measured it was estimated at 8-12 feet.

#### Floating Plant Community

This area was very limited in extent and consisted largely of such floating plants as Nymphaea and Castalia. Insects found on the floating leaves of these water plants serve as a food sup-

ply for some birds as was evidenced by a female Red-wing Blackbird which was seen hopping from one lily pad to another in search of insect food. The water depth here does not exceed eight feet. Birds of the open water mentioned before would also be found in this community.

### Bulrush Community

In water not more than six feet in depth these communities were found irregularly distributed throughout the area, and often associated with Cattail in an ecotone. Plants of the genera Scirpus and Phragmites were the dominant flora. Seeds of both these plants are used for food by water fowl.

One Black Tern nest was found in this community. It was built along the edge in open water about 10 feet from the vegetation proper. It was constructed on what appeared to be a mass of bulrushes - probably an abandoned muskrat house. The water depth at the nest site was 20 inches. The nest itself was only 1.8 inches above the level of the water, and was composed of loosely arranged pieces of dead bulrush stalks. The average diameter of the nest was 5.8 inches. The nest contained three eggs measuring 1-1.5 inches in length. The Black Terns protested our approach violently, diving again and again at our heads and screaming shrilly.

Bent (1921) describes the Black Tern as being largely insectivorous, and also feeding on crayfish and mollusks. Insects are caught on the wing gleaning grasses, reeds, and bulrushes. As the Black Tern is the most widely distributed bird of the mid-west it could be assumed that they were the predominant bird of the

inant bird of the marsh under study. This was found to be true.

The nest of an Eastern Kingbird was found located on a stump in open water 20 inches deep, and 8 to 10 feet away from the edge of the bulrushes. It was situated in a depression in the stump 18 inches above the water surface. The nest was composed of rootlets, string, paper, cotton, grass, and had a diameter of 3.8 inches. It contained one egg and three nestlings in pin feathers. The female Kingbird perched some distance away, and made no attempt at defense.

### Bulrush-Cattail Ecotone

This ecotone was rather extensive, bordering the open water and ranging in depth from three to four feet. Patches of Carex were also found throughout this area. Although a common nesting area for the American Bittern, no nests were discovered.

One Red-wing Blackbird nest was found near the edge of this ecotone. The nest was supported by a sort of platform formed by weaving plant fiber among stalks of cattail. It was built 14 inches above the surface of the water, and had a diameter of four inches. The nest contained two eggs and two young. The female Red-wing protested our approach by scolding about us in circles.

### Cattail Community

This community was the largest in extent, and contained the greatest variety of birds. The dominant plant of this area was Typha latifolia, and the dominant bird the Red-wing Blackbird.

Three Red-wing Blackbird nests were found along the margin of this area. They were similar in structure to the one already described in the Bulrush-Cattail ecotone. One nest was empty, one contained four eggs, and the other contained three eggs.

The nest of a Sora Rail was found containing one dead downy young. This nest was constructed on a platform of dead cattail stalks 28 inches above the water in dense cattails.

Six nests of the Long-billed Marsh Wren were observed in various stages of construction; none were occupied, and one was in the process of being constructed. All nests were located fairly close to the margin of the cattail community toward the open water. Green cattails were bent over, and dead wet leaves were interwoven among these to form a ball-shaped nest with a small side opening approximately 1.5 inches in diameter. The nests were situated 14 to 18 inches above the water.

The abandoned nest of a Pied-billed Grebe containing one cold egg was also found. It was constructed on a mass composed largely of roots and cattails in 18 to 20 inches of water. The actual nest was 8 inches in diameter, the top of which was 1.6 inches above the water. The dimensions of the egg were 1.2 by 1.8 inches.

Bent (1926) describes the Coot as using this community as a nesting area.

#### Sedge-Cattail Ecotone

Such ecotones were observed toward the shoreward side of several cattail communities. Although the Red-wing Blackbird and Long-billed Marsh Wren are known to use this ecotone no nests were found.

### Sedge Community

One such community occupied a strip of land roughly 20 yards in width extending along the eastern shore of the marsh. The dominant plants of this community were sedge (Carex), small bulrushes (Scirpus), and rushes (Juncus). This community with its short stalked plants had a definite swampy appearance with small pools scattered throughout.

Three American Bitterns were flushed from this area though no nests were discovered. One Swamp Sparrow was seen perched on a post, and a Virginia Rail was observed flying low over this area.

Besides numerous insects many frogs and water snakes were noted here.

### Shrub Community

Groups of shrubs dotted the sedge community, and appeared along the forest edge. The leather leaf (Chamaedaphne) being the most dominant shrub. As this area was not too extensive a sedge-shrub ecotone was not apparant. Both the Swamp Sparrow and the Northern Yellow-throat were heard singing in this community. These birds are known to nest here, however, no nests were seen.

A faun was flushed from a patch of shrub in the sedge community. The effect of this animal on the bird population is apparantly negligible.

### Climax Forest

The original virgin climax forest of this area was of a

mixed coniferous-deciduous type. The original forest has long since been cut over, and it is presently in a sub-climax stage of development. The dominant coniferous trees were white cedar (Thuja occidentalis), tamarack (Larix laricina), balsam fir (Abies balsamea), and black spruce (Picea mariana). The dominant deciduous trees were beech (Fagus), maple (Acer), and aspen (Populus). Birds seen or heard in this association were:

Black-billed Cuckoo  
 Crested Flycatcher  
 Black-capped Chickadee  
 Robin  
 Cedar Waxwing  
 Red-eyed Vireo  
 Black and White Warbler  
 Oven-bird  
 American Redstart  
 Scarlet Tanager  
 Rose-breasted Grosbeak  
 Indigo Bunting  
 Purple Finch  
 Chipping Sparrow  
 Song Sparrow

#### General Area

The following birds were seen ranging over the entire area. Some of the birds included have been mentioned before as related to the open water community:

Crow  
 Great Blue Heron  
 Common Tern  
 Caspian Tern  
 Belted Kingfisher  
 Black Duck  
 Herring Gull



## BIOLOGICAL RELATIONSHIPS

Certain species of birds prefer certain habitats for food, protection and nesting. A species then usually remains associated with a particular vegetative association whenever it is available. Changes of a topographical nature sometimes force certain species to adapt themselves to other habitats. Interspecific and intraspecific relationships may also be effective in bringing about these changes. There is, however, a limit to which any one species can be removed from a particular environment. As the marsh under study occupied a fairly large area which in turn contained more than ample food and nesting areas, relationships and distribution of all species involved would appear to be well balanced. There would appear then to be little competition between or among species as regards food or nesting, and defense of territories would seem to be the only interspecific relationship.

### SUMMARY

1. The study of a portion of Indian River Marsh, two miles northeast of Indian River (town), Cheboygan Co., Michigan, was undertaken on June 26, 1948 by a party of five members.
2. The sequence of ecological communities and ecotones observed were as follows: open water community, floating plant community, bulrush community, bulrush-cattail ecotone, cattail community, cattail-sedge ecotone, sedge community, shrub community, and climax forest.

3. Thirty-seven species of birds were recorded. The location and general distribution of each species to each ecological community was noted.

4. The nests of six species of birds were discovered. These were, with the community in which they were found: Bulrush Community - Black Tern (1), Eastern Kingbird (1); Bulrush-Cattail Ecotone - Redwing Blackbird (1); Cattail Community - Red-wing Blackbird (3), Sora Rail (1), Long-billed Marsh Wren (6), Pied-billed Grebe (1).

5. The Black Terns and Red-wing Blackbirds were by far the most dominant birds of the marsh.

6. All nests observed were built along the margin of the community in which it was located.

7. Species were found to be limited in their nesting sites to one or two communities.

8. As food, nesting sites, nesting material, and cover were ample, there was little evidence of interspecific or intraspecific competition.

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Location of area:

Date (or dates):

Number persons  
making study:

Weather rating:

General description  
of area:

Communities and Ecotones

OPEN WATER COMMUNITY	FLOATING PLANT COMMUNITY	BULRUSH COMMUNITY	BULRUSH-CATTAIL ECOTONE	CATTAIL COMMUNITY	CATTAIL-SEDGE ECOTONE	SEDGE COMMUNITY	SHRUB COMMUNITY	CLIMAX FOREST
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Species

Black-throated

Green Warbler

Oven-bird

Northern Yellow-  
throat

American Redstart

Red-wing

Scarlet Tanager

Rose-breasted Gros-  
beak

Indigo Bunting

Purple Finch

Chipping Sparrow

Swamp Sparrow

Song Sparrow

heard

heard

heard

heard

heard

heard

heard

heard

heard

seen

seen

(1)  
nest

(3)  
nest

PORTION OF INDIAN RIVER MARSH

MAP SHOWING ECOLOGICAL COMMUNITIES AND DISTRIBUTION OF NESTS

