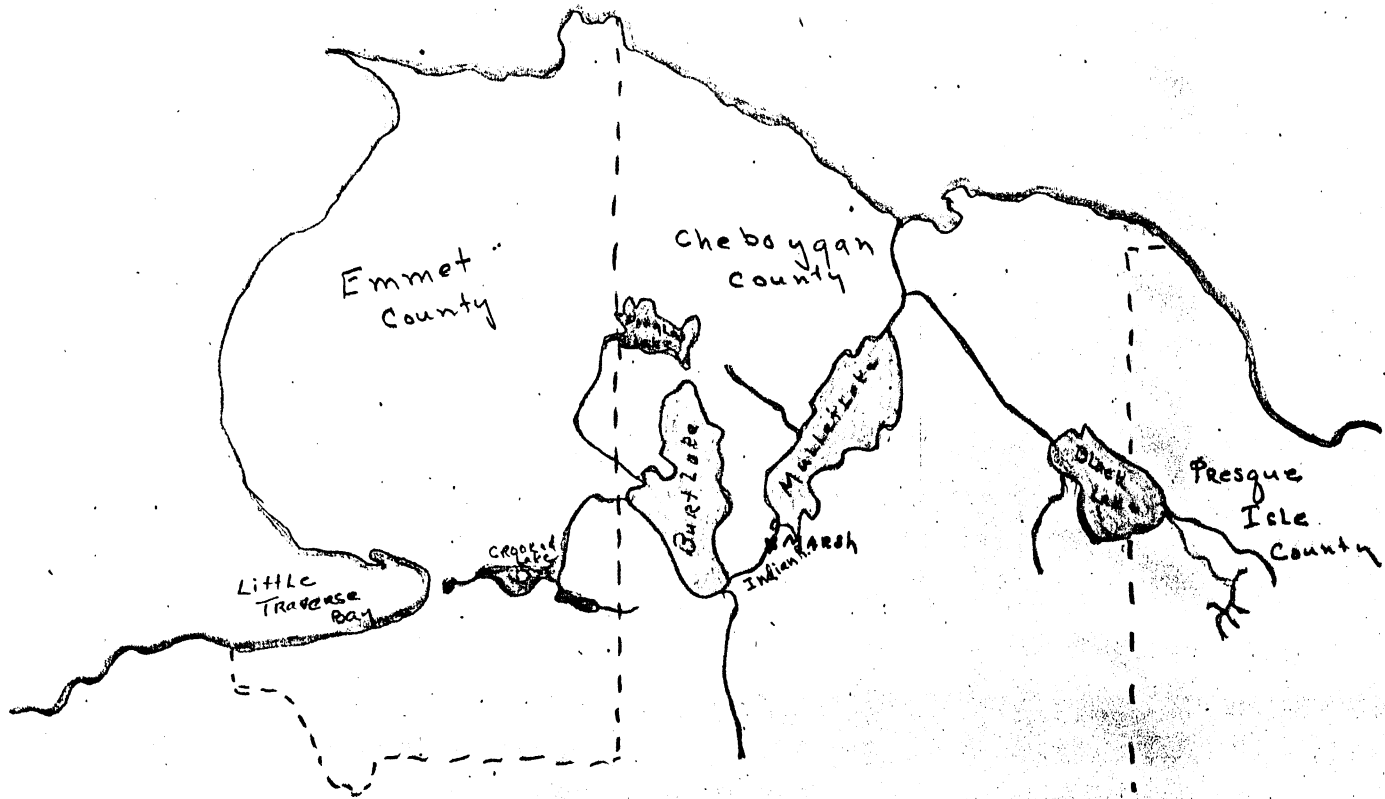


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Bird Communities
in the Indian River Marsh.



BIRD COMMUNITIES OF THE INDIAN RIVER MARSH

The Advanced Ornithology class at the University of Michigan Biological Station, with some students doing special problems in ornithology, spent the morning of June 28, 1947, from six-fifteen until eleven o'clock, in the Indian River marsh studying bird communities and some of the ecological aspects of them. Although the night had been rainy, the day was fair and warm; the wind was calm to fresh (0-4 miles per hour); the humidity was high, especially after a thunderstorm which caused to group to seek shelter for about 20- 25 minutes.

The Indian River marsh is located a few miles northeast of the summer resort town of Indian River, which is situated on the southeastern shore of Burt Lake, in Cheboygan County, near the northern tip of the Southern Peninsula of Michigan. Indian River forms the drainage from Burt Lake into Mullet Lake.

The area in which these lakes and river are found has a very interesting and fairly complicated geological history. Most of this region is underlain by limestone, and some of the lakes are the result of sink holes caused by the dissolving of the limestone. However, just as glaciologists believe that the present Great Lakes are the ice-scoured valleys of a pre-glacial river system, so too, the chain of lakes known as the "Inland Route" - Black, Burt, Crooked, Douglas, Mullet, Pickerel, and Round Lakes and Little Traverse Bay - all of which lie in a low land area (or depression) may have been the drainage system formed by stream erosion as the ice which covered the state

retreated, or by ice scour as the ice advanced, or by both. During the Pleistocene era, there flowed outward from a center in Labrador, a sheet of ice with its main portion extending in a southwesterly direction as far as Kansas and Nebraska, and as far south as the Ohio River, and east to the Atlantic Ocean. Like a gigantic cauliflower, the lobes of this glacier reached outward, finally merging into one continuous sheet. Then, as the climate became warmer, the ice front melted faster than it could be supplied by the main body; there was a retreat, the lobes came into being again, and at their heads were formed as huge crescents, the earliest of the glacial lakes. These were all in the southern part of the Great Lakes region, although there may have been a lake that extended northward almost to the Straits, as "varved deposits" have been found in the northern part of the state that do not correlate with the level of any glacial lake whose existence is positively known. Evidence does show, however, that this area was covered by water in both the glacial Lake Algonquin and the post-glacial Nipissing Great Lakes stages. "At Indian River, the waters of Lake Algonquin entered a region of islands forming an archipelago of considerable extent. The eastern islands are relatively small. One lying about two miles northeast of Indian River and another about two miles north along the east shore of Burt Lake are each about two miles in length and roughly oval in form. They rise 100 to 150 feet above the highest Algonquin beach, which is well developed around their sides." ¹

1 Leverett, Frank and Frank B. Taylor, THE PLEISTOCENE OF INDIANA AND MICHIGAN AND THE HISTORY OF THE GREAT LAKES. Monograph No. 53, United States Department of Interior, Geological Survey. 1915. p. 423.

During the post-glacial Nipissing Great Lakes period, the "Inland Route" was a strait separating a large island (now Emmet and northern Cheboygan counties) from the mainland and connecting the waters of Lakes Huron and Michigan, just as the Straits of Mackinaw do today. As the level of the water lowered and the present Great Lakes were formed, only the deeper parts of this strait were left with water, and these remnants became the lakes mentioned above.

I. D. Scott, in his book, "Inland Lakes of Michigan", writes that, "Indian River leaves the lake (Burt) at the extreme southeastern corner and flows through the north side of a break in the upland which is about a mile in width and extends to Mullet Lake. This rather broad channel is flanked on either side by the high cliffs of Lake Nipissing. Its bed where not traveled by the Indian and Sturgeon Rivers, rises gradually to a sandbar which extends from cliff to cliff through the town of Indian River in a regular curve concave to the west. This bar grew from the west and practically separates the Burt and Mullet lake basins, forcing the outlet to the north. On the gentle front slope of the bar are several minor beaches which were formed during the recession of Lake Nipissing and probably mark levels of short duration; since small terraces and cliffs at like elevations are found along the shores of Burt Lake. In the lagoons behind these small beaches swamp conditions prevailed." ²

² Scott, I. D., INLAND LAKES OF MICHIGAN., Michigan Geological and Biological Survey, Publication 30, Geological Series 25. 1921 p. 79.

Scott also says, "The valley spreads to a width of more than one-half mile north of Indian River and becomes a swampy mud flat through which the Indian River still meanders. The stream was unable to keep a channel open at its mouth and in its lower course, which was undoubtedly a shallow arm of Mullet Lake now filled by the silt carried down by the Sturgeon River after its diversion." 3

The question will arise, what relationship does this geological history have with bird communities. The answer is that, if the history had been different, there would be no marsh to provide suitable habitats for the birds found in the area. Had this been a "driftless area" as is found in central Wisconsin, no marsh could have been formed, for the history of such an area is entirely separate from that of a glaciated area. So it is that geology enters the picture, and also affects the ecological succession. For from a hydrosere or open type of association (which often contains submerged vegetation and aquatic life), there succeeds an emergent floating stage, which limits or eliminates the submerged type by depriving it of sufficient light. The depth of water for this stage is usually about eight to ten feet as compared to the twelve to twenty feet of the open water stage. Following the floating plants there comes the bulrush stage, in water four to six feet deep. This gives way to the cat-tail type in water less than four feet deep. These two types intermingle, as do the cat-tail and sedge stages; or any one of the three may be omitted in the ecological succession. Shrubs take over from the sedges.

in very shallow water or moist soil, and the final community is the climax forest of either black ash, elm - maple, or cedar; or in dry soil, by beech - maple, oak - hickory, balsam - spruce, or pine.

The open water community is the river itself (with perhaps a few open places here and there). One member of the group observed a female Black Duck (Anas rubripes trisis) with ten feathered young swimming after her. "Nest sites are variable, but usually on the ground not far from water; 6 to 12 eggs, indistinguishable from those of the Mallard, are laid in a well-concealed nest made of grasses and weeds and lined with down. The male Black Duck deserts its mate after the eggs are laid, leaving her to incubate the eggs for about 26 days and to care for the young until they are half grown. Food is obtained largely from pondweeds, grasses, sedges, mollusks, and crustaceans." ⁴ A Blue-winged Teal (Querquedula discors) was also seen. "Seeds of sedges, pondweeds, grasses, and smartweeds are favorite foods, and animal life, including mollusks and insects, is taken in greater quantity than is usual with most surface-feeding ducks." ⁵ An American Egret (Casmerodius albus egretta) was seen on a log in the river by Dr. Nelson and myself.

No nests were found among the floating plants, but the Red-wings (Agelaius phoeniceus phoeniceus) were seen walking about on the lily pads, eating the insects they found there.

Bulrushes (Scirpus sp.) were to be found alone and intermingled with the cat-tails (Typha sp.). In the bulrushes are to be

4 Sheldon, Col. H. P., WILD DUCKS., American Wildlife Institute, 1941. p. 6.

5 Sheldon., Ibid. p. 10.

found the nests of the Black Tern (Chlidonias nigra surinamensis) According to Barrows, " It nests in large or small communities, placing its one or two eggs on mats or windrows of floating vegetation, or sometimes on a floating plank or log; the nest usually is only a hollow in the vegetation, although sometimes the materials appear to be slightly arranged." 6 The first nest we found, had three eggs in it. It was over two feet in width. Nearby was another, also containing three eggs. Around the bend, where the channel divided, was another nest with two eggs in it. This was in cat-tails, rather than in bulrushes, and was more exposed. Nearby was a nest containing a baby Pied-billed Grebe (Podilymbus podiceps podiceps) in the downy stage (but was very bedraggled since it was wet) and one egg. A baby Grebe was found in water near a tern's nest in a dying condition, apparently having been struck on the head by terns. Grebes make their nests of wet materials, never of dry, and build them in either bulrushes or cat-tails. Barrows says that, "During the nesting season the birds keep more closely to the marshes and the rank vegetation along the borders of streams and ponds where they are less likely to be seen. Sometimes many pairs will be found in small and isolated marshes where their presence would hardly be suspected. No doubt the heat of the decaying vegetation of the nest aids materially on hatching the eggs, and the mother usually covers the eggs with some such material when leaving the nest voluntarily. The young take to the water immediately upon hatching, and when a nest with one or two stained eggs is found, search in the vicinity, or a little

6 Barrows, Walter B., MICHIGAN BIRD LIFE., Special Bulletin, Michigan State College, 1912. p. 64

patient watching, will usually reveal three or four newly hatched young close by. This bird is seldom seen on the wing, since it seems always to prefer to escape by diving." 7

Also to be found in the cat-tails are the nests of the Red-wings. "The nest is commonly a somewhat bulky and substantial structure woven out of coarse grasses and weeds and lined with finer materials of the same kind. It is most often attached to the stalks of grass, reeds, or flags at heights ranging from a few inches to several feet above the water, or in rarer instances, above the ground. . . . The birds are more or less gregarious even when nesting, and in favorable locations scores, or even hundreds of nests may be found placed here and there at intervals of but a few yards, sometimes only five or ten feet apart." 8

We found several nests close to each other in the cat-tails, and a more thorough search would undoubtedly have revealed more since there were quite a few females in the vicinity. One nest was 13 inches above the water; another 14 inches. The first nest was made of grasses and sedges, lined with grass, and with a few cat-tails in it. This nest had an overall diameter of 4 $\frac{1}{2}$ -5 inches while the second, about forty feet away, was 5 $\frac{1}{2}$ inches in diameter and 3 inches deep. There were three eggs in in, while nearby was a nest with four young. A tern's nest with two young in it, two days old, was near the second Red-wing's nest. This nest was 24 inches long, and 10 inches wide, and was in water 16 inches deep. Floating nearby was a log with a tern's nest containing one egg on it.

7 Barrows., Ibid., p. 39.

8 Barrows., Ibid., p.440

The Coot (Fulica americana) was heard but not seen. "The nest is a heap of vegetable rubbish, sometimes placed well up among the reeds and deeply hollowly, occasionally almost floating like that of a Grebe. Coots are rather omnivorous, eating grains, seeds, bulbs, snails, insects, and tadpoles, and almost anything animal or vegetable which is available." ⁹

We heard the Long-billed Marsh Wren singing and after a search found the nest. Barrows tells us that "The species is remarkable for the number and character of the nests which it builds. These are globular or ovoid, and built mainly of dead flags, reeds, and rushes, woven into a compact mass and the cracks filled with decayed vegetable matter which in some cases gives the impression that mud has been used. . . . The interior is rather neatly lined with fine grasses and other soft materials, often with down from the cat-tails. The entrance is through a small hole in one side which is generally inconspicuous. This nest is swung among the reeds, grass, or cat-tails, usually over standing water, but occasionally second nests are built in nearly dry situations after the spring floods have subsided. In addition to the nest which contains the eggs, the birds build numbers of similar nests which apparently are never occupied, or are occupied for roosting purposes. It is a common thing to find twenty to fifty such nests in an area of a few acres., and the male is commonly believed to have constructed all these supernumerary nests in order to mislead its enemies and prevent the discovery of the occupied nests. However this may be, not one nest in twenty is found to contain eggs or young,

⁹ Barrows., Ibid. p. 64

and the birds seem to continue building as long as young remain in any of the nests. . . .

"The bird is continually rambling about among the grass stems, climbing to the tops of reeds and cat-tails, and occasionally fluttering a few yards upward into the air, uttering his peculiar sputtering song and then dropping back out of sight in the reeds. . .

"The food consists very largely of aquatic insects which creep up the marshy vegetation as they transform from their larval condition, and are easily secured by the bird. It also eats small crustacea, as well as spiders, caterpillars, and such forms of minute animal life as abound in wet places." 10
The nest which we found was in the sedges (Carex sp.) and was made of sedges with a few cat-tails, lined with cat-tail down. It was one foot above water and had a hole of one inch diameter.

The Virginia Rail (Rallus limicola limicola) and the Sora (Porzana carolina) are to be found in the cat-tails and sedges.

In the shrub community are to be found the nests of the Swamp Sparrow (Melospiza georgiana) and the Mississippi Song Sparrow (Melospiza melodia beata). The Swamp Sparrow seems to prefer the more open marshes, avoiding those grown up to willows and trees, while the Song Sparrow is found along the edges of wet woods or bushy meadows.

As we move into the forest, which here was a mixed one, we find more of the song birds, Near the forest edge, but still in the shrub community is the nest of the Northern Yellowthroat (Geothlypis trichas brachidactyla), a warbler that prefers a swampy habitat.

Since we found these birds in these different types of communities, it would seem that they must be able to find the right kind of food in the marsh, or they could not survive there. The food of the ducks was available as was that of the terns (who are insect eaters, instead of fish eaters, as are other species of terns) , and of the grebes. So too, was there the food of the other birds seen.

The terns and the red-wings seem to nest near each other with no trouble, but not so the terns and grebes. The rails and bitterns were neighbors. The nest of an American Bittern (Botaurus lentiginosus) was found in mixed cat-tails and bulrushes, with the female brooding four eggs, one of which was pipped. She illustrated to us the way the bittern imitates a reed, but would not leave the nest. The male bittern was seen flying. While no nests of the rails were found, a Virginia Rail and a Sora were seen.

This marsh well illustrates the fact that birds have preferences as to nesting sites, and are to be found in the plant communities that are best suited for them, even though we humans would not consider some of the places they like best. And like humans, birds will live peaceably with their neighbors, or be troublesome.

List of Birds Seen in the Indian River Marsh (or heard)

Pied-billed Grebe	<u>Podilymbus podiceps podiceps</u>
X American Egret	<u>Casmerodius albus egretta</u>
American Bittern	<u>Botaurus lentiginosus</u>
Black Duck	<u>Anas rubripes tristis</u>
Blue-winged Teal	<u>Querquedula discors</u>
Virginia Rail	<u>Rallus limicola limicola</u>
Sora	<u>Porzana carolina</u>
Coot	<u>Fulica americana</u>
Herring Gull	<u>Larus argentatus smithsonianus</u>
Common Tern	<u>Sterna hirundo hirundo</u>
Black Tern	<u>Chlidonias nigra surinamensis</u>
Belted Kingfisher	<u>Megaceryle alcyon alcyon</u>
Phoebe	<u>Sayornis phoebe</u>
Tree Swallow	<u>Iridoprocne bicolor</u>
Long-billed Marsh Wren	<u>Telmatodytes palustris palustris</u>
Northern Yellowthroat	<u>Geothlypis trichas brachidactyla</u>
Red-wing	<u>Agelaius phoeniceus phoeniceus</u>
Swamp Sparrow	<u>Melospiza georgiana</u>
Mississippi Song Sparrow	Melospiza melodia beata
Eastern Kingbird	<u>Tyrannus tyrannus</u>

List of Birds Seen or Heard in the Mixed Woods

Black-billed Cuckoo	<u>Coccyzus erythrophthalmus</u>
Eastern Hairy Woodpecker	<u>Dryobates villosus villosus</u>
Crested Flycatcher	<u>Myiarchus crinitus boreus</u>
Least Flycatcher	<u>Empidonax minimus</u>
Blue Jay	<u>Cyanocitta cristata cristata</u>
Crow	<u>Corvus brachyrhynchos brachyrhynchos</u>
Black-capped Chickadee	<u>Penthestes atricapillus</u>
Winter Wren	<u>Nannus hiemalis hiemalis</u>
Robin	<u>Turdus migratorius migratorius</u>
Veery	<u>Hylocichla fuscescens fuscescens</u>
Cedar Waxwing	<u>Bombycilla cedrorum</u>
Red-eyed Vireo	<u>Vireo olivaceus</u>
Black-and-white Warbler	<u>Mniotilta varia</u>
Yellow Warbler	<u>Dendroica aestiva aestiva</u>
Oven-bird	<u>Seiurus aurocapillus</u>
American Redstart	<u>Setophaga ruticilla</u>
Cowbird	<u>Molothrus ater ater</u>
Scarlet Tanager	<u>Piranga erythromelas</u>
Rose-breasted Grosbeak	<u>Hedymeles ludovicianus</u>
Indigo Bunting	<u>Passerina cyanea</u>
Purple Finch	<u>Carpodacus purpureus purpureus</u>
Chipping Sparrow	<u>Spizella passerina passerina</u>

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