

The birds that were found in these small unbroken prairie areas are chiefly of species that live in woodlands, including shrubby growths, but only a small proportion of the species of the woodland birds of the Charleston region appear to visit the prairie ponds. Some marsh birds are found in them. The true open field birds treat these areas as they do woodlands, avoiding them almost entirely. Upland plovers, horned larks, dickcissels, savanna sparrows, and grasshopper sparrows, all of which are common in the Charleston region, gave no indication of being attracted by these ponds.

Since these areas of undrained prairie land constitute a distinct type of bird habitat with a fauna having some semblance to that of the old prairie sloughs and since they are rapidly being destroyed, ornithologists, who find them accessible for field work, should strive to preserve data on the bird inhabitants of these and other remnants of the primitive prairies.

Charleston, Ill.

THE TERNS OF WEEPECKET ISLANDS, MASSACHUSETTS.

BY ALVIN R. CAHN.

DURING the summer of 1903 and 1904, Professor Lynds Jones had the opportunity of watching and studying the colony of terns (*Sterna hirundo* and *S. dougalli*) in the vicinity of Woods Hole, Massachusetts, and the results of this study were given to the public a couple of years later.¹ As Professor Jones does not confine his remarks to any one special colony, it may be taken for granted that his observations will hold for one island he investigated as well as for another. Among the islands he visited was the small group of three known as the Weepeckets, located about four miles off the coast of Woods Hole. Eleven years have elapsed since Professor Jones investigated these islands, and it is evident from obser-

¹Jones, L., "A Contribution to the Life History of the Common (*Sterna hirundo*) and Roseate (*Sterna dougalli*) Terns." *Wilson Bull.*, Vol. XVIII, No. 2, June, 1906, pp. 35-47.

vations made by the writer during his brief opportunity to survey the islands in 1915, that marked changes have occurred in this particular colony, which may be worthy of notation. A large colony, as accessible to scientists as that on the Weepecket islands, should be carefully watched and all possible data accumulated which will lead to a fuller understanding of the natural history of the species. The writer wishes to express his sincere appreciation to the staff of the Marine Biological Laboratory, which made his visit to the islands possible, and especially to Mr. George Gray, who arranged for his transportation to and from the islands.

The Weepeckets, as a group, comprise three islands—two very small, being probably less than half a mile in circumference at high tide—and a larger one, approximately a mile in extent. All three are treeless, margined by a wide, gently sloping sand beach, the monotony of which is broken by areas of boulders, and covered by a knee-high growth of vegetation, of which poison ivy (*Rhus toxicodendron* L.) forms no small percentage. High-water mark is clearly indicated by a nearly continuous line of sea weed, interspersed with occasional old skate (*Raja crinacea*) egg-cases. The beach is practically devoid of life,—as would be expected in the case of an exposed flat of this character,—with an occasional razor clam (*Ensis directus*) stranded in some tide pool behind the boulders, the inevitable “sand-flea” (*Orchestia agilis*), the Acorn shell barnacle (*Balanus balanus*), and the commonest of the marine molluscs (*Littorina littoria*).

As I neared the island (the time being limited, I confined myself to the larger island, with only a very hasty look at the smaller two), there was considerable doubt in my mind as to what would be found there, as very few birds were in evidence. Some two dozen terns sailed leisurely overhead, and paid little or no attention to the approaching boat. It seemed hardly possible that as early as June 28 nesting should be over, as the spring had been very cool and backward, and it seemed hard to believe that so ideal a breeding site would be abandoned without good cause. However, with the first



Fig. 1, Common Tern. Type I, A Simple Depression in the Sand.

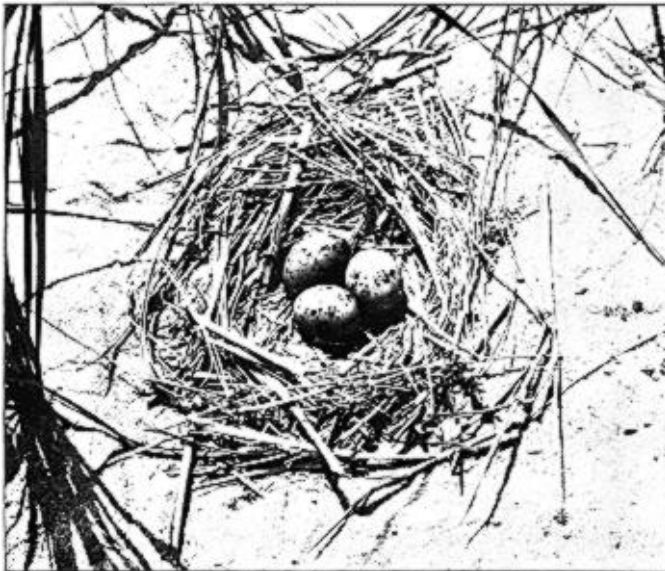


Fig. 2, Common Tern. Type II, A Well Constructed Grass Nest on the Beach.

grating of the boat on the beach, all doubts were forcibly expelled, for instantly it seemed as if the entire island had burst into life and was about to rise bodily out of the water and soar away. In an instant the quiet green was transformed into a blaze of dazzling white, as hundreds upon hundreds of long-winged, long-tailed birds sprang from their nests and swung into graceful flight overhead. Like a great, slow-moving wave the birds rose, until it seemed quite certain that very nearly all the birds were a-wing. The air was alive with them, each screaming and calling in what seemed to be an honest effort to out-scream and out-call his neighbor. The birds at either end of the island, seeing that the cause of the confusion was not to their immediate concern, soon returned to their nests, but wherever I went I was accompanied by protesting birds, so that for two days I had hardly any peace.

As the object of the trip was a survey of the colony, and as photographs were desired, some few minutes were spent in selecting a suitable position for the umbrella blind, after which it was speedily erected. For nearly half an hour after I was safely inside, the birds wheeled and screamed overhead; then one by one they dropped to the ground, and waddled to their respective nests. As luck would have it, I chose well in selecting the individual for photographic purposes, and in the nest three hours she was shot no less than sixty times. After a short time it became necessary, in order to get a variety of poses, to resort to radical treatment to make the bird leave the nest, and in the end it was necessary to thrust a leg out suddenly from under the blind, or actually to prod the bird with a stick.

For nearly seven hours I sat in the blind, photographing at intervals, and watching the actions of the birds about me. In approaching the nests the birds never settle directly on the eggs, but alight near,—often within five feet of them,—and then waddle over the intervening distance. Often the birds stand for some minutes over the eggs, shading them from the hot sun: again, they approach, and without any ado, settle upon the eggs. Usually the birds find it necessary to remodel the

nest to a greater or less extent, depending upon the character of the nest, each time they return to it. This usually consists of scratching a slight depression first with one leg, then with the other, and these holes seem to function as the resting place for the legs. It will be remembered that these nests are essentially shallow depressions in the sand, with but a thin lining of "legal" nesting material. The sand, being very dry, is jarred out of place every time the bird springs from the nest: hence, probably, the necessity, or at least the desirability of hollowing out the nest again. In the cases where a considerable amount of lining is used this scratching is omitted, but when there is little lining, as in the case of the bird most photographed, scratching almost invariably occurs.

Both sexes incubate—as pointed out by Dr. Jones, and the process of changing off is as he describes. Evidently the female does a large part of the incubating; in the case of the photographic subject the male did not put in an appearance during the seven hours I was in the blind; the female had a broken primary that made it certain that it was always the same bird that returned to the nest. She never called for her mate, nor did she in any way show signs of expecting his appearance. It is possible that owing to some tragedy, he had not materialized for some time, and the female had given up hopes of his arrival and had consoled herself to the task ahead of her. As an incubator the male is very restless, and evidently does his share under protest. Often he does not sit upon the eggs at all, but stands over them, calling continually, and fidgeting about nervously. Whereas the female waits until the male is nearly at her side before leaving the nest, the male seems to stand the strain of incubating as long as possible—usually not more than fifteen minutes—then, after an outburst of complaints, leaves the nest as if he could endure it no longer. The female usually appears within a minute or two to take his place.

What impressed me most during my vigil was the marvelous amount and variety of noise the birds were capable of making. While on the wing the birds have their well known

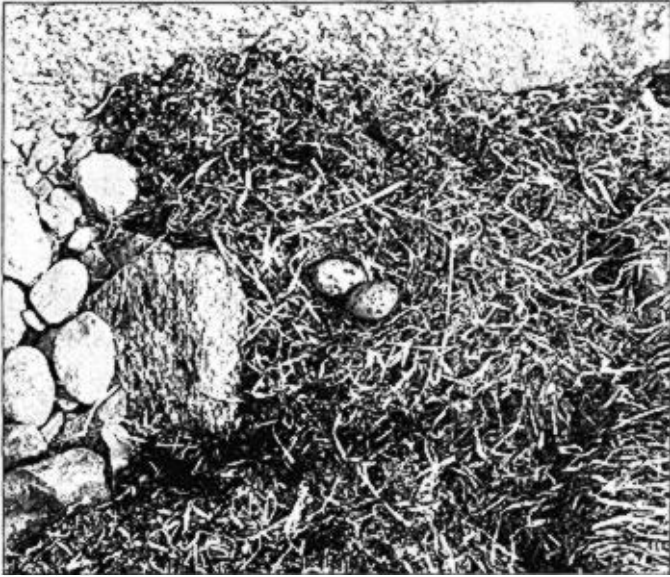


Fig. 3. Common Tern. Type III, A Depression in the Seaweed Drift.



Fig. 4. Common Tern. Type IV, Grass-lined Nest in Vegetation; Egg Just Hatched.

call-note, varied somewhat as the bird sallies at the intruder's head. While incubating, especially during the minutes immediately following their return to the nests, the birds cackle for all the world like a hen announcing the arrival of an egg, until at times the island sounded like a prosperous poultry farm. This cackling is varied occasionally by a "chip," which when first heard calls instantly to mind the song sparrow, but is of rather rare occurrence. When quietly incubating, often a neighbor will approach too closely, or some overhead bird will fly too low, whereupon the bird raises its head and utters a squawk not unlike that of the little green heron. Another note, and one that seems to be given at almost any time the bird is on the ground, is comparable to that made by a mallard "rinsing" its mouth. This was heard a number of times while the birds stood over the eggs prior to sitting upon them, a sort of chattering, as it were. As a whole, the ventriloquial powers of the tern were a big surprise, and I was kept busy jumping from one peep hole to another in order to find out which bird was performing the particular notes I desired to locate.

At four o'clock, the sun being no longer suited for photographic purposes, I left the blind, and wandered about the island with the idea of estimating the number of nests, and thereby getting at some idea as to the number of birds using the island. It was out of the question to count the nests, both because of the great numbers, and because of the fact that they were scattered over the entire island, not only on the beaches, but through the poison ivy sections, where I did not care to follow. If possible, the nests were more abundant in the vegetation than on the open sand beaches: but whether in the grass or on the beach, it was always a difficult task to walk without stepping upon a nest full of eggs. By counting the number of nests in different places, averaging them, and estimating the ratio of the areas counted to the entire island, a rough estimate was secured as to the number of nests on the island. I conclude from this estimate that there were probably not fewer than two thousand nests, thus accounting for about four thousand birds.

A few words should be said about the nests themselves, of which four general types were noted, with gradations, of course, from one to the other. The simplest nest was no nest at all: merely a slight depression in the sand, with no lining. This type was found quite commonly along the beaches, and such nests contained eggs differing in incubation from practically fresh to nearly ready to hatch. This is at variance with the observations of Professor Jones. More than a hundred such nests were noted. The second type was a nest in the sand, with a grass lining; this was the dominant beach nest. Third, a depression in the seaweed drift just above the high water mark, either with or without a small amount of grass lining. It is but a short step from this to the fourth type,—grass-lined nests in the grass, poison-ivy, and other vegetation, protected from the blazing sun and the full blast of the ocean winds.

In an estimate as to the number of eggs to a nest, I should say that fully 50% contained but a single egg; 40% contained two; the remaining 10%, three. Not a single nest was found with more than three eggs, a rather curious fact. As incubation was in general well along, these facts would seem to be significant, and point to the conclusion that the colony is in poor condition, if not actually on the decline. This condition may, perhaps, be explained: there was ample evidence on the island to show that the colony had been raided by egg-gatherers, despite the warning of the conspicuous sign of Massachusetts Audubon Society posted on the highest point of the island. It was possible at the northwest corner of the island to trace an area of over half an acre, through the fact that *all* the nests contained but one egg, and this one in a very early stage of development, where the gathering had taken place. I was confirmed in these suspicions by information gathered at the Marine Laboratory to the effect that the islands are raided by parties from New Bedford, who use the old method of clearing every egg from a given area, and return in a few days and gather in the fresh stock.

During the summer of 1915 there was but a single brood



Fig. 5, Common Tern. A Type IV Nest at the Edge of the Vegetation.



Fig. 6, Common Tern. As Incubation Begins when the First Egg is Laid; the Eggs Hatched a Day Apart.

raided after June 28, and as incubation was quite well along at that date, it seems hardly likely that a previous brood had been raised, and there was no sign of young birds. A party visiting the island from the Laboratory on July 10 reported but a few nesting birds, and innumerable young, still in the down, running about the island. On July 28 no nesting birds were seen, and the young were rapidly maturing. August 7 found the island entirely deserted. This should not be taken to mean that in a healthy, flourishing colony, free from interference, two broods are not raised during a season.

The activity in the colony was incessant, and there was hardly a time during the two days of my visit that one section or another of the island was not in commotion. This activity lasted well into the night, and those few birds which had already hatched their young were bringing in fish as late as 8:20 in the evening, and as early as 3:28 in the morning, so far as I could see. Most of these fish, by the way, are caught around the neighboring islands, and are even brought from the shore of the mainland. In the harbor at Woods Hole the birds were watched diving for fish (*Fundulus heteroclitus* and *Ammodytes americanus* largely), the birds remaining completely under the water for a second or a trifle longer.

The fact that the island was so crowded with nests suggested one or two little experiments, which were tried before leaving, to see if the bird recognized its own nest, and the results seem to point to the conclusion that the bird returns to the *spot*, rather than to the nest itself. The eggs from two nests were interchanged, and the bird on returning, settled without noticeable hesitation on the new set of eggs, though her own were in another nest, fully exposed to her view, less than three feet from her. In the case of a grass-lined nest with a single egg, the rude lining was removed, and the complement increased to four eggs by temporarily robbing neighboring nests, and the bird did not hesitate over the remarkable increase and change. The reverse of this proved equally true; a complement of three reduced to one did not seem to

worry the parent in the least. However, if the eggs were moved more than about thirty inches from their rightful location, there was apt to be trouble before the bird realized that her eggs had moved away, and it would only settle after wandering about rather aimlessly when all the birds in the immediate vicinity had taken their places, and there were no other nests empty. Curious to know how many eggs a bird would cover, a nest was selected containing one egg, and the complement increased during the bird's absence, until in less than two hours the bird was sitting—not exactly comfortably, but sitting—upon seven eggs, evidently with the best of intentions. After she had become thoroughly used to this large complement, six of the eggs were removed at once: the disappearance of so large a part of her charge was taken, apparently, as a matter of course, for, with barely a second's inspection, she settled upon the nest, and began preening her feathers. Hence the statement that the bird returns to the spot rather than to the nest.

*Zoölogical Laboratory, University of Wisconsin,
Madison, Wisconsin.*

A STUDY OF A WHITE-BREASTED NUTHATCH.¹

BY WINSOR M. TYLER, M.D.

IN regions where the White-breasted Nuthatch (*Sitta carolinensis carolinensis*) is a common resident bird, such as the country about Boston, Mass., I think it must often have been noticed how closely a bird of this species, or a pair of birds, remains in one restricted locality for weeks at a time. This habit is most noticeable in winter. Wherever the birds elect to settle for the cold season, they can generally be found within a few hundred yards of their chosen station. The chief requisites for their winter quarters are a food supply, cranies of rough bark in which to store food, or into which to wedge such food as has to be broken before being eaten, and

¹ Read on Jan. 17, 1916, at a meeting of the Nuttall Ornithological Club.