

EXPERIMENT IN THE RECOLONIZATION OF THE COMMON TERN¹ (*STERNA HIRUNDO*).

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DURING the summer of 1929 an attempt was made at the Marine Zoological Laboratory at the Isles of Shoals to establish a colony of Terns (*Sterna hirundo*) on North Head of Appledore Island. This colonization was tried because of the threatened destruction of the colony on Londoner's Island.

The first records of a colony of these birds at the Shoals come from two of the oldest inhabitants. "Uncle" Oscar Leighton, ninety-one years of age, recalls a colony on Duck Island where thousands of "mackerel gulls" nested yearly. In his boyhood the fishermen used to collect the eggs for food, and the men and youths shot the adults for the feathers. This colony persisted until 1898 when "Captain" Caswell moved to Duck Island. As a result of this disturbance, the colony migrated "down the Maine Coast" and settled on various islands. In 1922 a few pairs started nesting on Londoner's Island. This new colony increased rapidly and during the summer of 1928 approximately one thousand pairs were breeding on the island.

The year after the establishment of the colony, a cottage was erected on the island. The cottage, however, was not occupied to any extent until the summer of 1927. At this time the island was sold and the new owner, not desiring the presence of the birds, set about to drive them from the island. The eggs were destroyed, the young were killed, and the adults kept in a state of constant confusion. During the summer of 1929 large numbers of eggs were broken, and numerous young were killed. A dog was kept roving the island and nosed out and killed many of the fledglings, and a flock of hens destroyed great numbers of eggs.

Although the situation was unfortunate, the owner was evidently well within his rights in destroying the birds on his own property.

In view of the above circumstances it was decided that an attempt at recolonization might be the means of saving the colony.

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Aside from the barest possibility of success, the project afforded an excellent opportunity for observing the habits of the bird as well as its adaptability. It was fully realized that such an experiment would cause a high mortality, but on the other hand, the mortality would be just as high if the young birds were left in the original colony.

Londoner's Island is at the south-western corner of the Isles of Shoals group. It is a rugged mass of rock of about fifteen acres. The majority of nests were on the higher portions which rise about forty feet above the high-tide mark.

The nests were most plentiful during June. They usually contained two or three eggs, occasionally four. The eggs were sometimes laid on the bare rock, but were usually in shallow nests scooped in the soil among the bushes. Some of the nests were built up of rock-weed to a height of two or three inches. It may be noted here that about ten pairs of the rarer Roseate Terns (*Sterna dougalli*) nested in the deeper brush of the northern end. A few of the young of this species were involved in the experiment.

In choosing a location for the experiment the environmental factors of Londoner's Island were carefully considered. North Head on Appledore Island was finally chosen as an ideal place for the experiment. Here an area approximately equal to that of Londoner's Island was available. The vegetation of this location is practically the same as that on Londoner's. The altitude and rocky shore-line are similar. The water is deep, and small fish are plentiful. Just off-shore there is a large rock which rises about twenty feet above the high-tide mark. Here Terns commonly alight. Between this projection and the shore is a large pool which is fairly shallow.

This region is about one and one half miles from the present colony, and is on one of the main tracks of flight to and from the regular fishing grounds of the birds. Normally there are a number of Terns fishing along this shore, and in the deep fjord-like cut at the northern extremity of the area. About a mile to the north-east is a large colony of Herring Gulls (*Larus argentatus*). The proximity of this colony appeared to be the only disadvantage of the proposed new colony of Terns. There was the possibility that the Gulls might kill the young Terns, or that the adults might not

settle so near the Gull colony. However, the other advantages of North Head more than offset this feature.

At the time the experiment was started, it was already late in June. Large numbers of the young were hatched, and a few were well grown. Arrangements were made for caring for about three hundred young. A pen of matched boards was constructed, 12' by 12' by 10'' in height. The top was left open to allow the old birds free access to the young.

Eight members of the University of New Hampshire Marine Zoological Laboratory collected the young. Each member of the party took a lane about six feet wide and collected all of the young birds in this area. It is the habit of the young Tern to creep under rocks, bushes, and grass to hide from the rays of the sun. This, added to the difficulties of wading through poison ivy, the swoopings of the distraught parents, and the stable-flies which appear indispensable to a sea-bird colony, made the work laborious. The young birds were put in bushel baskets and immediately transported to Appledore, and placed in the pen. After the young were in the pen five adults flew back and forth over it until dark. They called constantly, and the young set up an answering clamor.

Several cunners (*Tautoglabrus adspersus*) were chopped finely with an ax, and fed to the young birds. Force feeding was necessary in most cases. A number of bushel baskets were left for cover, and brush was distributed around the pen. The birds were then left for the day to allow the old birds, who were apparently very curious about the whole proceeding, to become used to the new situation. At nightfall the very youngest chicks were put in covered baskets.

The following day there were twelve adults present throughout the whole day. The young were fed two meals of chopped fish. Several adults brought fish, and one or two lit on the edge of the pen for a few seconds, but none were seen to feed the chicks. Fresh water was left in flat dishes in various parts of the pen and the chicks drank and bathed freely. From the third day on the fish was ground whole in a meat-grinder. The chicks accepted it much more readily in this form. Several of the medium grown chicks picked up the fish from a tray in which the residue of the food was placed. The heaviest mortality was among the oldest

and the youngest birds. The former were shy and could not be made to eat, while the latter were so numerous that they could not receive enough individual attention. At the end of the third day eighty had died. About forty adults were near the new colony most of the time now.

The mortality rate dropped, and after the first week but few of the young birds died. By the end of this time the adults were feeding an amount equal to possibly one-third of that which was put in the pen in the form of ground fish. Often there were one hundred and fifty adults flying about the vicinity. All of the young ate from the tray, and came running like so many chickens at the sight of food, and a number had started to fly.

Toward the latter part of July all of the remaining young were flying, and it was thought desirable to obtain more. Only seventy-eight were collected on this trip, as only the medium sized ones were taken. The care of these was the same as of the preceding group. Once or twice they were left for a day without food in order to check on the amount of food brought by the adults, but they never seemed particularly hungry the following day. Many of the young flew continually in and out of the pen, but came back whenever food was brought. The adults seemed fewer as the number of the young decreased. The young birds spread all along the shore during the day, and returned to the pen at night.

One interesting feature of the behavior of the adults was the way in which they drove the young up from the tide region at night. After sitting amicably with the young on the rocks they would suddenly rise and noisily swoop at the youngsters, driving them toward the pen. Some of the young were surprisingly tame, and would light near any spot where fish was being ground. They would beg for pieces by calling and fluttering the wings as they did when the adults brought food. The bright-eyed little fellows watched every movement, and open-billed, tried to catch chunks of fish liver tossed to them. One flew half a mile to a place where fish were being cleaned, and was fed upon the scraps. He was easily picked up.

By the end of the first week in August the feeding was discontinued as all of the birds collected were now able to care for themselves. It is estimated that about eighty birds were reared to this

stage of maturity. A visit to the colony the last week in August showed that a number of the young were remaining in the vicinity. A pair of adults accompanied each bird and all were engaged in fishing. Often a youngster coming in from the sea alighted on the familiar rocks.

The results of this experiment were awaited with a great deal of interest. On a trip to the islands soon after the Terns appeared in 1930 many pair were seen in the vicinity of North Head on Appledore Island. It was not possible to again visit the islands until the middle of June when it was definitely established that a sizable colony was nesting on North Head. A careful search about June 18 showed thirty nests with from two to three eggs. This meant that approximately sixty birds, nearly the number reared to maturity, were nesting on North Head. Although some banding was done in the summer of 1928, it was not thought desirable to catch any of the birds until after the nesting season. Hence the colony was left strictly alone. It was, therefore, a great surprise on returning to the colony about two weeks later to find the nests completely abandoned.

Many Terns were in the vicinity and some would occasionally swoop down on the intruder as though protecting their nests or young.

However, there was no evidence of a single young having been hatched and practically all the nests contained from two to three eggs. The eggs were weather beaten, and in many cases were punctured on the under side by small irregular holes. The cause for this could not be determined, nor have we the slightest idea what caused the birds to abandon their nests. It could not have been that they were disturbed for every effort was made to protect the colony from intruders. One theory was that the entire colony was composed of young birds and that the first year these do not produce fertile eggs. This does not seem reasonable, however, but in order to test this possibility no additional young were brought from the parent colony this year.

We are awaiting, with considerable interest, the nesting season of 1931. If none nest on the North Head of Appledore, a new lot of young will be imported from the parent colony and the entire project started over again.

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