

RAM ISLAND: RECOVERY IN PROGRESS

by Richard A. Harlow, Jr.

Ram Island in Mattapoisett, Massachusetts, has a history of avian study beginning around 1937, when Dr. Oliver L. Austin, a physician, started a bird banding operation on the island, extending his work on several other islands and shores in southeastern Massachusetts. For twenty years he banded Common Terns (*Sterna hirundo*) and Roseate Terns (*Sterna dougallii*) on Ram Island, and in 1947 he banded 3403 terns on Ram Island, the highest number of terns in the state that year. The second largest total was 1886 terns banded on Bird Island. Thus, Ram Island was home to a significantly large tern colony for both Common and Roseate terns, and at times, a larger colony than Bird Island is today.

Ram Island is located just off the mainland, between West Island in Fairhaven, Brant Island in Mattapoisett, and Mattapoisett Harbor. The island is slightly larger than one hectare in size, larger in area than Bird Island (located off Marion), but lower in elevation. The island has a small, narrow, and southerly tidal opening, which is being overgrown by cord grass, and leads to a somewhat oval shallow tidal pond that does not completely empty at low tide. This tidal pond is thought to be a remnant of a spring-fed freshwater pond that had once been on the island 100 years ago. The southwest and southeast points of land are dissected by this narrow tidal opening and have large and medium-sized glacial erratics that extend beyond the land at low tide. These exposed points of rocks all meet in a foul area at the entrance to the channel. At the northern end of the tidal pond there is a narrow swale that is slightly elevated above the pond and is wet only during the highest moon tides. This swale comes between the west and east sides of the island until it almost reaches the northern tip, and then the swale is blocked by a sand and cobble berm that is fifteen to twenty feet from the ocean. At the northern tip of the island there is a bar that extends underwater almost to the mainland. Although there are about two feet of water over the bar during mean low water, there is certainly the opportunity for a person or an animal to wade to the island under the right conditions, such as a moon low tide and a strong northwest wind. All the shores of the island are surrounded by large submerged and half submerged glacial erratics, with a few cut granite blocks on the westerly side, that evidence past human habitation or use when the island was larger in size.

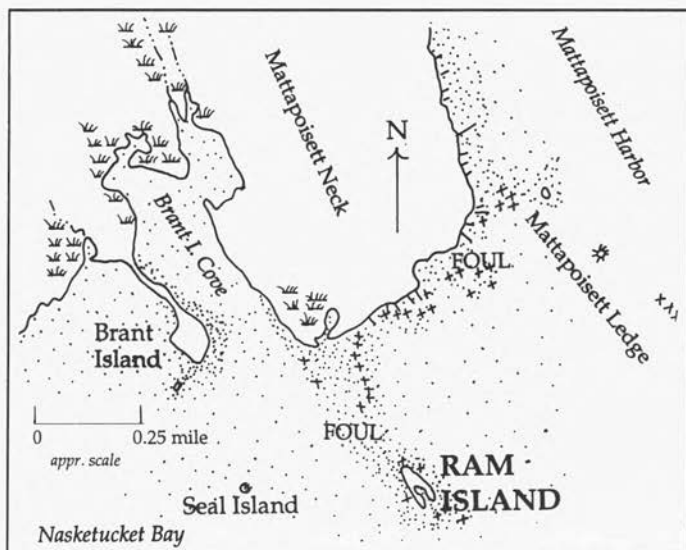
I received my banding license in 1960 and in 1966 became involved with banding adult terns and chicks on both Bird and Ram islands. During the late 1960s and early 1970s the Massachusetts Audubon Society determined that they needed more data on the various tern colonies in the state, with emphasis on the Roseate Tern population. They conducted research on both islands and

determined that it was logistically more advantageous to work on Bird Island rather than Ram Island, especially when gulls overran Ram Island in 1972-1973 and displaced the last terns to Bird Island. From 1972 to 1989 gulls and cormorants completely usurped all terns from Ram Island, and their fecal matter practically denuded the island of all its vegetation, contributing to a more rapid deterioration of the island from wave and wind erosion. Along with the gull and cormorant occupation, we are not aware of other species attempting to nest on the island.

Within a healthy natural ecosystem, biodiversity should be high relative to the processes regulating that ecosystem. Unfortunately, an overpopulation by one or two animal species, unless checked by predation or disease, tends to decrease biodiversity within a given area. That is what happened to Ram Island.

Due to the increase in human refuse, fisheries wastes, and open dumps, both the Herring and Great Black-backed gull populations dramatically increased over the past thirty years. The new-found winter food supply allowed otherwise marginal members of the gull population to successfully live through the winter, when they might otherwise have died. Therefore, their increased numbers could now successfully compete against other species for nesting space in the spring. Because gulls, for the most part, do not migrate and begin their nesting in April, they already have eggs when terns arrive in May and subsequently chicks when terns are just beginning to incubate. When the gull population exploded in the 1960s and 1970s, their numbers were too great for some habitual tern-nesting sites. Ram Island was one of those sites.

When traditional tern-nesting areas have already been taken over by gulls or by human use, the terns then have to nest wherever they can. Although terns do



well in alternative sites, these sites tend to be more prone to predation and cannot produce enough young to offset deaths in their population that are caused by predation or environmental factors. This results in the slow elimination of the species from those areas that are dominated by gulls. The same would be true if those nesting areas were frequented by off-road vehicles or otherwise developed by human habitation or human activity. When Ram Island was fully occupied with gulls in 1972, terns ended up being displaced and had to move to Bird Island or find alternative nesting sites.

When the northeastern population of Roseate Terns was listed as an endangered species on December 2, 1987, federal money became available to help protect the species. Therefore, in 1989 the Massachusetts Division of Fisheries and Wildlife (MDFW), which owns Ram Island, visited the island and verified that there was a Herring Gull population of 700 pairs, or 1400 individuals (the gull population had been greater than 1000 pairs in the 1970s), plus fifty pairs of Great Black-backed Gulls and 100 pairs of Double-crested Cormorants. Therefore, a total of 1700 large birds were directly competing for nesting space that otherwise could be used by terns.

MDFW decided in 1989 to focus on recovering Ram Island from gulls and cormorants and restoring the island to conditions for nesting terns. Thus, a Roseate Tern restoration program was established and a "Recovery Team" set up by the U.S. Fish and Wildlife Service under the Endangered Species Act. From 1989 until 1992 gulls and cormorants were discouraged from nesting on Ram Island by continual but controlled human harassment during the nesting season. By 1992, for the first time in twenty years, terns began to investigate and nest again on Ram Island. One pair of Common Terns and three pairs of Least Terns nested on the island; gull nests decreased from 750 to 91. In 1993 ninety-eight pairs of Common Terns and two pairs of Roseate Terns nested, while only fifty-six gull pairs nested.

By the end of the 1994 breeding season, the island had 300 pairs of Common Terns, 130 pairs of Roseate Terns, and 50 pairs of Least Terns, with only three actual Herring Gull nest attempts. My job on Ram Island was to establish and develop a research program, modeled somewhat after Dr. Ian Nisbet's Bird Island program (including criteria and protocol), that would provide baseline data as this island began to be restored to its use as a tern colony. In early May 1994 Ian Nisbet, Jack Dixon, Sid Chowdri, and I set out initial transects across the entire island using a transit, tape, and compass. This survey would allow us to plot nest and vegetation locations. When the survey was completed, we had permanent six foot rebars at the intersections of each quadrat, flagged with the appropriate coordinate. Dividing the island into ten-meter-square quadrats gives us a measurable way to track annual changes on the island.

The 1994 focus for Ram Island was to maintain consistent and frequent

human presence on the island to discourage gull nesting and gull harassment of terns. Observations, nest and chick data, and banding were the primary objectives for 1994. All nests were marked with numbered stakes and identified as to their quadrats. We limited our entry into the colony during the week to keep human activity to a minimum. Once the chicks were hatching, we limited our banding to early morning to prevent any stress caused by the combination of our presence and the heat of the day.

During July and August we did a complete vegetative survey of the island, noting presence and dominance of each species on a quadrat basis.

The terns occupied the island in three distinct subcolonies: the southeast, comprising Common and Roseate terns; the southwest comprising Common and Least terns; and the north colony comprising Common and Least terns. The southeast end of the island held the highest concentration of Common Terns (166 nests) and the only concentration of Roseate Terns (134 nests). It was at this end of the island that an abundant growth of seaside goldenrod, ragweed, and spike grass with some saltmeadow hay created an optimum habitat for Roseate Terns to nest. The north colony had forty-nine Common Tern nests, and the southwest end of the island had ninety-five Common Tern nests. Least Terns were active at both the north and the southwest colonies amounting to a total of fifty nests.

The first tern nest, with three eggs, was marked on May 29. The first of these eggs was probably laid on May 24 or May 25, about one week later than the first 1994 eggs on Bird Island. The majority of early chicks on Ram Island had fledged by July 22, and the colony was considered very productive. We also had a good late-nesting contingent that was approaching some kind of success with piping eggs and healthy newly hatched chicks by this date.

Up until July 22, we observed only minimal tern harassment from Great Black-backed and Herring gulls. We suspected, but could not prove, that three resident Ruddy Turnstones might be responsible for holes in eggs. Several fledged tern chicks mysteriously died. However, they looked healthy, their feathers were in good shape, and their weights were reasonable. One dead chick had its breast area plucked and part of the breast meat eaten. The others had no apparent predatory marks.

When we left the island on July 22, we were looking forward to banding many chicks, especially in the north section upon our return on July 25. But when we arrived on the island and viewed the colonies before entering them, as was our usual practice, we noticed that the north colony was decidedly ambivalent, with no members coming out to greet us. We would usually be investigated by several aggressive members of the north colony when we landed on the island, but this time not a one was interested. After a cursory look over the three colonies, we immediately checked the north end of the island. What we found put a knot of major concern in my stomach. Not a single egg or chick

could be found! It was like a vacuum cleaner had swept the whole north colony clean. Moving with major concern to the southwest colony, we found only a few chicks that could not be accounted for, and generally everything else looked okay, with new eggs, piping eggs, and chicks. The same was true with the southeast colony, with the exception of one seemingly healthy but dead fledged chick.

We considered the possible tern predators that could have devastated the north colony. Great Horned Owl, Great Black-backed Gull, Herring Gull, a falcon, Black-crowned Night-Heron, or something else. We had discounted daytime predation, at least while we were on the island. We suspected a nocturnal predator, and the only way to verify that situation was to be there in the evening. On the evening of July 25, at about 9:00 PM, a vocal Black-crowned Night-Heron and at least one, but possibly two, immature night-herons landed in the island pond. It seemed that they were concentrating primarily on the southwest end, but they were also seen in the southeast colony, and one night-heron was caught in the rays of a flashlight with a tern chick in its bill. It is hard to relay to the reader how helpless we felt at this point, watching what seemed to be a very dynamic and healthy tern colony wither away by the slow attrition of eggs and chicks that were finding their way into the gullets of night-herons. Also, when we came back the very next morning to see a lethargic southwest colony hanging on to the few eggs and chicks that were left and the southeast colony in an uproar over a very local phenomenon, we wondered what could be wrong now. When we investigated that disturbance, we flushed an immature Merlin from the carcass of a fledged chick. The other mystery seemed to be solved—a falcon was taking down fledged chicks and raising havoc with the colony.

For the rest of July and the first two weeks in August, not being able to do anything about the night-herons, we watched in resigned frustration as the nesting colony slowly diminished in size. The adults and fledged chicks did not seem to be affected and used the rocks on the shore to roost and loaf, but it was simply a matter of time before all eggs and chicks would be eliminated. Such was the case, except for two Roseate Tern chicks that were able to elude predators until they fledged in the third week of August.

This may seem to the reader like a poor year. On the contrary, watching the colony grow, develop, and successfully fledge chicks up to July 22 can certainly be considered very positive. In the sample nests on the island, the Common Terns had raised 2.2 young per nest, the Roseate Terns 1.6 young per nest, and the Least Terns 1.2 young per nest. Considering that the year before had recorded only ninety-eight Common Terns and two pairs of Roseate Terns, with both tern species only marginally successful, then 1994, by comparison, can be considered a success.

During the course of the season, we made careful observations of which

species were using the island and how their presence affected the avian diversity of the island. We had a total of fifty-five species of birds using island space, including the shore or the pond, for nesting, food, or resting. Birds that nested and successfully raised chicks to fledging on the island included four pairs of American Oystercatchers, two pairs of Killdeers, five pairs of Willets, two pairs of Spotted Sandpipers, and two pairs of Sharp-tailed Sparrows. We also had a scouting pair of Black Skimmers that acted as though they would like to nest, but never did. The island bird list showed diversity that was quite adequate for an island that could not boast of more than three nesting species between 1975 and 1991.

The year 1994 was only the beginning. We have a good start at collecting information, and barring any major catastrophe the 1995 tern population should grow in numbers. It will be extremely interesting to collect and compare data over the next several years.

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