



Egg Rock Update

1985 Report

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Director

Newsletter of the Fratercula Fund of the National Audubon Society

EGG ROCK PUFFINS INCREASE TO 20 PAIRS

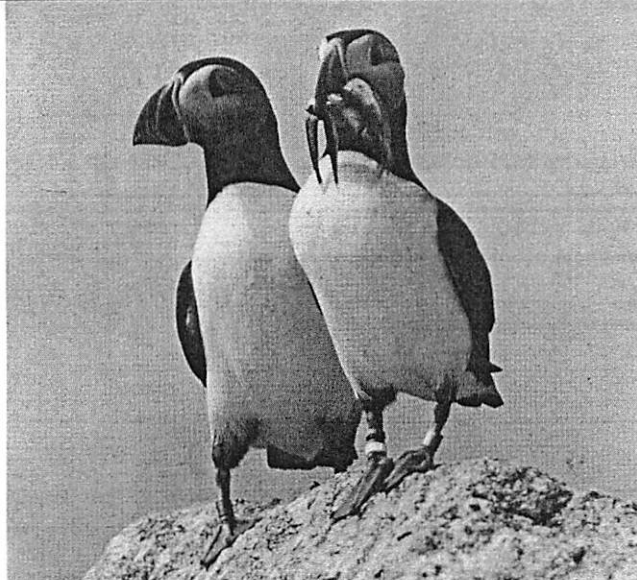
Twenty pairs of Atlantic puffins nested at Eastern Egg Rock in 1985, the largest number nesting there since the colony was re-established in 1981. Puffins disappeared from Eastern Egg Rock and most other Gulf of Maine islands in the late 1880's due to overhunting by local fishermen who shot and trapped the tasty "sea parrots" for food.

The effort to re-establish puffins to seven acre Eastern Egg Rock began in 1973 and eventually led to the restoration of the colony in 1981. In that year five pairs bred in the same rock crevices where the original population nested approximately 100 years earlier. The colony slowly increased to 14 breeding pairs in 1984 and made a major gain this year as the colony grew to 20 nesting pairs.

Thirty-three of the breeding puffins wear color leg bands identifying them as Newfoundland transplants. These birds were removed from burrows on Great Island in Witless Bay, Newfoundland when they were approximately two weeks old. They were then transplanted to Eastern Egg Rock where they were reared on a diet of smelt and vitamin supplements until they fledged when about six weeks old. An additional six of the 1985 breeding puffins are unbanded, suggesting that these are native birds from either Matinicus Rock or Machias Seal Island, the other two Gulf of Maine puffin colonies. The forty breeding puffins represent 89% of the 45 puffins identified at the island in 1985. This suggests that most of the puffins which attend the Egg Rock colony are now members of the breeding population.

Many of the puffins at Eastern Egg Rock show faithfulness to the same mate and nest site from one year to the next. This is a feature of puffin social life described from other colonies. For example, three pairs have returned to the same mate and burrow for the past four summers, and nine of the twenty pairs that nested in 1985 had the same mate and burrow for two or more years. However, by carefully watching the color-banded puffins we found that not all pairs are so faithful. For example, engraved plus 92 and 24, mated for the first time in 1984 when they were both four years old, yet in 1985 they both had new mates and re-nested within 20 feet of each other.

Another interesting trend is the increasing age at which puffins first begin to breed. In 1981, when puffins first nested at Egg Rock, the average age of the six known-age breeding puffins was 4.2 years old. In 1985, the average age for the five known-age first breeding birds was 5.8 years.



In 1985, Egg Rock puffins fed their nestlings an exclusive diet of small herring. Sixteen young puffins fledged from the 20 breeding pairs.

Studies of puffin feeding behavior are an important part of the annual monitoring program at Egg Rock. All of the nests are spot-checked from the time the first fish is delivered until the time feeding stops. The span from first feeding to last is the only way to determine how many chicks fledge, since all of the nests are out of reach in deep rock crevices and the young typically fledge at night. Such studies revealed this year that 80% of the nests produced chicks. Pairs which had bred together at least once previously, fledged 89% of their chicks, while new, inexperienced pairs fledged only 67% of their young.

Dawn to dusk feeding studies are also providing interesting information about the kinds of fish being delivered, frequency of feeding, timing, and amounts of food delivered. This year research assistants watched three neighboring nests from dawn to dusk for three consecutive days. To accomplish this puffin-watching marathon, the assistants took four-hour shifts inside a burlap-covered blind that was positioned within 20 feet of three nests.

From this close view, they found that each chick (puffins have only one chick/nest) received an average of 13 feedings/day, with one nest receiving as many as 21 feedings and another as few as 7 feedings/day. All of the 113 feedings observed consisted of small Atlantic herring. In the Gulf of Maine this is the puffin's principal and most nutritious food.

The abundance of herring delivered to native puffin chicks is a good indicator that this year small herring were in good supply for the Egg Rock puffins.

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Making Room for Puffins and Terns A Case for Controlling Gulls

Following the feather hunting years of the late 19th century, the New England population of Herring Gulls increased from approximately 11,000 pairs on 17 islands in 1901 to 88,502 breeding pairs on 379 islands in 1977 (the most recent census).

Great Black-backed Gulls have experienced an equally dramatic increase. Although Great Black-backed Gulls were completely eliminated from New England waters due to overhunting in the late 1800's, they recolonized New England in 1928 and fifty years later (by 1977), there were approximately 20,464 pairs nesting on 297 islands from Long Island to the Canadian border. These increases are largely due to expanded food supplies from garbage dumps and inshore fishing activities.

This spectacular increase in gull colonies and numbers is probably the principle reason for the 40 year decline in Maine populations of Common and Arctic Terns. During this period, Arctic Terns declined from approximately 8,000 pairs in 1940 to 1,631 pairs in 1984. Herring and Great Black-backed Gulls begin breeding earlier than Common and Arctic Terns and eventually exclude terns by taking nesting space and by preying on tern eggs, chicks, and adults.

The expanded population of Herring and Great Black-backed Gulls has also inhibited natural range expansion by Atlantic Puffins to former nesting islands in Maine, as prospecting puffins looking for a nest site will usually avoid nesting habitat dominated by Herring and Great Black-backed Gulls.

Experiments in Gull Control at Seal Island

Seal Island National Wildlife Refuge in outer Penobscot Bay, is the site of the Puffin Project's latest puffin and tern recolonization effort. In 1984, following the successful re-establishment of the Eastern Egg Rock colony, National Audubon Society and the Canadian Wildlife Service began a joint effort to re-establish puffins to Seal Island, which once supported the largest population of puffins on a U.S. island. The island was also an important nesting site for Arctic Terns. While the puffins and terns were eliminated from the island in the late 1880's due to hunting for food and feathers, natural recolonization by both species is now inhibited by the large populations of Herring and Great Black-backed Gulls. Our most recent estimates suggest that approximately 2,000 pairs of these large gulls nest on this 99 acre island in about equal proportions.

In 1984, to open habitat for colonizing Atlantic Puffins and Arctic Terns, we began displacing the gull population from the northern 8 acres of the island. This area, about the size of Eastern Egg Rock, has the best puffin and tern habitat on the island. Approximately 167 pairs of Herring Gulls and 87 pairs of Great Black-backed Gulls nested on this part of the island in 1984. Their nests and eggs were destroyed in 1984, yet in 1985 there were still 152 pairs of Herring gulls and 94 pairs of Great Black-backed Gulls in residence.



Increasing numbers of Great Black-backed Gulls crowd terns and puffins from many of their historic Maine nesting islands. Fish scraps from fishing boats and fish processing plants provide food for the exploding population of Great Black-backed Gulls.

In 1985, several techniques for displacing gulls were tested in a random sequence over the course of the breeding season. These included displaying six wind-rotating "scare-gulls," using a propane noise-maker, and shooting. These techniques were used by themselves and in combination for random five-day periods throughout the breeding season. These harassments alternated with five day periods where none of the control techniques were used. Gulls were counted several times each day to compare the effects of the different harassment techniques. Nests and eggs were also destroyed throughout the season on the northern eight acres.

A preliminary comparison of the different techniques points to shooting, as the most effective technique. However, as soon as the shooting stopped, gull numbers quickly rebounded. The propane noisemaker (which sounds like a shotgun) was almost as useful as shooting in keeping down gull numbers, but the scaregulls were of little value. Even though the scaregulls pivoted freely back and forth with the wind, the gulls quickly recognized that they were not a real threat.



Scaregulls (left) and a propane noisemaker were tested at Seal Island to frighten gulls from puffin and tern habitat.

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ISLAND UPDATES

1985 Puffin Transplant

This spring persistent Newfoundland ice and cold water led to changes in the timing of movements and abundance of the puffin's principle food, capelin, and that delayed breeding of puffins in East Newfoundland by about 7-10 days. This necessitated a later than usual collecting trip, but by July 17th, the collecting team, headed by Dr. D.N. Nettleship, was on the slopes of Great Island collecting puffin chicks.

Most of the 200 chicks destined for the Gulf of Maine were already in their carrying cases, when winds and heavy seas, built up from "Hurricane Bob," prevented the CWS boatman, John Reddick, from leaving the shelter of his wharf at nearby Bauline. Unable to leave Great Island, the chicks were returned to their burrows for the night of the 19th, and then removed at dawn the following morning. Ten hours later, after transfer by car, plane and boat, the 200 chicks were delivered without a single loss to Seal Island and Eastern Egg Rock.

Ninety-nine of the 100 chicks reared at Seal Island successfully fledged and 94 of those reared at Eastern Egg Rock fledged for a total success of 97%. All were banded with stainless steel and individual plastic color leg bands.

Feeding Study

A feeding study with transplanted puffin chicks was directed by Dr. D.N. Nettleship and executed by Dr. A. Diamond from the Canadian Wildlife Service. At Eastern Egg Rock, puffin chicks were reared on different-amount diets of capelin, smelt, and shrimp. At Seal Island, the puffin chicks were divided into different groups that were fed once, twice, and five times daily.

These studies are aimed at examining features of chick growth in a food-stressed environment (southeast Newfoundland where a commercial capelin fishery is in operation) and one where food is in plentiful supply (captive-reared puffins). The results are critical to answering certain management questions concerning the welfare of the Newfoundland puffin population (the mainstay of North American puffins) and will allow us to streamline chick-rearing procedures associated with the Maine transplant program.

Maine Coastal Islands Project

Nineteen eighty-five marked the beginning of the Maine Coastal Island Project. The Program was conceived to better manage National Audubon's 26 Maine Islands and coastal properties. The program focused this summer on the Society's seabird colonies, which include some of Maine's most important seabird islands.

Over the next five years, detailed management plans will be written for each of the Society's nine seabird colonies. As the first step in this program, two Cornell botanists, Robert Wesley and Naomi Rappaport, were hired as special consultants to visit each of the islands and to compile complete inventories of all vascular plants on each sanctuary. In addition to a plant list, they also identified plant

communities and placed as many as twenty permanent 4x5 meter plots on each island.

Tern Attraction at Seal Island

Arctic Terns have not nested at Seal Island since 1953, at which time growing numbers of Herring and Great Black-backed Gulls excluded them from suitable nesting habitat. To help restore Arctic Terns to this once-important nesting island, 113 tern decoys were placed in suitable nesting habitat at two locations on the north end of Seal Island. Tape recordings of tern colony sounds were played over both locations. At one location, the recordings were alternated every other day for 30 days to determine the effect of sound on the number of landings. Observers also noted the behavior of terns landing with different posture decoys to see if the terns interacted in different ways with various posture models.

In 1984, Arctic Terns were frequently seen, but there were no landings. In 1985, terns began landing and displaying with decoys soon after the models were set in place. As many as 22 Arctic Terns were observed at a time over the island, and several frequented the decoy areas throughout the summer. There were nearly twice as many landings among decoys when the recording was playing. Courtship fish displays to decoys were among the most common displays. Terns did not nest at Seal Island in 1985, but the attraction effort holds promise for next year.

Within each quadrant, they described the percent of ground cover occupied by each species, vegetation height, and soil characteristics. Steel rods permanently mark the location of each quadrant so that comparative studies may be conducted in the future. Bird populations were also censused at each island. The islands included in this summer's field work include Stratton Island, Ross Island, Western Egg Rock, Eastern Egg Rock, Harbor Island, Seal Island, Ten Pound Island, Matinicus Rock, and Little Duck Island.

Matinicus Rock

Following the licensing of the Matinicus Rock Light Station to National Audubon in 1984, warden biologists were placed at this important seabird colony in 1985. A study of the interaction of Arctic Terns and Herring Gulls by Rutgers Ph.D. candidate, Gregg Transue, found that the population of Arctic Terns declined to 777 pairs from 963 pairs in 1982. In 1985 reproductive success was poor with only .34 chicks produced per nest.

The principle cause of this low reproduction was heavy predation from Herring Gulls, which took at least seven chicks per day throughout the chick-rearing period. This resulted in a minimum loss of 200 tern chicks. Such studies will help to develop management recommendations to protect the Matinicus Rock terns which presently comprise about 50% of all Arctic Terns nesting in the United States.

Puffins were in good number at Matinicus Rock this year with as many as 244 in sight at once. Thirty puffins transplanted to Egg Rock were sighted this summer and 13 of these bred at Matinicus Rock.

ACKNOWLEDGMENTS

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I also thank the Maine Department of Conservation for the lease which permits us to work on Eastern Egg Rock, and I thank the U.S. Coast Guard for the privilege of working on Matinicus Rock. I also acknowledge the cooperation of the U.S. Fish and Wildlife Service for permission to conduct our studies on Seal Island National Wildlife Refuge and thank the Canadian Wildlife Service for their continued cooperation and assistance with the collection of puffin chicks on Great Island, Newfoundland.

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