

Egg Rock Update

1979 Report

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Director

Newsletter of the Fratercula Fund of the National Audubon Society

Three Puffin Age Groups Return to Eastern Egg Rock 1979 High Count: 14 Puffins in Sight at Same Time

The summer of 1979 was the most successful season to date for National Audubon's Puffin Re-establishment Project. Now in its seventh field season, the project has moved significantly closer to accomplishing its principal goal of establishing techniques for re-colonizing former puffin breeding sites.

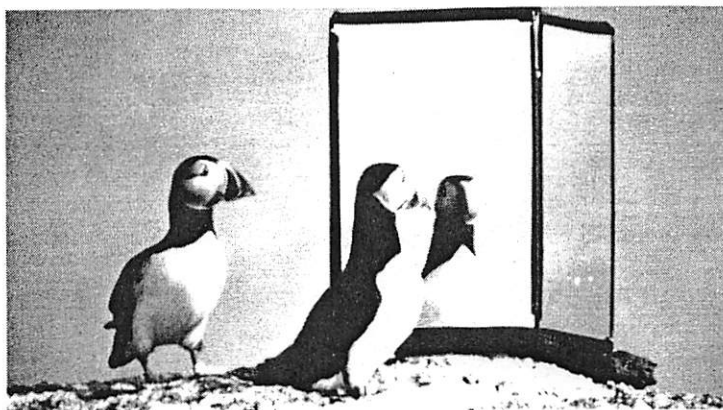
The site for the experiment is Eastern Egg Rock, a treeless 7A coastal Maine island. Like many other North Atlantic seabird islands, Egg Rock lost its breeding puffins due to over-hunting for food and feathers in the 1800's. Puffins were last known to breed at Egg Rock in 1880, but they have not recolonized this or any other Maine island.

Now Eastern Egg Rock is protected as National Audubon's Allan D. Cruickshank Wildlife Sanctuary through a cooperative agreement with the Maine Bureau of Public Lands. Since 1973, the National Audubon Society and the Canadian Wildlife Service have jointly sponsored the re-establishment program which has to date successfully fledged a total of 530 puffins from Egg Rock. Each year, puffin nestlings approximately two weeks old are moved from Great Island in Newfoundland and reared to the fledging age of six weeks in artificial burrows at the Cruickshank Sanctuary.

Although puffins do not usually breed until they are at least five years old, they usually return to their birthplace when two years old and continue to visit their natal colony until they reach breeding age. The transplant project rests on the hypothesis that if young puffins are transplanted to a new location and permitted to mature and fledge from that locale, they will eventually return and breed at the release site rather than their original home.

In 1977, transplanted puffins which were two years old began to return to Egg Rock. Now four years old, some of these white-banded birds continue to return to Egg Rock and have since been joined by black-banded puffins released in 1976 and yellow-banded birds released in 1977. Although exact numbers of puffin returns are impossible to determine, several measures of activity point to a substantial increase in puffin activity.

Puffin sightings (the sum of the minimum daily counts of individuals) increased dramatically during the 1979 season, increasing from 38 in 1978 to 229 in 1979. Hours of attendance at the island showed a tenfold increase, climbing from 61 in 1978 to 665 in 1979. Puffins were observed at Egg Rock on 67 different days this past summer which represents 77% of the observation days. While no more than three puffins



Two yellow-banded puffins from the 1977 transplant examine their reflections in a four-sided mirror box mounted atop a rock at Audubon's Allan D. Cruickshank Wildlife Sanctuary. Conceived as a technique for providing active social stimulation to lone puffins, the mirror has attracted the attention of puffin groups as well as individuals.

were observed on any one day in 1978, as many as 14 were sighted at the same time in 1979 and five or more puffins were observed on 21% of the observation days. Although no burrow prospecting or any serious breeding intentions were observed, the birds spent considerable time standing and walking about rock outcrops at the perimeter of the island. Puffins are known to have landed on Egg Rock 82% of the days they were sighted near the island.

This increase in activity is due primarily to an impressive return from the 1977 age group. Now two years old, members of this age class were observed at Egg Rock on 57% of the observation days with as many as nine yellow-banded birds on the island at the same time. Black-banded puffins (now three years old) were present for 17% of the observation days while the four year old white-banded birds were present for 13% of the days. Puffins without bands were observed on 11% of the days. Unbanded puffins are most likely additional transplanted birds which have lost their bands or may possibly be individuals visiting Egg Rock from other Gulf of Maine puffin colonies.

The transplant program continued during the summer of 1979 with the transfer of 100 additional puffin nestlings from Great Island. These ranged from 2-3 weeks of age at the time of transplant. Of these, 92 successfully fledged wearing individually numbered color leg bands which will permit future recognition of individuals. The 1979 transplant brings the total of puffins fledged from Eastern Egg Rock to 530; 54 in 1974; 91 in 1975; 98 in 1976; 99 in 1977; 91 in 1978 and 92 in 1979. This represents a total fledging success of 95%.

Leach's Storm-Petrel in Muscongus Bay



Leach's Storm Petrel, a burrow-dwelling member of the tubenose order, is colonizing artificial puffin burrows at the Cruickshank Sanctuary and is the subject of a new colony formation experiment at nearby Old Hump Ledge.

Leach's Storm-Petrel, a robin-sized member of the albatross order, nests on four islands in Muscongus Bay. This uniformly gray-colored seabird differs from the similar Wilson's Storm-Petrel by its forked tail, flight pattern and North Atlantic breeding distribution. Aside from a small population on one Massachusetts island, the Muscongus Bay colonies occupy the southernmost frontier of the species breeding range in the eastern United States.

A casual visit to a petrel colony gives no hint of the activity one would experience at night. Petrels feed in waters distant from their breeding habitat and only approach and depart their colonies at night. Then the air and soil are filled with sounds while their long-winged forms circle low over the boulders and driftwood where they nest.

There are approximately 150 pair of storm-petrels breeding at Eastern Egg Rock. They nest under piles of driftwood, deep within rock crevices and occasionally tunnel burrows into the peaty soil. After spending winter at sea, perhaps travelling as far as the tropics of South America and Africa, the breeding pairs return to Egg Rock burrows as early as the third week of April. Both parents take turns incubating the single white egg for approximately 42 days.

Like other members of the tubenose order, the nestling matures slowly on a diet of predigested seafood oil until it is at least half again as heavy as an adult. When the chick is approximately 10 weeks old, it fledges without the company of its parents and lives off fat reserves while adjusting to life over the open ocean. Petrels may return to the vicinity of their natal nesting when one year old, but they usually do not breed before they are at least four years old.

As Muscongus Bay is the southern periphery of Leach's Petrel's North Atlantic breeding range, this small population has many similarities to populations of rare and endangered tubenose species. The factors limiting expansion of the Muscongus Bay population may be similar to those limiting distributions of endangered seabirds. Rare burrow nesting petrels and shearwaters have many similarities to the Leach's Storm Petrel and it is therefore likely that management techniques developed for this petrel will benefit other species such as the Hawaiian Dark-rumped Petrel and the Bermuda Petrel (Cahow).

Petrels Occupy Artificial Puffin Burrows

During the summer of 1978, while preparing puffin burrows for the 1978 transplant, 11 burrows were found to contain either adult petrels incubating their eggs or abandoned eggs. During the 1979 season, eight additional puffin burrows were discovered with petrel occupants, bringing the total number of petrel-occupied puffin burrows to 19. Occupation of burrows by petrels contributed to the necessity of building 20 new burrows for this summer's puffin transplant.

Seven of the 12 occupied burrows in 1979 produced chicks for a fledging success of 58%. While this fledging success is not as high as would normally be experienced in an established colony, it is a marked increase over the 18% fledging success achieved by the petrels which fledged a total of two chicks in 11 occupied puffin burrows in 1978. The relatively low breeding success for these petrels may result from the possibility that these are young, inexperienced pairs which could be expected to have low breeding success during their first nesting attempts.

Attracting Petrels to a Former Nesting Site

Old Hump Ledge, located approximately two miles north-east of Eastern Egg Rock, is a treeless island with little more than one acre of land above the high tide line. Like several other Muscongus Bay islands, it is a former nesting site for the Leach's Storm-Petrel. Theorizing that availability of vacant nest sites within an existing colony might be limiting the expansion of petrels to new nesting habitat, 24 artificial burrows were hand-dug into the turfy soil on Old Hump Ledge. If petrels so readily occupied the puffin burrows at Eastern Egg Rock, perhaps they would also utilize similar burrows constructed on Old Hump Ledge.

To simulate an active colony, a tape recording of vocalizations produced by breeding petrels was broadcast from a small speaker located in the center of a set of 16 burrows. Eight similar burrows, isolated from the vocalizations by a rock outcropping, served as a control for the experiment. Measurements of petrel activity at the artificial burrows were recorded by placing infrared activity indicators at the entrance to each burrow. If a petrel entered the burrow, it broke an infrared beam and this information was recorded on a nearby digital counter.

Though the recordings were only played for several evenings during the 1979 season, the results of this feasibility study are very encouraging. As many as seven petrels were observed circling the speaker and with the aid of the infrared indicators and late night watches by research assistants, petrels were seen to enter and explore the artificial burrows. The control burrows (without sound) had no visitors, lending further support to the importance of vocalizations in advertising the presence of a colony.

CONTRIBUTIONS

CONTRIBUTORS OF \$10. or more will be placed on the mailing list to receive future copies of EGG-ROCK UPDATE. Checks should be made payable to the National Audubon Society and directed to the Fratercula Fund, 159 Sapsucker Woods Road, Ithaca, New York 14850.

Puffins and Matinicus Rock

Matinicus Rock, located approximately 20 miles offshore from Rockland, Maine, is the only United States breeding site for the Atlantic Puffin. Puffins are known to have bred on Matinicus Rock as early as 1864 and likely occurred there long before that. The Matinicus puffins and those which breed on Canadian Machias Seal Island are the only surviving remnants of the Gulf of Maine puffin population which once occupied at least seven coastal islands.

The hunting pressure that led to the extinction of most Maine puffin colonies also nearly extinguished the Matinicus population. At their lowest ebb, in 1902, only one pair was reported from the island. The colony exists today due largely to the protection it received from the Matinicus Rock light house keepers beginning with Captain William Grant. Their determined efforts to protect the Arctic Terns and other seabirds from the millinery trade gave the puffins the protection they require. In 1900, William Dutcher, then Chairman of the American Ornithologists' Union Bird Protection Committee, appointed Grant to serve as a warden to protect the birds of the Rock. Thus Grant became one of the first wardens to protect birds in the United States. Dutcher continued to appoint the keepers as wardens and when he became Founder and President of the National Association of Audubon Societies (renamed National Audubon Society in 1905) the Society continued to hire Matinicus light keepers as wardens until 1916.

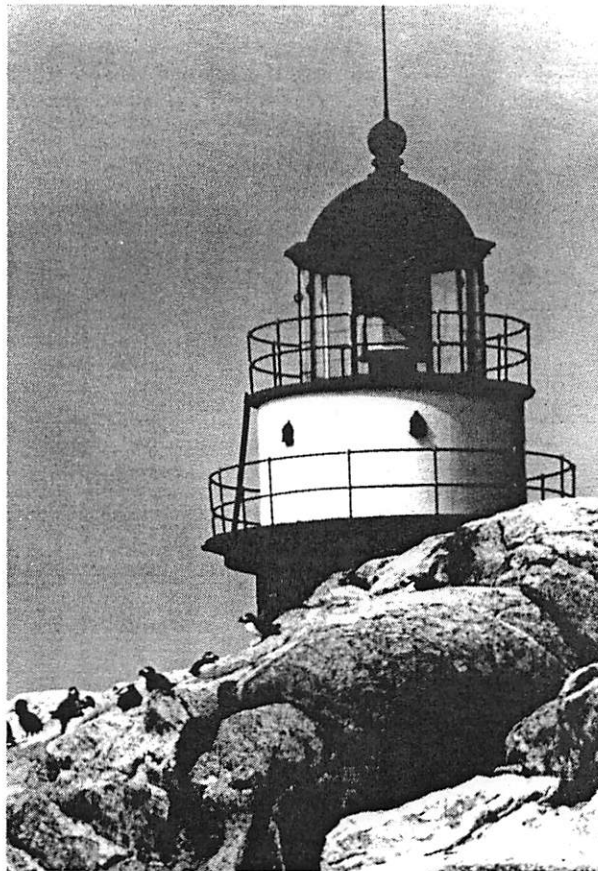
Matinicus Rock is now cooperatively maintained as a seabird nesting refuge by the U.S. Fish and Wildlife Service and the U.S. Coast Guard. Since the early 1950's, Dr. Carl W. Buchheister (President Emeritus of the National Audubon Society) and Mrs. Buchheister have served as Audubon wardens at Matinicus Rock, insuring that visitors to the island do not disturb the breeding seabirds.

With protection, the Matinicus puffins have slowly increased in number. During the summer of 1979 there was an average of 85 puffins observed daily with counts as high as 175 individuals. The actual number of breeding pairs is difficult to determine as many birds will be at sea feeding and others are out of sight in deep rock crevices where actual nest sites can not be counted.

On June 15, 1977, during a brief visit to Matinicus Rock, a white-banded puffin was observed standing among a group of Matinicus puffins. Other spot checks made during 1977 and 1978 consistently produced one or more of the transplanted Egg Rock puffins at Matinicus Rock. The appearance of Egg Rock birds at the Matinicus colony is not surprising, as Matinicus Rock is only 26 miles east of the Cruickshank Sanctuary and the presence of an established breeding population is understandably attractive to the highly social puffins which do not make a breeding commitment until they are at least five years old.

During June through August of 1979 a Fratercula Fund assistant, John Guarnaccia, lived with the Matinicus Rock lighthouse keepers. In addition to serving as wildlife warden, his principal responsibility was to observe puffin behavior and determine how frequently the transplanted puffins were visiting the island.

By carefully reading metal leg band numbers through a spotting scope from an observation blind, he identified a minimum of 36 different transplanted puffins. These included six four year olds, eight three year olds, nineteen



Some Egg Rock transplanted puffins rest with Matinicus puffins atop the massive granite outcrops of Matinicus Rock, 26 miles east of Egg Rock.

two year olds and three one year olds. Most birds were identified on only a few different dates, suggesting that they were not at Matinicus for long periods of time, but rather stayed at the island for short visits. Exceptions to this pattern were two four year old birds which were observed at Matinicus Rock most of June and July.

The discovery of transplanted puffins at Matinicus Rock raises many interesting questions. Do these same individuals also visit Eastern Egg Rock? What dispersal patterns do puffins display that bring them to the Matinicus colony? How many other puffin colonies do transplanted puffins visit? (One two year old transplanted puffin was observed this summer at Machias Seal Island - approx. 116 miles east of Egg Rock). Perhaps most important, will the transplanted puffins choose to join the Matinicus colony rather than initiate a new colony at Egg Rock?

It is too early to determine the influence of the Matinicus colony on the eventual outcome of the transplant experiment. Perhaps the transplanted birds will eventually breed at the Cruickshank Sanctuary after gaining social experience at Matinicus from the established breeders. Or perhaps the majority of transplanted puffins will nest at Matinicus, swelling that population to the point where it will naturally expand to nearby islands. Whatever the outcome, it is already clear that the transplant experiment has resulted in the homing of many birds to the Gulf of Maine and that Matinicus Rock is playing an important though unexpected role in the re-establishment project.

Arctic and Common Terns Continue Courtship Behaviors

Arctic Terns, back from their winter migration, to Antarctica, continue to show encouraging courtship and nesting behaviors at Eastern Egg Rock, an important former breeding site.

Historically, Muscongus Bay was the principal southern breeding limit for the Arctic Tern. Many factors such as the millinery trade of the late 1800's and competition from expanded Herring and Great Black-backed Gull populations have reduced tern numbers throughout much of their North Atlantic range. Presently Arctic Terns nest in only three major colonies in the Gulf of Maine - all of which are east of Muscongus Bay.

In 1978 a program was begun to re-establish Arctic Terns at Eastern Egg Rock, a former breeding site which has not been colonized by this species since 1936. Reproductive stimuli consisting of wooden tern decoys in nesting postures and tape-recorded tern vocalizations were presented in late May as the Arctic Terns arrived from their winter in Antarctica. The concept behind this approach is to provide social stimulation to facilitate nesting behavior among terns which have not made a previous nesting commitment.

Since 1974 the research team has observed Arctic and Common Terns flying over former nesting habitat at the Cruickshank Sanctuary, but these visits were typically brief and without evidence of any serious nesting intentions. During the two years that decoys and sound have been used on the island, there has been a substantial increase in tern landings and time spent on the island. During the 1978 and 1979 field seasons, pairs of Arctic and Common Terns repeatedly landed among the wooden models performing typical courtship displays. During late May and throughout June of 1978 and 1979, researchers watched pairs repeatedly engage in mutual display, courtship feedings, matings, nest-building and aggressive defense of the nest site - seemingly everything short of egg-laying.

A comparison of the past two field seasons shows an increase in the number of sightings and frequency of landings in early summer of 1979. However, the number of overall sightings was similar in both years with at least two pair of Arctic Terns and one pair of Common Terns accounting for most of the courtship activity.

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