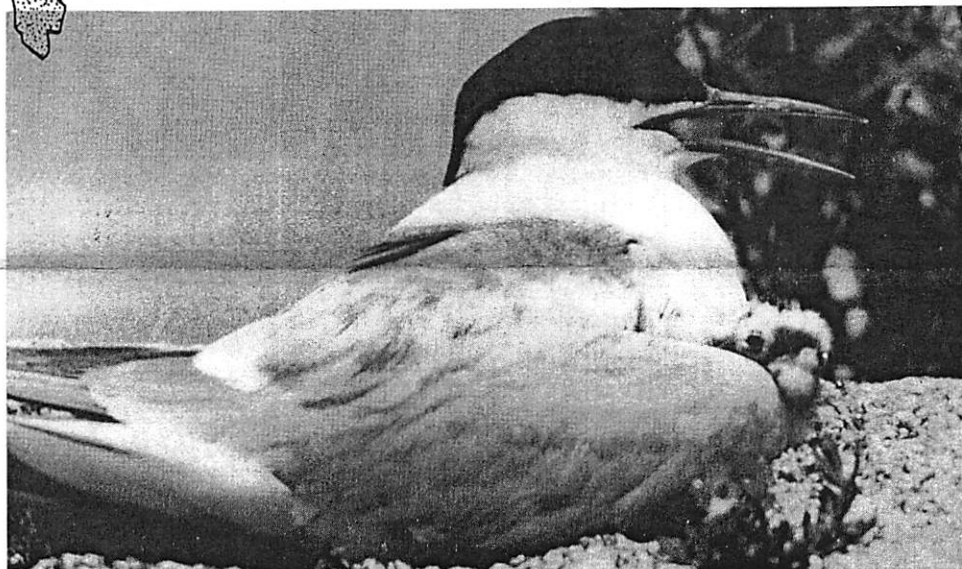
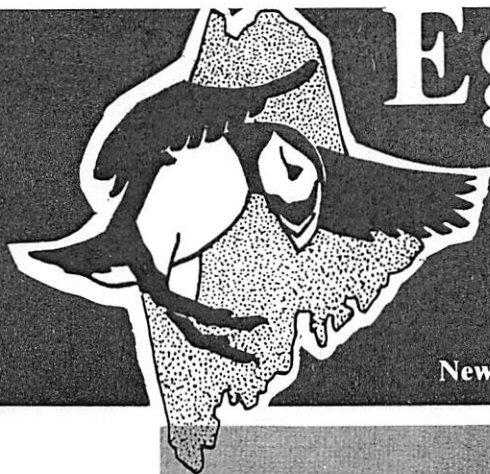


Stephen W. Kress,
Director

Egg Rock Update

Newsletter of the Fratercula Fund of the National Audubon Society



The first Arctic Tern chick hatched at Eastern Egg Rock in 43 years peers from beneath a protective parent.

Arctic And Common Terns Nest At Eastern Egg Rock

For the first time in 43 years, Arctic and Common Terns delivered fish to their young at Eastern Egg Rock. Once an important tern colony, Egg Rock lost its breeding population of terns in the late 1800's to hunting for the feather trade. Presently restricted to only three principle breeding sites in the Gulf of Maine, Arctic Terns have never regained their original abundance and face an insecure future in this part of their range due to abnormally large Herring and Great Black-backed Gull populations.

Developing techniques for re-establishing terns to Eastern Egg Rock is an integral part of the management plan for re-establishing puffins because the aggressive terns will chase predatory gulls from their own nests and indirectly protect puffins.

The effort to re-establish terns is based on the hypothesis that terns looking for a nesting place could be stimulated to nest by first reducing the large Egg Rock gull population and then providing stimuli to simulate an active tern colony.

Herring and Great Black-backed Gulls compete for nest sites and prey upon tern chicks. Since 1903 Herring and Great Black-backed Gull populations in Maine have expanded from 11,000 pair to more than 35,000 pair due largely to the abundance of food that the opportunistic gulls find at garbage dumps. Now, many former tern colonies like Egg Rock are dominated by these big gulls. A gull control effort by the U.S. Fish and Wildlife Service at Egg Rock eliminated most breeding gulls by 1977, thus setting the stage for the terns to recolonize the island.

To encourage tern nesting, noted decoy carver Donal C. O'Brien, Jr. carved two Arctic Tern models and these were replicated on a multiple carving machine. Thirty-five decoys were positioned in likely tern habitat during 1978 and 1979 and tape recorded vocalizations were played whenever terns were observed near the decoys. The technique produced encouraging results, but no actual nesting.

In 1980 the decoys were positioned in approximately the same locations and a new recording of Arctic Tern courtship vocalizations was broadcast from dawn to dusk from a speaker positioned near the decoys. The season began similar to previous years, with a few pair landing among the decoys, males offering fish to prospective mates and displaying with wings drooped and tails pointed toward the sky.

By early July it was clear that there were more terns at Egg Rock than in previous years and a careful telescope scan of the decoy areas revealed several birds sitting in incubation posture. While the research team anticipated finding a few nests in the midst of all the activity, everyone was amazed to find 80 Arctic and Common tern nests containing a total of 144 eggs. Nineteen young terns were banded and, no doubt, many others went undetected in the dense vegetation and rock jumble.

If terns continue to nest at Eastern Egg Rock, they will provide valuable protection for puffins and other seabirds, but even more important, the techniques that brought terns back to Egg Rock could have far reaching benefits to many seabirds.

Puffins Court And Prospect For Nest Sites At Eastern Egg Rock

Puffins growled from under the massive granite boulders of Eastern Egg Rock for the first time in 100 years this past summer. Although Egg Rock supported a thriving colony of Atlantic Puffins in the 1800's, its breeding population was lost due to excessive hunting for food and feathers. Puffins have not bred at this island since 1880, but events of this past summer point to the end of their absence.

The Puffin Project began in 1973 with a study to test the feasibility of transplanting puffin fledglings from Newfoundland. Approximately 100 puffins have been released annually since 1975. In expectation of the return of the first transplanted puffins, the National Audubon Society leased Eastern Egg Rock from the Maine Bureau of Public Lands in 1976 and dedicated its new sanctuary in memory of the noted ornithologist Allan D. Cruickshank. Puffins began to return to the Cruickshank Sanctuary during the summer of 1977, providing the first evidence that this pioneering project of the National Audubon Society and the Canadian Wildlife Service might succeed.

The 1980 puffin watch began on May 25th and already by that date five puffins were circling the island busy landing atop huge boulders. During the 1980 season, puffins were seen on 99% of the 85 observation days, with five or more birds observed on 79% of the days. The high count for the summer was 23 birds sighted at the same time, a significant increase over the 1979 high count of 14 puffins. While 1980 puffin sightings climbed to nearly four times those of 1979 (229 to 896), changes in behavior were the most meaningful indications of future breeding intentions.

Puffins do not usually breed until they are at least five years old, but in the year or two prior to breeding, they search for a nest site and become increasingly social with members of the opposite sex. For the first time in the eight years of the project, puffins were observed vigorously rubbing bills, copulating and searching rock crevices for likely nesting places. Puffins were observed exploring rock crevices on 71% of the observation days. Yellow-banded three-year-olds and several black-banded four-year-olds performed most of the crevice investigation.

Color leg bands prove that nearly all of the puffins sighted at Egg Rock this summer were transplanted as nestlings from the large population on Great Island, Newfoundland. These two-week-old nestlings were reared in sod burrows and fed by project staff to the age of six weeks when puffins normally become independent from their parents.

**PUFFIN ACTIVITY AT EASTERN EGG ROCK
1977 - 1980**

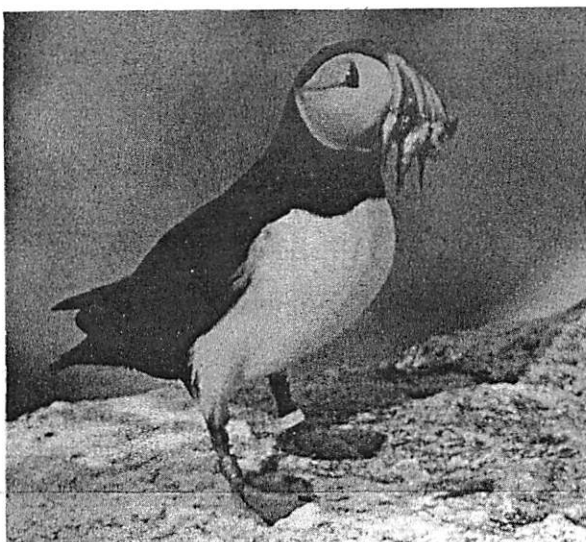
	1977	1978	1979	1980
No. of OBSERVATION DAYS	70	87	87	85
SIGHTINGS	16	38	229	896
PUFFIN HOURS	9 HRS.	17 HRS.	203 HRS.	1824 HRS.
% OF DAYS PUFFINS OBSERVED	24%	32%	77%	99%
% OF DAYS FIVE OR MORE PUFFINS OBSERVED	0	0	21%	79%
 % of DAYS LANDING OCCURRED	 6%	 16%	 82%	 94%
 % of DAYS OBSERVED				
1975 group	13%	16%	13%	15%
1976 group	—	1%	17%	60%
1977 group	—	—	57%	90%
1978 group	—	—	—	32%
unbanded puffins	1%	2%	11%	44%
 ANNUAL HIGH COUNT	 2	 3	 14	 23
AVERAGE DAILY COUNT	.23	.44	2.63	10.54

Transplanted Puffin Breeds At Matinicus Rock

During the summer of 1979, Puffin Project biologists discovered that at least 36 different transplanted puffins visited Matinicus Rock. This isolated outpost is the only U.S. puffin colony and it is located 26 miles from Audubon's Cruickshank Sanctuary on Eastern Egg Rock. Among the birds observed at the island in 1979 was a four-year-old puffin that repeatedly hopped down among the boulders in what was thought to be burrow prospecting behavior. This bird was identified by its U.S. Fish and Wildlife Service metal band as puffin #14 released at Egg Rock in 1975.

During 1980, #14 was back at Matinicus Rock repeatedly exploring the same rock crevices. Then, on July 19th this white-banded puffin whipped into the view of Audubon warden/biologist David Enstrom with its beak loaded with fish. With trembling excitement, David watched the bird drop into a rock crevice to deliver fish to its chick.

This first known breeding of a transplanted puffin demonstrates that puffin chicks moved from their natal island and released from a former breeding site (such as Eastern Egg Rock) will not only return, but will eventually breed in the vicinity of the release location. Matinicus Rock's appeal to transplanted puffins is understandably strong as it offers a powerful attraction over the long vacant habitat at Egg Rock. When the 1975 transplant group returned to Egg Rock during their prospecting years, they found only barren rocks. Although more transplanted puffins are likely to join the Matinicus colony, the increasing activity at Egg Rock will, hopefully, hold greater numbers of returning birds.



The first transplanted puffin to breed. Transplanted from Newfoundland at two weeks of age, white banded puffin #14 holds a load of tiny Herring intended for its own chick at Matinicus Rock.

Of the twenty-three, four and five-year-old birds identified as individuals at Matinicus Rock during the 1980 season, only five were observed at the island in 1979. Indeed, it was surprising to find that of the 13 three-year-olds observed at Matinicus Rock this summer, 11 of these had not been observed in 1979. Thus at least 30 of the 99 transplanted puffins in 1977 reached at least two years of age and homed to the vicinity of the release site.

Intercolony Movement

In 1979 observers noted that individually identified puffins disappeared from Matinicus Rock for a week or more at a time and would then suddenly reappear. It was suspected that puffins were moving between Matinicus Rock and Eastern Egg Rock, but because they were observed only at great distance at Egg Rock, little could be said about such intercolony movement.

The return of the individually color-marked 1978 age group has helped to clarify movement between the islands. Wearing as many as four different color bands, 12 members of the 1978 group were observed at Matinicus Rock. Of these, six also were observed at Eastern Egg Rock. Eight different two-year-olds were observed at Egg Rock and of these six eventually put in appearances at Matinicus Rock.

In cooperation with the Canadian Wildlife Service, the Puffin Project placed an observer on Machias Seal Island to watch for transplanted puffins in late July and early August. Located approximately 116 miles east of Eastern Egg Rock, Machias Seal Island is the largest puffin colony in the Gulf of Maine. Among the hundreds of puffins which occupy Machias Seal, the Project biologist spotted five different transplanted puffins. Two additional birds were observed earlier in the season. Ages of the seven transplanted puffins were: one five-year-old, two three-year-olds and four two-year-olds. Three of these puffins were also observed at Matinicus Rock and two were observed at Eastern Egg Rock. Most exciting were the travels of yellow banded puffin #3. Observed at Machias Seal Island on July 25th, this bird was observed the following day at Matinicus Rock!



Leach's Storm-Petrels Recolonize Old Hump Ledge

Old Hump Ledge is a rugged outcrop of black igneous rock. High tides drown most of its contour, but a grassy meadow caps its jagged summit. To most mariners, it is probably little more than just another rocky ledge. However, to the seabirds it is much more. Only an acre in total surface, it is home to a small breeding assemblage of Black Guillemot, Common Eider, Herring and Black-backed Gulls. Located approximately two miles northeast of Eastern Egg Rock, it also has historical ornithological significance for in 1931 it was the first site in Muscongus Bay to be recolonized by Double-crested Cormorants, ending their long absence from this part of their range. Historical records also reveal that Leach's Storm-Petrel, a secretive, robin-sized member of the albatross order once nested on the island.

Although this petrel is not a rare species in the Gulf of Maine (several islands have populations estimated in thousands of breeding pairs), the Leach's Storm-Petrel reaches the southern limit of its breeding range in Muscongus Bay and presently nests in small numbers on only four islands. Thus, the breeding distribution of petrels in Muscongus Bay is similar to that of certain endangered members of the albatross order. As such, it offers an ideal model for designing management techniques that could be applicable for saving rare species such as the endangered Bermuda Cahow, Hawaiian Dark-rumped Petrel and Newell's Manx Shearwater.

Leach's Storm-Petrels are burrow nesting birds that usually tunnel their nesting cavities into soft soil. Adaptable in their nesting strategies, they can also nest in rock crevices or under driftwood. They appear equally at home tunneling into the soil under grassy meadows or tangled spruce forests.

Petrels usually mate for life and faithfully return to the same burrow which they inhabited the year before. Frequently they either return to nest at their natal hatching place or join a nearby colony. Burrows generally show a clustered pattern because established breeders tend to attract additional breeding pairs.

Since petrels have occupied 19 artificial puffin burrows at Eastern Egg Rock since 1978 and they are known to be highly attracted to recordings of their own vocalizations, it was hypothesized that given an abundance of prospecting birds looking for a colony to join, a new colony could be established if tape recordings of burrow sounds were broadcast over artificial burrows.

To test this hypothesis, a tape recorder with a repeating cassette was specially designed to broadcast sounds for six hours, starting at 10PM and running until 4AM. Two sets of 16 burrows, each with its own outdoor speaker, were prepared in typical petrel nesting habitat in the center of the island's grassy meadow. Powered by a car battery and sealed in a watertight case, the tape recorder unit was installed at Old Hump Ledge on April 28th and checked once each month to keep the recorder playing until the end of August.

A check of the 32 burrows in mid summer revealed the success of this approach. Four burrows contained adults incubating eggs and nine additional burrows contained obvious evidence of petrel activity such as burrowing or nest construction. It is of special interest that the 13 active burrows were on the average 10 inches closer to the speakers than inactive burrows and that the four active burrows with incubating adults were those closest to the speakers - two in each area.

Upon removing the new breeding adults from their burrows for banding, the research team was amazed to find four of the five birds examined were already banded! Three of these birds were banded several years earlier after being caught in mist nets at Eastern Egg Rock. The fourth bird was banded as a chick on Eastern Egg Rock in 1976. Now four years old it is the first Egg Rock petrel chick to be found as a breeding adult. Of the four eggs layed, this was the only bird to successfully rear its chick - an accomplishment not achieved at Old Hump Ledge in at least 40 years.



In response to tape recorded burrow calls and artificial burrows, Leach's Storm-Petrels recolonized Old Hump Ledge rearing the first petrel chick there in at least 40 years.

Contributions continue to be an important source of income to the Puffin Project. Your gifts will support continued research to develop techniques for restoring lost seabird populations. Contributors of \$15. or more will be placed on the mailing list to receive future editions 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.

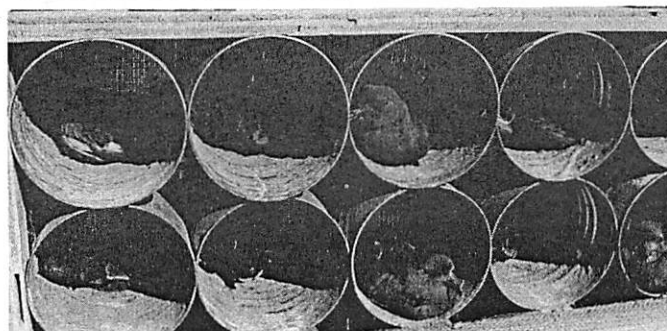
Petrel Transplant

Where prospecting petrels are abundant, the use of tape recordings and construction of burrows is the most straightforward approach to establishing new colonies. However, where prospecting petrels are not associated with available habitat or in situations where relocation of a threatened population is desired, the transplantation of nestling birds may be a more realistic approach.

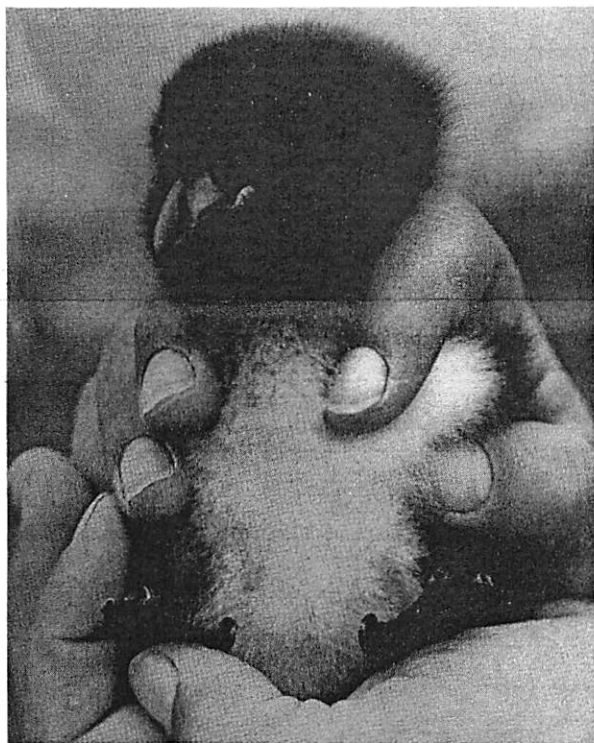
Transplantation of puffin chicks is achieving remarkable success as described earlier in this newsletter and other researchers have likewise found that young Brown Pelicans and Red-footed Boobies will home to their release site and eventually adopt this as their breeding place. As most petrels usually return to nest at or near their hatching location, it is likely that the transplant technique will also prove applicable to petrels.

Like puffins, Leach's Storm-Petrels are burrow nesting birds. Adults feed their single chick a predigested oil and seafood mixture and fatten their nestling until it weighs as much as three times the weight of its parents. The petrel nestling lives in its burrow between 60-70 days, but during the last week of its residence it exercises and trims down for fledging.

On the assumption that young petrels do not learn the location of their natal site until the days just prior to fledging or during the first flight from their nesting island, twenty petrel nestlings were collected from National Audubon's Little Duck Island Sanctuary and transplanted to Eastern Egg Rock. The twenty birds were within a week of fledging at the time of collection on September 16th. Fifteen hours later they were banded and tucked into their new burrows at the Cruickshank Sanctuary. Nesting material was transferred along with each chick and the burrows were blocked the first night to prevent premature departures. The next night the burrows were opened and a check the following morning showed that the ten oldest birds, all of which were in fledging condition, had departed. The remaining ten birds continued to complete their feather growth and trim down for fledging as they would have done in their original burrows. During the next week, a few at a time, the birds departed into the Egg Rock night. This feasibility study demonstrated that none of the chicks fledged prematurely. Although the ultimate results are at least four years away when these birds reach breeding age, the transplant technique could provide another important tool to help conserve threatened petrel populations.



Petrel nestling within one week of fledging peer from the carrying case used to transport them from Audubon's Little Duck Island Sanctuary to the Cruickshank Sanctuary.



Only 10 days old, this puffin chick was transplanted along with 102 others 1,000 miles from Great Island, Newfoundland to Eastern Egg Rock.

The 1980 Puffin Transplant

To further bolster puffin numbers at Egg Rock, 103 puffin nestling ranging in age from approximately 10 to 26 days were transplanted from Great Island to Eastern Egg Rock on July 15. Of these, 100 matured to fledging age, thriving on two daily meals of smelt and vitamin supplement. All were banded with individual color combinations. The 1980 transplant brings the total number of puffins fledged to 630: 5 in 1973; 54 in 1974; 91 in 1975; 98 in 1976; 99 in 1977; 91 in 1978; 92 in 1979; and 100 in 1980. This represents a total fledging success of 96%.

Working on offshore seabird islands is largely a matter of logistics. Without safe and dependable support at Eastern Egg Rock and the other Muscongus Bay sanctuaries, none of our projects would be possible. More than any one person, I thank Joe Johansen, Warden and Head Boatman for Audubon's Muscongus Bay Sanctuaries. Who else would, or could, deliver puffins and petrels at night in often raging seas to these lonely, offshore rocks?

Acknowledgements

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Special thanks go to the project's "Puffin Patrons" for their very generous gifts. Donations from many enthusiastic supporters and participants in the first annual "Birdathon for the Puffins" helped to make this such a successful field season.

I also extend my thanks to the Maine Bureau of Public Lands for their continued cooperation and lease of Eastern Egg Rock to the National Audubon Society and thank the Maine Department of Inland Fisheries and Game for permission to conduct research at Old Hump Ledge.

I am also especially grateful to Dr. Carl W. Buchheister, the U.S. Fish and Wildlife Service and U.S. Coast Guard Service for their cooperation which permitted placement of an Audubon warden/biologist at Matinicus Rock. I also extend my most sincere thanks to Mr. Albert Bunker for his capable assistance with logistics at Matinicus Rock. Our work at Little Duck Island was greatly facilitated by the cooperation of Drs. David Miller and Ronald Butler of the Mount Desert Island Biological Laboratory who assisted us with collection of petrel chicks and other studies at Little Duck.

It is again my pleasure to thank Dr. David N. Nettleship of the Canadian Wildlife Service for his continued support and assistance with this project and for making a special trip to Newfoundland this summer to assist the 1980 puffin transplant.

It would be hard to imagine conducting the project without the enthusiasm and ready support of Mr. Duryea Morton and Mr. Michael Shannon and I thank them for use of the Audubon Ecology Camp in Maine facilities. I also thank Dr. Glenn Paulson, Mr. Alexander Sprunt IV and Dr. Donald McCrimmon of the National Audubon Research Department for their assistance and support. I also extend thanks to Dr. Charles Smith and the staff of the Cornell Laboratory of Ornithology for their continued interest and cooperation with Fratercula Fund projects.

My deepest appreciation goes to the 1980 Research team who maintained the watch for returning puffins at Eastern Egg Rock, Matinicus Rock and Machias Seal Islands and meticulously cared for the puffin chicks. I extend my thanks to: Diane DeLuca, David Enstrom, Thomas Fleischner, Thomas French, Kathy Blanchard-French, Thomas Litwin, Randy Mohn, Margery Plymire, Richard Podolsky and Evelyn Weinstein.

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