

Egg Rock Update

1987 Report

Stephen W. Kress
Director

Newsletter of the Fratercula Fund of the National Audubon Society

TRANSPLANTED PUFFINS RETURN TO SEAL ISLAND

The effort to restore Atlantic Puffins to Seal Island National Wildlife Refuge had its first important success this summer with the sighting of two 3-year old puffins that were transplanted to the island from Newfoundland as chicks in 1984.

Located 20 miles off Rockland, Seal Island was the largest puffin colony off mid-coast Maine until the 1850's at which time fishermen began capturing so many adults for food that the colony became extinct by 1887. Now, 100 years after the extirpation of the native colony, the return of 2 banded puffins this summer provided the first solid encouragement that the Seal Island puffin restoration program might succeed in establishing a new colony.

The Seal Island Project began in 1984 as a cooperative program of the National Audubon Society, Canadian Wildlife Service and the U.S. Fish and Wildlife Service. Modeled after the successful effort to restore puffins to Eastern Egg Rock in Muscongus Bay, the Seal Island Project has taken on the ambitious task of rearing and releasing 1000 transplanted puffin chicks over the 6 year period, 1984-1989. The Project seeks to learn more about survival rates, growth rates and behavior associated with formation and growth of puffin colonies.

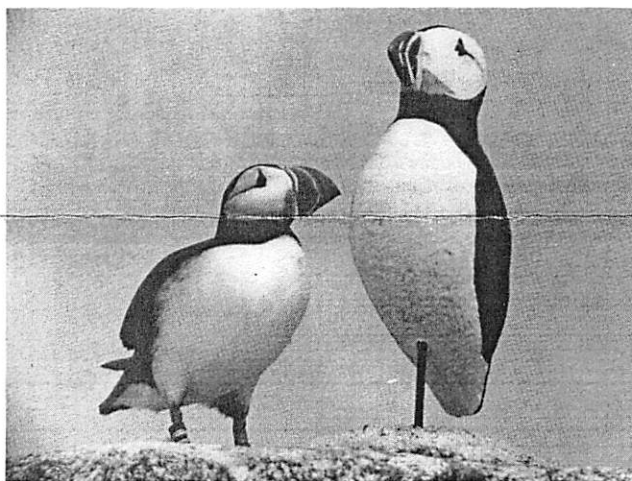
In 1984, 100 puffin chicks from Great Island, Newfoundland were transplanted to Seal Island when they were approximately 10-28 days old and were reared in artificial sod burrows on a diet of silversides which were placed in the burrows by research assistants. Transplanted puffins fledge from their nesting island and then spend the next 2-3 years at sea. The Project rests on the assumption that surviving birds will return to the Maine coast rather than their true natal home in Newfoundland.

In 1985 an additional 99 chicks were reared and released at Seal Island and these were supplemented by 149 in 1986. This summer an additional 187 transplanted chicks fledged from Seal Island. To date, the Seal Island Project has successfully fledged 534 chicks out of 549 for a total fledging success of 97%. The Project will also transplant 200 chicks each year in 1988 and 1989.

Perhaps the most important lesson learned at Eastern Egg Rock about re-establishing a puffin colony is that there will likely be great variation in the number of puffins that return from one year's transplant group to the next. For example, although rearing conditions on Eastern Egg Rock were very similar from 1975-1981, the percent of puffins returning from one transplant to the next, varied from as low as 6% to a high of 56%!

After leaving their nesting islands, young puffins must find ample food while avoiding predators such as gulls and large fish. Even in a natural colony, fledgling puffins are not fed by their parents and must rely on a mix of instinctive feeding behavior and learned fishing skills. Most young puffins probably die at sea during their first winter.

It takes a great deal of luck for a young puffin to avoid predators and raging North Atlantic storms, as well as human-created hazards such as oil slicks and entanglement in fishing nets. Apparently, once every several years, sea conditions (such as available food and low predation) favor the survival of transplanted puffin fledglings.



The first Seal Island transplanted puffins returned this summer and landed among decoys on Seal Island.

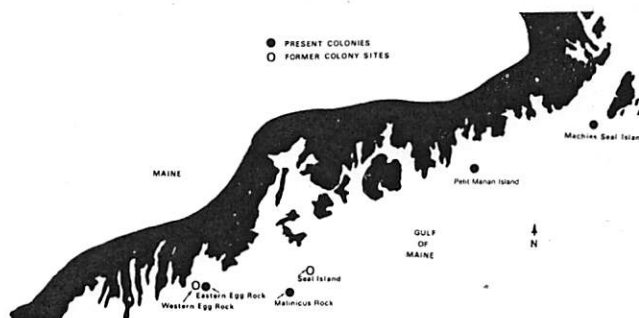
In a seabird restoration program, such as the Seal Island Puffin Project, transplants must continue for many years since the odds for survival fluctuate greatly between years. Each year is a gamble— not unlike a spin of a roulette wheel.

The travels of the first puffin to return to Seal Island (#60) were especially impressive. Since it wore a unique combination of color bands, it was possible to learn something of its travels along the Maine coast as it visited several offshore islands.

Puffin #60 was first observed on June 8th on the puffin loafing ledges at Matinicus Rock, a small puffin colony only 6 miles west of Seal Island. This puffin was observed at Matinicus Rock on 13 days from June 8 until August 6th. On July 3rd, it made its historic return to Seal Island accompanied by an unbanded puffin. They stayed for only 2 hours, but spent much of that time on land pecking at the bills of puffin decoys and exploring rock crevices where puffins probably nested 100 years earlier.

Puffin #60 was also observed from July 19-23 on land at Petit Manan Island, which is located 35 miles east of Seal Island. Petit Manan is the newest Gulf of Maine puffin nesting island (see Island Updates). Puffin #60 was last sighted back on Matinicus Rock on August 6th.

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Puffin Colonies in the Gulf of Maine

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A second transplanted puffin landed among the Seal Island decoys on July 28. This bird, #59, accompanied by two unbanded puffins, landed among the wooden decoys and explored rock crevices. There were a total of 53 puffin sightings from Seal Island this summer and 14 of these were of puffins on land. In contrast, only 14 puffins were sighted in 1986 with only 2 on land. This modest increase in activity offers encouragement that puffins are becoming increasingly familiar with Seal Island.

Although the return of transplanted puffins to Seal Island is encouraging, establishment of a new colony is far from assured. The success of the Project will likely depend on one or more years where 50% or more of the young return. A large return will probably be necessary to reach the critical mass necessary for puffins to not only visit, but actually stay and breed.

Also, the nearby puffin colony on Matinicus Rock may prove a serious obstacle to re-establishing a Seal Island colony since young puffins that are only 2 or 3 years old appear to prefer socializing at the established Matinicus colony rather than pioneering a new nesting island. Wooden decoys at Seal Island hold the attention of young birds briefly, but not surprisingly, the real puffins at Matinicus Rock are a stronger magnet.

This summer, for example, Seal Island puffin #60 was sighted 13 days on Matinicus Rock, but only once on Seal Island. Also, four additional 1984 Seal Island transplanted puffins returned to Matinicus Rock but did not visit Seal Island.

PUFFINS AND TERNS FEED ON WHITE HAKE AT MATINICUS ROCK

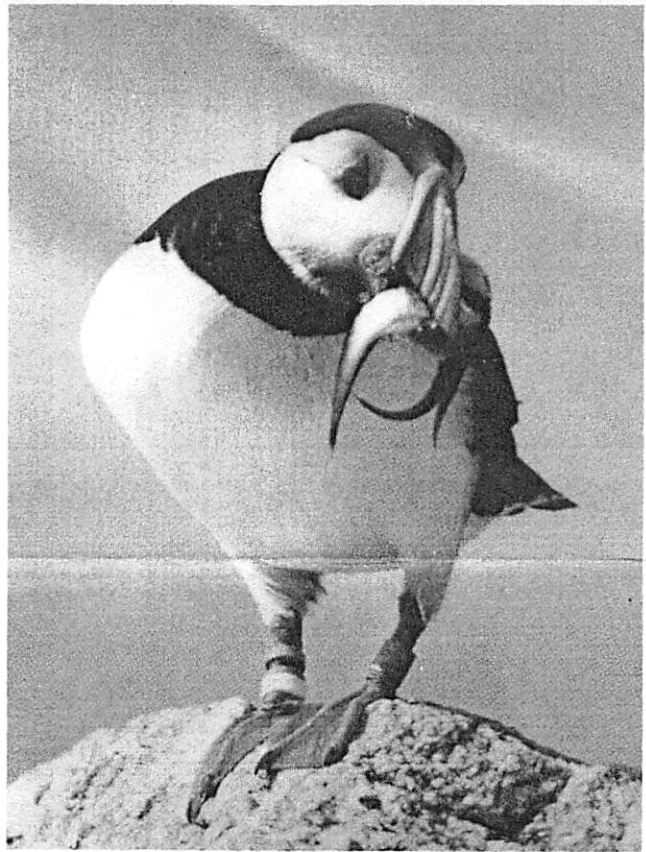
Late in the summer of 1986, a puffin netting effort at Matinicus Rock led to the discovery that the meals being delivered to puffin chicks consisted mainly of white hake, butterfish and bluefish. The surprise was the absence of Atlantic herring, formerly thought to be one of the puffin's most important foods in the Gulf of Maine.

Detailed studies continued in 1987 to learn more about the food habits of Matinicus Rock puffins and terns. Research Assistants followed the feeding habits of four pairs each of Arctic Terns and Atlantic Puffins throughout the nesting season, identifying contents of each food load and counting the number of loads delivered from dawn to dusk. Puffins carrying food were also netted to weigh a sample of meals and to confirm fish identifications.

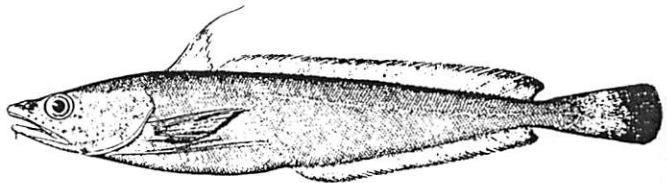
In 1987, observation of puffin nests at Matinicus Rock found that white hake occurred in 96% of 266 fish loads. Hake dominated the food delivered to puffin chicks throughout the summer, but hake meals were supplemented with sand lance in late June (15% of feedings) and by young bluefish in late July (6% of feedings). Atlantic herring occurred in only 4% of the feedings.

White Hake was also the primary food for Arctic Terns in 1987. Matinicus Rock terns delivered hake to their young in 68% of 868 feedings. In addition to hake, Arctic Terns also fed their young a variety of other small fish such as Atlantic herring (6% of meals), bluefish (3%) and sand lance (2%). Some terns also fed their chicks on a diet containing many insects (click beetles and moths) and euphausiid shrimp.

White Hake are close relatives of cod and haddock. Adult white hake often grow to 20 pounds or more and are becoming an increasingly important commercial fish stock as more popular bottom fish such as cod and haddock have declined due to over-fishing. The commercial catch of white hake in the Gulf of Maine has increased steadily since 1968 and was 7,300 metric tons in 1985. By contrast, the Gulf of Maine catch of haddock had dropped to only 3,000 metric tons by 1985.



White hake was the principal food delivered to young puffins at Matinicus Rock this summer.



White hake is an increasingly important commercial fish that may be the principal food for Gulf of Maine puffins and Arctic Terns.

White hake presumably breed in deep ocean waters south of the continental shelf of Georges Bank and southern New England. According to on-going research by the National Marine Fisheries Service, eggs are laid in April (or earlier) and soon develop into the 1-3 inch long pelagic-juvenile stage. During May and June, these small hake migrate inshore, appearing just in time to provide food for newly hatched terns and puffins.

The discovery of hake as the dominant fish in the diet of mid-coast Maine Arctic Terns is also a surprise to fisheries biologists who previously thought juvenile hake stayed away from the ocean surface during the day and only migrated toward the surface at night. Since the Matinicus terns feed on hake at the ocean surface during daylight, they point to the presence of small hake throughout the water column.

The puffins and terns have also demonstrated that juvenile hake occur near Matinicus Rock throughout July, a month later than previously known. It is likely that terns are better samplers of surface fish than biologists' nets and that they will continue to reveal interesting facts about their prey fish.

Terns and puffins can tell us a great deal about the abundance, distribution and habits of small marine fish. Such knowledge is vital for the management of increasingly hard-pressed commercial fish stocks. It is also necessary information for conserving seabirds such as terns and puffins because their future is closely linked to ample supplies of small fish such as white hake.

Egg Rock Update

ISLAND UPDATES

Egg Rock Puffin Colony Remains Stable At 18 Pairs

All 18 nests occupied by puffins at Eastern Egg Rock in 1986 were reoccupied in 1987. Seventeen pairs consisted of the same mates as in 1986. The exception was nest #11, at which 9-year-old #91 failed to return. For the past four years, nest 11 was occupied by #91 (a female) and its mate, 9-year-old #12. This year #12 paired with an unbanded bird and they successfully reared a chick.

The strong return from 1986 to 1987 of 32 out of 33 known breeders demonstrates high winter survival among Egg Rock's breeding puffins. The high faithfulness to mate and burrow shown between years is the greatest observed since the colony was re-established in 1981. In 1987, sixteen of the 18 breeding pairs successfully reared their single chick, which ties last year's record high breeding success of 89%.

Common Terns Re-established On Stratton Island

Common Terns nested on the beaches of Stratton Island this summer in response to gull control and tern attraction efforts, offering encouragement that the island may once again become an important tern nesting island.

Stratton Island, the Phineas W. Sprague Memorial Sanctuary of the National Audubon Society, is located at the mouth of the Scarborough River off Prout's Neck (10 miles south of Portland). In addition to having the northernmost mixed heron and Glossy Ibis colony in North America (see *Egg Rock Update* 1986), the island was once home to the largest colony of Common and Roseate Terns in southern Maine.

Tern numbers at Stratton Island have fluctuated greatly since the beginning of this century, but a colony containing as many as 1,000-1,500 terns nested on the island in the 1930's and colonies numbering as many as 300 Common Terns and 75 Roseate Terns have nested on Stratton Island as recently as 1981. However, recent population increases of Great Black-backed Gulls and Herring Gulls have crowded terns off the island. This displacement has forced terns to nest on several small, nearby islands that are presently very vulnerable to erosion, predation from dogs, fox, skunks and raccoons, as well as human disturbance.

Stratton Island is an excellent site for terns. It not only has a long history as a favored tern nesting island, but it has abundant suitable habitat well above the high tide. Also there are no mammal predators and it is protected by resident summer wardens. This importance is heightened by the fact that as of 1987 there were only about 600 pairs of Common Terns and 12 pairs of Roseate Terns nesting along the entire stretch of coast from Pemaquid Point to the Massachusetts border. In Maine, these nested on only 7 islands, all of which are vulnerable to gulls, predators or high tides.

The tern restoration project on Stratton Island began this spring on May 8th with construction of a series of parallel monofilament fishing lines stretched across a 60x40 m section of Great Black-backed Gull nesting habitat adjacent to the tern nesting beach. The intent of the lines was to prevent gulls from landing in a buffer zone next to the tern beach. Other gull control techniques included egg and nest removal and occasional shooting. Terns were attracted to the former nesting habitat by placing 46 wooden tern decoys (modeled after originals carved by Donal C. O'Brien Jr.) and by playing tape recordings of tern colony sounds through 4 speakers located among the decoys.

By May 25th terns were courting on the beach near the decoys. The first nest was discovered on June 16th and 4 additional nests had eggs by July 22nd. Three young from the first nest fledged by early August, but late nesting apparently prevented the remaining nests from producing young. The late nesting at Stratton Island

occurred five days after the highest tides of the summer washed out 43 nests on nearby Beach Island. By early August, as many as 60 terns were associated with the Stratton Island colony, offering encouragement that next summer the colony may show a substantial increase.

Petrel Colony Grows at Old Hump Ledge

In 1979, 24 artificial burrows were excavated into the peaty soil of Old Hump Ledge, a former petrel nesting island 2 miles NE of Eastern Egg Rock. The burrows were intended as homes for Leach's Storm-petrel, a blackbird-sized seabird.

In an effort to lure petrels into the artificial homes, tape recorded petrel calls were played at night over the burrows. In 1980 four petrel pairs nested in the artificial burrows, choosing nest sites closest to the speakers. Tape recordings were not used from 1981 to present.

In late August this summer, we found nine active burrows, three with chicks and the remainder with eggs. Six pairs nested in the artificial burrows and 3 pairs tunneled burrows into nearby soil.

The persistence of this small colony is very encouraging as Old Hump Ledge may serve as a useful model for designing attraction projects for endangered petrels. There are presently 16 species of endangered petrels and shearwaters on islands throughout the world. Most of these are threatened due to introduced predators such as rats, mongoose and feral cats, dogs and pigs. It is possible that an attraction program, similar to that conducted at Old Hump Ledge could lure endangered petrels to a predator free island or to the safety of a fenced predator enclosure.

Puffins Nest At Petit Manan Island

In 1987 a pair of puffins successfully fledged their single nestling on Petit Manan Island, a National Wildlife Refuge about 12 miles to sea from Milbridge, Maine. Petit Manan is most notable as the largest tern colony in Maine (1458 pairs in 1987). Terns recolonized this very important nesting island after the U.S. Fish and Wildlife Service poisoned approximately 700 Herring and Great Black-backed Gulls in 1984. Puffins began landing on the island soon after the gulls were removed and have since visited regularly each summer.

Although Petit Manan offers little suitable nesting habitat for crevice-nesting birds such as puffins, a pair laid an egg in 1986 and successfully reared a chick at the same nest site this summer. Machias Seal Island, located 36 miles east of Petit Manan, is the most likely source for these colonizing puffins since it has a breeding population of about 900 pairs and banded puffins from Machias Seal are regularly observed on Petit Manan.

Special Support

In April, 1987 Stephen Kress gratefully accepted the ROLEX AWARD FOR ENTERPRISE at a ceremony in Geneva, Switzerland. The "Seabird Colony Creation Project" was one of five projects selected from several thousand applicants for this international conservation award.

In December, 1986 the National Audubon Society established the MICHAEL A. APGAR MEMORIAL FUND to assist the Maine Coast Seabird Sanctuaries. Each year the Fund will support one warden-biologist position on a National Audubon Society seabird sanctuary.

Several important grants were received from foundations. We gratefully acknowledge the generous support of the ACHELIS FOUNDATION, BARRINGTON FOUNDATION, BODMAN FOUNDATION and IRELAND FOUNDATION.

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