RE-ESTABLISHMENT OF THE COMMON PUFFIN, Fratercula arctica, IN A FORMER BREEDING AREA IN MUSCONGUS BAY, MAINE

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The world population of the Common Puffin, Fratercula arctica, is estimated at fifteen million birds, thirteen million of which breed on islands off the coast of Iceland. In the eastern north Atlantic, some Common Puffins have been found nesting in a few areas as far south as the coast of France, but a large oil spill in that area in March 1978 has rendered the status of these colonies questionable. Most of the remaining two million are distributed in the western north Atlantic around Labrador and Newfoundland. Two islands in the waters of northern Maine are the current southern limit of their range.

Puffins are known to have nested on at least seven islands off the coast of Maine during the nineteenth century. Due primarily to pressure from hunters, they had disappeared from five of these nesting areas by 1895, surviving on Machias Seal Island and Matinicus Rock. Although the world population is in decline, the protected Maine colonies have grown to approximately 1500 pairs on Machias Seal and 170 pairs on Matinicus.

In the summer of 1974, 54 two-week old puffin chicks were collected on Great Island in Witless Bay, Newfoundland, and transported one thousand miles to Eastern Egg Rock, an island in Muscongus Bay, Maine. This was the beginning of the Puffin Re-establishment Project, which is under the direction of Stephen W. Kress, an ornithologist at Cornell University and a staff member of the National Audubon Society. The main objective of the project is to investigate procedures for re-establishment of the Common Puffin in a former breeding area at the southern limits of its range.

Eastern Egg Rock, a seven-acre island situated six miles east of New Harbor, Maine, was chosen as the study site because it had supported a breeding colony prior to 1900. Located only eight miles from Hog Island, site of the Audubon Camp in Maine and the base of operations for the project, Eastern Egg Rock offers ideal nesting habitat unmarred by the presence of terrestrial predators. With a shoreline of large granitic boulders, the island's maximum elevation above high tide is 23 feet. There are no trees, but 58 species of vascular plants are present. The summer climate is cool and dry, with a mean daily range in temperature of 13-24°C.. Resident birds include: Leach's Storm Petrel, Common Eider, Spotted Sandpipers, Black Guillemot, Tree Swallow, Common Yellowthroat, Red-winged Blackbird, and Song Sparrow. In 1978, 139 species of birds were seen on or near the island.

Since the project began, 438 puffins have fledged, an overall success rate of 97 percent. These chicks, raised in sod burrows especially constructed to simulate their natural environment, were fed two meals per day, consisting of smelt and vitamin supplements. The fish were placed in the entries of the burrows so that there would be minimal contact between the birds and the team of three research assistants.

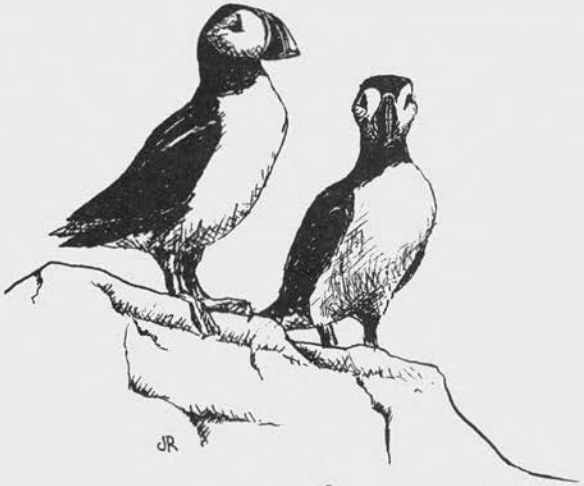
The team also studied plumage changes and development processes involving

growth and behavior. Observations were conducted from a blind constructed over four burrows which had been roofed with clear plexiglass panels.

Until recently, the puffin chicks were banded just prior to fledging with a U.S. Fish and Wildlife Service monel band and one colored plastic band designating the year. In 1978, however, the chicks were banded with a series of color bands in various combinations with the FWS band and a bi-colored band which marks them as Eastern Egg Rock puffins. These combinations allow individual birds to be identified.

Puffins, like other alcids, live at sea, feeding on the abundance of fish found in the cold northern waters. Although they are social birds, they come ashore only during the breeding season. Returning to the island colony from which they have fledged, puffins begin to breed at approximately five years of age. One egg is laid, usually in a burrow dug into the earth or appropriated from another species. Both parents participate in caring for the chick, which fledges at approximately six weeks. By late August, the birds have deserted the breeding area for the sea. It is not known where puffins go in winter, but as they are seldom seen in any great number, it has been postulated that they disperse over the Atlantic.

A number of puffins fledged from Egg Rock in past years have been seen visiting the island and sitting in the water offshore. In 1977, there were eighteen sightings, 28 percent of which involved birds landing on the island. This increased to thirty sightings in 1978, 50 percent of which involved landings on the island. Puffins were seen on one island for a total of four hours, ten minutes, in 1977; thirty-five hours, forty minutes, in 1978. In the latter years, most identified birds were wearing white bands, indicating they were three years old, but one bird wearing a black band, was a two-year-old. At least one year-old puffin, with no band discernible, was seen in the company of a three-year-old bird. There have been two sightings of unbanded puffins, which may indicate that birds of other colonies are interested in the island. Perhaps they are drawn to it by the wooden decoys mounted at various positions along the southern end of the island. Most of the landings on Eastern Egg Rock have occurred among the six puffin decoys situated on a large boulder on the southeastern shore. A number of the birds have been seen rubbing bills with the decoys and sitting among them for hours at a time.

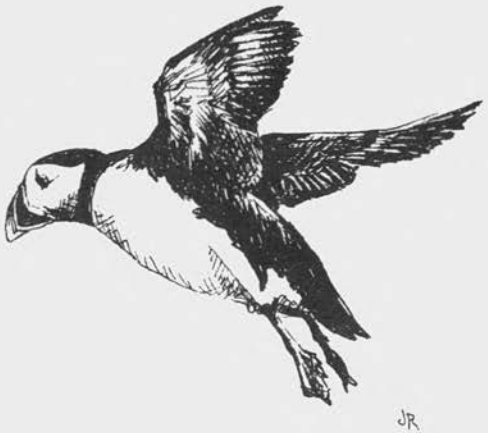


In conjunction with the re-establishment of the puffin, an experiment was begun in 1978 to encourage Arctic Terns, Sterna paradisaea, to nest on Eastern Egg Rock. Arctic Terns are known for their aggressive defense of their nesting sites against predators, including gulls. It is hoped that such a colony will prevent re-colonization of the island by gulls, which might prey upon the chicks of the re-established puffins.

Arctic Terns are known to have nested on the outer islands of Muscongus Bay in the 19th century. Like puffins, they were hunted for their skins, which were at a premium during the height of the milinery trade. As recently as 1936, a few pairs still nested on Eastern Egg Rock, but eventually their nesting sites were taken over by Great Black-backed Gulls, Larus marinus, and Herring Gulls, Larus argentatus, which were in the throes of a population explosion.

To attract Arctic Terns to the island, thirty-eight wooden Arctic Tern decoys were placed in a typical nesting habitat and a taped recording of flocking sounds was played. Both Arctic and Common Terns, Sterna hirundo, visited the island, landing among the decoys in the mock tern colony. Courtship displays, feedings, and matings were observed, along with some nest building activity, but no eggs were laid. At least three pairs of Arctic Terns were seen visiting this "colony" throughout the summer and were very active in chasing gulls away from their territories.

The success of the Puffin Re-establishment Project to date, based on the return of transplanted chicks from different age-groups, is very encouraging. Breeding birds are not expected to colonize the island before 1980 because puffins do not usually breed before their fifth year. Although there will be no more chick transplants, observation of the island will continue. If this re-establishment project is successful, it will set a precedent for wildlife management, establishing procedures for the re-introduction of puffins and perhaps other locally-extirpated seabirds to their former ranges.



References

Kress, S. W. 1974. Report on the re-establishment of the Common Puffin, Fratercula arctica, to its former breeding habitat in Muscongus Bay, Maine. Unpublished Progress Report.

_____ 1975. Unpublished Progress Report.

_____ 1978. "Establishing Atlantic Puffins at a former breeding site." In S. A. Temple (ed. Endangered Birds: Management Techniques for Threatened Species. U. of Wisconsin Press, Madison, pp. 373-378.

Lockley, R. M. 1953. Puffins. New York: Devon-Adair Co.

Nettelship, D. "Breeding Success of the Common Puffin , Fratercula arctica, on Different Habitats at Great Island, Newfoundland." Ecological Monographs 42, no. 2, pp. 239-268.

Norton, A. H. 1923. "Notes on Birds of the Knox County Region," (Parts 1 and 2). Maine Naturalist 3:31-35.

Petersen, A. 1976a. "Age of First Breeding in the Puffin, Fratercula arctica." Astarte 9:43-50.

_____ 1976a. "Size Variables in Puffins, Fratercula arctica, from Iceland, and Bill Features as Criteria of Age." Ornis Scand. 7:185-192.

ARCHAEOPTERYX - NOT ALONE?

A single fossil feather inpression, the discovery of which established the existence of Archaeopteryx, has now been augmented by partial or entire skeletons of a further four specimens. Since 1861, Archaeopteryx has held the distinction of being the most ancient known bird at about 135 million years old.

Dr. James Jenson, a palaeontologist at Brigham Young University, has unearthed two femurs from rock formed 130 million years ago, about the time Archaeopteryx was living. The new fossil femurs appear to belong to two different species. The femur of Archaeopteryx has a large well-developed knob that fits into a socket in the pelvis, which is typical of animals that run well on the ground; the newly discovered femurs, however, are small, a characteristic shared with birds that are good flyers.

Archaeopteryx has generally been regarded as a direct link between birds and reptiles; however, if Dr. Jenson's theory proves that Archaeopteryx shared the same period in time with other birds that were more adept at flying, its singular status may now be challenged.

R.H.S.