

THE RETURN OF THE ATLANTIC PUFFIN

to Eastern Egg Rock, Maine

by Stephen W. Kress

1887: Deep under a huge boulder, an Atlantic puffin, *Fratercula arctica*, wedged itself into a shadowed corner to incubate its single egg. For 10 years it had returned to this hidden crevice on a wind-blasted jumble of granite called Eastern Egg Rock, eight miles to sea off the Maine coast. But even here there was little safety. Above, muffled voices reviewed plans to spread herring nets over the boulders to trap puffins as they emerged in the early dawn.

Puffins and other seabirds had been hunted on this tiny island for several hundred years. But by 1887, seabirds were scarce. Only a few terns flushed from the trampling feet of grazing sheep and virtually no puffins teased fishermen by circling within gunning range. Trapping efforts were poorly rewarded; only one puffin struggled in the waiting net.

Little did the disappointed fishermen realize that there were no more puffins on Eastern Egg Rock,

Atlantic puffin, Handa Island, Scotland. Photograph © by J. C. Carton (Bruce Coleman Inc.)



or on nearby Western Egg Rock, and that most seabird populations from Florida to Labrador were in a state of serious decline. By 1900, puffins had been eliminated from all but two colonies in the Gulf of Maine: Machias Seal Island and Matinicus Rock. Where once they had been abundant, puffins and most other seabirds had almost disappeared from the islands of Maine.

However, by 1900, things began to change. With protective legislation, such as the federal Migratory Bird Treaty Act of 1918, The Lacey Act and Maine's Model Wild Bird Act (both of 1900), puffins received a legal reprieve from more than 200 years of excessive hunting. Even more important to the renaissance of seabirds were the life style changes affecting coastal Mainers around the turn of the century. Long isolated by the convoluted coastline, highways and railroads were starting to connect even remote communities. With the advent of electricity and refrigeration, fresh seafoal meat and eggs became less important. Gasoline-powered boats made it possible for fishermen to commute to and from the mainland. This combination of life style changes and protective legislation made the islands suitable for nesting once again.

Arctic and common terns, *Sterna paradisae* and *S. hirundo*, were among the first birds to re-colonize islands such as Eastern Egg Rock. And their return was noteworthy. They had not inhabited Egg Rock since the millinery raids of the 1880s destroyed their populations. But puffins, unlike terns, are not quick to settle into new nesting sites nor are they known for their ability to arrive *en masse* to a suitable habitat. If puffins were to re-colonize Egg Rock in the near future, we would have to devise a plan to help them along.

Our effort to re-establish a breeding colony of puffins at Eastern Egg Rock began in 1973 with financial support from the National Audubon Society and private contributors. Dr. Robert Noyce, a good friend and neighbor of the Audubon Ecology Camp in Maine, flew us to Newfoundland in his private plane to collect puffin chicks during the first three years of the project. These chicks and those from subsequent transplants were reared on Egg

Rock by biology students from Cornell and other universities.

Our re-establishment program was based on the premise that young puffins usually return to breed at their natal island, sometimes in the immediate vicinity of their parents' burrow. All we had to do was to transplant some young puffins to Egg Rock and hope that eventually they would return there to breed. As simple as this sounds, we had no way of knowing if it would work. However, the vision of bright-beaked adults coursing over the boulders was incentive enough for us to try.

"Can't be serious," grumbled a crusty old lobsterman when I explained my plan to have assistants live in a tent on Eastern Egg Rock. Surely if the winds didn't shred the tent, the rigors of rain, sun and flood tides would prevent us from surviving on this seven acres of salt-sprayed, treeless granite. Yet our resolve, the novelty of the adventure and a good dose of blind optimism made the goal of re-establishing puffins on Eastern Egg Rock seem highly plausible and worth whatever physical discomforts the island had in store.

It was August, 1973 when we arrived at Egg Rock with some very unusual cargo. As the greater black-backed gulls, *Larus marinus*, chanted overhead, five fledgling puffins huddled against the walls of the artificial bur-

rows we had constructed for them. These two-week-old chicks were from the large puffin colony on Great Island, Newfoundland, and were hand reared on nearby Hog Island. We reasoned that by this age, young puffins are capable of maintaining their own body temperature and should be strong enough to resist the shock of the transplant. We gambled that they probably had not learned where home was and that if we transferred them quickly to a new island, finish rearing them there and then permit them to fledge, they should acquire their homing information at the release site and return there to breed several years later.

Little is known about how seabirds find their way home after winter migrations that may take them thousands of miles away, but the transplant program rested on the hypothesis that while the puffin's methods for homing were of a genetic nature, the specific information was learned some time during the development of the nestling. Although resident gamebirds such as turkey and pheasant have been successfully transplanted for years to stock vacant habitat, this was the first time such a program had been ventured for a migratory seabird.

While waiting for our transplanted puffins to mature on Egg Rock, we prepared the island for them by establish-

Stephen Kress places nestlings in carrying case for the 1,000 mile journey from Great Island, Newfoundland to Eastern Egg Rock



Both male and female puffins bring food to their single nestling

ing ten colonies to control the gull population, and by securing the island's status as Audubon's Allan D. Cruickshank Wildlife Sanctuary.

Besides gaining safety for the puffins, we studied the development of our nestlings, examining the sequence in which new feathers and behaviors transformed the helpless and clumsy chick into a trim and alert young sea-bird. To learn as much as possible about these changes, we built an observation blind over four plexiglas-roofed burrows and noted the behavior of four nestlings from 1976 to 1978. These puffin chicks showed remarkable variety in personality. Some were vocal, restless birds that actively roamed their underground domain, excavating side chambers of their own design, pursuing intruding flies and mosquitoes and sometimes arranging platforms of vegetation on which they rested in their nest chamber. By contrast, other chicks seldom moved from their nest chamber except to consume their daily rations.

Our studies of nestling behavior revealed some of the ways that puffin chicks avoid the menacing gulls which frequently wait outside their burrows. By monitoring the puffin chicks in our observation burrows, it soon became evident that even the most active avoid the vicinity of the burrow entrance until they are about four weeks old. During these weeks the slow, awkward chicks would be easy prey if they ventured too close to the entrance. We observed that deep inside the burrow the young chicks have a well-defined toilet area just outside their nest chamber. Here they back to the toilet wall, bend forward and squirt their excrement against it. By concentrating the excrement in one location the chick stays clean and avoids danger at the burrow entrance.

After four weeks, the chicks usually move their toilet closer to the burrow entrance. Even though they are now much quicker and more coordinated, they still show the greatest caution. The usual approach is to edge slowly toward the entrance with the head held low. If all is clear, the nestling makes a quick 180 degree turn, backs up a few steps and ejects a vigorous stream that



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may be propelled more than a foot outside the burrow. Then, without hesitation, the chick dashes back to the dark safety of its nest chamber.

As fledging time approached, the nestling puffins became increasingly active, pacing the length of the burrow, frequently rejecting food in the day or two prior to fledging. At night, when gulls sleep, the young puffins left their burrows to clamber over intervening boulders and crevices until they reached the sea. I have hidden among the boulders to watch the procession, listening for the clinking sound of metal bands against the granite. If moonlight permitted, a small white apparition appeared, for only the fledgling's white breast was visible, the dark head and body feathers blending into night shadows.

Balancing with wing and sharp claws, the fledgling may climb up the boulders, only to tumble into a crevice and struggle forward again. Once I saw a bird gain the peak of a tall boulder and fly off to sea in a single attempt, but most plunge into the foaming surf, sometimes to be thrown back repeatedly to the island. When clear of the surf, the young birds dive and bathe as if they have done this many times before. By dawn the fledglings are no longer in sight from the island and no longer vulnerable to the predatory gulls which patrol the inshore waters.

By June of 1977 we had released 248 young puffins from Egg Rock without having a single return. We were con-

cerned that if the puffins did return, they would hesitate to come ashore without seeing established adults to attract and hold their interest. To overcome this problem, we prepared standing decoys and secured them atop several granite outcrops. We also moored floating decoys to the ocean bottom near the island, but strong seas soon broke them free, scattering them southward in the Gulf of Maine current.

Even though we had watched daily during the summers of 1974 through 1976, we had sighted only one adult puffin at Egg Rock, that being a solitary bird that circled the island once in 1974. It was therefore a momentous occasion on June 12, 1977 when a puffin rounded the shore of Egg Rock and splashed down just as we were rowing ashore. With absolute confidence, the bird swam up to our landing boat where we could easily see that it carried a white band on its left leg—proof at last that at least one transplanted chick from Newfoundland had found its way back to Egg Rock.

Our studies of two and three year olds show that puffins freely move among the Gulf of Maine colonies, but when they are three and four years old, they become involved in burrow prospecting and do less inter-island traveling. In 1979, at Matinicus Rock, 26 miles from Eastern Egg Rock, we observed a four-year-old transplanted puffin that seemed especially fixed to a particular boulder site. This bird, iden-

tified as white #14 by its metal band and white plastic leg band, was one of 91 nestlings transplanted to Egg Rock from Great Island in 1975. Now at Matinicus Rock, it was defending a territory, growling and chasing other puffins that ventured too close. In 1980, white #14 was observed carrying fish into the same rock crevice for its own young. This was an exciting discovery for not only was it proof that transplanted puffins will breed near the release site, but it also demonstrated that puffins will select their nesting colony and defend a burrow site the year before they actually nest, thus shedding some light on at least one reason for delayed breeding.

It was late May, 1981 when we landed at Egg Rock and already the puffins were coming and going among the boulders. We had observed this be-

havior for the past two summers, but most of the puffins were four and five years old now and the chances for breeding had never looked better.

Through late May, June and July the puffins teased us with their secretive habits. At Matinicus Rock, puffin chicks hatched as early as June 7, but these were older, more experienced breeders that lay their eggs soon after arrival in mid-April. Yet as July began to unfold, we reasoned that if puffins were breeding at Egg Rock, their eggs

must hatch soon because it would take the adults at least another six weeks to rear the chicks—a process that must be complete before the migratory urge pulls the adults back to the open sea by mid-August.

It was nearly dark on a very hazy fourth of July when I spotted a puffin winging around the south end of Egg Rock, its beak packed with glistening herring. Without hesitation, it landed and scrambled into the boulders to emerge a moment later without a trace of its catch. After nearly 100 years of absence, puffins were nesting again at Egg Rock.

Five pairs of puffins hatched young at Egg Rock in 1981 and, as far as we know, all successfully fledged their young. Both members of three pairs were four-year-old birds, one pair consisted of a four year old and a five year

Once puffins select a nest site and successfully breed, they usually return to the same island and burrow for many years. Thus the future of the new Egg Rock colony looks encouraging since this core of breeders will help attract increasing puffin numbers to the island. Of the 530 transplanted puffins old enough to have returned by 1981, 111 or 21 percent have been sighted at Egg Rock, Matinicus Rock, or Machias Seal Island. In the next year or two numbers will further increase as the 1980 and 1981 transplant groups reach breeding age and return.

While the future of the Egg Rock puffin project looks bright and the techniques developed could have application for other colonial seabirds, restoration projects must be only part of a comprehensive management program. Puffins are declining throughout their extensive range on both sides of the North Atlantic. Tragic losses result from poaching, drowning in fishing nets, and predation from increasing herring and greater black-backed gull populations. Although puffins still nest in a few colonies of more than a hundred thousand pairs, the losses from oil spills and overfishing of their food supplies can be enormous.

Puffins have survived hundreds of years of human history on the Maine coast, but it has taken all the tools of conservation to restore them from the grim days of seabird exploitation. Legislation, enforcement, sanctuaries, and active management are necessary if the puffin is to maintain its precarious posture on the Maine coast. Certainly the ability to re-establish puffins to former breeding sites is a useful new management tool, but to secure the puffins' future, we need a worldwide commitment to work toward maintaining the highest possible productivity and diversity of the seas.

FURTHER READING

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Decoys are used to attract puffins to Eastern Egg Rock



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old, and surprisingly, both members of the remaining pair were unbanded. Since there has been relatively little band loss, it is likely that these unbanded birds are recruits from either Matinicus Rock or Machias Seal Island. A certain amount of inter-colony breeding is normal even under completely natural conditions and these welcome additions may play a vital role in expanding the new Egg Rock colony, offsetting the loss of transplanted birds to other colonies.

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