



Egg Rock Update

Newsletter of the Seabird Restoration Program
of the National Audubon Society

2005

SPRING STORMS IMPACT PUFFIN NESTING

This spring, Seabird Restoration Program staff stationed on the islands experienced four unusually late and strong “Nor’easters.” Interns usually arrive and set up camp on Maine islands in mid-May to discourage early-nesting gulls from settling in key puffin and tern nesting areas. While our “puffineer” teams are generally prepared for cold and raw weather, this spring they found themselves in severe weather that flooded tents; bird blinds, observation towers, and boats were blown or washed away by wind and waves.

At the time the anemometer was ripped off the Seal Island NWR cabin roof, island supervisor Carlos Zavalaga and his team were recording 70 mph winds.

Storms raged for six days, confining Carlos, Stacey Hollis and Lance Ebel to their 12-foot-square cabin.

In our 20 years of managing Seal Island seabirds, this is the first time storm surges had intruded into puffin nesting habitat. High water flooded the burrows of about 60 pairs of puffins and left standing water on top of the impermeable granite throughout much of the colony. It took several weeks for this water to evaporate. While some of the flooded puffin pairs renested, many did not, significantly affecting the size and growth of the colony. We have recorded population increases as high as 26% in recent years; however, this year the colony remained stable at 281 pairs—similar to last year’s total of 290 pairs.

At Matinicus Rock, the spring storms took a toll on nesting Razorbills as well as puffins. Huge seas rolled into the Razorbill colony, destroying most of the eggs in low-lying habitat. Fortunately, many pairs renested. In a sample of 20 destroyed nests, 60% of pairs (n=12) relaid their single egg and half of those successfully hatched eggs. Due to the storm, only 212 pairs nested, compared to 237 pairs last year. We hope most of the displaced puffins and Razorbills survived the spring storms and will rejoin the colonies next year. ❖



STACEY HOLLIS

Above: Tents on Seal Island were flattened by wind gusts recorded as high as 70 mph.

Below: Waves rage on Matinicus Rock.



SUE SCHUBEL



BILL SCHOLTZ

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WORLD REPORT

The techniques that have brought puffins and other seabirds back to Maine islands are now helping rare and endangered seabirds worldwide.

SHORT-TAILED ALBATROSS

Torishima Island, Japan

Feather hunting between 1887 and 1902 killed about five million Short-tailed albatross, nearly exterminating this spectacular North Pacific seabird. Today, about 360 pairs nest on just two Japanese Islands and more than 80% of the surviving population nests on a steep slope of an active volcano on Torishima Island. Here, they are threatened by volcanic explosions, landslides, and mud flows of volcanic ash that can bury nestlings. To encourage some of the birds to colonize a safer location on the island, Dr. Hiroshi Hasegawa of Toho University, the Japanese Ministry of the Environment and the Yamashina Institute for Ornithology are using decoys and sound recordings to encourage some of the birds to nest at a safer location. In 1992, they placed 50 decoys



Short-tailed Albatross pair.

and added 45 more in the next two years. They also installed a sound system to play colony sounds at the new location, which is far from the volcano. One pair nested at the new location among the decoys in 1995, but it took 10 more years for others to join the lone pair. In 2004, three additional pairs nested at the colony, including one of the chicks from the first nesting pair. All four pairs successfully fledged young and as many as 45 albatross are now associated with the new colony. ❖

Information provided by Hiroshi Hasegawa

CAHOW

Castle Harbor, Bermuda

The critically endangered Cahow (Bermuda Petrel) population reached a new record high of 71 nesting pairs with six new pairs occupying burrows in 2005. Biologists from the Bermuda Department of Conservation (BDC) translocated 21 three-quarters-grown Cahow chicks to Nonsuch Island, a nearby, densely vegetated sanctuary. This island offers greater security from hurricanes than the present nesting islets that are crumbling due to rising seas and storms.

At Nonsuch Island, the chicks were fed a diet of whole squid and anchovies until they reached fledging age. All of the translocated chicks successfully fledged in



A Cahow sits on its nest in its burrow.

addition to 14 others at the existing colonies. It will be several years before these birds will be old enough to return. To encourage Cahows to nest as high as possible at one of the present nesting islets, a sound system began broadcasting recorded calls in January 2004. SRP biologist, Sue Schubel, working with BDC biologists, built and setup the sound system that broadcasted recordings prepared by the Maculay Library of Natural Sounds at Cornell. During the 2005 nesting season, three new pairs occupied artificial burrows and built nests in burrows closest to the speakers. ❖

Information provided by Jeremy Maderios (Bermuda Dept. of Conservation).

COMMON MURRES

Devil's Slide Rock, California

During this 10th year of the Devil's Slide Rock program, a total of 164 pairs of murres laid eggs and 52 chicks fledged. This compares to 190 pairs in 2004 that fledged 142 chicks. Reduced attendance was typical of most California colonies this summer, but the nesting population still exceeds the 10-year goal of the program to have 100 Common Murre nesting pairs. The program began in January of 1996—ten years after the *Apex Houston* oil spill of 1986. The project is a partnership between U.S. Fish and Wildlife Service, Humboldt State University, and National Audubon Society. Prior to the spill, about 2,800 murres nested at this important colony near Half Moon Bay, California. The project is the first to



Hiroshi Hasegawa sets up decoys that have successfully lured four pairs of Short-tailed Albatross to nest in a safer location on Torishima Island.

PUFFIN NEWS

Eastern Egg Rock

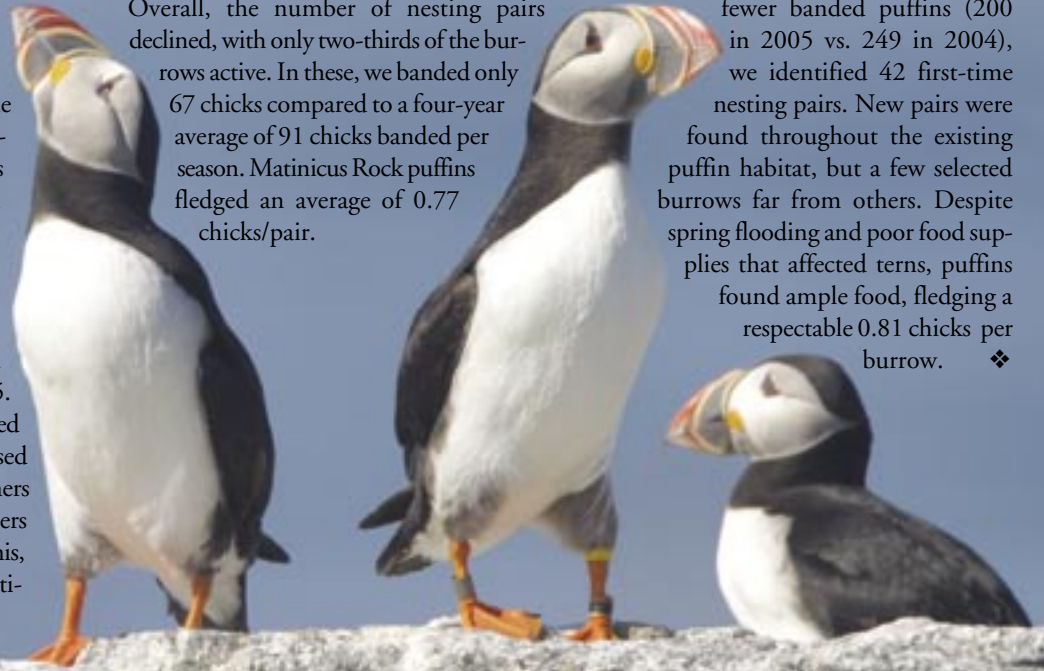
The colony reached an all time high of 72 nesting pairs, including nine new pairs. Three nesting birds were 28 years old and one pair broke the previous record for pair and burrow fidelity by nesting together at the same location for their 18th consecutive year! At least 15 other pairs retained the same mate between 2004 and 2005. Although total number of pairs increased, some previously banded birds were not present and the number of individual banded puffins declined from 142 in 2004 to 124 in 2005. This suggests the colony experienced storm-related flooding that caused some pairs to abandon, while others nested later than usual. (Researchers arrived after the storms). Despite this, Egg Rock puffins produced an estimated 0.86 fledglings/pair.

Matinicus Rock

As with the other puffin colonies, hatching was delayed one to two weeks. Overall, the number of nesting pairs declined, with only two-thirds of the burrows active. In these, we banded only 67 chicks compared to a four-year average of 91 chicks banded per season. Matinicus Rock puffins fledged an average of 0.77 chicks/pair.

Seal Island NWR

Although total nesting pairs declined from 290 to 281 and we observed 20% fewer banded puffins (200 in 2005 vs. 249 in 2004), we identified 42 first-time nesting pairs. New pairs were found throughout the existing puffin habitat, but a few selected burrows far from others. Despite spring flooding and poor food supplies that affected terns, puffins found ample food, fledging a respectable 0.81 chicks per burrow. ❖



ADOPT-A-PUFFIN

Puffin devotees who contribute \$100 or more (tax deductible) to the Seabird Restoration Program will receive a certificate of adoption for one Eastern Egg Rock puffin, along with a photograph and a biography of the bird.

Call us at (607) 257-7308 or adopt online at <www.projectpuffin.org>



Bill Scholtz

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use social attraction as a method for recolonizing a former murre nesting site. Nearly 400 murre decoys, two sound systems, 12 three-sided boxes with mirrors, and even decoy eggs and chicks were used to help bring the murre home. For the past several years, biologists have reduced the number of decoys and mirrors to make room for the growing colony. A live-streaming camera was in place on the island throughout the nesting season and this will likely continue next summer. To watch the real time video next summer, click on www.projectpuffin.org. ❖

Information provided by Gerry McChesney (San Francisco Bay NWR). For further information see: <<http://desffbay.fws.gov/murre.htm>>



Danielle LePer/USFWS

This summer, the Project Puffin website broadcast live-streaming video transmitted by a camera overlooking the murre decoy colony on Devil's Slide Rock.



SEABIRDS—INDICATORS OF GULF OF MAINE HEALTH

Feeding studies indicate decline in Atlantic herring stocks

In 1987 the Seabird Restoration Program initiated a long-term study of prey fed to terns. Information about food delivered to seabird chicks is essential to understanding the health of colonies and measuring our success with restoration. Our data is valuable for assessing the health of the colonies we manage, for understanding changes in fish availability and/or abundance, and perhaps for demonstrating how seabirds function as indicators of fish populations vital to marine and human life in the Gulf of Maine.

Observing puffins, Razorbills and three tern species from blinds located near nests, researchers collect information on foods the adults feed to chicks. These species carry prey crosswise in their bills, allowing researchers to identify it before the chick swallows it. With training, even novice observers learn to identify fish and invertebrates dangling from the beak of a fast-moving seabird. Data are later analyzed for patterns within and between years, islands, and species.

We have learned that terns and alcids

in the Gulf of Maine are primarily dependent on two keystone prey species—white hake and Atlantic herring. Maine seabirds generally feed on fish that are less than a year old, typically one to three inches long. We have also learned that diet varies predictably between islands. For example, white hake is dominant in the diet of Eastern Egg Rock seabirds, while Atlantic herring is dominant on Seal Island NWR. These patterns are consistent between nesting seasons. For seabirds that depend predominantly on herring

AUDUBON TERN NEWS

Storms that swept through the Northeast in May impacted nesting throughout the region. Some colonies reported a three-week delay in egg laying; most were seven to 10 days late resulting in fewer chicks produced. On July 9th, when the remnants of tropical storm Cindy arrived, the chicks were at a vulnerable stage of their development. Consequently, many perished in the day-long rain because they were too large to be protected by their parents, but not yet capable of keeping warm.

Seal Island NWR

Maine's largest Common and Arctic Tern colony remained stable. Like other Maine colonies, productivity was lower than average this year; 65% of the chicks died of weather-related causes or starvation due to inadequate food supplies.

Matinicus Rock

The number of nesting terns increased, but nesting success was lower than usual, caused in part by poor weather during critical times and persistent predation by Herring Gulls. Arctic and Common Terns produced only 0.4 and 0.6 fledglings per pair, respectively. An apparent reduction in fish availability forced the terns to feed their young tiny shrimp, a low-quality food.

Eastern Egg Rock

Roseate Terns produced a total of 135 fledglings. However, continued widespread gull predation (Herring, Great Black-backed, and occasionally Laughing gulls) and the growth of the Laughing Gull colony to 1,638 pairs were the main factors causing the Common Tern colony to decline to 50% of the 2001 total (1,514 pairs).

Pond Island NWR

Common Terns fledged an average of 1.1 chicks/pair, ranking the refuge as the most productive tern colony in Maine. Success was due primarily to trapping a single Great Horned Owl (released in northern Maine). One pair of Arctic Terns nested for the first time since 1977. We noted very little evidence of the mysterious "funk" malady that claimed about 30% of the chicks in 2004.

Jenny Island

In this second consecutive year without major predation, Jenny Island produced an average of one chick per nesting pair.

Outer Green Island

In just four years, the colony size has skyrocketed from one pair of Common Terns. Unfortunately, a mink swam to this remote Casco Bay island in mid-July and killed at least 300 birds (mostly Common Tern chicks) before it was captured. Despite the mink's presence, many fledgling Common and Roseate terns survived.

Stratton Island

Total number of nesting terns remained low, but pairs averaged one chick per pair. Offering new hope for a rare species, 18 Least Tern pairs nested here—the first time in Maine on an offshore island. State endangered, beach-nesting birds, they are vulnerable to disturbance, predation and flooding on the mainland. At least nine chicks (half the Maine total) were produced. ❖

	Common Tern	Arctic Tern	Roseate Tern	Least Tern
Seal Island NWR	1,219	1,064	0	0
Matinicus Rock	243	963	0	0
Eastern Egg Rock	758	81	136	0
Pond Island NWR	277	1	1	0
Jenny Island	532	0	11	0
Outer Green Island	971	0	36	0
Stratton Island	156	3	2	18

Above: Number of pairs of nesting terns at Audubon tern islands in 2005. Yellow boxes indicate numbers that increased from 2004; white boxes show declines.

COMMON TERN BY BILL SCHOLTZ



or hake, absence of these prey types during the breeding season has immediate short-term impacts on the number of breeding birds and their reproduction.

The seabird literature is replete with examples of the collapse of key prey species and the associated disasters to seabird populations. With only two key prey species, Gulf of Maine seabird populations are vulnerable to decline or collapse. A notable example occurred in 1996 when the percentage of herring in tern diets was significantly reduced and replaced with butterfish—a wide-body fish difficult for tern chicks to swallow. Breeding success for all tern spe-



BILL SCHOLTZ

A Common Tern chick attempts to swallow a butterflyfish.

cies declined to less than 0.5 chicks/pair and some islands failed to fledge any chicks that year. In 2005, herring was absent or reduced at all colonies and tern productivity was below average at most colonies. Some breeding puffins and Razorbills either deferred nesting or perished at sea, as overall numbers were down.

Feeding study data may also provide evidence for long-term shifts in diet. We have identified a recent shift from high-protein herring to low-quality invertebrates, especially euphasiid shrimp. The proportion of herring in tern diets has declined since the late 1990s and is most obvious at our “herring-dominant” islands—Jenny Island and Seal Island—but it has been most pronounced at Seal Island during the last two years. In 2005, Seal Island puffins collected just 2% herring, turning instead to white hake (85% of their diet). Likewise, *no herring* were observed in Arctic or Common Tern chick diets, while euphasiid shrimp accounted for 60% and 90% respectively. Tern reproductive success was

also well below average in 2005. In contrast, in 1991, when herring accounted for 70% and 80%, and invertebrates less than 2% of chick diets, Arctic Terns fledged 1.6 chicks per pair and Common Terns an astounding 2 chicks per pair.

Our data suggest that changes in the availability of herring for seabirds have occurred (especially at Seal Island), and similar findings have emerged from the whale-watch and tuna-fishing industries in the Gulf of Maine. Collectively, these data suggest that herring populations are declining; these declines coincide with an increase in the quantity of herring harvested by mid-water and pair trawls. These recently implemented, non-selective fishing methods take massive amounts of both target and non-target species.*

Analysis of our data indicates significant differences in the proportion of herring fed to seabird chicks on all islands before and after mid-water and pair trawl activities began in Fisheries Management Zone 1A.** Relationships are even stronger when only Arctic Tern data from Seal Island are



SCOTT HALL

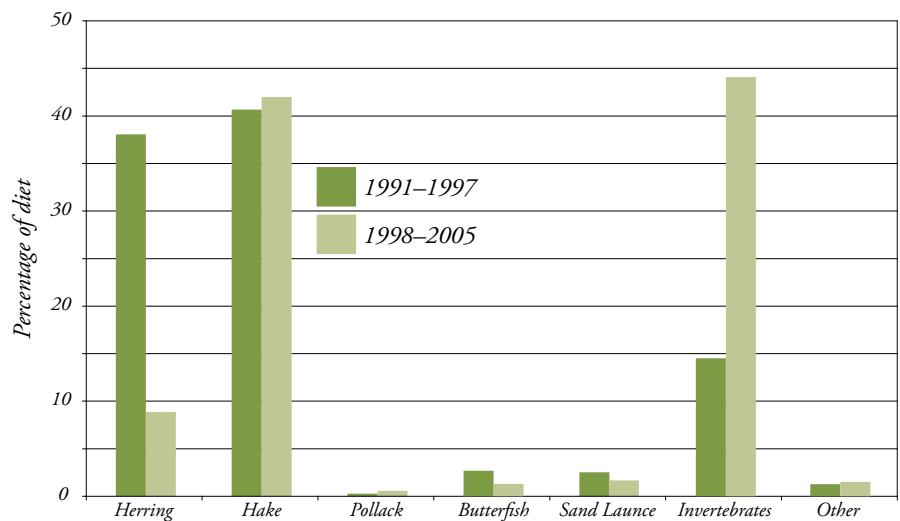
A Common Tern marked with leg bands for the Jenny Island tern chick feeding study returns to its nest with Atlantic herring.

considered (Figure 1). It appears that the seabirds, together with the whales and tuna, are telling us the same thing; a fundamental change is occurring in herring populations in the Gulf of Maine, and it may be driven by fishery management practices. Maine seabirds are telling us about the health of the Gulf of Maine and perhaps it is time to listen. ❖

* For more information on herring fisheries management and the mid-water and pair trawl fisheries in the Gulf of Maine, visit <http://www.nefnc.org/herring/index.html>

** Zone 1A extends from Eastport, Maine to Provincetown, Massachusetts, and 50 miles offshore.

Figure 1. Changes in proportion of Seal Island NWR Arctic Tern chick diets



This graph shows the percentage of selected foods in the diet of Arctic Tern chicks at Seal Island NWR from 1991-1997 prior to the initiation of mid-water and pair trawl herring fishing in Fisheries Management Zone 1A (dark green bars); the 1998-2005 data (light green bars) is post-initiation of the mid-water and pair trawl fishery.

EDUCATION AND OUTREACH

PROJECT PUFFIN VISITOR CENTER

Plans to open the Project Puffin Visitor Center, located on busy Main Street in Rockland, Maine, moved forward this summer and fall. A grand opening is scheduled for June 2006. Visitors will enter through a seabird-themed gift shop and display area, then make their way through a mural-covered hallway to a theater where they can view "Project Puffin," a new film created by award-winning cinematographer Daniel Breton. Visitors will also be able to view and operate a live-streaming video on Matinicus Rock, 22 miles south of Rockland

at the outer reaches of Penobscot Bay to watch puffins, mures, razorbills and guillemots. The center will also house an art and photo gallery with interactive exhibits. The first exhibit will feature 35 photos from Bill Scholtz of Middletown, New Jersey, who has spent part of the past four summers documenting seabirds on Audubon islands. Project Puffin Visitor Center is operated in partnership with Maine Audubon Society. Visit us next summer at 311 Main Street, Rockland, four doors toward the harbor from the Strand Theater. ❖



SUSAN SCHUBEL (2)

Above: Project Puffin Visitor Center will be opening in June, 2006.

Right: Staff include (left to right) Steve Kress, Lisa Quirk and Sean Smith.



EDUCATION HIGHLIGHTS

Puffin CD-ROM

Thanks to a generous grant from the Dorr Foundation, a CD-ROM about Atlantic Puffins designed for children 9–12 years old, will be available in June 2006

Tern's Journey in Spanish

A Spanish version of our first educational CD-ROM, *Tern's Journey*, will be available for sale in 2006 and will be marketed to schools and conservation groups in South American countries where Common and Roseate Terns spend the winter.

School Programs

"Seabird Sue" Schubel visited 27 schools, sharing her enthusiasm and knowledge with 1,450 students. The same classroom is visited several times, building depth and understanding about the remarkable lives of seabirds and their ocean habitat—one of the great strengths of our program. The primary goal is to instill awareness and appreciation of coastal wildlife. Field trips to see puffins and other seabirds around Eastern Egg Rock were the highlight of the school year for several hundred students.

Boat Tours

This season, Audubon naturalists provided narration to 4,674 passengers on boats operated by Hardy Boat Cruises from New Harbor and Cap'n Fish from Boothbay Harbor. ❖

THE 2005 MAINE RESEARCH TEAM

First Row (left to right): Stacey Hollis (Seal Island NWR Resident Intern); Emily Pollom. **Second Row (left to right):** Pete Salmansohn (Education Coordinator); Sarah Thomsen (Egg Rock Resident Intern); Steve Kress (Director); Paula Shannon (Matinicus Rock Supervisor); Suzanne Sanborn. (Stratton Island Supervisor); Debbie Wood (Gifts Manager). **Third Row (left to right):** Robert Lambert (Stratton Island Resident Intern); Matt Martinkovic (Outer Green Island Supervisor); Rosalie Borzik (Associate Director); Lisa Quirk; Mary Woodsen. **Fourth Row (left to right):** Lisa White; Ellen Peterson (Eastern Egg Rock Supervisor); Jeff Kimmons; Lance Ebel; Frank Mayer (Matinicus Rock Resident Intern); Jo Hiscock (Pond Island NWR & Jenny Island Supervisor). **Fifth Row (left to right):** Sue Schubel (Education Outreach Specialist); Heather Richard; Carlos Zavalaga (Seal Island NWR Supervisor); Scott Hall (Research Coordinator). **Absent from photo:** Charles Arbutnot; Catherine Banks; Lucas Blass; Andre Breton (Database Manager); Anna Corson; Charles Doersch; Christina Donehower; Lilian Doyle; John Drury; Lance Ebel; Erin Ellis; Tammy Fuehrer; Ted Gaine; Kirk Gentalen; Phyllis Gutierrez; Nicki Hall; Courtney Harris; Elizabeth Hassell; Anthony Hill; Becky Junco; Martin Junco; Jonathan Kyne; Matthew LaCasse; Cindy Langley-Wilbur; Noemi Laplante; Jill Lewis; Mandy Lightcap; Susan Long; Thomas Mullin (Naturalist); Kristin Pennock; Sean Smith (Project Puffin Visitor Center Supervisor); Angela Rouse; Jeff Rouse; Bill Scholtz; Sam Slater; Richard Smith; Colleen Sutherland; Chris Tupper; Cricket Tupper; Emily Tupper; Stella Walsh; Erin Walters.



RICHARD PODOLSKY

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