During the past two seasons, Project Puffin documented lower nesting success of Atlantic Puffins in the Gulf of Maine. At Matinicus Rock (MR) and Seal Island National Wildlife Refuge (SINWR), where puffin nesting burrows are shallow enough to check for eggs, Project Puffin staff discovered that in 2013, there were only two-thirds as many nests as in 2012. At these islands, puffin eggs hatched about two weeks later than usual, and many abandoned their eggs. Only about 10 percent succeeded in rearing a chick.

Similar nesting failure occurred at Machias Seal Island, on the U.S.-Canadian border, where only 15 percent of the 6,500 puffin pairs produced a fledgling in 2013. These events suggest that puffins were in poor condition following the stressful winter of 2012–2013; many either took a year off from breeding or died at sea over the winter. Because puffins may live for more than 30 years, taking an occasional nesting season off is their way of protecting themselves.

A surprising twist to the disappointing 2013 nesting season occurred at Eastern Egg Rock (EER), Maine’s southernmost puffin colony, where there were seven more pairs nesting (104 pairs in 2012 compared to 111 in 2013). Most pairs fledged chicks.

Where are the fish?

A new scientific study is helping to solve this mystery. White hake and Atlantic herring are among several species that frequent the Northeast Continental Shelf (which includes the Gulf of Maine) that are shifting their ranges. Seventeen important fish populations (stocks) are moving north at the surprising speed of 1 to 8 km per year, another seventeen are moving to deeper, cooler water and eight stocks are moving both north and into deeper water.

The fact that white hake and Atlantic herring are among the species affected by warming water has huge implications for the future of puffins and other fish-eating seabirds in Maine. These two fish make up the bulk of the summer diet for puffins and terns, but white hake are moving north and into deeper, cooler
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Haddock and Redfish: New Fish in Puffin Diet

- More than 4 million views of the Audubon/Explore.org page are associated with high-definition cams focused on puffins, terns and ospreys.
- More than 9,000 visitors viewed the live cams, seabird art exhibits and lectures at Project Puffin Visitor Center in Rockland.
- 7,025 puffin watchers on the “Hardy Boat” from New Harbor and “Cap’n Fish” from Boothbay Harbor learned about puffins and other seabirds on day trips led by Project Puffin narrators.
- Seabird Adventures, our school outreach program, provided hands-on activities about seabirds and coastal conservation to 1,361 children in 19 Maine schools with many children receiving multiple visits from outreach teacher “Seabird Sue” during the 2012–2013 school year.
- Ten sessions at the Hog Island Audubon Camp were filled with 355 participants who attended the popular six-day programs for adults, teens, and families.

Egg Rock Update 2013

- 2011: Four pairs of puffins nest after a 36-year absence.
- 2014: Matinicus Rock light- house becomes Project Puffin station.
- 1984: Restoration of puffins begins on Seal Island NWR.
- 1981: First use of social attraction results in Common and Arctic terns nesting at EER after a 44-year absence.
- 1980: First international seabird restoration project begins in the Galapagos Islands to help endangered Dark-rumped Petrels.
- 1999: Arctic and Common terns recognize Seal Island NWR after a 25-year absence.
- 1991: Jenny Island field station opens near Cundy’s Harbor, Maine.
- 1992: Seven pairs of puffins nest on Seal Island after a 105-year absence.
- 2009: 100th birthday celebration for the puffins of Egg Rock.
- 1984: Stras hton Island field station opens (Proud’s Neck, Maine).
- 1988: First international seabird restoration project begins in the Galapagos Islands to help endangered Dark-rumped Petrels.
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What is changing in the puffins’ world?

During the spring and summer of 2013, fertility of the Gulf of Maine was also lower than usual, perhaps due to a very weak, undetectable spring phytoplankton bloom that lead to a dearth of food in the region. This cold water species is the primary food that fattens puffin prey such as herring and hake.

“Chance events” may help puffins adapt

Two new kinds of fish are showing up in puffin chick diets—redfish, or “ocean perch” (Sebastes spp.) and haddock, both greatly overfished in previous decades. New, effective fishery management regulations are giving them a chance to rebuild their numbers and populations in the Gulf of Maine are increasing. Fortunately, neither species appears to be shifting northward or into deeper water. This timely recovery of haddock and redfish stocks may prove to be good news for puffins.

If white hake moves out of reach of the nesting islands, perhaps a well-managed herring population can make up for the loss. New fish from warmer waters will also enter the puffins’ domain. These unknowns point to the huge role of chance events associated with climate change. For example, this summer, another wide-bodied southern fish, the Atlantic moonfish (Solenostomus clubs), showed up in Maine tern nests for the first time. However, moonfish proves of little value as the tern chicks could not swallow them.

Harbor and “Cap’n Fish” from Boothbay Harbor learned about puffins and other seabirds on day trips led by Project Puffin narrators.
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The summer weather was typically wet and foggy. Tropical Storm Andrea soaked Maine’s tern colonies on June 7th and later storms caused further havoc for tern chicks. The rain also favored the rampant growth of bindweed over puffin and tern habitat. Predators affected productivity on Jenny Island where two minks and a Black-crowned Night-Heron raided the tern colony. Peregrine Falcons visited several islands regularly, causing colony disruptions and taking adult puffins and terns.

Food was relatively abundant for terns on all islands this summer, but not for puffins or black guillemots on Matinicus Rock and Seal Island. In contrast, Egg Rock puffins found ample food. White hake and herring dominated puffin chick diet, especially in early summer. Butterfish was scarcer than in 2012, but the even more difficult-to-swallow Atlantic moonfish showed up for the first time in tern nests on all seven islands.

Eastern Egg Rock
Rosate Terns increased 17% in number since 2012, to 83 nesting pairs with 77 fledglings. Puffins increased to 111 nesting pairs.

Jenny Island
A total of 829 Common Tern pairs nested and fledged an average of 1.89 chicks per pair this summer. Seven pairs of Roseate Terns nested, producing five fledglings.

Outer Green Island
The Common Tern colony reached a record high of 1,143 pairs, which produced 1.15 chicks per pair (1,314 chicks). Ten percent of the colony (112 pairs) nested on the outdoor carpet placed down as a weed barrier.

Pond Island N.W.R.
The Common Tern colony reached a record high of 692 pairs—a 16% increase from 2012. They fledged an average of 1.25 chicks per nest (865 fledglings)—the result of a diet dominated by sand lance and herring.

Stratton Island
The Common Tern colony reached a record high of 692 pairs—a 16% increase from 2012. They fledged an average of 1.25 chicks per nest (865 fledglings)—the result of a diet dominated by sand lance and herring.

1996 Devil’s Slide Rock project for Common Murres begins in Half Moon Bay, CA.

1996 Pond Island N.W.R. field station opens near the mouth of the Kennebec River, ME.

2002 Outer Green Island tern restoration begins near Portland, Maine; Common Terns nest.

2009 Common Murres nest and first Manx Shearwater chick at Matinicus Rock.

2012 Baja Seabird Restoration Program begins in Mexico.

2013 Audubon and Explore.org launch HD cams to view osprey, puffins, and terns.

2013 Plans start for Audubon Seabird Institute.
2012–2013 CONTRIBUTORS

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