Sitting in a blind within a colony of over 5,000 common terns is a remarkable experience. I was fortunate enough to conduct my master’s research on these enthralling birds, to identify important foraging areas along New Hampshire’s coast. I must say, it was challenging to live on an island in the middle of the Gulf of Maine for a few weeks, observing not only terns, but common eiders, spotted sandpipers and black guillemots – and being covered in tern droppings. If you knew me, you would know that I’m being sarcastic, as I love adventure and don’t mind being covered in seabird poo! I spent time on an island in Alaska working with seabirds after I graduated from college, and it was the most amazing experience of my life. I was grateful to be reunited with seabirds once again for my master’s research. They are extremely rugged birds, and it amazes me that they have adapted to live in the ocean, a place that is so dynamic and unpredictable.

RESTORATION SUCCESS STORY

North America has an estimated 150,000 pairs of breeding common terns, with the majority (90,000 pairs) along the Atlantic Coast. Common terns migrate to coastal islands in the Northeast each spring to form breeding colonies, with the largest being Great Gull Island in New York, with upwards of 10,000 pairs each season. The colony on White and Seavey islands in New Hampshire, which with six other islands form the Isles of Shoals, is a local success story. Historically, terns nested by the thousands on Duck and Lunging islands. In the late 1800s, they were nearly wiped out because of demand from the millinery trade. For reasons that are hard to fathom today, it was a fashion statement for women to adorn their hats with feathers, sometimes an entire bird! Luckily, bird enthusiasts organized to safeguard numerous bird species from near extinction, and common terns and many other bird species were spared. This movement that protested the slaughter of birds was the impetus for the creation of the Audubon Society.

With the islands no longer occupied by terns, a niche opened for large gulls (herring and great black-backed gulls) to fill and create their own nesting colonies at the Isles of Shoals. In the late 1990s, New Hampshire Audubon and the New Hampshire Fish and Game Department’s Nongame and Endangered Wildlife Program embarked on a project to restore tern populations to the Isles of Shoals. Tern decoys were placed on Seavey Island, and colony sounds were broadcast from loudspeakers to attract terns. It proved successful, and by the fifth year, approximately 800 pairs of common terns nested on the island. In 2015, the largest nesting colony had almost 2,900 common tern pairs. The restoration has been facilitated by seasonal biologists who occupy the island from May through August to monitor the terns for productivity, as well as deter gulls from nesting. A low-tech method of deterring the gulls is to yell at them and wave your arms, but when that doesn’t work, pyrotechnics are shot in the air to scare them off.
While predation and competition for nest sites by gulls is an underlying factor that must be dealt with in restoring successful tern populations on the Isles of Shoals, little is known about other factors that limit tern populations locally and throughout the region. In particular, information is lacking on the critical foraging areas for the terns nesting on White and Seavey islands. It is important to monitor foraging behavior and prey composition through time, as prey availability can change rapidly, especially in the Gulf of Maine, which is undergoing changes in response to warming ocean temperatures. Recent research states that 2012 was the largest, most intense warming event in the Northwest Atlantic in 30 years. These changes can effect growth and distributions of forage fish, which could have significant impacts on the foraging success of common terns nesting in New Hampshire. It’s important to identify feeding locations of these birds, so these areas can be protected from future development and to inform wildlife managers about the characteristics of the habitats in which terns typically forage.

The common terns were captured using a treadle trap (wire trap with a mesh bottom) placed over their nest, and measurements of bill length, head length, wing dimensions and body weight were collected. We then placed a U.S. Fish and Wildlife Service metal band on them, with a unique number to identify each bird. To identify foraging locations, we attached GPS tags to their backs, using two veterinary-grade sutures. We also marked the terns’ cheeks with color to help identify individuals on the nest. The whole process took about ten minutes. Terns were tagged during the late incubation stage, when the eggs were close to hatching. The birds have invested a great deal of energy to lay and incubate the eggs up to that point, so we hoped they would be easy to catch, given their strong obligation to incubate their clutch.

In order to obtain fine-scale movements, which was the objective of the study, GPS tags were programmed to record a location every 15 minutes over a 24 to 36 hour period. The tags store the data internally, so the birds had to be recaptured using the same treadle trap in order to remove the tag and obtain the data. Upon recapture, birds were weighed again to see if the tag had a negative effect on their foraging ability. A few of the birds regurgitated fish upon recapture, so that was a positive sign that they were still foraging with the tag attached to them. During the summers of 2014 and 2015, we tagged a total of 26 common terns.
WHERE DO TERNs FORAGE?

The terns traveled much more than expected in a 24 to 36 hour period. Two of the 26 terns traveled approximately 90 miles. That’s equivalent to us walking from Concord to Littleten in 24 hours - quite impressive for a bird that only weighs about 130 grams or, to equate it to a common object, slightly less than the weight of one cup of flour! The average total distance of the 26 bird tracks was 33 miles, and each single trip (from one GPS location to the next) was 1.7 miles. These birds travel quite fast; I have tried to race them while heading back to the mainland in my boat, and it is challenging. The maximum speed of one of the birds clocked in at a whopping 30 miles per hour - fast for a bird that size!

The three important foraging areas identified for the common terns nesting at Seavey Island were the mouth of the Piscataqua River, the mouth of the Merrimack River, and an area offshore, east of Seavey Island. I’ve noticed many terns near the mouth of the Piscataqua while out fishing for striped bass. Fishermen often follow them, as they are indicative of forage fish in the water, implying stripers are on the prowl below in search of the same prey.

Sadly, I won’t be a temporary resident on the island this summer, surrounded by dive-bombing terns, never-ending blue skies and like-minded bird-loving people. My on-the-ground research is completed, but seasonal biologists will be there once again to monitor the terns and deter gulls. The tern colony is a very special place, and we have learned a considerable amount from these sassy little birds. To me, the New Hampshire coast would not be the same without these graceful summer residents. I am hopeful the tern colony will continue to have reproductive success, and that these birds will further reinforce the importance of maintaining a healthy marine environment for future generations.

Jessica Carloni is the New Hampshire Fish and Game Department’s waterfowl biologist. She is a candidate for a Master’s in Wildlife Biology at the University of New Hampshire, where she is studying the foraging movements of common terns in coastal New Hampshire.

A DAY IN THE LIFE OF A TERN

This is a map of the travels of one of the GPS-tagged terns. A point was collected every 15 minutes, and the tag was on the tern for a total of 26 hours. The consecutive numbers in the map are those logged by the GPS tag for each of five trips made by the tern. Some numbers are missing, because the bird was on Seavey Island at that time, either incubating or loafing on the rocks. Quite an impressive journey in 26 hours!
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