

The Cape Cod Chronicle

Radio Telemetry Used To Track Shorebird Migration Routes

10 March 2021

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Wildlife Biologist Pamela Loring with an American oystercatcher. COURTESY PHOTO

How do we know what routes are taken by migrating birds? We may know where they start their migration and where it ends, but exactly how do they get there?

These were some of the questions answered by Wildlife Biologist Pamela Loring of the U. S. Fish and Wildlife Service last Thursday evening when over 90 people tuned in to learn more about tracking shorebirds in the Chatham Marconi Maritime Center's Virtual Speakers Series.

Loring and her team of scientist collaborators from the Bureau of Ocean Energy Management and several academic institutions centered their

tracking research on three coastal birds familiar to Cape Codders – the piping plover, the roseate tern, and the common tern. The research is critical to ensuring that proposed offshore wind energy areas up and down the east coast do not inadvertently impact these bird populations.

In the case of piping plovers, a threatened species that nests on our coastline, scientists knew that they traveled from the Atlantic coast to the Caribbean, Loring said. Did they fly across the ocean, with no options to stop and rest, or did they take the longer route along the coast, stopping as needed?

A project using automated radio telemetry, done from 2014 to 2017, provided some surprising answers. Key to this work was the use of the international MOTUS network consisting of over 800 tracking stations, covering an area from the Arctic to the tip of South America. The birds' flight is tracked with 40-foot towers, each with six antennas covering 360 degrees capable of detecting a range of a little over 10 miles.

To track the birds, they first must be tagged. The elusive plovers were corralled using walk-in traps. Researchers then affixed lightweight transmitters about the size of a penny and weighing less than .2 grams on 150 plovers. How do they do that? Super glue was the surprising answer. More answers came after mapping the tracking results. From late July to early August, piping plovers do indeed choose the challenging option of migrating offshore and choosing the evening hours (between 6 and 9 p.m.) to take off, when they can get a tail wind blowing to the southwest to assist them traveling over water, Loring said. In response to a question, Loring added that the birds are believed to use the stars for navigation, as well as sensing electromagnetic visual cues.

When it came to the task of finding more about the route that the common and the endangered roseate terns use to migrate from the coastal U.S. to Argentina, satellite telemetry was needed, since the birds fly outside of the range of the radio telemetry towers.

"We decided to use heavier two gram solar powered satellite transmitters," Loring said. "They are not quite as good as the towers in terms of accuracy."

Ultimately, five terns received the larger satellite tags, affixed using harness material and two stitches. Monitoring commenced as they started their migration journeys from their nesting area in Petit Manan Island off the Gulf of Maine. After departing in late July, and with a stop off in Cape Cod, one female tern took six days to fly 3,000 kilometers, or over 1,800 miles, traveling at the rate of more than 17 miles per hour, arriving in late August in Venezuela. Loring noted that birds are able to "sleep with half their brain and fly with half," flying for days on end.

Two male terns who departed Cape Cod in mid-September ran into very bad weather along the way. Loring shared the animated tracking data, which showed their migration route encountering two hurricanes, one shortly after another, packing winds of up to 64 knots. The data on the screen disappeared momentarily as the terns flew through Hurricane Jose and later through Hurricane Maria, but not for long. Loring was happy to report both arrived safely in Venezuela. For some of the oldest terns, these annual migrations have happened for 30 seasons or more.

Future projects described by Loring include radio telemetry stations on off-shore buoys and at the Block Island Wind Farm. And new GPS technology to better measure altitude is being tested using gulls and common and arctic terns.

Next up in the Chatham Marconi Maritime Center Virtual Speaker Series is "Autonomy in the Maritime Industry" with Captain Lauren Lamm of Sea Machine Robotics on April 1 at 7 pm. For more information go to www.chathammarconi.org.

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