

## **Environmental Studies Program: Ongoing Studies**

**Study Area(s):** Atlantic

**Administered By:** Office of Renewable Energy Programs

**Title:** Pilot Study Tracking Offshore Occurrence of Common Terns and American Oystercatchers with VHF – extended to include Roseate Terns and Piping Plovers

**BOEM Information Need(s) to be Addressed:** This study provided the first documentation of movements of endangered Roseate Terns and threatened Piping Plovers during foraging flights from their nest colonies in eastern Massachusetts (MA), Rhode Island (RI), and Long Island NY, and dispersal flights throughout the southern New England - NY Bight region during the post-breeding period. This information is essential for understanding the potential for these species to encounter conflicts with future energy development in these areas, for NEPA assessments, and for Section 7 Consultations with the USFWS.

**Total Cost:** \$2,175,492

**Period of Performance:** FY 2013-2018

**Conducting Organization(s):** U.S. Fish and Wildlife Service (USFWS)

**BOEM Contact(s):** [Dr. David Bigger](#)

### **Description:**

**Background:** Since FY2013, BOEM and USFWS have been collaborating on a project which verified digital VHF ("nanotag") technology as an effective way of tracking movements of coastal breeding birds. A small number of tags were used to track American Oystercatchers during the first field season. Common Terns were also tagged as surrogates for Roseate Terns, since the two species are commonly found together in mixed flocks and appear to be behaviorally similar. This information will allow scientists to assess the degree to which these species use offshore federal waters during foraging flights to/from their nests, during the pre-migratory staging period, and when departing from the region on fall migration. It will also permit the gathering of information on flight behavior of these birds at night and during inclement weather conditions, data which has previously been unattainable.

**Objectives:** The objective of the study is to document movements between nesting sites and foraging areas of endangered Roseate Terns and threatened Piping Plovers, as well as their movements when departing for fall migration, and to determine to what extent they fly over federal waters where potential exists for future energy development projects.

**Methods:** Nest traps are used to capture Common terns, Roseate Terns, and Piping Plovers from nesting areas in MA, RI, and NY, including added priority Roseate Tern nesting sites in MA. All birds are tagged using nanotags. Signals from nanotags are picked up from 20-25 automated receiver towers stationed on the Cape Cod and Islands

region of MA and selected coastal and island sites within Rhode Island Sound, Block Island Sound, Long Island Sound, and adjacent waters of the Atlantic OCS.

During the 2016 field season, six additional towers will be strategically placed to expand coverage for study species, plus a total of 50 nanotags will be attached to piping plovers and 120 nanotags on common and roseate terns. The work will be coordinated with a new BOEM funded study "Tracking Movements of Threatened Migratory rufa Red Knots in the US Atlantic Outer Continental Shelf Water" which will establish 10 new telemetry towers in high priority coastal areas from New Jersey to Virginia. This expanded array will help identify the specific routes that tagged birds follow during migration, and estimate exposure of individual birds from known populations to multiple offshore wind energy areas along the Atlantic coast. Receivers are located so that signals can be received simultaneously from a minimum of two towers, allowing precise location of the birds detected when flying at or above rotor-swept altitudes (>25 m). These data will be used to construct the pattern of use of offshore waters.

**Current Status:** The interagency agreement was awarded in March 2013. Annual reports for the 2013, 2014, and 2015 are complete. The 2016 and 2017 field seasons were successful.

**Final Report Due:** December 7, 2018

**Publications Completed:** Loring, PH, PR Sievert, CR Griffin, and CS Spiegel. 2015. [Using satellite and digital VHF Telemetry to estimate length of stay, home ranges, and habitat use of American Oystercatchers in coastal Massachusetts.](#) Waterbirds 39th Annual Meeting. Bar Harbor, ME.

Loring, PH, PR Sievert, CR Griffin, and PWC Paton. 2015. [Weather and time of day influence post-breeding movements of Common Terns.](#) Waterbirds 39th Annual Meeting. Bar Harbor, ME.

Loring, PH, PR Sievert, CR Griffin, R Janaswamy, and S Johnson. 2016. [Tracking Offshore Movements of Common Terns across the Southern New England Continental Shelf using Nanotags and Automated Radio Telemetry Stations.](#) British Ornithologists' Union Proceedings – Birds in time and space: avian tracking and remote sensing.

Loring, PH., 2016. "Evaluating Digital VHF Technology to Monitor Shorebird and Seabird Use of Offshore Wind Energy Areas in the Western North Atlantic". Doctoral Dissertations May 2014 - current. Paper 761.  
[http://scholarworks.umass.edu/dissertations\\_2/761/](http://scholarworks.umass.edu/dissertations_2/761/)

Loring, PH, CR Griffin, PR Sievert, and CS Spiegel. 2017. [Comparing Satellite and Digital Radio Telemetry to Estimate Space and Habitat Use of American Oystercatchers \(\*Haematopus palliatus\*\) in Massachusetts, USA.](#) Waterbirds 40 (sp1), 19-31.

Loring, PH, RA Ronconi, LJ Welch, PD Taylor, and ML Mallory. 2017. Postbreeding dispersal and staging of Common and Arctic Terns throughout the western North Atlantic. Avian Conservation and Ecology 12(2):20. <https://doi.org/10.5751/ACE-01086-120220>

Janaswamy, R, P Loring, and J McLaren. 2018. [A State Space Technique for Wildlife Position Estimation Using Non-Simultaneous Signal Strength Measurements.](#)

**Affiliated WWW Sites:** Video: Tracking Endangered Coastal Birds in Areas of Potential Wind Energy Development (<http://www.umass.edu/newsoffice/article/video-0>)

**Revised Date:** July 31, 2018