

Environmental Studies Program: Ongoing Studies

Study Area(s): Atlantic

Administered By: Office of Renewable Energy Programs

Title: Tracking Movements of Threatened Migratory rufa Red Knots in U.S. Atlantic Outer Continental Shelf Waters (AT 16-02)

BOEM Information Need(s) to be Addressed: Information from this study will be used to inform Endanger Species Act (ESA) consultations with the U.S. Fish and Wildlife Service (USFWS) and National Environmental Policy Act (NEPA) analyses on the risk of offshore wind development projects on the Outer Continental Shelf (OCS) to the Red Knot.

Total Cost: \$500,521

Period of Performance: FY 2016-2019

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

Principal Investigator(s): Scott Johnston, scott_johnston@fws.gov

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Description:

Background: This study would provide new information on the movements and flight altitudes of the Federally-threatened Red Knot (*Calidris canutus*) within the Atlantic OCS region. This will allow assessment of the degree to which red knots use offshore Federal waters during their staging and migratory periods. Red knots will be captured at major stopover areas in the north and mid-Atlantic during fall migration, and tracked within the U.S. Atlantic portion of their southbound flights. As part of this study, existing, 2-dimensional movement modeling techniques will be expanded to include estimates of altitude.

Objectives: Use nano-tag transmitter technology and a network of receivers to describe the occurrence, extent, and altitudes of Red Knot flights over Federal waters where potential exists for offshore wind energy development.

Methods: During May and June 2016, at least 10 automated telemetry receiving stations will be installed from New Jersey to Virginia. These stations will be located to maximize reception coverage from coastal vantage points adjacent to BOEM offshore wind planning and lease areas, and within proximity to high-use areas for red knots along the U.S. mid-Atlantic coast. At least 350 red knots will be captured in Canada (200), Massachusetts (100), and coastal New Jersey (50) and fitted with nano-tags. The migration of tagged Red Knots will be tracked from the 10 stations in this study, other BOEM studies (e.g., [shorebirds](#) and [bat](#) studies), and to the maximum extent possible from other stations in the Motus Wildlife Tracking System (<http://www.motus-wts.org>).

Movement models will be developed that simultaneously: 1) account for observation error; 2) estimate movement parameters (e.g. rates, direction); and 3) estimate behavioral modes (e.g. on land, direct flight). The final analyses will relate the movements of red knots to demographic (age, sex), atmospheric (e.g. wind speed, wind direction, barometric pressure, temperature, precipitation, visibility), and temporal covariates (time of day, date) to inform collision risk models (e.g., [Risk of an Offshore Wind Project to a Migrant Shorebird](#)) and to estimate the time spent within Federal waters and within each BOEM Wind Energy Area and wind energy lease areas.

Current Status: The interagency agreement was awarded in March 2016. Field work for 2016 has been completed. Received the 2017 annual report on April 28, 2017.

Final Report Due: April 1, 2018

Publications Completed: None

Affiliated WWW Sites: None

Revised Date: June 30, 2017