NJDEP Research and Monitoring Initiative: Project Fact Sheet

Whales and wind: Using satellite telemetry to estimate the habitat use and behavior of fin and humpback whales off southern NJ to understand the potential impacts of offshore wind development.

Research Motivation

- The objective of this project is to improve knowledge of preconstruction whale ecology, movement, and environmental variables off the southern NJ coast.
- A main goal of this study is to evaluate preconstruction whale movement, model spatial and temporal dynamics in behavior, and quantify spatial and temporal habit overlap with major shipping lanes and wind energy areas.

Principal Investigators and Institutions

Lead Principal Investigator: Dr. John Wiedenmann, Assistant Professor in the Department of Ecology, Evolution, and Natural Resources at Rutgers University

Collaborators: Danielle Brown, PhD Candidate at Rutgers University under the mentorship of Dr. Wiedenmann
Dr. Alex Zerbini, Research Scientist at the University of Washington, Telemetry Research and Seattle Marine Mammal Laboratory with NOAA. Adjunct Professor at the Universidade Federal de Juiz de Fora in Brazil.

RMI Research Priorities Addresses

- (10) Study and estimate the seasonal abundance, habitat use, and distribution of humpback and fin whales and identify environmental variables that drive these patterns.

Geographic Scope

Data collection for this study will be completed in waters off the coast of Southern NJ.

Methods or Approaches Used

- Satellite tags will be deployed over the course of 2 years, with a goal of tagging 40-45 whales total. The number of humpback whales and fin whales tagged will ideally be evenly split.
- Satellite transmitters will transmit data through the Argos satellite system to provide high resolution spatial and temporal movement data. Location data for tagged individuals may also be used to evaluate detection bias from passive acoustic monitoring (PAM) networks and ocean glider data. Foraging and transiting behavior will be evaluated with environmental data from RUCOOL Slocum gliders.

Expected Outcomes or Deliverables

- Develop a habitat use model, assessing overlap and risk associated with vessel strike in shipping lanes and WEAs. A movement model will also be developed to correlate different behavioral modes (e.g foraging vs transiting) with potential environmental drivers (e.g. temperature, prey availability, etc.)
- At least two peer-reviewed papers on each model, with potential for papers on glider and tag overlap as well as general behavior in collaboration with NOAA's Northeast Fisheries Science Center.

Regional Coordination / Collaboration / Data Sharing

- This project involves collaboration with NJDEP and NOAA's Northeast Fisheries Science Center.
- Danielle will aid in public education and engagement through Gotham Whales as their Director of Research.
- The data will be made available through regional and local whale catalogs, and sighting of species will be available on the Whale Alert application. A social media page regarding this project will also be made to inform the public on sightings and general status.
- Satellite tag data will be available on the Animal Telemetry Network Data Portal a year after the study period is complete. These data and the corresponding code will also be available in the GitHub site of Dr. Wiedenmann.

Project Completion Date: August 2027
Total Project Budget: $929,437