Environmental Studies Program: Ongoing Study

Title	Wildlife and Offshore Wind (WOW): A Systems Approach to Research and Risk Assessment for Offshore Wind Development from Maine to North Carolina (NT-21-x07)
Administered by	Headquarters
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Procurement Type(s)	Inter-Agency Agreement
Conducting Organization(s)	Duke University
Total BOEM Cost	$500,000
Performance Period	FY 2022–2027
Final Report Due	September 30, 2027
Date Revised	August 4, 2023
PICOC Summary	
Problem	Environmental monitoring of Atlantic marine wildlife, from the offshore wind siting through operation phases, is vital to inform BOEM's management decisions.
Intervention	Develop a risk assessment framework for offshore wind development impacts on marine mammals, sea turtles, seabirds, and bats, utilizing the Occurrence, Exposure, Response, Consequence (OERC) framework. Pursue targeted observations using a combination of visual surveys, passive acoustic monitoring, tagging, and remote sensing.
Comparison	Project deliverables will allow for a more accurate assessment of offshore wind impacts on marine wildlife at the MA/RI and New York Bight lease sites, compared to what is currently possible.
Outcome	The risk assessment framework and targeted data collection that are anticipated from this project will greatly aid BOEM's management decisions regarding offshore wind development in the Atlantic, and possibly in other regions.
Context	Atlantic region; offshore wind; renewable energy; marine mammals; cetaceans; sea turtles; seabirds; bats; visual surveys; passive acoustic monitoring; remote sensing.

BOEM Information Need(s): BOEM needs to assess the impacts of Atlantic offshore wind development on marine wildlife, from the siting through operation phases, in order to guide management decisions by the Office of Renewable Energy Programs (OREP) and headquarters.

Background: BOEM is partnering with the Department of Energy's (DOE) Office of Energy Efficiency and Renewable Energy (EERE), via Inter-Agency Agreement M21PG00011, to fund three environmental monitoring research projects that will support offshore wind development. This award to Duke University is for Topic Area 1 under DOE's Funding Opportunity Announcement and addresses marine mammal and bird monitoring in the Atlantic region. The project will likely start in early 2022 and will

take five years to complete.

Project Summary: The project is a trans-disciplinary, highly integrated collaboration of diverse experts for the comprehensive evaluation of potential effects of offshore wind energy development on marine wildlife. The goal is to provide a long-term, adaptive roadmap for efficient and effective assessment of potential effects, from siting through operation. The project team will create and refine a suite of frameworks for risk assessment; and use these to identify data gaps, prioritize research, and design integrated research programs, capitalizing on lessons from the European development of offshore wind and learning from previous, ongoing and upcoming activities off the U.S. east coast. The frameworks will allow for integration of new technologies and innovation into assessments of effects and for active evaluation at multiple temporal and spatial scales, including cumulative impacts. Intended outcomes are to increase efficiency of risk and impact assessments, enhance communication and collaboration across broad stakeholder groups, facilitate innovation, and directly inform the responsible and timely development of offshore wind energy.

The two WOW project objectives are: (1) Gap analysis and risk assessment and research framework development; and (2) Targeted data collection and technology validation. The project team has identified two case studies that are expected to see construction of offshore wind farms in the next five years. Study methods currently include a combination of surveys (visual, acoustic), tagging, and remote sensing, as well as the development and application of new technologies to further improve monitoring of wildlife and marine ecosystems; methods will be refined, if necessary, during the first project year based on the development of the research frameworks. Project deliverables include creation of tools to evaluate baselines, recommendation of consistent methodologies, harmonization of data and metrics necessary for monitoring, robust design agenda for targeted research, species distribution models and behavioral assessments for marine mammals, sea turtles, birds, and bats, and the development and maintenance of an open-source blueprint for risk assessment frameworks that can be applied to future decision making.

The WOW team represents a multi-institution consortium that will bring together internationally recognized principal investigators (PIs) in the areas of statistical and ecological modeling (University of St. Andrews), geospatial data analysis and modeling (Duke University), marine megafauna research (Duke, Syracuse, TetraTech, Florida State, Wildlife Conservation Society [WCS], New England Aquarium), avian and bat ecology (Biodiversity Research Institute, TetraTech, SUNY Stonybrook), bioacoustics (Cornell University, Duke, Southall Environmental Associates, Syracuse University, Woods Hole Oceanographic Institution [WHOI], Pacific Northwest National Lab [PNNL]), behavioral ecology (Duke, SUNY, Syracuse, WCS), biological oceanography (Rutgers), and technology development (PNNL, WHOI, Scientific Innovations). The project team will also focus on a stakeholder engagement process organized with relevant regional entities such as the Northeast Regional Ocean Council (NROC), Mid-Atlantic Regional Council on the Ocean (MARCO),Environmental-Technical Working Group (E-TWG), NYSERDA State of the Science Workgroups, and the RWSE. Critically, the consortium has extensive experience in research, monitoring and risk assessment associated with offshore energy development, including deep relationships with wind energy developers and extensive experience collaborating with stakeholders, as well as state and federal agencies. This work will facilitate environmental impact assessment in the region and, potentially, renewable energy development in US waters more broadly.

Current Status: Project initiated in 2022. Field work conducted during the summer of 2023 to include tagging whales during pile driving at Vineyard Wind site and monitoring of tagged avian species.

Publications Completed: None

Affiliated WWW Sites:

WOW project web site: https://offshorewind.env.duke.edu/

DOE Press Release: https://www.energy.gov/articles/doe-announces-135-million-sustainable-development-offshore-wind