

Environmental Studies Program: Ongoing Study

Field	Study Information
Title	Surveying Commercial Fish Species and Habitat in Wind Farm Areas Using a Suite of Non-Lethal Survey Methods (NT-21-x07b)
Administered by	Office of Environmental Programs
BOEM Contact(s)	Brian Hooker (brian.hooker@boem.gov), Michael Rasser (michael.rasser@boem.gov), Thomas Kilpatrick (thomas.kilpatrick@boem.gov)
Procurement Type(s)	Interagency Agreement
Conducting Organization(s)	Coonamessett Farm Foundation (through an IA with the Department of Energy)
Total BOEM Cost	\$500,000
Performance Period	FY 2022–2027
Final Report Due	December 2027
Date Revised	January 31, 2024
Problem	Environmental monitoring of Atlantic fisheries, from the offshore wind siting through operation phases, is vital to inform BOEM's management decisions.
Intervention	Develop innovative video trawling and towed off-bottom optical surveying methods for fisheries monitoring during pre- and post-construction phases at offshore wind sites.
Comparison	Work with the Northeast Fisheries Science Center (NEFSC), who conducts seasonal bottom trawl surveys in the region, to compare fisheries impacts in the offshore wind siting region to broader regional variability.
Outcome	The innovative optical observing technologies that are anticipated from this project will provide high-value fisheries data to inform BOEM management decisions.
Context	Atlantic region; offshore wind; renewable energy; fisheries; benthic habitats.

BOEM Information Need(s): BOEM needs to assess the impacts of Atlantic offshore wind development on commercial fish species and benthic habitats, in order to guide management decisions by the Office of Environmental 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 four environmental monitoring research projects that will support offshore wind development. This award to Coonamessett Farm Foundation (CFF) and partners is for Topic Area 2 under DOE's Funding Opportunity Announcement and addresses offshore wind impacts to Atlantic fisheries. The project began in 2022 and will take 5 years to complete.

Through use of multiple non-lethal optical survey methods, this project will provide a holistic view of the habitats and communities that may be impacted by offshore wind development. By combining a mix of

well-established tools like the HabCam vehicle and new technologies like ropeless camera systems, the project team will minimize risk to the project's overall success while advancing efforts to create new and innovative survey methods that can be used in wind energy lease areas after construction, meeting a need for fishery-independent assessment methods that can be used year-round and safely in the presence of protected species. It will provide data on changes in commercial fish and marine invertebrate abundance and distribution, and the relationship of both to habitat changes, the presence of new structures (turbine bases), and changing underwater noise levels.

This research will also address the challenges of offshore wind development competition with other ocean needs like fishery-independent surveys used for management. The project team has partnered with two highly experienced groups to successfully complete the project. Scientists from the Stokesbury laboratory at the University of Massachusetts Dartmouth School of Marine Science and Technology will conduct video trawl surveys using a system in development since 2013; their video trawl has been used to survey groundfish stocks in wind energy areas and on important scallop grounds. Automated detectors for imagery from optical surveys will be developed in collaboration with Kitware, Inc., the developers of Video and Image Analytics for Marine Environments (VIAME), an open-source system for analysis of underwater imagery created with initial support from the NOAA Automated Image Analysis Strategic Initiative. End-of-project goals include a completed methodological framework for monitoring commercial fish species in wind farms using optical surveys, including preferred survey designs, freely available automated detectors and image sets for training new machine learning algorithms, and design schematics/technical drawings for any new gear designs.

Objective(s): Evaluate the impacts of offshore wind development on commercial fish species and benthic habitats and communities.

Methods: The study will use a suite of state-of-the-art, non-lethal survey tools including an open code-end video trawl, a towed off-bottom optical survey vehicle, and anchored and ropeless stationary camera systems.

Specific Research Question(s): N/A

Current Status: This project has been engaged in extensive planning and permitting in FY 2023. The project hopes to begin in-water work in FY 2024.

Publications Completed: None

Affiliated WWW Sites:

CFF site: <https://www.coonamessettfarmfoundation.org/marine-surveys-and-offshore-wind/doe-project>

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

References: None