

Environmental Studies Program: Ongoing Study

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| Title | Surveying Commercial Fish Species and Habitat in Wind Farm Areas Using a Suite of Non-Lethal Survey Methods (NT-21-x07) |
| Administered by | Headquarters |
| BOEM Contact(s) | Brian Hooker (brian.hooker@boem.gov), Michael Rasser (michael.rasser@boem.gov), Thomas Kilpatrick (thomas.kilpatrick@boem.gov) |
| Procurement Type(s) | Inter-Agency Agreement (Department of Energy) |
| Conducting Organization(s) | Coonamessett Farm Foundation |
| Total BOEM Cost | \$500,000 (Total Federal Contribution: \$3.3 million) |
| Performance Period | FY 2022–2027 |
| Final Report Due | TBD |
| Date Revised | August 4, 2023 |
| PICOC Summary | |
| <i><u>Problem</u></i> | Environmental monitoring of Atlantic fisheries, from the offshore wind siting through operation phases, is vital to inform BOEM’s management decisions. Unfortunately, traditional sampling methods result in unnecessary mortality of target species. |
| <i><u>Intervention</u></i> | Develop innovative video trawling and towed off-bottom optical surveying methods for fisheries monitoring during pre- and post-construction phases at offshore wind sites. |
| <i><u>Comparison</u></i> | Compare new non-lethal sampling techniques with traditional (trawl) sampling methodologies. |
| <i><u>Outcome</u></i> | The innovative optical observing technologies that are anticipated from this project will provide high-value fisheries data to inform BOEM management decisions. |
| <i><u>Context</u></i> | 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 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 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 will start in the fall of 2022 and will take 5 years to complete.

Project Summary: This research project is designed to evaluate the impacts of offshore wind development on commercial fish species and benthic habitats and communities using a suite of state-of-the-art, non-lethal survey tools including an open cod-end video trawl, a towed off-bottom optical

survey vehicle, and anchored and ropeless stationary camera systems. 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.

Current Status: Project was begun in the fall of 2022. Surveys were conducted in spring 2023.

Publications Completed: None

Affiliated WWW Sites:

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

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

Tethys site: <https://tethys.pnnl.gov/stories/developing-non-lethal-survey-methods-marine-species-habitat-wind-farm-lease-areas>