

Environmental Studies Program: Ongoing Study

Title	Comprehensive Seafloor Substrate Mapping and Model Validation in the Atlantic (NSL #AT 15-06)
Administered by	Office of Renewable Energy Programs
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Conducting Organizations(s)	National Oceanic and Atmospheric Administration, National Ocean Service, National Centers for Coastal Ocean Science
Total BOEM Cost	\$1,450,000
Performance Period	FY 2016-2019
Final Report Due	June 2019
Date Revised	May 22, 2019
PICOC Summary	Write one or two sentences for each of the following elements, as appropriate. If not appropriate, write N/A.
<i><u>Problem</u></i>	The composition of the seafloor and seafloor habitat will be characterized to establish a baseline for offshore wind energy development in the vicinity of the New York Bight.
<i><u>Intervention</u></i>	Remote sensing and field sampling will be utilized to describe the seafloor habitat and other important biological and geological observations.
<i><u>Comparison</u></i>	Results of the seafloor data collection will be incorporated into predictive models characterizing the composition of the seafloor.
<i><u>Outcome</u></i>	A more thorough understanding of the composition of the seafloor and associated habitats.
<i><u>Context</u></i>	Atlantic offshore wind energy development offshore New York/New Jersey.

BOEM Information Need(s): The Atlantic region is in need of high quality information on the composition of seafloor substrate and sediments for BOEM to accurately assess the effects of renewable energy development. This is particularly important for offshore wind development with respect to turbines that are anchored into the seafloor and the potentially high levels of benthic disturbance that will occur during construction and operation. Direct on-the-ground documentation of the makeup of the seafloor could prevent the inadvertent destruction of marine habitats and shipwrecks. The results will also enhance NEPA documentation which requires an evaluation of the effects of proposed actions with consideration of numerous categories including: ecological, cultural, historic, aesthetic, economic, social, and health. One of the primary impacts of offshore wind development will be ecological effects on the substrate. The results of this study will allow for more successful and appropriate planning for the development of renewable energy on the Atlantic OCS and inform project siting.

Background: There have been several recent efforts to better describe the ocean floor. For example, as part of the New York Department of State's renewable energy planning efforts and its Offshore Atlantic Ocean Study, released in July 2013, NOAA's National Centers for Coastal Ocean Science (NCCOS) developed a biogeographic assessment with maps and spatial information on bathymetry, surficial sediments, deep sea corals, oceanographic habitat variables, and seabirds offshore New York. BOEM has also partnered with NOAA's Northeast Fisheries Science Center to conduct a benthic habitat assessment in several offshore wind energy areas. Additionally, The Nature Conservancy has also partnered with the University of Massachusetts at Dartmouth to further analyze their seafloor imagery database. Each of these efforts uses relatively sparsely distributed data and statistical interpolation to create maps of habitats. Given the high cost of vessel time to conduct full multi-beam echosounder surveys, there will continue to be only broadscale sampling within potential lease areas and the need for predictive models.

Objectives: The study will validate the existing substrate and sediment models, and provide finer-resolution substrate and habitat data in areas selected for ground-truthing.

Methods: The predictive models of seafloor substrate and sediment composition that have recently been developed for New York, and are under development for the other Mid-Atlantic states, need ground-truthing and model validation to assess the model predictions and ensure reliability. Obtaining this baseline information is a necessary precursor for evaluation of the potential impacts of offshore wind development upon the substrate and to inform siting decisions. This project will collect data of the seafloor by the use of acoustic sonar survey, incorporate those results into predictive models characterizing the composition of the seafloor, and describe the seafloor habitat and other important biological and geological observations.

Specific Research Question(s): What are the specific research questions this study proposes to address? If there is more than one question, use a numbered list.

Current Status: The project is on schedule and all required milestones have been met. Ground-truthing to include grab samples and camera tows were conducted in April 2018. The final field mission of the project was completed September 2018. The mission aboard NOAA ship *Nancy Foster* focused on the collection of ground-truthing, accuracy assessment and fish acoustics. A draft final report has been completed and the final report is currently in-progress and anticipated to be delivered according to schedule.

Publications Completed: None.

Affiliated WWW Sites: <https://coastalscience.noaa.gov/news/?p=18448>

References:

Menza, C., B.P. Kinlan, D.S. Dorfman, M. Poti and C. Caldwell (eds.). 2012. *A Biogeographic Assessment of Seabirds, Deep Sea Corals and Ocean Habitats of the New York Bight: Science to Support Offshore Spatial Planning*. NOAA Technical Memorandum NOS NCCOS 141. Silver Spring, MD. 224 pp.