

## **RENEWABLE ENERGY PROGRAM: Ongoing Studies**

**Region:** Atlantic

**Planning Area(s):** Mid-Atlantic

**Title:** Studies Toward Fulfillment of the OCS Lands Act Offshore North Carolina: Stakeholder use and Essential Fish Habitat in Wind Energy Call Areas

**BOEM Cost:** \$619,644

**Period of Performance:** FY 2013-2016

**Conducting Organization(s):** The University of North Carolina – Chapel Hill and National Oceanic and Atmospheric Administration

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### **Description:**

#### Background:

BOEM has identified three potential Wind Energy Areas (WEAs) for offshore wind power development along the North Carolina coast: Wilmington-West, Wilmington- East and Kitty Hawk. Two additional areas were initially considered but are now deferred (see the summary of activities for North Carolina on the BOEM [website](#)). Among the many issues to address, fishing is of significant importance to the State of North Carolina. This effort will begin to address the concerns of fishermen through expanded stakeholder meetings and surveys of the seafloor habitat in the WEAs.

The University of North Carolina-Institute of Marine Sciences (UNC-IMS) team working on environmental issues and on conflicts with existing and developing human uses completed a very productive stakeholders' meeting in winter 2012 to resolve conflicts and accept community advice for a portion of the initially proposed WEAs. However, the areas of most immediate relevance were not included and therefore lack the advice, special knowledge, and informed inputs that can emerge from stakeholders' meetings. The previous stakeholders' meeting involved experienced and respected commercial fishermen, head boat captains, recreational fishermen, dive industry leaders, and ecotourism operators. The winter 2012 stakeholders' meeting was organized to resolve apparent conflicts between hard-bottom habitat with its fishermen and diver users and suitable environments for wind power development. Arising from the stakeholders' meeting held in Carteret County was a willingness to loan the UNC-IMS proprietary information on the exact spots of all hard-bottom habitat known by at least one stakeholder, with the understanding that the valuable information on specific locations of every bottom feature serving as a productive reef habitat for demersal fishes would not be made public. In this way, an integrative understanding of generations of experience from

multiple user groups, the ideal of community-based knowledge. The success of the meeting warrants a repeat of similar discussions for the WEAs now under consideration.

Natural hard bottom and shipwrecks are classified as Essential Fish Habitat (EFH) by NOAA National Marine Fisheries Service (NMFS) and these reef habitats are required for support of many valuable but depleted reef fishes. In 1985, the SEAMAP-SA undertook a large-scale effort to identify and map hard-bottom distributions in North Carolina; the techniques used at the time likely underestimated the amount of hard-bottom habitat (SEAMAP-SA 2001). The SEAMAP database provides both single point and line transect information on known hard-bottom and possible hard-bottom areas. However, these data do not provide important spatial information such as the overall extent, geometry, or quality in support of reef fishes, nor does SEAMAP provide larger scale surficial geology context on what surrounds the hard-bottom areas (e.g. rubble, pavement, sand, mud, etc), all of which can now be sampled and analyzed using modern seafloor mapping techniques. Shipwrecks and man-made artificial reefs also provide habitat for a variety of marine species. In addition, many of the shipwrecks in North Carolina hold important maritime and cultural heritage significance. The North Carolina Department of Cultural Resources has documented nearly 1000 underwater archeological sites. However, many more undocumented and uncharted marine archeological sites are likely to exist, which ultimately pose limitations for siting offshore energy facilities. High-resolution imagery and precise positioning on any shipwreck within the Wilmington-East area will add to the existing database.

The combination of information gathered from stakeholders who use the area with field surveys will provide needed information to further determine the best locations for wind energy development and eventually for the siting of individual wind turbines.

#### Objectives:

1. To obtain and convey in a report and GIS layers/maps, spatially explicit information indicating where wind-energy development can avoid known stakeholder conflicts in each of the three Call Areas in offshore North Carolina
2. To determine the location and three-dimensional structure of shipwrecks and other hardbottom habitat in Call Area Wilmington-East
3. To map fish biomass using splitbeam fishery acoustics and relate results to benthic invertebrate habitat value
4. To elucidate how variations in hard-bottom vertical relief and structural complexity affect habitat value defined by species-specific fish uses
5. To determine how wave-driven sediment dynamics surrounding seabed structures influences their degree of burial and affects their habitat value

**Importance to BOEM:** The information obtained in this study will directly relate to BOEM's mission by supporting environmentally responsible renewable energy

development through informed decision-making on planning, leasing and development. The detailed information of areas of importance for fish and fisheries will inform siting decisions for wind facilities prior to leasing as well as the actual locations for turbines after leasing.

**Current Status:** The cooperative agreement was executed on April 18, 2013 and a kickoff meeting was held on May 2, 2013. The southern regional stakeholder meeting was held with the fishing community in Shallotte, NC on May 14, 2013. The Northern regional stakeholder meeting was held with the fishing community in Manteo, NC on May 28, 2013. The Final fishing, diving, and ecotourism stakeholder report was delivered on 11/12/13 and published on the BOEM website. Hard bottom habitat identification cruises occurred on 06/19 – 06/30/13, 08/30 – 09/08/13, and 11/05 – 11/09/13. All side-scan sonar and multi-beam echosounder surveys of the Wilmington East Call Area have been completed. Data obtained during the hard bottom habitat identification cruises has been processed. In addition the initial mapping of fish biomass has been completed. The initial results of the processed data were presented to BOEM at a meeting and in a subsequent quarterly progress report (delivered March 1, 2014). A biological/dive assessment cruise was held from May 5 – 15, 2014. A VIP educational outreach event was held on May 16, 2014 in Morehead City, NC. The seafloor mapping data was delivered on November 10, 2014. On March 9, 2015 BOEM modified the cooperative agreement to include monitoring of baseline conditions and any impacts of the R/V Langseth seismic surveys. On May 1, 2015 the contractor submitted the draft final report of the “Benthic Habitat Mapping and Assessment in the Wilmington-East Study Area”. On August 31, 2015 the contractor submitted the draft report on the R/V Langseth seismic surveys “In situ observations from a marine seismic survey in Onslow Bay, North Carolina”. On December 4, 2015 the contractor submitted the final report for “Benthic Habitat Mapping and Assessment in the Wilmington-East Study Area”.

**Final Report (Modification 1) Due:** April 29, 2016

**Publications:** None

**Affiliated Web Sites:** None

**Revised Date:** December 4, 2016

**ESPIS: Environmental Studies Program Information System**

**All *completed* ESP studies can be found here:**

[http://www.data.boem.gov/homepg/data\\_center/other/espis/espisfront.asp](http://www.data.boem.gov/homepg/data_center/other/espis/espisfront.asp)