Environmental Studies Program: Ongoing Studies

Study Area: Mid-Atlantic

Administered By: Office of Renewable Energy Programs

Title: Atlantic Fish Telemetry: Movement and Habitat Selection
                        by Migratory Fishes within the Maryland Wind Energy
                        Area and Adjacent Sites

BOEM Information Need(s) to be Addressed: BOEM has made good investments in determining the presence of important commercial and protected fish in Atlantic wind energy areas and sand borrow areas on the Atlantic Outer Continental Shelf (OCS). The next step is to better understand more about how fish use the area so that impacts from such impacts as bottom disturbance and noise can be better understood. The information collected for this study will greatly aid BOEM's Office of Renewable Energy Programs and Marine Minerals Program to meet obligations under the National Environmental Policy Act, the Endangered Species Act, and the Magnuson-Stevens Fishery Conservation and Management Act.

Total Cost: $457,000   **Period of Performance:** FY 2016-2018

Conducting Organization: David Secor, Chesapeake Biological Laboratory-University of Maryland Center for Environmental Science.

BOEM Contact: Brian Hooker

Description:
Background: Increasingly, active acoustic telemetry is being used to track the movements of fish species. The use of telemetry involves the attachment of active acoustic tags on fish and the placement of passive acoustic receivers on the seafloor. Over the years a network of largely near-shore receivers has been established by various academic and government agencies on the Atlantic coast.

Through this study BOEM will be taking advantage of new methodologies of securing receivers in deeper waters of the OCS to expand and leverage data from the existing acoustic receiver network (see: Atlantic Cooperative Telemetry Network and the Mid-Atlantic Animal Tracking Observing System) by researchers participating in those networks. In addition, BOEM would fund the additional capture and tagging of fish to increase the pool and diversity of tagged fish. The information will be useful to the Office of Renewable Energy Programs and the Marine Mineral Program.

This study will focus on the Maryland Wind Energy Area.

Objectives: The objective of the this project is to measure seasonal transit times and habitat occurrences of striped bass, Atlantic sturgeon, and black sea bass in relation to depth, temperature, and other oceanographic and benthic variables in and around the Maryland Wind Energy Area (MD WEA).

<u>Methods</u>: The approach would be to leverage large numbers telemetered fish and increase the number of tags in important commercial fish taxa. This study will tag up to 40 striped bass and black sea bass in the MD WEA.

From 2016 to summer 2018, the project will deploy and maintain (triannual cruises) twenty VEMCO Acoustic Release receivers in a quasi-central composite design, providing intensive coverage of the MD WEA and sufficient statistical coverage of the area of potential effect. During spring 2017, implant 40 large Potomac River striped bass (total length > 80 cm) and other commercially important species with depth transponder acoustic transmitters.

Fish detection data will be analyzed to determine:
- Seasonal incidence and transit rates of fish within the MD WEA;
- Depth of occurrence;
- Fish habitat use of MD WEA versus adjacent inshore and offshore areas (distance from shore); and
- Habitat and fish size correlates for spatial and temporal variables (for example: season, depth, and distance from shore) and transit times.

A predictive habitat model will be developed for both inshore and offshore habitats centered on the MD WEA. Detection data will be shared through the Atlantic Coast Telemetry Network and the Mid-Atlantic Telemetry Observing System (MATOS).

Current Status: Cooperative agreement was awarded on July 7, 2016. Acoustic receivers were deployed in fall 2016. The array has logged 41,650 detections of 642 acoustically-tagged fish between 11/9/2016 and 12/20/2017, the bulk of which were target species of the current study: striped bass (254 individuals) and Atlantic sturgeon (218 individuals). Other species included Atlantic cod, Atlantic bluefin tuna, black sea bass, and miscellaneous elasmobranchs (blacktip, bull, dusky, sand tiger, tiger, and great white sharks; cownose ray) belonging to 32 different investigators. Twelve of the detected species (Atlantic bluefin tuna; Atlantic cod; Atlantic sturgeon; black sea bass; striped bass; cownose ray; and blacktip, bull, dusky, great white, sand tiger, and tiger sharks) were detected within the Wind Energy Area.

Final Report Due: August 2018

Affiliated Web Sites: None.

Revised Date: January 25, 2018