

## Environmental Studies Program: Ongoing Study

Title	Occurrence of Commercially Important and Endangered Fishes in Delaware Wind Energy Area using Acoustic Telemetry (NSL #AT 16-01c)
Administered by	Office of Renewable Energy Programs
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Principal Investigators(s)	Matthew Oliver (moliver@udel.edu)
Conducting Organizations(s)	University of Delaware/Delaware State University
Total BOEM Cost	\$437,130
Performance Period	FY 2017–2020
Final Report Due	March 2020
Date Revised	May 17, 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 distribution and movement patterns of Atlantic sturgeon and other fish are not fully understood in the offshore environment. Baseline information is needed ahead of potential disturbance from offshore wind facility development.
<i><u>Intervention</u></i>	The solution to the problem is monitor fish movement continuously through the year using acoustic telemetry.
<i><u>Comparison</u></i>	This baseline information will be compared with movements during and/or after offshore wind construction.
<i><u>Outcome</u></i>	Baseline understanding of fish movement, abundance, and habitat offshore Delaware.
<i><u>Context</u></i>	Atlantic offshore wind energy development.

**BOEM Information Need(s):** 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.

**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.

**Objectives:** The main objective of this study is to provide information on the seasonal patterns of occurrence and habitat use of the Delaware wind energy area (DE WEA) by Atlantic sturgeon and winter skate as well as explore the underlying causal mechanisms for their habitat selection in the DE WEA.

**Methods:** 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 50 Atlantic sturgeon and 50 winter skate in the DE WEA. This project will deploy an acoustic receiver array for two years in the DE WEA. A total of 25 passive acoustic receivers will be anchored in gate formations that transect the DE WEA. These gates will border the northern, southern and eastern edges of the DE WEA. Data from the fixed passive acoustic arrays will be supplemented with mobile surveys conducted by autonomous underwater vehicles (AUVs) funded through the Mid-Atlantic Regional Association Coastal Ocean Observing System (MARACOOS). These AUVs allow *in situ* measurements of water properties, such as temperature, salinity, oxygen and optics so that surveys can be designed to follow water masses as well as detect acoustically tagged animals. The results of these efforts will be analyzed to determine seasonal usage of Atlantic sturgeon, winter skate and other acoustically telemetered species as provided by the Atlantic Cooperative Telemetry (ACT) Network in the DE WEA. Lastly, an environmentally driven habitat models for Atlantic sturgeon and winter skate in the DE WEA will be developed. Other data outputs include the determination of transit times of acoustically telemetered species in the DE WEA and the comparison of the recovery efficiency of standard retrieval versus acoustic release receivers.

**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:** Cooperative agreement was awarded on August 8, 2016, the acoustic receivers were deployed in the Spring of 2017. A total of 50 tag were implanted on winter skate and Atlantic sturgeon in the Spring of 2017. The array has detected over 700 individual fish (mostly striped bass and Atlantic sturgeon) over 125,000 times between February 2017 and August 2018.

**Publications Completed:** N/A.

**Affiliated WWW Sites:** <https://www.boem.gov/Renewable-Energy-Ongoing-Studies/>.

**References:** N/A