Environmental Studies Program: Ongoing Study

Title	Animal Tracking around Atlantic Outer Continental Shelf (OCS) Sand Resources (MM-20-x04)
Administered by	Headquarters (HQ) / Marine Minerals Program (MMP)
BOEM Contact(s)	Deena Hansen (Deena.Hansen@boem.gov)
Procurement Type(s)	Interagency Agreement
Conducting Organization(s)	U.S. Navy
Total BOEM Cost	$150,200
Performance Period	FY 2020–2022
Final Report Due	December 2021
Date Revised	July 21, 2021
PICOC Summary	
Problem	BOEM needs more information on how differences in fish behavior on sand shoals may interact with dredging activities.
Intervention	Monitoring fish movement under different conditions provides information on how dredge activities may impact them.
Comparison	Fish occurrence can be compared among species, seasonally, between years, and before and after dredge events.
Outcome	Improved environmental impact assessments for understanding the impacts to fishes on Atlantic OCS sand resources.
Context	Atlantic OCS

BOEM Information Need(s): This study proposes to leverage existing collaborative efforts between BOEM and the U.S. Navy (Navy), with support from Kennedy Space Center Ecological Program, to maintain acoustic receiver and glider activities that investigate the long-term recovery of fish communities following dredging of an OCS sand resource off east-central Florida. The long-term recovery of fishes is under-studied, and necessary for better management of fish habitat. Results of this effort apply to the Marine Minerals Program (MMP) as well as the Office of Renewable Energy Programs. These results will improve effects analyses in National Environmental Policy Act (NEPA) documents and Essential Fish Habitat (EFH) consultations.

Background: Longer term environmental monitoring at multi-use sand shoals include an improved understanding of: the localized movements of federally managed or “keystone” fish species, the degree to which sand shoals serve in the life history of important coastal fishes, and the site fidelity and behavior of fish species following dredging events.

BOM has already made a significant investment in monitoring at the Canaveral Shoals complex. Previous funding has supported six years of data collection, existing project infrastructure (i.e., acoustic arrays, existing tagged fish, developed eco-path models, etc.), and established partnerships (Navy, NASA, BOEM). The receivers at the borrow and control sites have detected many species of fish tagged through

these previous efforts (sharks, croaker, red drum). Many fish thought to be resident species make use of a wider home range than previously documented. Additional funding would support continued monitoring of tagged fish (1-10 years of remaining battery life) via acoustic array and wave glider; this will help provide answers into the natural movement, habitat associations, residency, and recovery for tagged fishes. Additionally, the telemetry data will also show how migrating fishes occur around the sand resources.

Objectives:

- Extend the life of the Florida Atlantic Coast Telemetry (FACT) Network acoustic telemetry array at Cape Canaveral annually
- Monitor the natural habitat associations, behavior, and relative abundance of large marine animals associated within the Canaveral Shoals area with a focus on protected species (e.g., sea turtles, giant manta, Atlantic sturgeon) and federally managed fishes.
- Document the presence and behavior of animals in the immediate vicinity of the Canaveral Shoal sand mining site that is used by multiple local municipalities for shoreline protection projects.
- Continue to provide local animal detection data to other regional researchers in the FACT Network whose tagged animals were released elsewhere but passed through the Canaveral region during their coastal migrations.
- Deploy the wave glider to augment the receiver array.

Methods: The proposed study sites include existing borrow area and control sites located off Cape Canaveral, Florida. These sites are the location of a portion of the existing FACT array. The existing fixed acoustic array relies on the passage of fishes within a receiver's range of detection (typically 300-1000 meters); further, a wave glider outfitted with a receiver increases the number and extent of detections. The wave glider also collects environmental information such as water temperature, salinity, and turbidity. Ongoing collaboration between the Navy and Kennedy Space Center Ecological Program allows for data sharing, use of the existing 300+ FACT array receivers, and additional information on large-bodied predatory fish (NASA-funded work). Observations will be analyzed via basic statistical procedures and may be incorporated into more complex statistical analyses and comparisons of spatial and temporal patterns of movement as well as community structure.

Specific Research Question(s): How do fish occur around Atlantic sand resources? How does this differ spatially and temporally?

Current Status: The receiver array is currently maintained, with data downloaded twice a year.

Publications Completed: Draft Report.

Affiliated WWW Sites: None

References: None