Title	NY Bight Fish, Fisheries, and Sand Features: Improving Knowledge of Demersal and Benthic Organisms' Habitat Use, Impacts of Dredging, and Time Series of Recovery of Regional Offshore Sand Sources
Administered by	Marine Minerals Program
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PICOC Summary	
Problem	The benthic environment in the NY Bight, both physical and biological features, will be potentially affected by future dredging activities (expected in the near future); this in turn will affect fishermen if landings are impacted.
Intervention	If we better understand the environmental setting, we can improve our NEPA analyses of impacts, as well as consultations that recommend mitigations. Collecting data before dredge events also provides a baseline with which to compare post-dredging data.
Comparison	This study leverages previous efforts by reviewing and compiling data sources, and identifying gaps in knowledge.
Outcome	We expect to identify existing data and needs of the NY Bight ecosystem, including sand features, benthic infauna, fish composition, and fisheries dependence across seasons and years, to inform future field efforts.
Context	The study area would include potential sand resource areas under BOEM's jurisdiction (i.e., >3 nm from shore) but no more than 50 m deep off of NY and NJ in the NY Bight.

BOEM Information Need(s): Better understanding of demersal and benthic organisms' use of habitats and sand features in the Mid-Atlantic is important for BOEM's Marine Minerals Program (MMP) to inform and evaluate the use of potential sand borrow areas in federal waters. BOEM anticipates that multiple sites may be accessed in federal waters of the New York Bight (NYB; waters off of New Jersey and New York), in part to address the Army Corps of Engineer's projected sand deficiency for completing vital federally-authorized shore protection projects in the next 5 years. BOEM's current Cooperative Agreements with New York and New Jersey have gathered data on sand resources and resulted in delineations of potential borrow areas offshore in the NYB. Since dredging on the NYB OCS has been infrequent relative to other regions, research on biological activity, biophysical coupling, and geomorphology will complement the geophysical and geotechnical data, and strengthen NEPA analyses that consider the potential effects of dredging.

Background: Limited information exists on the ecological function and biological significance of sand waves, ridges, swales, shoals, and other OCS features in the New Jersey and New York Bight (NYB), especially as it relates to dredge-related disruptions.

Dredging activities under BOEM's jurisdiction generally occurs from 3 to 9 nautical miles (nm) from shore. The NYB is inhabited by a diverse community of fishes and invertebrates, with both resident and transient species. Many of these species are economically important to commercial, recreational, and charter fishing industries. Additionally, strong seasonal fluctuations in abiotic factors are often linked to changes in biological diversity. Therefore the potential effects and recovery of sand dredging on ecosystem health and the abundance of fish and invertebrate communities may vary spatially and temporally. This research also aligns with state and regional research priorities that aim to identify and assess offshore sand resources, and improve sediment resource management strategies.

Objectives: Goals include identifying and obtaining baseline data on the seafloor morphology, seabed and substrate sedimentary texture, and the diversity and abundance of demersal and benthic organisms which rely on sand habitats, specifically around potential sand resources off the NYB, from 3-9 nm offshore. The study should review all studies and data collection efforts focused on biological activity and succession in these areas. The results of this effort should then be leveraged for any future studies to highlight issues and inform methodology.

Specific objectives include reviewing studies focused on invertebrates, especially ecologically and economically significant shellfish, both demersal and pelagic fish species, and the presence of basal autotrophs. Of interest is data on species abundance, size composition, and distribution across the spatial continuum from the air-sea interface to the sea-sediment interface, in order to understand mesoscale and microscale habitat use, species assemblages, biodiversity, and habitat associations. Data collected through time should be identified, so that seasonal changes might be observed. Finally, gaps in knowledge and recommendations for study prioritization should be included.

Methods: Region-specific studies and dataset should be reviewed for relevance and availability. Datasets of interest include multibeam or sidescan backscatter geophysical surveys that monitor seafloor morphology and characterize benthic substrate; biological data from grab samples, clam dredges, and trawl surveys; vibracore data of substrate; water column profiles that measured current flow and direction and water chemistry (e.g., temperature, salinity, pH, dissolved oxygen, turbidity, chlorophyll); direct observations from video cameras or remotely operated vehicles; acoustic surveys; and tagging.

Once this data is identified (and compiled, when available), the review will also note knowledge gaps and needs to inform potential follow-on field efforts.

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.

- How can BOEM best assess cumulative effects within the framework of environmental assessments?
- What is the effect of habitat or landscape alteration from BOEM regulated activities on ecological and cultural resources?

- How will future ocean conditions and dynamics amplify or mask effects of BOEM regulated OCS activities?
- What affected resources, measures, and systems are best used for long-term monitoring?