BOEM | FACT SHEET

BUREAU OF OCEAN ENERGY MANAGEMENT

Marine Minerals Program Research and Studies

The Bureau of Ocean Energy Management (BOEM) manages the responsible exploration and development of energy and mineral resources on the Outer Continental Shelf (OCS). BOEM's Marine Minerals Program (MMP) is the sole federal program responsible for leasing access to non-energy resources (primarily sand and gravel) from the OCS, most often used in beach nourishment and coastal restoration projects. BOEM must ensure that the removal of any mineral resources is done in a safe and environmentally sound manner. To this end, the MMP invests in applied research in support of the National Environmental Policy Act (NEPA) and other environmental laws to ensure that potential adverse impacts to the marine, coastal, and/or human environments are avoided or minimized.

Researchers from Louisiana State University and the University of New Orleans collect sediment cores from the Gulf of Mexico. Photo: LSU

MMP research funding comes from the Environmental Studies Program (ESP) and the Office of Strategic Resources (OSR). When evaluating environmental impacts of MMP-related activities, the MMP identifies information needs and data gaps for further study under the ESP. Study ideas warranting additional investment are then further developed and, if approved, executed through the ESP. The results ultimately inform policy decisions regarding OCS resource development. Additionally, the MMP invests in sand and gravel resource evaluation studies to identify existing and potential sand resources and strategically manage their use and associated impacts. These studies are traditionally funded through OSR and executed through cooperative agreements with state agencies or universities.

Many MMP studies, as well as research for other BOEM program areas, are accessible through BOEM's Environmental Studies Program Information System (ESPIS), which includes summaries, maps, and query tools. Since the MMP's start in 1992, BOEM has invested about $40 million to identify non-energy resources on the OCS, conduct scientific research, and lease OCS resources to local communities and Federal agencies in need.

RECENTLY COMPLETED STUDIES

***Characterization of Underwater Sounds Produced by Trailing Suction Hopper Dredges during Sand Mining and Pump-out Operations*, U.S. Army Corps of Engineers (USACE), National, 2011-2014.** The trailing suction hopper dredge (TSHD) is commonly used in dredging operations to support beach nourishment operations. Some have raised concerns regarding underwater noise of anthropogenic, or human-generated origin, and potential impacts on aquatic organisms including marine mammals, sea turtles, and fishes. In this study, conceived, overseen, and funded by BOEM in collaboration with USACE, underwater sounds were characterized for three TSHDs during the removal of 3.1 million cubic yards of sand from an offshore borrow area and during pump-out for the Wallops Island, Virginia Beach Stabilization Project. Sounds were recorded simultaneously at two depths, 3 and 9.1 meters below the surface. Sound sources included sediment removal, pump-out of material, pump-out of clear water during pipe flushing, and transit to the borrow site (hopper empty) and to the pump-out stations fully loaded.

***Characteristics of Sounds Emitted during High-Resolution Marine Geophysical Surveys,* Naval Undersea Warfare Center Division (NAVSEA) and USGS, National, 2015-2016.** Scientific questions

regarding the impact of noise in the marine environment have resulted in an increasing number of regulations and mitigation strategies to reduce the risk associated with high-resolution marine geophysical surveys performed in U.S. waters. However, data to estimate the ecological risk associated with the operation of a given high-resolution survey system are frequently lacking. The characteristics of sounds radiated by a variety of commercial marine geophysical survey systems including boomers, sparkers, airguns, chirp profilers, side-scan sonars, and multibeam bathymetric echosounders were quantified in this study. Calibrated acoustic data were acquired for a total of 18 different marine survey systems in this report to support future permit applications and in-water measurements in coastal U.S. waters.

***Review of Biological and Biophysical Impacts from Dredging and Handling of Offshore Sand*, Research Planning, Inc., National, 2011-2013.** As the demand for OCS sand increases, the MMP is facing increasingly complex issues, such as resource allocation, cumulative impacts from repeated use, fisheries conflicts, protection of archaeological sites, oil and gas infrastructure, renewable energy infrastructure, and essential fish habitat issues. It is critical that BOEM use the best available science while conducting environmental reviews of proposed leases and agreements. This report summarizes current knowledge on the potential impacts of OCS sand dredging and conveyance operations to biological resources and their habitats and rates of habitat recovery post-dredging. BOEM synthesizes dredging guidelines and recommended practices to minimize impacts and speed habitat recovery, and applies mitigation measures to reduce or eliminate adverse impacts to specific valued resources, such as marine mammals, sea turtles, and fishes.

SELECT ONGOING AND PROPOSED STUDIES

***Development of a Decision Support Tool to Reduce Sea Turtle Dredging Entrainment Risk*, NOAA Office for Coastal Management, National, 2015-2017 (ongoing).** BOEM must ensure that the removal of any mineral resources is done in a safe and environmentally sound manner. One significant environmental factor which impacts how projects are designed and constructed is the potential for entrainment and mortality of federally protected sea turtles when using TSHDs. In collaboration with sea turtle and dredging industry technical experts, BOEM and its federal partners aim to develop a standardized decision support tool to assess project-specific dredging entrainment risk and improve the effectiveness of mitigation planning decisions within marine mineral resource areas.

***Ecological Function and Recovery of Biological Communities within Dredged Ridge-Swale Habitats in the South-Atlantic Bight*, University of Florida, USACE, U.S. Navy, and NASA, Atlantic OCS, 2014-2016 (ongoing).** BOEM needs to observe prolonged biological, physical, and chemical recovery of borrow areas to understand the importance of dredged habitats to benthic communities and fish. Existing project-specific, post-construction monitoring is not of sufficient duration to fully understand the dynamics and recovery of shoal complexes associated with capes in general. Observations over an extended time frame will allow for BOEM to more fully identify the potential impacts of sediment removal activities and determine the true extent, nature, and process of disturbance and recovery. Information on recovery is necessary for improved regional management of offshore habitat availability for prey and fish species. This knowledge will improve effects analyses in NEPA documents and greatly focus and improve the outcomes of Essential Fish Habitat (EFH) consultations.

***Regional Essential Fish Habitat Geospatial Assessment and Framework of Offshore Sand Features*, National, 2017-2018 (proposed).** Subject to the availability of funds, this study would address the need for regional EFH planning methodologies by developing a geospatial tool that includes regional classification of offshore sand features and associated EFH. Historically, EFH assessments have been developed on a project-by-project basis using species and habitat information specific to a borrow area. However, defining and organizing spatial relationships of OCS sand resource areas and classified sand features important to fish habitat will enable BOEM to improve EFH consultations and coordination with other federal agencies such as the National Marine Fisheries Service and the US Army Corps of Engineers.