

TECHNICAL SUMMARY

Study Title: Workshop and Research Planning to Improve Understanding of the Habitat Value and Function of Shoal/Ridge/Trough Complexes to Fish and Fisheries on the Atlantic and Gulf of Mexico Outer Continental Shelf

Report Title: Understanding the Habitat Value and Function of Shoal/Ridge/Trough Complexes to Fish and Fisheries on the Atlantic and Gulf of Mexico Outer Continental Shelf. Draft Final Literature Synthesis and Gap Analysis

Contract Number: M12PC00009

Sponsoring OCS Region: Headquarters

Applicable Planning Areas: Atlantic (North, Mid, South), Gulf of Mexico (Eastern, Western)

Completion Date of Report: December 2014

Costs: \$ 153,390

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Key Words: shoal, ridge and trough complex, OCS, habitat, sand, sediment transport, dredging, invertebrates, finfish

Background: The BOEM Marine Minerals Program (MMP) considers proposals for use of OCS sand resources. BOEM has the authority to negotiate, on a noncompetitive basis, the rights to OCS sand, gravel, and shell resources for shore protection, beach or wetlands restoration projects, or for use in construction projects funded in whole or part by, or authorized by, the federal government. The BOEM Renewable Energy Program considers proposals for wind energy facilities on submerged lands. Offshore shoals are of scientific interest to both programs – as a source of sand for beach nourishment, coastal restoration, and shoreline protection projects and as an ideal location for renewable energy projects to take advantage of favorable bathymetric conditions. Prior to approving such uses, BOEM must analyze the effects of the aforementioned activities under the requirements of the National Environmental Policy Act (NEPA) using the best available science and, in doing so, adhere to relevant federal regulations including, among others, the Endangered Species Act and the Magnuson-Stevens Fishery Conservation and Management Act.

Historically, ecological studies in support of the MMP have focused largely on benthic communities, the organisms that had been considered to experience the most direct impacts from sand mining. Some studies examining microhabitats (e.g., troughs vs. crests of sand waves; tops vs. flanks of banks) have found differences in benthic communities that suggest the distribution of benthic predators may also vary spatially. Other studies suggest that shoals may provide nursery or spawning habitat for some fishes. The scientific background for determining the level

of impact for these habitat uses is incomplete, resulting in difficulties in assessing the suitability of various shoals for sand removal.

Objectives: This project encompasses three components: a literature synthesis, a workshop, and an analysis of information needed to improve BOEM's understanding of the issues and to enhance BOEM's ability to make environmentally sound management decisions. There were three primary study objectives:

- Compilation of the recent information on the habitat values and functions of sand shoals on the OCS for fish and benthos;
- Convening a group of experts to discuss the state of knowledge on this topic at a workshop that includes oral presentations and discussion groups on critical issues; and,
- Evaluation of the information needs and data gaps that arose through the literature synthesis and the workshop to identify those that are achievable, have the most relevance to BOEM, and have the greatest potential to advance an understanding of the impact issues in the reasonable future.

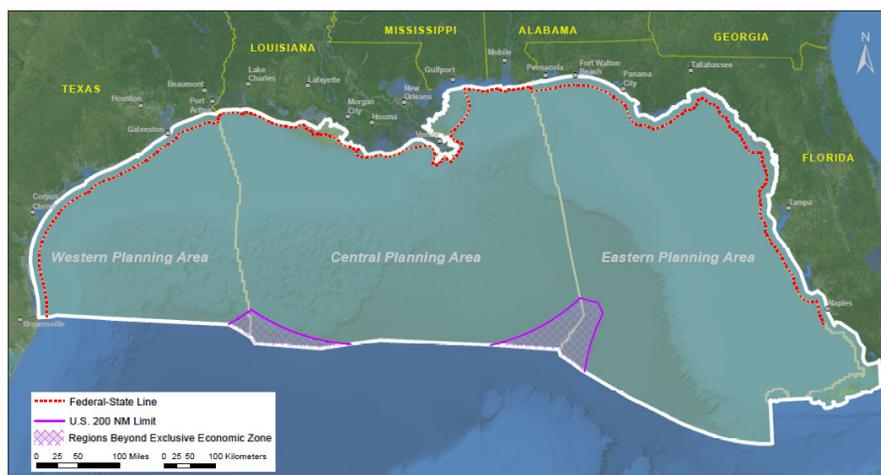
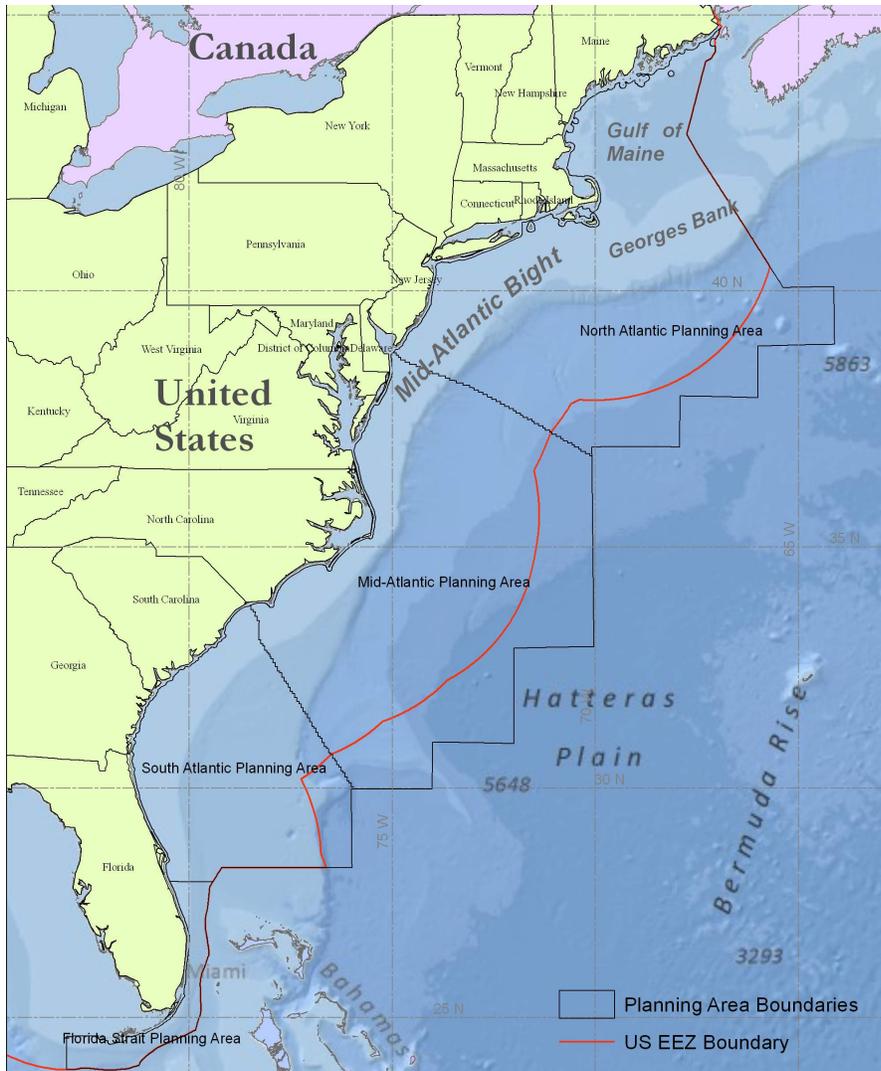
Description: A comprehensive literature survey was conducted on the habitat values and functions of offshore sand shoals for fish and benthos. The synthesis included background information on the geology and physical forcing factors affecting each type of shoal in the US Atlantic and Gulf of Mexico OCS. The draft synthesis was provided to an invited panel of experts representing various federal and state agencies, research scientists, and the dredging industry in advance of the workshop to aid in discussions.

The workshop included oral presentations on the geology and regional (Gulf of Mexico and Atlantic OCS) biology of offshore shoals and group discussions on four major topic areas (geological and physical processes governing the shoals and effects of sand removal; benthic invertebrate use of shoals; finfish use of shoals; and research methods to improve understanding of these questions) was convened in January 2014. The invited oral presentations were designed to set the stage for group discussions with the goals of identifying important information gaps and methods to fill those gaps.

Following the workshop, the report was revised to elaborate on the data gaps identified throughout the project and to make recommendations on the key research needed to facilitate agency discussions about future sand mining from offshore shoals. The final report was delivered to BOEM in December 2014.

Study Products: Normandeau Associates, Inc. 2014. Understanding the Habitat Value and Function of Shoal/Ridge/Trough Complexes to Fish and Fisheries on the Atlantic and Gulf of Mexico Outer Continental Shelf. Draft Literature Synthesis for the U.S. Department of the Interior, Bureau of Ocean Energy Management. BOEM 2015-012. Contract # M12PC0009. 191 pp.

Rutecki, D., T. Dellapenna, E. Nestler, F. Scharf, J. Rooker, C. Glass, and A. Pembroke. 2014. Understanding the Habitat Value and Function of Shoal and Shoal Complexes to Fish and Fisheries on the Atlantic and Gulf of Mexico Outer Continental Shelf. Literature Synthesis and Gap Analysis. U.S. Department of the Interior, Bureau of Ocean Energy Management. 176 pp.



Study Area: U.S. Atlantic and Gulf of Mexico Outer Continental Shelf regions showing the Bureau of Ocean Energy Management Planning Area boundaries and the U.S. Exclusive Economic Zone (EEZ) boundary.