

## **BOEM ENVIRONMENTAL STUDIES PROGRAM: ONGOING STUDIES**

**BOEM OCS**      [Gulf of Mexico](#)

**Region:**

**Title:**                      Deep-Water Reconnaissance of Potentially Sensitive Biological Features (PSBF's) Surrounding Shelf-Edge Topographic Banks in the Northern Gulf of Mexico (GM-11-01a)

**Planning Area:**      Central and Western

**Total Cost:**  
\$252,294

**Period of Performance:** FY 2011-2015

**Conducting Organization:**      NOAA, Flower Garden Banks National Marine Sanctuary

**BOEM Contact:**                      [Mark Belter](#)

### **Description:**

Background: The Bureau of Ocean Energy Management (BOEM) Notice To Lessees 2009-G39 describes protection for Potentially Sensitive Biological Features (PSBF's). These are seafloor features in the Gulf of Mexico (GOM) with moderate to high relief (about 8 feet or higher) that provide valuable habitat for benthic species and serve as Essential Fish Habitat. They are not covered by the biological stipulations on Leases. They provide surface area for the growth of sessile invertebrates and attract large numbers of fish. Habitat utilization of these features is expected to vary depending on physical parameters including relief, size, habitat complexity, association with other features (as in trends or systems of features), water quality, turbidity, depth, and temperature.

The BOEM has become aware of PSBF's from its large database of bathymetric surveys and from USGS multi-beam surveys. These features are protected from direct physical impacts of oil and gas activities based on bathymetry provided with permit applications. However, the benthic and fish communities of these features are relatively unknown. Of particular concern are multiple features known to exist in the vicinity of protected topographic features along the shelf-edge of the northern GOM. Available seafloor surveys suggest that these PSBF's support high diversity benthic communities similar to the lower levels of the protected banks. Significant areas of these features occur outside the bank No Activity Zones. The BOEM needs to investigate these PSBF's to characterize their benthic and fish communities and define their distribution. Bathymetric data alone does not describe the quality and sensitivity of this ecosystem. This information is required to ensure that the BOEM properly protects these valuable resources which are a significant component of the wider ecosystem.

The Deepwater Horizon oil spill on April 20, 2010, in block MC252, approximately 50 miles southeast of Venice, Louisiana, released millions of gallons of crude oil in the north-central GOM. The oil release was treated with dispersants both at the sea's surface and subsea (at about 5000 ft of water depth). The dispersed oil weathers, biodegrades, clumps, and eventually sinks to the seafloor. In this manner, the oil could be distributed widely over a large area of the seafloor and could directly affect hard bottom communities.

This study is designed as an adaptive approach to management and may result in revision of BOEM No Activity Zone boundaries. The BOEM needs to characterize these features across the entire northern GOM. This study will begin that process by examining notable PSBF's known to exist near important topographic features along the shelf-edge. We will also assess the impact and recovery of these ecosystems to possible effects of oil from the Deepwater Horizon spill. Recent USGS work has provided high resolution multi-beam bathymetry around numerous shelf-edge topographic features in the northern GOM. In addition, the Flower Garden Banks National Marine Sanctuary (FGBNMS) has conducted several ROV surveys around a few of the banks. This study will be carried out in cooperation with the Louisiana Universities Marine Consortium (LUMCON), the FGBNMS, and the University of North Carolina Wilmington (UNCW).

Objectives: The objective of this study is to provide the BOEM with information needed to evaluate the quality and sensitivity of known PSBF habitats near protected topographic features, relate them to the wider ecosystem, and assess possible oil impacts/recovery.

Methods: This study will characterize both the physical and biological components of PSBF's near shelf-edge banks. The study will incorporate available information for these features and conduct field investigations to gather new information. In addition, sediment and tissue samples will be analyzed for effects from the Deepwater Horizon oil spill. The study will focus on representative areas of PSBF's around protected topographic features along the edge of the GOM continental shelf from the Flower Garden Banks to Jakkula Bank. Sampling sites will be selected to produce a representative description of features in this area. Work already done by the FGBNMS will be incorporated and supplemented to maximize our results. That work includes numerous ROV surveys at several shelf-edge banks. New information will be gathered with additional ROV surveys, water quality instrumentation, and sampling of benthic and fish components (including contaminants analyses). Semi-Permeable Membrane Devices may be deployed at each sampling site if continued deposition of oil is suspected. Other methods may be employed as available and appropriate, including SCUBA, AUV, submersibles, benthic samplers, and camera systems.

Products: Final Report, archive of still and video imagery, GIS files, data files, peer-reviewed scientific article.

Importance to BOEM: The BOEM needs to describe the character of Potentially Sensitive Biological Features (PSBF's) in the shelf-edge region of the northern Gulf of Mexico to establish baseline conditions, enhance identification of sensitive habitats, and ensure adequate protection. Potential impacts and recovery from the Deepwater Horizon

spill should be assessed.

**Status:** One cruise accomplished, including the survey of two banks: Horseshoe Bank (between East and West Flower Garden Banks) and 29 Fathom Bank.

**Final Report Due:** July 2015

**Publications:** none

**Affiliated WWW Sites:** <http://geopubs.wr.usgs.gov/open-file/of02-411/index.html>

[http://www.ncddc.noaa.gov/website/google\\_maps/FGB/mapsFGB.htm](http://www.ncddc.noaa.gov/website/google_maps/FGB/mapsFGB.htm)

**Revised date:** March 2012

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