

## Environmental Studies Program: Ongoing Study

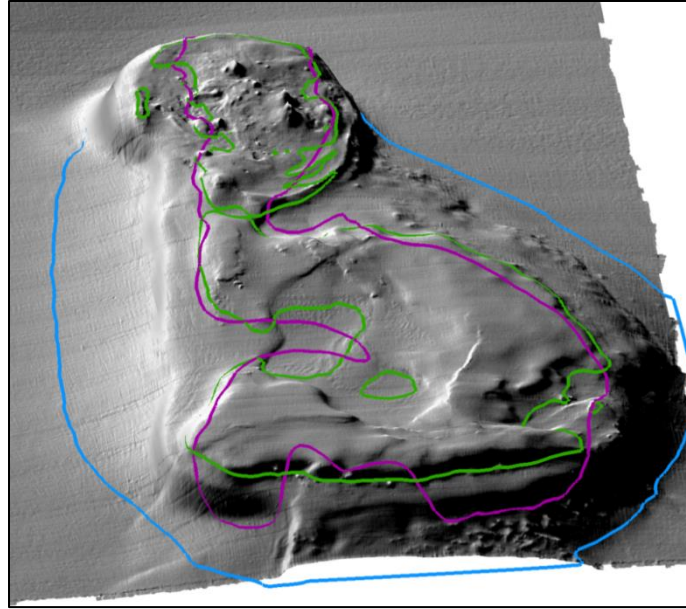
Title	Multibeam Survey of Small Topographic Features to Determine Efficacy of Current “No Activity Zones” (NSL #GM-17-07)
Administered by	GOM OCS Region
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Principal Investigators(s)	Emma Hickerson ( <a href="mailto:emma.hickerson@noaa.gov">emma.hickerson@noaa.gov</a> )
Conducting Organizations(s)	National Oceanic and Atmospheric Administration (NOAA) National Ocean Service (NOS) Flower Garden Banks National Marine Sanctuary (Interagency Agreement)
Total BOEM Cost	\$360,000
Performance Period	FY 2017–2020
Final Report Due	May, 2020
Date Revised	June 10, 2019
PICOC Summary	
<i>Problem</i>	BOEM’s is managing/mitigating “No Activity Zones” (the most ecologically sensitive areas of Topographic Features) based on outdated bathymetry data. Acquiring and using new data will allow improvements to the geographic accuracy of the boundaries with resultant improvement in assessments and mitigations.
<i>Intervention</i>	BOEM already collected necessary bathymetry data to update ~24 of the 38 Topographic Features, but an exhaustive search of available internal and external datasets left 14 features in need of updated bathymetry. This IA is funding the acquisition and processing of both bathymetry and backscatter data via modern multibeam echosounder.
<i>Comparison</i>	Lacking updated bathymetry data, BOEM is reliant on outdated data that may not adequately define “No Activity Zone” (NAZ) boundaries.
<i>Outcome</i>	BOEM can perform improved National Environmental Policy Act (NEPA) pre-lease assessments and post-lease mitigations using updated best available scientific data.
<i>Context</i>	14 banks (Topographic Features) in the Northern Gulf of Mexico.

**BOEM Information Need(s):** Since the 1970–1980’s, there has not been an update to nor evaluation of the efficacy of the NAZ boundaries that BOEM applies to certain topographic features in the Gulf of Mexico and uses to distance permitted bottom-disturbing activities from sensitive benthic habitats. The boundaries were defined using specific depth contours based on some of the earliest survey work, using now-outdated bathymetric survey methods. Technological advances in survey equipment, techniques and Geographic Information Systems, combined with an improved understanding of the benthic ecology of Gulf topographic features, necessitates that BOEM obtain and use updated bathymetric survey data. This will help BOEM subject matter experts determine if the existing NAZ boundaries are accurately drawn at the correct locations and are functioning as originally intended to protect the sensitive benthic habitat at each topographic feature, as required by BOEM’s NEPA pre- and post-lease requirements.

Because of NOAA's shared interest in data collection about northern Gulf of Mexico bank features, this is a collaborative effort between BOEM and the Flower Garden Banks National Marine Sanctuary.

**Background:** This collaborative BOEM/NOAA project will collect new multibeam bathymetry and backscatter data for the 14 topographic features of highest interest to BOEM, along with secondary areas of mutual interest (e.g., Potentially Sensitive Biological Features [PSBFs]). NOAA is providing ship time on multiple cruises through three vessels with survey capabilities suitable for the targeted depths and distance from shore. These are the Sanctuary-operated [R/V Manta](#), hydrographic survey vessel [NOAA Ship Thomas Jefferson](#) and [NOAA Ship Pisces](#). The Sanctuary's objective is to better understand the types and distribution of bank habitats found throughout the Sanctuary's region of interest region, including in areas proposed for potential Sanctuary expansion. BOEM's re-evaluation of the NAZs began in 2014; of the 38 identified topographic features, 14 sites were identified for this project as Topographic Features with NAZs where necessary bathymetry data were lacking but needed to complete BOEM's internal analyses. Additional bathymetric data collected by the Sanctuary outside of these 14 features could also reveal previously unknown Topographic Features or new Potentially Sensitive Biological Features (e.g., patches of exposed pinnacles) that would require site-specific mitigations during benthic reviews.

**Objectives:** The objective is to map selected features in the Gulf of Mexico using a multibeam echosounder sonar system and to provide post-processed (XYZ) bathymetry and backscatter datasets. The finished datasets will be used by both BOEM and NOAA in order to reevaluate and modify agency policies used to manage environmental resources. The finalized datasets will be made publicly available through the NOAA National Centers for Environmental Information and through BOEM's Environmental Studies Program Information System (ESPIS).



**Figure 1.** Example of a multibeam sonar-derived bathymetry dataset (gray) depicting the relief of a topographic feature. The different colored lines illustrate different hypothetical boundaries that could be drawn based on varying source bathymetry.

**Methods:** Through an Interagency Agreement with NOAA, NOAA (and/or subcontractor) will conduct the surveys of identified locations in as few days at sea as possible, likely over 2 cruise legs. Upon survey completion, NOAA/subcontractor will also be responsible for data post-processing and delivery to BOEM in a format acceptable to BOEM geographic information system (GIS) personnel. The data would then be incorporated in to the on-going BOEM effort to reevaluate NAZ boundaries.

**Specific Research Question(s):**

1. Are BOEM’s existing NAZ boundaries accurately drawn at the correct locations for the 14 features in question?
2. Will BOEM’s management efficacy benefit from adopting GIS-derived boundaries (based on the acquired bathymetry data) instead of the old depth-based boundaries?
3. Are the NAZs in general functioning as originally intended to protect the “core” sensitive benthic habitat at each topographic feature, as assumed by BOEM’s NEPA pre-lease assessments and post-lease mitigations/stipulations?

**Current Status:** About half of the high-priority target sites have been successfully surveyed by R/V Manta and NOAA Ship Pisces, and post-processed data delivered to BOEM. The remaining targets are planned to be surveyed by NOAA Ship Thomas Jefferson on a single cruise in late FY 2019, although necessary dry dock work to that vessel was previously delayed by the federal government shutdown and may alter the schedule.

**Publications Completed:** None to date.

**Affiliated WWW Sites:** <https://marinecadastre.gov/epis/#/search/study/100187>

<https://noaa.maps.arcgis.com/apps/MapJournal/index.html?appid=8e46cfa3ffa4945a9ed3bd22d3eca07>

[Scroll down to “OPR-K306-FH-19, BOEM-FGBNMS No-Activity Zone Delineation (NOAA)”]

**References:** None cited.