

Environmental Studies Program: Ongoing Study

Study Area(s): Western GOM, Central GOM, Eastern GOM

Administered By: GOM OCS Region

Title: Passive Acoustic Monitoring (PAM) Program for the northern Gulf of Mexico (GM-15-02)

BOEM Information Need(s) to be Addressed: Data on the ambient noise environment in the Gulf of Mexico (GOM) is extremely limited. Other than some short-term recordings associated with previous studies and recent PAM work done as part of the Natural Resource Damage Assessment for the Deepwater Horizon event, little data exist. Noise impacts to protected species (primarily cetaceans) may occur as a result of BOEM and BSEE activities (e.g. seismic, decommissioning, drilling, vessel noise, etc.) however characterizing this is difficult without any “baseline” data about the current ambient noise environment in the GOM. BOEM and BSEE are required to assess potential impacts to protected species, specifically under the Marine Mammal Protection Act (MMPA), Endangered Species Act (ESA), and the National Environmental Policy Act (NEPA). The future BOEM MMPA rulemaking for seismic activities in the GOM has a considerable monitoring requirement associated with it and data on both ambient noise as well as noise associated with seismic activities will be required by National Marine Fisheries Service (NMFS). A PAM program would provide a relative baseline with which to assess any BOEM/BSEE authorized activities as well as provide additional information about cetacean presence/absence based on vocalizations detected by the PAM system.

Total Cost: \$15,000,000

Period of Performance: FY 2015–2020

Conducting Organization(s): HDR

Principal Investigator(s): Anwar Khan (Anwar.Khan@hdrinc.com)

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Description:

Background: Worldwide, the ocean has become a very noisy habitat for marine animals as ambient noise levels rise as a result of anthropogenic activities. Cetaceans rely on sound as a primary sense for vital life functions and increased noise levels may mask important sounds (including con-specific vocalizations) as well as cause direct harm. As ambient noise levels have increased in some areas, cetaceans have changed the frequency at which they vocalize in order to communicate in a noisy environment (Parks et al. 2007). Cetaceans in the GOM inhabit a highly industrialized environment with multiple anthropogenic acoustic inputs including shipping, oil and gas activities, and military operations. In 2006, NOAA conducted a National Passive Acoustics Workshop (Van Parijs et al. 2006), which recognized the need for a Passive Acoustic Oceans Observing System (PAOOS). While a National program is still not in place, there are

smaller scale PAM programs in some areas (e.g. Bering Sea, Stellwagen Bank National Marine Sanctuary), which have proven effective in measuring ambient noise levels, detecting marine mammal presence, and monitoring anthropogenic noise (e.g. seismic, vessel noise).

Objectives: This project will establish a long-term passive acoustic monitoring program using moored acoustic recorders at permanent stations throughout the GOM. The program will establish a “baseline” for ambient noise in the GOM against which to judge potential future noise impacts from BOEM/BSEE activities as well as characterize the sound budget from other kinds of noise already occurring in the GOM (e.g. shipping). In addition, acoustic recorders will be able to detect vocalizing marine mammals, providing both spatial and temporal information about cetacean species in the GOM.

Methods: Hydrophones will be deployed, maintained, and redeployed on a regular schedule throughout the GOM. Placement will include shelf, slope and deep water depths as well as all planning areas in order to gather a comprehensive data set representative of the entire GOM. Ideally this program should be put in place for no less than 5 years (period of MMPA rule) in order to adequately capture seasonal and temporal variations. Placement of the hydrophones will be dependent on the number of recording stations selected and the capabilities of the hydrophones used. In addition, areas of particular concern can be identified for monitoring (e.g. Mississippi and DeSoto canyons). Hydrophones collect huge volumes of data and a significant expense will be the post-processing of these acoustic data.

Current Status: Awarded February 1, 2017 and working on deliverables

Final Report Due: January 31, 2022

Publications Completed:

Affiliated WWW Sites: <https://marinecadastre.gov/espis/#/search/study/100151>

Revised Date: February 21, 2018