Environmental Studies Program: Ongoing Studies

Study Area(s): Western and Central Gulf of Mexico

Administered By: Gulf of Mexico Region

Title: Explosive Removal of Structures: Fisheries Impact Assessment

BOEM Information Need(s) to be Addressed: Despite BOEM's previous efforts, quantitative data on the impacts of explosive platform severance to fishes remains limited. It is known that many fishes are killed during decommissioning, but impact analysis is based on a small sampling effort (9 platforms) across a narrow depth range (14 -32 m). The increase in decommissioning activities combined with the understanding that fish assemblages vary greatly in space and time, suggests that extrapolation of results from previous work may not accurately predict impacts to fish populations or to fisheries (Gitschlag et al., 2000). An expanded evaluation of explosive severance impacts across a greater range of habitats would provide BOEM and BSEE more accurate information for understanding the broader impacts of OCS decommissioning activities. These data will permit a more accurate analysis as required by NEPA and make available vital information that can be incorporated into regional fisheries management policies by other agencies.

Total Cost: (in thousands) $3,326 **Period of Performance:** FY 2016-2020

Conducting Organization(s): LGL Ecological Research Associates

BOEM Contact(s): Mark Belter (mark.belter@boem.gov)

Description:
Background: Oil and gas platforms represent defacto artificial habitat for pelagic and demersal fishes. In the broadest sense fish assemblages can be classified by water depth into coastal (<30 m), offshore (31-60 m), and bluewater (>60 m). Many of the fish species utilizing these artificial reef habitats are managed by the Gulf of Mexico Fishery Management Council. Of particular concern are the snapper-grouper reef fish complex, migratory pelagics, and other managed species often present around offshore oil and gas structures. Many of these stocks have been overfished and are strictly managed while undergoing rebuilding.

Approximately 2,600 oil and gas platforms remain on the U.S. OCS. Federal regulations require that within one year of lease termination, platforms be removed from the OCS or integrated into a State Artificial Reef Program. The most common platform decommissioning method is explosive severance below the mud line. This method is planned for use in approximately 60% of decommissioning activities, although actual usage has declined to approximately 50% of decommissioning activities. Explosive severance, regardless of whether the structure is deployed as a permanent reef or taken to shore for scrapping, represents a certain amount of lost fisheries potential. Fish kills are an unwanted consequence of explosive severance activities and given that

decommissioning of older platforms currently outpaces the installation of new structures, the large number of removals has the potential to influence fish populations at the local and regional scale. Given our current understanding, it is not possible to accurately estimate the potential impacts explosive severance may have on stocks of commercially and recreationally valuable fishes. The only study in the GOM quantifying the impact of explosive platform severance on fish abundance was limited in scope with respect to spatial and temporal variation (Gitschlag et al., 2000) and conducted during a period of depressed fish stocks. In addition, the study occurred during a period of low platform removal rates. Given that fish stocks have improved and decommissioning rates have substantially increased, previous conclusions about the impacts of decommissioning activities may not accurately reflect how fish stocks will respond. It is important to accurately capture data across the range of conditions and depths expected for future decommissioning activities if BOEM is to provide a thorough analysis of the potential impacts, as required by NEPA and demanded by other GOM stakeholders.

Objectives: The overall goal of this study is to quantify the impact to fishes and fisheries resulting from explosive severance methods as employed in the current and anticipated OCS environment. The specific objectives of this study are to: 1) characterize the relative abundance of federally managed fishes in assemblages associated with complex OCS structures; 2) develop a model to more accurately estimate fish mortality, incorporating spatial and temporal variables; 3) validate the model with respect to observed mortality resulting from explosive severance activities; 4) compare results with fish loss estimates incorporated into current fisheries management policies; 5) develop recommendations to guide BOEM and BSEE in authorizing decommissioning activities; and 6) develop educational materials to aid in public outreach efforts.

Methods: Leverage existing data, supplemented by targeted surveys, to characterize fish assemblages associated with OCS oil and gas platforms within zones influenced by major features (e.g., Mississippi River, topographic features, or bottom type). Model federally managed fishes individually as components of assemblages associated with platforms as a function of decommissioning season, water depth and zone. Sample explosive severance decommissioning operations in depth ranges and zones which are representative of current and future decommissioning activities. Sampling should be conducted during the period of time, historically May to October, when most platform removals occur. Techniques such as hydroacoustic estimation of biomass and analysis of ROV/AUV video data to assess the fish species composition and relative abundance are encouraged. Sites selected for characterization and validation surveys must be representative of complex OCS structures in depth ranges and zones anticipated to experience high or increasing levels of decommissioning activity. Pre- and post-severance observations will be used to validate the model. For example, underwater video could be analyzed to identify fish to lowest taxa and provide length estimates. Floating mortalities could be collected, weighed, and sub-sampled to determine length and weight distributions by species. Min-max analysis of ROV video data may be used to identify constituent species potentially inaccurately represented in post-blast mortality analyses. Inclusion of additional methods for collecting high quality data on explosive severance related fish mortalities is encouraged.

Current Status: LGL has completed literature syntheses for: a) marine acoustics related to explosive severance activities and estimating the resulting fish mortality; and b) characterizing assemblages of managed fishes associated with oil and gas platforms. A model for shock wave propagation has been selected and is being tested. Field sampling has been completed for season 1 & 2. The final sampling season will begin May 2018.

Final Report Due: June 15, 2020

Affiliated WWW Sites: https://opendata.boem.gov/BOEM-ESP-Ongoing-Study-Profiles-2017-FYQ1/BOEM-ESP-GM-15-01.pdf

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