Technical Announcement

MMS

U. S. Department of the Interior
Minerals Management Service
Gulf of Mexico OCS Region

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Northern Gulf of Mexico Continental Slope Habitats and Benthic Ecology Study: Final Report

OCS Study MMS 2009-039

The Minerals Management Service (MMS), Gulf of Mexico OCS Region, announces the availability of a new study report, *Northern Gulf of Mexico Continental Slope Habitats and Benthic Ecology Study: Final Report.*

The Deep Gulf of Mexico Benthos (DGoMB) project was initiated in 1999 for the U.S. Department of the Interior's Minerals Management Service. The MMS sought to investigate the structure and function of the biota associated with the seafloor in the deep water of the northern Gulf of Mexico. This study is the first comprehensive look at the deep Gulf of Mexico benthos since the mid-1980 and a previous MMS-funded study of the Gulf of Mexico continental slope (MMS 88-0053 and others). The purpose of the study has been to determine how living resources inhabiting deepwater habitats might be impacted by oil and gas exploration and exploitation. The strategy of the initial stage of the field work was to survey a broad region from which community structure could be determined and to conduct extensive sampling of physio-chemical variables within both the water column and the sediments of the seafloor.

Eight hypotheses related to environmental variables were tested. Components of the seafloor community sampled included sediment bacteria, small protists and metazoans (meiofauna, > 63 micrometer mesh sieves), small metazoan invertebrates (macrofauna, >300 micrometer mesh sieves), large bottom-dwelling invertebrates (megafauna, > ca. 1 cm diameter), and demersal fishes. The sampling crossed the continental margin from depths of 200 m (656 ft) on the upper continental slope out to 3,750 m (12,303 ft) on the Sigsbee Abyssal Plain and extended geographically from some stations in Mexican waters to northern Florida.

Stock size and oxygen consumption decreased exponentially with depth. Interactions between the biotic communities and oil and gas exploration activities are expected to be substantially greater on the upper continental slope (down to 2,000 m [6,562 ft] depth) simply because the standing stocks are so much higher on the upper slope than on the lower slope and abyssal plain. Upper slope biota may be better adapted to alterations in substrate and organic loading because of the greater natural environmental variability at those depths. The general principle has emerged that biota in the rather quiescent and benign environment of the deep ocean is

controlled by various sources of organic nourishment, including those introduced by human activities. The introduction of biodegradable organics, whatever the source, could stimulate biomass production in the deep Gulf of Mexico where food supply is limiting.

This report is available only in compact disc format from the Minerals Management Service, Gulf of Mexico OCS Region, at a charge of $15.00, by referencing OCS Study MMS 2009-039. The report may be downloaded from the MMS website through the Environmental Studies Program Information System (ESPIS). You will be able to obtain this report also from the National Technical Information Service in the near future. Here are the addresses. You may also inspect copies at selected Federal Depository Libraries.

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