

STUDY TITLE: Distribution & Abundance of Marine Mammals in the North-Central, & Western GOM (GulfCet I)

REPORT TITLE: Distribution and Abundance of Marine Mammals in the North-Central and Western Gulf of Mexico, Interim Report - Volume I: Technical Report and Volume II: Appendix

CONTRACT NUMBERS: 14-35-0001-30619; IA 16197

SPONSORING OCS REGION: Gulf of Mexico

APPLICABLE PLANNING AREA: Central Gulf of Mexico

FISCAL YEAR OF PROJECT FUNDING: 1992

COMPLETION DATE OF REPORT: December 1994

COSTS: FY 1992: 1,105,700; FY 1993: 1,136,575

CUMULATIVE PROJECT COST: \$2,242,275

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KEY WORDS: Gulf of Mexico; marine mammals; cetaceans; distribution; abundance; bioacoustics; hydrography, satellite telemetry; aerial surveys, shipboard surveys

BACKGROUND: The Minerals Management Service (MMS) has the responsibility to assure that oil and gas operations on the Outer Continental Shelf (OCS) Leases in the GOM are conducted in a manner that reduces risks to the marine environment. To meet their responsibilities under the Marine Mammal Protection Act (MMPA) of 1972 and the Endangered Species Act (ESA) of 1973, the MMS must understand the effects of oil and gas operations on marine mammals.

OBJECTIVES: The purpose of the GulfCet study is to determine the distribution and abundance of cetaceans in the areas potentially affected by future oil and gas activities along the continental slope in the north-central and western GOM.

DESCRIPTION: The GulfCet Program is a 3.25 year project (1 October 1991 through 31 December 1994). The study is restricted to the area bounded by the Florida-

Alabama border, the Texas-Mexico border, and the 100- and 2,000-m isobaths. A major part of the GulfCet Program's field research consists of seasonal, line transect surveys to determine the distribution and abundance of cetaceans in the study area. Three types of surveys are being conducted: 1) visual surveys from an aircraft, 2) visual surveys from a ship, and 3) acoustic surveys using a linear hydrophone array towed behind the visual survey ship. The hydrographic portion of the program was designed to sample the meso-to-large scale features in the GOM. Stennis Space Center (NMFS) is providing remote sensing and geographic information system (GIS) support for the GulfCet project. Finally, tagging and tracking of sperm whales using satellite telemetry was attempted.

SIGNIFICANT CONCLUSIONS: Cetaceans were sighted throughout the length of study area and at all water depths. However, distinct species were found at specific water depths. Bottlenose dolphins and Atlantic spotted dolphins were sighted primarily near the shelf edge (200-300 m). Pantropical spotted dolphins and dwarf/pygmy sperm whales were found in much deeper water (> 300 m). Pilot whales, Risso's dolphins, and sperm whales were sighted over the greatest range of water depths (1400 m range). Several poorly known species turned out to be moderately common (beaked whales, pygmy and dwarf sperm whales, melon-headed whales and Fraser's and clymene dolphins). Both melon-headed whales and Fraser's dolphins were almost completely unknown in the Gulf of Mexico before this study began.

STUDY RESULTS: A total of 164 cetacean groups representing 18 species have been sighted on-effort during the first four aerial surveys. Bottlenose dolphins, pantropical spotted dolphins, dwarf/pygmy sperm whales, and Risso's dolphin were the most commonly sighted species. A total of 531 shipboard marine mammal sightings of at least 20 species have been made on the first eight cruises. Sperm whales and pantropical spotted dolphins were the most common cetaceans seen in oceanic waters. An unexpected finding was the paucity of short-finned pilot whales. Marine mammal acoustic contacts totaled 149. Of the 64 identified marine mammal acoustic contacts, 33 (51%) have been from sperm whales. The majority of the sperm whale contacts have been off the mouth of the Mississippi River and on the western side of the study area. During the GulfCet cruises, several anticyclonic (warm core) eddies (Triton, Unchained, Vazquez, Whopper, and Extra) have been detected. Small cyclonic eddies (cold water) have often been observed in association with the periphery of these dominant features. These are generally areas of higher chlorophyll concentration, and are therefore indicative of increased primary productivity.

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