

**STUDY TITLE:** Distribution and Abundance of Endangered and Vulnerable Mammals, Birds, and Turtles

**REPORT TITLE:** Proceedings of a Workshop on Cetaceans and Sea Turtles in the Gulf of Mexico: Study Planning for Effects of Outer Continental Shelf Development

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**BACKGROUND:** Several Federal agencies, including the Bureau of Land Management (now the Minerals Management Service) and the U.S. Fish and Wildlife service, have, historically, expressed concern that adequate information be available to address the effects of offshore oil and gas development on endangered and protected vertebrates. As a means of establishing the current state of knowledge regarding individual species and their susceptibility to development-related impacts, and to solicit research recommendations, a workshop was conducted involving scientists knowledgeable about cetaceans, sea turtles, and various physical and biological aspects of the Gulf of Mexico region.

**OBJECTIVES:** (1) To identify ways in which cetaceans and sea turtles have been or could be affected, either directly or indirectly, by activities and events associated with

offshore oil and gas development; (2) to identify the types and specificity of data needed to predict, detect, and mitigate possible adverse effects; (3) to identify and discuss the advantages and disadvantages of various methods that might be used to obtain needed data; and (4) to identify specific research and monitoring programs that would be required to obtain needed data, including the necessary expertise, level of effort, equipment, and facilities.

**DESCRIPTION:** A workshop was conducted during 6-8 April 1982 at the University of Southern Mississippi. A total of 49 representatives from government, academia, and private industry participated in the workshop. Working groups were convened on cetaceans and sea turtles. Discussion sessions were summarized by the chairperson and reviewed by participants.

**SIGNIFICANT CONCLUSIONS:** Information on the occurrence, distribution, behavior, and ecology of cetacean and marine turtles in the Gulf of Mexico is generally lacking. These species can be affected by oil and gas development in various ways, including mortality from contact with or ingestion of oil, disruption of behavioral patterns from noise associated with OCS activities, and fouling of nesting and feeding habitats, among others. Various opportunities currently exist to use existing facilities to conduct qualitative surveys of cetacean populations in the Gulf of Mexico. Additional information can be obtained from radio tagging and tracking studies to obtain data on the movements of these species. An important data gap exists relative to the early life history of sea turtles. To address these needs, a series of studies were recommended to: collect data on the effects of oil on the early life stages of turtles and their habitats; and compile biological information for turtle species found off Florida and in the northeast Gulf of Mexico.

**STUDY RESULTS:** The Gulf of Mexico is influenced by Mississippi River discharges in the north and by high salinity water from the Caribbean Sea in the southwest. Soft bottom communities predominate within the Gulf of Mexico, whereas pelagic communities are little known and have few commercially valuable species. While direct effects from oil and gas development are spatially limited, effects over time are less well known. A key problem lies in separating man-induced changes in marine and coastal systems from natural changes.

Sperm whales, beaked whales, and pilot whales have been spotted in waters deeper than 200 m off south Texas. Risso's dolphin have also been observed in the western Gulf of Mexico, while short-finned pilot whales were also noted in a narrow zone in waters ~350 m deep off the southern coast of Texas. Bottlenose dolphins (*Tursiops truncatus*) appear to be restricted in the Gulf of Mexico to shallow water, whereas striped and spotted dolphin (*Stenella* spp.) distribution was less obviously correlated with water depth. The *Stenella* species were observed most frequently in moderately shallow waters off southwest Florida.

The major concentrations of marine turtles in the Gulf of Mexico are located off Florida. The offshore regions of southwest Florida had large numbers of turtles and low levels of

nesting in relation to eastern Florida. The role of these feeding habitats in the recovery or continued decline of marine turtles in the U.S. waters has not been determined. Oil and gas development may affect cetaceans and turtles in various ways. Seismic surveys employing explosive charges (rarely the case) can be lethal at close range. Surface contact with oil can threaten those species of cetaceans which rely on hair or fur for thermal insulation.

The long-term effects of accumulation of petroleum fractions through the food chain are unknown. The ability of marine mammals to detect and avoid oil slicks is critical to assessments of the potential impacts of oil. It was suggested that oil fouling creates significant harm for small sea turtles. Petroleum impacted turtles have been found from the Florida Keys to Cape Canaveral, an area associated with the Florida current. The widespread dispersal of young turtles and petroleum residues in the ocean suggests that an indeterminate number of turtles may die at sea.

Only a few scientific surveys assessing marine mammal distribution and abundance have been conducted within the Gulf of Mexico. Twenty-six species of whales and dolphins reportedly occur in the Gulf of Mexico based on historical records. The reported sightings of baleen whales may be questionable. Sperm whales do occur in the Gulf, predominantly outside the 200-1,000 m depth contours. The best understood cetacean species is the bottlenose dolphin (*T. truncatus*), however, little is known about this species' behavior and interactions. Systematic surveys are the only means of quantifying the presence of species and the extent of their occurrence over a wide geographical area. Such surveys must be made with adequate frequency to document daily, seasonal, and annual use of important habitats. Radio tagging/tracking of individual cetaceans should provide information which could be representative of populations as a whole. This technique and the monitoring of the tagged individuals over the lifespan of a development should be given a high priority. Qualitative information can be obtained over long periods of time from stranding records, platforms of opportunity, hydrophones, and satellites. The southeastern stranding network should be expanded. Because of the lack of information on many cetacean species, studies should focus on bottlenose dolphins (*T. truncatus*), one or more species of *Stenella*, sperm whales, and baleen whales. Future studies should be coordinated efforts designed to address Federal and State agency needs; these efforts should include sampling in areas previously or currently under development, in areas where development is anticipated, and in areas that may always remain pristine. The studies should be undertaken in order to better understand cetacean distribution, abundance, behavior, and ecology. Physiological effects of oil and gas development activities on cetaceans occur from a variety of sources, including shock waves from the detonation of explosives; noise associated with all phases of exploration and production; and surface contact and ingestion of oil. Three approaches to gathering data on these effects include implementation of a stranding/necropsy program, sampling of live caught *T. truncatus*, and a contingency oil spill investigation plan.

Effects of oil and gas activity on marine turtles can range from direct contamination and mortality (associated with oil contact) to increased predation on neonates (due to

attraction to light on platforms where birds and large fish congregate). Several studies were recommended to address these potential impacts, including a program to determine the impact of oil on neonatal and juvenile sea turtles and their habitats. A second priority identified was a study to evaluate the effects of crude oil on sea turtle eggs, embryos, hatchlings, and nesting females. It was also suggested that another program address the feeding biology, population structure, and seasonality of turtles off western Florida. In addition, it was recommended that a study be initiated to determine habitat use and effects of oil on sea turtles (especially Kemp's ridley turtle, *Lepidochel vs kempii*; in Louisiana and east Texas waters. Further, it was recommended that a synthesis of the data generated in these studies (i.e., data regarding the interaction between OCS development and sea turtles) be completed.

Contributors to the workshop proceedings included K. Adams, T. Fritts, B. Gallaway, L. Herman, P. Major, D. Owens, M. Solangi, D. St. Aubin, H. Winn, R. Witham, and B. Wursig.

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