

## BOEM ENVIRONMENTAL STUDIES PROGRAM: ONGOING STUDIES

**BOEM OCS Region:** [Gulf of Mexico](#)

**Planning Area:** Gulfwide

**Title:** The Movement and Habitat Associations of Sea Turtles in the Northern Gulf of Mexico (GM-10-04)

**Total Cost:** \$497,000

**Period of Performance:** FY 2010-2012

**Conducting Organization:** NOAA, National Marine Fisheries Service

**BOEM Contact:** [Dr. Deborah Epperson](#)

### **Description:**

Background: Sea turtles are ubiquitous in the continental shelf and inner slope waters of the northern Gulf of Mexico. All species of sea turtles found in the Gulf of Mexico are federally listed under the Endangered Species Act. The Gulf of Mexico is one of the most heavily industrialized bodies of water in the world. In particular, west of the Mississippi River on the continental shelf, there are extensive oil and gas facilities including thousands of oil and gas platforms. The recent Deep Water Horizon MC252 event has resulted in millions of barrels of oil being released into the Northern Gulf of Mexico. There have been observations of sea turtles within oiled areas, and there may be impacts on turtle populations through direct mortality, chronic exposure, and degradation of nesting beaches. Understanding the extent of the impact on sea turtle populations requires establishing a long-term monitoring strategy for changes in abundance and spatial distribution. A strong understanding of turtle movements and habitat use will facilitate any such monitoring effort. Satellite tag telemetry data provides long-term records of the movements of individual animals and thus provide insight into their habitat use patterns and dive-surface intervals that are useful for correcting abundance estimates derived from visual surveys for the proportion of turtles that are underwater at any given time. Thus, this project will deploy satellite telemetry tags on three species of turtles throughout the Northern Gulf to provide information on movements, habitat use, and dive surface behavior.

Objectives: The goal of this study is to evaluate the habitats, abundance, and spatial distribution of marine turtles occupying continental shelf waters of the northwestern Gulf of Mexico. These data will be used to improve the capability of BOEM and the National Marine Fisheries Service to evaluate the status and trends of sea turtles in the Northern Gulf of Mexico and to understand the potential impacts of the DWH MC252 event. The study objective is to use satellite tag-telemetry data to characterize seasonal movement and habitats of turtles and quantify diving behavior.

Methods: This study will focus on sea turtle abundance, habitat, and spatial distribution in the northern Gulf of Mexico between Texas (-97.5°W longitude) and southwestern Florida. The primary target species will be Loggerhead turtles (*Caretta caretta*), Kemp's

Ridley turtles (*Lepidochelys kempii*), and Green turtles (*Chelonia mydas*). These are the most common species encountered throughout the northern Gulf of Mexico, and in particular have been observed in areas impacted by the DWH spill. The study will include tagging of both juvenile and adult turtles from each species within three primary areas of the Gulf of Mexico.

The goal of the study will be to tag 60 turtles within the eastern, central, and western Gulf of Mexico beginning in the spring-summer of 2011. Turtles will be obtained primarily through cooperation with several different research groups that are conducting in-water studies of turtles within the target areas. These sampling programs include relocation trawling, in-water netting, and beach surveys. The tags used will provide records of location, dive depths, and water temperature throughout their approximately 12-month deployment cycle. As precise information on spatial location is required, the tags will employ "FastLoc" GPS capability. These tags transmit data via the ARGOS satellite system and contain sensors for recording of depth, light-level, and temperature. The on-board GPS provides very precise spatial positioning data and tracking of animal movements through time.

Products: NOAA will provide quarterly reports with information on seasonal movements and dive-behavior patterns of sea turtles in the Northern Gulf of Mexico. A final synthesis and summary report will be completed.

Importance to BOEM: A previous BOEM study of sea turtle association with oil platforms showed seasonal changes in the degree of association with platforms, with less evidence of association during winter months. Changes in spatial distribution may be evident from changes in the locations occupied by tracked animals such as a shift from more nearshore to more offshore habitats. There may also be seasonal changes in the extent of the range used or the daily movement rate of individuals. Finally, the temperature data collected by the tags can be compared to the distribution of available temperatures within the habitat to identify possible preferential selection of particular habitats. These data can then be used for Endangered Species Act Section 7 consultations as well as associated National Environmental Policy Act analyses.

**Current Status:** ongoing

**Final Report Due:** December 2012

**Publications:** none

**Affiliated WWW Sites:** none

**Revised date:** March 2012

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