

The Gulf of Mexico Marine Assessment Program for Protected Species (GoMMAPPS): Surveys and density models for marine mammals in shelf and oceanic waters of the Northern Gulf of Mexico.

Lance Garrison

National Marine Fisheries Service, Southeast Fisheries Science Center

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Abstract

The Gulf of Mexico Marine Assessment Program for Protected Species (GoMMAPPS) is a cooperative project between BOEM, the National Marine Fisheries Service, the U.S. Fish and Wildlife Service and the US Geological Survey. The overall project objective is to provide improved information on abundance, distribution, habitat use, and behavior of protected species including marine mammals, sea turtles, and seabirds. For the marine mammal portion of the project, we conducted seasonal aerial and vessel line transect surveys during 2017-2018 covering the continental shelf and oceanic waters of the Northern Gulf of Mexico. These data, in combination with survey data collected in prior years by NMFS, were used to update abundance estimates, characterize species habitats, and develop spatially explicit maps of animal density for 25 stocks of marine mammals including the endangered Sperm whale and Rice's whale. In addition, aerial survey data were used to develop abundance estimates and density maps for sea turtles occupying continental shelf waters. The analyses accounted for known sources of bias including incorporating dive-surface behavior from telemetry tag data to estimate availability at the surface. Habitat models demonstrated the importance of mesoscale physical oceanographic features, including the Loop Current and Loop Current eddies, in driving the spatial distribution of marine mammal species in oceanic waters. Variability in these features drives seasonal and inter-annual variation in animal distribution and density. In addition, the recently collected data suggests changes in the abundance of oceanic dolphins with lower overall densities in recent years compared to 2003-2009. These changes in abundance may be associated with either shifts in spatial distribution in response to habitat changes or declines in population size. Ongoing data collection beyond the current project to update the habitat models is needed to better understand these observed trends. The model and data outputs from this project are currently supporting spatial planning efforts by BOEM and other federal partners related to aquaculture and wind energy development. As products are finalized, they are being shared with the public and interested partners through the National Centers for Environmental Information, the Marine Cadastre, and the NMFS Cetacean Density Mapper.