

## Environmental Studies Program: Ongoing Study

Field	Study Information
Title	Gulf of Mexico (GOM) Marine Assessment Program for Protected Species (GoMMAPPS): Seabird Fieldwork and Data Analysis (GM-16-09c)
Administered by	Gulf of Mexico Region
BOEM Contact(s)	Melanie Damour ( <a href="mailto:Melanie.Damour@boem.gov">Melanie.Damour@boem.gov</a> )
Procurement Type(s)	Interagency Agreement
Conducting Organization(s)	U.S. Fish and Wildlife Service (USFWS) Southeast Region
Total BOEM Cost	\$2,400,000
Performance Period	FY 2017–2024
Final Report Due	Spring 2024
Date Revised	October 23, 2023
Problem	Provide improved information on living marine resource abundance, distribution, habitat use, and behavior in the GOM.
Intervention	Properly develop, mitigate, and monitor protocols for potential impacts of human activities.
Comparison	Improve discovery of and access to data and study products to compare anthropogenic impacts in living natural resources.
Outcome	Provide important information to inform both BOEM and BSEE regulatory needs, as well as other agencies and stakeholders involved in effective management and conservation of Gulf protected species.
Context	All Gulf of Mexico planning areas.

BOEM Information Need(s): Improved information is needed on living marine resource abundance, distribution, habitat use, and behavior in the GOM to properly mitigate and monitor for potential impacts of human activities, including those related to the oil and gas industry. Understanding of cumulative impacts on protected species in the Gulf from both natural and anthropogenic forcing is required to inform National Environmental Policy Act (NEPA) documents and consultations related to Endangered Species Act (ESA), Marine Mammal Protection Act (MMPA), essential fish habitat (EFH), Migratory Bird Treaty Act (MBTA), and other statutes that govern bureau activities. The results of this study provides important information to inform both BOEM and BSEE regulatory needs, as well as other agencies and stakeholders involved in effective management and conservation of Gulf protected species.

Background: Better information is needed on living marine resource abundance, distribution, habitat use, and behavior in the GOM to properly mitigate and monitor for potential impacts of human activities. The GOM is a heavily utilized and industrialized basin, supporting oil and gas exploration and development, commercial and recreational fishing, shipping, military operations, and tourism. Given the highly migratory nature of many protected species in the Gulf, the scientific community has

recommended a “Gulf-wide” approach, whenever possible, which considers the entire Large Marine Ecosystem (LME). To fill these gaps, GoMMAPPS is modeled after the successful Atlantic Marine Assessment Program for Protected Species (AMAPPS) and is a collaboration among BOEM, National Oceanic and Atmospheric Administration (NOAA), USFWS, and the U.S. Navy. GOMMAPPS focuses on collecting seasonal data on the abundance, distribution, and behavior of seabirds, throughout the U.S. GOM Economic Exclusion Zone (EEZ). Using current habitat utilization models, this study is generating seasonal density maps of various species to inform stock assessments and as a tool for decision makers concerned with possible adverse impacts from offshore energy development, military readiness exercises, and other activities.

**Objectives:** The objective of this study is to improve information about protected living marine resources through multi-year surveys of seabirds over the entire GOM EEZ.

**Methods:** GoMMAPPS conducts repeated, broad-scale surveys of seabirds in the GOM in order to:

- Estimate abundances using direct aerial and shipboard surveys;
- Collect similar data at finer scales at several sites of particular interest using visual and acoustic survey techniques;
- Conduct tag telemetry studies within surveyed regions to develop corrections for availability bias in the abundance survey data;
- Collect additional data on habitat use and life-history, residence time, and frequency of use;
- Assess the population size of surveyed species at regional scales, and develop models and associated tools to translate these survey data into seasonal, spatially-explicit density estimates incorporating habitat characteristics.

Collaboration via data sharing with other related observational efforts in the Gulf was accomplished. In keeping with an LME approach, “gulf-wide” coordination was applied to the larger migratory pathways of various species.

**Specific Research Question(s):**

- 1) What are the major gaps in current GOM deepwater ocean observing systems that can be filled by this study?
- 2) How do oceanographic and other ecosystem properties change both temporally and spatially in the deep GOM, including in comparison to historical datasets?
- 3) What are the natural and anthropogenic drivers of observed variability in these time series?

**Current Status:** The two main components of the GoMMAPPS Seabird Study were the design and implementation of aerial and vessel-based surveys to collect information characterizing the distribution, abundance, and diversity of birds in the northern GOM; and using models and other empirical data to interpret the influences of natural and anthropogenic variables on avian species. The study evaluated the null model that avian populations are not influenced by: presence and status of offshore oil and gas platforms; proximal fisheries activities; proximal micro-habitat or forage indicators; oceanographic

features; and broad-scale weather patterns. The study's period of performance is being extended to 2024. The final study report is currently in progress and is anticipated to be published in spring 2024.

#### Publications Completed:

Davis KL, Silverman ED, Sussman AL, Wilson RR, Zipkin EF. 2022. Errors in aerial survey count data: identifying pitfalls and solutions. *Ecology and Evolution* 12(3): <https://doi.org/10.1002/ece3.8733>

Jodice PGR, Michael PE, Gleason JS, Haney JC, Satgé YG. 2021a. Expanding the marine range of the endangered black-capped petrel *Pterodroma hasitata*: Occurrence in the northern Gulf of Mexico and conservation implications. *BioRxiv*: <https://doi.org/10.1101/2021.01.19.427288>

Jodice PGR, Michael PE, Gleason JS, Haney JC, Satgé YG. 2021b. Revising the marine range of the endangered black-capped petrel *Pterodroma hasitata*: Occurrence in the northern Gulf of Mexico and exposure to conservation threats. *Endangered Species Research* 46:49-65.

Michael PE, Hixson KM, Haney JC, Satgé YG, Gleason JS, Jodice PGR. 2022. Seabird vulnerability to oil: exposure potential, sensitivity, and uncertainty in the northern Gulf of Mexico. *Frontiers in Marine Science* 9: 880750 <https://doi.org/10.3389/fmars.2022.880750>

Michael PE, Hixson KM, Gleason JS, Haney JC, Satgé YG, Jodice PGR. 2023. Migration, breeding location, and seascape shape seabird assemblages in the northern Gulf of Mexico. *PLoS ONE* 18(6): e0287316 <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0287316>

#### Data Releases:

Gleason JS, Wilson RR, Jodice PGR, Satgé YG, Michael PE, Hixson KM, Sussman AL, Haney JC. 2022. Seabird visual surveys using line-transect methods collected from NOAA vessels in the northern Gulf of Mexico for the Gulf of Mexico Marine Assessment Program for Protected Species (GoMMAPPS) project from 2017-07-21 to 2019-09-25 (NCEI Accession 0247206). U.S. Department of the Interior, Bureau of Ocean Energy Management. NOAA National Centers for Environmental Information. Unpublished Dataset. <https://doi.org/10.25921/afrq-h385> [Date Accessed]

Sussman AL, and Eyler MC. 2018. EPA 40km hexagons for conterminous United States. U.S. Geological Survey data release. Washington (DC): U.S. Department of the Interior, U.S. Geological Survey. <https://doi.10.5066/P9C56AY1>

Wilson RR, Gleason JS, Lyons JE, Silverman ED, Sussman AL, Zipkin EF, Davis KL. 2022. Seabird visual surveys using line-transect methods collected from USFWS aircraft in the Gulf of Mexico for the Gulf of Mexico Marine Assessment Program for Protected Species (GoMMAPPS) project from 2018-01-31 to 2020-02-12 (NCEI Accession 0247205). U.S. Department of the Interior, Bureau of Ocean Energy Management. NOAA National Centers for Environmental Information. Unpublished Dataset. <https://doi.org/10.25921/vyq0-tv44> [Date Accessed]

Affiliated WWW Sites: N/A