



## Gulf of Mexico Marine Assessment Program for Protected Species (GoMMAPPS)

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### PROJECT INFORMATION

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Project Website: <https://www.boem.gov/GOMMAPPS/>



## **LONG-TERM GOALS**

Improved information is needed on living marine resource abundance, distribution, habitat use, and behavior in the Gulf of Mexico (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 GoM 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), Migratory Bird Treaty Act (MBTA), and other statutes that govern agency activities. The results of this study will provide important information to regulatory agencies, as well as other agencies and stakeholders involved in effective management and conservation of GoM protected species.

## **OBJECTIVES**

The GoMMAPPS program is a multi-agency partnership program to collect and disseminate broad-scale seasonal data on the abundance and distribution of marine mammals, seabirds, and sea turtles from nearshore to the EEZ in the GoM. These data will improve information for living marine resources in the GoM to better understand ecosystem health and productivity and for mitigation and monitoring of impact-producing factors, including from offshore energy development.

## **APPROACH**

The GoMMAPPS program is composed of both outreach and fieldwork components to ensure that the data collected are appropriately disseminated and communicated to stakeholders. The outreach portion of the project is being performed by all federal agencies and Quantum Spatial Incorporated (QSI), with the latter spearheading development of a data inventory and gaps analysis, as well data model and data schema documents, and story maps to be hosted through the MarineCadastre.

The GoMMAPPS fieldwork component is being performed by all federal agencies, with NOAA, USFWS, and USGS leading the marine mammal, seabird, and sea turtle data collection respectively. BOEM is serving as the overall program lead for the project, providing funding through its Environmental Studies Program and including in-kind contributions from each the partnering agencies. Broad-scale regional aerial and ship-based line-transect surveys are being performed throughout the year, including visual observations, acoustic monitoring, and collection of environmental data. Tag telemetry work is being performed for in-water captured sea turtles, with satellite tracking providing turtle movements and dive behavior. Biological samples are being collected to inform population connectivity. Ultimately, the data will be used to inform spatially-explicit density distribution models for the various species being studied.

Data management and dissemination standards will be followed by all parties including appropriate data QA/QC and application of metadata standards, as well as timely distribution of datasets to the public.



## **WORK COMPLETED**

In terms of outreach and planning, the QSI team finished a draft white paper presenting a data inventory and gaps analysis for the marine species of interest to GoMMAPPS. The team also developed a draft Story Map to be eventually posted on the MarineCadastre showing the results of the gaps analysis and recommendations for data collection during GoMMAPPS. A data model and schema were developed to help inform appropriate data management and eventually data archiving within the project.

A large team of program scientists spent months in the field during spring/summer 2017 collecting data from multiple observing platforms, including aircraft, oceanographic vessels, and satellite tagged animals. NOAA scientists and team members spent July and August aboard NOAA Ship *Gordon Gunter* conducting visual line transect and passive acoustic monitoring surveys and conducting aerial surveys for marine mammals and sea turtles from a NOAA Twin Otter aircraft. These data will contribute to improved abundance and spatial distribution estimates. For seabirds, fieldwork began in late April and was ongoing through the summer aboard NOAA vessels of opportunity (5 seabird surveys were conducted between April – August), as well as via a USFWS Kodiak aircraft survey. Sea turtle nesting and in-water captures were conducted by USGS and are ongoing at several western Florida locations resulting in the collection of tissue samples and the deployment of a host of satellite-tracking tags. Habitat modeling efforts are ramping up to combine historical satellite tracks with aerial survey data collected by partners. Progress is also being made towards the integration of automated imaging systems during the aerial surveys and extending sea turtle fieldwork to all Gulf states.

All team members have given multiple presentations to the public and interested stakeholders. This includes talks given at the GoMMAPPS 2<sup>nd</sup> Annual Informational Meeting in New Orleans on February 6<sup>th</sup>, 2017. A GoMMAPPS ½-day session was also held during BOEM’s Information Transfer Meeting in New Orleans on August 23<sup>rd</sup>, 2017.

## **RESULTS**

Based on the gaps analysis, it was further demonstrated that up-to-date seasonal information is required for all taxonomic groups being studied as part of the GoMMAPPS program. QSI completed a draft white paper titled: “Identifying past studies and prioritizing research gaps in support of the Gulf of Mexico Assessment Program for Protected Species (GoMMAPPS)”. The team has also completed a draft story map based on this gap analysis to be hosted on the MarineCadastre. The large volume of data collected during the first field season alone will start to answer questions about the abundance, distribution, and behavior of living marine resources in the northern GoM.

NOAA scientists completed both a summer vessel survey and aerial survey in 2017. The aerial survey was conducted from 29 June through 17 August. The survey included 293 marine mammal sightings and 929 sea turtle sightings. The vessel survey began on 21 July and



concluded 25 August, 2017. The survey team conducted dual team visual line transect surveys concurrently with passive acoustic surveys. Environmental and oceanographic data were collected, as well as, the collection of plankton samples at night. Preliminary data include 338 visual marine mammal sightings including sperm whales, Bryde's whales, bottlenose dolphins, pantropical spotted dolphins, Risso's dolphins, and at least 10 additional species. Exciting observations from the field included a sighting of killer whales in July about 200 nautical miles west of Sarasota, FL and several sightings of Bryde's whales which were recently proposed for listing as endangered under the Endangered Species Act (<http://www.fisheries.noaa.gov/pr/species/mammals/whales/brydes-whale.html>).

For seabirds, this first field season represents perhaps the most comprehensive effort ever for pelagic seabirds in the GoM. To date, thousands of seabirds have been documented by USFWS biologists and USGS contracted seabird observers during an extended period of fieldwork. Fieldwork began in late April and was ongoing through the summer aboard NOAA vessels of opportunity (5 seabird surveys were conducted between April – August), as well as via a USFWS Kodiak aircraft survey. On the first cruise which included both the continental shelf and deeper waters, no fewer than 25 species of pelagic, offshore, and coastal marine seabirds were counted. Researchers have been surprised by both the diversity and abundance of seabirds encountered in 2017, including multiple observations of the rare Black-capped Petrel.

A variety of innovative tools are being used by USGS scientists and team members to better understand sea turtle distributions and genetics in the GoM. Sea turtle nesting and in-water captures were conducted during this time period and resulted in deployment of depth-capable satellite tags on two female green turtles that nested in the northern GoM and a handful of juvenile turtles captured at various sites across Northwest Florida. These captures will continue into the winter months and extend westward into Mississippi and Louisiana. Habitat modeling of historic sea turtle tracking data was completed and efforts are ramping up to combine these historical satellite tracks with aerial survey data collected by partners, including the hundreds of sea turtle observations collected during the summer surveys. Progress is also being made towards the integration of automated imaging systems during the aerial surveys and extending sea turtle fieldwork to all GoM states.

#### **DELIVERABLES/DATA TRANSMISSIONS**

*How are the project's deliverables and data contributing to the following four NOPP evaluation factors?*

##### **1. National Security**

The mission of BOEM is to manage development of U.S. Outer Continental Shelf (OCS) energy and mineral resources in an environmentally and economically responsible way. The vision of the bureau is excellence in the management of these OCS resources for environmental sustainability, economic development, and national security. The GoMMAPPS program is providing data to inform offshore energy development in an



environmentally responsible manner by providing information for ESA, MMPA, MBTA, and NEPA environmental analyses and ensuring appropriate mitigation measures are in place to minimize harm to GoM living marine resources.

Eglin Air Force Base (AFB) hosts users and tenants that conduct high-priority DoD missions in the GoM, including the testing of strategic defense weapons. The GoMMAPPS program provides important data on federally-protected species that are potentially impacted by DoD activities. This information can inform and potentially expedite ESA and MMPA consultations with NMFS, which enables missions to be conducted in a timely manner by allowing the selection of locations to avoid high concentrations of protected species. Thus any improvement in density estimates and locations of seasonal concentrations of protected species supports DoD testing and training in the GOM.

The Navy is statutorily mandated to protect U.S. national security by being ready, at all times, to effectively prosecute war and defend the nation by conducting operations at sea. To comply with NEPA and Executive Order 12114, Environmental Effects Abroad of Major Federal Actions, the Navy must assess the potential environmental impacts associated with military readiness activities conducted at sea, in particular those activities that could potentially impact human and natural resources, especially marine mammals, sea turtles, and other marine resources. Data collected through GOMMAPPs will ensure that the best available science informs these assessments.

2. **Economic Development (e.g., new product lines, businesses, practices, increased efficiency, new manufacturing techniques)**

BOEM's mission related to offshore energy development also contributes to national economic development. The GoMMAPPS program is providing information to allow for development in an environmentally responsible manner. Information will also inform sustainable fisheries management in the GoM with fisheries playing an important economic role.

3. **Quality of Life (e.g., public health, ecosystem health, coastal resource management)**

The GoMMAPPS program will provide seasonal information documenting the abundance, distribution, and diversity of marine mammals, seabirds, and sea turtles in the GoM. These taxa are important indicators of ecosystem health in the GoM and understanding how they vary will inform responsible resource management.

4. **Science Education and Communication**

Communicating the results of GoMMAPPS to the public and stakeholders is an important part of the program. All PIs have participated in 2 public meetings during the last year to give presentations on program results. Storymaps are being developed to



communicate the evolution of the GoMMAPPS program and its findings. A website provides information on methods, status, updates, presentations, and a field blog.

## **IMPACTS AND APPLICATIONS**

*What are the potential future impacts and applications of the project with regard to the following four NOPP evaluation factors?*

### **1. National Security**

Information collected from GoMMAPPS will help BOEM ensure that appropriate mitigations are in place for offshore energy development activities, which help to serve the national security interest. Spatially-explicit density estimates that will be developed from the GoMMAPPS data will help ensure that mitigations are effective in both space and time for minimizing harm to GoM living marine resources from the various activities associated with oil and gas development.

The ability to conduct military missions and satisfy DoD objectives directly impacts national security. GoMMAPPS supports these efforts by gathering data the Air Force can use to identify species- or location-specific mitigations for military activities while still achieving mission objectives. By providing spatially-explicit census data the GoMMAPPS project can improve species avoidance, thus expediting approvals for weapons testing and supporting National Security.

### **2. Economic Development (e.g., new product lines, businesses, practices, increased efficiency, new manufacturing techniques)**

Information collected from GoMMAPPS will ensure that appropriate mitigations are in place for offshore energy development activities, which also contribute to national economic development. Mitigations for sustainable fisheries may also be informed by the program, with GoM fisheries having important economic value.

### **3. Quality of Life (e.g., public health, ecosystem health, coastal resource management)**

By understanding the status of GoM living marine resources and how they're impacted by both natural and anthropogenic stressors, government agencies will be better equipped to conserve these important species and their habitat.

### **4. Science Education and Communication**

Improved outreach and educational materials will be developed for GoM living marine resources with application to a wide range of regional stakeholders.

## **RELATED PROJECTS**

Atlantic Marine Assessment Program for Protected Species

(<https://www.nefsc.noaa.gov/psb/AMAPPS/>): Established a program in the Atlantic for collecting broad-scale species abundance and distribution datasets.



Gulf of Mexico Bryde's Whales Project (<https://restoreactscienceprogram.noaa.gov/funded-projects/brydes-whales>): Leveraging of programs to provide data on Bryde's whale distributions and habitat, as well as opportunistic tagging opportunities.

Gulf of Mexico Avian Monitoring Network (<https://gomamn.org/>): Approaches, priorities, and methodology developed through GoMAMN are being applied to the GoMMAPPS program.

Sea Turtle Movement and Habitat Use in the Northern Gulf of Mexico: Leveraging of tracks from tagged animals encountered during dredging activities for offshore marine minerals.

#### **PUBLICATIONS**

None to date

#### **PATENTS**

N/A

#### **WORK PLAN**

Field work is ongoing with the next major aerial and ship surveys planned for January through March of 2018. Survey efforts including satellite tagging work will continue through 2018. A GoMMAPPS 3<sup>rd</sup> Annual Informational Meeting is being held on February 5<sup>th</sup>, 2017 in New Orleans in conjunction with the Gulf of Mexico Oil Spill and Ecosystem Science (GOMOSES) Conference. A new story map is being developed to tell the evolving story of the GoMMAPPS program and demonstrate initial findings from the program. An article will be published on the program in the Winter issues of DOI's NEWSWAVE newsletter.

#### **OUTREACH MATERIALS**

GoMMAPPS Website: <https://www.boem.gov/GOMMAPPS/>

GoMMAPPS Field Diaries (with pictures): <https://www.boem.gov/GOMMAPPS-Diaries/>

Press Release: <https://www.boem.gov/press06072017/> - "BOEM Joins Federal Partners to Launch Intensive Marine Assessment Program for Protected Species in the Gulf of Mexico"