GU1703 NOAA SEFSC GoMMAPPS Additional Information and Data Dictionary

Dataset title: Cetacean visual observations using line-transect survey methods, and environmental parameters collected by CTD and other instruments onboard the NOAA Ship Gordon Gunter (GU) in the Gulf of Mexico, during the Gulf of Mexico Marine Assessment Program for Protected Species (GoMMAPPS survey GU1703) from 2017-07-03 to 2017-08-23.

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Related Funding Agencies: U.S. Department of Interior (DOI), Bureau of Ocean Energy Management (BOEM) and the U.S. Department of Commerce (DOC), National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service (NMFS), Southeast Fisheries Science Center (SEFSC).

Related Projects and/or Programs: Gulf of Mexico Marine Assessment Program for Protected Species (GoMMAPPS), University of Miami’s Cooperative Institute for Marine and Atmospheric Studies (CIMAS).

Ships Names or Platforms: NOAA Ship Gordon Gunter (call sign WTEO - ICES code 33GG).

#### Survey Naming Convention

* surveyEventID: Unique identifier to a survey event (a.k.a. cruise code).
  + VVYYCC:
    - VV= vessel code
    - YY = year
    - CC = survey or project number during the year
      * E.g.: GU1703

Sea Areas or Regions: United States of America, Gulf of Mexico

Data Types: CETACEANS, VISUAL OBSERVATIONS, CONDUCTIVITY, OCEAN TEMPERATURE, WATER DEPTH, SALINITY/DENSITY, OXYGEN, FLUORESCENCE, ACOUSTIC VELOCITY

Abstract: As part of the Gulf of Mexico Marine Assessment Program for Protected Species (GoMMAPPS), the Southeast Fisheries Science Center (SEFSC) conducted shipboard surveys of the U.S. oceanic waters of the Gulf of Mexico out to the Exclusive Economic Zone (EEZ) from 2017-07-03 to 2017-08-23. The survey was designed for a two-team independent visual observer approach with distance sampling to estimate the detection probabilities for marine mammal sightings. This dataset includes marine mammal visual observation data and effort points with surveying conditions that can be used in abundance and density modeling per visual line-transect survey protocols. This dataset also includes opportunistic marine mammal photographs and biopsy samples and non-marine mammal sightings (a.k.a. occurrences) such as sea turtles. Raw and processed files from conductivity, temperature and depth (CTD) casts performed on a daily basis during the survey are also available.

Purpose: The primary goal was to collect data on the distribution and abundance of marine mammals in the U.S. waters of the Gulf of Mexico (GOM) using two independent visual survey teams.

Sampling protocol (a.k.a. Cruise report): https://repository.library.noaa.gov/view/noaa/32750

Research Permit: All marine mammal data, including photographs and biopsies, were collected under the National Marine Fisheries Service (NMFS), the Marine Mammal Protection Act (MMPA) and Endangered Species Act (ESA) permit number: NMFS ESA/MMPA Permit No.14450. Biopsy samples were collected by trained and authorized personnel under the permit. If a photo displaying a marine mammal is used, please include the permit number in the captions and acknowledge NOAA Fisheries.

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Thank you to the marine mammal observers who participated in the SEFSC surveys and also to the crew of the NOAA Ship *Gordon Gunter*.

Keywords:

*UNITED STATES OF AMERICA*

*GULF OF MEXICO*

*DOC/NOAA/NMFS/SEFSC*

*DOI/BOEM*

*GoMMAPPS*

*Gulf of Mexico Marine Assessment Program for Protected Species*

*SHIPS*

*SIGHTING*

*In Situ/Laboratory Instruments*

*LINE TRANSECT SAMPLING*

*DISTANCE SAMPLING*

*VISUAL OBSERVATION*

*BIG EYE BINOCULARS*

*MARINE MAMMALS*

*CETACEAN*

*BALEEN WHALES*

*TOOTHED WHALES*

*DOLPHINS*

*ENDANGERED SPECIES*

*SPECIES DISTRIBUTION MODELS*

*POPULATION ABUNDANCE*

*SPECIES ABUNDANCE*

*CAMERA*

*PHOTOGRAPH*

*VIDEO*

*INDICATOR SPECIES*

*ATMOSPHERIC/OCEAN INDICATORS*

*CTD*

*CONDUCTIVITY*

*OCEAN TEMPERATURE*

*WATER DEPTH*

*SALINITY*

*OXYGEN*

*FLUORESCENCE*

*SPECIES/POPULATION INTERACTIONS*

*BIOLOGICAL DATA*

*SEA TURTLES*

*BIOPSY*

Dataset content and format

**NOAA\_SEFSC\_GoMMAPPS\_GU1703\_VisualSightingData/:** This dataset contains visual data collected by two independent observer teams provided as relational tabular data via five comma delimited (.csv) files. In addition, a sixth file is provided containing biopsy sample data.

1. effort points with sampling conditions: effort-point data; main goal is to provide sampling conditions recorded by observers and platform movement during marine mammal visual observations (NOAA\_SEFSC\_GoMMAPPS\_GU1703\_EffortPoints\_20211115.csv)
2. marine mammal (cetacean) sightings cues with calculated radial distances: cues to marine mammal sightings; main goal is to provide cue’s location and radial distance in relation to the platform based on distance, bearing, and observation height (NOAA\_SEFSC\_GoMMAPPS\_GU1703\_MMSightsCues\_20211115.csv)
3. marine mammal (cetacean) sightings with species (or lowest taxonomic level possible) identifications and behavioral observations: marine mammal sightings; main goal is to provide sighting’s attributes, behavioral observations, and remarks (NOAA\_SEFSC\_GoMMAPPS\_GU1703\_MMSights\_BehObs\_20211115.csv)
4. marine mammal (cetacean) group size estimates by sighting number and observer (recordedBy): group size estimations for marine mammal sightings; main goal is to provide minimum, best, and maximum values estimated by observers (NOAA\_SEFSC\_GoMMAPPS\_GU1703\_MMGroupSizes\_20211115.csv)
5. non-mammal (cetacean) opportunistic occurrences with calculated radial distances: non-marine mammal occurrences; main goal is to provide occurrence’s attributes, location, and radial distance in relation to the platform based on distance, bearing, and observation height (NOAA\_SEFSC\_GoMMAPPS\_GU1703\_NonMammals\_20211115.csv)
6. biopsy samples with sample ID and location: main goal is to provide biopsySampleID with sighting number, species, and location where samples were collected (NOAA\_SEFSC\_GoMMAPPS\_GU1703\_BiopsySamples\_20211115.csv)

Dates of the .csv file names indicate when the file was created (YYYYMMDD; Y=year, M=month, D=day). Effort points can be cross-referenced to cetacean sightings and cues, and to non-mammal occurrences via eventID. Group size estimates can be cross-referenced to cetacean sightings via sightingNumber and species and may include multiple entries per sighting by different observers.

**NOAA\_SEFSC\_GoMMAPPS\_GU1703\_CTD/:** This directory contains environmental parameters collected during conductivity, temperature and depth (CTD) casts and are provided as raw and processed files in subdirectories:

### NOAA\_SEFSC\_GoMMAPPS\_GU1703\_CTD/ This directory contains water column profiles made by different instruments during the expedition. It is divided into 2 subfolders:

* + NOAA\_SEFSC\_GoMMAPPS\_GU1703\_CTD\_Raw/ This directory contains raw files generated by the Seabird (SBE) system:
    - \*.XMLCON and/or .CON (case independent) - configuration file; the .xmlcon file is in XML format and the CON file is binary
    - \*.hdr - header metadata about the cast; ascii text
    - \*.hex - raw hexadecimal data from the instrumentation during the cast; ascii text
    - \*.mrk - file contains a line for each mark with the selected mark variables.
  + NOAA\_SEFSC\_GoMMAPPS\_GU1703\_CTD\_Processed/ This directory contains the processed SBE files:
    - \*.cnv - processed fiSBE CTD file; ascii text
    - CNV file names include the surveyEventID, followed by the cast number, and a string (“AFLDB2S”) assigned by the processing software:
      * GU1703\_CCCAFLDB2S.cnv
        + CCC = cast number
      * Example:  GU1703\_001AFLDB2S

**NOAA\_SEFSC\_GoMMAPPS\_GU1703\_Photos\_Metadata\_NCEI/**: This directory contains the media in .jpg and .png format and some short video clips (.mp4 format) embedded with the exchangeable image file (EXIF) metadata recorded by the cameras (e.g., time, date, camera settings) as well as metadata tags specific to the research and survey (e.g., project name, permit number). Media are taken opportunistically with project and personal cameras and may include photos and videos of marine mammals and other organisms seen during the sighting or survey. Photos are organized by collection date and divided into subdirectories by the observer team (designated by location on the ship) responsible for collecting the media, by the observer’s initials, or by the small boat name (e.g. R3), with additional nested folders that correspond to the sighting number (starting at one and numbered consecutively from the beginning of each survey) of that date. Subdirectories are defined as:

* Bow = Observers located on the bow of the ship; photos taken with project cameras
* Flying Bridge (FB) = An observer platform located directly above the ships’ bridge; photos taken with project cameras
* Two letters = observer’s initials; media taken with personal cameras
* R3 = The small boat deployed from the ship

For example, the nested file structure for photos may be as follows:

* YYYY\_MM\_DD
  + YYYY\_MM\_DD\_Bow
    - Sighting\_XXX
  + YYYY\_MM\_DD\_FB
    - Sighting\_XXX
  + YYYY\_MM\_DD\_MB
    - Sighting\_XXX

**Data dictionary**: Definitions, vocabulary and keywords used during SEFSC datasets follow standard terms, such as The Darwin Core (dwc) and the Global Change Master Directory (GCMD) as much as possible. In addition, other extensions such as the Ocean Biodiversity Information System (OBIS) Marine Biogeography (MGB) and OBIS MBG Visual Line Transect Survey (MBGVLTS) are also consulted. Terms are used as defined in each standard, modified, or created all together to fit specific SEFSC’s needs. Definitions for each parameter and/or variable used during the GU1703 survey and in the .csv files are provided also as a .csv file (GU1703\_NOAA\_SEFSC\_GoMMAPPS\_DataDictionary.csv).