

Please provide the following information, and submit to the NOAA DM Plan Repository.

Reference to Master DM Plan (if applicable)

As stated in Section IV, Requirement 1.3, DM Plans may be hierarchical. If this DM Plan inherits provisions from a higher-level DM Plan already submitted to the Repository, then this more-specific Plan only needs to provide information that differs from what was provided in the Master DM Plan.

URL of higher-level DM Plan (if any) as submitted to DM Plan Repository:

1. General Description of Data to be Managed

1.1. Name of the Data, data collection Project, or data-producing Program:

Biogeographic Characterization of Fish Communities within the Flower Garden Banks National Marine Sanctuary (2006 - 2007)

1.2. Summary description of the data:

The overarching goal of this collaboration was to provide the Flower Garden Banks National Marine Sanctuary (FGBNMS) staff with information on biogeographic patterns within the Sanctuary. This specific project focused on the development of a plan to spatially and quantitatively characterize the fish communities in relatively shallow waters throughout the Sanctuary (less than 110 ft). This collaboration also included the initial implementation of that plan. The FGBNMS represents the northernmost tropical western Atlantic coral reef on the continental shelf and support the most highly developed offshore hard bank community in the region. The complexity of habitats supports a diverse assemblage of organisms including approximately 250 species of fish, 23 species of coral, and 80 species of algae in addition to large sponge communities. Understanding and monitoring these resources is critical to both sanctuary inventory and management activities. Monitoring of the biological communities has taken place at FGBNMS since the 1970s. This work has focused primarily on monitoring the benthos with video transects and photostations documenting transitions between coral, algae and sponge communities over time. Until relatively recently, little has been done to monitor or characterize the reef fish community. In 1994 the Reef Environmental Education Foundation (REEF) began surveys of the Sanctuary and utilized a combination of REEF personnel, volunteers, and Sanctuary staff to visually census reef fish populations via roving diver surveys. These surveys have been invaluable in terms of species list development and understanding the ranges of these species. Subsequently, a stationary point-count survey technique was utilized to begin to quantify community metrics such as species abundance and trophic structure at selected locations. These data provide an important starting point for characterizing the fish community; however, they are limited in scope of inference to small portions of the Sanctuary coral cap environment and are therefore difficult to utilize in developing population estimates at the scale of the Sanctuary.

1.3. Is this a one-time data collection, or an ongoing series of measurements?

One-time data collection

1.4. Actual or planned temporal coverage of the data:

2006-09 to 2007-09

1.5. Actual or planned geographic coverage of the data:

W: -93.82, E: -93.59, N: 27.92, S: 27.87

1.6. Type(s) of data:

(e.g., digital numeric data, imagery, photographs, video, audio, database, tabular data, etc.)

1.7. Data collection method(s):

(e.g., satellite, airplane, unmanned aerial system, radar, weather station, moored buoy, research vessel, autonomous underwater vehicle, animal tagging, manual surveys, enforcement activities, numerical model, etc.)

1.8. If data are from a NOAA Observing System of Record, indicate name of system:

1.8.1. If data are from another observing system, please specify:

2. Point of Contact for this Data Management Plan (author or maintainer)

2.1. Name:

NCCOS Scientific Data Coordinator

2.2. Title:

Metadata Contact

2.3. Affiliation or facility:

2.4. E-mail address:

NCCOS.data@noaa.gov

2.5. Phone number:

3. Responsible Party for Data Management

Program Managers, or their designee, shall be responsible for assuring the proper management of the data produced by their Program. Please indicate the responsible party below.

3.1. Name:

NCCOS Scientific Data Coordinator

3.2. Title:

Data Steward

4. Resources

Programs must identify resources within their own budget for managing the data they produce.

4.1. Have resources for management of these data been identified?

4.2. Approximate percentage of the budget for these data devoted to data management (specify percentage or "unknown"):

5. Data Lineage and Quality

NOAA has issued Information Quality Guidelines for ensuring and maximizing the quality, objectivity, utility, and integrity of information which it disseminates.

5.1. Processing workflow of the data from collection or acquisition to making it publicly accessible

(describe or provide URL of description):

Process Steps:

- 2007-09-01 00:00:00 - A stratified random sampling design was employed to sample fish on the coral cap communities of the East and West Flower Garden Banks. The survey domain at each coral cap was designated as all areas shallower than 110 feet below sea level. Fine-scale (0.5 m) bathymetric data provided by the Flower Garden Banks National Marine Sanctuary was used to ascertain depths and slope. In 2006, the survey domain was partitioned into flat/gentle sloping (0-30 degrees) and steep sloping (>30 degrees) area and into East and West Banks. A continuous surface of slope estimates was produced for each Bank using a nearest neighbor filter on an aggregated resolution (5m X 5m) bathymetric grid derived from the original bathymetric dataset in ArcGIS (ESRI, 2006). The combination of two slope and two location groupings resulted in four strata. Survey sites were then randomly positioned in each stratum in ArcGIS (ESRI, 2006). Data were collected using 100m² transects. Transects radiated from each point at a random bearing. In 2007, a sample frame consisting of mutually-exclusive 50m X 50m grid cells was produced and overlaid on each coral cap to exhaustively cover all diveable areas (i.e less than 110ft). Each grid cell was considered a sample unit and units were divided into six strata. Strata were defined using benthic habitat, location and depth. High (dominated by plate and head corals) and low relief (dominated by Madracis and rubble) coral categories were determined using a benthic habitat map generated by visual interpretation of multibeam data. Units were divided into deep (>105 ft) and shallow (less than 105ft) groups based on the location of sampling unit centroids on multibeam bathymetric models. Location and high relief coral categories were divided by depth, low relief coral was not. Data were collected within 100m² transects. Transects radiated from the centroid of each sample unit at a random bearing. Once in the field, the boat captain navigated to previously selected sites using a handheld GPS unit. On-site, divers were deployed and maintained contact with each other throughout the entire census. One diver was responsible for collecting data on the fish communities utilizing the belt-transect vis

ual census technique over an area of 100m² (25m length X 4m width). The belt-transect diver obtained a random compass heading for the transect prior to entering the water and recorded the compass bearing (0-360°) on the data sheet. Visibility at each site must be sufficient to allow for identification of fish at a minimum of 2 m away. Once reasonable visibility was ascertained, the diver attached a tape measure to the substrate and allowed it to roll out for 25m while they collected data. As a rule, the habitat was not altered in any manner by lifting or moving structure, however, the observer did record fish seen in holes, under ledges and in the water column. To identify, enumerate, or locate new individuals, divers moved off the centerline of the transect as long as they stayed within the 4m transect width and did not look back along area already covered. The diver was allowed to look forward toward the end of the transect for the distance remaining (i.e. if the diver was at meter 15, he can look 10 meters distant, but if he was at meter 23, he could only look 2 meters ahead). On-site, no attempt to avoid structural features within a habitat such as a sand patch or an anchor was made as these features affect fish communities and are "real" features of the habitats. The only instance where the transect deviated from the designated path was to stay above 110 ft. Transect lasted 15 minutes regardless of habitat type or number of animals present. This allowed more mobile animals the opportunity to swim through the transect, and standardized the samples collected to allow for comparisons. (continued)

- 2007-09-01 00:00:00 - (continued from above) Data were collected on the following: 1) Logistic information - diver name, dive buddy, date, time of survey, site code, transect bearing. 2) Taxa presence - as the tape rolls out at a relatively constant speed, the diver records all fish species to the lowest taxonomic level possible that come within 2m of either side of the transect. To decrease the total time spent writing, four letter codes are used that consist of the first two letters of the genus name followed by the first two letters of the species name. In the rare case that two species have the same four-letter code, letters are added to the species name until a difference occurs. If the fish can only be identified to the family or genus level then this is all that is recorded. If the fish cannot be identified to the family level then no entry is necessary. 3) Abundance and size - the number of individuals per species is tallied in 5cm size class increments up to 35cm using visual estimation of fork length. If an individual is greater than 35cm, then an estimate of the actual fork length is recorded. 4) Photos ? individuals too difficult to identify or unique in some manner may be photographed for later clarification. Data caveats: The mission in 2007 was aborted early due to Hurricane Humberto (September 2007). No sites were surveyed on the West Bank and only a subset of the sample of random sites selected on the East Bank were surveyed. Randomly selected sites on the East Bank were not sampled randomly. These data should not be aggregated to make synoptic population or community estimates for the East Bank. (end continuation)

5.1.1. If data at different stages of the workflow, or products derived from these data, are subject to a separate data management plan, provide reference to other plan:

5.2. Quality control procedures employed (describe or provide URL of description):**6. Data Documentation**

The EDMC Data Documentation Procedural Directive requires that NOAA data be well documented, specifies the use of ISO 19115 and related standards for documentation of new data, and provides links to resources and tools for metadata creation and validation.

6.1. Does metadata comply with EDMC Data Documentation directive?

No

6.1.1. If metadata are non-existent or non-compliant, please explain:

Missing/invalid information:

- 1.6. Type(s) of data
- 1.7. Data collection method(s)
- 4.1. Have resources for management of these data been identified?
- 4.2. Approximate percentage of the budget for these data devoted to data management
- 5.2. Quality control procedures employed
- 7.1. Do these data comply with the Data Access directive?
 - 7.1.1. If data are not available or has limitations, has a Waiver been filed?
 - 7.1.2. If there are limitations to data access, describe how data are protected
- 7.2. Name of organization of facility providing data access
 - 7.2.1. If data hosting service is needed, please indicate
- 7.4. Approximate delay between data collection and dissemination
- 8.1. Actual or planned long-term data archive location
- 8.3. Approximate delay between data collection and submission to an archive facility
- 8.4. How will the data be protected from accidental or malicious modification or deletion prior to receipt by the archive?

6.2. Name of organization or facility providing metadata hosting:

NMFS Office of Science and Technology

6.2.1. If service is needed for metadata hosting, please indicate:**6.3. URL of metadata folder or data catalog, if known:**

<https://www.fisheries.noaa.gov/inport/item/39307>

6.4. Process for producing and maintaining metadata

(describe or provide URL of description):

Metadata produced and maintained in accordance with the NOAA Data Documentation Procedural Directive:

https://nosc.noaa.gov/EDMC/DAARWG/docs/EDMC_PD-Data_Documentation_v1.pdf

7. Data Access

NAO 212-15 states that access to environmental data may only be restricted when distribution is explicitly limited by law, regulation, policy (such as those applicable to personally identifiable information or protected critical infrastructure information or proprietary trade information) or by security requirements. The EDMC Data Access Procedural Directive contains specific guidance, recommends the use of open-standard, interoperable, non-proprietary web services, provides information about resources and tools to enable data access, and includes a Waiver to be submitted to justify any approach other than full, unrestricted public access.

7.1. Do these data comply with the Data Access directive?

7.1.1. If the data are not to be made available to the public at all, or with limitations, has a Waiver (Appendix A of Data Access directive) been filed?

7.1.2. If there are limitations to public data access, describe how data are protected from unauthorized access or disclosure:

7.2. Name of organization of facility providing data access:

7.2.1. If data hosting service is needed, please indicate:

7.2.2. URL of data access service, if known:

7.3. Data access methods or services offered:

Please contact the Flower Garden Banks NMSP Science Coordinator for additional information on data access (FGBScience.Coordinator@noaa.gov);

7.4. Approximate delay between data collection and dissemination:

7.4.1. If delay is longer than latency of automated processing, indicate under what authority data access is delayed:

8. Data Preservation and Protection

The NOAA Procedure for Scientific Records Appraisal and Archive Approval describes how to identify, appraise and decide what scientific records are to be preserved in a NOAA archive.

8.1. Actual or planned long-term data archive location:

(Specify NCEI-MD, NCEI-CO, NCEI-NC, NCEI-MS, World Data Center (WDC) facility, Other, To Be Determined, Unable to Archive, or No Archiving Intended)

8.1.1. If World Data Center or Other, specify:

8.1.2. If To Be Determined, Unable to Archive or No Archiving Intended, explain:

8.2. Data storage facility prior to being sent to an archive facility (if any):

National Centers for Coastal Ocean Science - Silver Spring, MD

8.3. Approximate delay between data collection and submission to an archive facility:

8.4. How will the data be protected from accidental or malicious modification or deletion prior to receipt by the archive?

Discuss data back-up, disaster recovery/contingency planning, and off-site data storage relevant to the data collection

9. Additional Line Office or Staff Office Questions

Line and Staff Offices may extend this template by inserting additional questions in this section.