

*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:**

Coral reef fish biomass and benthic cover data from Timor-Leste in June 2013

**1.2. Summary description of the data:**

Coral reef fish and benthos were surveyed at 150 shallow-water coral reef sites across the north coast of Timor-Leste and around Atauro Island in June 2013 during a 21-day survey mission. This project was conducted by the National Oceanic and Atmospheric Administration (NOAA), Pacific Islands Fisheries Science Center's Coral Reef Ecosystem Program (CREP) using consistent methods, survey design, and personnel.

Fish biomass and benthic cover were estimated at all survey sites using the stationary point count (SPC) method. The SPC method catalogs the diversity (species richness), abundance (numeric density) and biomass (fish mass per unit area) of diurnally active reef fish assemblages in shallow-water (less than 30 m) hard-bottom habitats. Visual estimates of benthic cover and topographic complexity are also recorded, with benthic organisms grouped into broad functional categories (e.g., 'Hard Coral', 'Macroalgae'). A stratified random sampling (StRS) design was employed, similar to surveys conducted by NOAA CREP of the coral reef ecosystems throughout the U.S.-Pacific regions.

The goal of the survey work was to generate baseline data on the nearshore coral reef fish assemblages and associated benthic communities around Timor-Leste's north coast and Atauro Island. Surveys were concentrated around these areas due to (1) limited time and resources, but also (2) low water visibility and safety concerns for potential dive survey operations along the south shore. In addition to the visual observations of reef fish and the associated benthos, photographs of the seafloor were taken using a photoquadrat method and were later analyzed for benthic cover. These two additional datasets are documented separately.

The reef fish and benthic estimate data collected during the 2013 mission in Timor-Leste can be accessed online via the NOAA National Centers for Environmental Information (NCEI) Ocean Archive.

**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:**

2013-06-04 to 2013-06-27

**1.5. Actual or planned geographic coverage of the data:**

W: 124, E: 127.5, N: -8.1, S: -9.4

Extent of reef fish surveys conducted by NOAA CREP at Timor-Leste in June 2013.

**1.6. Type(s) of data:**

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

Table (digital)

**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:**

Annette M DesRochers

**2.2. Title:**

Metadata Contact

**2.3. Affiliation or facility:**

**2.4. E-mail address:**

annette.desrochers@noaa.gov

**2.5. Phone number:**

(808)725-5461

**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:**

Kaylyn S McCoy

**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?**

Yes

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

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):*

Lineage Statement:

All sites were surveyed using CREP's standard coral reef fish assemblage survey method, stationary point counts (SPC). The current SPC protocol involves pairs of divers recording the number, size, and species of all fishes observed within visually estimated cylinders 15 m in diameter. At the start of a survey dive, a pair of divers first lay down a 30-m transect line along a predetermined depth contour, and then the two divers move to the 7.5- and 22.5-m marks on that line; these marks serve as the centers of two adjacent SPC cylinders. During the first 5 min of a survey, the divers create a list of the fish species observed in or passing through their cylinder. After the first 5 min, divers systematically proceed down their species lists, counting and estimating the size (TL) of each fish present to the nearest centimeter. Species seen after the 5 min or outside of the survey area are recorded as present.

Process Steps:

- Step 1: Survey Design The surveys were based on a common stratified random survey design, with site locations selected randomly. As a result of the large area of coastline and time and personnel constraints, survey efforts were focused on 8 sections of coastline within 7 districts hereafter referred to as sectors. Each sector was treated as an independent survey area, and was separated by at least 18 km of coastline from adjacent sectors (with the exception of East and West Atauro, which are separated by 2 km). The target survey area was hard-bottom reef habitat in either a shallow (0–6 m) or mid-depth (6–18 m) range. Bathymetry and hard-bottom reef habitat maps were not available at the time of the mission planning, so sites were randomly selected within a rough 30-m depth contour. Once the divers arrived at the randomly located survey site, they assessed the benthos to determine whether habitat and visibility were suitable and moved to the target depth range. (Citation: Coral Reef Fish Biomass and Benthic Cover Along the North Coast of Timor-Leste Based on Underwater Visual Surveys in June 2013)
- Step 2: Field Method, fish surveys All sites were surveyed using NOAA CREP's standard coral reef fish assemblage survey method; stationary point counts (SPC). T

The SPC protocol involves a pair of divers conducting simultaneous counts in adjacent, visually estimated 15-meter-diameter cylindrical plots extending from the substrate to the limits of vertical visibility. Each count consisted of two components. The first of these was a 5-min species enumeration period in which the diver recorded the taxa of all species observed within their cylinder. At the end of the 5-min period, divers began the tallying portion of the count, in which they systematically worked through their species listing for each species and recorded the number of fish and size (total length, TL, to nearest centimeter) of each individual fish. The tallying portion was conducted as a series of rapid visual sweeps of the plot, with one species-grouping counted per sweep. In cases where a species was observed during the enumeration period but was not present in the cylinder during the tallying period, divers recorded their best estimates of size and number observed in the first encounter during the enumeration period and marked the data record as 'non-instantaneous.' For more detailed information, see Ayotte et al. (2011) for the complete fish survey standard operating procedure. (Citation: Coral Reef Ecosystem Division Standard Operating Procedures: Data Collection for Rapid Ecological Assessment Fish Surveys)

- Step 3: Field Method, benthic images Upon completion of the fish survey, one diver photographed the benthos at 1-m intervals along the transect line (30 photographs per site). A 1-m PVC stick was used to position a digital camera directly above the substrate to frame a photograph approximately 0.7 m<sup>2</sup> in area. (Citation: Coral Reef Ecosystem Division Standard Operating Procedures: Data Collection for Rapid Ecological Assessment Fish Surveys)

- Step 4: Analysis: Estimation of Biomass by Fish Groupings Fish biomass was calculated using the following allometric equation to estimate weight (w) from length (L) measurements:  $w = a \times L^b$ . The parameter a is a scaling coefficient for the weight at length of the fish species, and the parameter b is a shape parameter for the body form of the fish species. Biomass was calculated for each species at each site by averaging the two divers' estimates. In estimating fish biomass, species data were pooled into "all fishes," and into a number of trophic, taxonomic, and size groupings. The four trophic groupings used were: "primary consumers" (herbivores and detritivores); "secondary consumers" (omnivores and benthic invertivores); "planktivores"; and "piscivores". Family-level data on emperors, snappers, breems, parrotfish, and groupers was also presented because of their general importance as fishery targets. Biomass was also pooled into size classes: small (0–20 cm), medium (21–50 cm), and large-bodied reef fish (greater than 50 cm). Results were compared to averages of reef fish biomass at populated and remote areas across the Pacific where NOAA CREP has conducted reef fish surveys at approximately 40 islands and atolls since 2009 using the same survey methods and largely the same personnel. Total biomass and each of the fish groupings from Timor-Leste were compared to Pacific-wide averages of remote and populated islands and atolls. Mean reference values are extensively used from NOAA CREP's other surveys of those 'remote' and 'populated' islands to provide context to fish biomass values from Timor-Leste. While there are important other sources of natural variability among

reefs, including biogeographic differences, the reference values serve as useful baselines for Pacific coral reefs—for example, reefs with significant human impacts including fishing are expected to be more similar to the Pacific ‘populated’ average than to the ‘remote’ average. (Citation: Coral Reef Fish Biomass and Benthic Cover Along the North Coast of Timor-Leste Based on Underwater Visual Surveys in June 2013)

**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):**

Observations, including species identification and sizing, were periodically checked during the expedition for consistency between divers, such as diver bias or other discrepancies, and little discrepancy was noted. Size estimates were checked against known size ranges per species. Data entry was conducted using a data entry interface with several data controls employed, and were quality controlled by the divers using a two-person system.

Following the mission, the data was then run through rigorous quality control checks by the data management team before the data were migrated to the Oracle database, but there remains some possibility of typographical or other errors.

**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:

- 1.7. Data collection method(s)

**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/32998>

**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](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?

Yes

**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:

NOAA National Centers for Environmental Information (NCEI)

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

#### 7.2.2. URL of data access service, if known:

<https://accession.nodc.noaa.gov/0165354>

<https://accession.nodc.noaa.gov/0165354>

<https://accession.nodc.noaa.gov/0165354>

### 7.3. Data access methods or services offered:

Data can be accessed online via the NOAA National Centers for Environmental Information (NCEI) Ocean Archive.

### 7.4. Approximate delay between data collection and dissemination:

Unknown

**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)*

NCEI\_MD

**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):**

Pacific Islands Fisheries Science Center - Honolulu, HI

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

Unknown

**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*

NOAA IRC and NOAA Fisheries ITS resources and assets.

**9. Additional Line Office or Staff Office Questions**

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