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:

National Coral Reef Monitoring Program: Benthic Images Collected from Stratified Random Sites (StRS) across American Samoa since 2015

1.2. Summary description of the data:

The data described here are benthic habitat imagery (photographs) from benthic photo-quadrat surveys conducted along transects at stratified random sites by the Pacific Islands Fisheries Science Center (PIFSC) Ecosystem Sciences Division (ESD)--formerly the Coral Reef Ecosystem Division--as part of the NOAA National Coral Reef Monitoring Program (NCRMP). The photo-quadrat surveys are part of Rapid Ecological Assessment (REA) surveys for corals and fish conducted during ESD-led NCRMP missions to American Samoa from 2015 to 2018.

A stratified random sampling (StRS) design was employed to survey the coral reef ecosystems at each of the islands/atolls in American Samoa. The survey domain encompassed the majority of the mapped area of reef and hard bottom habitats in the 0-30 m depth range. The stratification scheme included island, reef zone, and depth. Sampling effort was allocated based on strata area and sites were randomly located within strata. Sites were surveyed using photo-quadrats along transects to collect benthic imagery (30 photos per site) to ultimately produce estimates of relative abundance (percent cover), frequency of occurrence, benthic community taxonomic composition and relative generic richness.

The StRS design effectively reduces estimate variance through stratification using environmental covariates and by sampling more sites rather than sampling more transects at a site. Therefore, site-level estimates and site to site comparisons should be used with caution.

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:

2015-02-15 to 2015-03-26, 2018-06-19 to 2018-07-18

1.5. Actual or planned geographic coverage of the data:
W: -171.0925737, E: -168.1373351, N: -11.04525081, S: -14.56050273

1.6. Type(s) of data:
(e.g., digital numeric data, imagery, photographs, video, audio, database, tabular data, etc.)
Image (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.)
Instrument: Digital camera
Platform: Not applicable
Physical Collection / Fishing Gear: Not applicable

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:
Bernardo Vargas-Angel

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:

The stratified random sampling (StRS) design and benthic photoquadrat survey methodology, employed by the PIFSC Ecosystem Sciences Division since 2013. Benthic imagery is collected at stratified random sites. These photos are color-corrected (if necessary) prior to analysis. The data management team also uses a optical validation script to re-name photos and enforce several validation checks.

Process Steps:

- A stratified random sampling (StRS) design was employed to survey the coral reef ecosystems through the U.S. Pacific regions. The survey domain encompassed the majority of the mapped area of reef and hard bottom habitats. The stratification scheme included island, reef zone, and depth. The habitat structure types included simple, complex, and coral-rich. Depth categories of shallow (0-6 m), mid (> 6-18m) and deep (>18-30 m) were also incorporated into the stratification scheme. Allocation of sampling effort was proportional to strata area. Sites were randomly selected within each stratum. A geographic information system (GIS) and digital spatial databases of benthic habitats (NOAA National Centers for Coastal Ocean Science NCCOS), reef zones (IKONOS satellite imagery, NDGC 1998) bathymetry (NDGC 1998, CREP benthic mapping data), and marine reserve boundaries (NOAA) were used to facilitate spatial delineation of the sampling survey domain, strata, and sample units. Map resolution was such that the survey domain could be overlain by a grid using a GIS with individual cells of size 50 m by 50 m in area. A two-stage sampling scheme following Cochran (1977) was employed to control for spatial variation in population parameters at scales smaller than the grid cell minimum mapping unit (2,500 m2). Grid cells containing hard-bottom reef habitats were designated as primary sample units (referred to as sites). (Citation: Swanson D, Bailey H, Schumacher B, Ferguson M, Vargas-Angel B. 2018. Ecosystem Sciences Division standard operating procedures: data collection for rapid ecological assessment benthic surveys. U.S. Dept. of Commerce, NOAA Technical Memorandum NOAA-TM-NMFS-PIFSC-71, 63 p.)
- Photoquadrat surveys were conducted by both the fish and benthic teams. Still

photographs were collected to record the benthic community composition at predetermined points along the transect lines with a high-resolution digital camera mounted on a pole. Overall, ~30 photoquadrat images are collected at each site. The fish team conducts these surveys along one 30-meter transect that spans the length of two stationary point count (SPC) cylinders used to assess fish abundance (30 images total, Transect A). Benthic substrate photos are taken at one-meter intervals along the right hand side of the 30-m transect line. The benthic team conducts the photoquadrat surveys along two, independent 18-meter transects. Photos of the benthic substrate are taken at one-meter intervals starting at meter 1, along the left hand side of each 18-meter transect (15 images/transect; 30 images total; Transect A and B).
- Raw data include ~30 benthic photographs per survey site. Included in the archive package is a list of survey sites, including site, date, latitude (dd), and longitude (dd) where photoquads were collected. The file naming convention for each photo/ image is [SITE]_[YEAR]_[TRANSECT]_[PHOTO_NUMBER].JPG (e.g., TUT-903_2012_A_01.JPG).

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):
The photos are reviewed by the diver for accuracy and usability. The data management team also uses a optical validation script to re-name photos and enforce several validation checks.

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?
Yes

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

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/25247

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?

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:

National Centers for Environmental Information - Silver Spring, Maryland (NCEI-MD)

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

7.2.2. URL of data access service, if known:

http://accession.nodc.noaa.gov/0159168
http://accession.nodc.noaa.gov/0159168
http://accession.nodc.noaa.gov/0187563
http://accession.nodc.noaa.gov/0187563
https://accession.nodc.noaa.gov/0157633

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

The images reside on a file server maintained and regularly backed up by PIFSC ITS.

9. Additional Line Office or Staff Office Questions

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