

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:

Hawaii Coral Bleaching Collaborative: surveys for percent and severity of bleached coral cover across the Hawaiian Archipelago from August 20 to December 7, 2019

1.2. Summary description of the data:

The data described here result from coral bleaching surveys across the Hawaiian Archipelago from August 20 to December 7, 2019. The data provide information on live coral cover and the percentage and average severity that was bleached, as well as taxa-specific metrics (live cover and the percentage and severity that was bleached). The data were collected during a multi-institutional effort by the Hawaii Coral Bleaching Collaborative (HCBC) to build a comprehensive dataset of the spatial extent and severity of bleaching in the Hawaiian Archipelago during the peak of the forecasted 2019 coral bleaching event. This dataset is a compilation of data supplied by: NOAA Fisheries Ecosystem Sciences Division (ESD); State of Hawaii Department of Land and Natural Resources (DLNR), Division of Aquatic Resources (DAR); Scripps Institution of Oceanography (SIO), Sandin Lab; Arizona State University (ASU), Asner Lab; National Park Service (NPS), Pacific Island Inventory & Monitoring Network (PACN); Hawaii Institute of Marine Biology (HIMB), Coral Reef Ecology Lab; and The Nature Conservancy (TNC) of Hawaii.

Coral bleaching surveys were conducted at both fixed and random sites using varying methods per institution that included: rapid visual assessments, photoquadrat assessments, and transect-intercept assessments. Metrics that were recorded include live coral cover, the percentage of living coral that was bleached, and the average severity of bleached corals. Surveys conducted in the Main Hawaiian Islands were conducted during shore-based missions, whereas surveys in the Northwestern Hawaiian Islands were performed opportunistically during the regularly scheduled NOAA National Coral Reef Monitoring Program (NCRMP) mission.

Random sites were selected by each institution in their own ways, as follows:

- NOAA ESD: A stratified random sampling (StRS) design was used; the StRS method effectively reduces estimate variance through stratification using environmental covariates and by sampling more sites rather than sampling more transects at a site

- DAR: Randomly chose sites by covering shorelines at depths from 1-15ft with hard bottom substrate, and aligned transects with shoreline access points
- TNC: Sites were randomly selected using ARC-GIS within a polygon bounded by 15' and 50' depth clines and clipped to hard bottom habitat, based on NOAA habitat maps
- HIMB: Method described in lineage source
- ASU: Sites were selected based on two factors: (1) bleaching reports sent into hawaiiicoral.org (ASU, DAR, NOAA website) to locate potential hotspots on the Big Island; and (2) areas not reported as potential coldspots. At each selected "site", randomly selected location GPS points constrained only by isobaths of 5, 10, and 15m
- PACN: Method described in lineage source

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:

2019-08-20 to 2019-12-07, 2019-08-27 to 2019-09-04

1.5. Actual or planned geographic coverage of the data:

W: -178.383718, E: -155.01512, N: 28.459215, S: 19.07672

Main Hawaiian Islands (MHI), including Hawaii, Maui, Molokai, Lanai, Oahu, and Kauai, and the Northwestern Hawaiian Islands (NWHI), including French Frigate Shoals, Lisianski Island, Pearl & Hermes Reef, and Kure Atoll.

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:

Morgan S Winston

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:

Each organization in the Hawaii Coral Bleaching Collaborative used one of three survey methodologies: rapid visual assessments, photoquadrat assessments, and transect-intercept assessments - with nuances described in the Dataset Method List.

Process Steps:

- NOAA Fisheries Ecosystem Sciences Division (ESD) conducted rapid visual assessments and photoquadrat assessments of coral bleaching using the methodology outlined by the NOAA Coral Bleaching standard operating procedure for 2019. The Nature Conservancy of Hawaii (TNC) conducted rapid visual assessments of bleaching following the NOAA Coral Bleaching standard operating

procedure for 2019, and photoquadrat assessments following methodology outlined in Survey of Marine Resources at Kipahulu, Maui. Scripps Institute of Oceanography (SIO)'s Sandin Lab conducted coral bleaching surveys using the methodology outlined by the NOAA Coral Bleaching standard operating procedure for 2019. Hawaii Department of Land and Natural Resources (DLNR), Division of Aquatic Resources (DAR) Oahu, Kauai, Maui, and Hawaii Islands conducted rapid visual assessments of coral bleaching following the DAR and NOAA Coral Bleaching standard operating procedures for 2019. DAR Oahu also conducted photoquadrat assessments following the DAR Mitigation Monitoring Protocol (Draft) and the DAR CoralNet Protocol. Hawaii Institute of Marine Biology's Coral Reef Ecology lab conducted coral bleaching surveys in Kaneohe Bay following methods outlined in the publications Bahr et al. 2015 and Bahr et al. 2017. The Arizona State University (ASU)'s Asner Lab conducted transect-intercept surveys, the method of which are further described in the Dataset Method List. The National Park Service (NPS) National Park Service Pacific Island Inventory & Monitoring Network (PACN) conducted photoquadrat assessments of coral bleaching using the methods outlined in the PACN NPS Coral Bleaching Overview 2019, NPS_PACN_BenthicMonitoringSOP, and NPS_PACN_BenthicImageAnalysisSOP. The slight differences in metrics collected between organizations, and any changes to methodologies over time, are documented in the Dataset Method List.

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):

Quality control of the data occurred at a few stages from initial data entry per institution, to data compilation into a single Excel spreadsheet. Observations, including species identification, were periodically checked during expeditions for consistency between and among divers. Data entry was usually conducted on the same day as the surveys using a data entry interface with several data controls employed, and were quality controlled by individual divers checking entry errors at a separate time. Following a mission, the data was run through rigorous quality control checks. The data was quality controlled against the physical data sheets following data entry.

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/59191>

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:

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/0209239>

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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 data is captured in both physical data sheets, an external hard drive, and a NOAA Fisheries server at the Pacific Islands Fisheries Science Center (PIFSC). The physical data sheets are housed at PIFSC. PIFSC servers are 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.