

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:

NCCOS Assessment: Use of Omics to Support Coral Interventions: Proteomics of gametes collected from *Acropora cervicornis*, *Acropora palmata*, *Orbicella faveolata* to Optimize Sexual Reproduction in corals from Key Largo, FL, from 2022-08-13 to 2022-08-17, 2023-08-04 to 2023-08-05, and 2023-09-05

1.2. Summary description of the data:

This dataset is comprised of proteomics results to better understand gamete compatibility factors. The dataset includes gametes from three species, *Acropora cervicornis*, *Acropora Palmata*, *Orbicella faveolata*, which were collected in three locations near Key Largo, Florida (Ofav: Horseshoe Reef, Apal: North Dry Rocks, Acer: Carysfort) during three different time periods (August 2022, August 2023, and September 2023).

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:

2022-08-13 to 2023-09-05

1.5. Actual or planned geographic coverage of the data:

W: -80.294217, E: -80.211317, N: 25.2248, S: 25.130967
Reef Location Bounding Box where corals were originally sourced.

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.)

Instrument: Orbitrap Fusion Lumos LC-MS/MS

Platform: MaxQuant Software

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?

No

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:

These data were generated after collecting gametes spawned from *Acropora palmata*, *Acropora cervicornis*, and *Orbicella faveolata* off the coast of Key Largo in August 2022 and August/September 2023.

Process Steps:

- Fertilization trials were conducted by performing reciprocal crosses. Gamete bundles from a single coral genet were collected in a 15 mL tube and incubated at room temperature until bundles lyse. Sperm were transferred to a clean 15 mL tube without disrupting ova. Sperm were diluted and concentration was calculated using a cellometer. Sperm were diluted and added to the appropriate vials. Ova were washed with artificial sea water and added to the appropriate vials. The gametes were incubated together for 4-6 hours prior to fixing for counting. (Citation: Collection of gametes in Key Largo 2022 and 2023)
- After gametes were combined for fertilization assays, the remaining sperm and ova were preserved for other molecular analyses. For glycan imaging, sperm and ova were fixed and stored at 4°C until processing. (Citation: Collection of gametes in Key Largo 2022 and 2023)
- Gametes from collected bundles were frozen at -20°C in protein lysis buffer (5% SDS with protease inhibitor). The proteins were extracted by tip sonicating on ice and then centrifuged at 2,000 rcf for 5 minutes. The supernatant was transferred to a new tube and then centrifuged at 10,000 rcf for 10 minutes. The supernatant was transferred to a new tube and 50 ul was reserved for protein quantification. Protein was quantified using Pierce BCA Protein Assay Kit. (Citation: Collection of gametes in Key Largo 2022 and 2023)
- Based on quantification, a volume equivalent to 100 ug was diluted to a volume of 80 ul in 5% SDS. Samples were reduced with 10 ul DTT at 60°C for 10 minutes. After cooling to room temperature (10 minutes), samples were alkylated with calcium acetamide and incubating in dark for 30 minutes. Alkylation was quenched by adding 12% phosphoric acid. Protein samples were digested following Proton's S-trap protocol, using a 1:20 trypsin:sample ratio and incubating for 2 hours at 47°C. The resulting peptides were evaporated until dry and resuspended in 100 ul 0.1% formic acid in water. Peptide concentration was quantified using Pierce Quantitative Fluorometric Peptide Assay kit. (Citation: Collection of gametes in Key Largo 2022 and 2023)
- Peptides in solution were sent to University of Arkansas and analyzed using LC-MS/MS analysis. Peptide and proteins were identified using Mascot running against a known *Orbicella faveolata* annotated metagenome. Resulting search data was imported to Scaffold and identifications were accepted at <1% local FDR for peptides and proteins. Normalized spectral abundance factor was derived from normalized spectral counts and intensity based on absolute quantification (iBAQ) intensity data. (Citation: Collection of gametes in Key Largo 2022 and 2023)

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):

Proteomic Analysis

Peptides digested from isolated proteins were identified from annotated genomes

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

- 7.4. Approximate delay between data collection and dissemination

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

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/73852>

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 Institutes of Health, National Center for Biotechnology Information, Gene Expression Omnibus

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

ProteomeXchange PRIDE

7.2.2. URL of data access service, if known:

<https://www.ebi.ac.uk/pride/archive/projects/PXD057823>

7.3. Data access methods or services offered:

Project Name: Proteomics of gametes collected from *Acropora cervicornis*, *Acropora palmata*, *Orbicella faveolata*

Project accession: PXD057823

Token: DjjiY09bxcWh

Project DOI: Not applicable

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)

OTHER

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 - Charleston, SC

Hollings Marine Laboratory

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

NCCOS IT Policy

9. Additional Line Office or Staff Office Questions

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