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:

Supporting Ecosystem-based Fisheries Management (EBFM) in meeting multiple objectives for sustainable use of coral reef ecosystem: Ecopath with Ecosim (EwE) Ecosystem Model Output Data using a social-ecological system (SES) conceptual framework

1.2. Summary description of the data:

The dataset represented here is the Ecopath with Ecosim (EwE) model input and output under various scenarios for biomass and catch data, taking into account ecological parameters, different fishing methods, as well as social and economical parameters.

Ecosystem-Based Fisheries Management is a holistic management approach that integrates the dynamics of an entire ecosystem, including societal dimensions. However, this approach seldom lives up to its promise because economic and social objectives are rarely specified. To fill this gap, we explored how an ecosystem model could better integrate economic and social objectives, using the coral reef ecosystem around Hawaii as a case study. After meeting with stakeholders and conducting a literature review of policy/strategy documents, we identified societal and ecological objectives and associated performance indicators for which data existed. We developed a social-ecological system (SES) conceptual framework to illustrate the relationships between ecological and social state components. This framework was the foundation for the development of the final SES model which we simulated using an Ecopath with Ecosim model. We simulated four gear/species restrictions for the reef-based fishery, two fishing scenarios associated with the opening of hypothetical no-take Marine Protected Areas for the deepwater-based fishery, and a Constant Effort (No Action) scenario. Despite limitations in the model, our approach shows that when social and economic objectives and social-ecological relationships are defined, we can visualize and quantify the trade-offs among the identified societal objectives to support managers in choosing among alternative interventions.

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:
2000 to 2019, 2020 to 2040, 1995 to 2019

1.5. Actual or planned geographic coverage of the data:
W: -160.5, E: -154.806, N: 23.185, S: 18.919
Main Hawaiian Islands (MHI), including the inhabited islands of Hawaii, Kauai, Maui, Oahu, Molokai, Niihau, and Lanai, and Kahoolawe, southwest off Maui

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:
Brooke Olenski

2.2. Title:
Metadata Contact

2.3. Affiliation or facility:

2.4. E-mail address:
brooke.olenski@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:
Mariska Weijerman

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:
Input data was collected for the Ecopath with Ecosim model (EwE) from various programs at PIFSC such as the RAMP surveys, the bottomfish surveys and stock assessments, and underwater camera surveys conducted by PIFSC, the University of Hawaii Hawaii Underwater Research Lab (HURL) and the Department of Oceanography Drazen Lab. Vital rates and diet came mostly from Weijerman et al (2013) and other literature. The model output data are generated with the EwE model. All steps are available in Weijerman et al (2020) ICES Journal of Marine Science

Process Steps:

- Input data was collected for the Ecopath with Ecosim model (EwE) from various programs at PIFSC such as the RAMP surveys, the bottomfish surveys and stock assessments, and underwater camera surveys conducted by PIFSC, the University of Hawaii Hawaii Underwater Research Lab (HURL) and the Department of Oceanography Drazen Lab. Vital rates and diet came mostly from Weijerman et al (2013) and other literature. The model output data are generated with the EwE model. All steps are available in Weijerman et al (2020) ICES Journal of Marine Science

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):

Model dynamics were validated with a hindcast simulation (1995-2019). Reconstructed linear catch time series per gear type from 1995 and 2019 were loaded into Ecosim for validation and to fine-tune the model by adjusting fishing effort and so minimize the residuals between predicted and observed fish biomass and fish landings temporal data

points using a least-square fitting criterion.

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

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/63158

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:
Pacific Islands Fisheries Science Center (PIFSC)

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/0240824
https://accession.nodc.noaa.gov/0240824
https://accession.nodc.noaa.gov/0240824
https://accession.nodc.noaa.gov/0240824
https://accession.nodc.noaa.gov/0240824
https://accession.nodc.noaa.gov/0240824
https://accession.nodc.noaa.gov/0240824
https://accession.nodc.noaa.gov/0240824

7.3. Data access methods or services offered:
Model input and output data can currently be obtained by the author, and are available from the publication in ICES Journal of Marine Science:

Title: Data from: Weijerman M, Oyafuso ZS, Leong KM, Oleson KLL, Winston M. 2020. Supporting Ecosystem-based Fisheries Management in meeting multiple objectives for sustainable use of coral reef ecosystems. ICES J Mar Sci.:13.

Journal: ICES Journal of Marine Science

Journal manuscript number: https://doi.org/10.1093/icesjms/fsaa194.

The biological diver survey data can be obtained from the Ecosystem Sciences Division at PIFSC

The MRIP and commercial fisheries data requires a written confidentiality agreement which can be obtained from the Fisheries Research and Monitoring Division at PIFSC.

The monk seal data can be obtained from the Protected Species Division at PIFSC.

All other data was derived from published reports or articles.

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)

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

Model data is stored on an external hard drive and backed up to a server at PIFSC weekly by the data steward. Data on the PIFSC server are managed by NOAA IRC and NOAA Fisheries ITS.

9. Additional Line Office or Staff Office Questions
Line and Staff Offices may extend this template by inserting additional questions in this section.