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:

Egg lipids - Determination and practical application of egg quality measures toward reliable culture of high-value marine finfish species

1.2. Summary description of the data:

There is increasing global awareness of the need for sustainable aquaculture. Aquaculture represents a potential mechanism for supplementing wild fish harvests, either through stocking of cultured animals or farming to market size. In the first case, stocked animals would be available to sport and commercial fishermen. In the latter, consumer demand would be met directly with a farmed product, reducing pressure on wild stocks. By the year 2030, the global population is projected to reach 8.2 billion, with an expected demand for seafood of 150 million metric tons (mmt), 54 mmt of which the Food and Agriculture Organization (www.fao.org) estimates that aquaculture must contribute.

Meanwhile in the U.S., an astounding 86% of the seafood consumed is imported ($9 billion annually), which makes seafood second only to oil as the largest natural resource contributor to our national trade deficit. There remains a great need for U.S. aquaculture production to fill the seafood void. Commercial-scale production of marine finfish in the U.S. is limited to a handful of species, however, including red drum, Pacific threadfin, cobia, cod, and flounder (excluding the anadromous Atlantic salmon), and production is often inconsistent. On the U.S. West Coast, many native marine species represent good potential candidates for aquaculture. Most of these, such as California sheephead, California halibut, cabezon, lingcod, white seabass, and rockfishes, are fully or over-exploited by capture fisheries. Other high-value species like California yellowtail and yellowfin tuna are transitory, with apparently healthy populations, but based on success elsewhere in the world, are believed to offer excellent potential for commercial aquaculture development in the U.S. A major step in the creation of a viable and profitable marine aquaculture industry lies in developing reliable fingerling production, and central to this is understanding the variables that determine egg and larval quality. The lack of knowledge in what optimizes egg and larval quality is an important limiting factor in developing culture techniques for any species (Kjorsvik et al. 1990; Bromage 1995). Inconsistent or poor egg quality significantly affects the production and viability

of larval and juvenile fish. In the absence of high-quality eggs, it is not possible to optimize husbandry practices because larval performance is substandard under typical culture conditions, such as high stocking densities, aggressive weaning regimes, and grading or other handling procedures.

Unfortunately, identifying simple indicators of egg quality has been difficult as no individual metric is universally applicable within and among species. This proposal seeks to identify easy-to-use indictors, as well as determine pre- and post-spawning factors that affect egg quality, in up to three very different ecologically and economically valuable marine fish species native to the U.S. West Coast: a highly-pelagic finfish, the California yellowtail (Seriola lalandi; CYT); a deep-sea whitefish, the sablefish (Anoplopoma fimbria; SF); and/or a semi-resident benthic flatfish species, the California halibut (Paralichthys californicus; CH). All three species are multiple batch spawners, producing large numbers of eggs several times over the course of a spawning season. Defining the differences between high and low quality eggs and documenting correlations between quality and different conditions (e.g. broodstock diet, age, domestication status, spawning methods, or progression through the spawning season) will directly impact the success of culturing species like these. If inferior batches of eggs can be identified early on, culturists would have a valuable tool, which would significantly advance mariculture development along the U.S. West Coast and elsewhere by leading toward consistent fingerling production of species with great potential for culture.

Fatty acid profiles of marine fish egg lipids.

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:
2013-10-01 to 2016-09-30

1.5. Actual or planned geographic coverage of the data:
W: -117.2493, E: -117.2493, N: 32.8856, S: 32.8856
DOC/NOAA/NMFS/SWFSC: Southwest Fisheries Science Center lab, CA

W: -122.5547, E: -122.5547, N: 47.569, S: 47.569
DOC/NOAA/NMFS/NWFSC: NWFSC Manchester lab, WA

W: -122.3062, E: -122.3062, N: 47.6449, S: 47.6449
DOC/NOAA/NMFS/NWFSC: NWFSC Montlake lab, Seattle

W: -117.2271, E: -117.2271, N: 32.7588, S: 32.7588
Hubbs-SeaWorld Research Institute: SeaWorld site, San Diego, CA

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:
Metadata Contact

2.2. Title:
Metadata Contact

2.3. Affiliation or facility:

2.4. E-mail address:
nmfs.nwfsc.metadata@noaa.gov

2.5. Phone number:
(206) 860-3433

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:
Ronald B Johnson

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"):
5%

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:
Results were derived from instrumental data via MS Excel. These data were collected and processed in accordance with established protocols and best practices under the direction of the projects Principal Investigator. Contact the dataset Data Manager for full QA/QC methodology.

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):

These data were collected and processed in accordance with established protocols and best practices under the direction of the projects Principal Investigator. Contact the dataset Data Manager in section 3 for full QA/QC methodology.

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/30910

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:

Northwest Fisheries Science Center (NWFSC)

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

No

7.2.2. URL of data access service, if known:

http://www.ncei.noaa.gov

7.3. Data access methods or services offered:

At this time, contact the Data Manager for information on obtaining access to this data set. In the near future, the NWFSC will strive to provide all non-sensitive data resources as a web service in order to meet the NOAA Data Access Policy Directive (https://nosc.noaa.gov/EDMC/PD.DA.php).

7.4. Approximate delay between data collection and dissemination:

365 days

7.4.1. If delay is longer than latency of automated processing, indicate under what authority data access is delayed:

No Delay

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):

Northwest Fisheries Science Center - Seattle, WA

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

365 days

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 Northwest Fisheries Science Center facilitates backup and recovery of all data and IT components which are managed by IT Operations through the capture of static (point-in-time) backup data to physical media. Once data is captured to physical media (every 1-3 days), a duplicate is made and routinely (weekly) transported to an offsite archive facility where it is maintained throughout the data's applicable life-cycle.

9. Additional Line Office or Staff Office Questions

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