

*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:**

Oxygen Uptake - Live Hauling of Fish

### **1.2. Summary description of the data:**

In certain markets, live fish can be sold for substantially higher prices than fresh dressed fish. A significant live-haul industry has developed in the U.S. and fish are commonly hauled 1,500-2,000 miles (25-30 hours) to market. The most common species hauled are tilapia, channel catfish, and rainbow trout; a smaller amount of marine rockfish, hybrid striped bass, and carp are also hauled. The most significant advancement in hauling technology in the last 20 years has been the use of bottled oxygen gas or liquid oxygen to maintain adequate dissolved oxygen levels. These types of systems can maintain significantly higher DO levels than systems using air. Some common stressors include harvest and loading procedures (pumping or out of water transfer), shaking as the transport vehicle is moving, low frequency sound from the vehicle and water treatment systems, crowding, and poor water quality (high ammonia and carbon dioxide levels, low dissolved oxygen), high light levels, or extreme water temperature. The physical shape and construction of the hauling unit may have an important impact on localized low DOs, physical damage to the fish, and survivability. Very little information has been published on the chemical and physical conditions in transport systems during long-distance transport and this limited data may not be representative of current commercial systems.

This research will be conducted with NWFSC staff in cooperation with private fish farmers in the Pacific Northwest. Specific sub-objectives will include the following:

- (1) Documentation of water quality during transport and impact on mortality and product quality
- (2) Design of efficient aeration systems for oxygen transfer and carbon dioxide stripping
- (3) Determination of the impact of transport tank design and aerator type on the thermal balance during hauling.

The impact of this project will be increased survival and product quality of transported fish as a result of adopting the recommended protocols and utilization of the models.

Project outputs will include peer-reviewed publications, popular publications, and conference presentations.

Oxygen uptake of hauling water samples will be determined from the change in dissolved oxygen over a 30 minute period using a YSI ProODO dissolved oxygen meter. Sample will be stirred using a magnetic rod. Oxygen uptake will be determined by fitting a linear regression line through the dissolved oxygen vs time curve and expressed as mg/minute. The oxygen uptake rate will be reported at 20C using a theta = 1.047.

**1.3. Is this a one-time data collection, or an ongoing series of measurements?**

Ongoing series of measurements

**1.4. Actual or planned temporal coverage of the data:**

2014-06-01 to Present, 2014-06-01 to Present

**1.5. Actual or planned geographic coverage of the data:**

W: -122.3062, E: -122.3062, N: 47.6449, S: 47.6449

Hagerman Valley, Idaho: Tilapia Farms

W: -122.3062, E: -122.3062, N: 47.6449, S: 47.6449

NWFSC Montlake: NWFSC Montlake lab

**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:**

Northwest Fisheries Science Center (NWFSC)

**2.2. Title:**

Metadata Contact

**2.3. Affiliation or facility:**

Northwest Fisheries Science Center (NWFSC)

**2.4. E-mail address:**

nmfs.nwfsc.metadata@noaa.gov

**2.5. Phone number:**

206-860-3200

**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:**

John E Colt

**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"):**

10

**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:

Instrument operated using manufacturer's recommendations

**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):**

Instrument calibrated daily

**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/17997>

**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](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 (NWFS)

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

No

**7.2.2. URL of data access service, if known:**

[https://www.webapps.nwfsc.noaa.gov/apex/parr/live\\_hauling\\_of\\_fish\\_oxygen\\_uptake/data/page/](https://www.webapps.nwfsc.noaa.gov/apex/parr/live_hauling_of_fish_oxygen_uptake/data/page/)  
[https://www.webapps.nwfsc.noaa.gov/apex/parrdata/inventory/tables/table/live\\_hauling\\_of\\_fish\\_oxy](https://www.webapps.nwfsc.noaa.gov/apex/parrdata/inventory/tables/table/live_hauling_of_fish_oxy)

**7.3. Data access methods or services offered:**

email the author

**7.4. Approximate delay between data collection and dissemination:**

360

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

Preparation of peer-reviewed article

**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)*

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):**

Northwest Fisheries Science Center - Seattle, WA

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

360

**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.*