

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:

AFSC/RACE/SAP/Swiney: Effects of holding space on juvenile red king crab growth and survival

1.2. Summary description of the data:

Rearing crustaceans communally for aquaculture, stock enhancement or research often results in high rates of cannibalism and low yields. One potential strategy to reduce loss from cannibalism is to rear crustaceans in individual cells. As small holding cell size can result in decreased growth or increased mortality, it is essential to identify the optimal holding cell size, both for mass culturing efforts and for experimental design purposes. In this study, we reared juvenile red king crab, *Paralithodes camtschaticus*, (3.67 to 8.30 mm carapace length) in 20, 40, and 77 mm diameter holding cells and monitored growth and survival over a 274-day experiment.

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:

2009-09 to 2010-06

1.5. Actual or planned geographic coverage of the data:

W: 170, E: -130, N: 75, S: 50
Alaskan waters

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:****2.2. Title:**

Metadata Contact

2.3. Affiliation or facility:**2.4. E-mail address:****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:

Katherine Swiney

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):

Process Steps:

- Ovigerous red king crab were captured with commercial crab pots in Bristol Bay, Alaska, in November 2008. Crab were shipped in coolers with seawater-soaked burlap bags and ice packs to the Alutiiq Pride Shellfish Hatchery in Seward, Alaska. Larvae hatched from these females between 22 March and 12 April 2009 and were reared for mass culture at the hatchery. In July 2009, juvenile crab were placed in seawater with net substrate in two 3.8 L insulated containers and then packed in a cooler with ice packs and shipped to the Alaska Fisheries Science Center's Kodiak Laboratory seawater facility in Kodiak, Alaska. Upon arrival at the laboratory, crab were placed in holding tubs acclimated to the ambient seawater temperature. Prior to beginning the experiment, crab were held communally in a 2480 L tank with unfiltered, flow-through ambient seawater with net substrate, and fed twice per week a diet of frozen Artemia (Brine Shrimp Direct, Ogden, Utah, USA), frozen bloodworms (Brine Shrimp Direct, Ogden, Utah, USA), frozen Cyclop-eeze (Argent Laboratories, Redmond, Washington, USA), Cyclop-eeze flakes and a gel diet of "Gelly Belly" (Florida Aqua Farms, Inc., Dade City, Florida, USA) enhanced with Cyclop-eeze powder and pollock bone powder (U. S. Department of Agriculture, Agricultural Research Service, Kodiak, Alaska, USA).

- To examine the effects of holding-cell size on growth, survival, and intermolt duration, three treatments were tested. Individual holding cells were constructed from PVC pipe of 20 mm, 40 mm, and 77 mm inner diameters cut to 77 mm in length with 750 micron nylon mesh glued to the bottom of each cell (Table 1). Each treatment had 30 replicates placed randomly on plastic grating raised off of the bottom of a rectangular 0.3 m deep x 0.9 m wide x 1.8 m long fiberglass tank. Three PVC pipes with holes drilled on the sides and bottoms were placed beneath the grating to distribute sand-filtered, flow-through, ambient seawater below the cells. To ensure adequate circulation was occurring prior to beginning the experiment, food coloring was placed in each holding cell. All visible dye was flushed out of all of the cells within 6 hours. A temperature logger was placed in the tank and it recorded temperature at half-hour intervals throughout the experiment.

- In September 2009, crab 158 to 179 days old and 32.1 mg to 99.6 mg wet mass were randomly placed in the holding cells with one crab per cell and the experiment was run for 274 days. During the experiment, crab were fed a gel diet of Gelly Belly enhanced with Cyclop-eeze powder and pollock bone powder three times per week. Cells were cleaned prior to feeding. Each cell was checked daily, mortalities and molting events were recorded, and the exuvia and mortalities were removed and stored in individually labeled containers with filtered seawater and placed in a refrigerator until growth measurements could be made. To examine growth, carapace length (CL) (straight-line distance from the posterior margin of the right eye orbit to the medial-posterior margin of the carapace) and carapace width (CW) (greatest straight-line distance across the carapace excluding spines) measurements were made on the exuvia and mortalities. A ratio of CL/CW was calculated to determine if crab shape was affected by holding cell size. To standardize these measurements, carapaces were carefully removed from all exuvia and mortalities and photographed under a dissecting scope using a darkfield adapter.

Measurements were made using Image-Pro Plus v. 6.00.260 imaging software (Media Cybernetics, Inc., Bethesda, Maryland, USA). Occasionally, part of a carapace was broken so only one or none of the measurements could be made. To determine the relationship of holding cell area to crab size we area and CL is crab carapace length.. Additionally, 7 days after each molt, crab were carefully blotted dry with a paper towel and weighed. Missing or regenerating limbs were recorded. Wet masses of crabs missing or regenerating limbs were excluded from the analysis. At the termination of the experiment, all surviving crab were sacrificed by being placed in a freezer. The crab were then thawed, and the carapaces were removed, photographed and measured as described above.

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):

Data was checked for outliers which were removed.

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)
- 2.1. Point of Contact Name
- 2.4. Point of Contact Email
- 7.2. Name of organization of facility providing data access

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/28134>

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

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):

Alaska Fisheries Science Center - Seattle, WA

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

IT Security and Contingency Plan for the system establishes procedures and applies to the functions, operations, and resources necessary to recover and restore data as hosted in the Western Regional Support Center in Seattle, Washington, following a disruption.

9. Additional Line Office or Staff Office Questions

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