Washington Sea Grant

Year 3 Interim Progress Report Narrative

**Recovery of the native Olympia oyster, Ostrea lurida, in Northern Puget Sound: measuring the larval import to and export from a restored subpopulation (R/HCE-8)**

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This narrative describes the progress of the project from February 1, 2017 through January 31, 2018. In our first year, we completed all field work and began processing samples. Last year was spent in the laboratory, quantifying ecological samples, preparing samples for elemental fingerprinting, creating laser-ablation analysis methods, and beginning to analyze our samples. This year, we analyzed all of our samples and have completed part of the statistical analysis. We also published our first peer-reviewed paper that resulted from this work and had solid education and outreach efforts. Note that we have been given an extension on this work and have one more year to complete the analysis.

Further detail is given below, organized by goals outlined in our original proposal.

**Research Goals**

*Goal A. Creating spatial reference signatures by conducting surveys of brooded larvae around the Puget Sound*

During the summer of 2015, our research team completed field sampling of over 14,000 oysters and collected shelled larvae from over 100 individuals. In the past, we have had to sacrifice adults to check for brooding. Due to the large numbers of oysters we needed to sample, we used a non-lethal sampling method, originally developed by students in Steven Robert’s lab at SAFS but further refined by our team. This year we published a manuscript on this technique.

All samples have now been analyzed for shell chemistry using a method we developed on LA-ICP-MS. This work was done by UW Tacoma students, WDFW Staff, and Brian Rusk from the Department of Geology at WWU. The statistical analysis was completed and included in the MS thesis of Megan Hintz.

*Goal B: Characterizing provenance of planktonic larvae based on reference signatures.*

Planktonic larval samples were collected by pump at the two focus sites (Fidalgo Bay and Dyes Inlet) every other week throughout the summer of 2015. Larval samples for trace elemental fingerprinting were hand sorted using visual identification methods by UW Tacoma students and volunteers, and the work was completed this year. The planktonic larval samples will be processed using similar methods as developed for brooding larvae for analysis at WWU as described above.

*Goal C: Assigning settlers to reference signatures to assign them to a place of origin.*

Settler samples were collected from the two focus sites every other week throughout the summer of 2015. Settlers were quantified by visual identification methods by NWIC staff and students in year 1. Cleaning for trace metal analysis was completed year 2 and were analyzed in year 3 with the other field samples. We are now analyzing the data for future publications.

**Education and Outreach Goals**

*Goal D: Training American Indian and non-traditional students in scientific methods to prepare them for careers in applied marine ecology.*

This work involves students at multiple levels and institutions. Megan Hintz is working towards her MS degree from SAFS with this study as her thesis project; she defended her thesis in the reporting period with her final thesis submitted in two month later. Ms. Hintz was a first-generation college student who graduated with a BS in Environmental Science from UW Tacoma in 2014. She originally worked as a technician on this project (funded through matching funds) until beginning at SAFS in fall 2015. She has presented her work at a number of conferences in the reporting period. In our original proposal, we anticipated that a new MS degree at UW Tacoma would start at this time, but it was postponed due to budget constraints. Instead, Ms. Hintz is attending SAFS with Drs. Becker and Roberts as co-chairs.

At UW Tacoma, seven undergraduate students have worked on this project over both years, with two continuing into year 3. Five of these students are first generation college students. They come from a diversity of backgrounds, including a Pacific Islander, students of Chinese- and Filipino-American descent, and two first generation immigrants from Vietnam. They have presented their work in local and regional venues. All seven students have graduated. In addition, one high school student participated in this work and began attending University of Washington in fall 2017. She plans to pursue the proposed UW Marine Biology major.

An American Indian student from NWIC participated in this project. He completed his capstone looking at oyster settlement and has presented his work in a number of venues including the Salish Sea Ecosystem Conference in year 2. He graduated in 2016 with a BS in Native Environmental Science and participated in an REU program at Shannon Point Marine Station last summer. In fall, he started an MS program in Environmental Science at Western Washington University.

*Goal E: Educating coastal landowners and the general public on the importance of native oyster restoration and stewardship of nearshore habitats, and about the importance of connectivity in preserving and restoring Puget Sound*

We reached out to the public in a number of ways during this project. UW Tacoma members of the team gave a number of public talks about this work this year. Many conference talks were given, as outlined in the report. In addition, a webpage that includes blog posts about this work, including contributions from students, has received over 9000 hits and a corresponding YouTube channel has over 2500 views.