County: Whatcom
Grant No: SEANWS-2018-WhCoPW-00013

PROJECT TITLE: Whatcom Marine Resources Committee Operation and Projects

DELIVERABLES FOR TASK NO: 3.12 (Olympia oyster final report)

PROGRESS REPORT: [ ] FINAL REPORT [x]

PERIOD COVERED: 10/01/2018 – 09/30/2019

DATE SUBMITTED: 09/30/2019

This project has been funded wholly or in part by the United States Environmental Protection Agency under Assistance Agreement [CE-01J31901]. The contents of this document do not necessarily reflect the views and policies of the Environmental Protection Agency, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

Pilot Olympia oyster Restoration in North Chuckanut Bay: 2019 final report

2018-2019

This report summarizes the activities completed between October 1, 2019 – September 30, 2019 by the Whatcom Marine Resources Committee for the pilot Olympia oyster restoration project in North Chuckanut Bay.

Report prepared by: Austin Rose, Whatcom County Public Works
Whatcom Marine Resources Committee Coordinator

9/30/2019

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2018-2019

Following a pilot planting of approximately 95,000 oysters in test plots in May 2018, the Whatcom Marine Resources Committee (MRC) is following a monitoring plan to collect physical and biological parameter data to determine the status of restoration potential in North Chuckanut Bay. In 2019, the MRC involved students from the Bellingham Technical College Fisheries and Aquaculture program to assess the population of live Olympia oysters within the test plots one year after seeding.

Olympia oyster Monitoring Plan

MRC volunteers and staff have been developing an Olympia oyster monitoring plan specific to the goals of the Whatcom MRCs efforts in North Chuckanut Bay. There are no members on the Whatcom MRC with expertise in shellfish restoration. Therefore, survey protocols have been drafted out of discussions with other MRC's conducting Olympia oyster restoration, technical advisors within the Northwest Straits Initiative, and staff from the Washington Department of Fish and Wildlife and the Puget Sound Restoration Fund. A monitoring plan was developed in 2018 as a working document, and is consistently being reviewed and updated based on information received.

The Whatcom MRC's Olympia Oyster Monitoring Plan was updated in early 2019 with the help of students at Western Washington University, Environmental Sciences Shannon Point Marine Center. Students enrolled in a marine conservation course with Dr. Brooke Love were required to develop a project proposal, partnering with a community organization and apply what they had learned. The MRC was a great fit for the students and members were asked to think about how it would work for students to engage and be useful for projects the Committee is currently working on. MRC members worked with students focusing on three different project interests to the MRC: 1) Olympia oyster restoration; 2) Forage fish survey data management; and 3) Community Engagement. A revised Olympia oyster monitoring plan was a result of one of the student projects from this partnership. That monitoring has since been reviewed by other with shellfish restoration knowledge. The MRC is now determining the extent they can follow the monitoring plan based on their capacity.

Site Visit

The MRC invited Dr. Paul Dinnel, a specialist in marine ecology and toxicology, with a special interest in shellfish resources and restoration of native oysters, to assess the Whatcom MRC test plots as they lay one year post seeding. Dr. Dinnel assessed the status of the test plots and the surrounding area and provided recommendations on how the MRC should conduct a year one population count.

It was recommended that the MRC use .10sq meter quadrats within the 20'x20' plots. A minimum of five quadrats should be thrown haphazard within the plots, and the MRC should count the number of shells within the quadrat along with shell length (from umbo). Dr. Dinnel also provided bags of Pacific oyster shell (with about 50-60 shells each) that were placed within three of the test plots, Oly 1, Oly 2, and Oly 3. These bags will be collected in one year to measure and count any recruitment of new Olympia oysters on the shell.

The seeded cultch placed at Oly 1 in 2018 was placed in close proximity to each other. At Oly 2, the cultch was spread much farther apart. Oly 3 also had cultch that was spaced out quite a bit, and the location included a lot of small organic debris in a depressed area that has some standing water over the shells. Dr. Dinnel noticed there were lots of shells along the bank of the main channel of Chuckanut Creek in the middle of Mug Bay and suggested the MRC consider this area as a potential site for Olympia oyster restoration. Overall, Dr. Dinnel felt that the oysters were progressing in a healthy way.



Year One Population Count

On May 21-22, students from Bellingham Technical College and five MRC volunteers conducted an Olympia oyster population count, one year post seeding in North Chuckanut Bay. The MRC followed protocols recommended by Dr. Paul Dinnel. The MRC's goal was to gather baseline data to help evaluate success within the plots and potential for species restoration. As suggested by Dr. Dinnel, volunteers also surveyed within the Chuckanut Creek channel to evaluate whether there has been any recruitment and movement of oysters outside the plot areas. MRC staff created the field sheet attached with this report.

Top left, Whatcom MRC member Chris Brown assisting students at a plot. Top Right: live Olympia oyster (O. lurida) from MRC seeding in 2018. Bottom pictures: Austin Rose, MRC Staff guiding group through the survey protocols. *Photos by: Kenny Clarkson, Northwest Straits Foundation*

BTC students conducting surveys within quadrats. *Photos by: Austin Rose, Whatcom MRC staff*


Bag of Pacific oyster shell for recruitment monitoring just outside Chuckanut Bay trestle.
Photos by: Bob Cecile, Whatcom MRC

Results

Results were shared with Dr. Paul Dinnel, WDFW staff and are attached with this report. The results from the year one post seeding survey were what was hoped for when the seven test plots sites were selected in 2016. Oly 5 – Oly 7 are closer to the center of the bay and are within optimum habitat available in the bay, whereas Oly 1 – Oly 4 have a more dynamic habitat condition that is not as suitable. WDFW staff agrees that adding shell bags for recruitment monitoring was a good idea. *O. lurida* can recruit to those shells even though they are not immersed. For continued monitoring, WDFW suggested following the same protocol to gather survival, growth, and recruitment data. For recruitment, it was suggested that the MRC look at any hard surface within a sample quadrat including clam shell and rocks in addition to oyster shell, live oysters or shell bags. One survey per year should be sufficient, preferably in late Spring as the MRC has been doing. It was also suggested that the MRC should continue collecting data for assessing any changes to habitat and organisms in the same time frame. Having that data will give the MRC a more solid baseline.

Attachments

- Year 1 population count field sheet

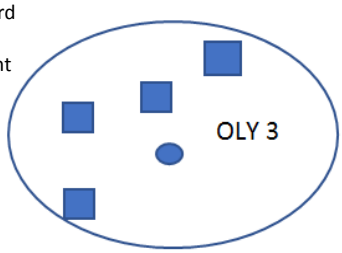
Day 1 – May 21 ~11 volunteers
BTC - 7 students plus Brittany
MRC - Chris B., Bob Seaman, Ryan M.

Assessing plots 1, 2, 3, + quadrants in channel

Day 2 – May 22 ~10 volunteers
BTC - 5 students plus Brittany
MRC - Chris B, Molly, Ryan, Eleanor

Assessing plot 5, 6, 7

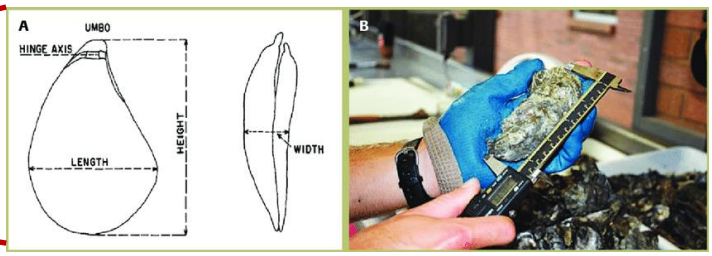
Figure 1. Example of half hazard quadrat placement



Haphazard quadrant monitoring:
Position of sampling in chosen arbitrarily without using systematic
Or random sampling methods.
1) Throw quadrat anywhere within the 20m'test plot.
2) Ensure to place a quadrat (or two) outside cluster of oyster shell, to capture oysters that have detached.
3) 5 quadrats per plot. 5 quadrats in channel sampling.

Data to capture within quadrats:

- number of pacific oyster shell
- number of live Olympia oysters
- height of Olympia oysters *(from umbo, above hinge axis)*
- length of Olympia oyster
- number of dead Olympia oyster
- additional observations (make overall plot observations, and observations within the quadrant.)



Whatcom MRC Pilot Olympia Oyster Restoration Project						
Year 1 population monitoring post- deployment of seeded cultch						
Date:					**Site and Plot Name** *(if monitoring within channel include GPS Coordinates)*:	
Time of survey:					**Tide Height at Time of Survey:**	
Surveyors:						
Quadrat	**Number of Pacific Oyster Shell**	**Number of LIVE Olympia oysters**	**LIVE Olympia oyster height (mm)**	**LIVE Olympia oyster Length (mm)**	**Number of DEAD Olympia oysters**	**Additional Observations**