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Whatcom Marine Resources Committee Pilot Olympia Oyster Restoration Project

2017-2018 Final Report

Final report of work completed by the Whatcom Marine Resources Committee for the pilot Olympia oyster restoration project in North Chuckanut Bay from October 1 2017-September 30, 2018.

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North Chuckanut Bay Pilot Olympia Oyster Restoration Project

The Washington Department of Fish and Wildlife identified two areas in Whatcom County ideal for the restoration of native oyster populations. North Chuckanut Bay appeared to be the area to offer the most promising opportunity to establish a self-sustaining population. Historic middens indicate past populations of Olympic oysters in North Chuckanut Bay, but none are known to be present today. Seven test plots were identified, by WDFW staff in June 2016, as suitable to plant seeded cultch. In order to provide information on feasibility of restoration in the seven test plots (see map below), the Whatcom MRC spread approximately 95,000 oysters into 2x2 meter plots along identified test plots. The MRC developed a monitoring plan to collect a baseline of physical and biological parameter data to determine the status of restoration potential and assess needs for adaptive changes.

The long-term goal of the project is to re-establish a native Olympia oyster population in North Chuckanut Bay. For the current year, the goal of the project was to involve local community members in seeding the test plots, monitoring, and

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to evaluate the potential for habitat creation for other species, and enhance the bio-filtration capacity in the bay for improved water quality.

The MRC purchased 35 bags of seed on Pacific Oyster shell from the Puget Sound Restoration Fund (PSRF). Each bag had a minimum of 250 shells and 3-5 spat (or seed) per shell. These bags were delivered to the Whatcom MRC in May 2017 and placed at a secure location in Fidalgo Bay for overwintering. The MRC aimed to place the seed after one year of overwintering, therefore

PERMITTING

A permitting preview meeting was held on site in the fall of 2017 with representatives from the various agencies that would be involved with the permitting process for this project. This project is one of several throughout the Northwest Straits Initiative. One goal of the permitting meeting was to inform a guidance document that will be developed for use by all Marine Resource Committees pursuing Olympia oyster reintroduction. The intent was to find consistencies in agency permitting procedures for pilot projects as well as full restoration projects that would follow successful pilot studies. One need from this process may be to define what the scope and size of a pilot study is.

City of Bellingham and Army Corps of Engineers

MRC staff began by completing a JARPA document which was submitted to the City of Bellingham, the owner of the North Chuckanut Bay tidelands. The project was determined SEPA exempt as the project is intended to be a restoration project. The JARPA was also submitted to the US Army Corps of Engineers who determined that a Nationwide 27 verification may be issued for the pilot study rather than requiring an individual permit. The Nationwide verification is valid for 5 years. If the project proceeds to full restoration within those 5 years, a new permit may not be needed, rather the verification can be modified for the expanded scope. Both the Lummi Nation and Swinomish Tribe were consulted in this process.

Under the State Environmental Policy Act, this project was issued a "Determination of Nonsignificance" as it was found that any significant environmental impacts from a proposal are already addressed by existing codes.

Washington Department of Fish and Wildlife (WDFW)

A transfer permit was obtained from WDFW, to have the oysters transported from Fidalgo Bay to North Chuckanut Bay. RCW 77.60.060 and WAC 220-340-150 require all transfers to be accompanied by a permit issued by the Director of Fish and Wildlife.

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HPA

MRC Staff completed a standard hydraulic project approval (HPA) permit which was approved and issued on May 1, 2018.

MARKING THE PLOTS IN N.CHUCKANUT BAY

Tuesday, May 15, 2018. high tide 4:33am (8.38ft), low tide 11:29am (-1.51ft), high tide 6:52pm (8.27ft), low tide 11:45pm (5.11ft)

On May 15, three MRC members, MRC Staff and staff from the Northwest Straits Foundation marked each test plot in North Chuckanut Bay at low tide. The team used helical anchors, parachute rope, and buoys.



RETRIVAL FROM FIDALGO BAY

Wednesday, May 16, 2018. high tide 4:54am (8.05ft), low tide 11:50am (-2.13ft), high tide 7:33pm (8.32ft)

Five MRC members, three volunteers, and MRC staff met along the Tommy Thompson trail over Fidalgo Bay to retrieve the oyster bags that were placed on the substrate a year earlier. Two pulley systems were developed to hoist the bags onto the trestle.



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DEPLOYMENT IN N. CHUCKANUT BAY

Thursday, May 17, 2018. low tide 12:35am (5.61ft), high tide 5:41am (8.28ft), low tide 12:54pm (-2.62ft), high tide 8:38pm (8.91ft)

On May 17, MRC Staff, four MRC members and two volunteers met on shore at North Chuckanut Bay to deploy the bags of oysters at high tide. It was determined that within the six plots in which shell would be placed 3 plots would have 6 bags and 3 plots would have 7 bags. A 12' SmokerCraft with a trolling motor was used to get to each plot in the early morning.

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OPENING BAGS AND SPREADING SHELL

Thursday, May 17, 2018. low tide 12:35am (5.61ft), high tide 5:41am (8.28ft), low tide 12:54pm (-2.62ft), high tide 8:38pm (8.91ft)

MRC Staff made a connection with faculty from the Bellingham Technical College Fisheries and Aquaculture to inquire whether students would be interested in helping with fieldwork work – opening bags of oysters, spreading shell densely within the test plot area, counting and measuring spat on shell. 18 students assisted with field work. MRC staff provided a lesson on the protocol on site.






(Pacific oyster shell with one-year old cultch attached)

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Intertidal Monitoring Survey 2 - one year later

A pre-seeding tidal survey was completed in August 2017 in order to collect baseline data for tidal elevations, eel grass/macroalgal presence, and substrate characteristics. This information can and will be used by the MRC for developing a restoration plan and acquisition of all necessary permits as needed. The MRC determined they want to complete an intertidal survey on an annual basis around the test plots, and as such, completed another survey on August 9, 2018.

The MRC adapted the protocol from the Intertidal Monitoring QAPP (Steffensen and Joyce 2013: https://www.aquaticreserves.org/wp-content/uploads/PC-00J29801-0-QAPP-Intertidal-Biota-13-06-21-FINAL.pdf). For the 2018 survey, the MRC followed the protocol to complete half hazard quadrats instead of the transect line that were done the previous year (see figure 1). Species were lumped according to the field data sheets (i.e. barnacles were identified as barnacles and not down to species).

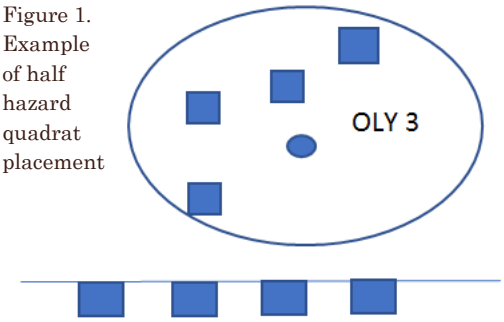

Figure 1. Example of half hazard quadrat placement

Three elevation profiles were conducted at Oly 4, Oly 2, and Oly 7. Elevation profiles were taken from 3 start points along the shoreline and aimed to capture at least 3 clusters of site locations in profile elevation. The elevation profiles seem highly inaccurate for such a flat slope within the bay, and as such, the MRC is deciding on whether it is worth continuing.

Core samples were completed at Oly 2 and Oly 7 beside each quadrat down to 30 cm, or as close as possible. Organisms found in the cores were identified to species when possible.

MRC members involved with this survey voiced the need to refine the protocols for this particular site even further. The start time was determined by referencing -1ft tide (7:30 AM), then one hour was subtracted for the setup start time (6:30 AM). After loading carts and walking, volunteers reached "base" at about 7AM; and it became hard to flag start points because water was too deep. Flagging was not able to occur until 7:30 AM at the -1ft tide. **NOTE – Oly 3 is the deepest site and needs a -2ft or lower tide to survey.

The objective of these surveys was to see if there is a measurable difference in species present over time, as well as any changes in elevation as Olympia oysters are reintroduced. Epiphana and infuana are both expected to be potentially impacted by oysters, so the MRC has included both in the notes. Oyster reefs can also form and change elevation, so that data has been captured. Special note was taken on any invasive species.

Overall, there are not a lot of species to be counted in these intertidal surveys. North Chuckanut Bay is characterized as mostly mud/sand/silt mixture. There were mostly barnacles, oysters, clams, snails, mussels, and sand dollars found, with some areas heavily

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covered by these organisms while others very sparse. Eelgrass was found at the sites closer to the trestle. Macro algae can cover the bay at low tides, but is ephemeral and was not a dominate presence. Some sites had relatively large sand dollar beds in or near the transect. The profiles were generally a very gentle slope and mark where some of the tidal stream channels lay.

CONCLUSION

The MRC would like to monitor temperature, pH, and DO data at the sites to measure any difference pre/post oyster restoration. The MRC is continuing to refine their monitoring plan and needs expert review. MRC staff will attempt to get input from the Puget Sound Restoration Fund and others with WDFW.

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