Whatcom Marine Resources Committee (MRC) 2025 Drayton Harbor Olympia Oyster Final Report

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Whatcom County Public Works—Natural Resources

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Abstract

The Olympia oyster (*Ostrea lurida*) is the only native oyster from British Columbia to Baja California. Olympia oysters are vital to coastal ecosystems, providing habitat for numerous marine organisms, filtering and improving water quality, and supporting local food webs. However, Olympia oyster populations have sharply declined due to overharvesting, habitat loss, and pollution. As such, the Whatcom Marine Resources Committee (MRC) aims to establish a self-sustaining population of Olympia oysters.

The Washington Department of Fish and Wildlife (WDFW) conducted an extensive review of historical records to identify locations where large, natural Olympia oyster beds were present in the Puget Sound prior to exploitation.[1] A primary goal of this review was to identify locations of historical Olympia oyster beds to inform future restoration priority sites for Olympia oysters. Given that Drayton Harbor was identified as an area in the North Puget Sound sub basin that historically had large native oyster beds, the MRC is working with WDFW and the Puget Sound Restoration Fund (PSRF) to develop a pilot Olympia oyster enhancement project in Drayton Harbor with the goal of establishing a self-sustaining population.

During this reporting period, the MRC contracted with PSRF to complete a reconnaissance survey in Drayton Harbor to determine locations for the MRC to test Olympia oyster restoration potential. Based on the expertise and survey findings of PSRF and WDFW, the MRC plans to pilot several Olympia oyster restoration test plots or bioassays within two broad locations in Drayton Harbor including the tidelands of California Creek and the inside of Semiahmoo Spit. By implementing these bioassays, the MRC aims to examine microhabitats within the larger sites to identify optimal conditions for Olympia oysters. Once the bioassays are established, annual population assessments will be conducted to evaluate oyster growth, survival, and spatial fidelity. The bioassays will be monitored for up to 5 years to inform where restoration efforts should be focused. The MRC has submitted the necessary permits to establish bioassays in 2026.

[1]Washington Department of Fish and Wildlife, Blake, B., Bradbury, A., & Washington Department Fish & Wildlife. (2022). Plan for Rebuilding Olympia Oyster (*Ostrea lurida*) Populations in Puget Sound with a Historical and Contemporary Overview. https://restorationfund.org/wp-content/uploads/2019/02/olympia_oyster_restoration_plan_final.pdf

Project Goals

The ultimate goal of this project is to establish a self-sustaining population of Olympia oysters in Drayton Harbor while enhancing water quality and habitat complexity.

For this reporting period of January — December 2025, the primary goal was to conduct surveys in Drayton Harbor to assess existing Olympia oyster populations and evaluate habitat characteristics to identify locations for Olympia oyster population enhancement. Another goal was to complete the necessary permit applications associated with setting up the bioassays in the locations proposed based on the surveys.

Project Partners

- **Washington Department of Fish and Wildlife (WDFW):** Provided expertise on Olympia oysters and guided the project's planning and implementation. Conducted a site visit of suitable Olympia oyster habitat within Drayton Harbor.
- **Puget Sound Restoration Fund (PSRF):** Assisted the MRC in conducting a reconnaissance survey in Drayton Harbor and provided the Olympia oyster seed that will be used in the bioassays to assess restoration potential.
- **Northwest Straits Commission (NWSC)**: Provided staff to assist with the surveys in Drayton Harbor.

MRC project lead, Jackie Dexter, accompanies PSRF staff on the reconnaissance survey in Drayton Harbor. Photo credit: Allie Simpson, NWSC staff.

Project Engagement

The Whatcom MRC led an assessment to inform potential Olympia oyster restoration efforts in Drayton Harbor. The MRC was responsible for coordinating and contracting with PSRF to conduct a reconnaissance survey in Drayton Harbor. The reconnaissance survey and corresponding report prepared by PSRF provided background information on Olympia oysters and previous restoration efforts in Drayton Harbor, assessed key habitat characteristics and the general distribution of existing Olympia oysters at selected sites, and recommended suitable locations for establishing bioassays to determine Olympia oyster restoration potential (see Appendix A). Following PSRF's reconnaissance survey, WDFW conducted another site visit of the identified locations to further explore habitat characteristics and to identify specific areas that would be the most suitable to set up bioassays for further testing. Based on the recommendations from PSRF and WDFW, the MRC submitted the appropriate permit applications to establish several Olympia oyster bioassay plots within two main locations. The MRC also purchased Olympia oyster seed from PSRF's hatchery during this reporting period.

Participants

The reconnaissance survey was completed by two field technicians with PSRF on March 31, 2025. One MRC member and staff with the NWSC joined PSRF on this survey. On June 24, 2025, MRC and NWSC staff joined WDFW's Olympia oyster program lead on a site visit to Drayton Harbor.

MRC project lead, Jackie Dexter, accompanies PSRF staff on the reconnaissance survey in Drayton Harbor. Photo credits: Allie Simpson, NWSC staff.

Project Methods and Results: PSRF's Reconnaissance Survey

PSRF conducted an investigation of potential sites for Olympia oyster restoration efforts within Drayton Harbor and identified project areas with the highest likelihood of success. This investigation included phases of information gathering (examining parcel layers, spatial data, eelgrass survey information, and bathymetry contours[2]) and a reconnaissance survey site visit.

Figure 1: Field map from PSRF highlighting three potential areas to establish Olympia oyster bioassays to assess restoration potential.

During the reconnaissance survey on March 31st, PSRF identified key habitat features, target species, and the general distribution of Olympia oysters at select sites. The focus areas of this effort were reaches of shoreline between California Creek and the end of Semiahmoo Spit. Following the reconnaissance survey and a review of vegetation maps, circulation patterns, shoreline imagery, monitoring data for oyster recruitment, and previous Olympia oyster enhancements in Drayton Harbor, PSRF recommended three potential locations to explore Olympia oyster restoration potential (see Figure 1). PSRF provided a summary report (see Appendix A) outlining their findings and recommendations for project actions. PSRF recommended establishing three to five bioassay plots at each of the three sites (up to 12 bioassays total) and monitoring annually to assess the restoration potential based on the habitat conditions. The goal of the annual monitoring events would be to provide insight on which locations would be the most suitable to expand restoration activities.

[2]Eelgrass and bathymetry survey results from Drayton Harbor Voluntary No-Anchor Zone Eelgrass Survey Report, Confluence Environmental Company, November 2023.

Project Methods and Results: WDFW Site Visit

Following PSRF's reconnaissance survey and summary report, staff with WDFW, the MRC, and the NWSC conducted site visits to the primary three locations that were identified as suitable Olympia oyster habitat in Drayton Harbor. The survey was conducted on June 24th, 2025, and consisted of surveying each of the identified locations to further investigate habitat features including substrate firmness, presence of standing water, presence of oyster drills, and other features. The habitat characteristics and corresponding recommendations from WDFW at each of the sites are outlined on the following pages.

1) Staff with WDFW, the MRC, and the NWSC conduct a site visit at Drayton Harbor. 2) Oyster drill with eggs observed at Site 1: the tidelands of California Creek. 3) Olympia oyster found near Site 2: Semiahmoo Spit. 4) The field crew surveys the habitat at site 2: Semiahmoo Spit. Photo credits: Dana Daniels, MRC staff.

Results

Site 1: The Tidelands of California Creek

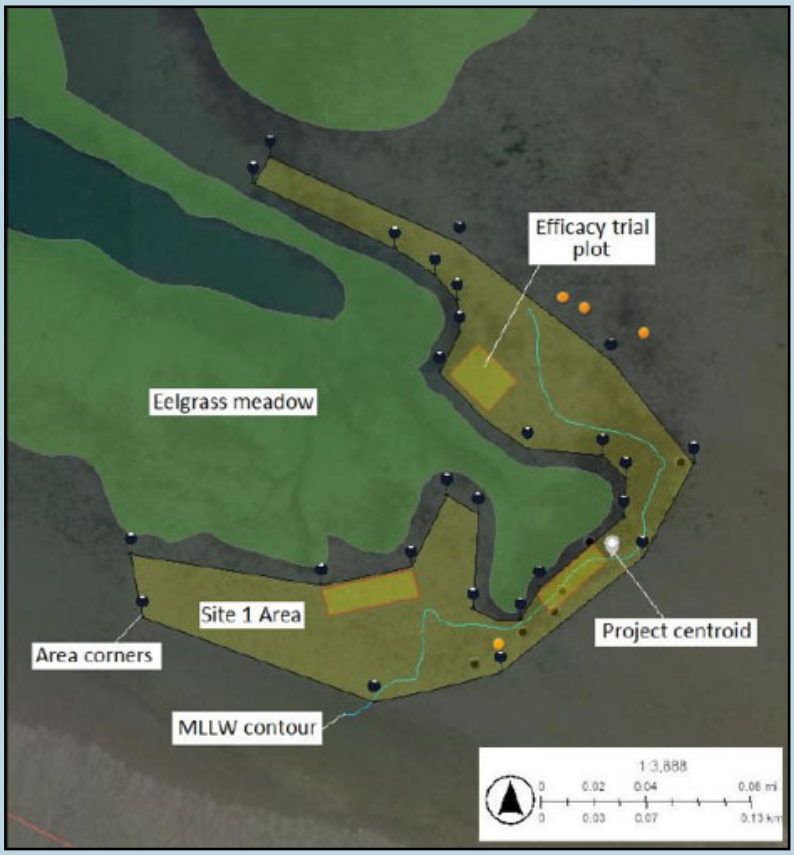

Figure 2: Proposed project area at site 1. Site area is highlighted in yellow with potential bioassay locations outlined in red. Site 1 is located on DNR state-owned aquatic lands. Figure created by PSRF.

Location	Latitude	Longitude
Project Centroid	48.963872	-122.754676
Center of polygons for proposed test plot locations		
Plot 1 (NE plot)	48.964866	-122.75576
Plot 2 (SE plot)	48.963758	-122.755011
Plot 3 (SW plot)	48.963676	-122.756705

Table 1: GPS coordinates of key site 1 locations.

Photos of site 1 including an observed oyster drill. Photo credits: Dana Daniels, MRC staff.

Key characteristics: Firmer substrate than the surrounding areas; proximity to eelgrass beds; located at the head of Drayton Harbor which provides increased water retention time that could promote larval retention; some oyster drills were found here, but presence is generally low in this area.

Recommendations: There is little elevation gradient at this site, so WDFW recommends distributing the plots along different orientations to the eelgrass meadow and further evaluating sediment firmness at these sites.

Results

Site 2: The Inside of Semiahmoo Spit

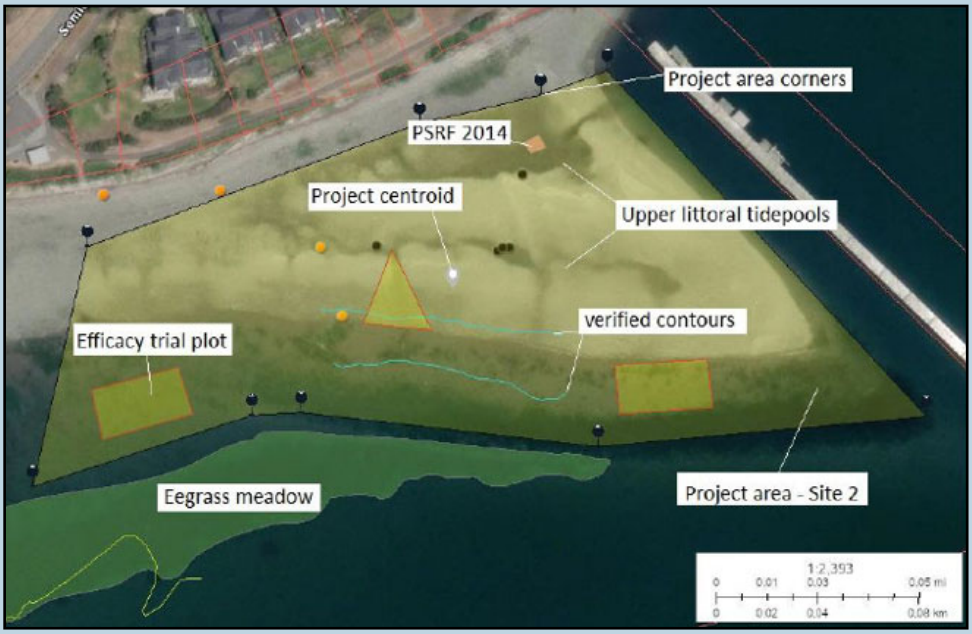

Figure 3: Proposed project area at site 2. Site area is highlighted in yellow with potential bioassay locations outlined in red. Site 2 is located on a parcel owned by the City of Blaine. Figure created by PSRF.

Location	Latitude	Longitude
Project Centroid	48.985561	-122.774823
Center of polygons for proposed test plot locations		
Plot 1 (West plot)	48.985153	-122.776507
Plot 2 (Central plot)	48.985514	-122.775131
Plot 3 (East plot)	48.985211	-122.773684

Table 2: GPS coordinates of key site 2 locations.

Site 2. Photo credit: Dana Daniels, MRC staff.

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Key characteristics: Consistently observed natural set Olympia oyster population.

Recommendations: WDFW recommends placing test plots close to eelgrass beds, distributing plots along the elevation gradient (prioritizing locations below +2 MLLW), and locating plots in areas with seeps or draining pore water and standing water features.

Results

Site 3: West Corner of Drayton Harbor

Figure 4: Proposed project area at site 3. Site area is highlighted in yellow with potential bioassay locations outlined in red. Site 3 is located on 2 parcels owned by the City of Blaine. Figure created by PSRF.

Location	Latitude	Longitude
Project Centroid	48.975263	-122.786041
Center of polygons for proposed test plot locations		
Plot 1 (N plot)	48.976925	-122.786070
Plot 2 (S plot)	48.972931	-122.784601

Table 3: GPS coordinates of key site 3 locations.

Site 3. Photo credit: Dana Daniels, MRC staff.

Key characteristics: This site was not surveyed by PSRF during their March survey, but was recommended for additional exploration due to its proximity to eelgrass beds and its hydrodynamic properties (circulation studies have indicated potential vortices in this region, which could increase the residence time of water, therefore enhancing larval recruitment).

Recommendations: PSRF recommended that the MRC further explore this site, focusing on assessing sediment firmness. WDFW determined that this location was too muddy and likely not firm enough to support Olympia oysters.

Outcomes

For this reporting period of January — December 2025, the primary goals were to conduct a reconnaissance survey in Drayton Harbor to assess existing Olympia oyster populations, to identify locations for exploring Olympia oyster population enhancement based on habitat characteristics, and to submit permit applications. The Whatcom MRC and PSRF completed a feasibility study and reconnaissance survey to inform the next steps for Olympia oyster restoration efforts in Drayton Harbor. The MRC also coordinated with WDFW to complete a site visit, further informing Olympia oyster restoration potential at select sites throughout Drayton Harbor. Through these assessments and field surveys, two main locations, including the tidelands of California Creek and the inside of Semiahmoo Spit, were identified as suitable areas to conduct additional testing to assess Olympia oyster restoration potential. The MRC submitted permits in December of 2025 to implement bioassay monitoring stations within each of the identified locations.

Outputs

- A reconnaissance survey and summary report were completed by PSRF
- A site visit was completed by WDFW
- Permits were submitted to set up bioassay monitoring stations within the locations identified with the greatest Olympia oyster restoration potential
- 150 bags of Pacific oyster shell containing Olympia oyster spat were purchased from PSRF for use in the bioassays to further test restoration potential at the identified sites

Results in Context

The assessments that took place in 2025 were conducted to inform the feasibility of conducting Olympia oyster restoration efforts in Drayton Harbor. The surveys facilitated by PSRF and WDFW helped to identify two locations to further assess Olympia oyster restoration potential. With help from PSRF and WDFW, the MRC will be placing several bioassay plots within the tidelands of California Creek and the inside of Semiahmoo Spit to determine which microhabitats best support Olympia oyster populations. Once these site/s are identified via annual monitoring surveys, resources will be concentrated on enhancement of these locations with the ultimate goal of creating a self-sustaining population (at least 2 million individuals) of Olympia oysters.

Project Highlights

"I am very excited to begin restoration efforts in Drayton Harbor with the MRC as a continuance of the work started by Puget Sound Restoration Fund and Drayton Harbor Oyster Company. As a Blaine resident and previous oyster farmer for Drayton Harbor Oyster Co., I have been tracking the Olympia oyster population for many years and see the potential this population has. I believe that Drayton Harbor has some of the largest Olympia oysters and with a little help from the MRC, it could turn into a self-perpetuating, sustainable population."

- Jackie Dexter, MRC Olympia Oyster Project Lead

Lessons Learned

One major insight that the MRC has gained over the course of multiple Olympia Oyster restoration projects is that successful Olympia oyster restoration is highly resource intensive. Restoration-grade seed is costly and can be a major limiting factor to population growth, making early coordination with partner organizations and securing adequate funding essential for success. The MRC was able to work with PSRF early to secure North Sound Olympia oyster seed from their hatchery to kickstart this project. Another lesson learned during this reporting period was to overestimate the amount of time needed to work on permits. Compiling the necessary materials for the permit application was time intensive and required coordination with many other organizations including WDFW, DNR, the City of Blaine, and Whatcom County.

Next Steps

Now that the initial investigations and reconnaissance surveys have been completed in Drayton Harbor, the MRC plans to implement bioassays within the two broader locations that were identified by PSRF and WDFW including the tidelands of California Creek and the inside of Semiahmoo Spit. The goal of implementing these bioassays is to further investigate microhabitats to determine the most ideal conditions to support Olympia oysters. The MRC proposes to distribute 150 bags of Pacific oyster shell with North Sound Olympia oyster spat (with 250 Pacific oyster shells per bag with about 5 Olympia oyster spat per shell for a total of around 200,000 baby Olympia oysters) in up to 12 bioassays. Once the bioassays are established at multiple locations within the two sites, annual population assessments will be conducted to collect data on oyster growth, survival, and spatial fidelity. The bioassays will be monitored for up to five years to inform where restoration efforts should be focused.

Appendices

- **Appendix A:** Drayton Harbor and Olympia Oysters: A Review of Population Enhancements and Recommendations for Future Activities. Report prepared by the Puget Sound Restoration Fund.