



Whatcom Marine Resources Committee (MRC) 2025 North Chuckanut Bay Olympia Oyster Final Report

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Whatcom County Public Works—Natural Resources

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Abstract

Olympia oysters (*Ostrea lurida*) are 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. In response, the MRC partnered with the Washington Department of Fish and Wildlife (WDFW) and the Puget Sound Restoration Fund (PSRF) to launch an Olympia oyster pilot restoration project in North Chuckanut Bay. The project's long-term goal was to establish a self-sustaining Olympia oyster population while enhancing water quality and increasing habitat complexity within the bay.

Since the deployment of Olympia oysters in 2018, annual population assessments have been completed using a haphazard sampling design. Students from Bellingham Technical College (BTC) helped complete the yearly monitoring surveys. Data was shared with the WDFW Olympia oyster biologist and was added to the Native Olympia Oyster Collaborative's [Restoration Storymap](#) that showcases Olympia oyster restoration along the west coast.

Monitoring surveys conducted from 2019-2025 have shown a clear decline in live Olympia oysters within the pilot restoration plots. However, in 2025, several live adult Olympia oysters were observed at half of the sites, indicating suitable habitat for Olympia oysters given that individuals have been surviving there since spat placement in 2018. These plots also retained oyster shell and organic material, which indicates strong potential for larval retention if a sufficiently large adult population is established. Based on these habitat conditions and recent observations, WDFW has indicated that North Chuckanut Bay may still be a promising location for Olympia oyster restoration.

Restoring Olympia oysters is highly resource intensive, and the availability of restoration-grade oyster seed remains one of the main constraints to population recovery. Due to the continued decline of oysters observed in the test plots, the MRC has decided to end restoration efforts in North Chuckanut Bay and redirect its focus to Drayton Harbor. If the MRC chooses to resume work in North Chuckanut Bay in the future, restoration would be concentrated at the sites that showed the greatest success during the pilot project including Oly 2, Oly 3, and Oly 7.

Project Goals

The goal of this project was to establish a self-sustaining population of Olympia oysters while enhancing water quality and habitat complexity in North Chuckanut Bay.

For this reporting period of January — December 2025, the primary goal was to complete an annual monitoring survey of existing test plots in North Chuckanut Bay by assessing oyster abundance and population recruitment.

Project Engagement

The MRC was responsible for planning and coordinating the annual population survey, reaching out to volunteers to assist with the survey, compiling and analyzing the data, and communicating with WDFW about the next steps for the project. The MRC relied on volunteers and project partners, including students from Bellingham Technical College's (BTC's) Fisheries and Aquaculture Program, to assist with the annual population survey in North Chuckanut Bay.

Project Partners

- **Washington Department of Fish and Wildlife (WDFW):** Provided historical and current expertise on Olympia oysters and guided the project's planning and implementation.
- **Bellingham Technical College (BTC):** Provided students from the Fisheries and Aquaculture Program to assist in annual monitoring surveys.
- **Puget Sound Restoration Fund (PSRF):** Assisted the MRC in facilitating the project in North Chuckanut Bay by providing Olympia oyster seed.

Participants

The MRC conducted their 7th annual population survey of Olympia oysters in North Chuckanut Bay on May 29th, 2025. Two MRC members, one MRC staff member, one volunteer, and about 20 students and 1 instructor from the BTC Fisheries and Aquaculture Program assisted with the survey.

Project Background

WDFW identified North Chuckanut Bay as a strong candidate for Olympia oyster restoration because historical records indicate native oyster populations previously existed there. Additionally, the bay is characterized by favorable habitat conditions including firm, but muddy substrate, consistent standing water, and an absence of oyster drills—the primary predator of Olympia oysters. As such, the MRC began exploring the potential of Olympia oyster restoration in North Chuckanut Bay in 2016.

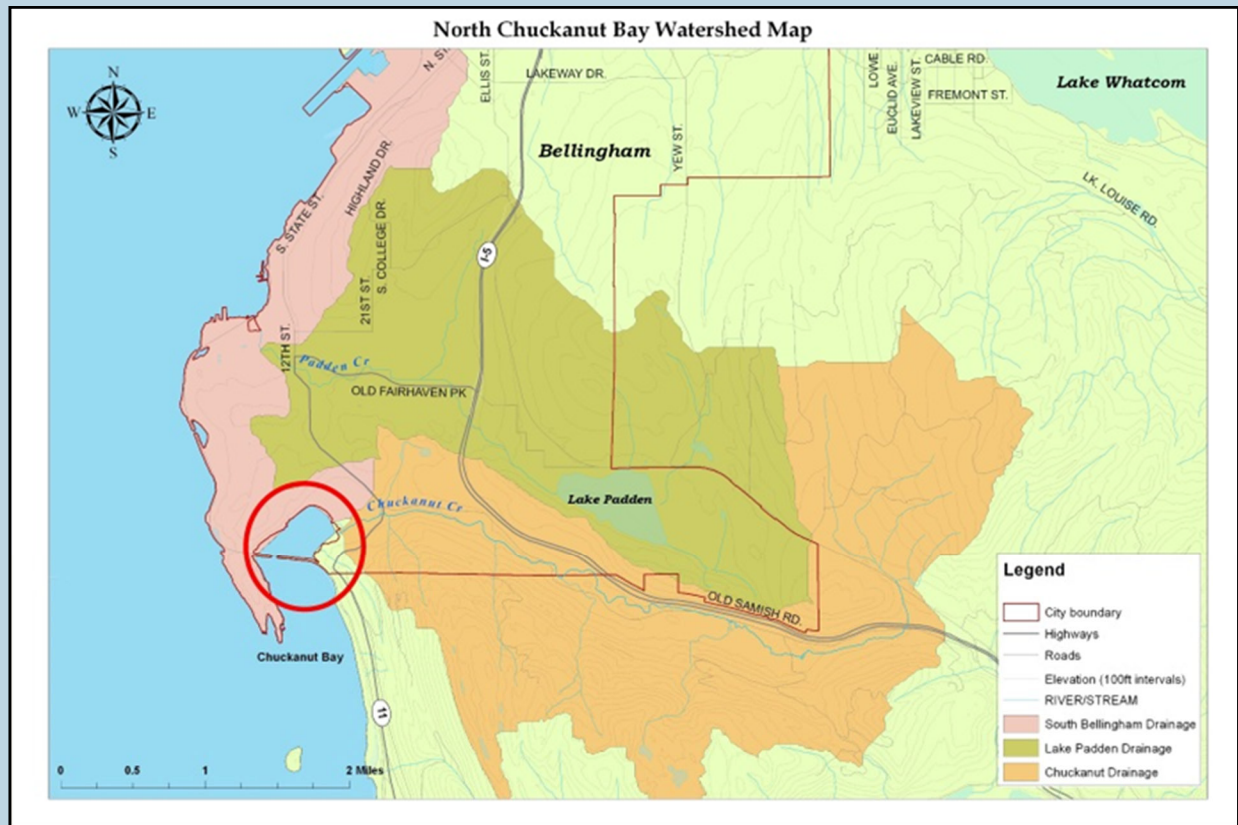


Figure 1: North Chuckanut Bay (circled in red) is a small embayment located in south Bellingham with a railroad trestle crossing the mouth. The primary freshwater discharge to this bay is Chuckanut Creek. Historic middens at the south side of the bay indicate past populations of Olympia oysters, but none are known to be present today.



Aerial view of North Chuckanut Bay. Photo credit: Dana Daniels

In 2016, WDFW staff conducted a site evaluation of North Chuckanut Bay. Based on the observed habitat characteristics, six test plots and one reference plot (shown in Figure 2) were identified to pilot Olympia oyster restoration efforts. In 2018, the MRC purchased 35 bags of Pacific oyster shell containing Olympia oyster spat from PSRF. Each bag contained a minimum of 250 Pacific oyster shells with 3-5 Olympia oyster spat per Pacific oyster shell.

Five bags were placed in each of the test plots except for the reference plot (Oly 4).

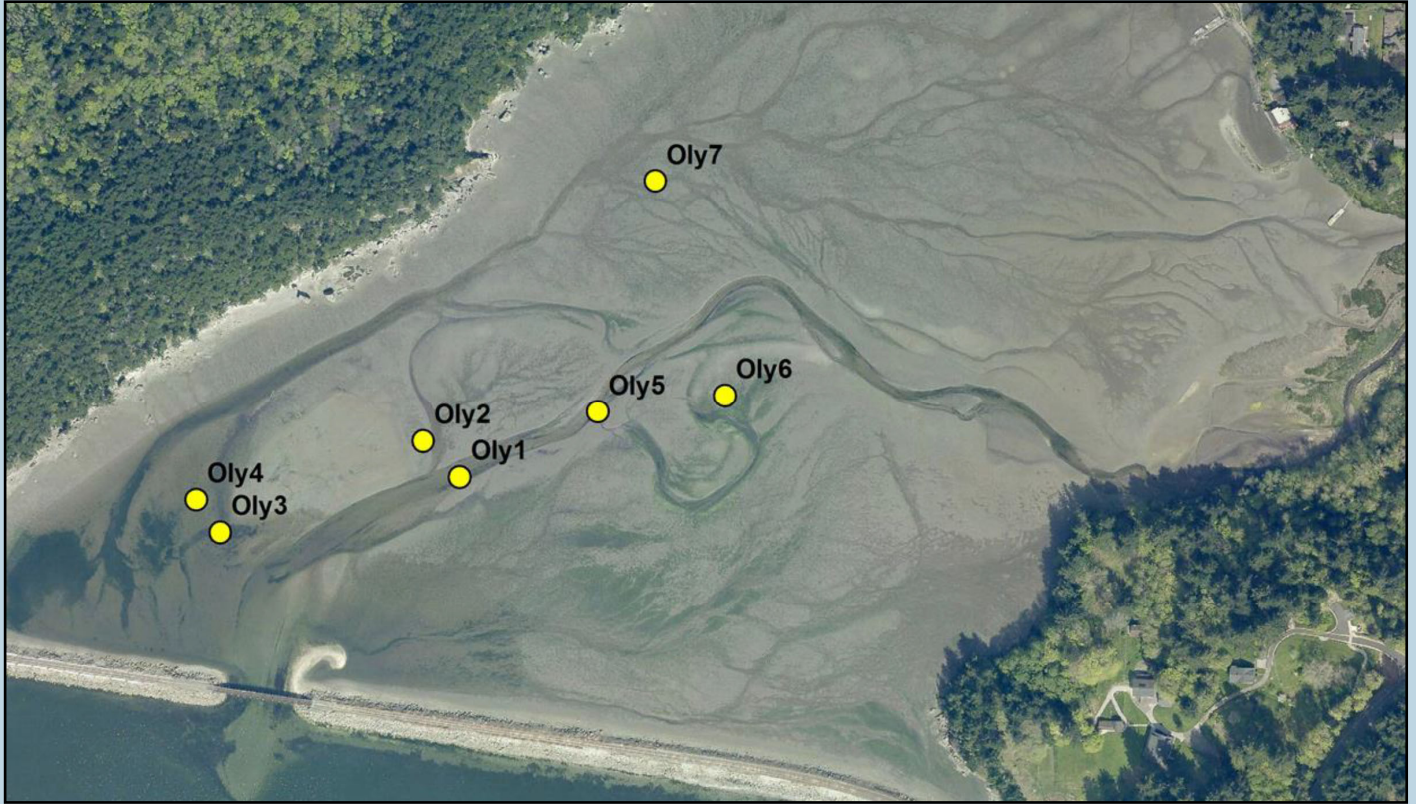


Figure 2: Locations of the Olympia oyster test plots within North Chuckanut Bay.

Site	Latitude	Longitude
Oly 1	48.69894	-122.50375
Oly 2	48.69914	-122.50408
Oly 3	48.69859	-122.50586
Oly 4 (reference site)	48.69877	-122.50607
Oly 5	48.69933	-122.50255
Oly 6	48.69944	-122.50143
Oly 7	48.70068	-122.50208

Table 1: Coordinates of the Olympia oyster test plots within North Chuckanut Bay.

Project Methods

Since the pilot Olympia oyster test plots were established in 2018, the MRC has conducted annual population surveys within the six pilot restoration plots and reference plot, each 20ft² in size, to monitor for Olympia oyster recruitment, oyster size, and spatial extent, using a haphazard sampling design (see Appendix A). The survey participants were divided into teams and provided with datasheets, quadrats, and calipers. The survey methods included:

- Using a GPS unit to locate plot centers and boundaries.
- Subsampling each test plot 5 times using haphazard quadrat placements. (While holding a quadrat, a surveyor stood approximately 2 feet away from the edge of one side of the plot and tossed the quadrat haphazardly into the plot. This was repeated for the other 4 quadrats for a total of 5 quadrat placements per test plot.)
- Counting and measuring the number of Olympia oysters (alive and dead) and the number of Pacific oyster shells within the quadrats and noting any presence of Olympia oyster spat on Pacific oyster shell (see Figure 3).
- Recording observations about overall plot appearance, such as loss of shell or any obvious signs of predation.

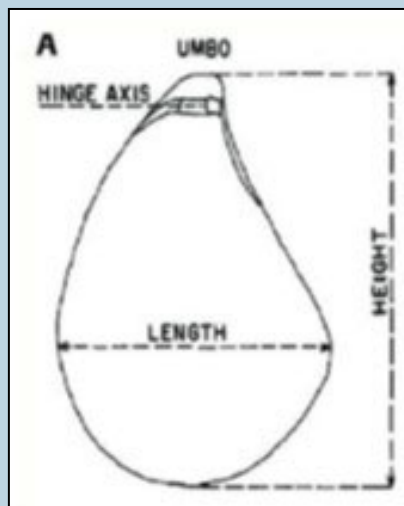
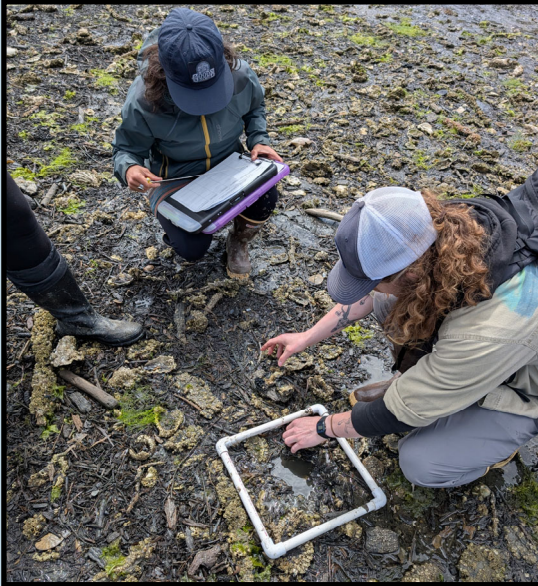


Figure 3: Measuring Olympia oysters (left and middle photos) and identifying Olympia oyster spat on Pacific oyster shell (right photo).

Project Methods/ Results

The MRC conducted their 7th annual population survey of Olympia oysters in North Chuckanut Bay on May 29th. All survey data was entered and analyzed in Microsoft Excel. The results from the survey and details about each of the sites are outlined on the following pages. Overall, there has been a decline in live Olympia oysters across all of the test plots since the project started in 2018.



BTC students participate in an Olympia oyster population survey in North Chuckanut Bay. Photo credits: Top row and bottom left: Dana Daniels, MRC staff. Bottom right: Glen Alexander, MRC member.

Results

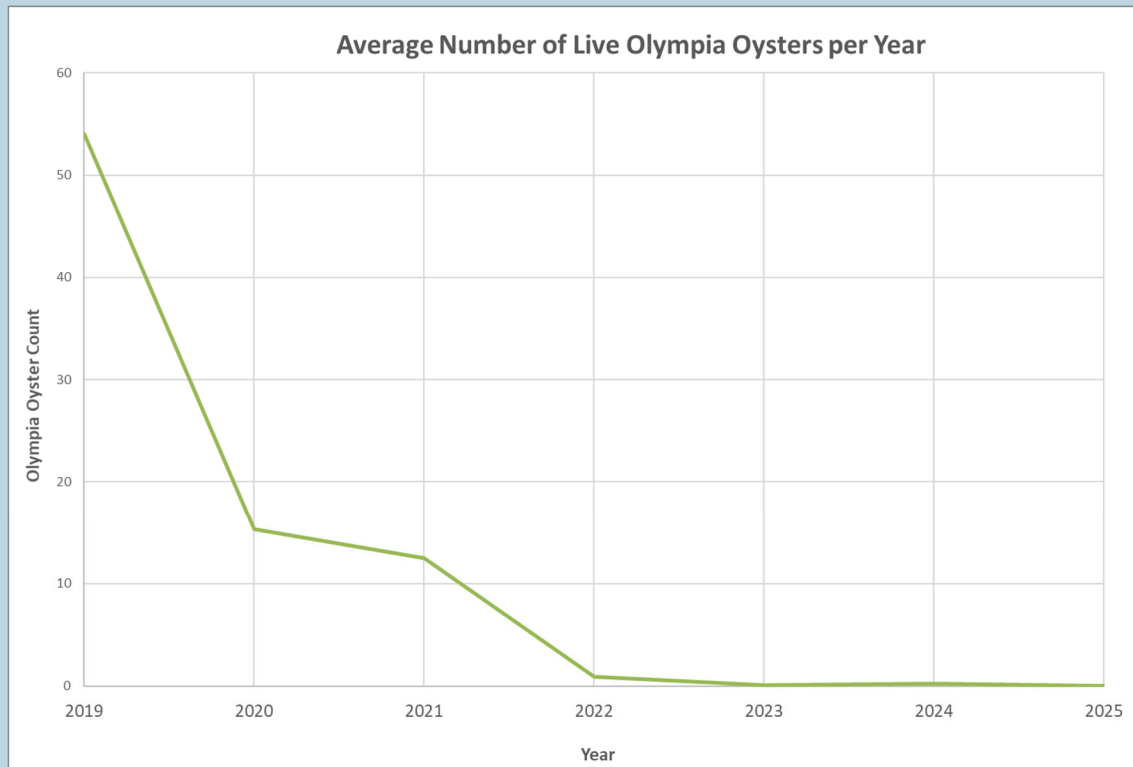


Figure 4: The average number of live Olympia oysters found within the plots around North Chuckanut Bay during the annual monitoring events. Monitoring from 2019 to 2025 shows a decline in live Olympia oysters at the plots.

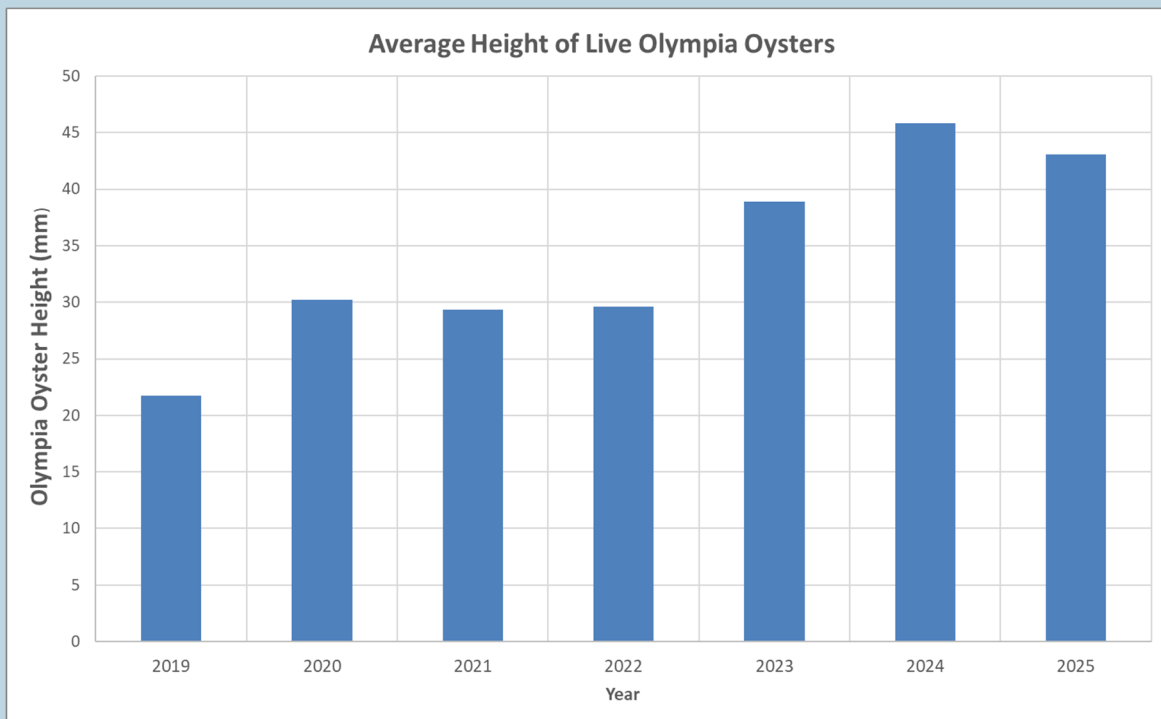
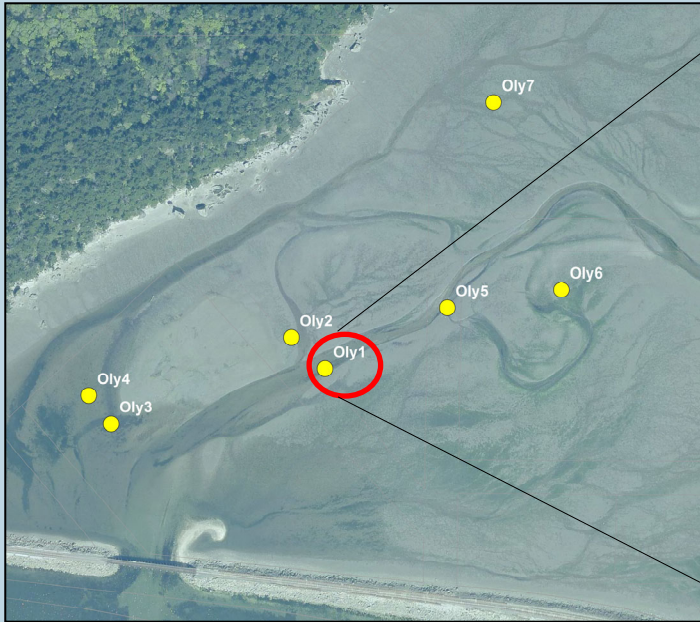


Figure 5: The average height of live Olympia oysters found within the plots around North Chuckanut Bay during the annual monitoring events. Monitoring from 2019 to 2025 shows increases in Olympia oyster size, indicating that the habitat at some of the sites was suitable to support Olympia oysters.

Oly 1



Site Oly 1. Photo credit: Shelby Tomtan, BTC.

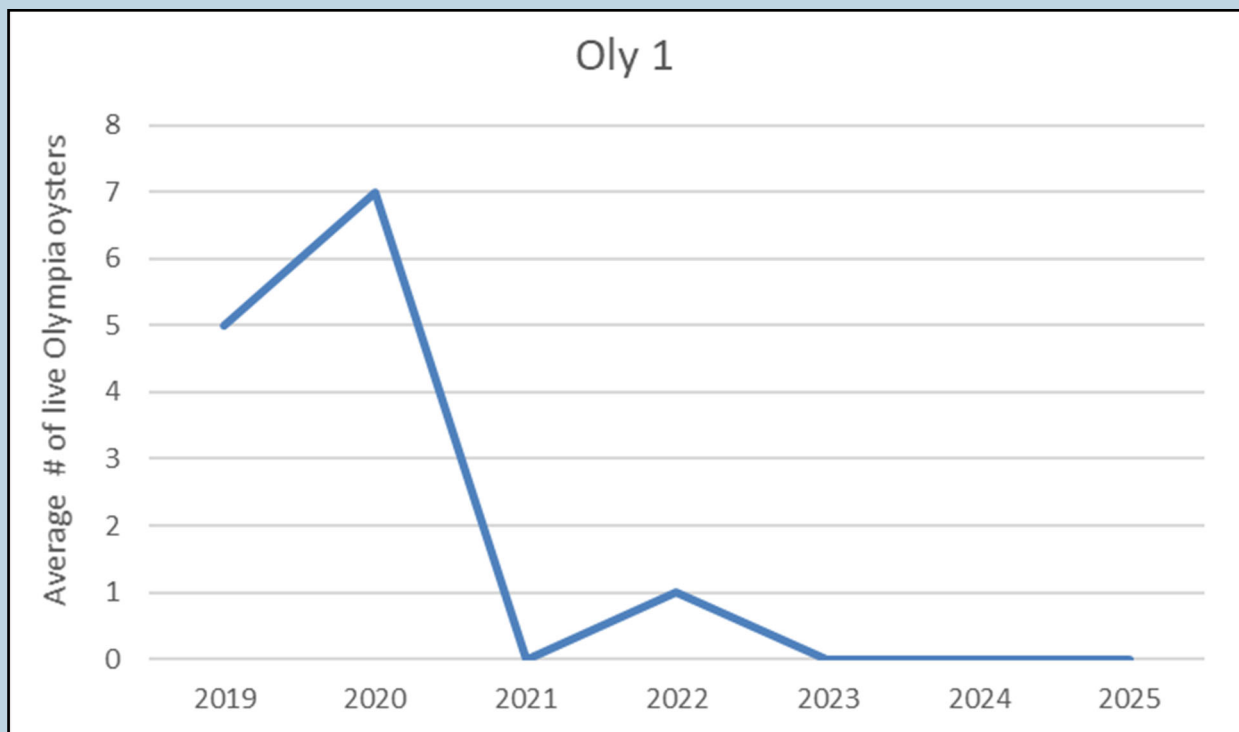
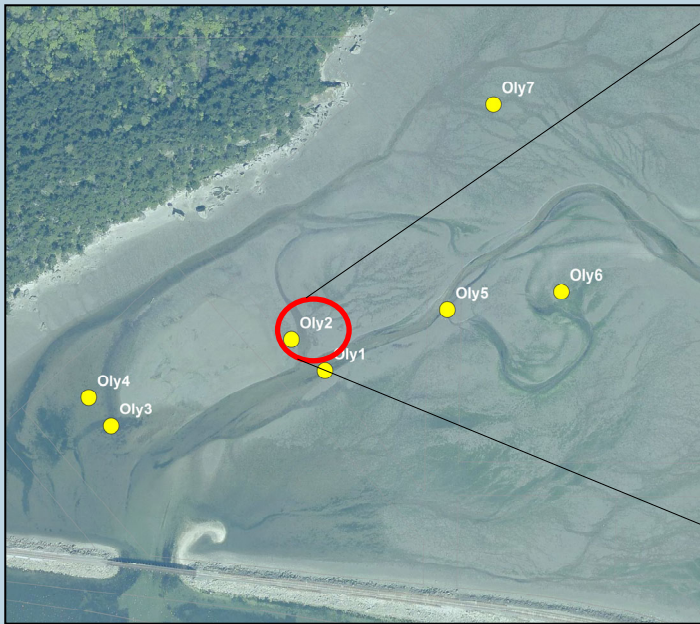


Figure 6: The average number of live Olympia oysters found at Oly 1. Monitoring from 2019-2025 shows a decline in live Olympia oysters.

Oly 2



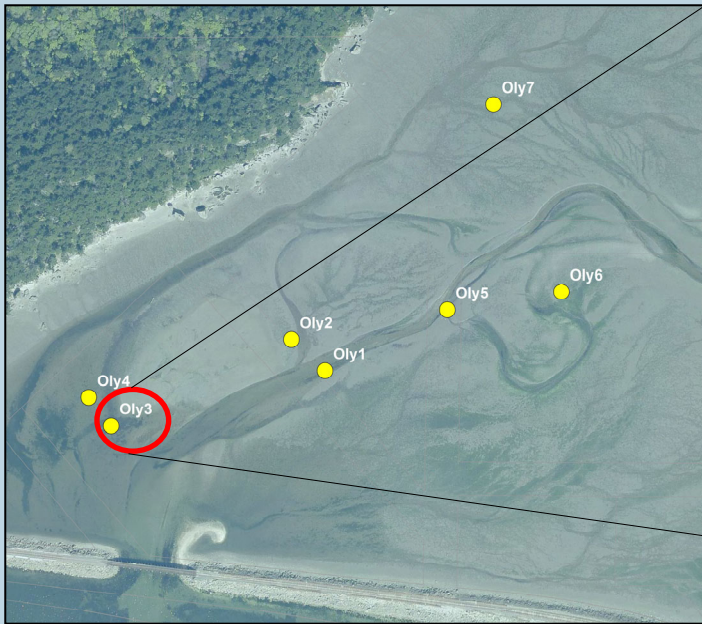
Site Oly 2. Photo credit: Shelby Tomtan, BTC.



Figure 7: The average number of live Olympia oysters found at Oly 2. Monitoring from 2019-2025 shows a decline in live Olympia oysters.

Despite the low number of live Olympia oysters detected at Oly 2 through the haphazard quadrat survey methods, several adult oysters were observed elsewhere within the plot in areas not captured by the quadrats. The plot also showed strong retention of oyster shell and organic debris, suggesting favorable conditions for larval retention if a sufficiently large adult population was present.

Oly 3



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

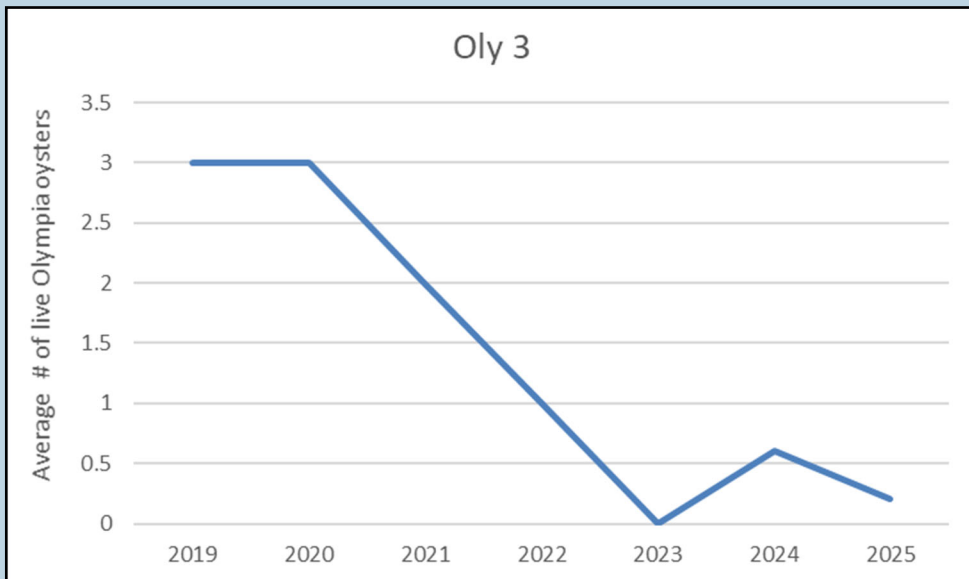
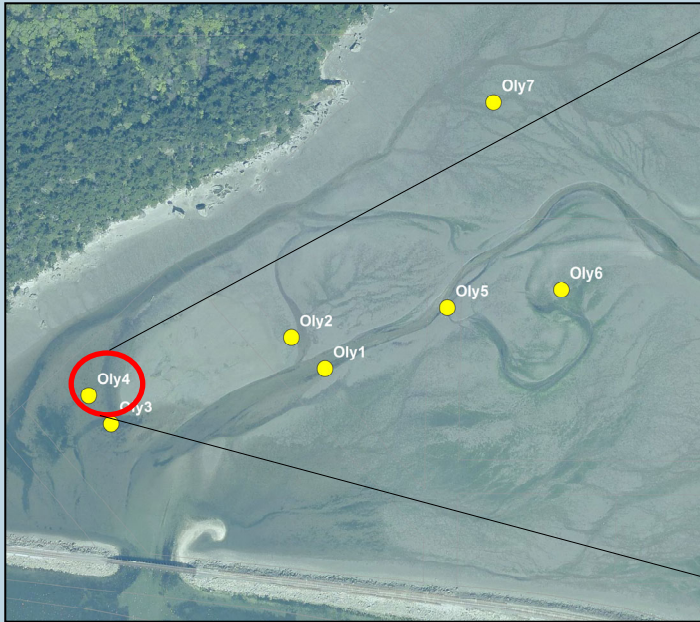


Figure 8: The average number of live Olympia oysters found at Oly 3. Monitoring from 2019-2025 shows a decline in live Olympia oysters.



Despite the low number of live Olympia oysters detected at Oly 3 through the haphazard quadrat survey methods, several adult oysters were observed elsewhere within the plot in areas not captured by the quadrats. The plot also showed strong retention of oyster shell and organic debris, suggesting favorable conditions for larval retention if a sufficiently large adult population was present. Photo credit: Dana Daniels, MRC staff.

Oly 4 (Reference Plot)



Site Oly 4. Photo credit: Dana Daniels, MRC staff.

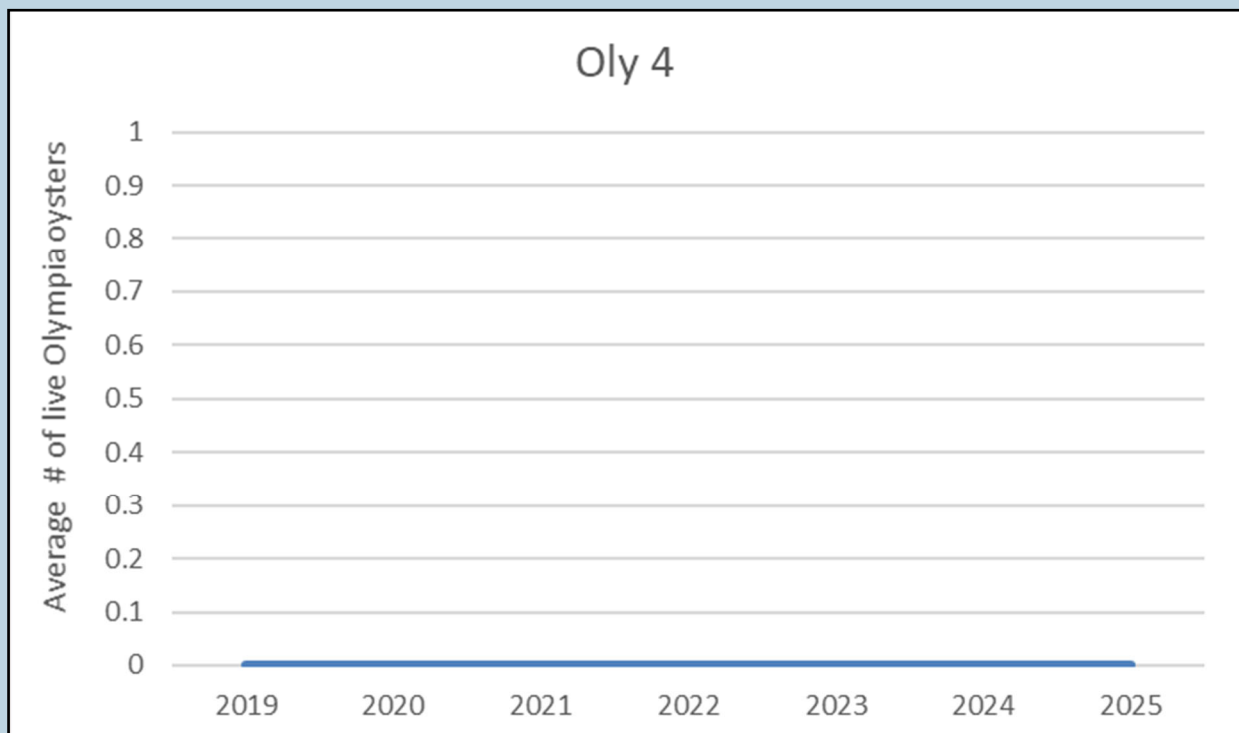
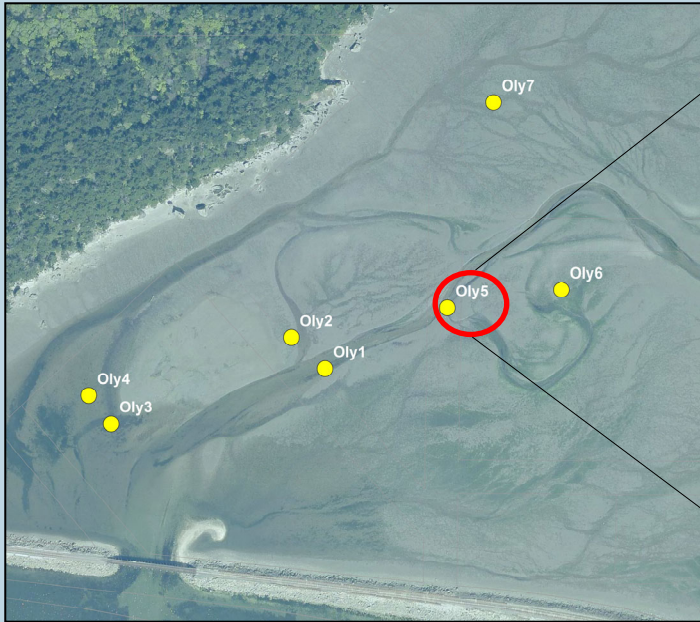


Figure 9: The average number of live Olympia oysters found at Oly 4. Since this is the reference plot, no Olympia oyster spat was placed in this plot when the project began in 2018. No Olympia oysters have been observed in this plot since the project began.

Oly 5



Site Oly 5. Photo credit: Jackie Dexter, MRC project lead.



Figure 10: The average number of live Olympia oysters found at Oly 5. Monitoring from 2019-2025 shows a decline in live Olympia oysters.

Oly 6



Site Oly 6. Photo credit: Dana Daniels, MRC staff.

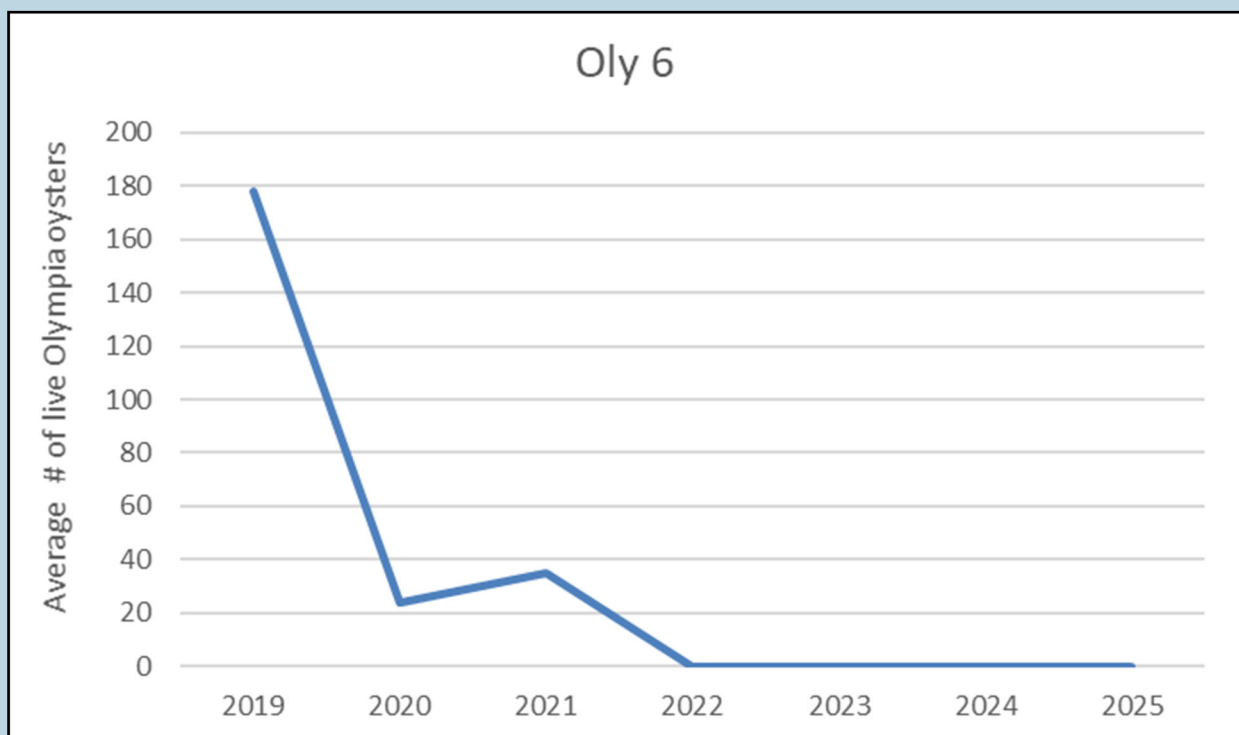


Figure II: The average number of live Olympia oysters found at Oly 6. Monitoring from 2019-2025 shows a decline in live Olympia oysters.

Oly 7



Site Oly 7. Photo credit: Glen Alexander, MRC member.

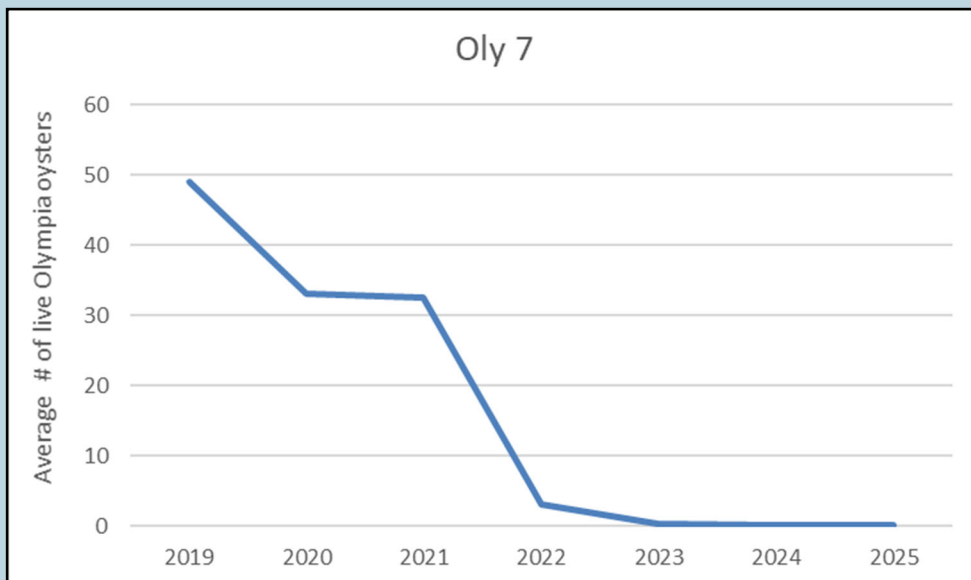


Figure 12: The average number of live Olympia oysters found at Oly 7. Monitoring from 2019-2025 shows a decline in live Olympia oysters.



Despite the low number of live Olympia oysters detected at Oly 7 through the haphazard quadrat survey methods, several adult oysters were observed elsewhere within the plot in areas not captured by the quadrats. The plot also showed strong retention of oyster shell and organic debris, suggesting favorable conditions for larval retention if a sufficiently large adult population was present. Smaller individuals were also observed, indicating that recruitment likely occurred at this site at some point during the project period. Photo credit: Dana Daniels, MRC staff.

Outcomes

For this reporting period of January — December 2025, the primary goal was to complete the annual monitoring survey in North Chuckanut Bay by assessing oyster abundance and population recruitment. The Whatcom MRC and BTC students achieved this goal by completing the 2025 Olympia oyster population assessment in North Chuckanut Bay, gathering the seventh and final year of monitoring data. BTC students successfully participated in the assessment, utilizing the proper sampling protocols. Data was shared with the WDFW Olympia oyster biologist and was added to the Native Olympia Oyster Collaborative's [Restoration Storymap](#) that showcases Olympia oyster restoration along the west coast of North America.

The overall goal of this project was to establish a self-sustaining population of Olympia oysters in North Chuckanut Bay. This goal was not reached as the MRC observed a major decline in the number of live Olympia oysters in the bay since the project started in 2018. Olympia oyster restoration efforts are resource intensive, and additional oyster spat is expensive. Because the MRC did not supplement the plots with any additional spat throughout the project period, this likely limited larval recruitment and any population growth.

Outputs

The 2025 Olympia oyster survey resulted in:

- Assessment of six pilot restoration plots and one reference plot
- Examination of 35 quadrats (5 per plot)
- Participation by 20 BTC students, 1 BTC instructor, 2 MRC members, 1 non-MRC volunteer, and 1 MRC staff

Results in Context

The MRC began Olympia oyster restoration efforts in North Chuckanut Bay in 2018. Olympia oyster spat was only added during the first year, and a relatively small amount of Pacific oyster shell was added during subsequent years to improve the substrate for the Olympia oysters within each of the established test plots. According to WDFW, it could take 5-10 years in large populations (of at least 50K individuals) for recruitment to be evident. Because a relatively small amount of Olympia oyster spat was initially placed into the test plots and no additional spat was added during the project period, it is unlikely that any recruitment would have been evident during these surveys. In year 7 (2025) of the population survey, several live adult Olympia oysters were observed at sites Oly 2, Oly 3, and Oly 7, indicating that the habitat within these areas is suitable for Olympia oysters. Oyster shell and organic debris were also well retained within these plots, indicating the potential for ideal larval retention given a large enough adult population. At Oly 7, smaller Olympia oysters were observed (as compared to the larger adults that were likely 7 years old), indicating that recruitment likely occurred at some point during the project period. If the MRC decides to continue Olympia oyster restoration efforts in North Chuckanut Bay, the suitable habitat identified at these 3 test plots will be further enhanced as the limiting factor for population growth in these plots was likely the small amount of adults. In the other plots that were less successful, limiting factors might have included too soft of substrate or poor water quality.

Based on the overall decline of live Olympia oysters observed within the test plots in North Chuckanut Bay, the MRC has decided to shift focus to restoration efforts in Drayton Harbor, another location identified by WDFW as suitable for Olympia oyster restoration.

Project Highlights

“One of my favorite aspects of being the lead for the Olympia oyster restoration project is being able to pass along the knowledge I have gained to the next generation of marine stewards. When I lead Bellingham Technical College students in the survey at North Chuckanut Bay, it gives them an opportunity to gain hands-on learning techniques into field research and survey methods. This landscape allows students to ask questions, apply critical thinking skills, and work collaboratively in outdoor environments. As an alumni of the Bellingham Technical College Fisheries and Aquaculture School, I find an immense amount of pride in being able to teach students about Olympia oysters, general field work, and proper survey protocols.”

- Jackie Dexter, MRC Olympia Oyster Project Lead

Lessons Learned

The MRC gained significant insights over the course of this project. One major lesson was that Olympia oyster restoration is highly resource intensive. Restoration-grade seed is costly and often limits population growth, making early coordination with partner organizations and securing adequate funding essential for success. Establishing local partners to supply Pacific oyster shell for substrate enhancement also proved important for supporting Olympia oyster recruitment.

Another key takeaway was the need for more consistent communication with WDFW and PSRF throughout the project. The MRC conducted annual population surveys at North Chuckanut Bay without regular involvement from these partners, which limited the committee's ability to interpret results and fully assess each site's restoration potential.

In early 2025, after several years of data showing declining Olympia oyster numbers across all test plots, the MRC chose to discontinue restoration efforts in North Chuckanut Bay. However, during a June 2025 site visit with WDFW's new Olympia oyster biologist, three sites were identified as having strong restoration potential based on shell retention, standing water, absence of oyster drills, and the continued presence of surviving adults. WDFW's biologist concluded that the primary limiting factor was likely the small quantity of spat originally introduced and recommended focusing future efforts and resources on the three most promising sites (Oly 2, 3, and 7). She also advised refining the population survey methods in collaboration with WDFW to better detect live oysters, as the previous haphazard approach failed to capture many individuals present within the plots.

Next Steps

The MRC has chosen to discontinue Olympia oyster restoration efforts in North Chuckanut Bay and is shifting focus to Drayton Harbor. The MRC is being more intentional about clear communication with PSRF and WDFW to enhance the success of the project at this location. If the MRC decides to return to North Chuckanut Bay to continue Olympia oyster restoration activities in the future, efforts will be concentrated on the locations identified by WDFW staff in 2025 including Oly 2, Oly 3, and Oly 7.

Appendices

- **Appendix A:** Quality Assurance Project Plan: North Chuckanut Bay Pilot Olympia Oyster Restoration Project
- **Appendix B:** Raw Data