



Whatcom Marine Resources Committee (MRC) 2024 Beach Seine with Schools Final Report

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Whatcom County Public Works—Natural Resources

Reporting Period: October 2023-September 2024



Grant Number: OTGP-2024-WhCoPW-00042

This report was prepared by Whatcom County using Federal funds under award NA23NMF4690358 from NOAA, U.S. Department of Commerce. The statements, findings, conclusions, and recommendations are those of the author(s) and do not necessarily reflect the views of NOAA or the U.S. Department of Commerce.

Abstract

In 2022, the Whatcom Marine Resources Committee (MRC) piloted a new project titled “Beach Seine with Schools”. This project provides elementary students with an opportunity to observe the importance of intertidal habitats to juvenile salmon and forage fish, fostering a deeper sense of connection to our shorelines. The Whatcom MRC strives to connect local communities with the marine environment to cultivate a sense of sea stewardship and to ignite interest in marine science and conservation careers and opportunities. This program provides elementary students with an immersive outdoor experience to help achieve these goals. Due to the success and demand of this program in its initial years, the project has continued into 2024. The program includes pre and post classroom visits by MRC members and the field trip to Boulevard Park in Bellingham where students observe the beach seining process, learn how to collect observational data, and hear from a Tribal Elder or marine scientist about the importance of salmon.

In 2024, the MRC conducted 3 beach seining events with 4 schools including Lummi Nation School, Beach Elementary School, Lowell Elementary School, and Eagleridge Elementary School. Across the 3 events, 189 total elementary students participated and over 110 volunteer hours were contributed. While the MRC would like to expand this program in the future so that more students can participate, some limitations include regular access to a beach seining crew and making sure each student is properly supported in an outdoor learning environment. To accommodate these limitations, the MRC will be exploring partnerships with additional organizations to determine how the program could be expanded in the future.

Project Goals

The goal of this project was for student and adult participants to develop awareness and appreciation of the importance of the intertidal zone for migrating juvenile salmon and other marine species through observations of the beach seining process. Through this experience, the MRC attempted to connect students with the marine environment to cultivate stewardship and to ignite interest in marine science and conservation careers and opportunities.

To achieve this goal, the expected outcomes of the program were:

- Development of pre and post classroom lesson plans
- Development of plans for each of the field events
- Coordination with Lummi Nation to provide talks by a Tribal Elder or marine scientist
- Attendance by 25 or more children at each of the events
- Collection of sample catch data



Students from Lowell Elementary School observe the beach seine and catch with the seining crew. Photo credit: Brigid Wills, RE Sources.

Project Engagement

The Beach Seine with Schools project relies on various partners, organizations, and the local community to help facilitate the program. Partners included Lummi Natural Resources, Tribal speakers and marine scientists, the Nooksack Salmon Enhancement Association, the Northwest Straits Foundation, Whatcom County Public Works, Washington Conservation Corps, and several community volunteers.

Partners/Organizations

- Lummi Natural Resources Department (LNR): Provided the seining crew, expertise, and permits necessary to conduct the beach seining.
- Northwest Straits Foundation (NWSF): Provided staff and interns to assist with the field events and provided compensation to Tribal speakers.
- Nooksack Salmon Enhancement Association (NSEA): Provided suggestions for supplemental activities that were implemented at the events and helped to facilitate these activities.
- Washington Conservation Corps (WCC): Provided volunteer crew members to help facilitate the events.
- RE Sources: Provided staff to assist at each of the events.
- Whatcom County Public Works: Provided staff assistance.



Left: The volunteer and staff crew at the April 19th beach seine event. Right: Lummi Natural Resources seining crew with MRC member and project lead, Mike MacKay. Photo credit: Jessica Owens, NWSC Staff.

Participants

April 19th: Lummi Nation (3 classes) and Beach Elementary (1 class)

- 61 total students
- Staff and volunteers included: NWSF staff and interns (3), Whatcom MRC staff (1), WCC crew members (2), MRC members (2) and former MRC member (1), RE Sources Americorps staff (1), LNR seining crew members (2).
- Tribal speaker: Harlan James Sr.



Photo credit: Brigid Wills, RE Sources

May 3rd: Lowell Elementary School (2 classes)

- 58 total students
- Staff and volunteers included: NWSF staff and interns (2), Whatcom MRC staff (1), MRC members (2) and former MRC member (1), RE Sources Americorps staff (1), LNR seining crew members (2).
- Tribal Speaker: Frank Lawrence III



Photo credit: Brigid Wills, RE Sources

May 15th: Eagleridge Elementary School (3 classes)

- 70 total students
- Staff and volunteers included: Whatcom MRC staff (1), Whatcom County Public Works staff (1), NSEA staff (1), WCC crew members (1), MRC members (2), RE Sources Americorps staff (1), LNR seining crew members (2).
- Speaker: Mike MacKay, Retired LNR Fish Biologist and MRC project lead



Photo credit: Dana Flerchinger, MRC Staff

Communities Involved

The target audience of this program was fourth grade students from schools throughout Whatcom County, including Lummi Nation School. Fourth grade classes were chosen as the target audience because students of this age group are able to comprehend the importance of intertidal habitat to salmon.

When fourth grade students observe live fish being caught from the intertidal, they are enthusiastic and curious, and can also become supportive of actions that protect shorelines and enhance salmon habitat.



Photo credit: Dana Flerchinger, MRC Staff



Photo credit: Brigid Wills, RE Sources



Photo credit: Dana Flerchinger, MRC Staff

Project Methods

The MRC hosted three, two-hour field trips for students to observe the deployment and catch of a beach seine during the peak juvenile salmon outmigration period from April-May. Boulevard Park, located in Bellingham, was chosen as the field location as it offers ideal seining characteristics and beach access for children. Invitations and applications to participate were sent to 4th grade educators throughout Whatcom County including Bellingham School District and Lummi Nation School (See Appendix A). Due to limited staff and volunteer capacity, the program could only be offered to 4 schools with classrooms of 20–30 students each, as not to exceed 70 total students per event. Classrooms were selected by MRC project leads based on classroom size and the relevance of the field experience to the current classroom curriculum.



Beaches used for seining at Boulevard Park, Bellingham

Prior to and after each field event, a MRC member visited participating classrooms to provide students with information about the beach seining process, the importance of the intertidal corridor to juvenile salmon, expectations for the field event and data collection, and to answer any questions. The classroom curriculum and data forms are included as Appendices B and C.



MRC staff conducts a pre-lesson classroom visit at Lummi Nation School. Photo credit: Mike MacKay, MRC project lead

Project Methods

The beach seine protocols that were utilized were developed by LNR and the Washington Department of Fish and Wildlife (WDFW) (See Appendix D). All catch data was shared with both agencies at the end of the project period. LNR field technicians conducted each beach seine, identified and measured the fish, and shared their knowledge of the species captured in the net to students.



LNR technicians conducting a beach seine. Photo credit: Dana Flerchinger, MRC staff

Each field event was preceded by a short talk by a Tribal Elder or marine scientist who discussed the ecological and cultural importance of salmon. Topics shared included fishing through family generations, the importance of appreciating and protecting natural resources, career opportunities in the biological sciences, the history of salmon fishing using traps and reef net gear, and the importance of salmon hatcheries in providing sustainable populations.



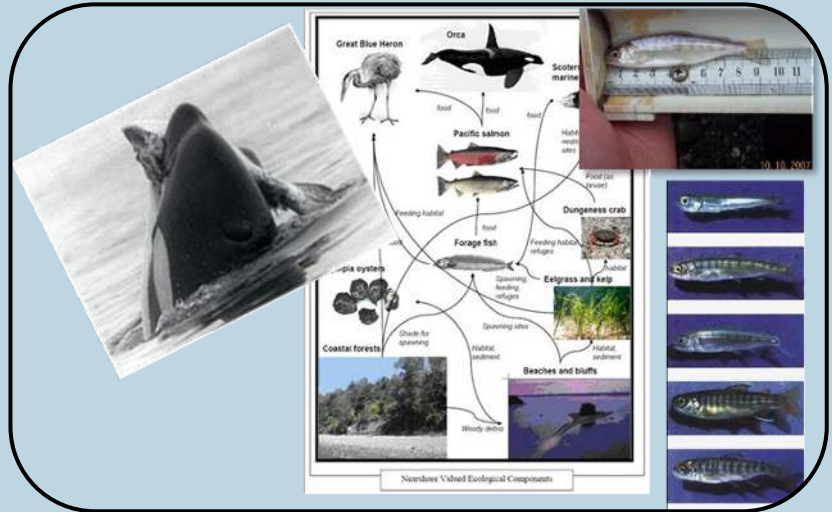
LNR Deputy Director, Frank Lawrence III speaking to Lowell Elementary students about the importance of protecting our local waters to support salmon populations. Photo credit: Mike MacKay, MRC project lead

Project Methods

Key Takeaway Messages:

The key takeaway message for this project is that marine intertidal zones serve as migratory corridors for juvenile salmon.

Intertidal habitats provide migrating salmon with a place to forage and seek refuge from predators.



Other key messages included:

- Juvenile salmon migration occurs during the spring and summer.
- Shoreline fill and dredge projects can interrupt intertidal migration and cause increased predation of juvenile salmon.
- Salmon and forage fish (such as herring, surf smelt, and sand lance) are an important component of the food chain in the Salish Sea. Many organisms, from seabirds to orcas, rely on salmon and forage fish. Both types of fish depend on the intertidal shoreline.
- Tribes are involved in field studies that monitor salmon and are concerned for the health of these populations.
- A career in the biological sciences can be fun, exciting, and important for protecting marine populations for future generations.

Evaluation Methods

To assess the efficacy of this program in communicating these takeaway messages, evaluations were sent to the participating teachers following the program. These evaluations are included as Appendix E.

Summary of Project Activities

Project Activity	Date	Location
Project Kickoff Meeting	1/5/2024	Virtual
Invitations Sent to Schools	2/5/2024	Virtual
Applications Reviewed and Schools Selected	2/26/2024	Virtual
Lummi Nation School Pre-Lesson	4/17/2024	Lummi Nation School
Beach Elementary School Pre-Lesson	4/15/2024	Beach Elementary
Beach Elementary and Lummi Nation Field Event	4/19/2024	Boulevard Park
Lummi Nation School Post-Lesson	4/22/2024	Lummi Nation School
Beach Elementary School Post-Lesson	4/26/2024	Beach Elementary
Lowell Elementary School Pre-Lessons	5/2/2024	Lowell Elementary
Lowell Elementary School Field Event	5/3/2024	Boulevard Park
Lowell Elementary School Post-Lessons	5/6/2024	Lowell Elementary
Eagleridge Elementary School Pre-Lessons	5/13/2024	Eagleridge Elementary School
Eagleridge Elementary School Field Event	5/15/2024	Boulevard Park
Eagleridge Elementary School Post-Lessons	5/24/2024	Eagleridge Elementary School
Project Wrap-Up Meeting and Evaluation for Next Year	6/3/2024	Virtual

Table 1: Overview of major project activities that occurred during 2024.

Detailed summaries of each of the 3 field events are outlined on the following pages.

Lummi Nation and Beach Elementary Schools : April 19th, 2024

The first Beach Seine with Schools event at Boulevard Park was by most accounts, an epic success! Mild weather and blue skies resulted in a fine outdoor day for the 61 fourth graders, teachers, and chaperones. Everyone assembled at the pavilion at 11AM to hear from Tribal Speaker Harlan James Sr. Harlan began by pointing out Portage Island, where his family lived and fished, and emphasized the importance of protecting salmon habitat. He said it would be up to these students to protect salmon habitat in the future.



Left: A student and teacher observe the LNR crew set the beach seine. Right: MRC member, Mike MacKay shows students juvenile salmon from the seine. Photo credit: Heather Spore, MRC member

Following Harlan's talk, the children were divided into two groups, the "chums" and the "cohos". The "chums" went to the beach to observe the LNR field crew set out the beach seine while the "cohos" played a game emphasizing the importance of sustainable fishing practices. The groups then switched roles halfway through. The LNR field team set out a total of 3 beach seines, collecting juvenile chum salmon, juvenile pink salmon, a pipefish, and a sculpin. The fish were measured for length and then transferred to handheld aquaria for the kids to observe. The MRC field team called out the pertinent field data (date, tide, weather, site location, and seine catch) and assisted the students in recording the data on their field forms. Some students took the data collection very seriously, while others were more fascinated by observing the fish. The catch for the three seine sets was 5 pinks, 8 chum, 2 sculpins, and one pipefish. Not a bad haul considering the very clear water conditions!

Lowell Elementary School: May 3rd, 2024

For our second beach seine field trip, 58 fourth graders from Lowell School walked down to Boulevard Park from their school. After arriving at the pavilion, students heard from Frank Lawrence III with LNR. Frank started by singing a song which was given to him by his family in Canada. Frank recalled fishing on a Lummi Island traditional reef net, a purse seiner, then on his own boat, where he gill netted in the Lower Nooksack River and Bellingham Bay. He recalled fishing in the 1980's, when it was possible to fish for 2 hours and catch 50-200 salmon. He explained that nowadays, it would take two weeks or more to catch those numbers. He relayed the sense of fulfillment he experienced being on the water and providing salmon for his family. Being a college graduate himself, Frank also encouraged the kids to consider going to college and finding a career that would benefit marine life.



Left: Students observe juvenile salmon. Photo credit: Brigid Wills, RE Sources. Right: Frank Lawrence III sings a traditional Lummi song to Lowell Elementary students. Photo credit: Mike MacKay, MRC project lead

The students were split into two groups; One group observed and recorded the data from the seine, while the other participated in a sustainable fishing game. The groups then switched activities. Many students were thrilled to see the catch in the aquariums. Based on the pre-lesson discussion, the students identified that the coho salmon was missing its adipose fin, meaning it was from a hatchery. In the two seines set out by the LNR crew, 32 shiner perch, 4 chum, and 1 coho salmon were caught!

Eagleridge Elementary School: May 15th, 2024

The third and final Beach Seine with Schools event occurred on May 15th. The weather was clear and breezy, and the water was cloudy after being churned up by the southwest wind. Seventy fourth graders from Eagleridge Elementary met at the Boulevard Park pavilion to have lunch and to hear from speaker, Mike MacKay. Mike relayed the messages from the last speaker, Frank Lawrence III, including his experiences learning to fish at a young age, the rewarding sense of providing seafood for one's family, and the importance of salmon and other marine fisheries to Native American communities. He expressed his hope that these students might become future stewards of the salmon.



Left: Students hear about the importance of salmon from MRC member, Mike MacKay. Right: Mike MacKay points out various types of salmon to Eagleridge Elementary students. Photo credit: Dana Flerchinger, MRC staff

The students were then split into two groups. One group participated in a sustainable fishing game run by NSEA staff, while the other group of students observed the beach seine set out by the LNR field crew. Due to the turbid water conditions, the catch yielded an abundance of juvenile salmon and other species. This successful catch generated lots of excitement by kids and adults alike. In two seines, we caught 68 chum salmon, 2 pink salmon, 13 chinook salmon, and a few shiner perch, sculpins, and pipefish. Eleven of the chinook were missing their adipose fins, indicating they were from a nearby hatchery (likely the Lummi Nation's Skookum Hatchery).

Results

In 2024, the MRC conducted 3 Beach Seine with Schools events with 4 schools including the Lummi Nation School, Beach Elementary School, Lowell Elementary School, and Eagleridge Elementary School.

Outcomes

The goal of this project was to provide an opportunity for elementary school students to observe juvenile salmon using their intertidal habitat along the shoreline, allowing students to foster a deeper sense of connection to the local environment. In 2024, the Whatcom MRC was able to provide this opportunity to 189 fourth grade students throughout Whatcom County.

Outputs

In 2024:

- 3 Beach Seine with Schools events took place
- 4 schools participated in the program
- 189 total students participated
- 14 volunteers participated in the events
- Over 110 hours of volunteer time were contributed
- Pre and post classroom lesson plans were developed
- 2 Tribal speakers and one marine scientist spoke at the events

Since the program was piloted in 2022:

- 9 Beach Seine with Schools events have taken place
- 9 total schools have participated in the program
- 450 total students have participated

Project Highlights from MRC Project Lead, Mike MacKay

This third year of the MRC's Beach Seine with Schools program was our most ambitious yet, with 189 kids attending our three field events on the Bellingham Bay shoreline at Boulevard Park. The students came from four diverse areas representing Whatcom County, Bellingham, and Lummi Tribal Schools.

As with past years, Lummi Nation's Natural Resources Department (LNR) played an integral role in the program, graciously providing the field crews and expertise for these events. We caught a variety of salmon and other small fish at each event, providing live specimens for the kids to observe. This truly is one of the main highlights of this event. It is so rewarding to observe the excitement and wonder expressed by the kids when they see live fish being removed from the nets and displayed up close in small aquariums. When most folks see a shoreline, they can't readily observe the fish that migrate along these beaches every day. For the kids who have attended our field events, they will forever be reminded that these fish are present, imparting a deeper sense of connection and stewardship to our shorelines.

Over the 3 field events this year, the LNR seining crews caught and released a variety of salmonids including 13 chinook, 88 chum, 7 pink, and 1 coho; the most diverse and highest total catch of any year so far.

Another key part of these events were the Tribal Speakers that spoke to the students about the importance of salmon and their habitat to the Tribal community. One speaker discussed the importance of showing appreciation for salmon and shared a family song that spoke of this feeling. I believe some of these heartfelt stories will be remembered, as the students were very attentive.

Many participants were important in making these events successful. Volunteers from the Washington Conservation Crew, Nooksack Salmon Enhancement Association, Northwest Straits Foundation, and Whatcom Marine Resources Committee contributed generously to the program. We wouldn't be able to make this program happen without the help of volunteers.

There were several rewarding components of this program. One often unrecognized benefit of this program is that it highlights the many ways that the Tribal community contributes to the enhancement of salmon stocks and our understanding of salmon habitat needs. Of course, the positive memories of the students participating in the program are also important. For many, it was the first field activity they observed. Students were introduced to the idea that they could train for and have future careers doing similar field studies in the biological sciences. One teacher commented, "What makes an impression on kids will stick with them. In our fourth-grade memory books, many listed our Beach Seine field trip as their favorite memory, or one of their highlights."

Lessons Learned and Next Steps

At the end of the project period, the MRC Beach Seine with Schools planning team met to discuss the program and how to proceed going forward. While the MRC would like to expand this program in the future so that more students can participate, some limitations include regular access to a beach seining crew and making sure each student is properly supported in an outdoor learning environment. The overall number of field trip events is dependent on the availability of the seining technicians with LNR. Because we are only able to conduct 3 events per year based on LNR's staff capacity, this also limits the amount of schools that can participate in the program. While we would like to expand this opportunity to more schools each year, this is not feasible at this time based on LNR's availability to assist. The planning team also discussed the possibility of integrating more stations and activities into the field day to foster smaller interactive learning groups for a more engaging experience for each of the students. One of the biggest challenges for this program is allowing as many fourth grade students the opportunity to attend these events, while also ensuring that each student is supported in an outdoor learning environment. With additional activity stations and volunteer help, we are hoping to split the participants into smaller groups to improve student engagement. Another takeaway from this year was the need to simplify the field datasheets for the fourth graders so they are able to fill them out independently. Rather than having the students fill in written data, we discussed integrating more observational data and picture drawing.

Appendices

- **Appendix A:** Classroom Invitations, List of Schools Contacted, Blank Application, and Application Responses
- **Appendix B:** Classroom Curriculum (Pre and Post Lessons)
- **Appendix C:** Data Sheet
- **Appendix D:** Beach Seining Protocols
- **Appendix E:** Blank Teacher Evaluation and Teacher Evaluation Responses