COUNTY: WHATCOM

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TASK NUMBER: 2.? (Beach Seine with Schools Year 2 Final Report)

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Whatcom Marine Resources Committee (MRC)

2023 Beach Seine with Schools Final Report

Prepared by: Austin Rose and Dana Flerchinger

Whatcom County Public Works—Natural Resources

Whatcom MRC Staff

Grant Number: SEANWS-2021-WhCoPW-00004

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In 2022, the Whatcom Marine Resources Committee (MRC) piloted a new project titled "Beach Seine with Schools", to be funded through their 2021-2023 grant. The goal of the project was to provide an opportunity for elementary school students to see juvenile salmon using their intertidal habitat along the shoreline. This year, the target audience was 4th grade students in the Bellingham School District and Lummi Tribal schools.

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. Boulevard Park, located in Bellingham, was chosen as the field location as it offers ideal seining characteristics and beach access for children. An invitation and application to participate was sent to 4th grade educators in the Bellingham School District and in the Lummi Tribal schools (see attachments). Due to limited funding and volunteer capacity, the program could only be offered to three classrooms of 20–70 students each. Classrooms were selected by MRC project leaders based on classroom size and the relevance of the field experience to the current classroom curriculum.

Field Locations: Beaches at Boulevard Park, Bellingham

The event dates selected were:

Friday, April 14th at 11AM – 1PM
Friday, April 28th at 11 AM– 1 PM
Friday, May 15th at 11 AM– 1PM

The beach seine protocols used were developed by Lummi Nation and the Washington Department of Fish and Wildlife (WDFW) (see attachments). All catch data was shared with both agencies at the end of the project period. Lummi Natural Resources (LNR) field technicians conducted each beach seine and shared their knowledge of the intertidal species captured in the net to students.

LNR Crew conducting a beach seine. Photo Credit: Dana Flerchinger

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.

Lummi Elder and retired Skookum Hatchery Manager, Bill Finkbonner, speaking to students about the history of salmon fishing gear and the importance of salmon hatcheries. Photo credit: Dana Flerchinger

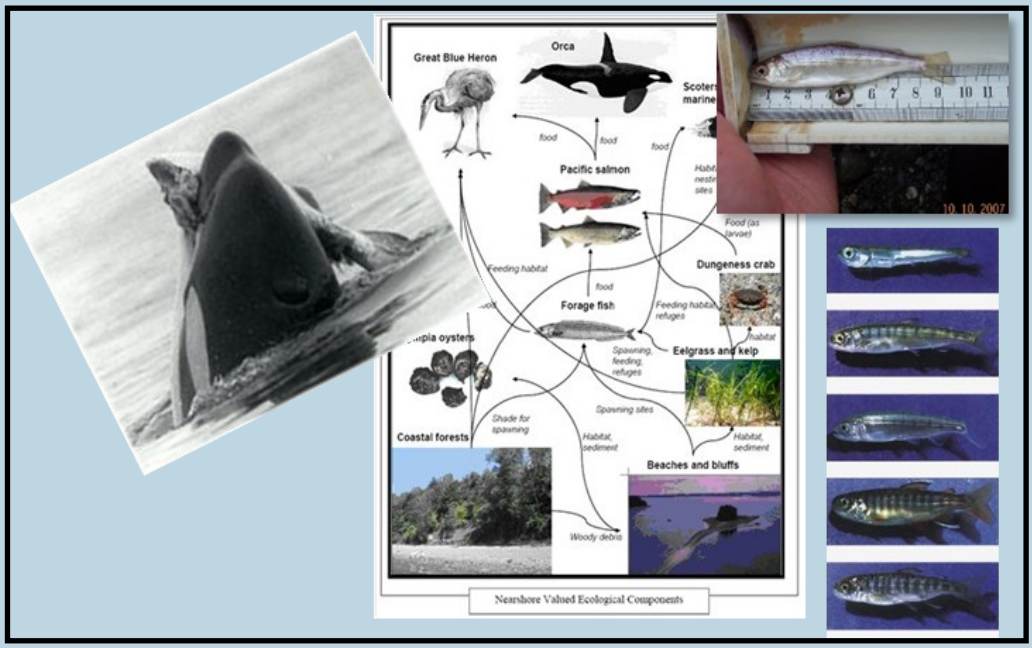
4th grade classes were chosen as the target audience because students within this age group are able to comprehend the importance of intertidal habitat to salmon. When children of these age groups observe live fish being caught from the intertidal, they are enthusiastic and curious, and can also become supportive of actions that can protect shorelines from activities that can degrade their function.

Students observing the beach seine catch. Photo Credit: Dana Flerchinger

Prior to each field event, a MRC member visited the classroom to brief students on the importance of the intertidal corridor to juvenile salmon, what they could expect to see during the seine set, and how to complete the field form to record the seine catch. The field forms and classroom curriculum are included in the attachments at the end of this report.

Key Takeaway Messages:

The key takeaway message for this project is that marine intertidal zones serve as migratory corridors for juvenile salmon. These habitats provide migrating salmon with a place to forage and seek refuge from predators.



Other key messages included:

- Juvenile salmon migration occurs during 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.

Lummi Nation School : April 14th, 2023

While the kids ate their lunch, Lummi Elder and retired Skookum Hatchery Manager, Bill Finkbonner, spoke about the history of salmon fishing using fish traps and reef net gear. He also discussed the importance of salmon hatcheries in providing sustainable salmon populations. After the talk, the 22 students were split into two groups. One group went to observe the Lummi Natural Resources (LNR) crew set the first beach seine net, while the others were entertained by eight Salish Sea Conservation Corps (SSCC) college students who provided an activity involving the marine food chain and bioaccumulation.

Photo Credit: Brooke Friesen

At the beach, the net was deployed, and the students recorded the set time and weather on their field forms. When the net came in, the students observed 18 small chum salmon that were displayed in viewing containers. Students observed the LNR crew count and measure the chum salmon, while also recording the information on their forms. Among the catch, there were also 2 large and colorful sculpins

Photo Credit: Dana Flerchinger

Happy Valley Elementary School : April 28th, 2023

Our second Beach Seine With Kids event was a big effort from all, with 68 4th graders participating. The weather was excellent with calm winds and blue skies. After arriving at the pavilion, the students ate their lunches and were very attentive to Paul Cline with LNR. Paul told them about his family's long history of fishing salmon, stating "We are salmon people, and because salmon can't talk, we are speaking for them." He also discussed the Treaty of Point Elliot that affirms tribes' fishing rights. He spoke about the many field projects he participated in at Lummi Natural Resources including spawner surveys, river smolt trapping, and beach seining, encouraging students to consider future careers that protect the salmon.

Photo Credit: Dana Flerchinger

The group was divided in two, with half participating in the marine food web activity with SSCC volunteers and half observing the seine. There were two beach seine sets deployed– one for each group of kids. On the field forms, students recorded environmental conditions, catch information, and fish length. The students were thrilled at the total catch of 2 juvenile chinook, 1 coho, 16 chum, and 31 shiner perch.

Roosevelt Elementary School : May 15th , 2023

We had another warm spring day for the final Beach Seine with Kids event with 68 4th graders from Roosevelt Elementary School. Our speaker was Frank Lawrence III, the LNR Deputy Director. He gave the students accounts of his experience fishing as a child and explained the importance of having a good mind and heart. He also emphasized the importance of appreciating others and the resources around us, stating that "Before fishing, I say a prayer of appreciation to the water, the salmon, and my family." The SSCC volunteers played a food chain game with half of the group, while the other students observed the first beach seine.

Photo Credit: Dana Flerchinger

Unfortunately, the seine crew was a bit late, so Mike and Alex simulated how a catch would be recorded, while students practiced tallying fish counts and recording data. The LNR seine crew arrived just in time to conduct the final seine set! Both groups gathered to observe the set in action. The LNR seine crew set out the net, catching all juvenile salmon! The catch contained 1 chinook and 42 chum salmon. Some of the catch were put in clear tubs for the students to see up-close. Everyone was thrilled with our catch, and many were amazed at the number of juvenile salmon utilizing this "intertidal corridor". Even though the water was clear, these fish were invisible to the public.

Attachments

- Classroom invitation to program
- List of schools contacted
- Applications from teachers
- Teacher acceptances
- Seining protocols
- Field form
- Classroom curriculum
- Post-event student follow up activity

Beach Seine with Kids Field Trip 2023 Info

The Whatcom Marine Resources Committee is excited to announce the return of the Beach Seine with Kids Field Trip, inviting local elementary school students (4th & 5th graders) to witness the wonder of our intertidal habitat, its juvenile salmon and the process of beach seining.

This is a two hour field trip at Boulevard Park, beginning at 11am Friday:

- April 14th
- April 28th
- May 12th

We co-host this event with Lummi Natural Resources, local, tribal leaders and (new this year) the Sound Stewards Conservation Corps. The MRC will provide sponsorship for district transportation and all materials needed for the field trip. This year we will provide and require participation in a pre-field trip classroom lesson *and* post-field trip classroom lesson.

Whatcom County Marine Resources Committee
322 N. Commercial St., Ste. 110 Bellingham, WA
360-778-6286 *https://www.whatcomcountymrc.org/*

Marine intertidal zones are migratory corridors for juvenile salmon, much like the sidewalks we use along the shoreline. This corridor provides migrating salmon with a place to forage and also provides protection from larger predators.

Other Key Messages:

1. Intertidal corridors provide a safe forage habitat for migrating juvenile salmon.
2. Spring and summer are seasons when juvenile salmon migration occurs.
3. Shoreline fill and dredge projects can interrupt intertidal migration and cause increase predation to juvenile salmon.
4. Salmon and forage fish (like herring, smelt, and sand lance) are important to the food chain for Puget Sound Orcas. Both types of fish depend on the intertidal shoreline.
5. Tribes are involved in monitoring field studies for salmon and are concerned for the health of these populations.
6. A career in the biological sciences can be fun and exciting. It is also important for protecting marine populations for future generations.

Unfortunately, we are are not able to support district-wide capacity (yet!) thus applications are required.

PLEASE CLICK HERE TO APPLY BY 2/21/23

Please direct any questions to MRC member Elma Burnham: eccburnham@gmail.com or 860-949-2144

Beach Seine with Schools Project - Contact List

Teacher Name	Email	School	Grade Level	
Jayme Rios	Jayme.Rios@bellinghamschools.org	Alderwood Elementary	4th Grade	y
Emily Cashmere	Emily.Cashmere@bellinghamschools.o	Alderwood Elementary	4th Grade	y
Matthew Burns	Matthew.Burns@bellinghamschools.org	Birchwood Elementary	4th Grade	y
Kathryn Candanoza	kathryn.candanoza@bellinghamschools	Birchwood Elementary	4th Grade	y
Cari Pearsall	Cari.Pearsall@bellinghamschools.org	Birchwood Elementary	4th Grade	y
Heidi Anderson	Heidi.Anderson@bellinghamschools.or	Cal Cozier	4th Grade	y
Siri Baldwin	Siri.Baldwin@Bellinghamschools.org	Carl Cozier	4th Grade	y
Kristen Schafer	kristen.schafer@bellinghamschools.org	Carl Cozier	4th Grade	y
David Bishop	David.Bishop@BellinghamSchools.org	Columbia Elementary	4th Grade	y
Ashley Welch	Ashley.Welch@bellinghamschools.org	Columbia Elementary	4th Grade	y
Graham Essex	Graham.Essex@bellinghamschools.org	Cordata Elementary	4th Grade	y
Meira Lifson	meira.lifson@bellinghamschools.org	Cordata Elementary	4th Grade	y
Jessica Erickson	jessica.erickson@bellinghamschools.or	Geneva Elementary	4th Grade	y
Jessica Spears	Jessica.Spears@Bellinghamschools.or	Geneva Elementary	4th Grade	y
Valarie Swenson	Valarie.Swenson@bellinghamschools.o	Geneva Elementary	4th Grade	y
Tiffany Gutierrez	Tiffany.Gutierrez@bellinghamschools.o	Happy Valley Elementary	4th Grade	y
Stephanie Lowin	Stephanie.Lowin@Bellinghamschools.c	Happy Valley Elementary	4th Grade	y
Tara Olvera	Tara.Olvera@bellinghamschools.org	Happy Valley Elementary	4th Grade	y
Molli O'Neill	Molli.ONeill@bellinghamschools.org	Lowell Elementary	4th Grade	y
Matt Peterson	matthew.peterson@bellinghamschools.	Lowell Elementary	4th Grade	y
Ethan Mass		Lummi Nation School	4th Grade	
Alana Marshall	Alana.Marshall@lummi-k12.org	Lummi Nation School	4th Grade	y
Leanne Finlay	Leanne.Finlay@bellinghamschools.org	Northern Heights Elementary	4th Grade	y
Ashleigh Martin	Ashleigh.Martin@bellinghamschools.or	Northern Heights Elementary	4th Grade	y
Kristin Roche	Kristin.Roche@bellinghamschools.org	Northern Heights Elementary	4th Grade	y
Jenovia Chunyk	Jenovia.Chunyk@bellinghamschools.or	Parkview Elementary	4th Grade	y
Heather Gabrielson	Heather.Gabrielson@bellinghamschool	Parkview Elementary	4th Grade	y
Jennifer Hanley	Jennifer.Hanley@Bellinghamschools.or	Roosevelt Elementary	4th Grade	y
Megan Mayer	Megan.Mayer@bellinghamschools.org	Roosevelt Elementary	4th Grade	y
Ellen Peterson	Ellen.Petersen@BellinghamSchools.org	Roosevelt Elementary	4th Grade	y
Jennifer Schiffner	Jennifer.Schiffner@bellinghamschools.c	Roosevelt Elementary	4th Grade	y
Marca Kidwell-Babcock	Marca.Kidwell-Babcock@bellinghamscl	Silver Beach Elementary	4th Grade	y
Gretchen Offutt	Gretchen.Offutt@bellinghamschools.org	Silver Beach Elementary	4th Grade	y
Luke Hostetler	Luke.Hostetler@bellinghamschools.org	Sunnyland Elementary	4th Grade	y
Kate (Catherine) Larocque	Kate.Larocque@bellinghamschools.org	Sunnyland Elementary	4th Grade	y
Marcy Bild	Marcy.Bild@bellinghamschools.org	Sunnyland Elementary	4th Grade	y
Richard Bennett	Rick.Bennett@bellinghamschools.org	Wade King	4th Grade	y
John Livezey	John.Livezey@bellinghamschools.org	Wade King	4th Grade	y
Stephanie Johnson	Stephanie.Johnson@bellinghamschool	Parkview Elementary	Principal	
Craig Baldwin	craig.baldwin@bellinghamschools.org	Cordata Elementary	Principal	
Amy Berreth	Amy.Berreth@bellinghamschools.org	Sunnyland Elementary	Principal	
Aaron Darragh	Aaron.Darragh@bellinghamschools.org	Roosevelt Elementary	Principal	
Tom Gresham	Tom.Gresham@bellinghamschools.org	Carl Cozier	principal	
Nick Hayes	Nicholas.Hayes@Bellinghamschools.or	Happy Valley Elementary	Principal	

Beach Seine with Schools Project - Contact List

Teacher Name	Email	School	Grade Level
Teri Herda	Teri.Herda@bellinghamschools.org	Silver Beach Elementary	Principal
Joseph Doucette	Joseph.Doucette@bellinghamschools.c	Wade King	Principal
Minh Ngyen	Minh.Nguyen@bellinghamschools.org	Columbia Elementary	Principal
Pamela Pottle	Pamela.Pottle@bellinghamschools.org	Northern Heights Elementary	Principal
Micah Smith	Micah.Smith@bellinghamschools.org	Alderwood Elementary	Principal
Laura Britt	Laura.Britt@bellinghamschools.org	Geneva Elementary	Principal
Nicole Talley	Nicole.Talley@bellinghamschools.org	Birchwood Elementary	Principal
Sarah Walker	Sarah.Walker@bellinghamschools.org	Lowell Elementary	Principal
Kevin Villars	Kevin.Villars@lummi-k12.org	Lummi Nation School	Principal

BSWK Application 2023

The Whatcom Marine Resources Committee is excited to announce the return of the Beach Seine with Kids Field Trip, inviting Bellingham Public School 4th Graders to witness the wonder of our intertidal habitat, its juvenile salmon and the process of beach seining. Please complete this application no later than February 21st. If you missed the informational PDF, please follow this link for more info: https://docs.google.com/presentation/d/17sHZO_IFM_KjNEZK-odBg-LiH6UlvRDLQMCG1_2Gno4/edit

* Indicates required question

1. School Name: *

2. Teacher Name *

Due to group size constraints, we ask that each class apply independently rather than as a whole grade. We will try to accommodate as many students as possible!

3. Did your class participate last year? *

Mark only one oval.

- Yes
- No

4. Did you APPLY for your class to participate last year? *

Mark only one oval.

- Yes
- No
- Not Sure/Can't Remember

5. How many students are in your class? *

6. Briefly explain how this activity would support your educational goals for your students. *

7. Please select your FIRST CHOICE among the three available dates. *

We are limited in our dates due to the tides at the trip site. The dates and times are not flexible. There will be time for lunch. Students will need to bring a sack lunch.

Mark only one oval.

- Friday, April 14th 11am - 1pm
- Friday, April 28th 11am - 1pm
- Friday May 12th 11am - 1pm

8. Please select your SECOND CHOICE among the three available dates. *

We are limited in our dates due to the tides at the trip site. The dates and times are not flexible. Please select "not available" for your 2nd and 3rd choice if only ONE date works for you.

Mark only one oval.

- Friday, April 14th 11am - 1pm
- Friday, April 28th 11am - 1pm
- Friday May 12th 11am - 1pm
- Not available on any other date but first choice

9. Please select your THIRD CHOICE among the three available dates. *

We are limited in our dates due to the tides at the trip site. The dates and times are not flexible.

Mark only one oval.

- Friday, April 14th 11am - 1pm
- Friday, April 28th 11am - 1pm
- Friday May 12th 11am - 1pm
- Not available on any other date but first choice

10. Does your schedule allow for a **45 minute** pre-trip classroom activity on the Thursday preceding the above dates AND A post-trip classroom activity during the week after the above dates? *

This is required for participation in the field trip. We will provide experienced and knowledgeable volunteers to maximize the efficacy and enjoyment of the field trip.

Mark only one oval.

- ◯ Yes
- ◯ No

11. Additional notes you'd like to share?

Please feel free to direct any questions to MRC member Elma Burnham, eccburnham@gmail.com or 860-949-2144 or Mike MacKay, starsailor@fidalgo.net or 360-410-1777. Thank you!!

Timestamp	Email Address	School Name:	Teacher Name	Did your class participate last year?	Did you APPLY for your class to participate last year?	How many students are in your class?	Briefly explain how this activity would support your educational goals for your students.	Please select your FIRST CHOICE among the three available dates.	Please select your SECOND CHOICE among the three available dates.	Please select your THIRD CHOICE among the three available dates.	Does your schedule allow for a 45 minute pre-trip classroom activity on the Thursday preceding the above dates AND A post-trip classroom activity during the week after the above dates?	Additional notes you'd like to share?
2/21/2023 7:48:52	matthew.burns@bellingha	Birchwood	Matt Burns	Yes	Yes	25	We have a year long inquiry unit on oceans. Lots of work done focusing on the Salish Sea watershed. Big focus on salmon.	Friday May 12th 11am - 1	Friday, April 14th 11am - 1	Friday, April 28th 11am - 1	Yes	
2/13/2023 2:45:33	siri.baldwin@bellinghamschools.org	Carl Cozier	Siri Baldwin	No	Not Sure/Can't Remember	19	Our unit of inquiry in the spring will be under the theme “how the world works” and this experience would give them the opportunity to experience part of our local “world” that is typically unseen. We have a salmon tank at our school and my students have been fascinated by them! This would be a great way to continue this learning.	Friday May 12th 11am - 1pm	Friday, April 28th 11am - 1pm	Friday, April 14th 11am - 1pm	Yes	
2/13/2023 9:27:58	ashley.welch@bellinghamschools.org	Columbia Elementary	Ashley Welch	No	No	24	We have two units that this will connect to. First, we do an STI unit related to the boldt decision and how access to resources provides opportunity. The second is a unit on climate justice, erosion and weathering and discusses how we are all interconnected.	Friday May 12th 11am - 1pm	Friday, April 28th 11am - 1pm	Friday, April 14th 11am - 1pm	Yes	We would love to have both Columbia fourth grades attend.
2/13/2023 9:36:15	david.bishop@bellinghamschools.org	Columbia Elementary	Dave Bishop	No	No	24	our IB unit of inquiry on climate change	Friday May 12th 11am - 1pm	Friday, April 28th 11am - 1pm	Friday, April 14th 11am - 1pm	Yes	
2/12/2023 19:52:49	eccburnham@gmail.com	Elma test	Elma test	Yes	No	elma test	elma test	Friday, April 28th 11am - 1pm	Friday, April 14th 11am - 1pm	Friday May 12th 11am - 1pm	Yes	
2/15/2023 16:00:24	Stephanie.Lowin@belling	Happy Valley	Stephanie Lowin	No	No	23	We are currently working to develop a unit of inquiry that focuses on stewardship of our local resources. We have worked with NSEA and Whales’s Tales from Seattle along with Krista Gordon’s Salish Sea Experiences. We have focused a lot of this unit around our local Salmon population and the Southern Resident Killer Whales. It would be a wonderful opportunity to work with our local neighbors from Lummi Nation. We will be learning about the importance of Salmon in our local ecosystem and what we can do in our own homes to help them thrive. We often work with NSEA on a local stream to help remove invasive species from the riparian zone. We are always looking for authentic ways to weave in the STI curriculum.	Friday May 12th 11am - 1	Friday, April 28th 11am - 1	Friday, April 14th 11am - 1	Yes	
2/15/2023 9:58:53	tara.olvera@bellinghamsc	Happy Valley Elementary	Tara Olvera	No	Not Sure/Can't Remembe	22	As a 4th grade team, we work closely with NSEA to learn about our watershed, salmon, and whales in the Puget Sound.	Friday May 12th 11am - 1	Friday, April 28th 11am - 1	Friday, April 14th 11am - 1	Yes	We would love to all go together. Our 4th grade team is very cohesive and collaborate on everything together.
2/15/2023 11:55:19	tiffany.gutierrez@bellingha	Happy Valley Elementary	Tiffany Gutierrez	No	Yes	23	We are currently working to develop a unit of inquiry that focuses on stewardship of our local resources. We have worked with NSEA and Whales’s Tales from Seattle along with Krista Gordon’s Salish Sea Experiences. We have focused a lot of this unit around our local Salmon population and the Southern Resident Killer Whales. It would be a wonderful opportunity to work with our local neighbors from Lummi Nation. We will be learning about the importance of Salmon in our local ecosystem and what we can do in our own homes to help them thrive. We often work with NSEA on a local stream to help remove invasive species from the riparian zone. We are always looking for authentic ways to weave in STI curriculum.	Friday, April 28th 11am - 1	Friday, April 14th 11am - 1	Friday May 12th 11am - 1	Yes	My grade level team tried to participate last year but due to demand we missed out. Hoping that we can join you for this learning opportunity that fits in with the vision of our school.
2/12/2023 20:07:00	alana.marshall@lummi-k12.org	Lummi Nation School	Alana Marshall	No	Not Sure/Can't Remember	15	We currently study water quality, raise salmon in our classroom, and it is culturally relevant to our students as they are all Tribally affiliated.	Friday, April 28th 11am - 1pm	Friday, April 14th 11am - 1pm	Friday, April 28th 11am - 1pm	Yes	I have a teaching partner, Ethan Maas, who teaches 4th grade. We would like to go together.

Timestamp	Email Address	School Name:	Teacher Name	Did your class participate last year?	Did you APPLY for your class to participate last year?	How many students are in your class?	Briefly explain how this activity would support your educational goals for your students.	Please select your FIRST CHOICE among the three available dates.	Please select your SECOND CHOICE among the three available dates.	Please select your THIRD CHOICE among the three available dates.	Does your schedule allow for a 45 minute pre-trip classroom activity on the Thursday preceding the above dates AND A post-trip classroom activity during the week after the above dates?	Additional notes you'd like to share?
2/12/2023 22:28:16	ethan.maas@lummi-k12.org	Lummi Nation School	Ethan Maas	No	Not Sure/Can't Remember	15	We are studying coho salmon by raising them in our classroom. We are studying water quality. And it is part of the student's culture as they are all tribally affiliated.	Friday, April 28th 11am - 1pm	Friday, April 14th 11am - 1pm	Friday, April 28th 11am - 1pm	Yes	There are two classrooms in 4th grade. We would like to participate together. My teaching partner is Alana Marshall at Lummi Nation School.
2/12/2023 20:48:05	ellen.petersen@bellinghamschools.org	Roosevelt	Ellen Petersen	No	No	22	The IB unit that my class will be in around this time of year has this central idea: “Decisions affect communities.” We are currently wrapping up our current unit: “People’s actions affect the health of the environment.” Students have been and will continue to analyze examples of actions and decisions that shape our communities and the health of our environment. Participating in efforts to maintain the health of our oceans will allow students to see that everyone can take action to make a difference.	Friday May 12th 11am - 1pm	Friday, April 28th 11am - 1pm	Friday, April 14th 11am - 1pm	Yes	
2/21/2023 10:29:50	jennifer.hanley@bellingha	Roosevelt Elementary	Jennifer Hanley	No	No	23	Our Inquiry Unit, People's Actions affect the	Friday May 12th 11am - 1	Friday, April 28th 11am - 1	Friday, April 14th 11am - 1	Yes	All of our 4th grade teachers at Roosevelt are applying. The 3 classrooms are aligned and would like to all be selected or none of us. We have a strong preference to attend on the same day. Thanks for considering.
2/21/2023 10:29:19	Jennifer.schiffner@Bellin	Roosevelt Elementary Sc	Jenny Schiffner	No	No	23	Our Inquiry unit is people's actions affect the	Friday May 12th 11am - 1	Friday, April 28th 11am - 1	Friday, April 14th 11am - 1	Yes	We have three 4th grade classes that work very closely together and who have also applied. Jennifer Hanley Megan Mayer/ Ellen Peterson (job-share) We would need to all go or not have any of the classes go. This would be perfect for us and I really hope we are considered. Thank you!
2/13/2023 7:20:13	gretchen.offutt@bellinghamschools.org	Silver Beach	Gretchen Offutt	No	No	29	Our fourth-grade class will be learning about the significance of salmon to the native peoples of Whatcom County. Attending your field trip to investigate the local intertidal zone would give our students a hands-on understanding of the habitat and life cycle of salmon. This field trip would provide a unique opportunity for students to see the importance of salmon, both scientifically and culturally, to the local community. Additionally, this field trip would strengthen our students' understanding of the significance of salmon to the native peoples of Whatcom County and encourage them to become stewards of our local environment.	Friday May 12th 11am - 1pm	Friday, April 28th 11am - 1pm	Friday, April 14th 11am - 1pm	Yes	
2/13/2023 12:48:47	aaron.lear@bellinghamschools.org	Silver Beach	A.J. Lear	No	No	30	This would tie perfectly into the Since Time Immemorial and Oceans units that we are creating.	Friday, April 28th 11am - 1pm	Friday, April 14th 11am - 1pm	Not available on any other date but first choice	Yes	

Beach Seine with Kids 2023 Acceptances: 2/28/2023

Classes Accepted/Confirmed

- Lummi Nation - 30 students - April 14th
- Happy Valley - 68 students - April 28th
- Roosevelt - 68 students - May 12th
- 166 students total for 2023!
- If a class drops out…we will offer the space to a class who listed the newly available date as their first choice

Discussion:

- Classes who applied last year get priority if they didn't participate last year
- Happy Valley is in for sure; discussion on all Happy Valley classes coming at once, about 60 students total
- Lummi classes gets priority - honoring contributions of Lummi Nation to salmon population locally and to support the collaboration between tribal nation & city district students; they were not available to join last year due to their stricter covid restrictions thus should get priority this year
- Eliminated the one Birchwood class with discussion about Matt Burns' class getting to come last year and ultimately decided that providing the opportunity to a variety of schools and teachers in the district would benefit the program in the long term
- The rest of the discussion for class selection was primarily focused on logistics (primarily dates and class size) with the goal of accommodating as many students as possible
    - Class size, reach of program, feasibility of dates
    - Group also discussed access to opportunity, trying to make sure we were offering opportunity to classes who may otherwise not be getting out into nature with other field trips, etc
    - This led to an emphasis on variety in the longevity of the program: as it grows we should aim to get the largest variety of schools through the program until we can accommodate everyone
    - We also noted in an ideal program, we wish to be able to grow capacity to include east county schools

Beach Seine with Schools Protocols

1. The Field Team will consist of a Leader and two Assistants.
2. The Field Team will wear waders.
3. Field team leader will:
    - Ensure complete field gear check prior to sampling
        1) Beach Seine and lines
        2) Field Forms
        3) Sampling Kit
            - Tray for Fork-lengths
            - DNA vials, clipper
            - Identification key
            - MS222
        4) CWT detector
        5) GPS unit
        6) Temperature / Salinometer
        7) Buckets & Dip Nets
    - Check the seine site for any obstructions
    - Check weather and tide conditions suitable for a seine set
    - Prior to deployment of the seine, record on field form
        1) Date, net type, site name/number, crew names
        2) Water temperature/salinity/visibility
        3) Weather (wind/sky condition)
        4) Tide height and time for the day
4. Seine will be deployed in a semi-circle with one end held by an Assistant and the other pulled out by the Leader to wader depth and then returned to shore. Direction of set will be determined by visible water current or tide.
5. Leader will record start time of set (deployment), quality of set, GPS location of set (Waypoint number),
6. When set is completed, both Assistants will pull in each end of the net to dry it up except for a small pocket for the catch.

7. All fish, crabs, and other interesting stuff caught will be transferred to plastic 5 gallon buckets containing seawater with a dip net.
8. Fish Processing:
    - Starting with any salmonids captured, all these will be:
        1) Anesthetized using MS22 by the field Leader one at a time and then measured using the fork-length tray.
        2) A small DNA tissue sample will be taken from the upper caudle fin and placed in a DNA vial with the vial number recorded on the field form.
        3) Checked for a CWT with the detecting wand, note any adipose fin clip.
    - All other specimens will be identified and counted and recorded on the field form.
9. All field gear will be gathered, cleaned, and inventoried prior to leaving site.
10. Field data will be copied and original given to a Lummi Natural Resources biologist to be entered into their database.

Beach Seine Field Data

Your Name: _____

School: _____

Date: _____

Teacher Name: _____

Site Location (**Set 1**): Boulevard Park **N or W** (circle one) Site Number: _____

Site Location (**Set 2**): Boulevard Park **N or W** (circle one) Site Number: _____

Weather: ___Clear ___Overcast ___Partly Cloudy ____ Rain

Site Location (**Set 3**): Boulevard Park **N or W** (circle one) Site Number: _____

Wind: _____ mph from the _____

Water Temp.: _____ C

Tide: _____ft Tide Phase: ____ flooding ____ebbing _____slack (mark one)

Catch Data

	Set Time	Set Quality	<----------Salmon Catch----------> Chinook	Coho	Pinks	Chum	<----------Forage Fish ----------> Herring	Surfsmelt	Sandlance	<----------Other Species----------> Stickleback	Starry Flounder	_____
Set 1	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
Set 2	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
Set 3	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____

Species:	Fork Length	Tagged?
_____	_____ mm	_____
_____	_____ mm	_____
_____	_____ mm	_____

Species:	Fork Length	Tagged?
_____	_____ mm	_____
_____	_____ mm	_____
_____	_____ mm	_____

Notes:

The Salish Sea is an Estuary

Vocabulary

- Shoreline
- Intertidal
- Nearshore

- Corridor
- Habitat
- Forage
- Migrate

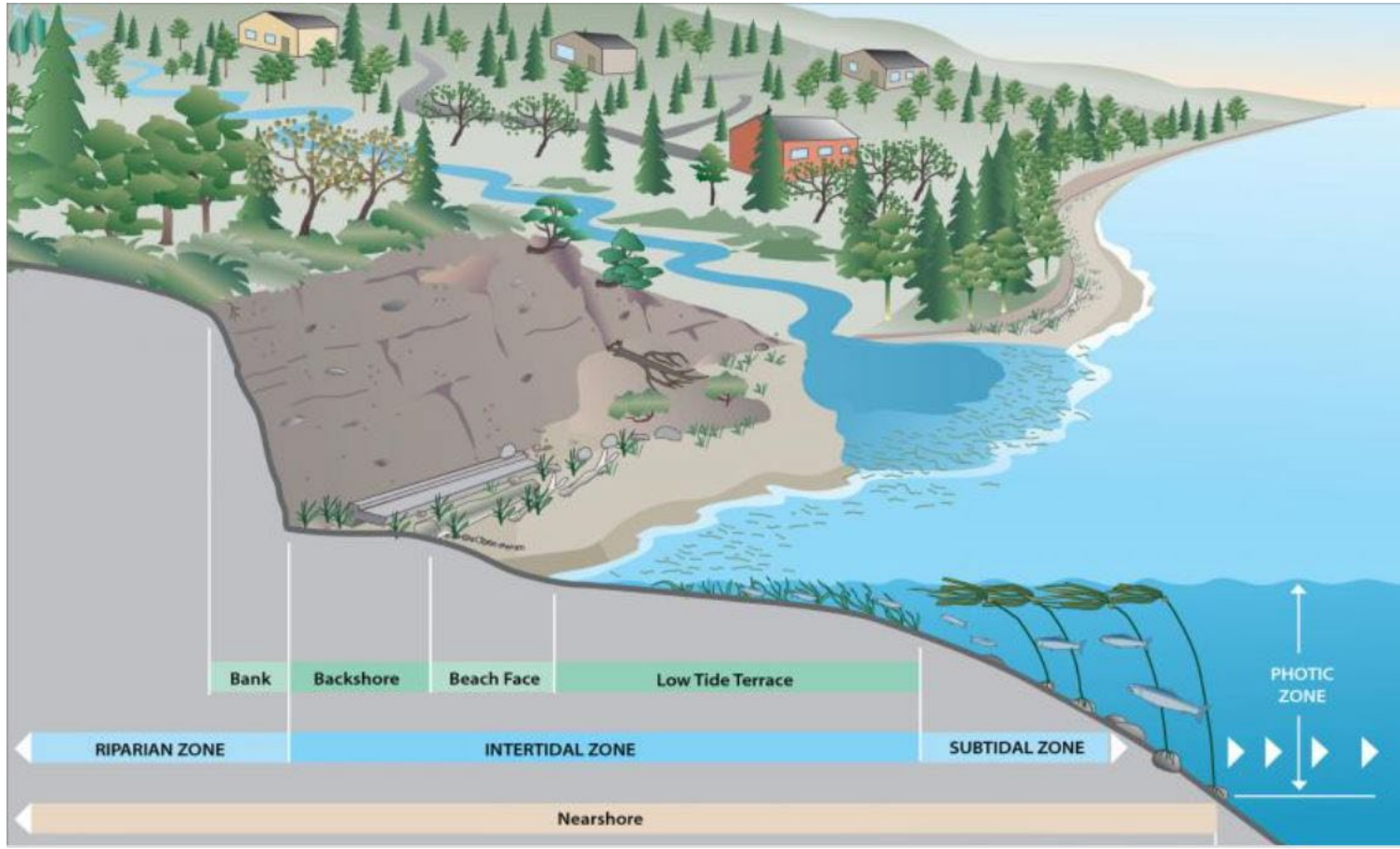
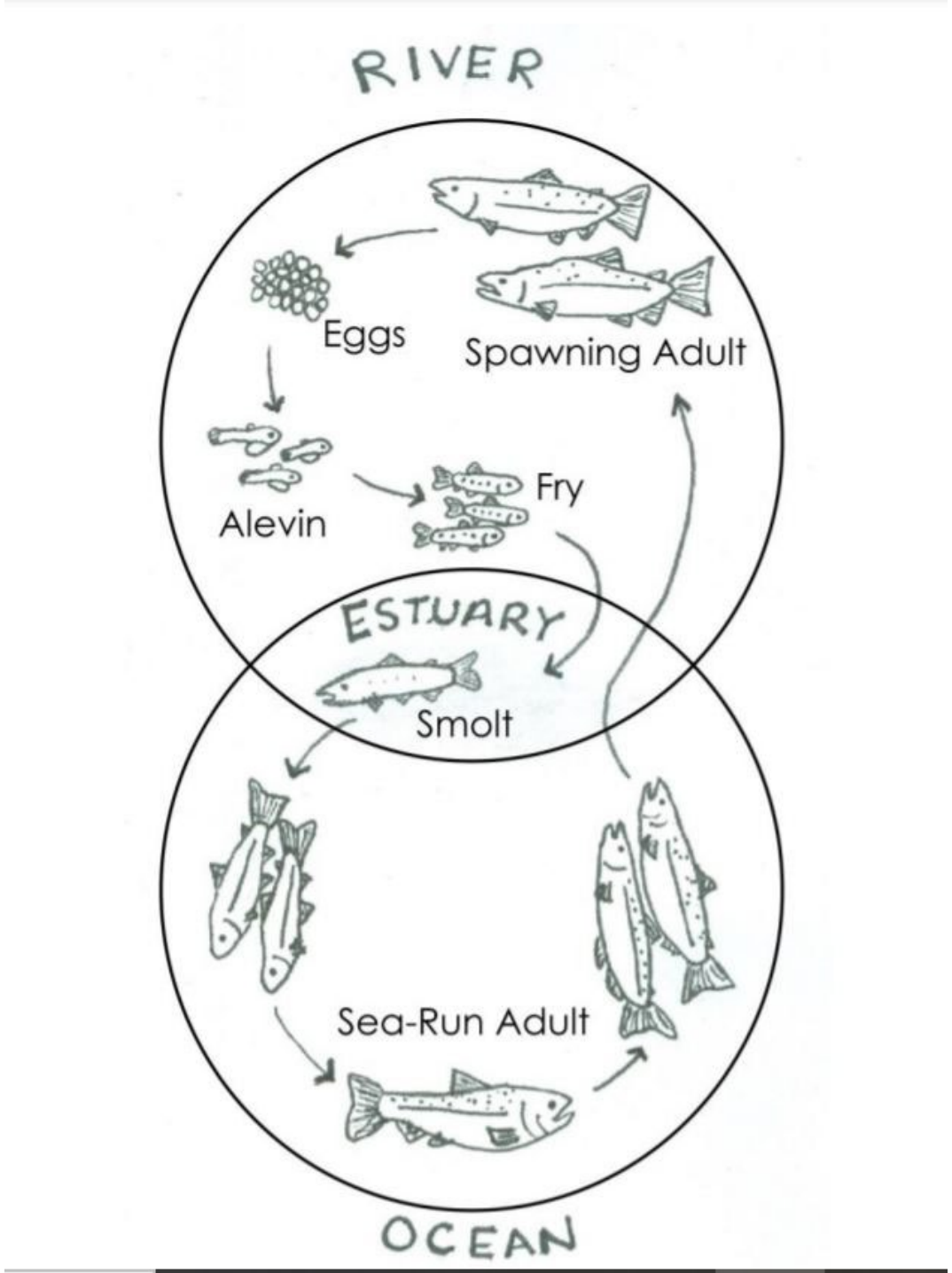


Image from WDFW

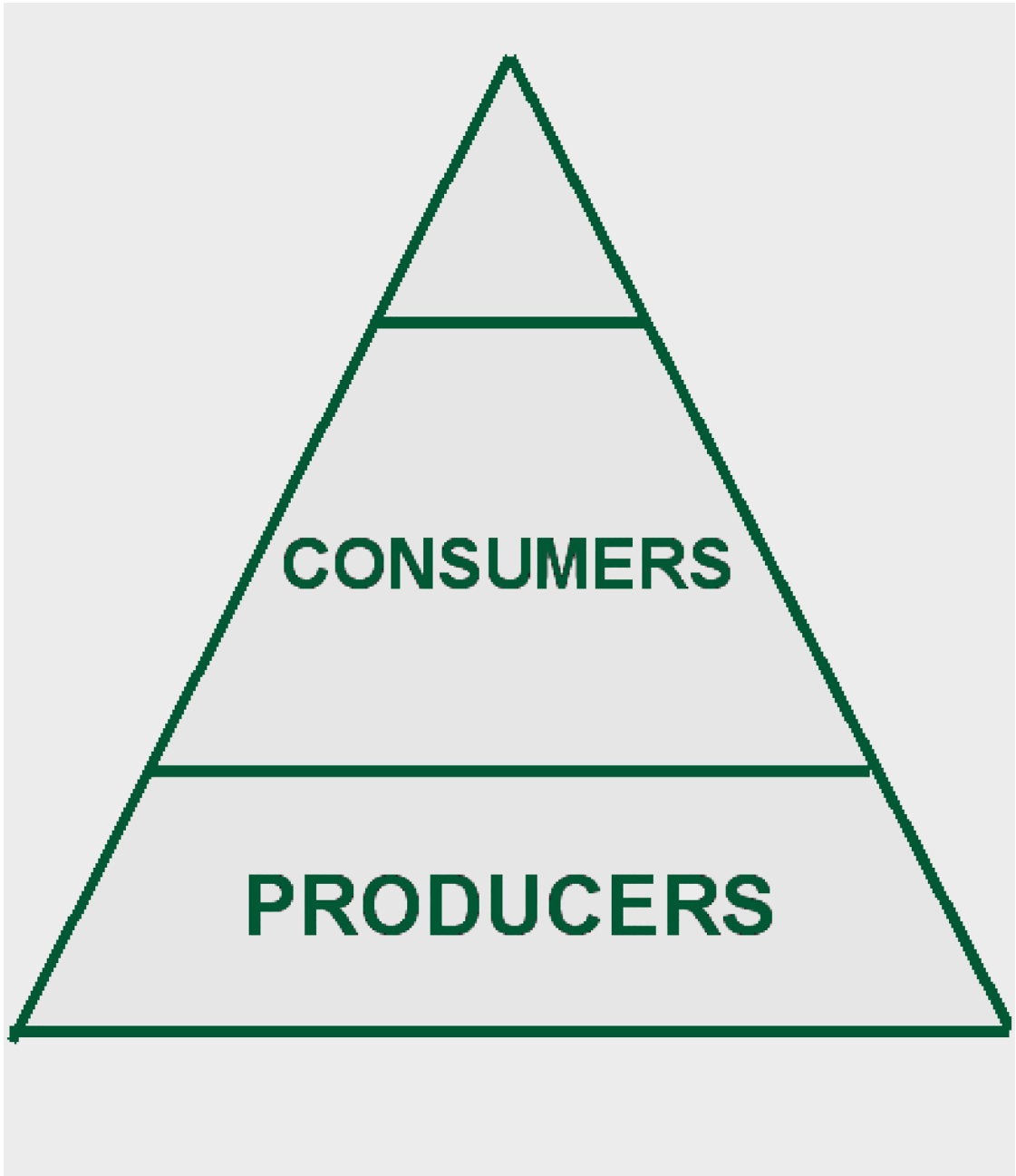
Beach Seine


cm 1 2 3 4 5 6 7 8 9 10 11
½mm
mm
Caudal fin clipped
Adipose fin not clipped
10. 10. 2007

Salmon Life Cycle



Food Pyramid



Plankton!

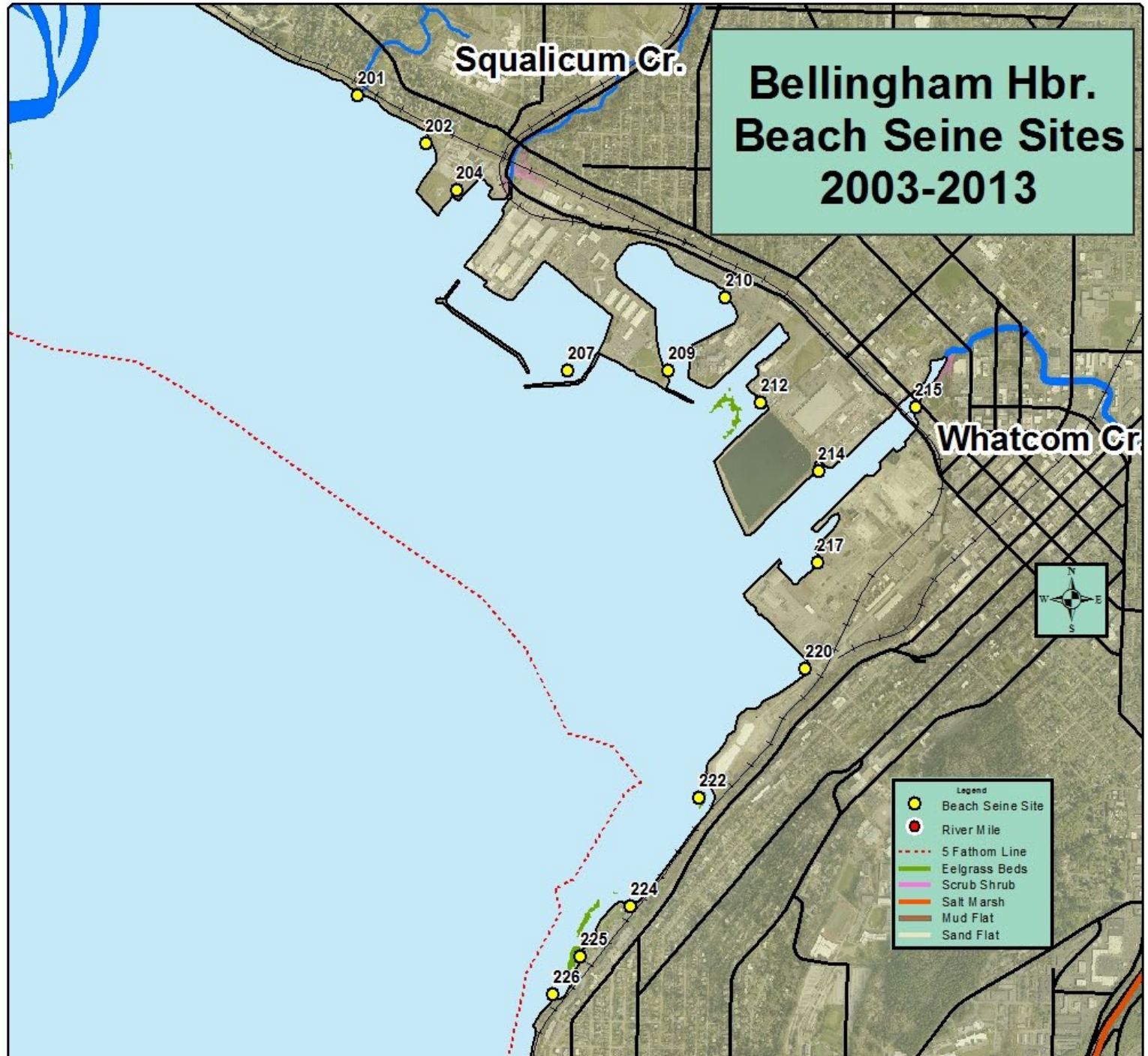
Copepod

Forage Fish

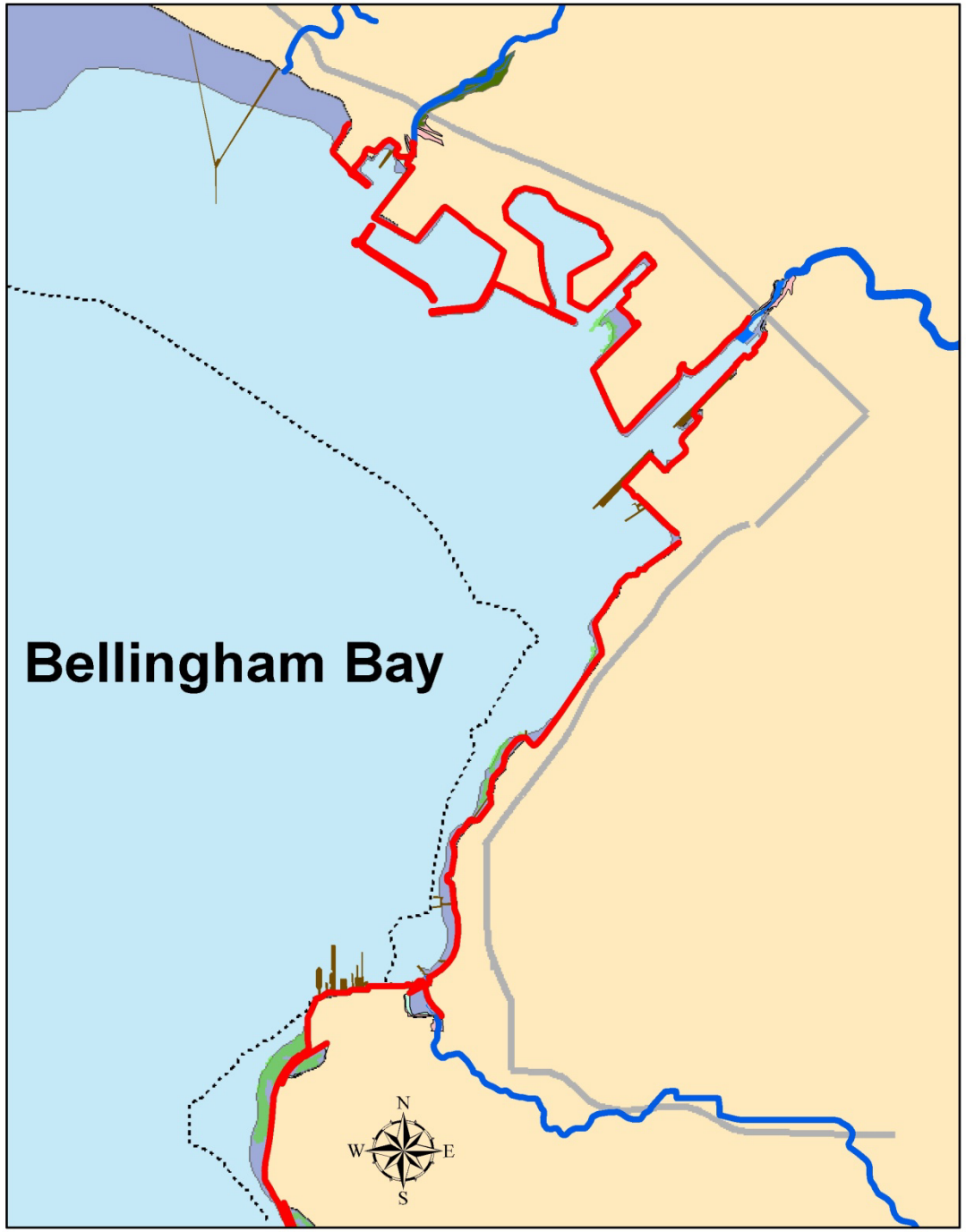
Sand lance

Herring

Smelt

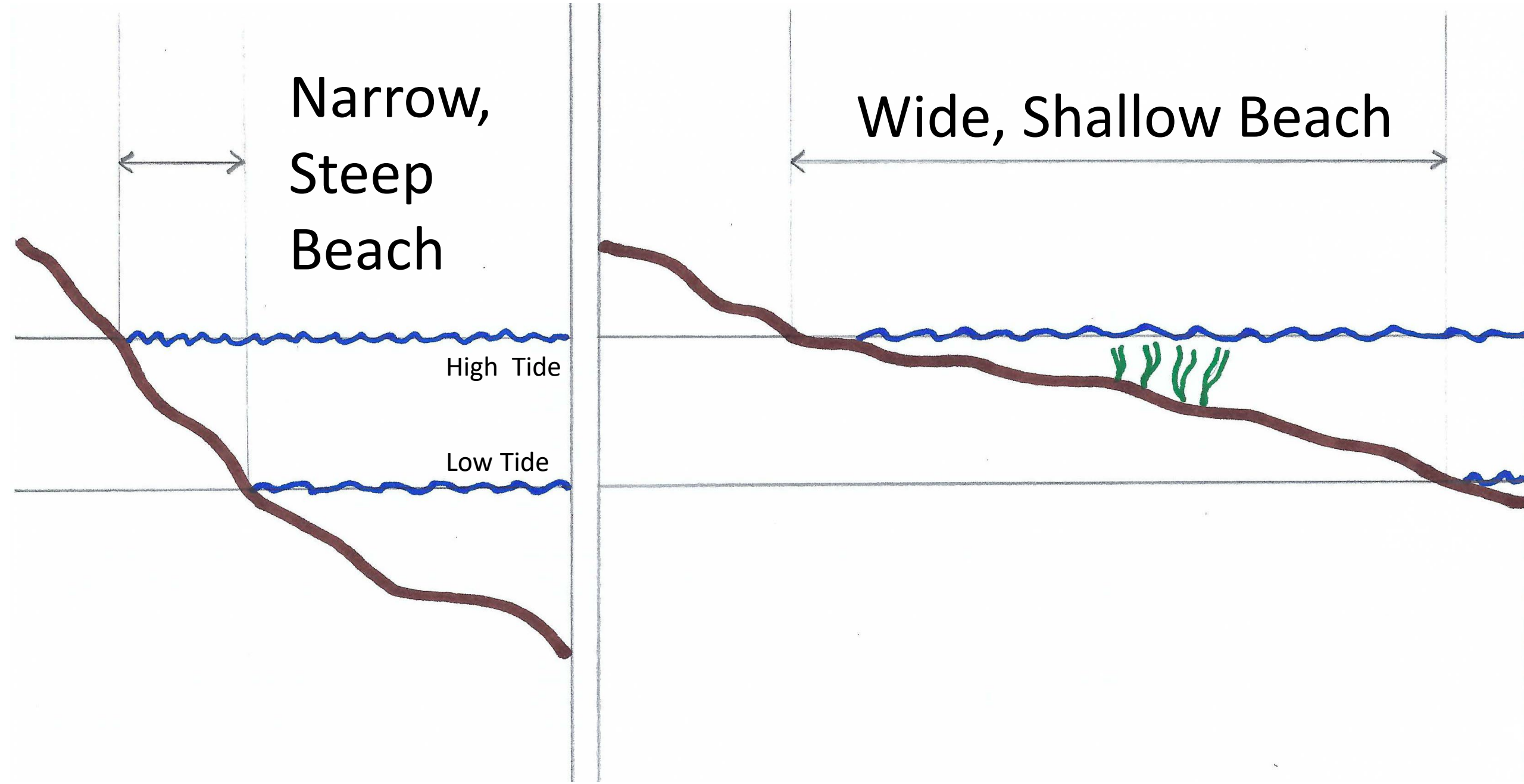

Bellingham Hbr.
Beach Seine Sites
2003-2013
Squalicum Cr.
Whatcom Cr.
201
202
204
207
209
210
212
214
215
217
220
222
224
225
226
N
W
E
S
Legend
Beach Seine Site
River Mile
5 Fathom Line
Eelgrass Beds
Scrub Shrub
Salt Marsh
Mud Flat
Sand Flat

Bellingham Nearshore Habitat



Legend

- Forested Floodplain
- Salt Marsh
- Scrub Shrub
- Wetland Marsh
- Intertidal Zone
- Armored Shoreline
- Overwater Structure

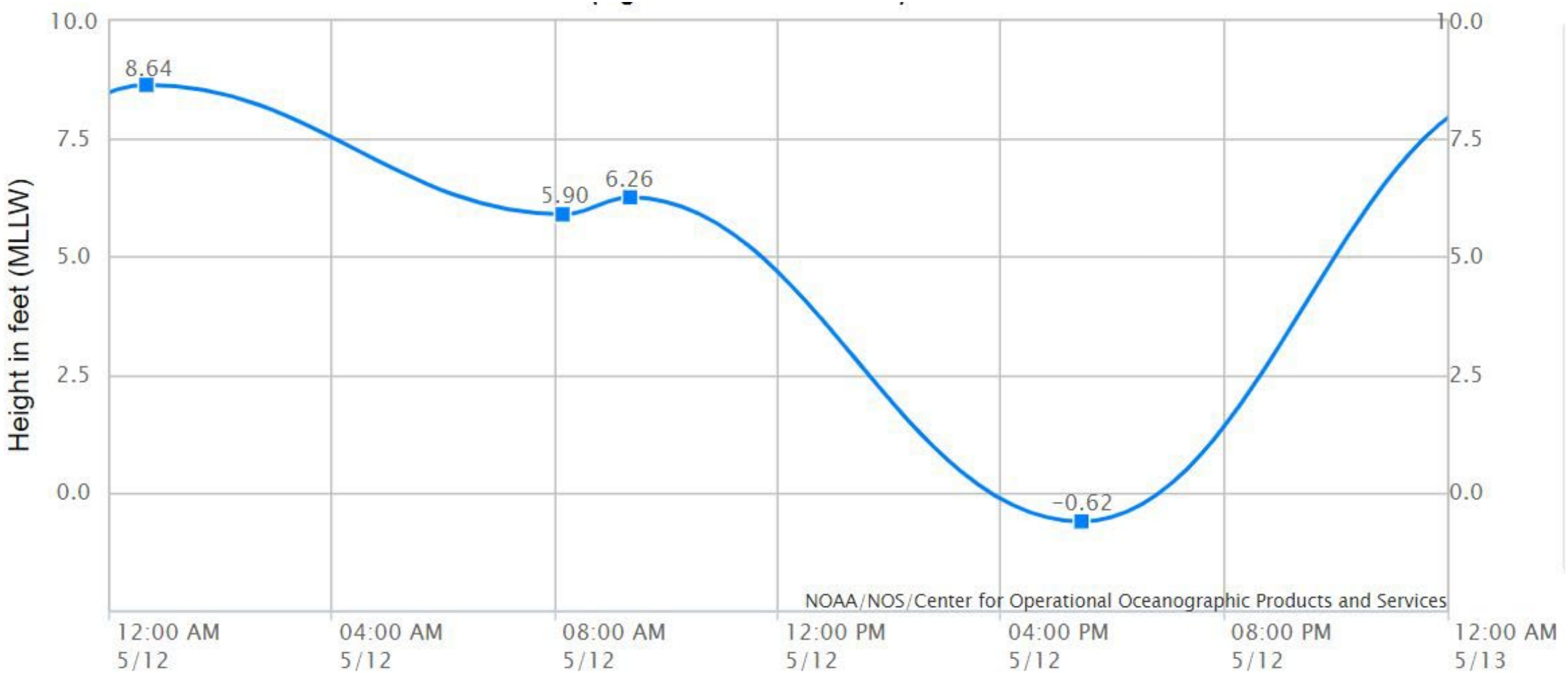

Narrow,
Steep
Beach
High Tide
Low Tide
Wide, Shallow Beach

Boulevard Park Beach Restoration

Before

After

Tide on May 12



Beach Seine Field Data

Your Name: _____ School: _____

Date: _____ Weather: ___Clear ___Overcast ___Partly Cloudy ____ Rain

Site Location: **Boulevard Park N.** Site Number: **224** Wind: _____ mph from the _____

Tide: _____ft. Tide Phase: ____ flooding ____ebbing slack Water Temp.: _____ C

Tide Phase: ____ flooding ____ebbing _____slack (mark one)

Catch Data

	Set Time	Secchi Depth	Set Quality	<----------Salmon Catch----------> Chinook	Coho	Pinks	Chum	<----------Forage Fish ----------> Herring	Surfsmelt	Sandlance	<----------Other Species----------> Stickleback	Starry Flounder	_____
Set 1	_____	_____ ft.	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
Set 2	_____	_____ ft.	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
Set 3	_____	_____ ft.	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____

Species:	Fork Length	Tagged?	Species:	Fork Length	Tagged?
_____	_____ cm	_____	_____	_____ cm	_____
_____	_____ cm	_____	_____	_____ cm	_____
_____	_____ cm	_____	_____	_____ cm	_____

Notes:

Beach Seine with Kids
Post Trip Summary

by
Mike MacKay

Beach Seine Field Data

Your Name: Mike MacKay

School: Lummi Fourth Grade

Date: 4/14/23

Weather: X Clear ___ Overcast ___ Partly Cloudy ___ Rain

Site Location: Boulevard Park N. Site Number: 224

Wind: 5 mph from the South

Tide: 6.5 ft. Tide Phase: ___ flooding ___ ebbing (slack)

Water Temp.: 12 c

Tide Phase: ~~___ flooding ___ ebbing ___ slack (mark one).~~

Catch Data

	Set Time	Secchi Depth	Set Quality	Salmon Catch: Chinook	Coho	Pinks	Chum	Forage Fish: Herring	Surfsmelt	Sandlance	Other Species: Stickleback	Starry Flounder	Sculpin
Set 1	1145	___ ft.	G	___	___	___	18	___	___	___	___	___	1
Set 2	1205	___ ft.	3	___	___	___	Ø	___	___	___	___	___	Ø
Set 3	1215	___ ft.	G	___	___	___	Ø	___	___	___	___	___	Ø

Species:	Fork Length	Tagged?
Chum	77 cm mm	N
Chum	41 cm mm	N
Sculpin	86 cm mm	N

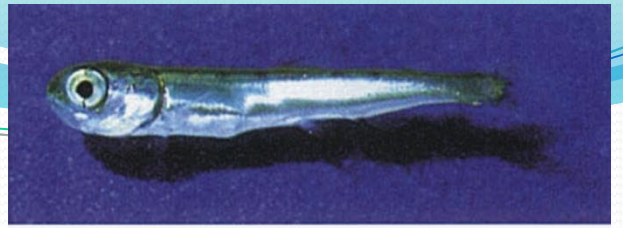
Species:	Fork Length	Tagged?
___	___ cm	___
___	___ cm	___
___	___ cm	___

Notes:

Beach Seine Sample Processing

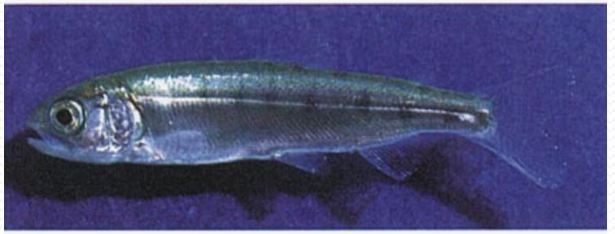

Caudal Fin clip for DNA tissue
10. 10.

Pink



Chum

Sockeye

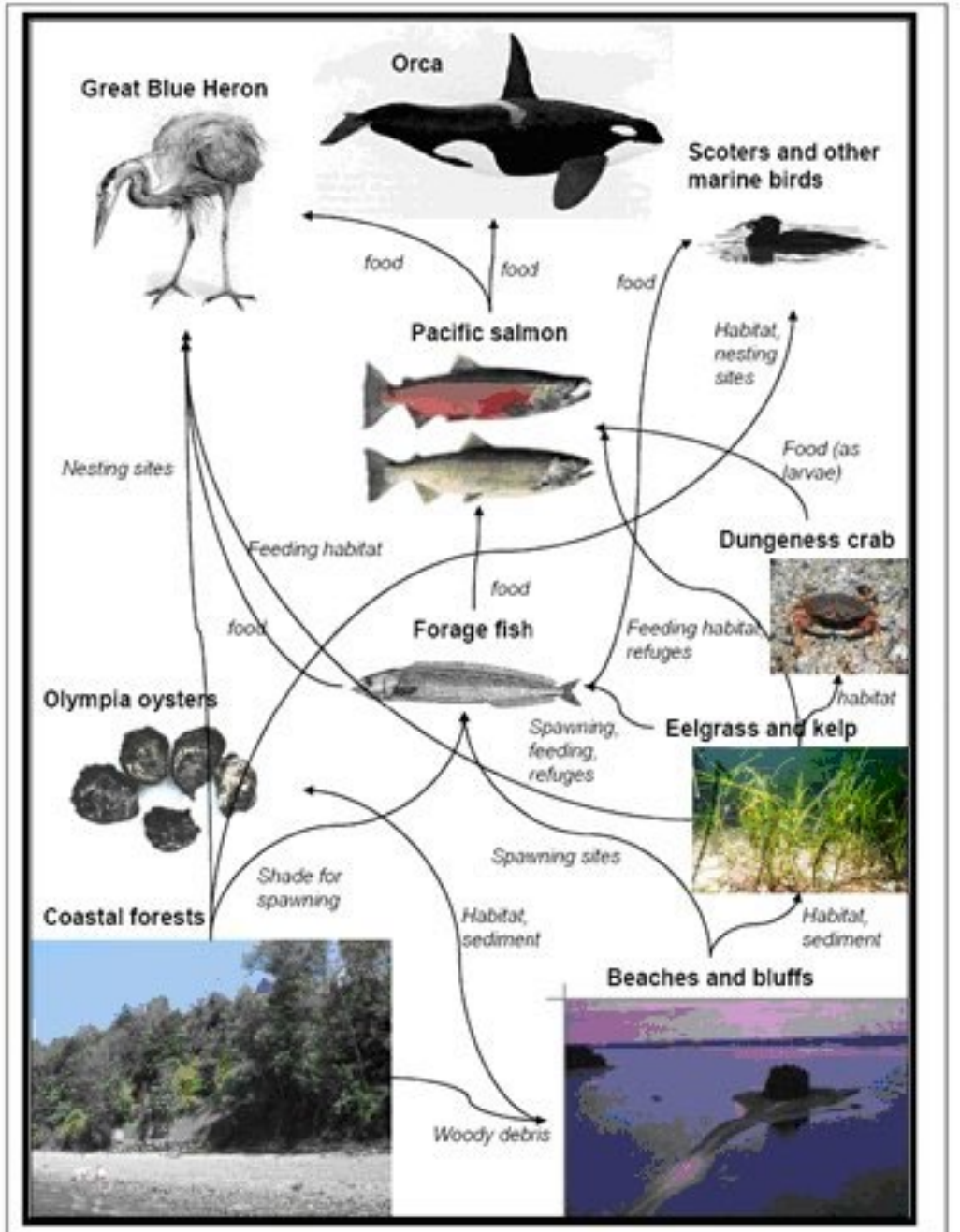


Coho

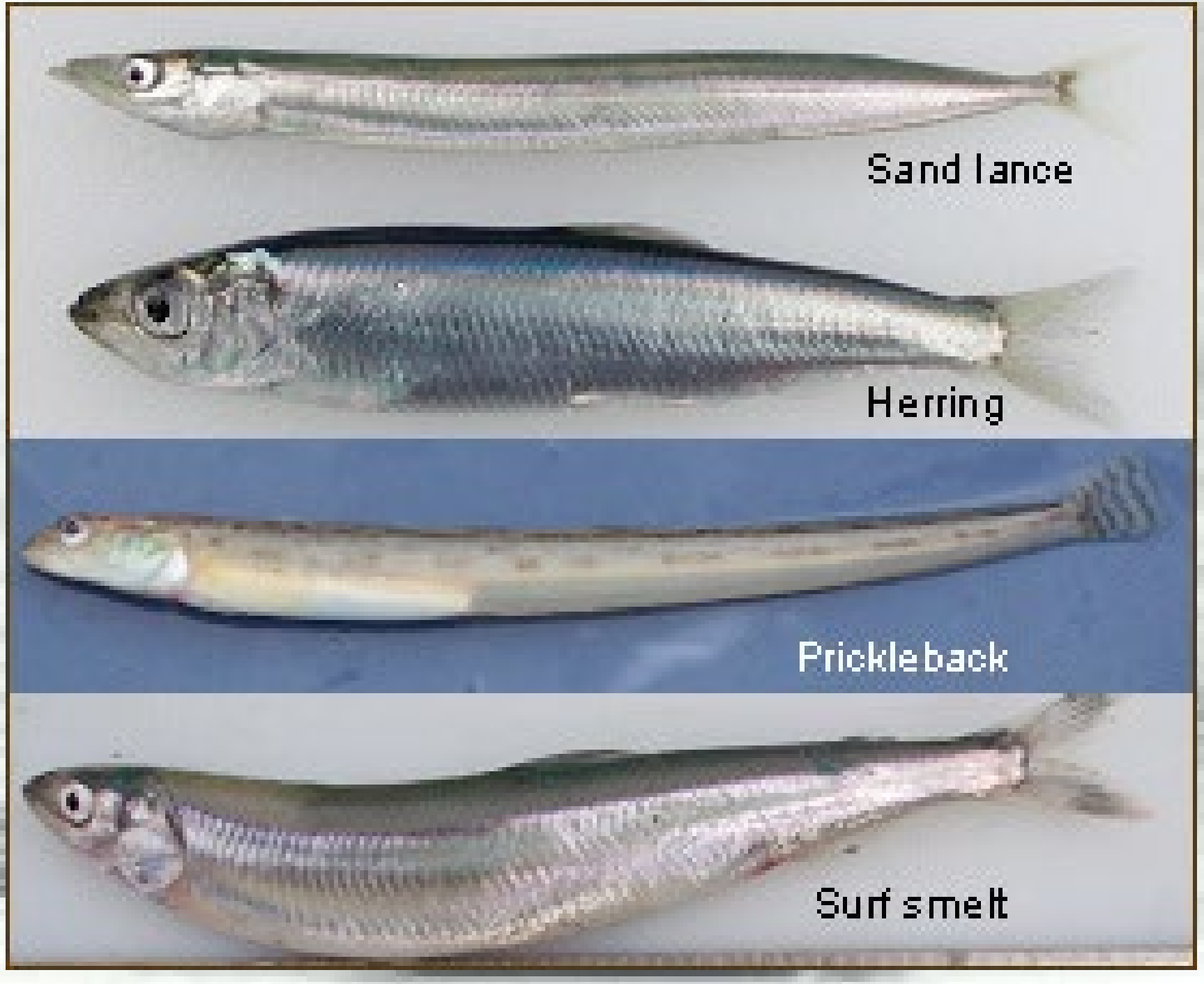
Chinook

Zero-age Juvenile Chinook

Yearling Juvenile Chinook



Nearshore Valued Ecological Components

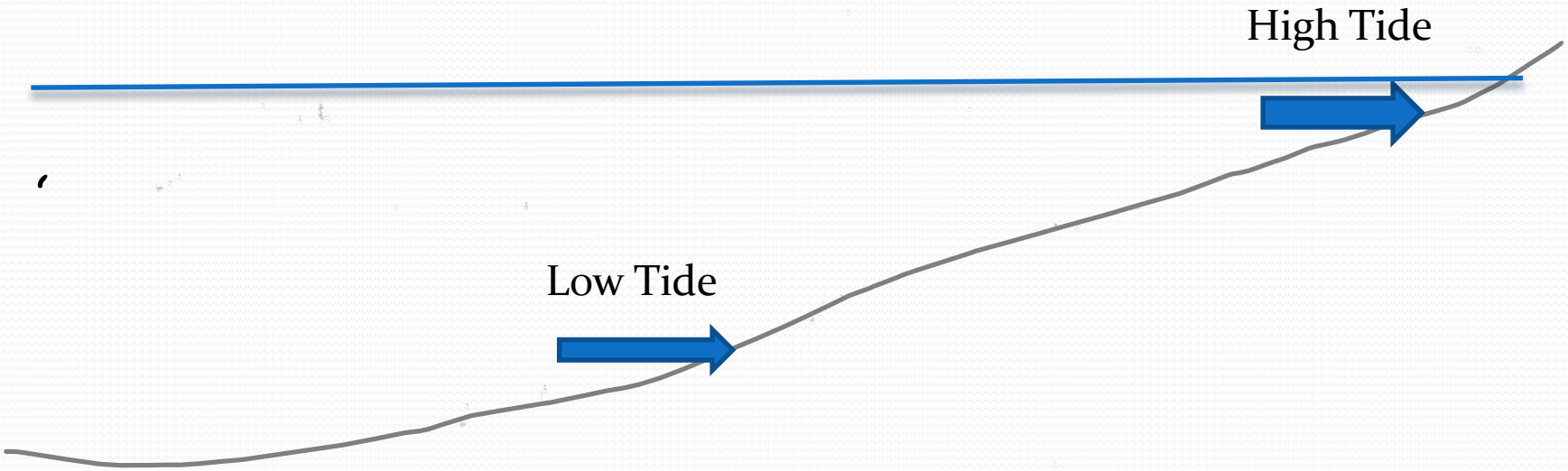

Sand lance
Herring
Prickleback
Surf smelt

Adult and Larval Sandlance

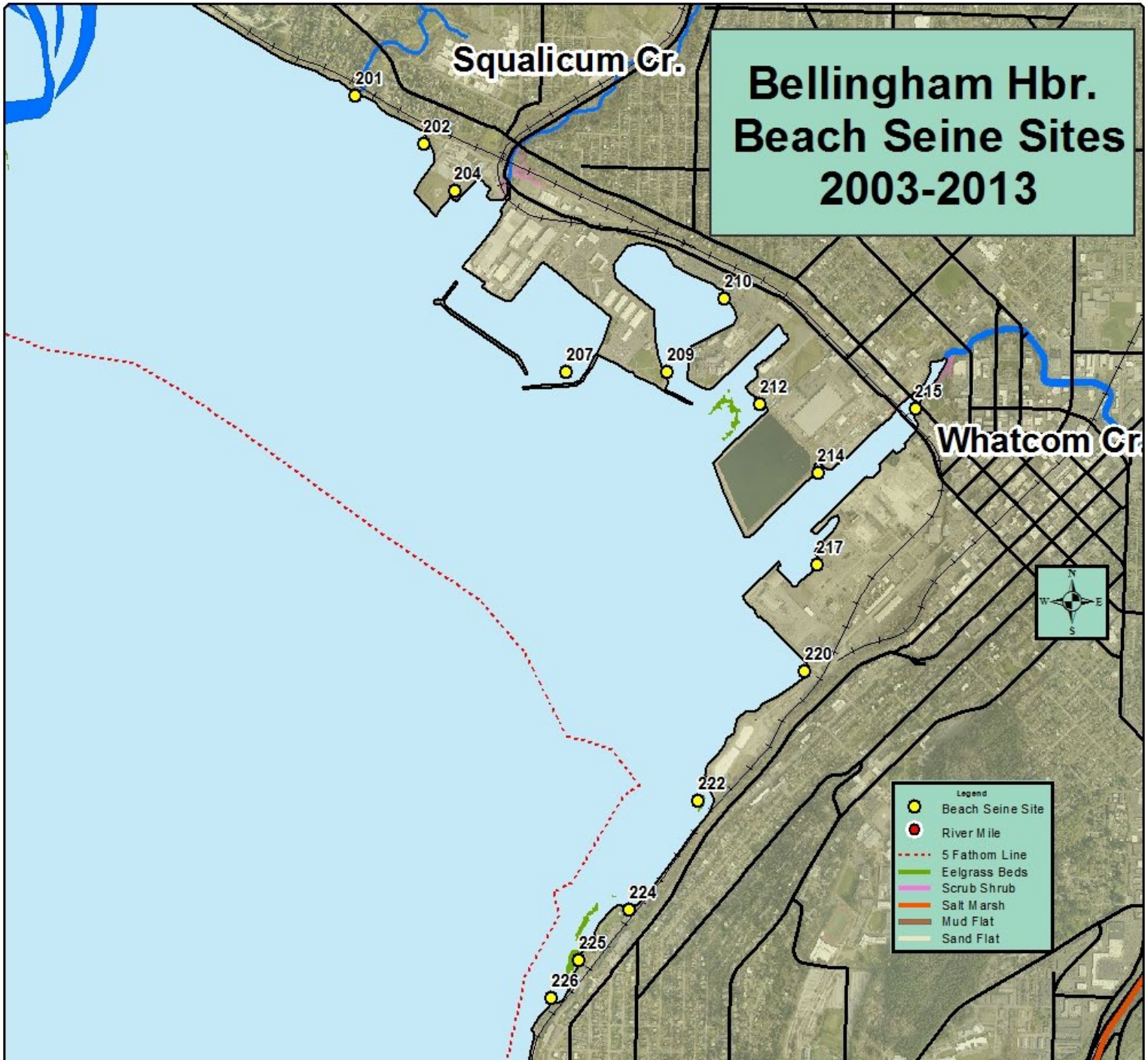
Key Messages

1. Intertidal corridors provide safe forage habitat for migrating juvenile salmon
2. Forage fish (herring, sandlance, surf smelt) depend on intertidal zone for spawning habitat and are essential elements of the food chain for Orcas.
3. These fishes depend on the inertial habitat to provide food, shelter, and spawning habitat (forage fish)

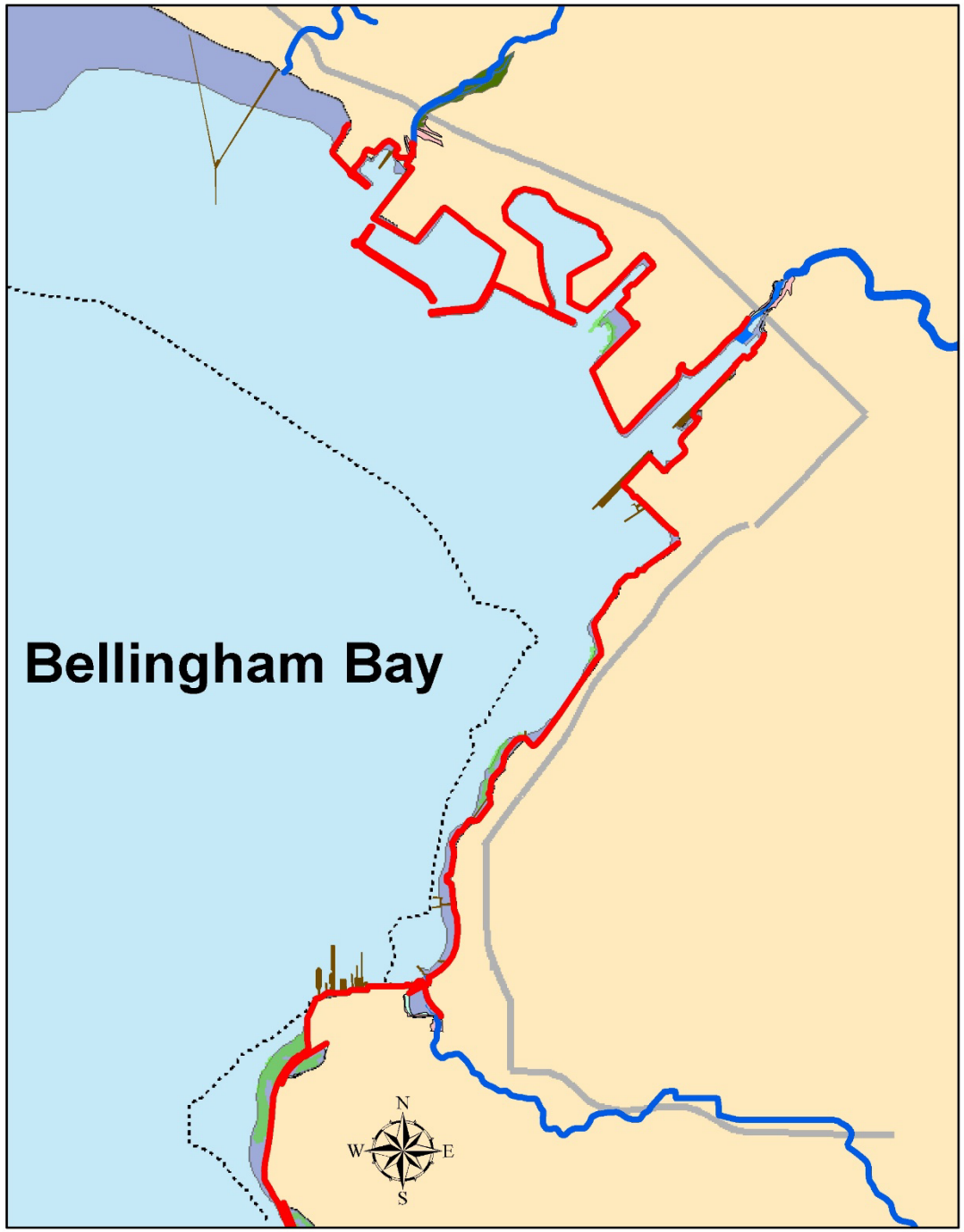
“Intertidal” means from low tide to high tide




+3.4’ Tide


Bellingham Hbr.
Beach Seine Sites
2003-2013
Squalicum Cr.
Whatcom Cr
201
202
204
207
209
210
212
214
215
217
220
222
224
225
226
N
W
E
S
Legend
Beach Seine Site
River Mile
5 Fathom Line
Eelgrass Beds
Scrub Shrub
Salt Marsh
Mud Flat
Sand Flat

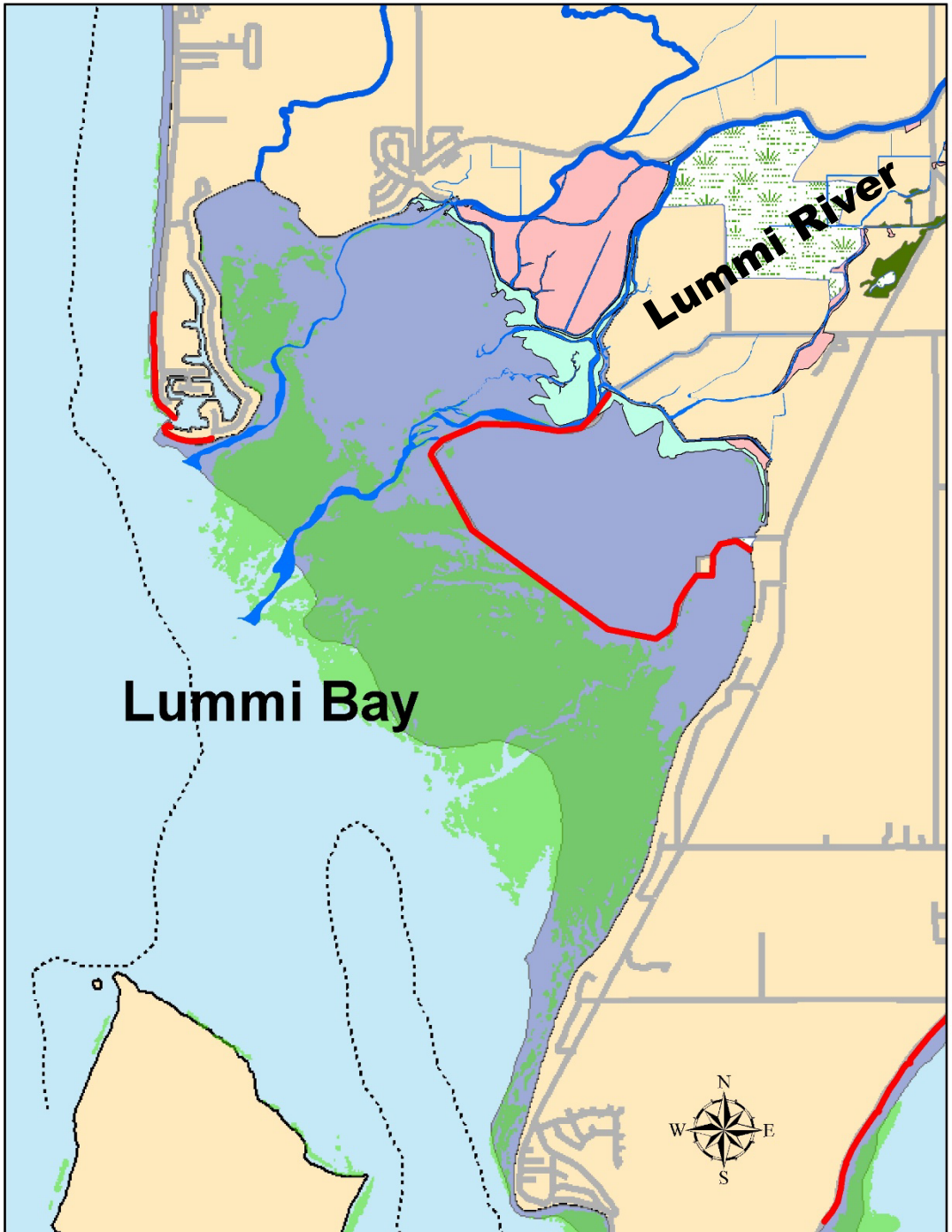
Bellingham Nearshore Habitat



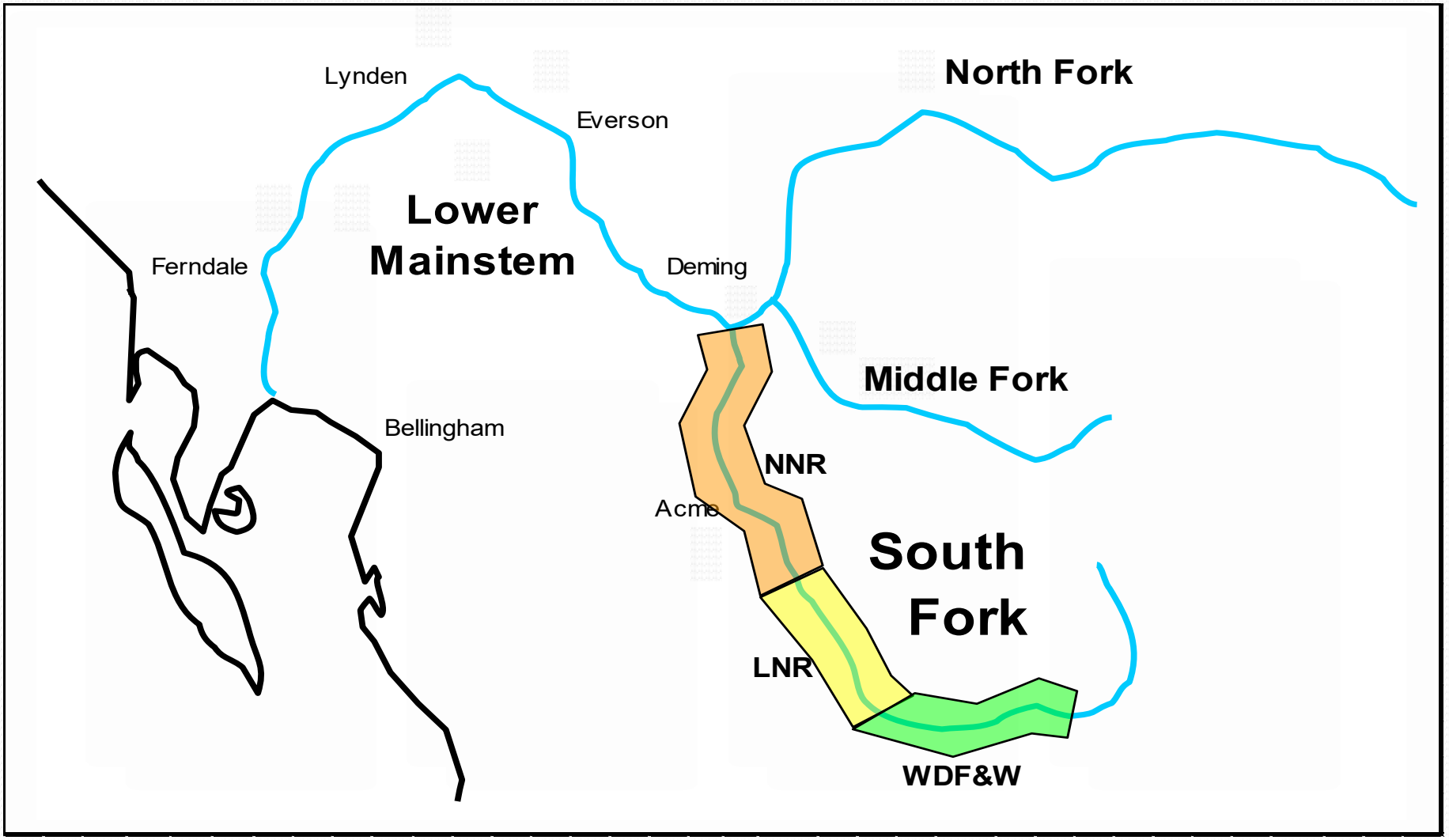
Legend

- Forested Floodplain
- Salt Marsh
- Scrub Shrub
- Wetland Marsh
- Intertidal Zone
- Armored Shoreline
- Overwater Structure

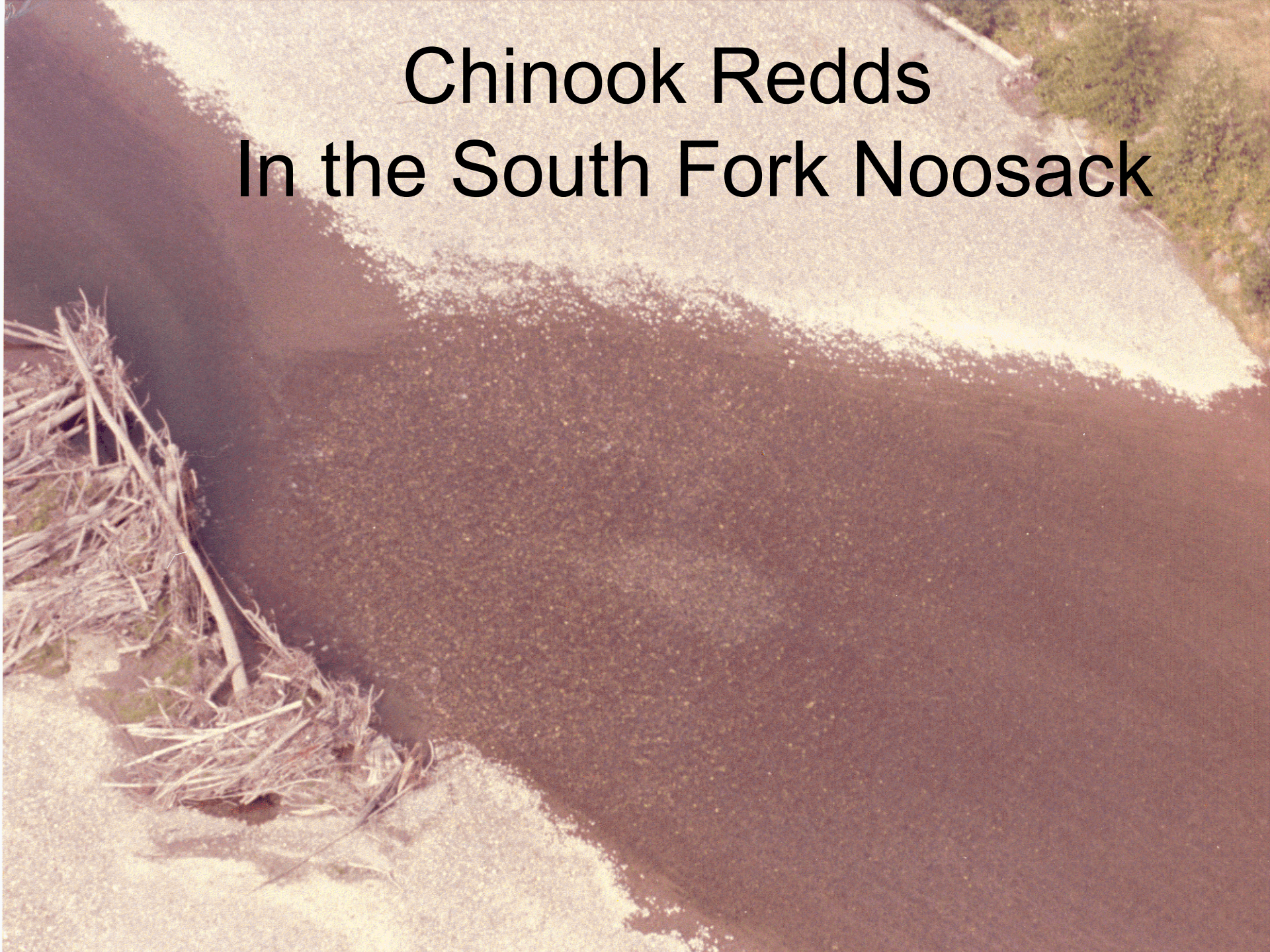
Lummi River Delta Habitat



South Fork Mainstem Coverage



Joint Effort of NNR, LNR, & WDF&W


Chinook Redds
In the South Fork Noosack

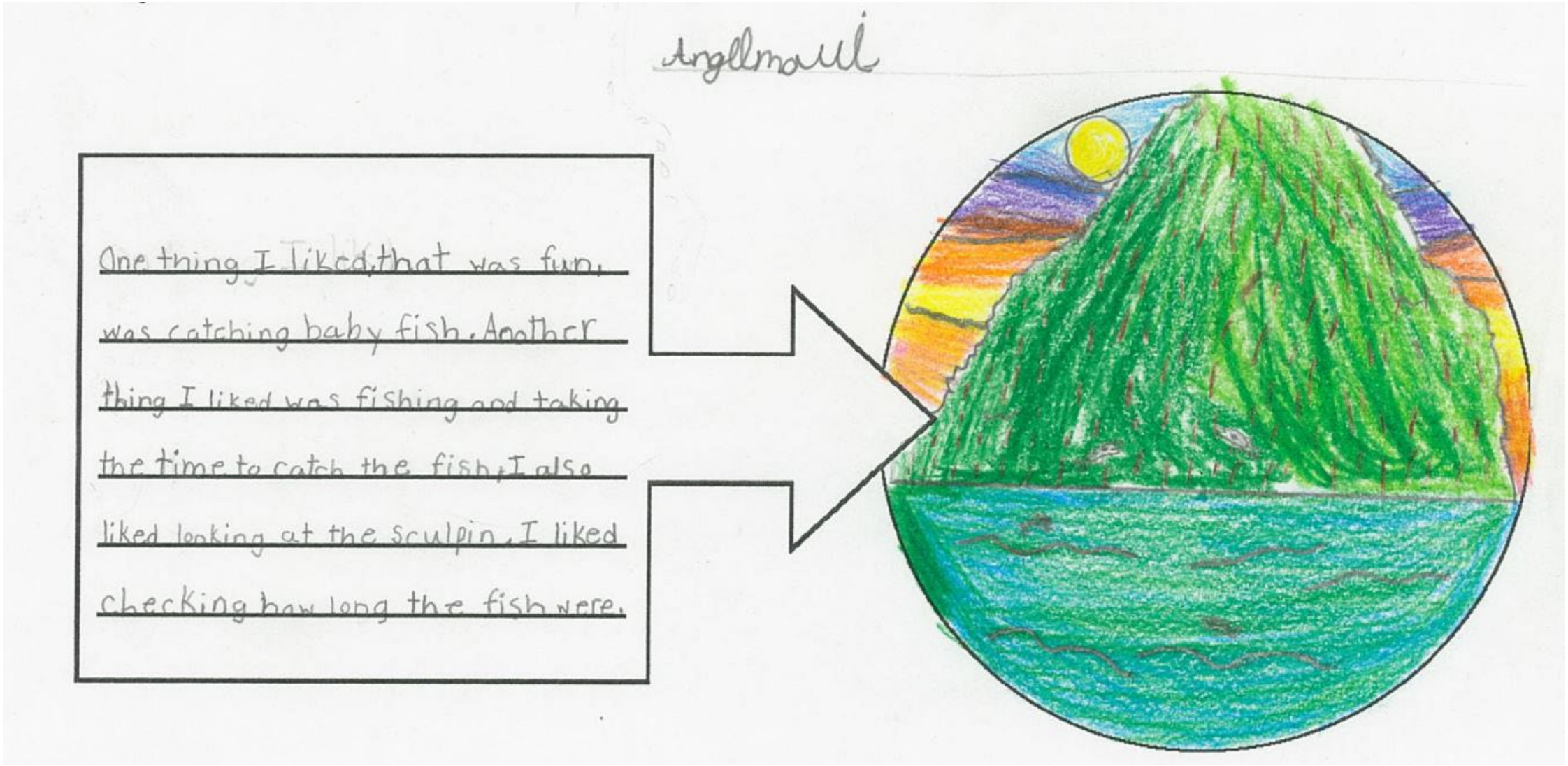
Key Messages

The key take-away message for this project is: Marine intertidal zones are migratory corridors for juvenile salmon that provides migrating salmon with a place to forage and also provides protection from larger predators.

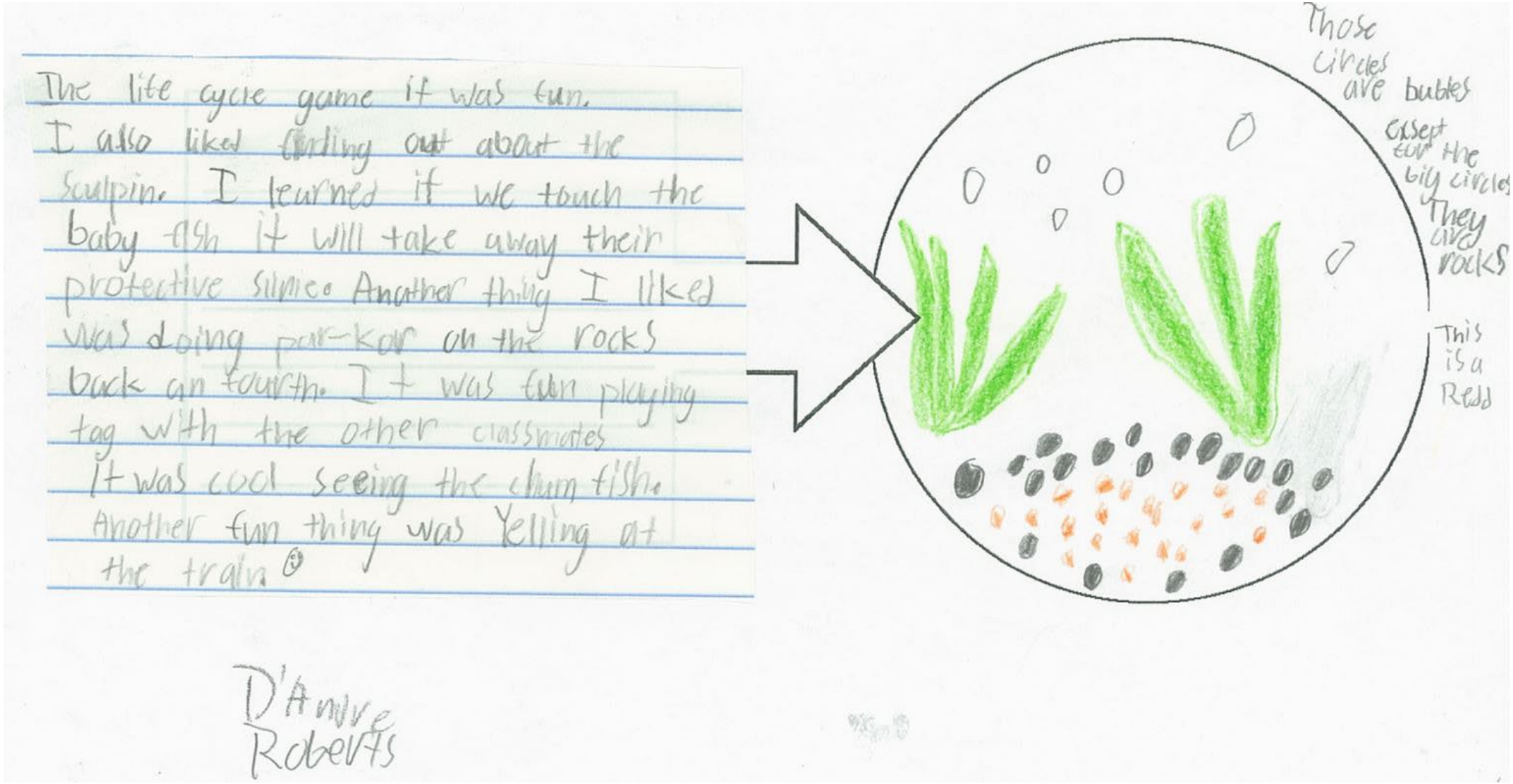
Other Key Messages:

1. Intertidal corridors provide a safe forage habitat for migrating juvenile salmon.
2. Spring and summer are seasons when juvenile salmon migration occurs.
3. Shoreline fill and dredge projects can interrupt intertidal migration and cause increase predation to juvenile salmon.
4. Salmon and forage fish (like herring, smelt, and sand lance) are important to the food chain for Puget Sound Orcas. Both types of fish depend on the intertidal shoreline.
5. Tribes are involved in monitoring field studies for salmon and are concerned for the health of these populations.
6. A career in the biological sciences can be fun and exciting. It is also important for protecting marine populations for future generations.

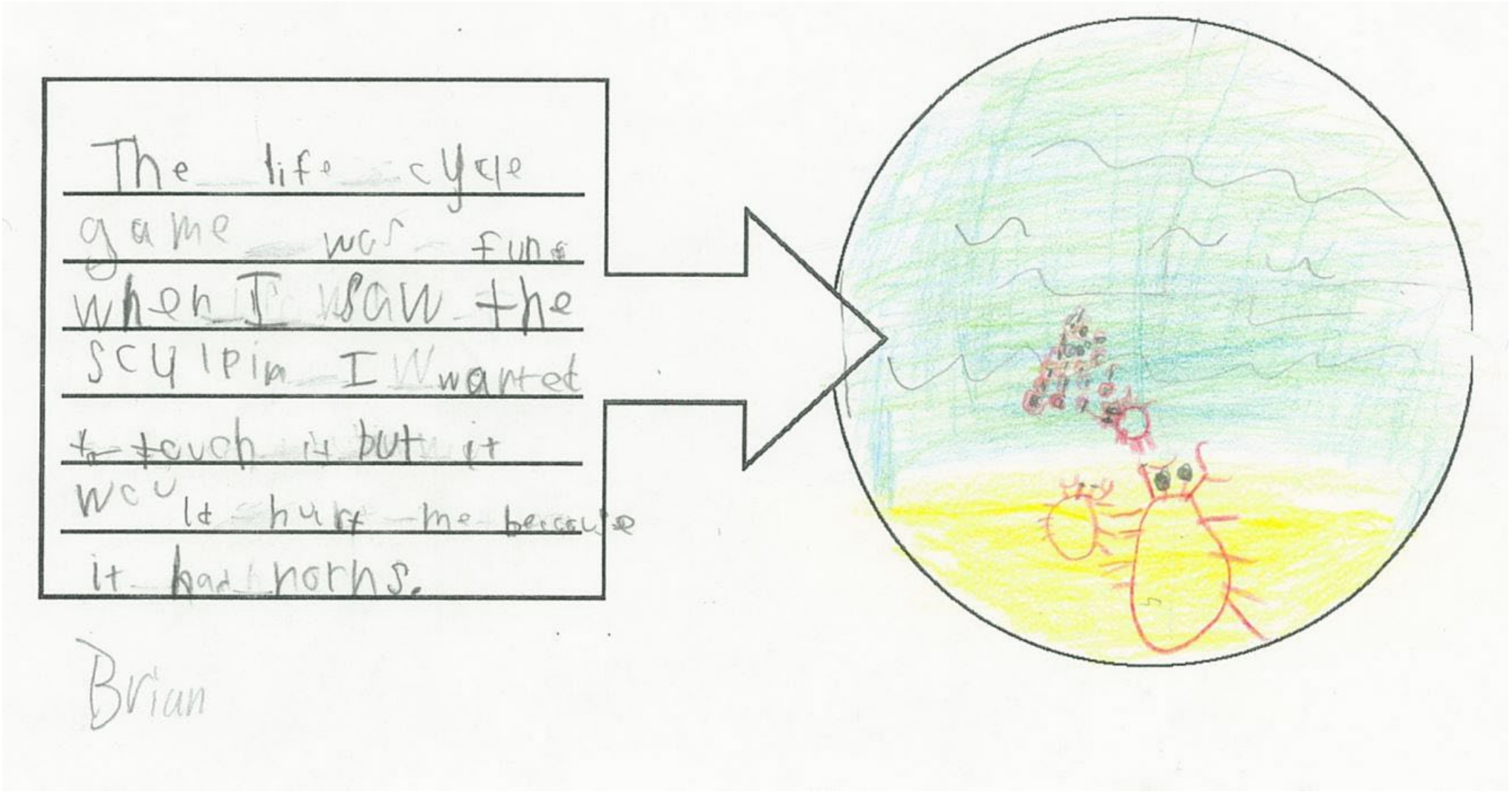
Lummi Nation School



Lummi Nation School



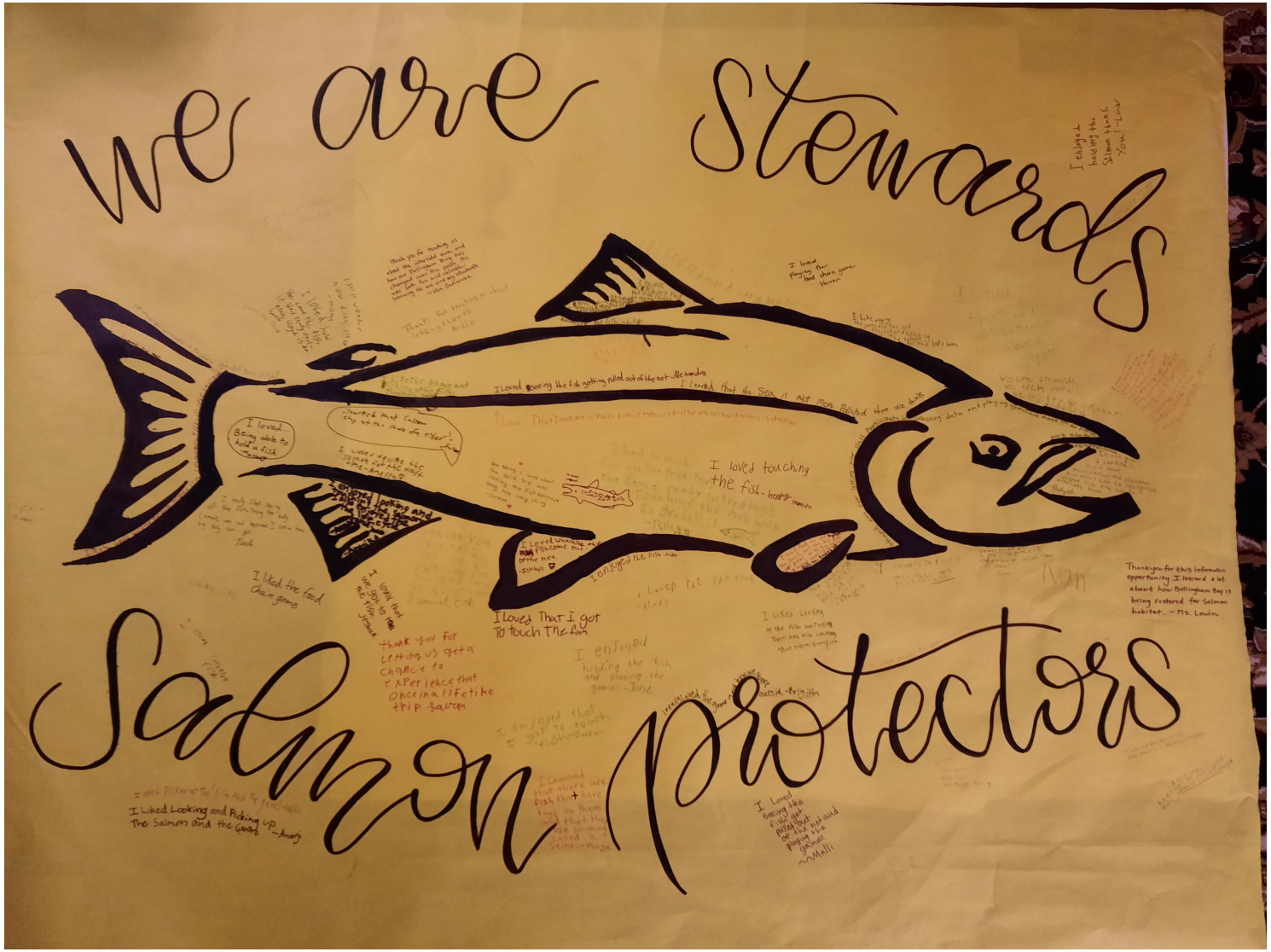
Lummi Nation School



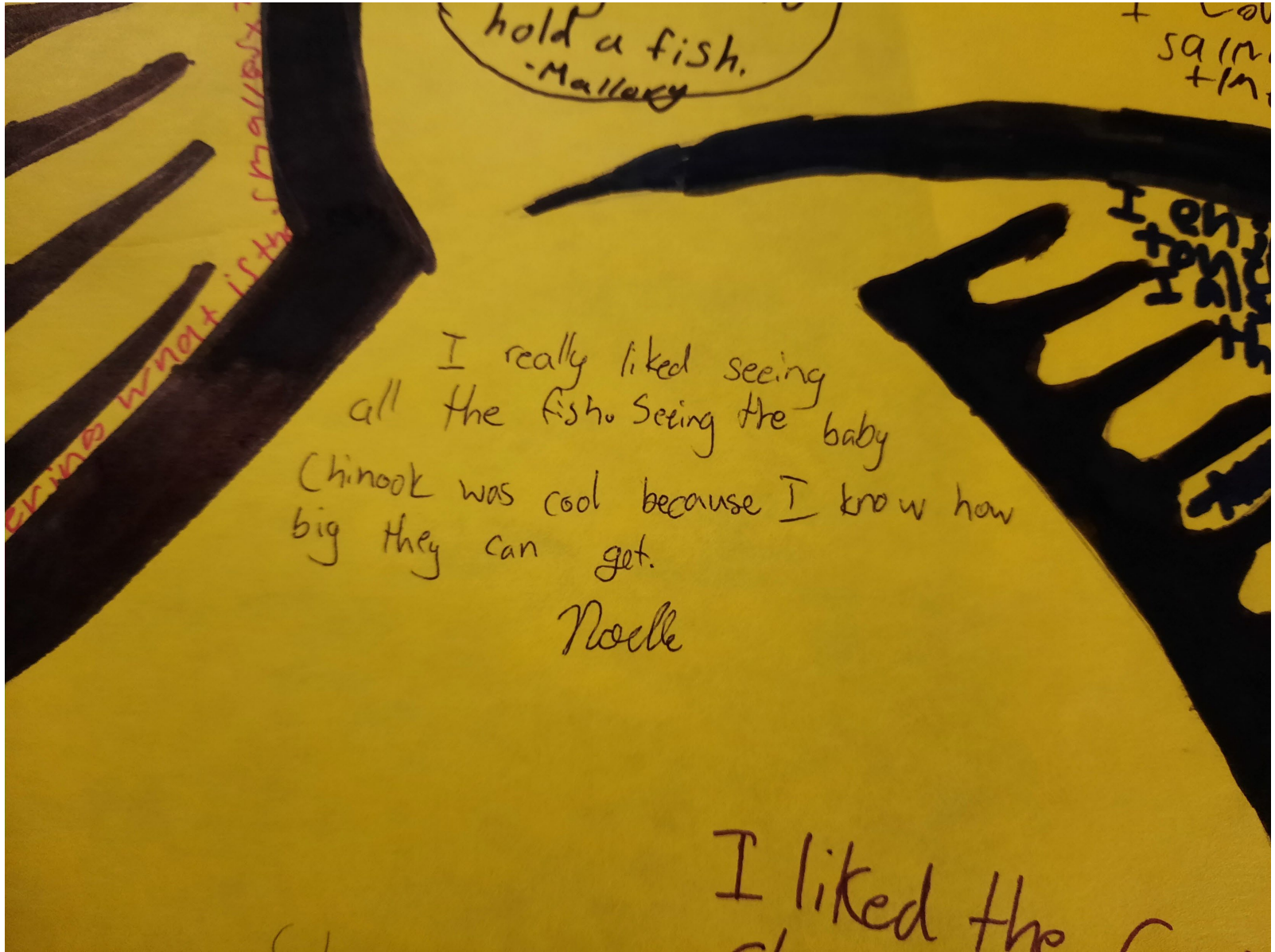
Lummi Nation School

Lummi Nation School

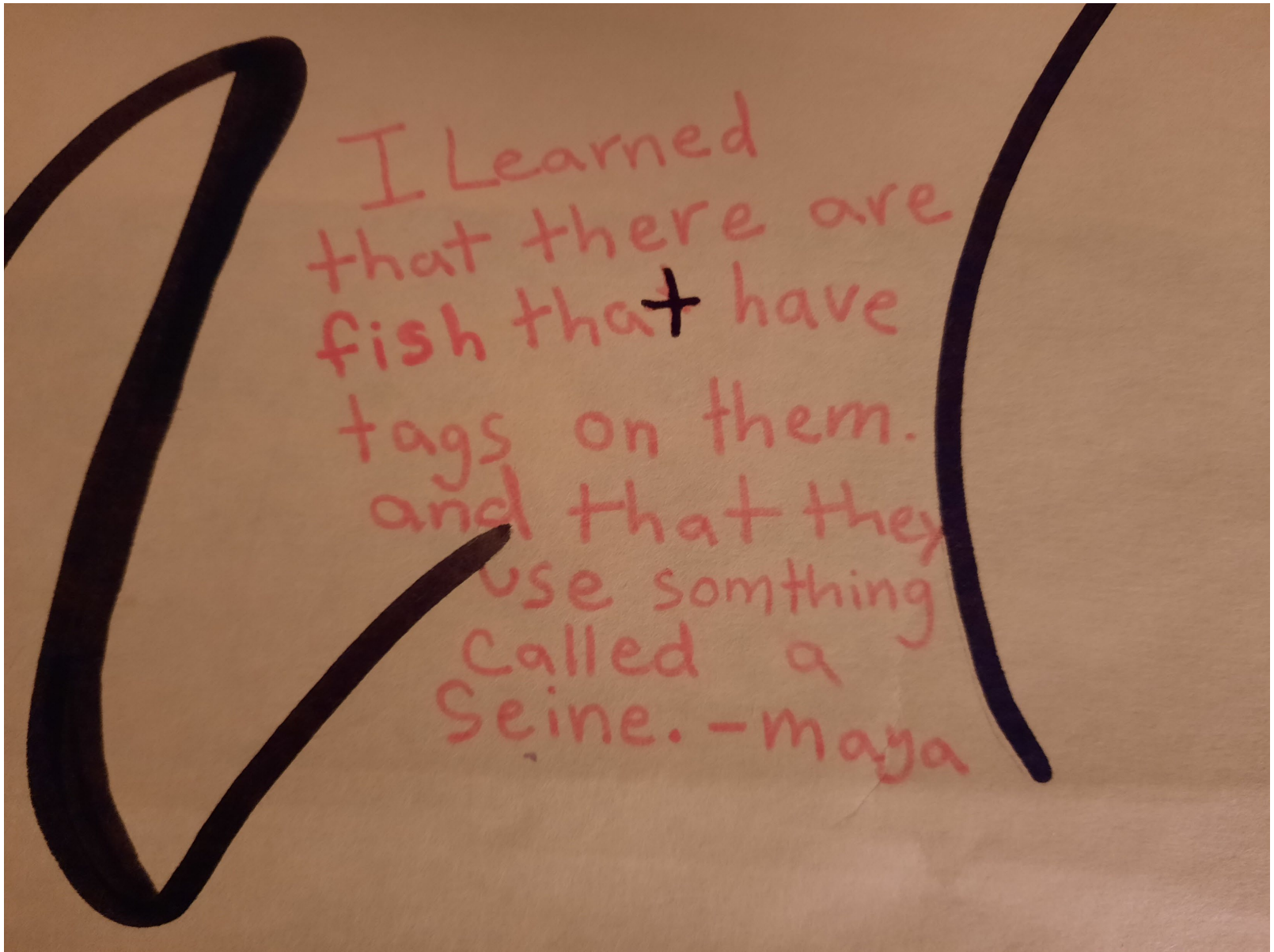
Happy Valley Elementary



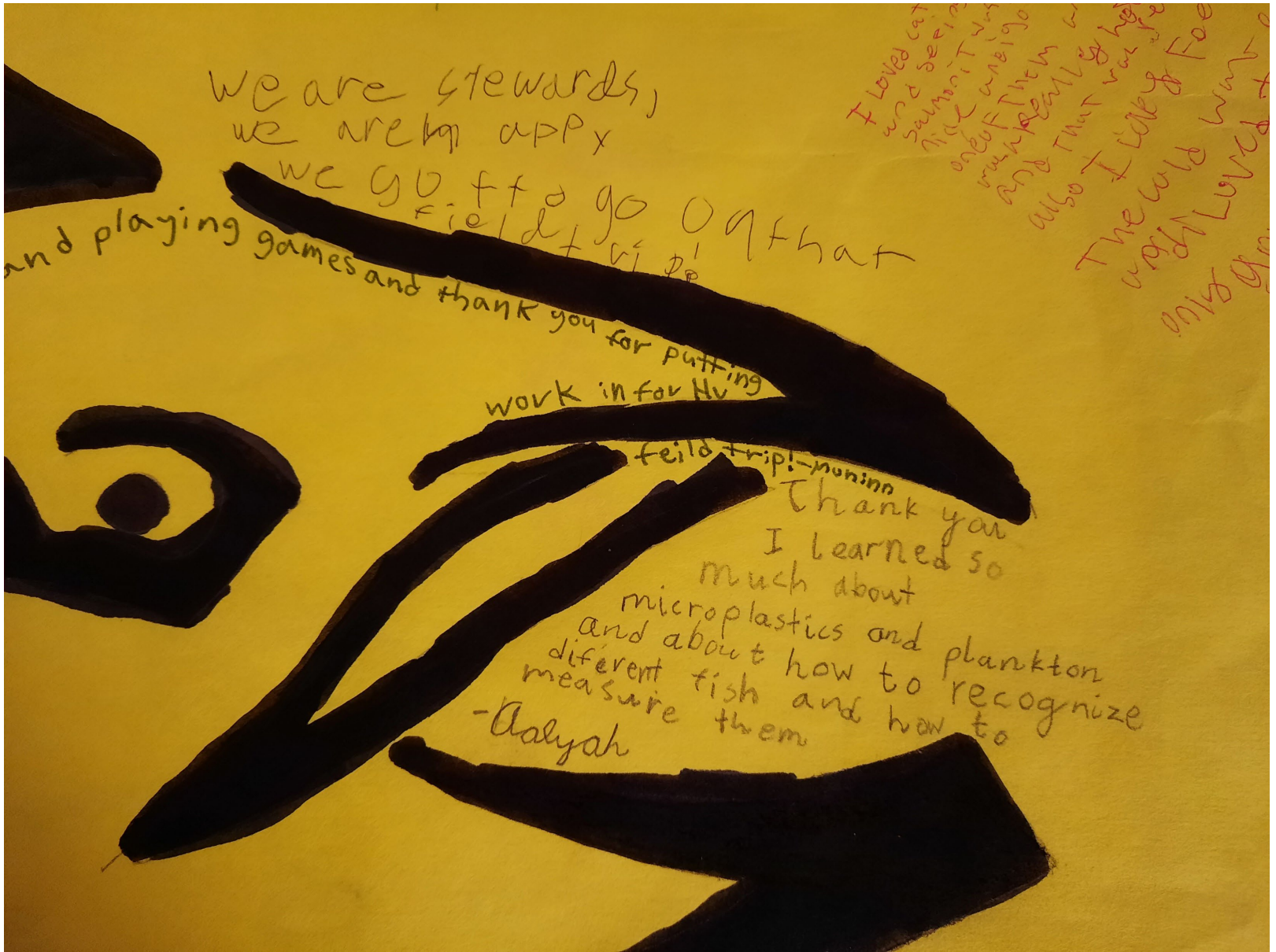
Happy Valley Elementary



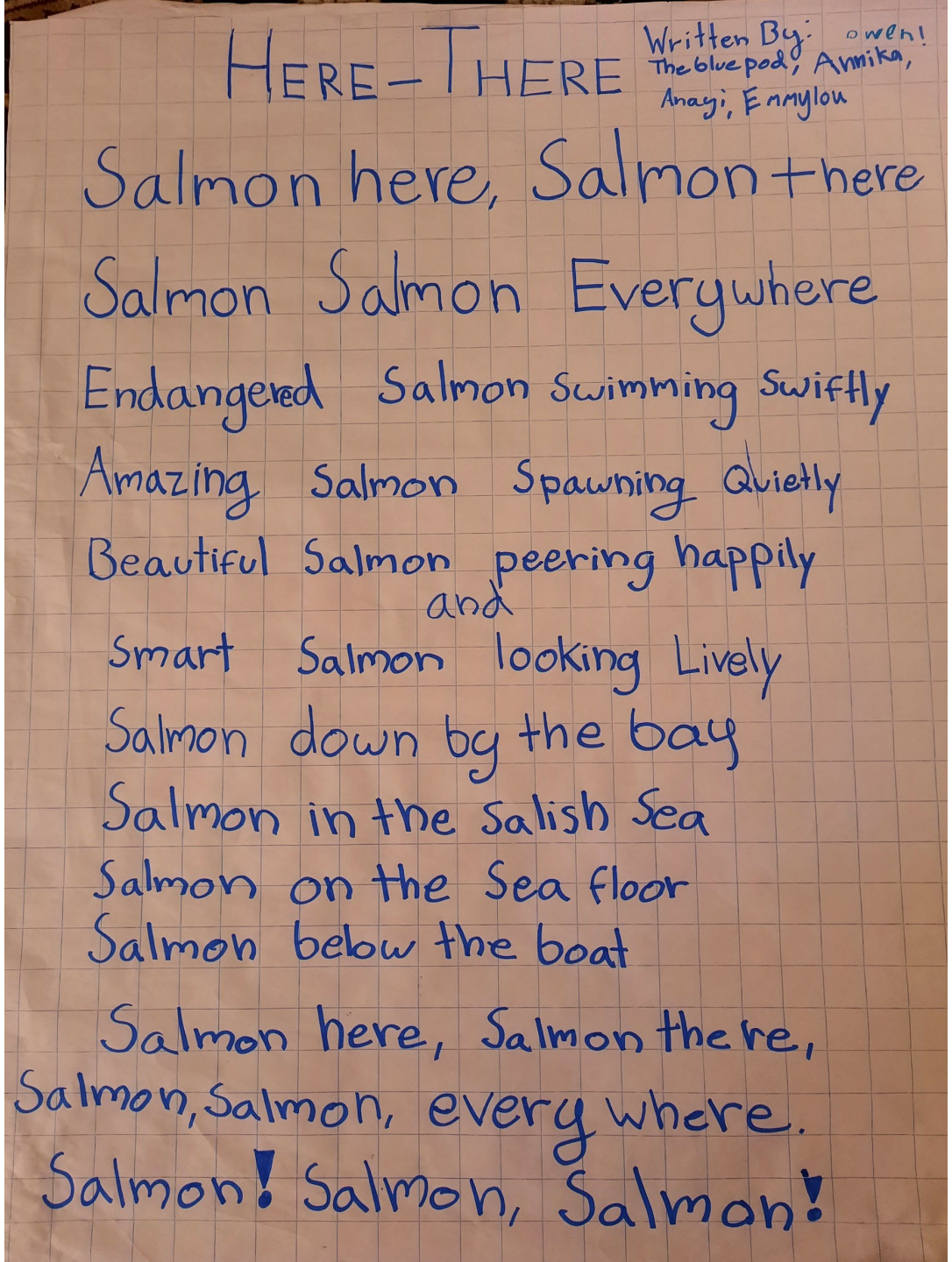
Happy Valley Elementary



Happy Valley Elementary



Happy Valley School



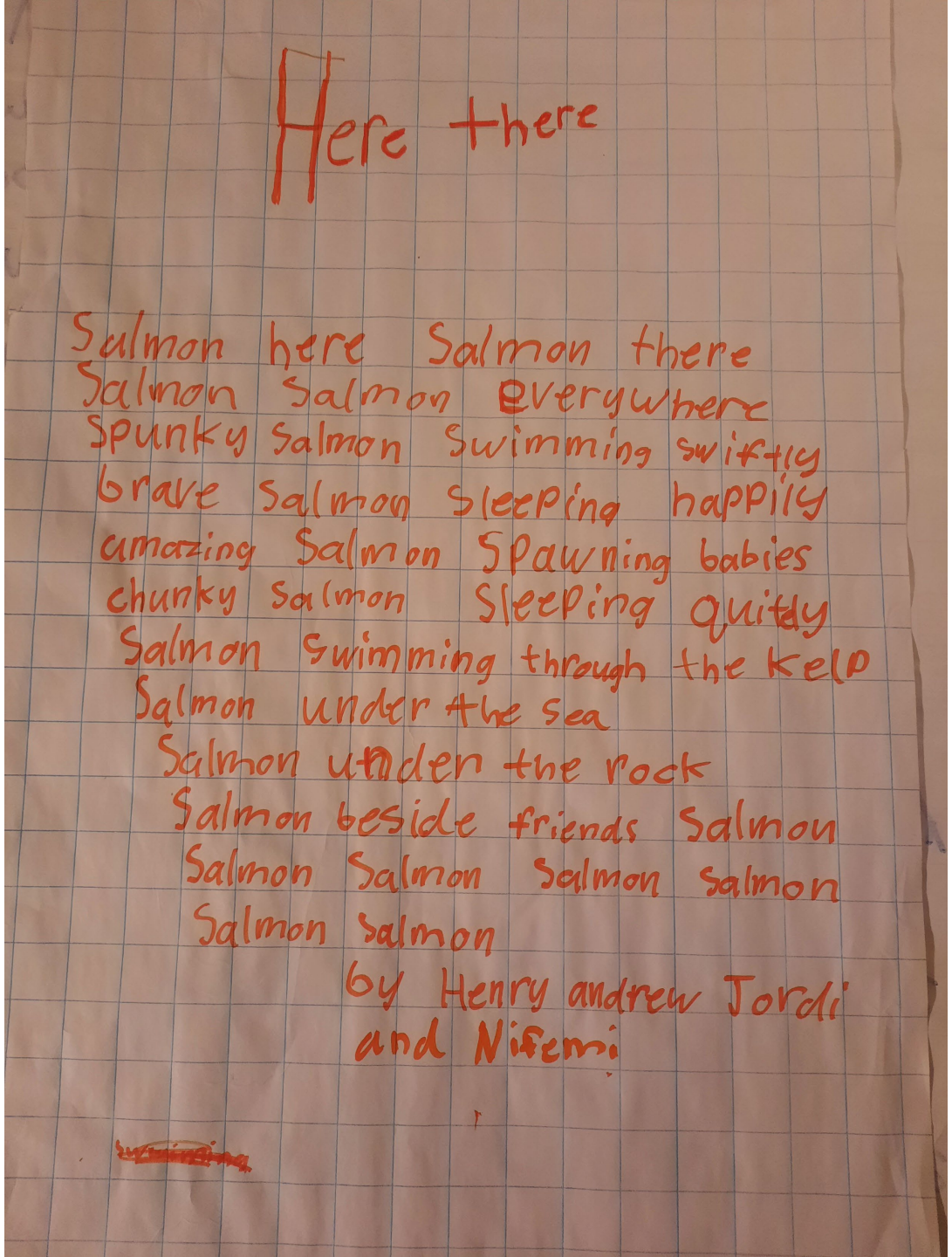
Here-There

Written By: Owen! The bluepod, Annika, Anayi, Emmylou

Salmon here, Salmon there
Salmon Salmon Everywhere
Endangered Salmon swimming swiftly
Amazing Salmon Spawning Quietly
Beautiful Salmon peering happily
and
Smart Salmon looking Lively
Salmon down by the bay
Salmon in the Salish Sea
Salmon on the Sea floor
Salmon below the boat

Salmon here, Salmon there,
Salmon, Salmon, every where.
Salmon! Salmon, Salmon!

Happy Valley School

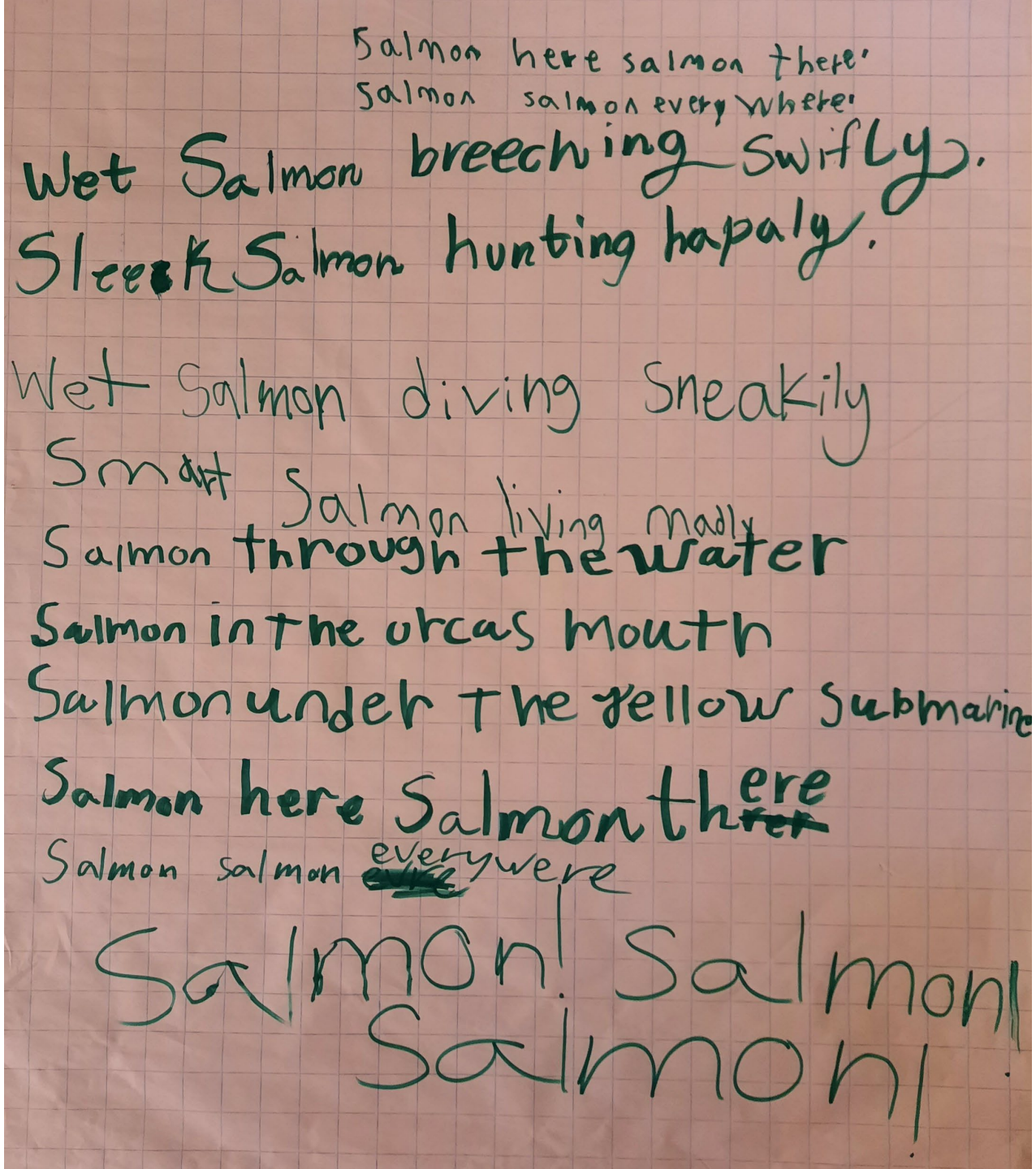


Here there

Salmon here Salmon there
Salmon Salmon everywhere
Spunky Salmon Swimming swiftly
brave Salmon sleeping happily
amazing Salmon Spawning babies
chunky Salmon Sleeping quitdy
Salmon Swimming through the kelp
Salmon under the sea
Salmon under the rock
Salmon beside friends Salmon
Salmon Salmon Salmon Salmon
Salmon Salmon

by Henry andrew Jordi
and Nisemi

Happy Valley School



Happy Valley School