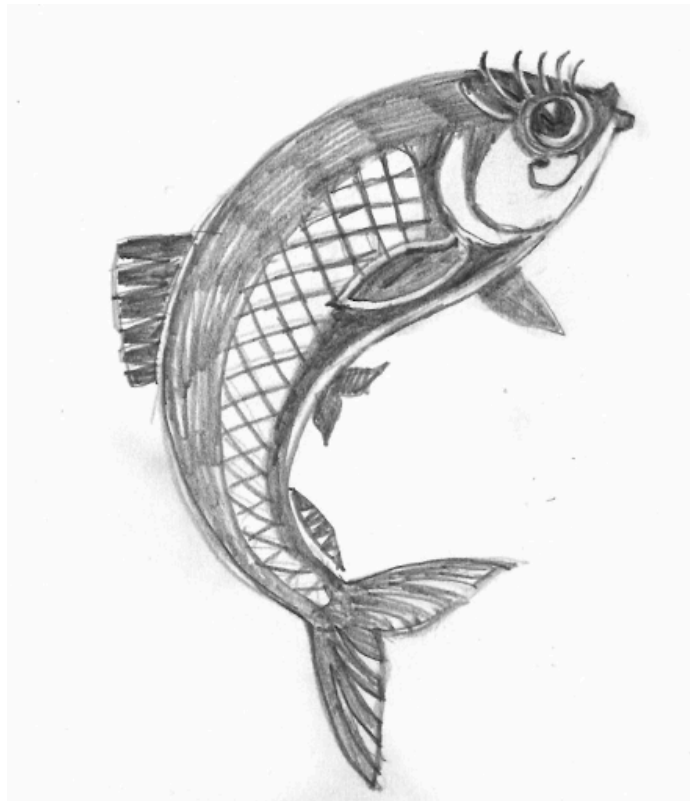


Searching for Slhawl'

Pacific Herring (*Clupea pallasii*) Survey Protocol

Volunteer Manual

Tem Lhawl' 2024



"Harriet the Herring"

Objectives of the Study and Our Story

Objectives in each year:

- 1) Document the spatial extent of Pacific Herring (*C. pallasii*) spawning in the North end of Átl'ka7tsem/Howe Sound
- 2) Determine the timing of *C. pallasii* spawning and peak spawning in the region.

Our goal with this data and the following protocols is to establish a long term dataset to track trends in herring distribution, abundance, and timing. Such a dataset will be useful for future studies of herring in our region.

Our Story:

2019

After a request from Elder Bob Baker and other Sḵw̓xwú7mesh Elders, the students of Aya7ayulh Chet/Cultural Journeys program at St'a7mes School hatched a plan to bring the community back into relation with the herring of Átl'ka7tsem/Howe Sound. For the first time in many generations, the community gathered to celebrate the return of the herring, known as Tem Slhawt' in the Sḵw̓xwú7mesh snichim (language). The students laid cedar and hemlock bows in the tidal zone for the harvest and after a few weeks the bows were coated in ch'em'esh (herring roe).

2020

The students of Aya7ayulh Chet begin receiving letters from Harriet the Herring. This magnificent little fish teaches them about her fish family and the Salish Sea they call home. As winter draws to a close the students prepare bows to be placed in the water once again. The winds howled and the tides flushed and by the time the herring had come and gone, so had the hemlock bows planted by the students, driven into deeper water by the violent weather. It was a tough lesson to see and feel the strength of the ocean.

2021

As the students of Aya7ayulh Chet prepared for another ch'em'esh harvest, a team of Sḵw̓xwú7mesh youth took to the water by boat and snorkel to understand how the herring were navigating in Átl'ka7tsem/Howe Sound. Citizen scientist John Buchanan passed the herring survey torch on to the new generation. His guidance provided a framework for the Sḵw̓xwú7mesh team to document Tem Slhawt' over its entire duration. As the surveys were underway the students of Aya7ayulh Chet studied the moon and tides to predict the arrival of the herring in Squamish. Following the students' recommendations the community gathered on the beach to welcome the herring through ceremony. With their best energy, they dropped the bows for the third time, hoping the herring would bless their work. To everyone's delight the herring not only returned to gift their roe, but we even got

to witness the spawn take place. Kids and elders alike grinned ear to ear trying to make out the flashes of silver in the water.

2022

This was our first formal year with volunteers! Our earliest spawn took place on January 18th near the Terminals west berth. There were big spawn all throughout the survey region. We saw early spawn in Catermole slough and on the south shore of the riprap on the Terminals. Then we saw two big spawns in Foulger creek. There were many sealions feeding on the herring right along this shoreline over a series of days. Once again, the youth at St'a7mes School welcomed the herring back to the sound. This time, they planted hemlock boughs right out along the waterfront of St'a7mes Village. After three weeks we started to doubt harriet and her family of herring would return but to our delight they turned up and covered the shoreline in shimmering eggs all along the village waterfront and up towards the St'a7mes creek. Oh how it was a wonderful treat to eat with baked bread, butter and some dungeness crab!

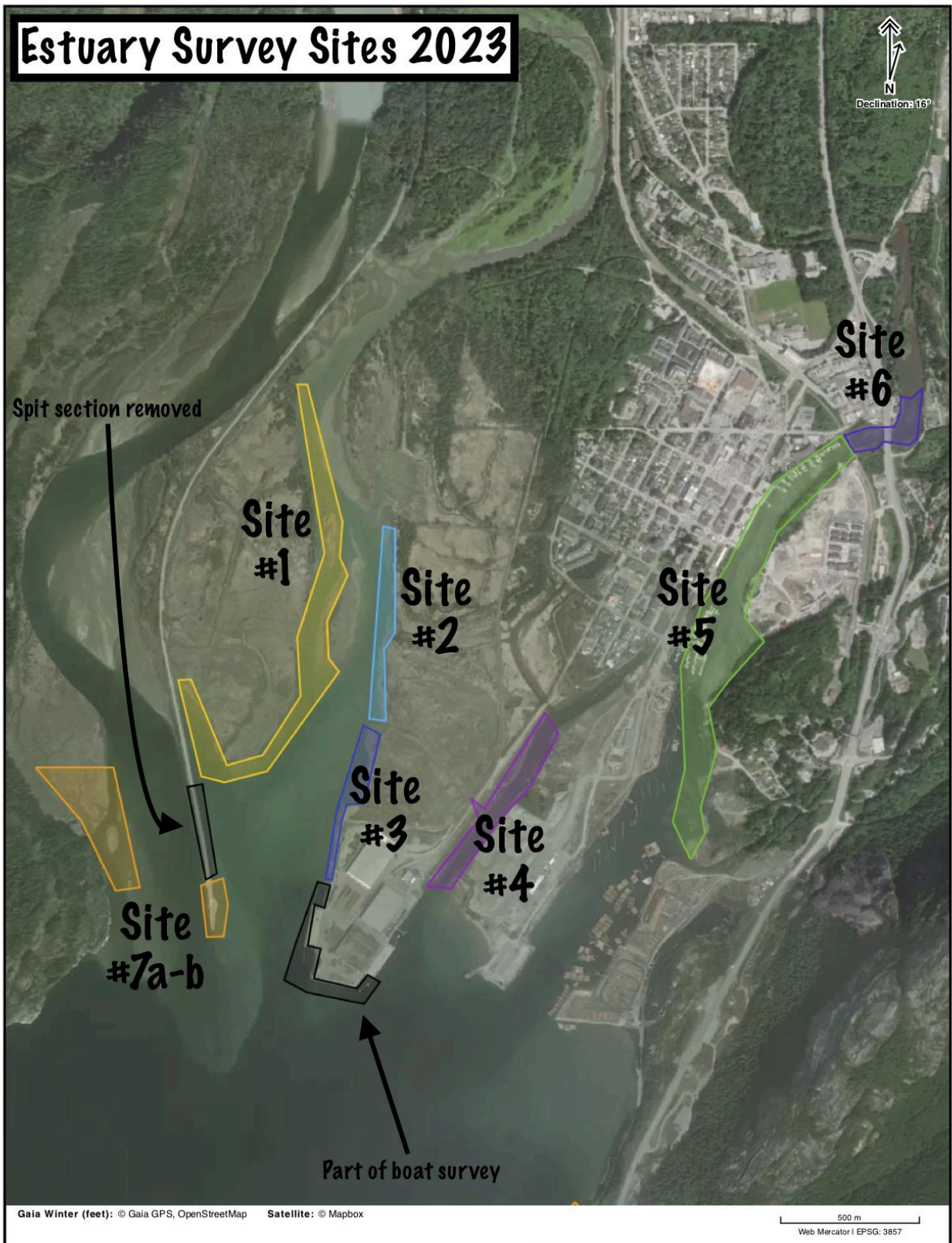
2023

This year we had a driven group of volunteers. We surveyed consistently in the estuary and as a boat crew. We document the usual early spawn in Catermole Slough as well as spawns throughout the estuary. Unfortunately a spawn took place in the blind channel all over the yacht club and harbor authority docks on creosote pilings. All the eggs died. In spite of this herring also spawned along a 5.5km shoreline starting just south of Woodfibre Creek and continuing south to near Zorro Bay. The St'a7mes school family hosted a large Herring Celebration at Totem hall where we honored and blanketed John Buchanan for his work in Skwxw7mesh territory as he speaks up for the non-human world. At the celebration we built hemlock racks as a community with the help of many Squamish Nation departments, the Squamish Community and the Capilano Little ones school. Huy Chexw a to all who came and lent a hand.

Herring Spawn documented in the Squamish Estuary 2021-2023



Survey Region: S̄kw̄x̄w̄ú7mesh Territory



Survey Area	Survey Method
#1 Skwelwil'em Central Estuary	Canoe
#2 Estuary Trail	Foot
#3 Terminals West Side	Foot
#4 Cattermole Slough West Side	Foot
#4.5 Cattermole East Side	Foot - Restricted Access
#5 Mamquam Blind Channel	Canoe both sides
#6 Upper Mamquam Blind Channel	Canoe/paddle board
#7a) and b) West Estuary <i>*only visited when weather and river flow safely permits.</i>	Canoe/paddle board

The MSI has two structured survey programs to collect herring spawn data:

1. Land based estuary surveys (around the Squamish Estuary)
2. Boat/ocean based snorkel surveys

For the purpose of this document, we will only discuss the land based estuary surveys.

Should you want to learn more about the other components of this program, please visit www.howesoundguide.ca/search-for-slhawt-herring or reach out to MSI staff directly with questions.

You will receive your site assignment and site-specific training date via email from Matthew.

Volunteer Survey Protocol

Timeline:

February 15, 2024 to April 30, 2024

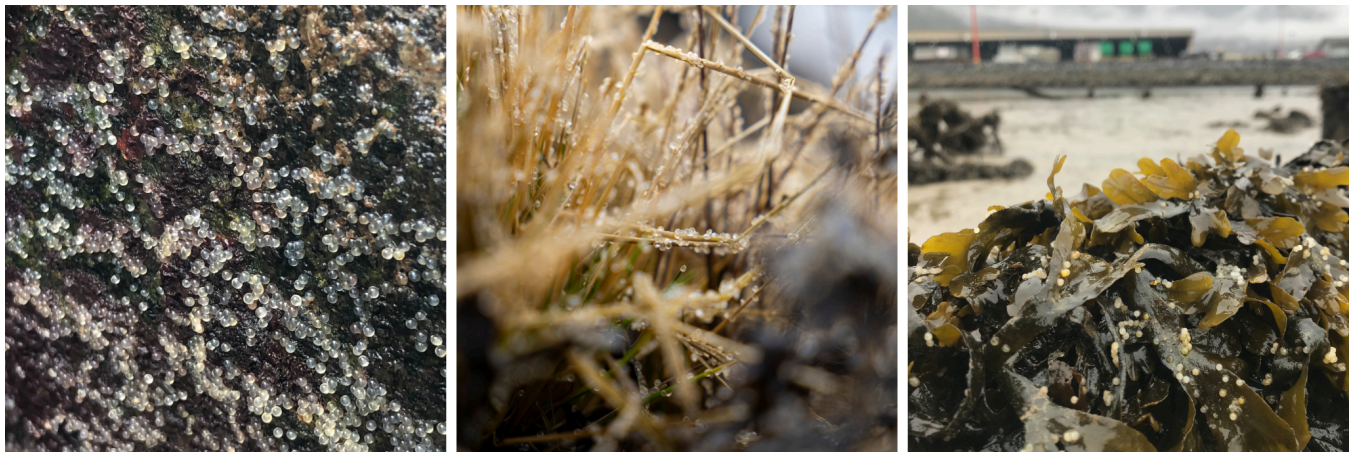
Schedule & Methods:

Volunteer survey teams will survey their assigned site at least once a week throughout this timeline. Survey groups can split into two to provide for one survey per week. We ask that you survey in minimum a group of 2 for safety reasons.

Estuary Surveys are done by walking or canoeing shoreline at a mid to low tide. You can look at the tide charts online here:

<https://www.tide-forecast.com/locations/Squamish-British-Columbia/tides/latest>

During your site-specific training with Matthew or Ellika, you will learn when spawning substrate is most easily accessed for your site. Herring usually like to spawn on grasses, rock, rock weed, or other aquatic vegetation.



Examples of herring spawn.

Please ensure you **also read the safely and habitat protection protocols** in the section below.

Data Entry:

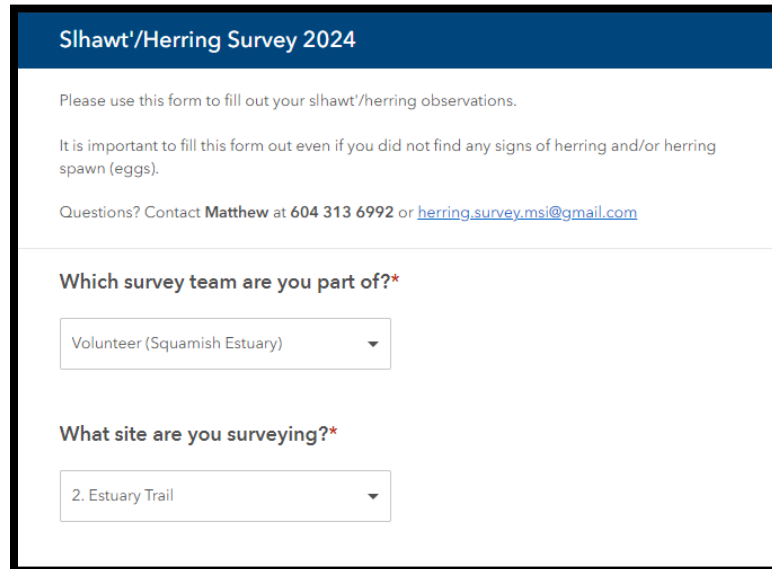
The [Survey Form](#) is completed every time a volunteer visits a site.

Access the form via the link (<https://arcg.is/0K4HHP>) or by scanning the QR code.



Reporting Findings:

Complete the [Survey Form](#) online **after every survey**, whether spawn is found or not. Select your survey team as 'Volunteer (Squamish Estuary)', select your site, and then fill in your details accordingly.



The image shows a screenshot of a web form titled "Slhawl'/Herring Survey 2024". The form has a blue header with the title. Below the header, there is a white background with a thin border. The text inside the form reads: "Please use this form to fill out your slhawl'/herring observations." followed by "It is important to fill this form out even if you did not find any signs of herring and/or herring spawn (eggs)." and "Questions? Contact Matthew at 604 313 6992 or herring_survey.msi@gmail.com". Below this text, there are two dropdown menus. The first is labeled "Which survey team are you part of?*" and has "Volunteer (Squamish Estuary)" selected. The second is labeled "What site are you surveying?*" and has "2. Estuary Trail" selected.

If you find herring spawn, we very much appreciate you taking photos (you can upload them to the survey form, or email/text them to us).

If you find spawn in multiple locations, please submit multiple survey forms (so that you can enter the location on a second map).

If you are unsure about the data entry process please let Matthew or Ellika know.

Scientific license:

The MSI holds a scientific license from the Department of Fisheries and Oceans Canada for this program. You can access a copy here:

<https://howesoundguide.ca/wp-content/uploads/2024/02/XR-15-2024-Marine-Stewardship-Initiative-Herring-1.pdf>

If you are questioned about what you are doing and authority to be surveying, please kindly let people know that you are conducting herring surveys on behalf of the Marine Stewardship Initiative, under a scientific license. You are welcome to show them a copy (you can save it to your mobile device for easy reference).

Survey Safety Guidelines

- Survey must be done in pairs of two at a minimum
- Wear appropriate clothing for the weather and terrain
 - Rain gear
 - Rain boots or hiking boots
 - Warm jackets and pants
 - Waders
- If you are on or near water please wear a lifejacket
- Use a check in or safety person if you are going somewhere unfamiliar or new
 - Let them know when you are in the field and when you will return
 - Tell them where you are going
 - Establish what to do if you do not return and are not reachable (911 - SAR)
 - Please notify Matthew or Ellika if an emergency situation arises.
- Wear a high visibility vest when surveying
- PLEASE kindly educate people when they ask what you are doing. Point them to look at the MRG website to learn about the Search for Sihawt' project. If they have questions or concerns please provide Matthews email. Not phone number.
- Impacts on the land
 - Be mindful where you step. Try and avoid creating new trails or drawing attention to routes you might use to access parts of the estuary. (Don't clear new trails).
 - Don't bring dogs when survey (on leash included). We are often in areas that there are not trails and birds may be nesting. Lets lessen out impact and leave our furry friends home.
- Wildlife / animal interactions
 - Stay aware when conducting surveys. Keep an eye out for wildlife or off-leash dogs, and minimize disturbances to animals whenever possible.
 - Leave the survey site if you feel unsafe in any way.

Walking in a good way

When doing this work we are on the territory of the Squamish Nation. From Whistler in the north to Vancouver in the South and from Gibsons in the west to the Pitt River in the East this is their territory. We do this work because we know that we have a responsibility and obligation to take care of the world we are a part of.

Please conduct yourself with respect and honor the work you are doing. This project is a partnership with the Squamish River Watershed Society, The Squamish Stream Keepers, and many others. The MSI is grounded in guidance from local knowledge holders including Elder Bob Baker, several Skwxwú7mesh families and elders, John Buchannan, and many others from the Salish Sea community, human and non-human.

Contact Information

Please reach out to us with any questions or concerns. We welcome your feedback!

MSI Search for Shakti/Herring Program Coordinator

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MSI Project Director

Ellika Cairns

604 880 5490

marinestewardshipinitiative@gmail.com

In case of emergency while surveying, call 911