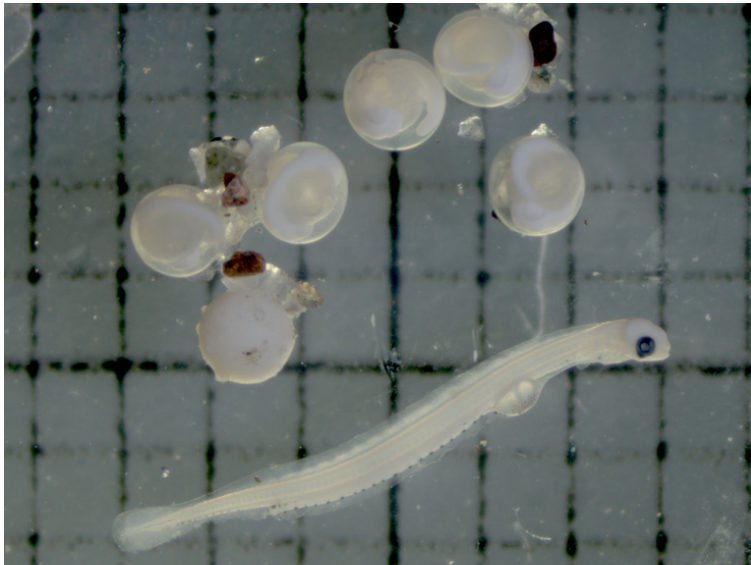




## WELCOME TO 'THE SCHOOLER' - ISSUE #4 YOUR BEACH PROGRAM COMMUNITY SCIENCE NEWSLETTER FROM PENINSULA STREAMS SOCIETY

Our community scientists have been doing some eggcellent work! Dive into this newsletter to get the inside scoop on our BEACH program.

If you'd like to submit a photo, data gathered while out in the field, tips and tricks, or a story, please email [austin.nolan@peninsulastreams.ca](mailto:austin.nolan@peninsulastreams.ca) to be featured in our next issue!



Surf Smelt eggs found at North Saanich Yacht Club March 2023

### DID YOU KNOW?

- A major threat to forage fish spawning habitat is hard armoring. This includes rip-rap and seawalls which are commonly used to protect ocean-side property. Armoring impedes natural sediment recruitment on the beach, which results in the finer spawning-suitable sediments being lost from the beach.
- 30-50% of adult Chinook salmon's summer diet is made up of Pacific sand lance. With both Chinook salmon and Southern Resident orcas (whose primary food source is Chinook salmon) in decline, having healthy populations of sand lance and other forage fish helps to ensure the overall health of the marine environment.



Surf smelt eggs collected from North Saanich Yacht Club, December 2021.

### INCREDIBLE WORK FROM OUR DEDICATED COMMUNITY SCIENTISTS!

Through the dedication of our forage fish egg surveying teams, we have been able to contribute large amounts of important data to the forage fish monitoring network!

This past season, from April 1st, 2022 to March 31st, 2023, our volunteers collected 189 samples, with **54** samples having eggs present!

You are all so incredible and we appreciate your dedication and hard work. Without your integral contributions, this project would not have the results it does! Thank you!

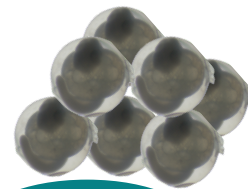
### From June 2018 to June 2023:



900+ samples have been taken



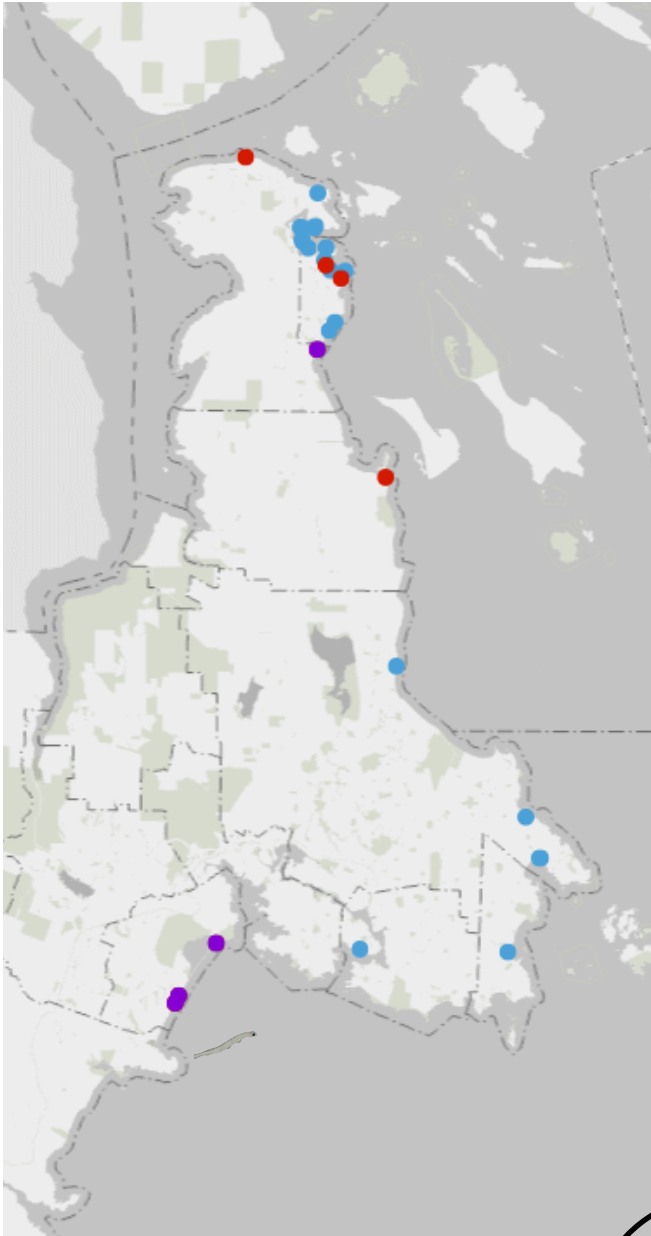
188 samples with eggs





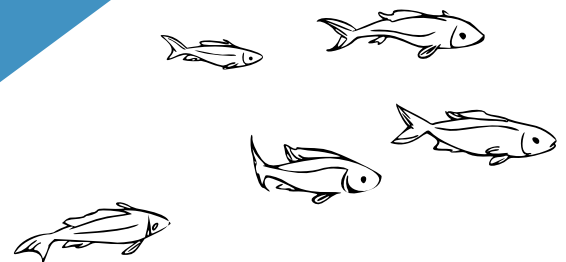
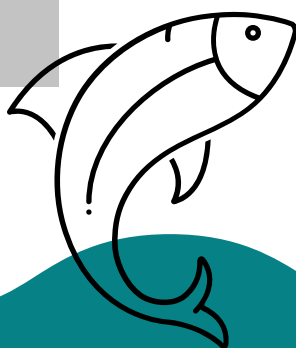
## POSITIVE DETECTIONS

These maps indicate where forage fish eggs have been found within the past season (April 2022-March 2023). Blue dots represent beaches where surf smelt were found, red dots represent beaches where sand lance were found and purple represents beaches where both were found.



### NEW BEACHES IDENTIFIED AS FF HABITAT

- CADBORO BAY ST. 5 & 6
- FINNERTY COVE ST. 1
- PAT BAY ST. 6
- ROYAL BEACH ST. 1&4
- TSAWOUT ST. 1
- SEABREEZE ST 1
- ESQUIMALT LAGOON ST. 4
- SAND PEBBLE BEACH ST. 1
- VICTORIA INTL MARINA ST. 1





## ABOUT FORAGE FISH AND THE FOOD WEB

Forage fish, such as Pacific sand lance and surf smelt, are small schooling fish that play an integral role in marine food webs, directly and indirectly feeding a diverse selection of birds, fish (including Chinook salmon), and whales. Their role as food, or 'forage' for other animals, underpins the Salish Sea's health, providing a link between lower and higher trophic levels.

Surf smelt grow to be 20-25cm long and spawn year-round on gravel and sand beaches near the high tide line. These fish depend on shading from overhanging vegetation to protect their eggs from the summer sun.

Pacific sand lance are up to 20cm long and spawn on sandy intertidal beaches. They are one of Chinook salmon's primary food sources.



Image from: Sea Doc Society April 8th, 2014. Photograph by David Ayers. sand lance (top) and surf smelt (bottom).

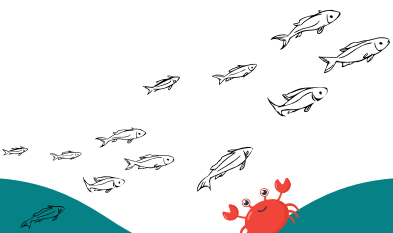
These little fish face threats from a variety of sources, most notably from fisheries and the destruction of spawning habitats through shoreline modification. This includes armoring (i.e. seawalls, rip rap), dredging, vegetation removal, and pollution from storm water outflow. These modifications result in alterations of the supply and movement of beach sediments, reduced shading of beach area, and increased pollution, therefore making the beaches unsuitable for surf smelt and sand lance.

## WHAT CAN YOU DO TO HELP?

In order to better protect these important fish, we first need to collect information on their movements, where they are spawning, how our actions may be impacting them over time, and what changes occur in marine food webs as forage fish continue to face threats to their habitats.

By participating in community science surveying local beaches, you are already providing an invaluable source of information that can lead to better beach management or restoration plans. The DFO currently has a lack of forage fish knowledge in comparison to the United States. For example, in 2016, WWF-Canada released a report, *Food for all*, which warned that 3/4 of the forage fish stock is unknown. This results in decisions being made within fisheries on how many fish can be caught without knowing how many fish there are. Therefore, the work you are doing as a volunteer in the field, collecting data, is extremely important, and remains the biggest contributor in helping protect these fish.

**Interested in becoming a community scientist?**  
**Please email:**  
**[austin.nolan@peninsulastreams.ca](mailto:austin.nolan@peninsulastreams.ca)**







## EUROPEAN GREEN CRAB MONITORING

### European Green Crab

*Carcinus maenas*

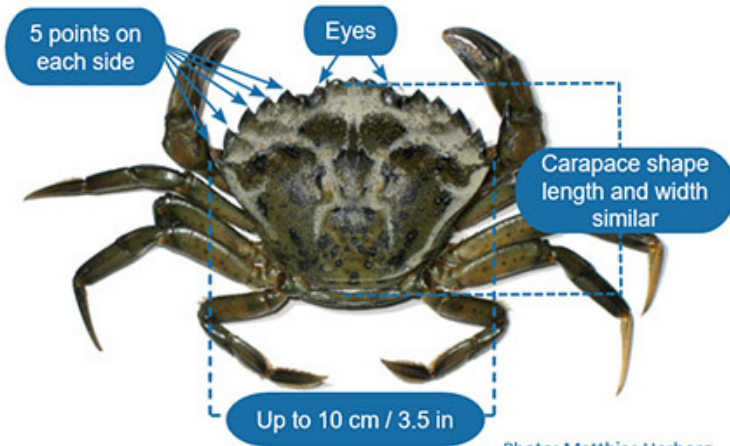


Photo: Matthias Herborg

Photo retrieved from: [https://www.adfg.alaska.gov/index.cfm?adfg=invasiveprofiles.europeangreencrab\\_characteristics](https://www.adfg.alaska.gov/index.cfm?adfg=invasiveprofiles.europeangreencrab_characteristics)

Peninsula Streams is expanding the BEACH program and is starting early detection monitoring for the invasive European green crab. The European green crab (EGC) impacts native ecosystems by outcompeting native crab species for food, excavating eel grass beds while looking for invertebrates, and feeding on native animals including clams, oysters, mussels, other crabs, and small fish. EGC's impact on eel grass beds is of particular concern due to their importance for our juvenile salmon species.



CRS staff, PSS staff, and volunteers set traps in Esquimalt Lagoon for EGC monitoring

EGC can be identified by the presence of 5 sharp spines on the side of each eye. Despite their name, EGC can be yellow, green, or red. Early detection monitoring involves wading into the surf at low tide and setting 6 traps in a line. The traps are left for 24 hours before returning to identify all species (native and non-native) caught within the traps. Native species are identified and released ASAP while EGC are not returned to the water.



**WE ARE LOOKING FOR VOLUNTEERS TO ASSIST WITH EGC MONITORING. IF INTERESTED PLEASE EMAIL:**

**[austin.nolan@peninsulastreams.ca](mailto:austin.nolan@peninsulastreams.ca)**







## PROJECT UPDATE: SALT MARSH RESTORATION AT MERMAID CREEK AND HOSPITAL CREEK ESTUARIES

Last year as a first step towards restoring salt marsh habitats PSS staff, volunteers, and partners constructed ecocultural fencing at Mermaid Creek Estuary and Hospital Creek Estuary. This year, Lyngby's sedge was planted along the banks of each site. The sedge, which is protected by fencing and biodegradable erosion socks, will collect sediments from the water column and actively rebuild marsh banks over time as it grows. At Mermaid Creek, large amounts of invasive English Ivy and Himalayan Blackberry were also removed from the upper marsh area and replanted with clovers and native salt-tolerant grasses.



Volunteers hard at work planting the Mermaid Creek Site



PSS staff Hannah standing next to removed invasive plants

## British Columbia Forage Fish Monitoring Network

The British Columbia Forage Fish Monitoring Network (BCFFMN) co-founded by Peninsula Steams is a network of organizations that work collaboratively towards identifying and monitoring forage fish spawning habitat, which plays a key role in the conservation of these species. The network's vision statement is "thriving stable forage fish populations that can sustain the predators that rely upon them and contribute to a healthy marine food web within the coastal waters of BC". The network is continually growing and includes multiple groups encompassing hundreds of community scientists.

Did you know Salt Marshes provided these ecosystem services?

- Blue Carbon Sequestration
- Wave energy buffering/shoreline protection
- Water filtration
- Productive habitat for fish and wildlife







**Environmental DNA monitoring**

Environmental DNA monitoring (eDNA) is an incredibly useful tool for determining species found in the area, especially small and/or cryptic species. Peninsula Streams' community scientists are currently collecting monthly eDNA samples from 4 sites in Greater Victoria. These 4 sites are located in Portage Inlet Linear Park, Victoria International Marina, Billings Spit in Sooke, and Ten Mile Point in Oak Bay. Findings from this monitoring is uploaded and can be found at <https://ico.hakai.org/>



Volunteers Reg and Karl performing eDNA sampling

**Earth Day Beach Clean**

To celebrate this years Earth Day, PSS hosted a beach clean event focused on multiple beaches in Sidney and North Saanich. Together 40 volunteers cleaned roughly 5km of beaches with 15 bags of garbage removed!



**PROJECT UPDATE: VICTORIA INNER HARBOUR SONGHEES WALKWAY BEACH**

Peninsula Streams is working with the City of Victoria, Songhees Nation, Esquimalt Nation, Pacific Salmon Foundation (funders), and the BC Stewardship Center to restore a culturally significant pocket beach along the Songhees Walkway. Last year, hard armoring was removed and replaced with about 400 tons of forage fish-friendly sand and gravel. This year we focused on the backshore, excavating non-native rock armoring and replacing it with alluvial fish friendly material. Native species will also be planted to help stabilize the backshore.



Songhees Walkway Beach before



Songhees Walkway Beach after





### BCFFMN SPRING SYMPOSIUM

The BCFFMN held a spring symposium: "Future Directions for Forage Fish Monitoring: Getting the Most from Community Science Data" on April 26th. This symposium featured presentations from 3 scientists discussing recent forage fish research, and presentations from members of the BCFFMN on their conservation/monitoring networks. Jacques Sirois was the lucky door prize winner which included an awesome backpack supplied by Arc'teryx. Thanks Arc'teryx for your contribution!

If you missed it the symposium can be watched here:  
<https://youtu.be/68h3F6OAmI8>

**Check out these links for further information:**

#### Strait of Georgia Data Centre

<https://soggy2.zoology.ubc.ca/geonetwork/srv/eng/catalog.search#/metadata/904a8e86-7992-424a-9b68-40906852f4e9>

#### MABRRI Research Projects

<https://mabrri.viu.ca/mabr-projects>

#### Forage Fish Spawning Map (Washington State)

[shorturl.at/exyJQ](http://shorturl.at/exyJQ)

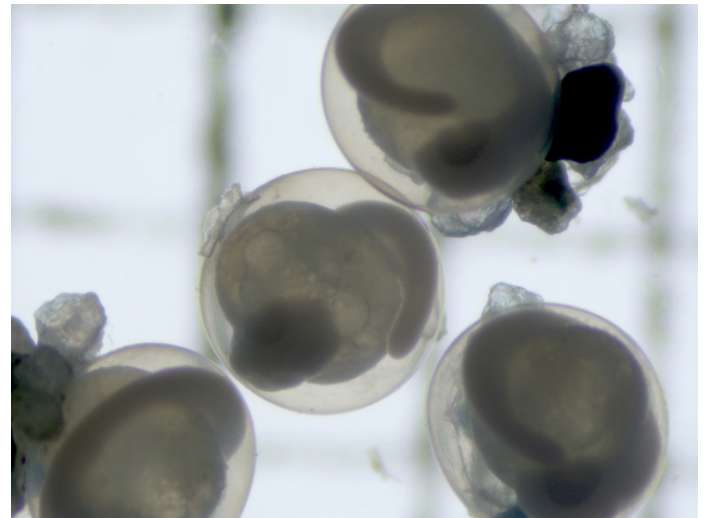
#### WWF Forage Fish

<https://wwf.ca/habitat/oceans/forage-fish/>

### TAKE ACTION

Not currently a forage fish community scientist? If you or anyone you know is interested in contributing to community science and assisting PSS with its work, contact Austin Nolan at:

**[austin.nolan@peninsulastreams.ca](mailto:austin.nolan@peninsulastreams.ca)**



Surf Smelt eggs found within Tsehum Harbor 2023

### FUNDING AND PARTNERS



TD Friends of the Environment Foundation



VICTORIA FOUNDATION





# THANK YOU TO OUR VOLUNTEER GROUPS!

# Thank you

from all of us at

Streams  
&  
Peninsula Shorelines  
Since 2002



Photo: Katia Bannister, UVic ERC. December 2021

