




**PACIFIC
SALMON**
FOUNDATION



CITIZEN SCIENCE PROGRAM NEWSLETTER

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Top cover photo by Eiko Jones

PACIFIC SALMON FOUNDATION CITIZEN SCIENCE IN THE SPOTLIGHT

The Citizen Science program is gaining more and more recognition. As word begins to spread more broadly through researchers, academic institutions and the general public about the PSF Citizen Science Oceanographic program, we are getting increasing numbers of requests and inquiries from those looking to learn more. Momentum is gaining and the data are definitely generating quite a buzz — and so they should!

Some examples of how the Citizen Science data are being recognized more broadly, include:

- ▶ The Citizen Science Program and the Community Fishers App were Featured in Ocean Networks Canada weekly news stories on July 20, 2021.
 - www.oceannetworks.ca/community-fishers-enabling-citizen-scientists-collect-their-own-ocean-data
- ▶ Biotoxin results collected by the Citizen Scientists will be presented in a poster at the 104th Chemical Institute of Canada Canadian Chemistry Conference and Exhibition.
 - This year, the annual conference was combined with the World Chemistry Conference, which provided a unique opportunity to showcase this work at a global level.
- ▶ A paper submission utilizing phytoplankton results collected by the Citizen Scientists and analyzed by Svetlana Esenkulova to *Frontiers in Marine Science*, a peer-reviewed open-access research journal.
- ▶ The public launch of the Atlas of Oceanographic Conditions in the Strait of Georgia via the Strait of Georgia Data Centre. This is an interactive, open access, publicly available web-based atlas that is based on the Citizen Science dataset.
 - The Atlas is updated annually and uses the most recent data to characterize conditions in the Strait of Georgia.
 - www.sogdatacentre.ca/atlas/
- ▶ Contribution to the Annual State of the Pacific Ocean meeting and associated technical report, Harmful algal blooms and oceanographic conditions in the Strait of Georgia.
 - The State of the Pacific Ocean meeting has been held by annually by DFO since 1999 to bring together the marine science community in the Pacific Region and present the results of the most recent year's monitoring in the context of previous observations and expected future conditions.
 - www.publications.gc.ca/collections/collection_2021/mpo-dfo/Fs97-6-3434-eng.pdf

“Frontiers in Marine Science publishes rigorously peer-reviewed research that advances our understanding of all aspects of the environment, biology, ecosystem functioning and human interactions with the oceans. This multidisciplinary open-access journal is at the forefront of disseminating and communicating scientific knowledge and impactful discoveries to researchers, academics, policy makers and the public worldwide.”

Source: www.frontiersin.org/journals/marine-science#about



FEATURED CITIZEN SCIENTISTS — GAIL AND TED NEWELL, STEVESTON

Ted Newell, a born and raised Vancouverite, has been volunteering with the PSF Citizen Science Oceanographic Program since 2016. He had just retired from a 50-year career as Professional Engineer and wanted to volunteer for something he cared about. He attended a PSF poster presentation in Richmond and was set-up as a deckhand with Billy MacMillan who was volunteering on the Steveston Patrol. Ted and Billy ran the Steveston patrol until 2019, when Billy sold his boat and Ted recruited his wife, Gail to carry on the sampling.

Ted's first work out of university was for the Engine Division at Caterpillar Tractor Co. in Peoria, Illinois. From there he worked at various jobs on his way back to Vancouver. In the late 1970's the family lived in Nanaimo and Ted ran a fabrication shop in Parksville that built boats, including steel boom boats from 8 ft to 24 ft and steel hulled fish boats from 40 ft to 72 ft. One memorable boat he helped build was the 54 ft steel hulled drum seiner, the "Cormorant Isle" that worked out of Alert Bay. Twenty years later Ted and Gail saw the "Cormorant Isle" in Alert Bay when they traveled up the coast in their own 24 ft power boat "Merganser". In the mid-1980's Ted returned to engineering. For the final 30 years before retirement, he ran his own engineering company that designed temporary works for construction companies throughout BC and down the U.S. coast. Under Ted's ownership, the company consulted on more than 150 high-rise buildings in the lower mainland. In 2015, with retirement in mind, Ted sold the firm to 3 employees and it is still active today.

The following year, Ted spent every Sunday (for the entire year) building a Glen L plywood runabout with his Grandson.

It's very obvious that Ted enjoys being out on the water and keeping busy! He has a passion for the natural world and in particular the oceans. He's seen the decline in salmon and the changes to the environment over time. He said it feels good to be a part of the Citizen Science program — to be doing something to help bring salmon back.

When Ted isn't volunteering as a citizen scientist, he likes to spend his spare time doing photography, woodworking, building boats and playing Bluegrass Banjo and maintaining the family cabin and docks in Johnson Bay, Indian Arm.



Ted Newell, captain of the Steveston Patrol driving his vessel, the Merganser, while completing sampling for PSF's Citizen Science Oceanography program in July 2021.

“Slow down. Enjoy the ride.”

Life advice from Ted.



Gail Newell, of the Steveston Patrol recording data on field data sheets, while completing sampling for PSF's Citizen Science Oceanography program in July 2021.

“Be honest and honour commitments — live within your means — take advantage of each opportunity and never stop learning.”

Life advice from Gail.

Spoken like a true lifelong learner!

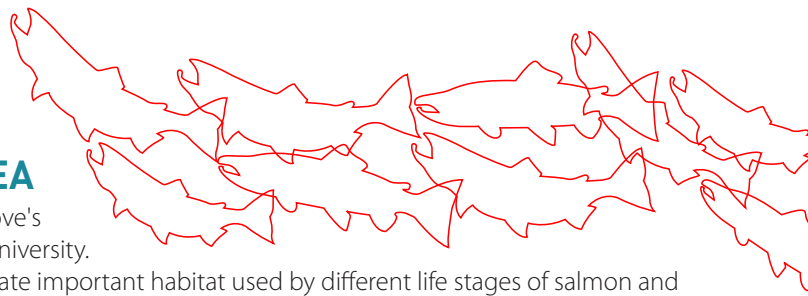
Gail Newell, a more recent recruit to the PSF Citizen Science program (although we get the sense that she was always supporting the program from behind the scenes ever since Ted got involved back in 2016), shares her husband's passion and connection with the water. In fact, it seems to run in the family. Gail's grandfather, great-grandfather and great-great-grandfather were all skippers on the Fraser River tugs. Her grandmother ran a small troller in her youth and Gail would go fishing with her grandparents in an old lifeboat that her family had in Pender Harbour. Ted and Gail's daughter worked as a deckhand on Ted's cousin's Troller out of Winter Harbour for three summers.

The couple has always owned boats of one sort or another — (half built by Ted) canoes, kayaks, a rowboat, a small sailboat and, later, when they could, a powerboat. They have both acquired Power Squadron and Canadian Yachting Association certifications.

Ted and Gail met in 1963 while working for Burnaby Parks and Recreation. Gail worked part time as a lifeguard, swimming instructor and small craft safety instructor for 27 years. After that, she attended BCIT and earned a certificate in Health care Management. She used her training to organize classes for surgical students at UBC for 15 years. A lifelong learner, she completed her Bachelor of Arts degree the year she retired. Post-retirement, she also earned her private pilot's licence and flew for 10 years.

In addition to their other hobbies, the couple are also avid travellers. In 1987 Gail and Ted traveled to Nepal and hiked to Everest base camp. In 2015 they cruised on a Russian owned scientific vessel to the Falkland Islands, South Georgia Island and the Antarctic Peninsula. They were amazed at the abundance of life on land and in the sea in the absence of human presence. In 2017 the couple saw the total solar eclipse in Madras Oregon with at least 125,000 other observers. In 2018 they went to Churchill Manitoba to see polar bears.

When asked what the most significant change the couple has seen in their lifetime, they both shared a similar response — Population growth and the resulting effects on the natural world.



SAVING KELP FORESTS IN THE SALISH SEA

The Pacific Salmon Foundation is collaborating with Dr Sherryl Bisgrove's team, including Dr Liam Coleman and Silven Read, at Simon Fraser University. The team is focusing on kelp forests in the Salish Sea. Kelp forests create important habitat used by different life stages of salmon and other species. Unfortunately, kelp have experienced significant declines in recent years, with about 80% of historic populations already lost. This collaboration is exploring innovative ways to try to restore kelp populations.



Photo by Tatiana Challand

Postdoctoral researcher Liam Coleman and co-op student Jasmine Ibasco admire a bull kelp blade found at Stanley Park in Vancouver, BC

SFU is hoping to collect more bull kelp fronds to continue this promising research. If you are interested in collecting samples or would like to contact the research team, please email Dr Liam Coleman at liam_coleman@sfu.ca.

Here is a link to an article that provides more detail on the projects: www.eopugetsound.org/magazine/IS/seed-bank-sea

Stay tuned for updates on the main PSF website, www.psf.ca. Future projects may include eelgrass beds as another valuable habitat.

Two of the main components of this research are:

1. biobanking
2. thermal tolerance

Biobanking is long-term storage of seeds or other organic material that can be used later for many purposes, such as restoring populations or contributing to ongoing research. It serves some of the same purposes as doomsday seed banks, which you may have read about. Thermal tolerance studies inform us on how kelp react to rising ocean temperatures, as this may damage kelp's ability to thrive; and help identify thermotolerant species or strains that may be more effective for restoration in a changing and warming climate.

In 2020, PSF citizen scientists collected bull kelp (*Nereocystis luetkeana*) fronds from two different populations, and the researchers started testing how to process kelp spores for biobanking. The kelp collected by citizen scientists was crucial to the program and researchers at SFU have expressed their immense gratitude for their efforts.

PHYTOPLANKTON NEWS

There was a bloom of dinoflagellate *Heterocapsa triquetra* at the end of June in Bute Inlet, Canada. While this species causes thick and colourful blooms, it is not considered directly harmful to fish since it does not produce toxins¹.

www.facebook.com/CitizenSciencePhytoplankton

1. note: blooms of any species can cause low dissolved oxygen

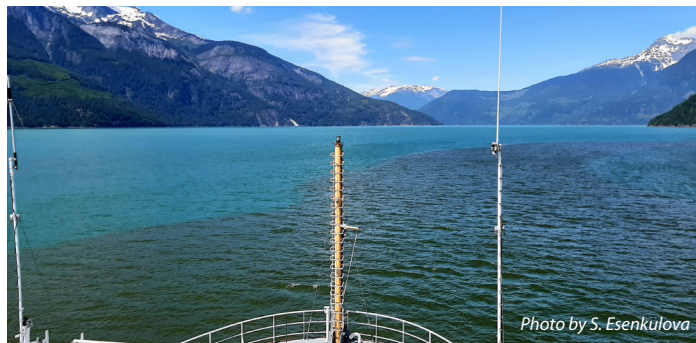


Photo by S. Esenkulova

A bloom of *Heterocapsa triquetra* observed at the end of June 2021, in Bute Inlet.



Photo by Nicole Frederickson

PRELIMINARY BIOTOXIN RESULTS

Analysis of biotoxin data collected by the Citizen Scientists shows that multiple biotoxins are present in BC coastal waters and that concentrations tend to be related to overall phytoplankton biomass (i.e., chlorophyll) as well as the presence of harmful algal species that produce these toxins.

A photo of a membrane filter following the filtering process for biotoxins. The sample was collected from Baynes Sound on April 5, 2021.

Upcoming Sample Dates

Below is a schedule of the upcoming sample dates for August through September. Starting in October we will be reducing sampling from twice a month to once every two months.

August	September	Winter
Sunday Aug. 8, 2021	Thursday Sept. 17, 2021	Wed. Oct. 20, 2021
Monday Aug. 30, 2021	Thursday Sept. 24, 2021	Friday Dec. 10, 2021



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