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Apr 26th, 4:00 PM - 4:30 PM

Components of the Strait of Georgia Data Centre

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Pacific Salmon Foundation

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Presented to:
Salish Sea Ecosystem Conference

Components of the Strait of Georgia Data Centre

<https://sogdatacentre.ca/>

Ben Skinner
Pacific Salmon Foundation

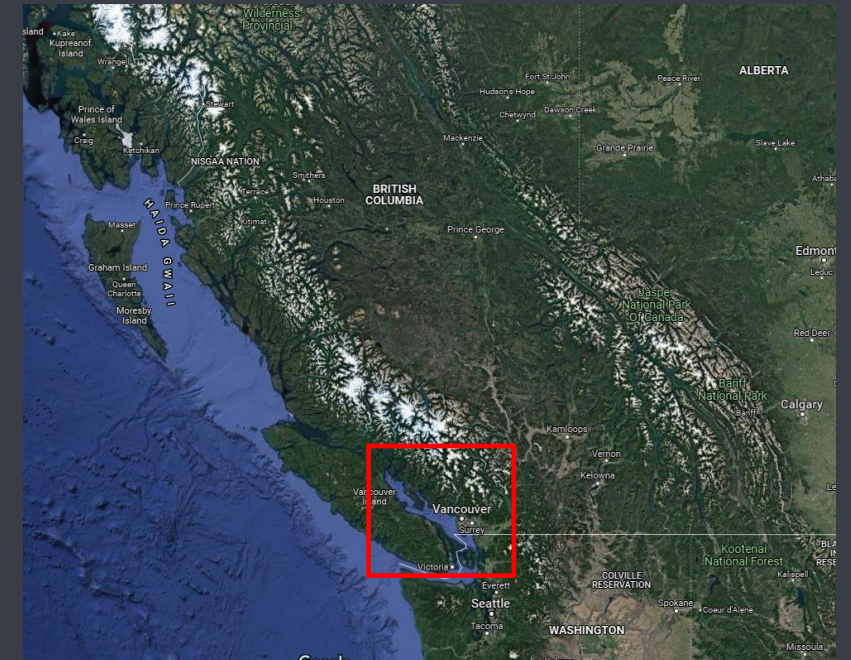


THE STRAIT OF GEORGIA DATA CENTRE

What Is the Strait of Georgia Data Centre?

The Strait of Georgia Data Centre (SGDC) is a collaborative program between the Pacific Salmon Foundation (PSF) and the Institute for the Oceans and Fisheries, UBC, to build a secure data archive for marine ecosystem information on the Strait of Georgia.

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Why Share Data (& Information)?

- Leads to increased personal visibility, recognition, and increased numbers of citations.
- Encourages collaboration among researchers to share resources, acquire more data, and produce new findings.
- Will assist in the development integrated scientific programs, interdisciplinary studies, modelling and ecosystem management.
- It reduces the risk of repeating work already done, and instead allows for researchers to build upon the work of others. This saves a lot of time and money.
- It allows for informed decision making leading to better environmental planning and policy.



Objectives of the Data Centre

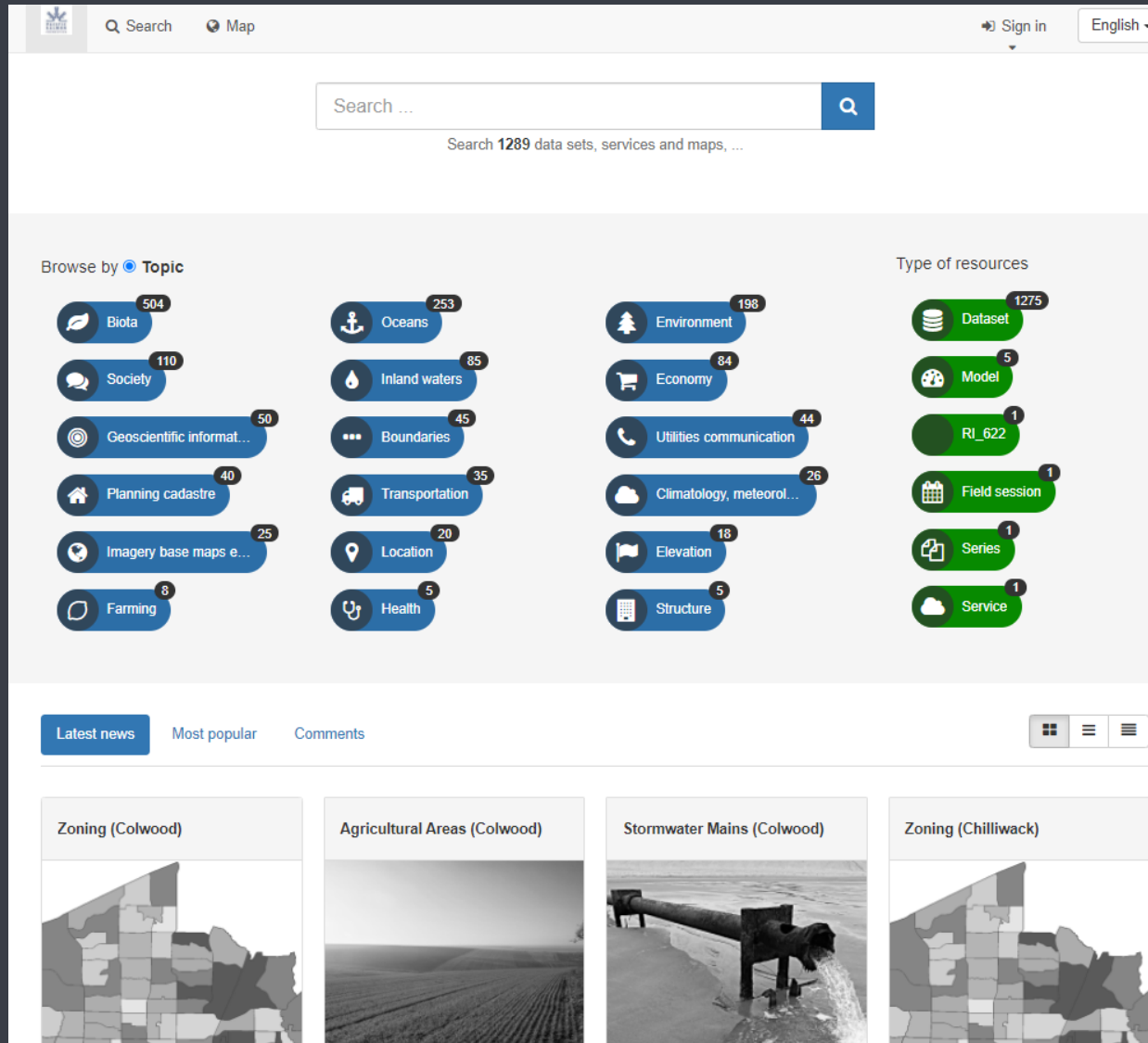
- ✓ To identify and obtain information resources relevant to the Strait of Georgia
- ✓ To create a secure archive for the data (bibliographic, data systems, and data files)
- ✓ To create a web-based, open access data system that makes the archived documents and data accessible
- ✓ To provide a map-based display that allows for spatial query of the data system
- ✓ To provide a search capability within the database to allow for a semantic search



Data Centre Components

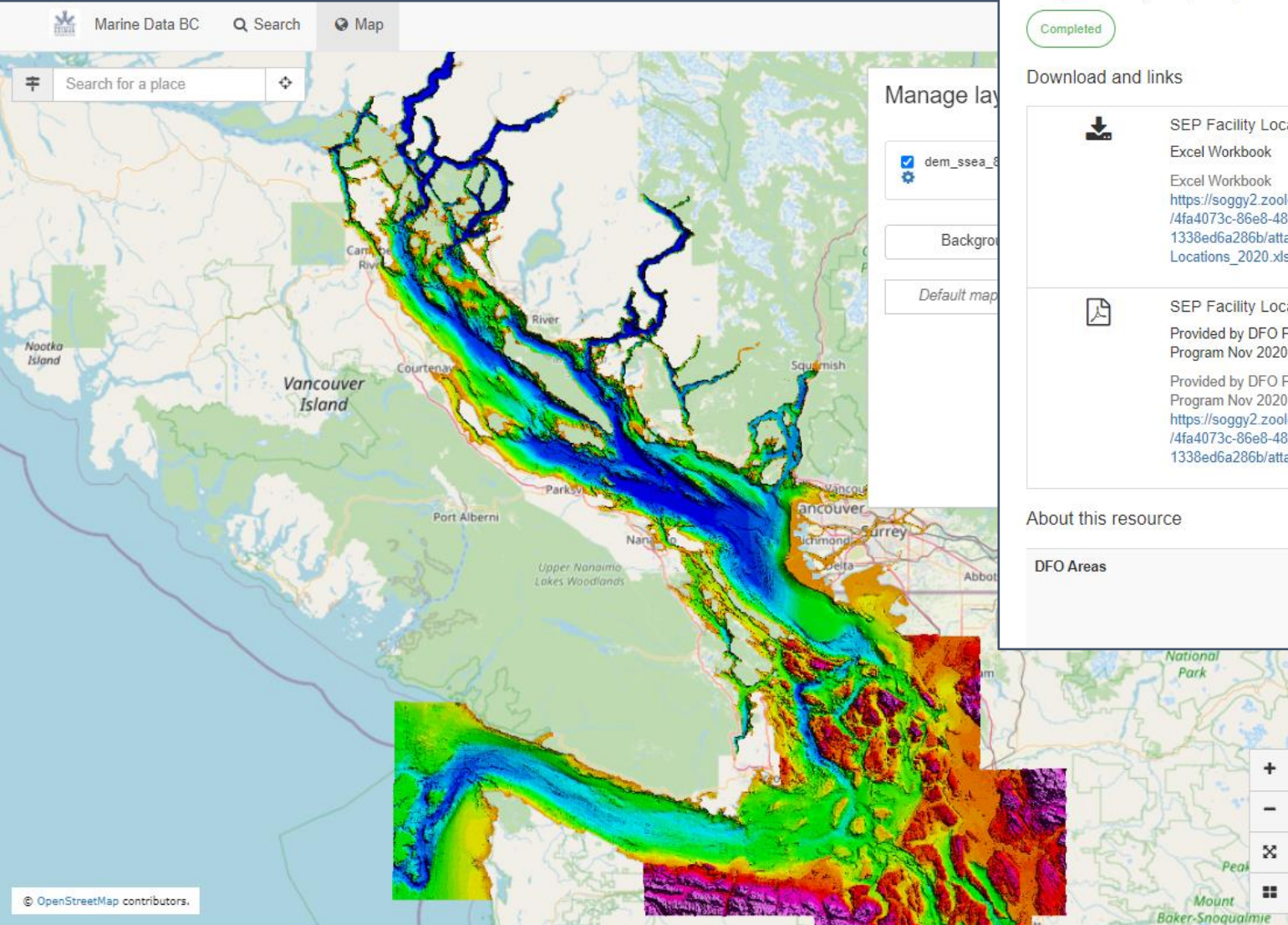
- ❑ Marine Data BC Portal (metadata, data, and make-your-own maps)
- ❑ OGC Standard Spatial Data Layers (e.g. WCS, WFS, WMS)
- ❑ SGDC Map Catalogue (pre-configured static, interactive, and story maps)
- ❑ List of Salish Sea Researchers
- ❑ List of Publications
- ❑ Educational Webpages (e.g. on aquatic invasive species)
- ❑ Atlas of Oceanographic Conditions in the Strait of Georgia

Marine Data BC Portal



- ~1500 datasets referenced within the portal.
- Either direct data downloads or link to source portal where the data can be accessed.
- Spatial and non-spatial data available, useful for 'mappers' and 'modellers', respectively.
- Operated using GeoNetwork opensource technology.
- Provides a map tab in which you can load datasets for a visual representation.

Marine Data BC Portal (cont'd)



Marine Data BC Search Map Sign in English

Back to search Previous Next



Download Display mode

Salmonid Enhancement program (SEP) hatchery locations

List of SEP hatcheries and their latitude/longitude where that information is known. The spreadsheet lists both Project and Facility, where facility is the physical location. A project may have >1 facility associated with it, for example a hatchery and spawning channel or sea pens.

Completed

Download and links


	SEP Facility Locations Excel Workbook Excel Workbook https://soggy2.zoology.ubc.ca/geonetwork/srv/api/records/4fa4073c-86e8-488a-998e-1338ed6a286b/attachments/SEP-Project-Facility-Locations_2020.xlsx	Download
	SEP Facility Locations PDF Map Provided by DFO Pacific Salmonid Enhancement Program Nov 2020 Provided by DFO Pacific Salmonid Enhancement Program Nov 2020 https://soggy2.zoology.ubc.ca/geonetwork/srv/api/records/4fa4073c-86e8-488a-998e-1338ed6a286b/attachments/SEP_Facilities_Nov2020.pdf	Download

About this resource

DFO Areas


- North Pacific Ocean > Fraser River and BC Interior
- North Pacific Ocean > North Coast Management Area
- North Pacific Ocean > North Inner Coast (Queen Charlotte Sound, Hecate Strait, Dixon Entrance, inlets and passages)
- North Pacific Ocean > North Outer Coast/West Coast Queen

Overview



Spatial extent

- Locations of BC hatcheries

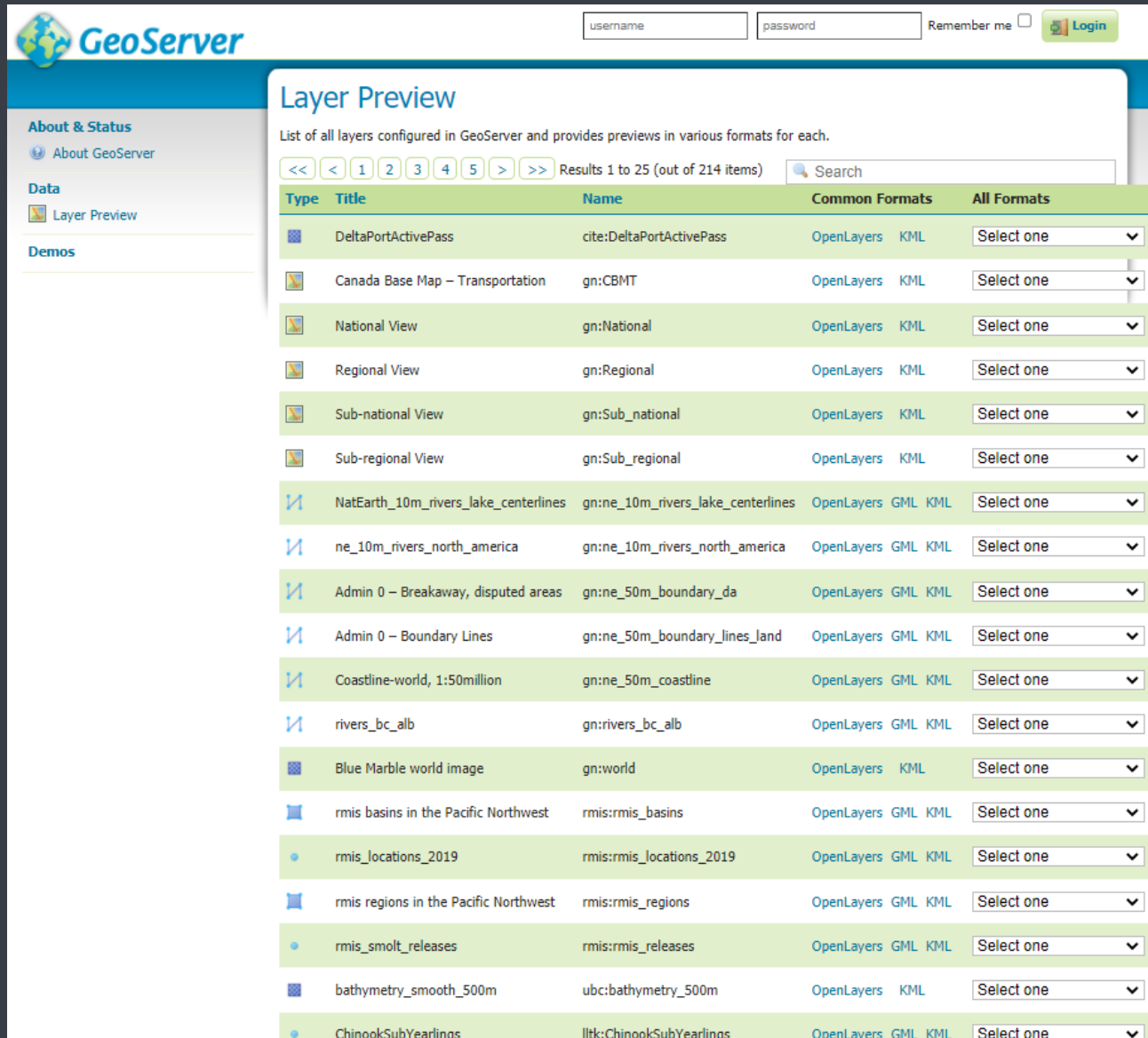


Resource events

Publication
26.05.2021 00:00

- Image-above: Metadata record (data download, additional resources, contextual information)
- Image-left: Make-your-own-map (add data from the portal or external source)

OGC Standard Spatial Data Layers

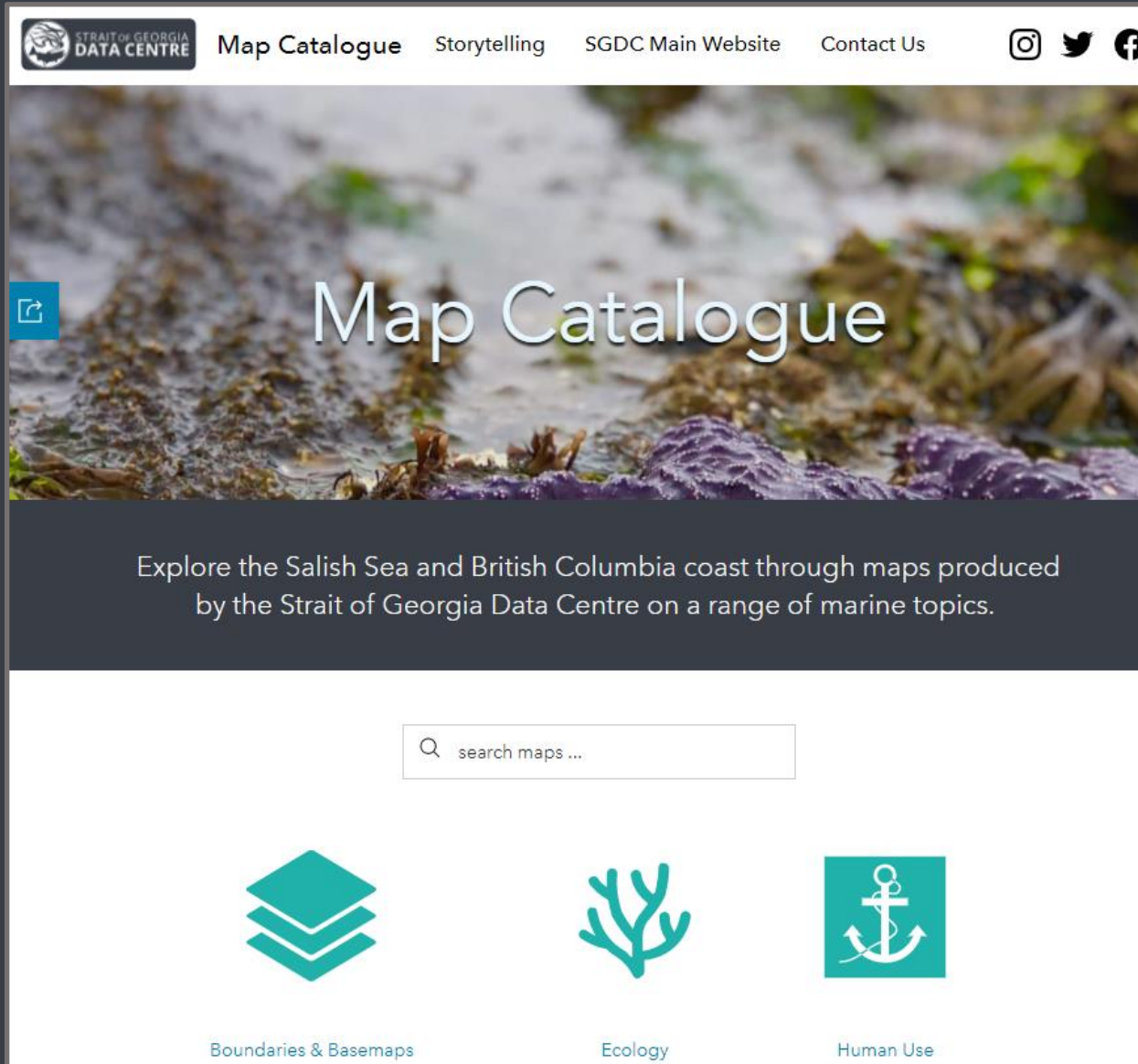


The screenshot displays the GeoServer web interface. At the top, there is a login section with fields for 'username' and 'password', a 'Remember me' checkbox, and a 'Login' button. Below this is a navigation menu with links for 'About & Status', 'Data', and 'Demos'. The 'Data' section is active, showing 'Layer Preview' as the selected option. The main content area is titled 'Layer Preview' and contains a description: 'List of all layers configured in GeoServer and provides previews in various formats for each.' Below the description is a pagination control showing 'Results 1 to 25 (out of 214 items)' and a search bar. A table lists the layers with columns for 'Type', 'Title', 'Name', 'Common Formats', and 'All Formats'. The table contains 25 rows of layer information, including titles like 'DeltaPortActivePass', 'Canada Base Map – Transportation', 'National View', 'Regional View', 'Sub-national View', 'Sub-regional View', 'NatEarth_10m_rivers_lake_centerlines', 'ne_10m_rivers_north_america', 'Admin 0 – Breakaway, disputed areas', 'Admin 0 – Boundary Lines', 'Coastline-world, 1:50million', 'rivers_bc_alb', 'Blue Marble world image', 'rmis basins in the Pacific Northwest', 'rmis_locations_2019', 'rmis regions in the Pacific Northwest', 'rmis_smolt_releases', 'bathymetry_smooth_500m', and 'ChinookSubYearlings'.

Type	Title	Name	Common Formats	All Formats
	DeltaPortActivePass	cite:DeltaPortActivePass	OpenLayers KML	Select one
	Canada Base Map – Transportation	gn:CBMT	OpenLayers KML	Select one
	National View	gn:National	OpenLayers KML	Select one
	Regional View	gn:Regional	OpenLayers KML	Select one
	Sub-national View	gn:Sub_national	OpenLayers KML	Select one
	Sub-regional View	gn:Sub_regional	OpenLayers KML	Select one
	NatEarth_10m_rivers_lake_centerlines	gn:ne_10m_rivers_lake_centerlines	OpenLayers GML KML	Select one
	ne_10m_rivers_north_america	gn:ne_10m_rivers_north_america	OpenLayers GML KML	Select one
	Admin 0 – Breakaway, disputed areas	gn:ne_50m_boundary_da	OpenLayers GML KML	Select one
	Admin 0 – Boundary Lines	gn:ne_50m_boundary_lines_land	OpenLayers GML KML	Select one
	Coastline-world, 1:50million	gn:ne_50m_coastline	OpenLayers GML KML	Select one
	rivers_bc_alb	gn:rivers_bc_alb	OpenLayers GML KML	Select one
	Blue Marble world image	gn:world	OpenLayers KML	Select one
	rmis basins in the Pacific Northwest	rmis:rmis_basins	OpenLayers GML KML	Select one
	rmis_locations_2019	rmis:rmis_locations_2019	OpenLayers GML KML	Select one
	rmis regions in the Pacific Northwest	rmis:rmis_regions	OpenLayers GML KML	Select one
	rmis_smolt_releases	rmis:rmis_releases	OpenLayers GML KML	Select one
	bathymetry_smooth_500m	ubc:bathymetry_500m	OpenLayers KML	Select one
	ChinookSubYearlings	lltk:ChinookSubYearlings	OpenLayers GML KML	Select one

- Over 200 layers that we directly store via PostgreSQL with PostGIS, and host via GeoServer.
- Allows user to access vector and raster data using a variety of web-accessible layer services: e.g. WMS, WFS, WCS.
- Data is stored securely in the University of British Columbia cloud (Vancouver, Canada).
- Often data we are the primary custodian of (i.e. they were produced in collaboration with PSF), or we work with the author to make available data not hosted elsewhere.

SGDC Map Catalogue



- Over 40 pre-configured maps on a variety of marine topics.
- Three types of map:
 - Non-interactive maps - PDF, PNG, JPG format maps created using desktop GIS software. Valuable for reports, presentations, etc.
 - Interactive maps - Interactive displays of geographic information you can use to tell stories and answer questions. Valuable for education, in depth data analysis, etc.
 - Story maps – Utilize various forms of media (e.g., videos, images, interactive maps, text) to form a narrative.

SGDC Map Catalogue (cont'd)

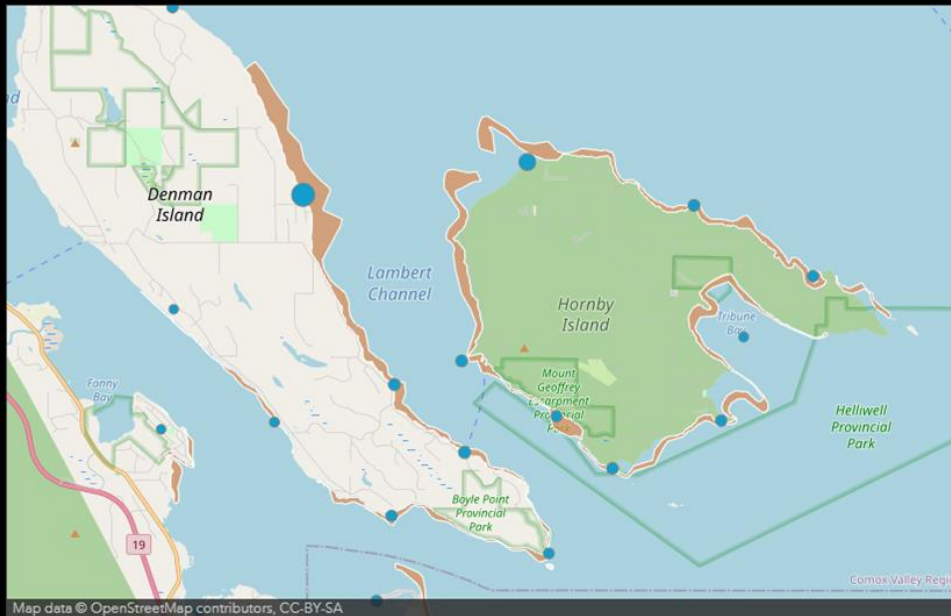
- Image-right: Non-interactive map
- Image-below: Interactive map (ArcGIS Online Dashboard style)

[Map Catalogue](#)[SGDC Main Website](#)[Interactive Maps & Story Maps](#)[Non-Interactive Maps](#)[Provide Feedback](#)

Dashboard Map of Herring Spawn in the Strait of Georgia, 1951 - 2019

Filter Herring Spawn by Year(s)

1999

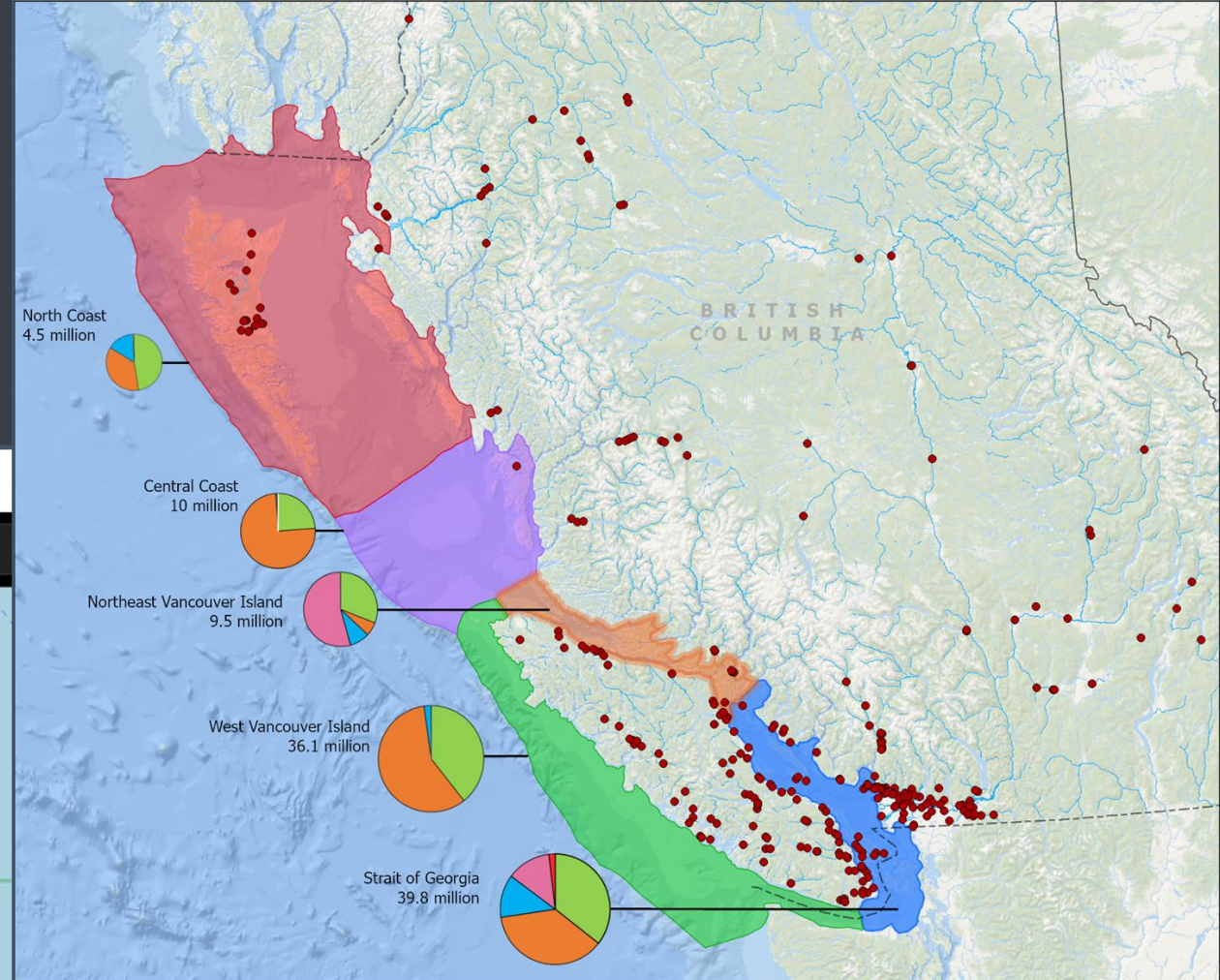


This map allows you to compare how herring spawn location and density has changed in the Strait of Georgia over time. Expand menu in the left of your screen to select the year or years you are interested in. Pan and zoom around the map to your area of interest.

Fisheries and Oceans Canada has been collecting records on location of Pacific herring spawn for over 70 years in British Columbia. Data was collected primarily by Officers on field patrol, with observations being made from beaches, patrol vessels and, occasionally, from SCUBA diver surveys, which proved to provide more accurate measurements, became the Standard methodology (McCarter et al., 2005).

Data Information - Herring Spawn Density and General Location

Notes (Fisheries and Oceans Canada, 2020):

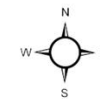


Salmonid Enhancement Program (SEP) Fish Releases by Region from 2015 to 2019 excluding Spawning Channel Facilities

• Hatchery Release Site

** Data was filtered to show only release sites active in 2019

40 20 0 40 80 120 160
Kilometers

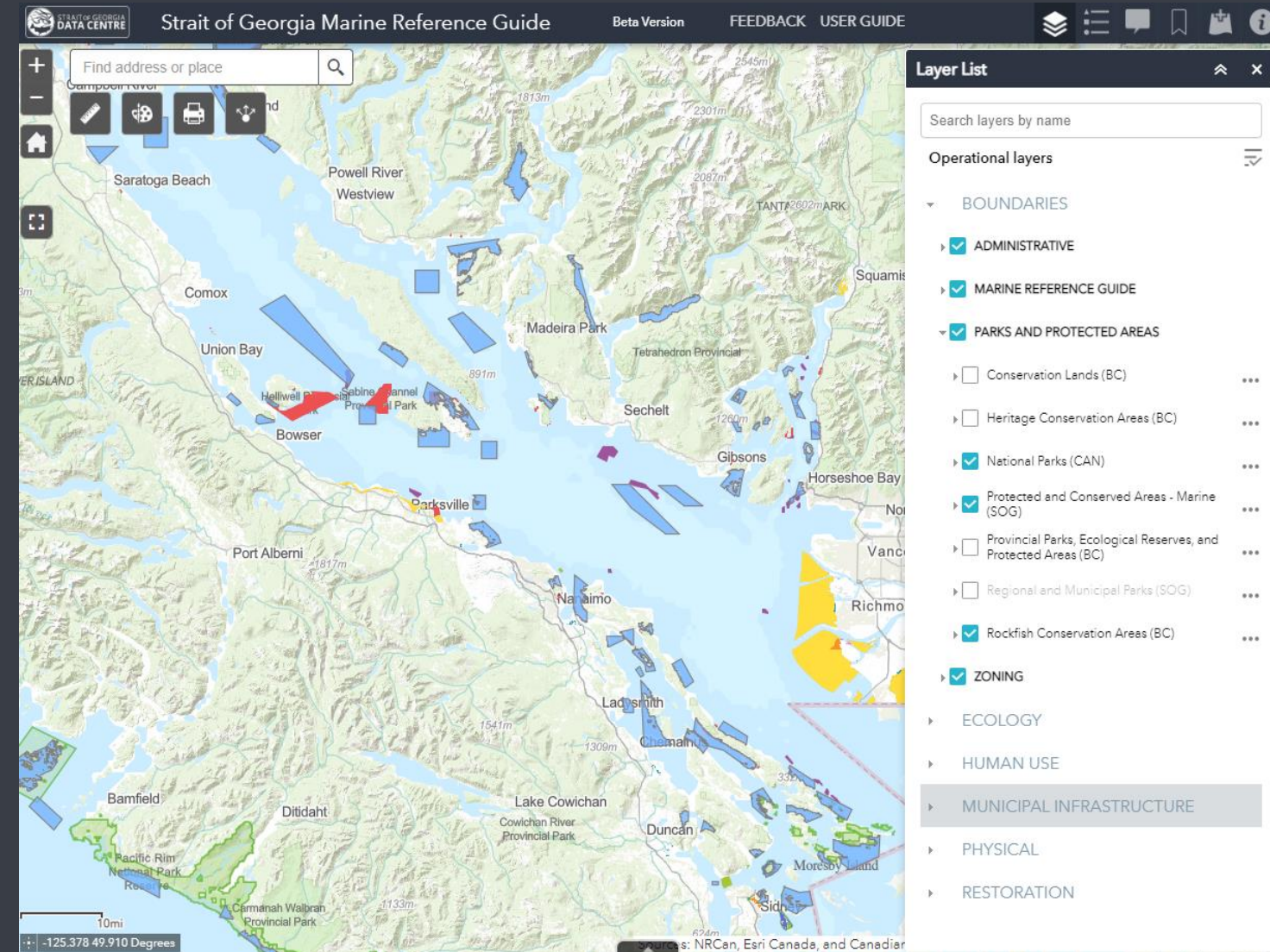


Average Annual Number of Fish Released,
2015-2019 (Millions)



Basemap: Esri, Garmin, GEBCO, NOAA NGDC, other contributors
Credit: PSF Hatchery Effectiveness Review
Data Source: Salmonid Enhancement Program, 2020
Produced February 2, 2021 by Pacific Salmon Foundation

SGDC Map Catalogue (cont'd)



The Strait of Georgia Marine Reference Guide (SOG MRG) is a recently launched interactive map that allows for:

- Viewing of hundreds of layers on a variety of marine topics.
- Visual comparison of layers allowing for decision-making, marine spatial planning, and general education.
- Each layer in SOG MRG includes direct linkage to a Strait of Georgia Data Centre metadata record that has data about the data.

Data Centre Additional Components

Researchers

Many scientists in government institutions and in academia are carrying out research within the Strait of Georgia. Many of these programs are long term programs, while others last only a few years. Some projects are very collaborative in nature; others are being implemented by academics that may be at institutions overseas.

The following inventory provides information on many of the researchers currently working (or having recently worked) on projects within the Strait of Georgia.

INVENTORY OF RESEARCHERS – STRAIT OF GEORGIA ECOSYSTEM

Field of Research

Organizations

Name

Search by Name

Search by Name

Reset

Cathryn Abbott	Dave Davies	Scott Hinch	Kevin Pellett
Scott Akenhead	Ramona de Graaf	Sandie Hollick-Kenyon	Angelica Pena
Susan Allen	Robert Devlin	Carrie Holt	Ian Perry
Faron Anslow	Richard Dewey	Brian Hunt	Erin Rechisky
H. Andres Araujo	Emiliano Di Cicco	Josephine Iacarella	John Reynolds
Ken Ashley	Diana Dobson	Debby Ianson	Brian Riddell
Jamieson Atkinson	John Dower	Jennifer Jackson	Cliff Robinson
Julia Baum	Scott Ducharme	Sophia Johannessen	Steve Romaine
Terry Beacham	Sarah Dudas	Stewart Johnson	Marvin Rosenau
Richard Beamish	Will Duguid	Simon Jones	Peter Ross
Rob Bell-Irving	Anya Dunham	Francis Juanes	Anne Salomon
Leah Bendell	Rana El-Sabaawi	Kim Juniper	Robert Schaefer
Keri Benner	John Elliot	Karia Kaukinen	Braeden Schiltroth
Doug Bertram	Karl English	Chris Kennedy	Dave Scott
Laura Bianucci	Svetlana Esenkulova	Jackie King	Karyn Suchy
Sherryl Bisgrove	Melissa Evans	Karen Kohfeld	Maria Surry

HOW TO SEARCH

"Search literature" will search the entire citation (title, author, year, abstract, journal name etc). Please specify if your search is an "AND" or "OR" or just a simple text string search. You can use as many terms as you wish for the "AND" and "OR" searches. No punctuation is necessary.

For example, you type: Hornby Island Kelp

For an "AND" search this will provide any literature than has each of the terms Hornby, Island *and* Kelp within the citation.

For an "OR" search this will provide any literature that has the term Hornby *or* Island *or* Kelp within the citation.

For a string search this will provide any literature that has the full text string "Hornby Island Kelp" within the citation

- Search Type -

Search

Reset

TYPES

- book
- techreport
- misc
- inproceedings
- article

YEARS

- 2021
- 2020
- 2019
- 2018
- 2017
- 2016
- 2015
- 2014
- 2013
- 2012

AUTHORS

Aykut I Olcer
Centre for Aquaculture
(Canada)

Year: 2021

2021

The meteorological tsunami of 1 November 2010 in the southern Strait of Georgia: a case study (Alexander B Rabinovich, Šepi'c Jadranka, Richard E Thomson), *In Natural Hazards*, Springer Nature B.V., volume 106, 2021. Look for this document on [Google Scholar](#) or [Google](#) or [locate using its doi](#)


Spatial and temporal changes in climate extremes over northwestern North America: the influence of internal climate variability and external forcing (Mohammad Hasan Mahmoudi, [35] Mohammad Reza Najafi, Singh Harsimrenjit, Schnorbus Markus), *In Climatic Change*, Springer Nature B.V., volume 165, 2021. Look for this document on [Google Scholar](#) or [Google](#) or [locate using its doi](#)

Population structure in a continuously distributed coastal marine species, the harbor porpoise, based on microhaplotypes derived from poor-quality samples (Phillip A Morin, Brenna R Forester, Karin A Forney, Carla A Crossman, Brittany L Hancock-Hanser, Kelly M Robertson, Lance G Barrett-[34] Lennard, Robin W Baird, John Calambokidis, Pat Gearin, M Bradley Hanson, Cassie Schumacher, Timothy Harkins, Michael C Fontaine, Barbara L Taylor, Kim M Parsons), *In MOLECULAR ECOLOGY*, volume 30, 2021. Look for this document on [Google Scholar](#) or [Google](#) or [locate using its doi](#)

Getting to a decision: using structured decision-making to gain consensus on approaches to invasive species control (Brett van Poorten, Martina Beck), *In MANAGEMENT OF BIOLOGICAL INVASIONS*, volume 12, 2021. Look for this document on [Google Scholar](#) or [Google](#) or [locate using its doi](#)


- Image-above: List of Publications – search through hundreds of peer-reviewed marine articles.
- Image-left: List of Salish Sea Researchers – learn more about researchers working on projects in the Strait of Georgia.

Atlas of Oceanographic Conditions in the Strait of Georgia



Atlas Of Oceanographic Conditions In The Strait Of Georgia

[Home](#)[About the Atlas](#)[CitSci Program](#)[Methods](#)[Hydrography](#)[Nutrients](#)[Harmful Algae](#)[Zooplankton](#)[Data](#)[Citation](#)



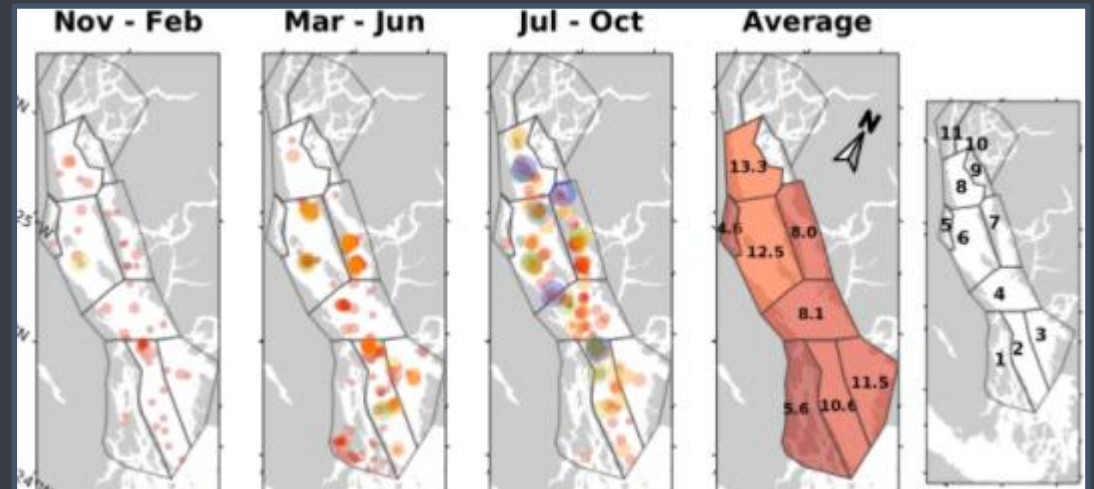
WATER SAMPLES READY FOR ANALYSIS

Water samples from the Spring Bloom in 2021: nutrient vials in front, preserved phytoplankton at right, biotoxin assays (new!) at left. Log sheet in foreground.

● ● ● ● ● ● ● ●

Welcome to the **Atlas of Oceanographic Conditions in the Strait of Georgia**, based on the Pacific Salmon Foundation's Citizen Science Dataset. The "PSF CitSci" Program visits about 60 locations in the Strait roughly 20 times a year to measure a variety of ocean properties, resulting in around 1000 stations sampled every year. Additional information in the atlas

- The PSF funds and operates a "Citizen Science" program to help acquire the data needed to investigate hypotheses surrounding salmon declines in the Salish Sea.
- All data from the CitSci program are archived and publicly available through the Data Centre.
- This web-based Atlas uses the most recent data to continue characterizing conditions in the Strait of Georgia.



Conclusion

- The Strait of Georgia Data Centre is an open-access portal to marine information for British Columbia, Canada.
- It is comprised of various components that deliver information to the public through:
 - Direct data downloads
 - Links to external data
 - Geospatial layer web services
 - Pre-configured educational maps
 - List of marine publications
 - List of Salish Sea researchers
 - Educational webpages
 - Atlas of Oceanographic Conditions
- Through offering these services we strive to ensure the marine science and conservation communities of the Strait of Georgia have the information they need to be successful.



Thank you

Questions?

Ben Skinner

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sogdatacentre.ca