

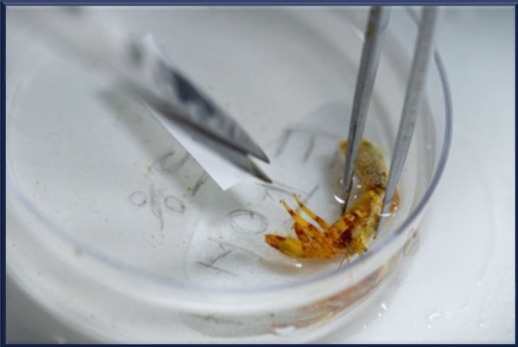
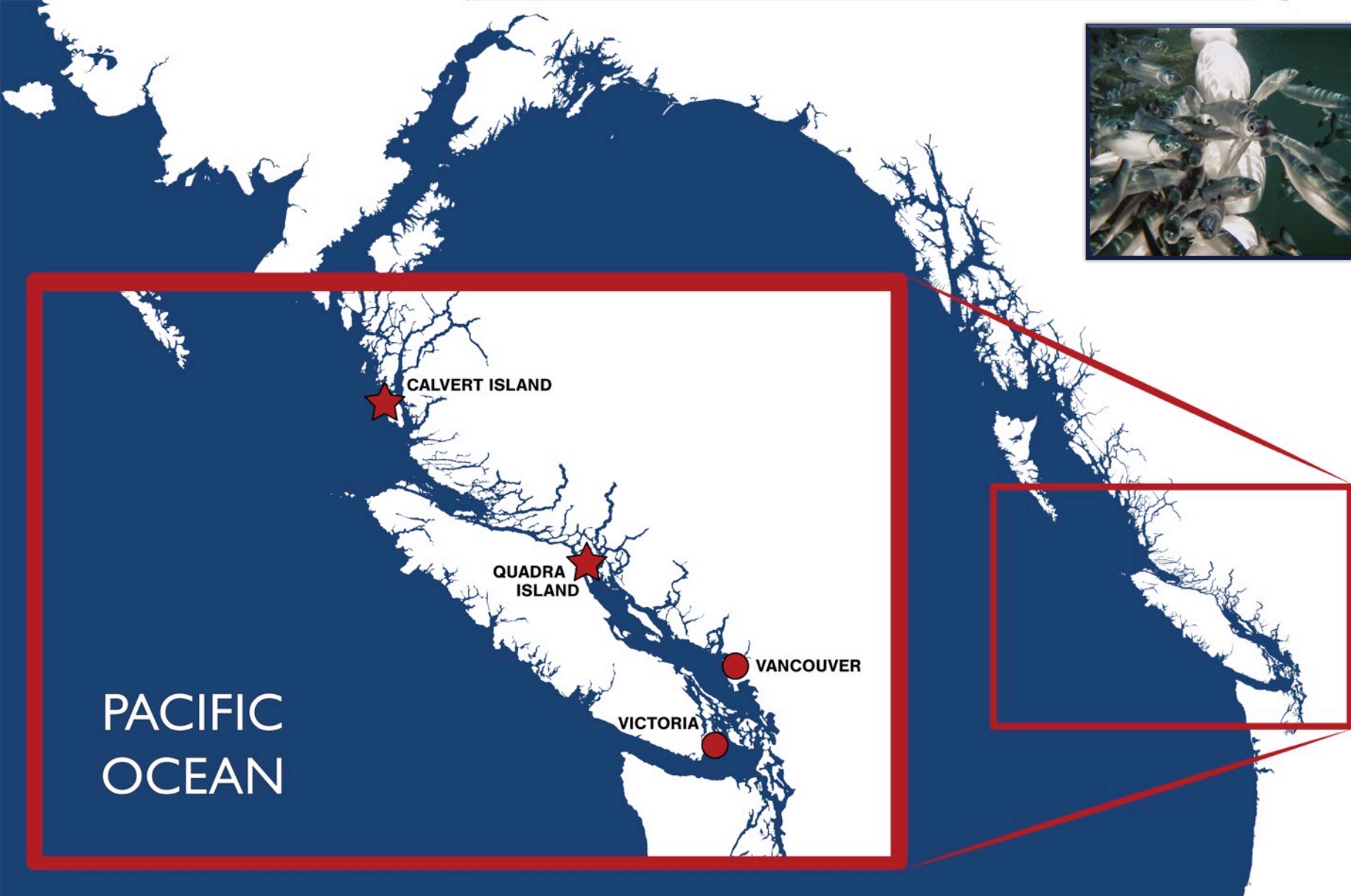


THE INTERNATIONAL YEAR OF THE SALMON OCEAN OBSERVING SYSTEM

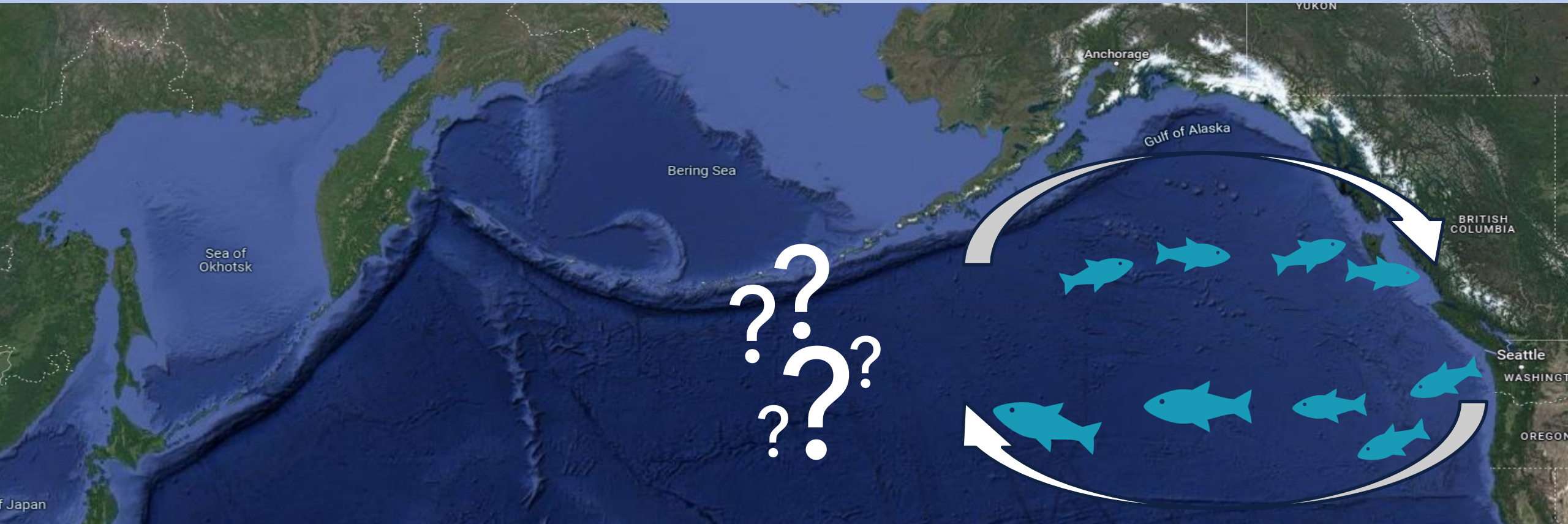
IYS Symposium, Vancouver, October 2022

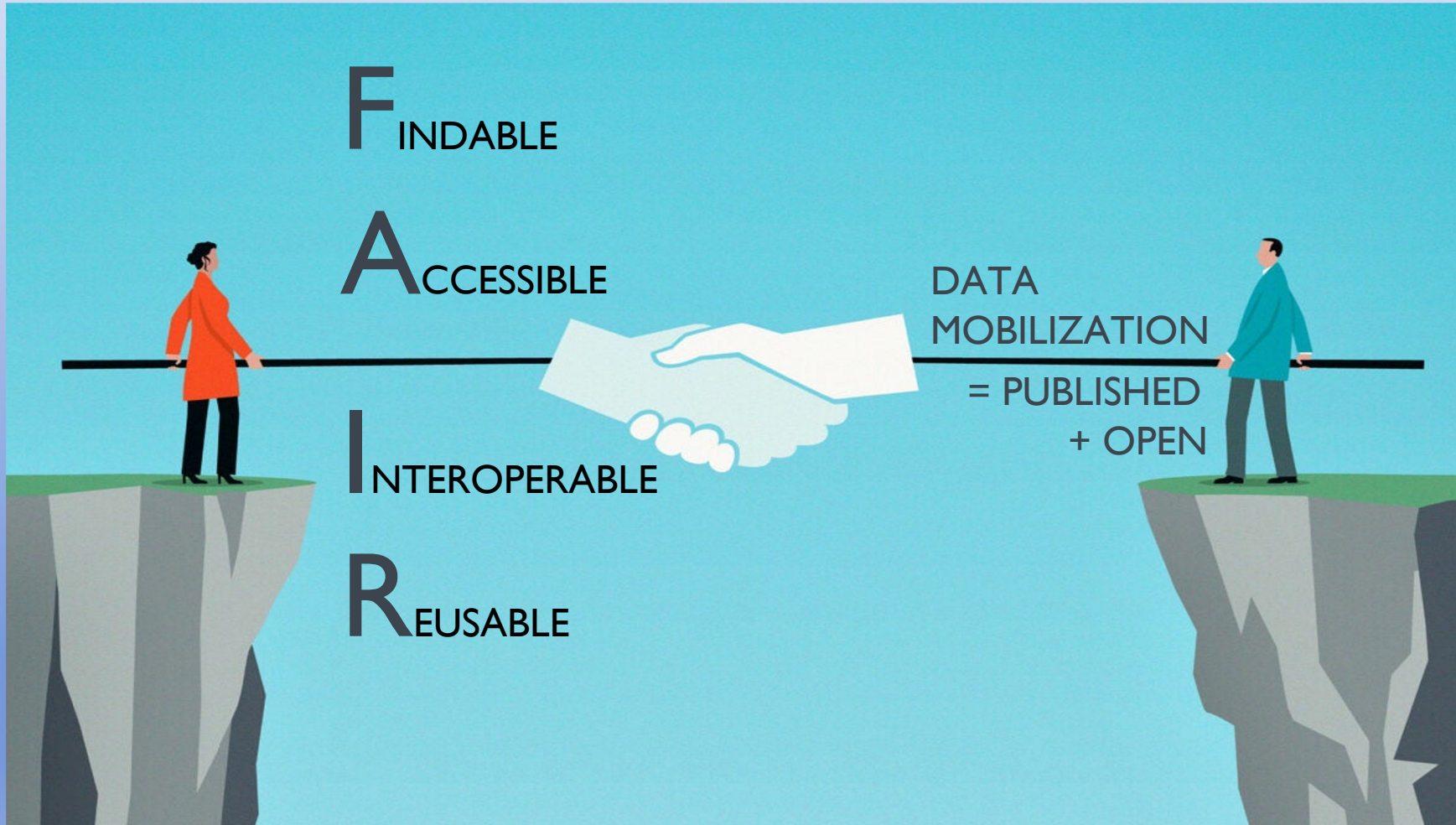
Tim van der Stap and Brett Johnson, Hakai Institute

Tula Hakai
FOUNDATION



- Salmon data: fragmented, stored in various platforms following various methodologies
- Maximize value of limited salmon data from international waters
- Effective data mobilization + integration across data disciplines and scales can benefit management and address issues





“Ensuring data are *preserved, shared* and *integrated* is key to inform management scenarios for issues that are cross-boundary”

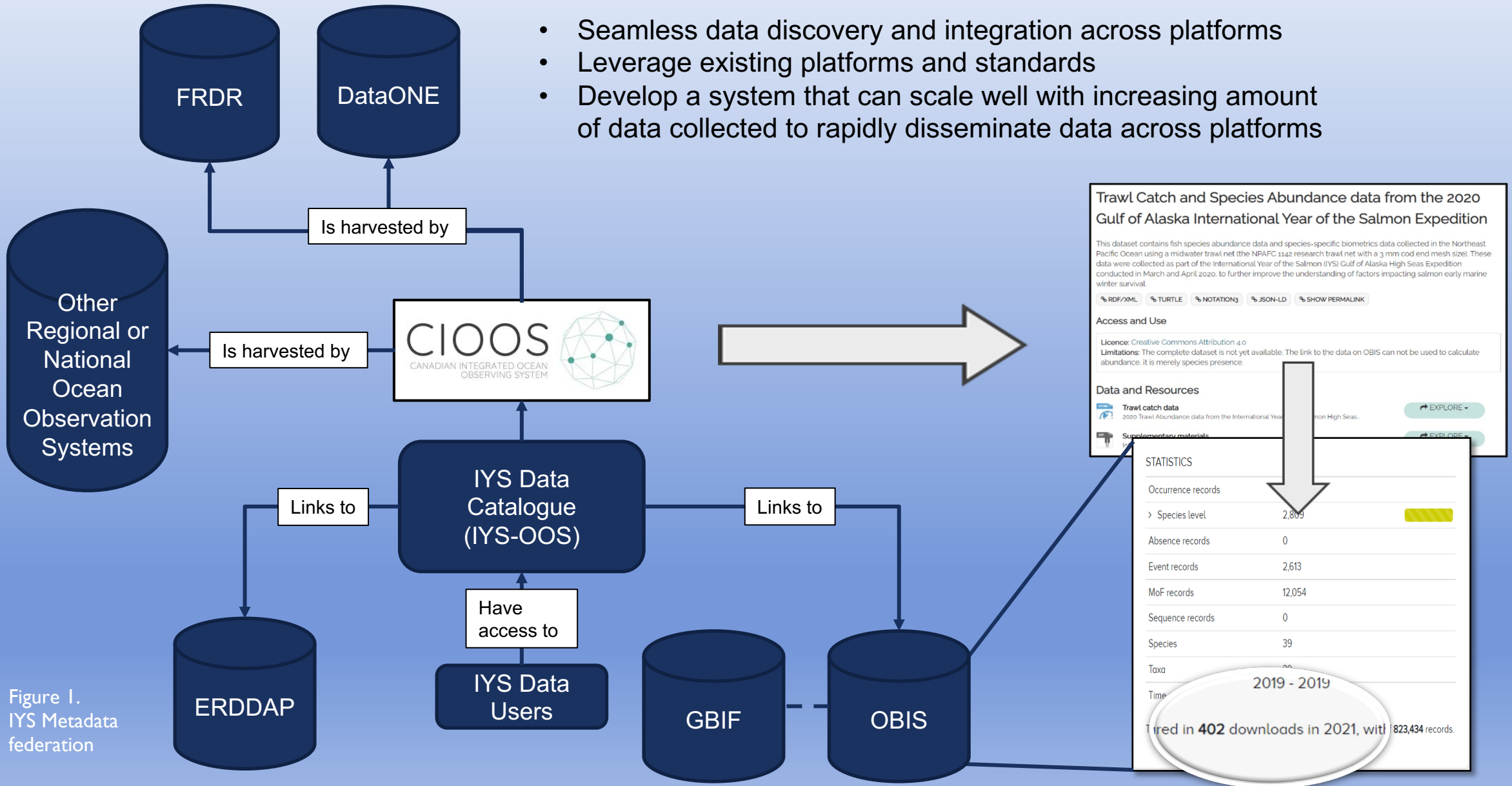


Figure 1. IYS Metadata federation

Trawl Catch and Species Abundance data from the 2020 Gulf of Alaska International Year of the Salmon Expedition

This dataset contains fish species abundance data and species-specific biometrics data collected in the Northeast Pacific Ocean using a midwater trawl net (the NPAFC 1142 research trawl net with a 3 mm cod end mesh size). These data were collected as part of the International Year of the Salmon (IYS) Gulf of Alaska High Seas Expedition conducted in March and April 2020, to further improve the understanding of factors impacting salmon early marine winter survival.

[RDF/XML](#)
[TURTLE](#)
[NOTATION3](#)
[JSON-LD](#)
[SHOW PERMALINK](#)

Access and Use

License: Creative Commons Attribution 4.0
 Limitations: The complete dataset is not yet available. The link to the data on OBIS can not be used to calculate abundance. It is merely species presence.

Data and Resources

- Trawl catch data
- 2020 Trawl Abundance data from the International Year of the Salmon High Seas.
- Supplementary materials

STATISTICS

Occurrence records	
> Species level	2,809
Absence records	0
Event records	2,613
MoF records	12,054
Sequence records	0
Species	39
Taxa	20
Time	2019 - 2019

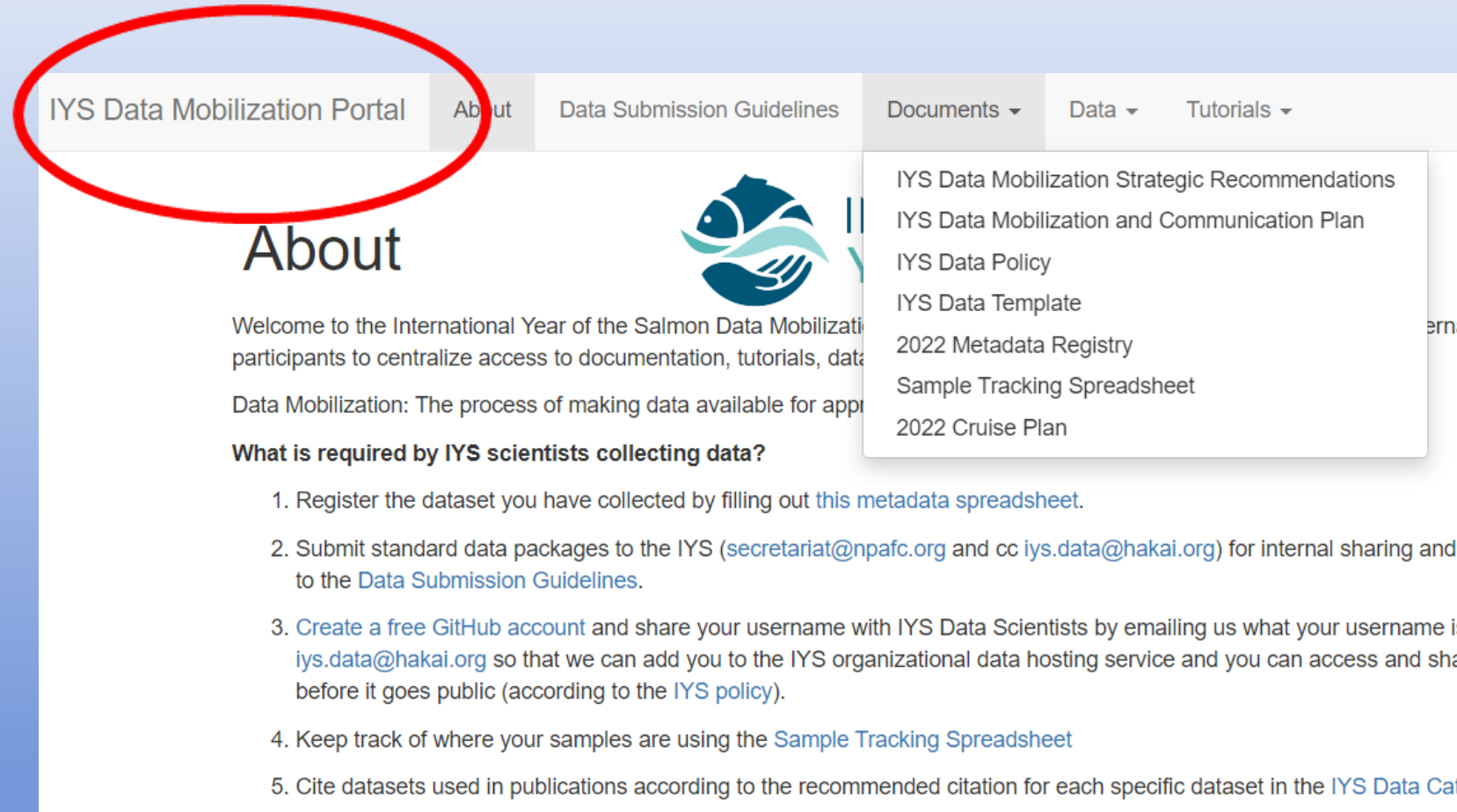
Titled in 402 downloads in 2021, with 823,434 records.



“Merging scientific cultures and practices from multiple countries and different participating organizations is no trivial task”

1

Portal: One-stop-shop for Data Mobilization Approach



IYS Data Mobilization Portal

About Data Submission Guidelines Documents Data Tutorials

About

Welcome to the International Year of the Salmon Data Mobilization Portal. We provide a central access to documentation, tutorials, data, and more for IYS participants to centralize access to documentation, tutorials, data, and more.

Data Mobilization: The process of making data available for application.

What is required by IYS scientists collecting data?

1. Register the dataset you have collected by filling out [this metadata spreadsheet](#).
2. Submit standard data packages to the IYS (secretariat@npafc.org and cc iys.data@hakai.org) for internal sharing and to the [Data Submission Guidelines](#).
3. [Create a free GitHub account](#) and share your username with IYS Data Scientists by emailing us what your username is to iys.data@hakai.org so that we can add you to the IYS organizational data hosting service and you can access and share your data before it goes public (according to the [IYS policy](#)).
4. Keep track of where your samples are using the [Sample Tracking Spreadsheet](#)
5. Cite datasets used in publications according to the recommended citation for each specific dataset in the [IYS Data Catalog](#)

IYS Data Mobilization Portal

1 Portal: One-stop-shop for Data Mobilization Approach

2 Policy: Set expectations for data preservation and sharing

- Differences in time frames across data categories
- Authorship and acknowledgments

4. Data Ingestion, Archiving, and Sharing among IYS Participants

The [2022 International Year of the Salmon GitHub Repository](#) will archive Processed Data and serve as the master copy of each Processed Dataset to share internally among IYS Participants. Only IYS Participants and IYS Data Scientists will have access to the data in this repository prior to publication. Data Packages containing Processed Data should be sent to the IYS Data Scientists (secretariat@npafc.org) according to the timelines defined in this document (Table 1) for ingestion into the data archive.

Table 1. Description of IYS data categories and their schedule of availability to IYS participants (via 2022 IYS GitHub Repository) and public release.

Data Category	Example datasets	Availability	
		To Participants	To Public
At sea observations / Data reported in Cruise Report	Fish trawl, specimen measurements, bridge log, wildlife observations, CTD	Immediate after basic QA/QC	June 1st, 2022
Sensor data	Argo float / glider, CTD	Immediate after basic QA/QC	November 1st, 2022
Post expedition laboratory sample analysis	Stock ID, pathogen, physical oceanography	As soon as available	No later than March 31st, 2024
Satellite	Chlorophyll a, radiance	As soon as available	No later than March 31st, 2024
Metadata	All datasets	Before cruise	Before cruise

1

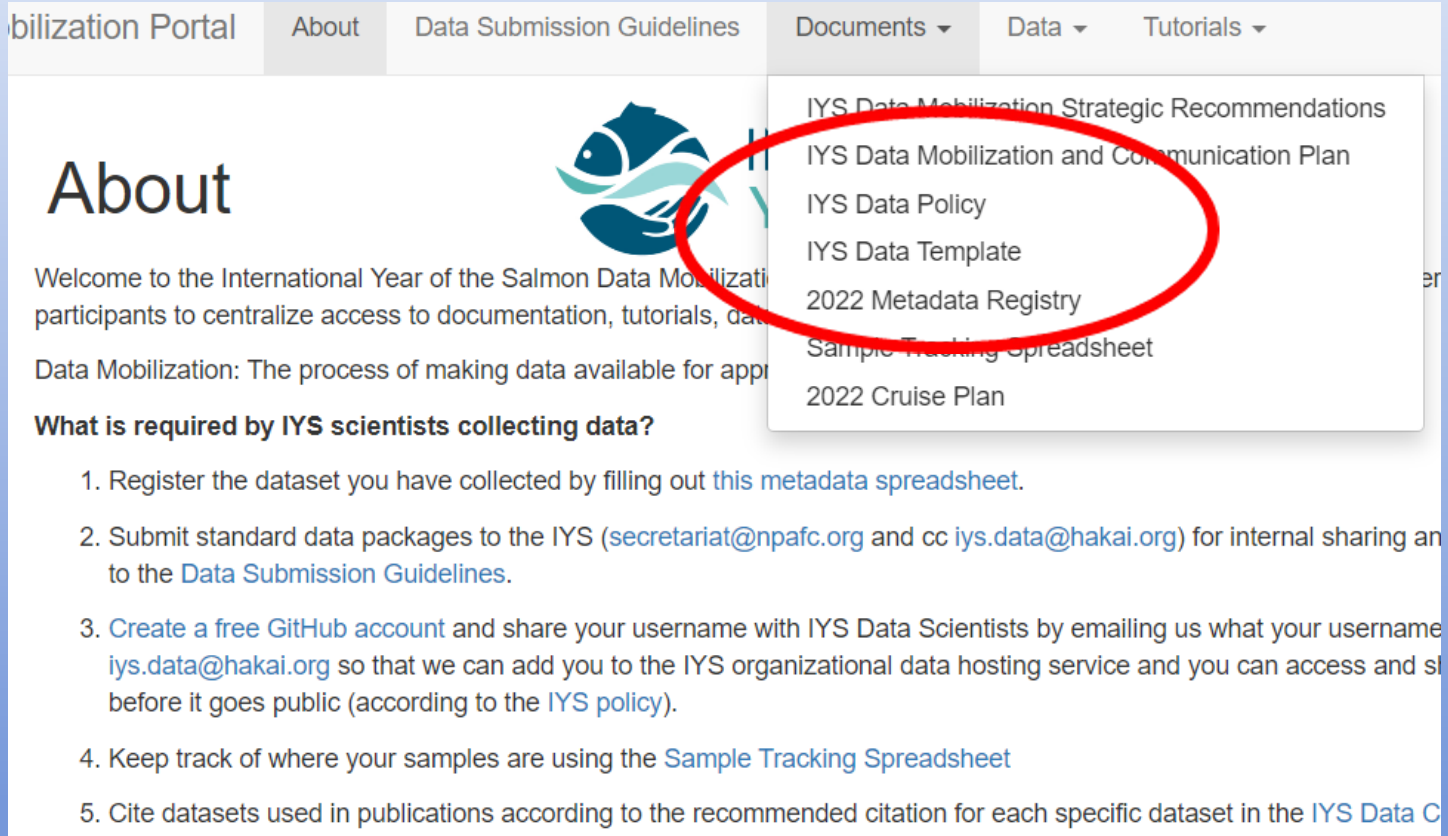
Portal: One-stop-shop for Data Mobilization Approach

2

Policy: Set expectations for data preservation and sharing

3

Integration: Data Template



The screenshot shows the 'About' page of the IYS Data Mobilization Portal. The navigation bar includes 'About', 'Data Submission Guidelines', 'Documents', 'Data', and 'Tutorials'. The 'Documents' dropdown menu is open, listing several items: 'IYS Data Mobilization Strategic Recommendations', 'IYS Data Mobilization and Communication Plan', 'IYS Data Policy', 'IYS Data Template', '2022 Metadata Registry', 'Sample Tracking Spreadsheet', and '2022 Cruise Plan'. The 'IYS Data Template' item is circled in red. The main content area includes a logo of a fish and a hand, a welcome message, and a list of requirements for scientists collecting data.

About

Welcome to the International Year of the Salmon Data Mobilization Portal. This portal provides a central location for participants to centralize access to documentation, tutorials, data, and more.

Data Mobilization: The process of making data available for application and sharing.

What is required by IYS scientists collecting data?

1. Register the dataset you have collected by filling out [this metadata spreadsheet](#).
2. Submit standard data packages to the IYS (secretariat@npafc.org and cc.iys.data@hakai.org) for internal sharing and to the [Data Submission Guidelines](#).
3. [Create a free GitHub account](#) and share your username with IYS Data Scientists by emailing us what your username is to iys.data@hakai.org so that we can add you to the IYS organizational data hosting service and you can access and share your data before it goes public (according to the [IYS policy](#)).
4. Keep track of where your samples are using the [Sample Tracking Spreadsheet](#)
5. Cite datasets used in publications according to the recommended citation for each specific dataset in the [IYS Data Catalog](#)

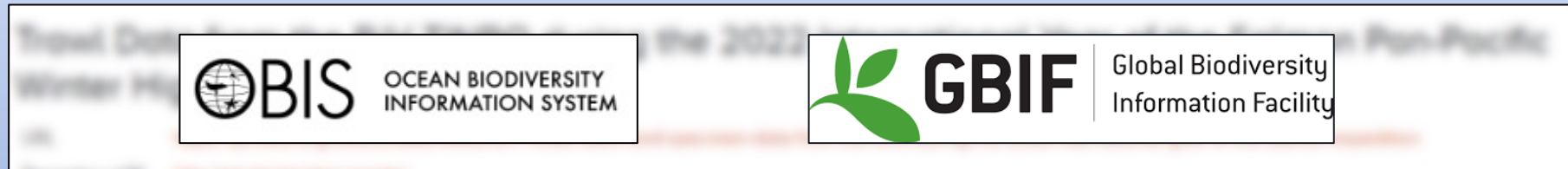
IYS Data Mobilization Portal

Findable

Trawl Data from the R/V TINRO during the 2022 International Year of the Salmon Pan-Pacific Winter High Seas Expedition


URL	https://ipt.iobis.org/obiscanada/resource?r=trawl-catch-and-specimen-data-from-the-tinro-during-the-2022-international-year-of-the-salmon-expedition								
Repository URL	http://ipt.vliz.be/obiscanada/								
Node	OBIS Canada								
Published	2022-08-31 21:15								
First registered	2022-07-21 18:01								
Abstract	This data set contains the at sea trawl and specimen data collected aboard the R/V TINRO for the IYS survey in 2022 in the North Pacific Ocean. Collected data offers important insights to achieve further understanding of changing ocean conditions and their effects on salmon in the open ocean. This data package contains event, catch and specimen data. The event data contains all of the sampling event information, including time, location, and duration. All dates and times are in UTC. The catch data contains all of the catch records, as counts and weights, for each species/taxa at each station. The specimen data contains individual lengths and weights for sampled individuals from each station.								
Citation	Somov, A., & Pakhomov, E. (2022). Trawl Data from the R/V TINRO during the 2022 International Year of the Salmon Pan-Pacific Winter High Seas Expedition [Data set]. North Pacific Anadromous Fish Commission. https://doi.org/10.21966/wevm-ww19								
Citation ID	https://doi.org/10.21966/wevm-ww19								
Rights	This work is licensed under a Creative Commons Attribution (CC-BY) 4.0 License								
Keywords	Samplingevent, Trawl; Specimen; Catch; R/V TINRO; International Year of the Salmon; IYS; North Pacific Ocean								
Contacts	<table><tr><td>Creator</td><td>Aleksey Somov TINRO Russian Pacific Federal Fisheries Research Institute</td></tr><tr><td>Creator</td><td>Evgeny Pakhomov University of British Columbia (UBC); Institute of Oceans and Fisheries (IOF)</td></tr><tr><td>Contact</td><td>Aleksey Somov TINRO Russian Pacific Federal Fisheries Research Institute</td></tr><tr><td>Contact</td><td>Evgeny Pakhomov</td></tr></table>	Creator	Aleksey Somov TINRO Russian Pacific Federal Fisheries Research Institute	Creator	Evgeny Pakhomov University of British Columbia (UBC); Institute of Oceans and Fisheries (IOF)	Contact	Aleksey Somov TINRO Russian Pacific Federal Fisheries Research Institute	Contact	Evgeny Pakhomov
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Contact	Aleksey Somov TINRO Russian Pacific Federal Fisheries Research Institute								
Contact	Evgeny Pakhomov								

Findable



The screenshot shows the CIOOS PACIFIC website interface. At the top left is the CIOOS PACIFIC logo with the text 'REGIONAL ASSOCIATION OF THE CANADIAN INTEGRATED OCEAN OBSERVING SYSTEM'. To the right are navigation links: 'ABOUT', 'APPLIED DATA', 'DATA TOOLS', and 'DATA CATALOGUE'. Below the navigation is a breadcrumb trail: 'Home / Catalogue / Datasets'. A 'Filter by location' section on the left contains a map of the Pacific Northwest coast with zoom and pan controls. The main content area features a search bar with the text 'International Year of the Salmon' and a search icon. Below the search bar, it displays '67 datasets found for "International Year of the Salmon"' and an 'Order by: Relevance' dropdown menu. The first search result is titled 'Salmon Pathogen Data from the 2019 Gulf of Alaska International Year of the S...' and includes a brief description: 'Information on pathogen load was collected from salmon in the Northeast Pacific Ocean. These data were collected as part of the International Year of the Salmon (IYS) Gulf of...'.

Findable



OBIS OCEAN BIODIVERSITY INFORMATION SYSTEM

GBIF Global Biodiversity Information Facility

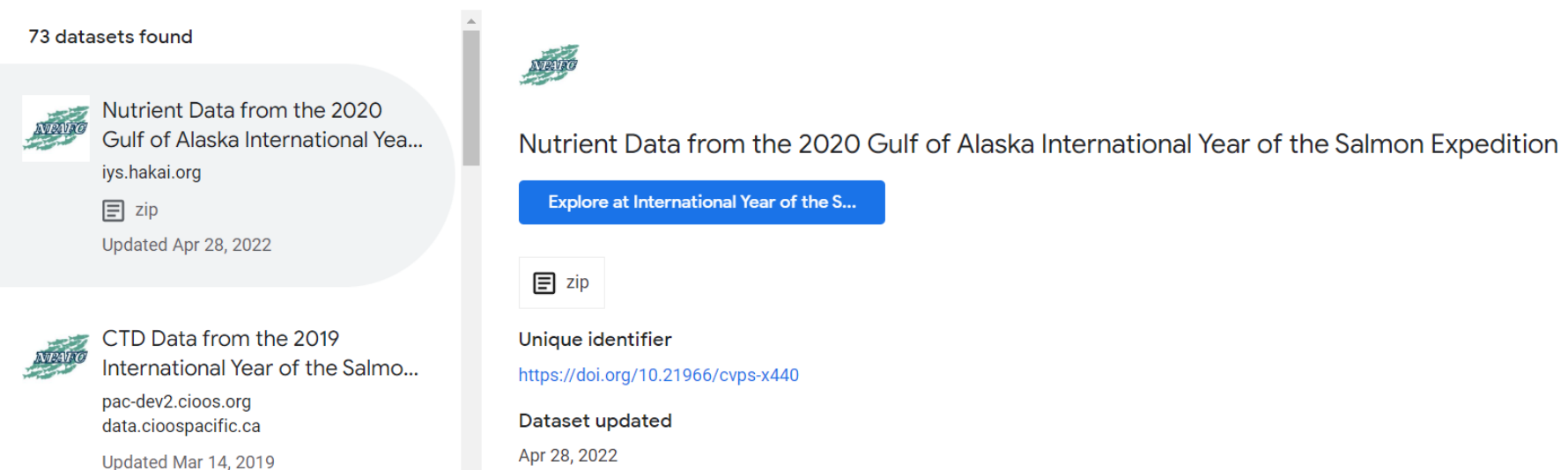



CIOOS PACIFIC
REGIONAL ASSOCIATION OF THE CANADIAN INTEGRATED OCEAN OBSERVING SYSTEM


DataONE


INTERNATIONAL YEAR OF THE SALMON

73 datasets found



 Nutrient Data from the 2020 Gulf of Alaska International Yea...
iys.hakai.org
zip
Updated Apr 28, 2022

 CTD Data from the 2019 International Year of the Salmo...
pac-dev2.cioos.org
data.cioospacific.ca
Updated Mar 14, 2019

 Nutrient Data from the 2020 Gulf of Alaska International Year of the Salmon Expedition

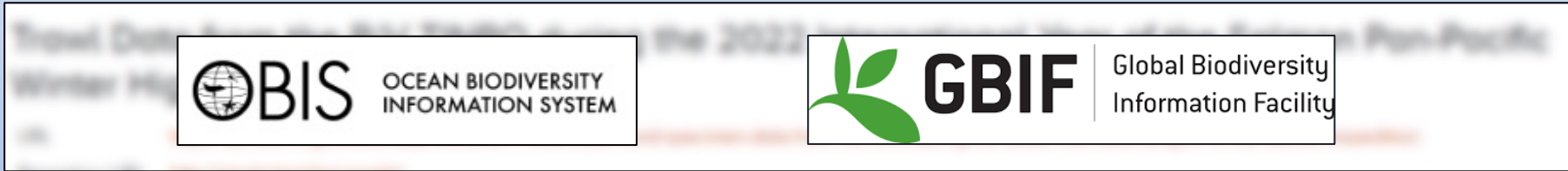
Explore at International Year of the S...

zip

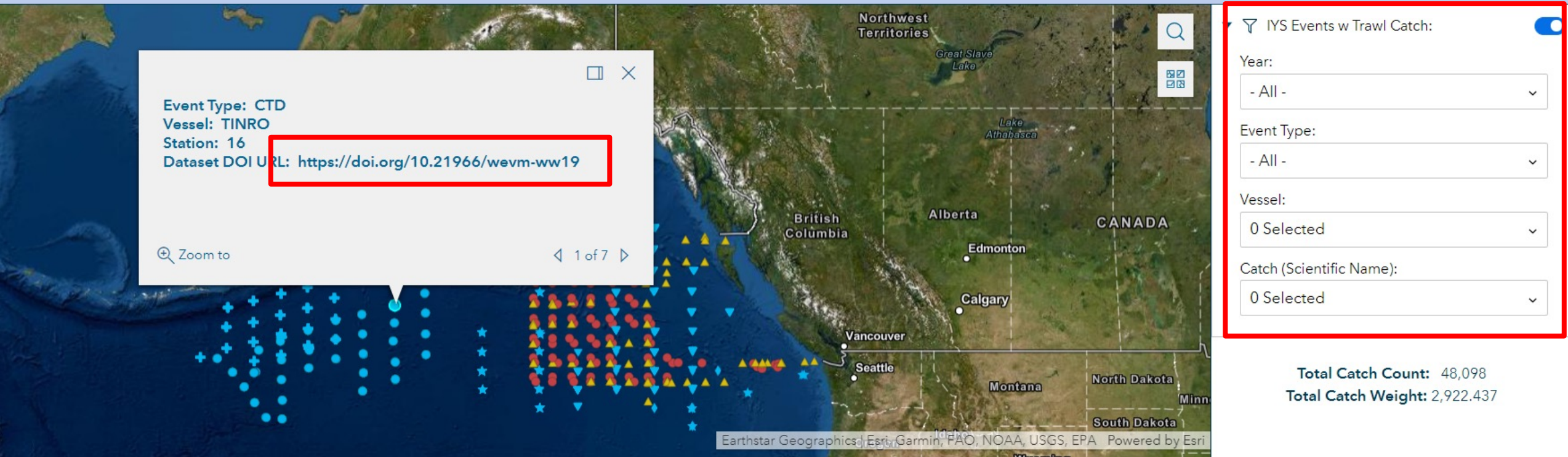
Unique identifier
<https://doi.org/10.21966/cvps-x440>

Dataset updated
Apr 28, 2022

Findable



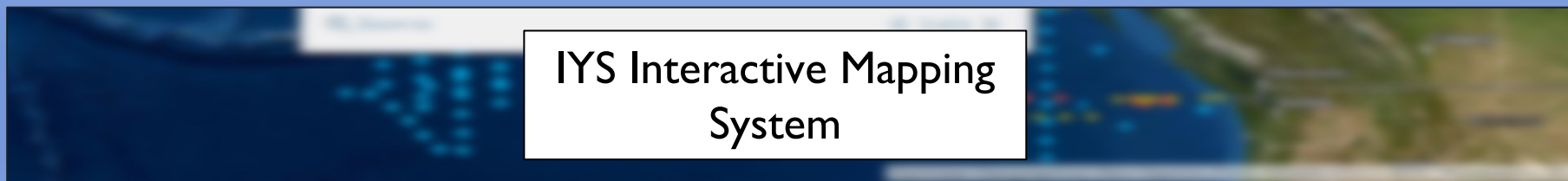
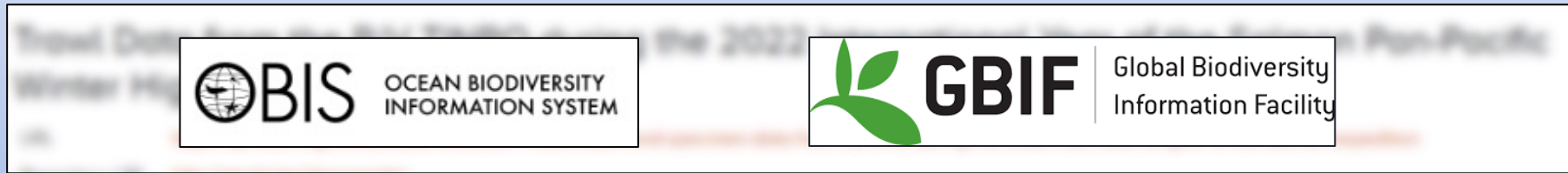
Findable



Credit: Kathy Smikrud (ADFG)
Dion Oxman (ADFG)

NPAFC IYS IMS

Findable



And perhaps many more...?

Accessible

ERDDAP Dataset Discovery

Search Datasets

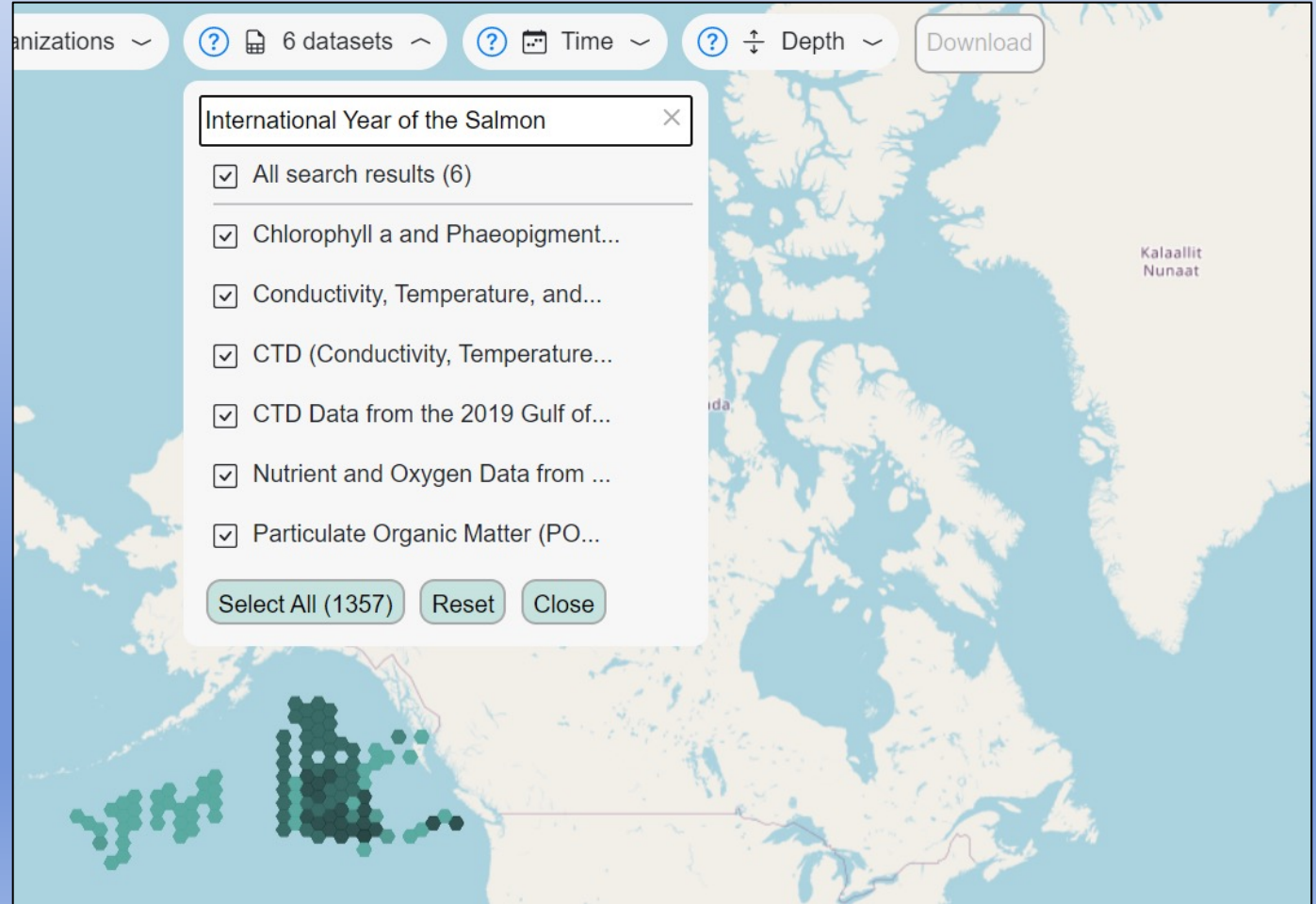
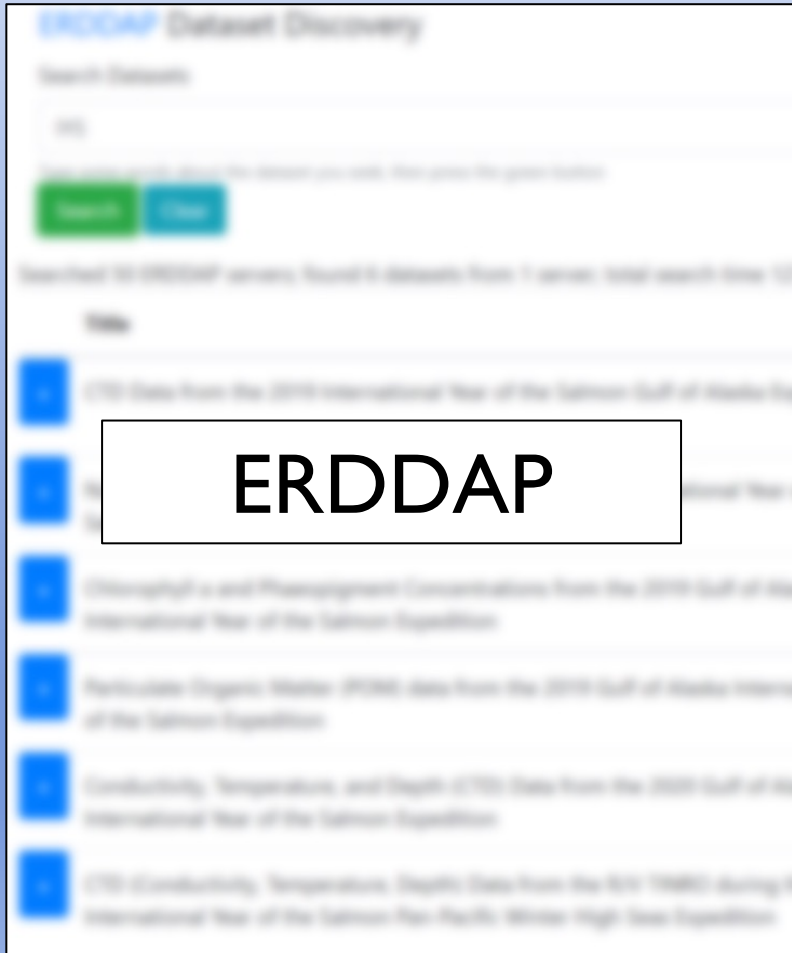
Type some words about the dataset you seek, then press the green button

[Search](#) [Clear](#)

Searched 50 ERDDAP servers; found 6 datasets from 1 server; total search time 12776ms.

	Title	Institution	Dataset
+	CTD Data from the 2019 International Year of the Salmon Gulf of Alaska Expedition	Russian Federal Institute of Fisheries and Oceanography	IYS_2019_CTD data.cioospacific.ca
+	Nutrient and Oxygen Data from the 2019 Gulf of Alaska International Year of the Salmon Expedition	Russian Federal Institute of Fisheries and Oceanography	IYS_2019_nutrients_O2 data.cioospacific.ca
+	Chlorophyll a and Phaeopigment Concentrations from the 2019 Gulf of Alaska International Year of the Salmon Expedition	University of British Columbia	IYS_NISKIN_chl_phaeo data.cioospacific.ca
+	Particulate Organic Matter (POM) data from the 2019 Gulf of Alaska International Year of the Salmon Expedition	University of British Columbia	IYS_2019_POM data.cioospacific.ca
+	Conductivity, Temperature, and Depth (CTD) Data from the 2020 Gulf of Alaska International Year of the Salmon Expedition	University of British Columbia	IYS_2020_CTD data.cioospacific.ca
+	CTD (Conductivity, Temperature, Depth) Data from the R/V TINRO during the 2022 International Year of the Salmon Pan-Pacific Winter High Seas Expedition	Russian Federal Institute of Fisheries and Oceanography	IYS_2022_TINRO_CTD data.cioospacific.ca

Accessible



Accessible



ERDDAP

The screenshot shows the ERDDAP Dataset Discovery interface. It includes a search bar with the text 'Search Datasets', a dropdown menu set to 'All', and two buttons: 'Search' and 'Filter'. Below the search area, there's a list of datasets with blue square icons. The first dataset listed is 'CFO Data from the 2019 International Year of the Salmon Gulf of Alaska Expedition'.

CIOOS Data Explorer

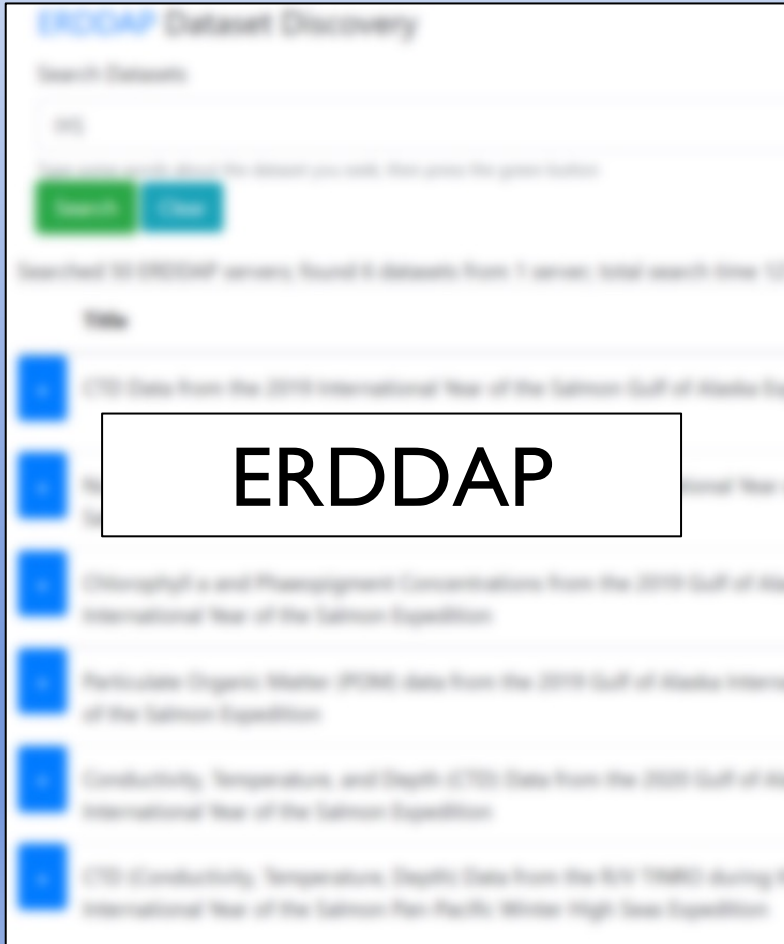
The screenshot displays the CIOOS Data Explorer interface. It features a map of the Pacific Northwest coast of North America. A search bar at the top contains the text 'International Year of the Salmon'. Below the search bar, there is a list of data layers with checkboxes, including 'All layers (ready to go)', 'Chlorophyll a and Phaeophytin', 'Conductivity, Temperature, and Depth (CTD)', and 'CTD Conductivity, Temperature, Depth'. A white box with the text 'CIOOS Data Explorer' is overlaid on the map.

Datasets

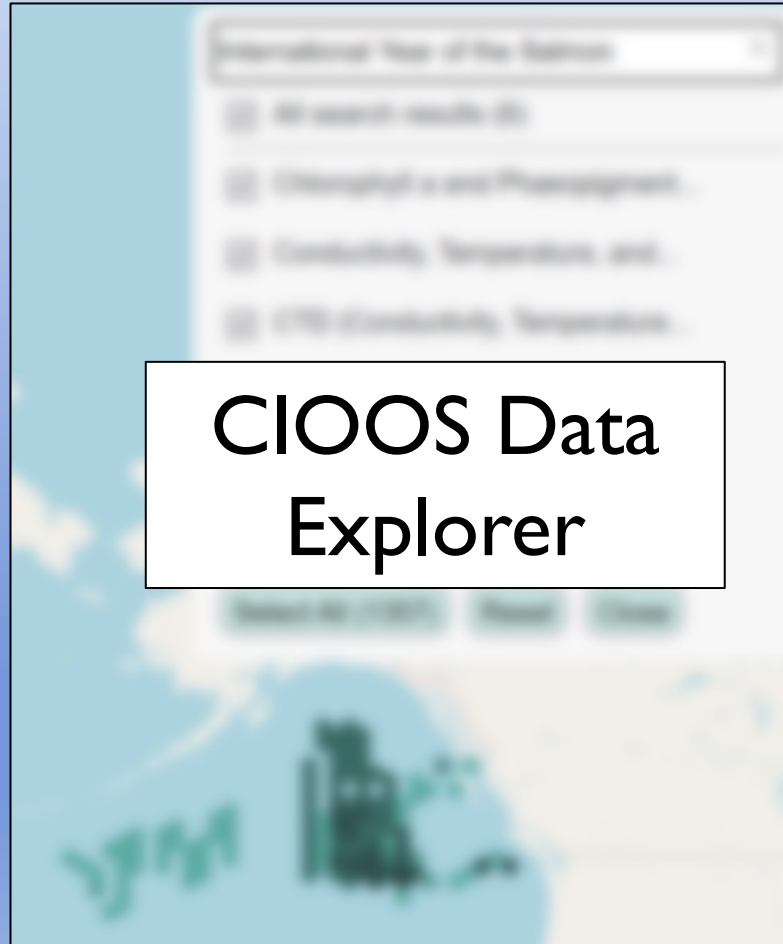
- International Year of the Salmon
- Trawl Data from the R/V the 2022 International Year of the Salmon Pan-Pacific Winter Expedition
- Trawl Data from the R/V Shimada during the 2022 Year of the Salmon Pan-Pacific High Seas Expedition
- Trawl Data from the CCOR Franklin during the 2022 Year of the Salmon Pan-Pacific High Seas Expedition
- Trawl Catch and Species from the 2020 Gulf of Alaska International Year of the Salmon Expedition
- Trawl Catch and Species from the 2019 Gulf of Alaska International Year of the Salmon Expedition

The screenshot shows a data visualization of trawl data along the Pacific Northwest coast. The map uses a color scale from light yellow to dark red to represent data density. On the right side, there is a 'Datasets' panel listing several trawl data collections from various expeditions between 2019 and 2022.

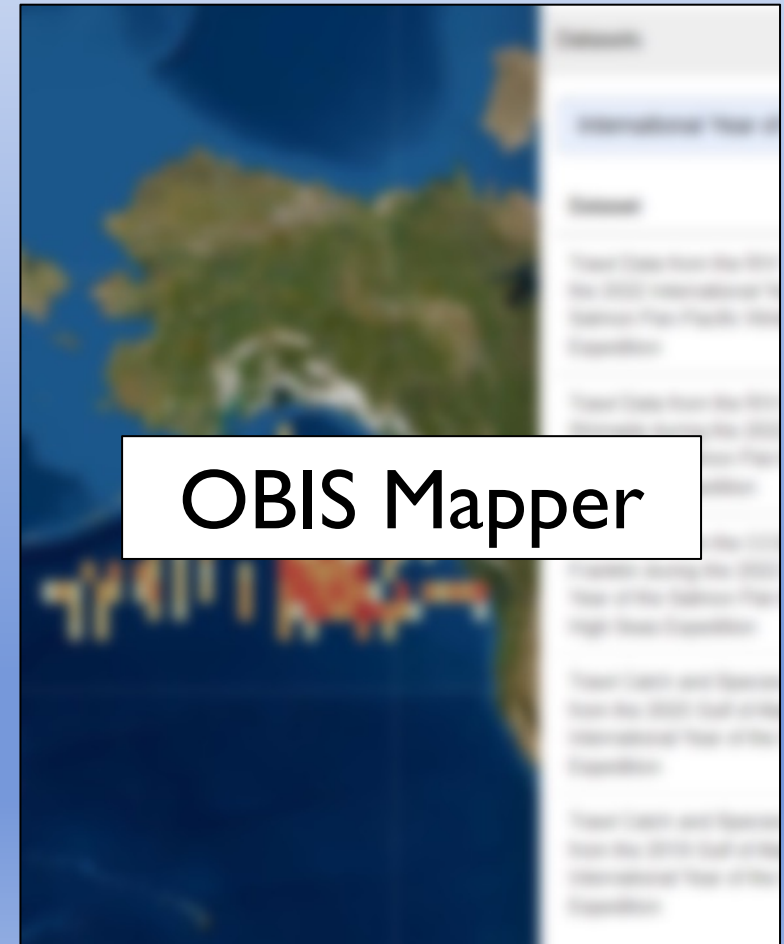
Accessible



The screenshot shows the ERDDAP Dataset Discovery page. It features a search bar at the top with the text "Search Dataset". Below the search bar, there are several search results listed, each with a blue square icon and a title. A white box with the text "ERDDAP" is overlaid on the first search result.



The screenshot shows the CIOOS Data Explorer interface. It features a map of the Pacific Ocean with a search bar at the top. Below the search bar, there are several search results listed, each with a blue square icon and a title. A white box with the text "CIOOS Data Explorer" is overlaid on the first search result.



The screenshot shows the OBIS Mapper interface. It features a map of the Pacific Ocean with a search bar at the top. Below the search bar, there are several search results listed, each with a blue square icon and a title. A white box with the text "OBIS Mapper" is overlaid on the first search result.

Interoperable

Integrated Data Collection

<https://doi.org/10.21966/81jn-6p63>

Integrated Data Collection from the International Year of the Salmon High Seas Expeditions

Dataset Activity Stream MANAGE




Integrated Data Collection from the International Year of the Salmon High Seas Expeditions

This dataset is a collection of all of the International Year of the Salmon High Seas Expeditions trawl catch, collected specimen measurements, CTD and chemistry datasets that were collected at sea in 2019 aboard the Professor Kaganovsky, 2020 on the Pacific Legacy NO.1, and 2022 aboard the CCGS Sir John Franklin, NOAA Bell M Shimada, R/V TINRO, and R/V Northwest Explorer. These data span the entire North Pacific Ocean and were collected to better our understanding of the ocean conditions salmon experience during winter and how that may drive high seas salmon survival.

Access and Use

Licence: [Creative Commons Attribution 4.0](#)

Data and Resources

 Integrated IYS Data Collection (Internal... Collection of IYS datasets integrated into one excel workbook including all...	EXPLORE
 Trawl Data from the R/V Bell M. Shimada during... Is a component part of the Integrated Collection	EXPLORE
 Trawl Catch data from the 2019 Gulf of Alaska... Is a component part of the Integrated Collection	EXPLORE

Interoperable

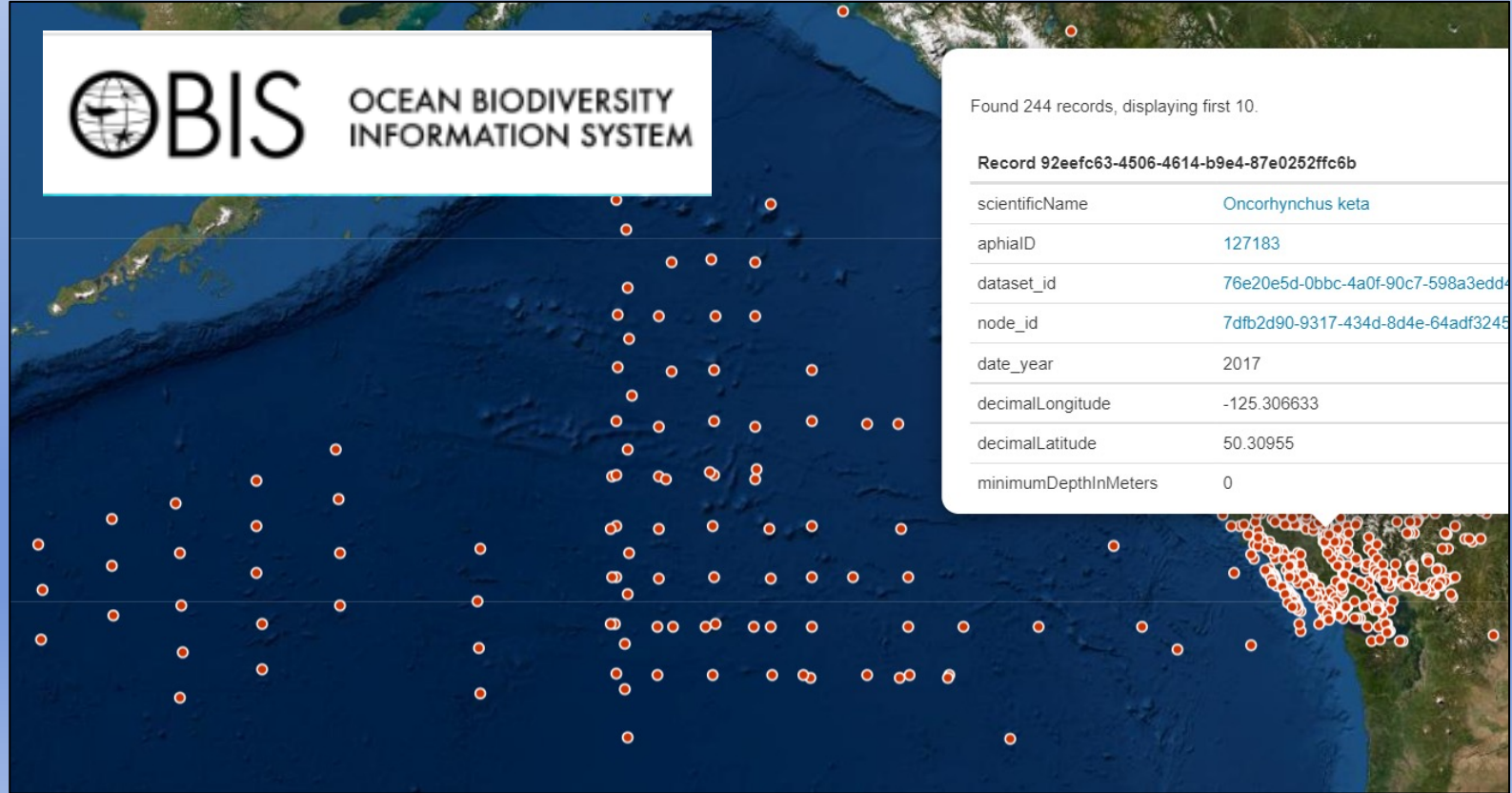
Integrated Data Collection **OBIS: Interoperable data across spatial scales**

<https://doi.org/10.21966/81jn-6p63>

<https://mapper.obis.org> (filter: *Oncorhynchus spp.* obs from 2015 – 2022)

Integrated Data Collection from the International
The Salmon High Seas Expeditions

**Interoperability:
project-level**

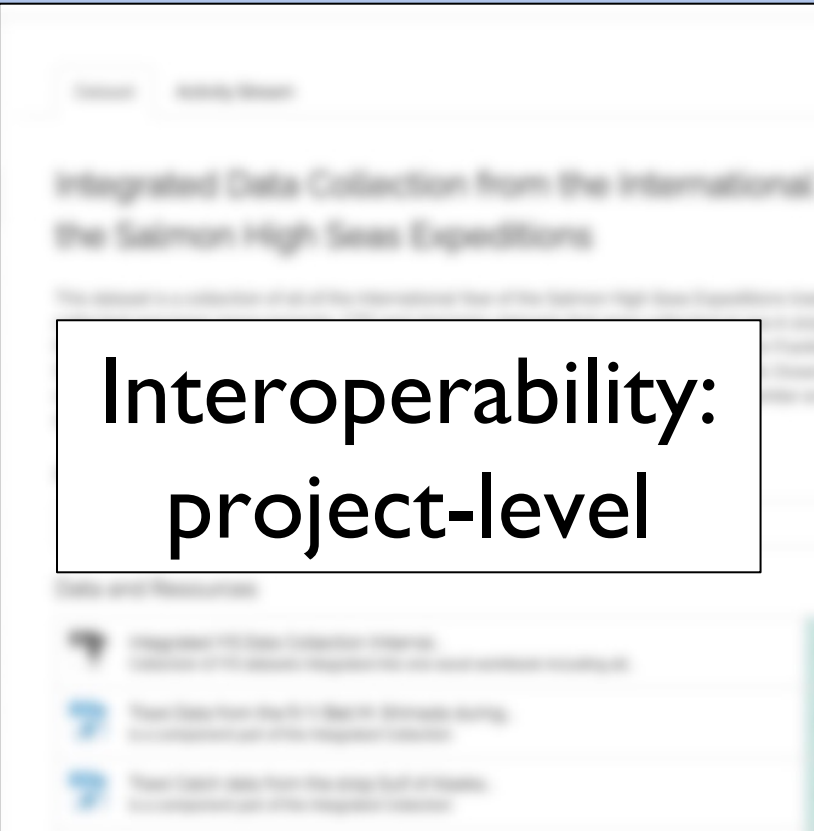


Interoperable

Integrated Data Collection **OBIS: Interoperable data across spatial scales**

<https://doi.org/10.21966/81jn-6p63>

<https://mapper.obis.org> (filter: *Oncorhynchus spp.* obs from 2015 – 2022)



A screenshot of a project page titled "Integrated Data Collection from the International the Salmon High Seas Expeditions". The page includes a title, a description, and a list of data sources. A white box with a black border is overlaid on the page, containing the text "Interoperability: project-level".



A screenshot of the OBIS (Ocean Biodiversity Information System) global map. The map shows a world map with a grid of orange dots representing observations. A white box with a black border is overlaid on the map, containing the text "Interoperability: global-level".



Reusable

2019 IYS Trawl Catch Data

<https://doi.org/10.21966/DPHZ-AS73>

Trawl Catch and Species Abundance from the 2019 Gulf of Alaska International Year of the Salmon Expedition

This dataset contains fish species abundance data and species-specific biometrics data collected in the Northeast Pacific Ocean using a midwater trawl net. These data were collected as part of the International Year of the Salmon (IYS) High Seas Expedition conducted in February and March 2019, to further improve the understanding of factors impacting salmon marine winter survival. A total of 64 tows were conducted, and for each tow the total species-specific weight and catch were recorded. Taxonomic records were identified to the lowest taxonomic rank possible. Additionally, for some species some individual biometrics were recorded, such as (fork, total, standard and/or mantle) length, weight, sex and age class. Furthermore for salmonids, DNA samples, otoliths, muscle tissue, scales and liver/gonad data were collected for further analysis in Alaskan and UBC labs. The data collected from the trawl aims to improve our understanding of the food web structure.

[<< read less](#)

Access and Use

Licence: Creative Commons Attribution 4.0

Limitations: Complete original data including net measurements and biological measurements is not yet publicly available. This dataset only indicates presence and can not be used for calculating abundance.

Data and Resources

- [OBIS: Trawl Catch and Species Abundance in...](#)
Species presence/absence only. This OBIS record contains the trawl catch and... [EXPLORE](#)
- [Data and Supplemental Materials](#)
Available internally only. Must be signed into GitHub to access. [EXPLORE](#)

STATISTICS	
Occurrence records	2,809
> Species level	2,809
Absence records	0
Event records	2,547
Model records	12,117
Measurement records	0
Species records	39
Taxa	39
Time range	1979 - 2022
This dataset has 1,852 data points, with a total of 3,122,401 records.	

2,809 OCCURRENCES 5 CITATIONS

Publication date: September 1, 2022
Last modified: September 10, 2022

an node of the Ocean Biogeographic Information System (OBIS Canada)
Ocean Biodiversity Information System (OBIS)

CC BY 4.0

DOI: 10.21966/dphz-as73


IYS Data Catalogue

OBIS

Global Biodiversity Information Facility (GBIF)

 *“Ensure seamless data discovery and integration of data across platforms.”*

 *Adherence to the FAIR Data Principles*

 *So... job done?*

Continue integration of data into collection

Create metadata records to make data findable

Publish to open-access repositories where we can

Future requirements for data (mobilization) across the salmosphere?

1. Prioritize data mobilization to amplify the value of collected data
2. Emphasize human 'infrastructure' and technical infrastructure
3. In-house Data Science Team: coordinate data exchange, standardize data, implement metadata standards
4. Leverage existing systems and (meta)data standards



THANK YOU!

Tula Hakai

Questions?

tim.vanderstap@hakai.org

brett.johnson@hakai.org



Tim van der Stap and Brett Johnson, Hakai Institute