

COINAtlantic Workshop

ACCESS conference

May 17, 2017

McGill's Geographic Information Centre (GIC), 5th floor of Burside Hall

Mary Kennedy (OBIS Canada) and Andrew Sherin (COINAtlantic)

obiscanada2017@gmail.com or a.sherin@dal.ca



Data Management for Research with Special Focus on Species Occurrence Data

Objective: The aim of this workshop is to promote best practices in data management to facilitate data accessibility and integration with habitat measurements and to connect the Atlantic Canadian coastal and estuarine biological research community to the Ocean Biogeographic Information System (OBIS).

Relevance: Any researcher, student, citizen scientist, community group, staff or volunteer who has collected or plans to collect data (or works with an existing dataset) that includes georeferenced observations and wants to ensure their data is eventually accessible for the benefit of the wider scientific community and support national and global biodiversity objectives such as those set by the United Nations Convention on Biological Diversity. Although the focus is on biodiversity the data management procedures described are applicable to any coastal and estuarine dataset.

Participants were encouraged to bring some of their own data to be used in the hands on sessions.

Workshop Schedule

- 09:00-09:10 Introductions
- 09:10-09:30 Module 1: Making research data accessible
- 09:30-09:45 Module 2: Introduction to OBIS
- 09:45-10:00 Module 3: Introduction to the standards used by OBIS
- 10:15-10:30 Break
- 10:30-11:00 Module 4: Map your dataset content to Darwin Core terms
- 11:00-11:30 Module 5: Clean and reformat dataset content
- 11:30-12:00 Module 6: Standardizing species lists
- 12:00-13:00 Lunch on your own
- 13:00-15:00 Module 7: Georeferencing observations
- 15:00-15:15 Break
- 15:15-16:00 Module 8: Metadata (data required to properly interpret a dataset and facilitate reuse)
- 16:00-16:30 Module 9: 'Data processing' of your datasets
- 16:30-17:00 Discussion

Module 8 - Metadata

One hour on metadata!!! Lets change the title to 'Discovery Metadata'

What is required to properly interpret a dataset and facilitate reuse.

What pieces of information do you need to provide so that someone on the other side of the globe (or in the office next to you) can determine if your dataset is suitable for there intended purpose? ('fitness of use')

TABLE SPECIES	PLOT NUMBER										Cover-
	1	2	3	4	5	6	7	8	9	10	
Aster sp.	+	2	3	1	4	r	-	1	3	1	
Cakile edentula	-	-	-	-	-	-	-	-	-	-	
Cirsium arvense	-	-	1	-	-	-	-	-	-	-	
Chrysanthemum leucanthemum	-	-	-	-	-	-	-	-	-	-	
Convolvulus sepium	-	-	-	-	-	-	1	-	-	-	
Equisetum sp.	-	-	-	1	-	-	-	-	-	-	
Fragaria vesca	1	2	3	-	5	-	-	-	-	-	
Galium Tinctorium	-	-	r	-	r	-	-	-	-	-	
Grass	5	5	5	+	2	5	1	1	1	4	
Iris versicolor	-	-	-	-	-	r	-	-	-	-	
Lathyrus japonicus	-	-	-	-	-	-	-	-	-	-	
Lathyrus	-	-	-	-	-	-	1	-	-	1	
Ligusticum scoticum	-	-	-	-	-	-	-	-	-	-	
Lycopus uniflorus	-	-	-	-	+	-	-	-	-	-	
Oenothera	-	-	-	1	-	-	-	-	-	-	
Potentilla anserina	-	-	-	-	-	-	1	-	1	-	



Module 8 -Metadata

Two routes

species occurrence datasets → EML

‘other’ datasets → COINAtlantic CSU tool

EML*
Basic Metadata
Geographic Coverage
Taxonomic Coverage
Temporal Coverage
Keywords
Associated Parties
Project Data
Sampling Methods
Citations
Collection Data
External links
Additional Metadata

CGG entry
Geospatial feature
Type of GeoContent
Contact name
Contact e-mail
Title of GeoContent
Description
Contact mailing address
Geographic location
Dataset language
URL website address
URL link to functional mapping server (WMS/WFS)
URL link to existing standard metadata
Add image
fileName

<http://www.gbif.org/ip>
t

<http://coinatlantic.ca/>

Module 8 - Metadata

Location of OBIS Canada IPT

Info about IPTs in general and user manual

Populate metadata and then generate data

Welcome to the VLIZ, OBIS & EMODnet IPT

This site hosts several IPT instances

- [EurOBIS](#): regional OBIS node for Europe (EurOBIS)
- [OBIS-Canada](#): regional OBIS node for Canada (OBIS-Canada)
- [IndOBIS](#): regional OBIS node for the Indian Ocean (IndOBIS)
- [ArcOD](#): regional OBIS node for the Arctic Ocean (ArcOD)
- [SEA-OBIS](#): regional OBIS node for South-East Asia (SEA-OBIS)
- [Senegal](#): regional OBIS node for Senegal
- [Caribbean OBIS](#): regional OBIS node for the Caribbean
- [WSAQBIS](#): regional OBIS node for Tropical and Subtropical Western South Atlantic
- [OBIS Deep Sea](#): thematic OBIS node for the Deep Sea

- [Dataprovider IPT](#): IPT instance used by data providers to upload their data
- [IBSS](#): IPT instance Institute of Biology of the Southern Seas, Ukraine (IBSS)
- [ILVO](#): IPT instance Instituut voor Landbouw- en Visserijonderzoek, Belgium (ILVO)
- [IEO](#): IPT instance Instituto Español de Oceanografía, Spain (IEO)
- [IMAR](#): IPT instance Institute of Marine Research, Universidade dos Açores, Portugal (IMAR)
- [BODC](#): IPT instance British Oceanographic Data Centre — oceanographic and marine data (BODC)
- [HAB](#): IPT instance Harmful Algae Blooms Programme (HAB)
- [KMFRI](#): IPT instance Kenya Marine and Fisheries Research Institute (KMFRI)
- [OBIS-ENVY](#): IPT instance for the [OBIS-ENVY-DATA project](#)
- [OBIS no node](#): IPT instance for orphaned datasets that lack an endorsing node

Website hosted by Flanders Marine Institute (VLIZ)

<http://ipt.iobis.org/obiscanada/>

The screenshot shows the OBIS Canada IPT website interface. At the top, there is a header with the logo and the text "INTEGRATED PUBLISHING TOOLKIT (IPT)". Below the header, there are navigation buttons for "Home" and "About". The main content area is titled "Hosted resources available through this IPT" and features a table of resources. The table has columns for Logo, Name, Organisation, Type, Subtype, Records, Last modified, Last publication, and Next publication. A search filter is located at the top right of the table. The table lists several resources, with the following details for the highlighted entries:

Logo	Name	Organisation	Type	Subtype	Records	Last modified	Last publication	Next publication
	A Study of Attached Benthic Foraminifera Associated With The Deep-Sea Coral <i>Primnoa resedaniformis</i> On The Scotian Margin	Not registered	Occurrence	Observation	2,568	2015-11-12	2014-03-02	—
	Abundance of hydroids in a mangrove ecosystem at Twin Cays, Belize, Central America	Not registered	Occurrence	Observation	49	2016-03-29	2016-03-29	—
	Benthic Foraminifera Assemblages Collected From Two Sediment Cores in Emerald Basin, 1975	Not registered	Occurrence	Observation	212	2014-02-16	2014-02-16	—
	Benthic Foraminifera Collected from the Magdalena Shallows, Gulf of St. Lawrence, 1963	Not registered	Occurrence	Observation	355	2014-02-16	2014-02-16	—
	Benthic Foraminifera Collected from the Minas Basin, Spring and Autumn of 1970	Not registered	Occurrence	Observation	998	2015-06-03	2015-06-03	—
	Benthic Foraminifera Collected in the Canadian Arctic During the 1966 Field Season	Not registered	Occurrence	Observation	1,157	2014-02-16	2014-02-16	—

Showing 1 to 20 of 143

The most recently updated resources are also available as an [RSS feed](#)

IPT Version 2.3.4-r68409e6 [About the IPT](#) [User manual](#) [Report a bug](#) [Request new feature](#)

Module 8 - Metadata

Populate the metadata as if you were writing a data report... and then when complete select and view the RTF format. Revise content if necessary

The screenshot shows the OBIS Canada IPT homepage. At the top, there is a search bar with fields for 'email' and 'password', and a 'login' button. Below the search bar are 'Home' and 'About' buttons. The main heading is 'Hosted resources available through this IPT'. Below this is a table with columns: Logo, Name, Organisation, Type, Subtype, Records, Last modified, Last publication, and Next publication. The table lists several resources, with the second one highlighted in green.

Logo	Name	Organisation	Type	Subtype	Records	Last modified	Last publication	Next publication
--	A Study of Attached Benthic Foraminifera Associated With The Deep-Sea Coral <i>Primnoa rosea</i> (Jeffries) On The Scotian Margin	Not registered	Occurrence	Observation	2,568	2015-11-12	2014-03-02	--
--	Abundance of hydroids in a mangrove ecosystem at Twin Cays, Belize, Central America	Not registered	Occurrence	Observation	49	2016-03-29	2016-03-29	--
--	Abundance of intertidal algae and invertebrates on the Atlantic coast of Nova Scotia	Not registered	Occurrence	Observation	100,620	2016-04-06	2016-04-06	--
--	Acadia University. Invertebrate species distribution during winter conditions at the Windsor mudflat, an intertidal mudflat located in the upper Bay of Fundy, January - June, 1999	Not registered	Occurrence	Observation	1,917	2016-06-27	2015-11-07	--
--	Acadia University. Invertebrates from mudflats in the Minas Basin (Bay of Fundy), collected for the NeGIS project, July 2008	Not registered	Occurrence	Observation	330	2017-02-11	2017-02-11	--

<http://ipt.iobis.org/obiscanada/>

The screenshot shows the resource page for 'Abundance of hydroids in a mangrove ecosystem at Twin Cays, Belize, Central America'. The page has a sidebar with navigation links: Summary, Data Records (highlighted), Downloads, Versions, How to cite, Rights, GBIF Registration, Keywords, Contacts, Geographic Coverage, Taxonomic Coverage, Temporal Coverage, Sampling Methods, Bibliographic Citations, and Additional Metadata. The main content area shows the title, a summary, and a list of actions: Home, DwC-A, EML, RTF (highlighted with a blue box), Versions, Rights, and Cite this. Below the actions is a 'Data Records' section with a description of the data and a 'Downloads' section.

http://ipt.iobis.org/obiscanada/resource?r=calder_belize_hydrob1991

Module 8 – RTF → Data paper

Populate the metadata as if you were writing a data report... and then when complete select and view the RTF format. Revise content if necessary

The screenshot displays a metadata editor interface with three main panels:

- Left Panel (Form):** Contains fields for title, author, citation, and abstract. The title is "Abundance of hydroids in a mangrove ecosystem at Twin Cays, Belize, Central America". The author is "Dale Calder¹, OBIS Canada²". The citation is "Calder, Dale R. (2016). Abundance of hydroids in a mangrove ecosystem at Twin Cays, Belize, Central America. Version 1 In OBIS Canada Digital Collections. Bedford Institute of Oceanography, Dartmouth, NS, Canada. Published by OBIS, Digital <http://www.iobis.org/>. Accessed on -INSERT DATE".
- Middle Panel (RTF Preview):** Shows the metadata in RTF format, including sections for Taxonomic ranks, Spatial coverage, General spatial coverage, Coordinates, Temporal coverage, Methods, Method step description, Study extent description, Sampling description, Quality control description, and Datasets.
- Right Panel (Data Paper Preview):** Shows the metadata as it would appear in a data paper, including Distribution, Publication date of data, Language, Licences of use, Metadata language, Date of metadata creation, Hierarchy level, and References.

http://ipt.iobis.org/obiscanada/resource?r=calder_belize_hydrob1991

Module 9 – Data processing



www.telegraph.co.uk

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Discussion

Resources

Resources

The screenshot shows the OceanTeacher website interface. At the top, there is a navigation menu with the following items: ABOUT, ALL COURSES, UPCOMING COURSES, APPLY, INSTRUCTORS, VIDEOS, CONTACT US, and LOG IN. Below the navigation menu, there is a language selection section: "Browse by Language: English | Français | Español | Português". Underneath, there is a "Browse by Subject:" section with four main categories, each represented by a colored banner with an icon and a list of topics:

- Data Management** (Dark Blue banner with database icon):
 - Marine Meteorology
 - Ocean Observation

Topics include Marine GIS, Bio-Geography, Cruise Planning and Oceanographic Sampling
- Information Management** (Dark Blue banner with document icon):
 - Disaster Recovery

Topics include Digital Asset Management, E-repositories, Disaster Planning and Recovery.
- Marine Spatial Planning** (Teal banner with globe icon):
 - Tsunami
 - GIS

Topics include Coastal and Marine Spatial Planning and Management
- OBIS** (Green banner with leaf icon):
 - Harmful Algal Blooms

Topics are related to marine biodiversity data and information management.

A notification badge in the bottom right corner indicates "1 new notification".

Resources



[Introduction to IOC, IODE and OBIS](#) 72.1MB Powerpoint presentation



[Introduction to WoRMS and MarineRegions](#) 5.5MB Powerpoint presentation

Biodiversity Data Standards



[OBIS taxonomic standards](#) 3.2MB Powerpoint presentation



[OBIS metadata standards](#) 1.2MB Powerpoint presentation



[Darwin Core standards](#)

Data Quality Control Procedures



[OBIS Data Quality control tools and techniques](#) 14.4MB Powerpoint presentation

Data Access and Visualisation



[Processing and visualizing OBIS data using R](#)



[Data visualization using online GIS tools](#)



[Data visualization using desktop GIS tools](#)

<http://classroom.oceanteacher.org/course/view.php?id=22>

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Resources - FAQ

<http://classroom.oceanteacher.org/course/view.php?id=22>

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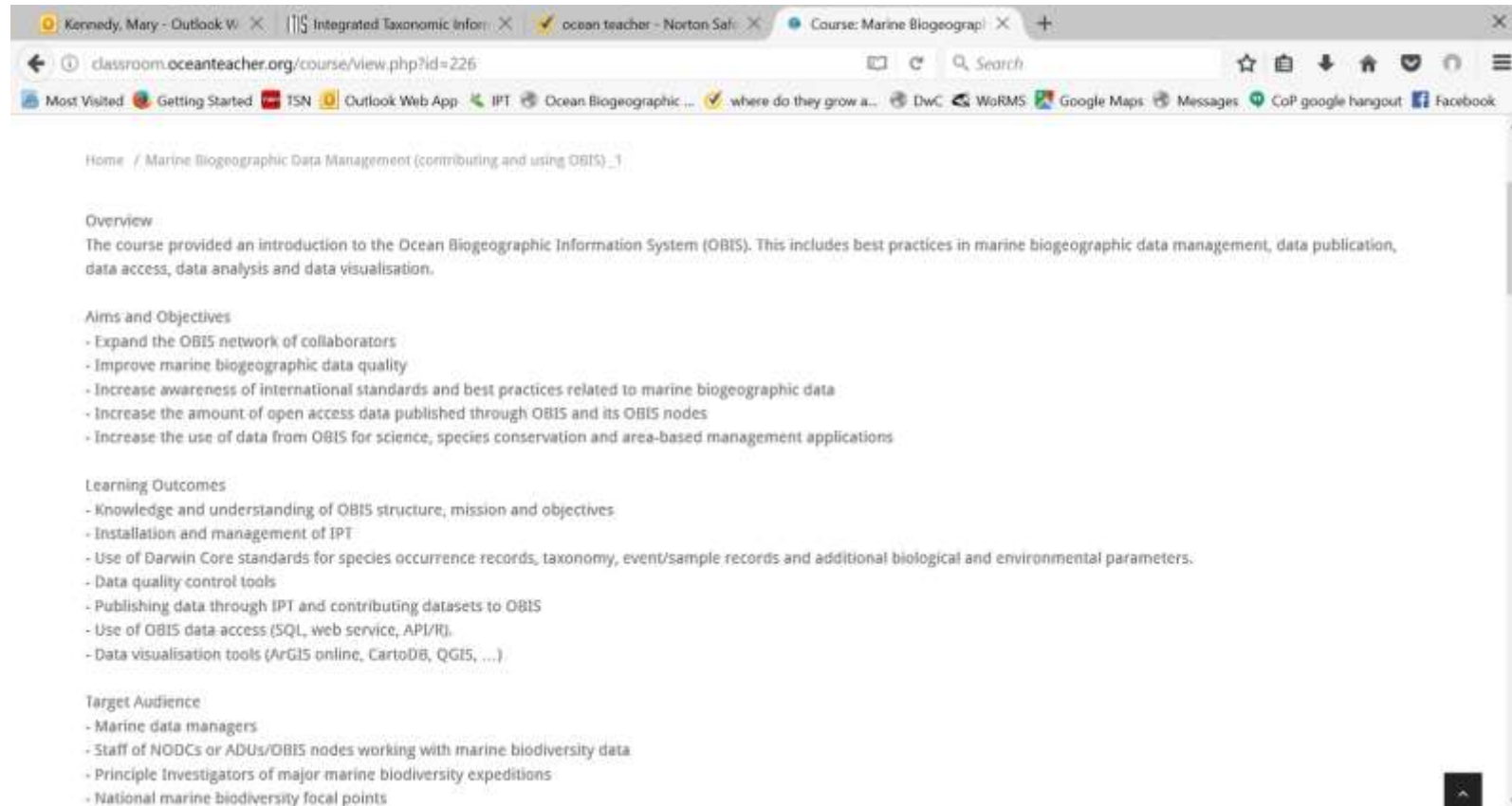




Additional Reading

- <http://dalspace.library.dal.ca/handle/10222/72817>
- Brown, Geoff, Kennedy, Mary, Sherin, Andrew, Appletans, Ward, Mills, Eric L., & Lavoilette, Lance (2017). NSIS and Atlantic Ecosystems Initiative to make data accessible - one dataset at a time. Proceedings of the Nova Scotian Institute of Science, 49(1), 17-22. handle: <http://hdl.handle.net/10222/72817>

Ocean teacher



Home / Marine Biogeographic Data Management (contributing and using OBIS) _1

Overview
The course provided an introduction to the Ocean Biogeographic Information System (OBIS). This includes best practices in marine biogeographic data management, data publication, data access, data analysis and data visualisation.

Aims and Objectives

- Expand the OBIS network of collaborators
- Improve marine biogeographic data quality
- Increase awareness of international standards and best practices related to marine biogeographic data
- Increase the amount of open access data published through OBIS and its OBIS nodes
- Increase the use of data from OBIS for science, species conservation and area-based management applications

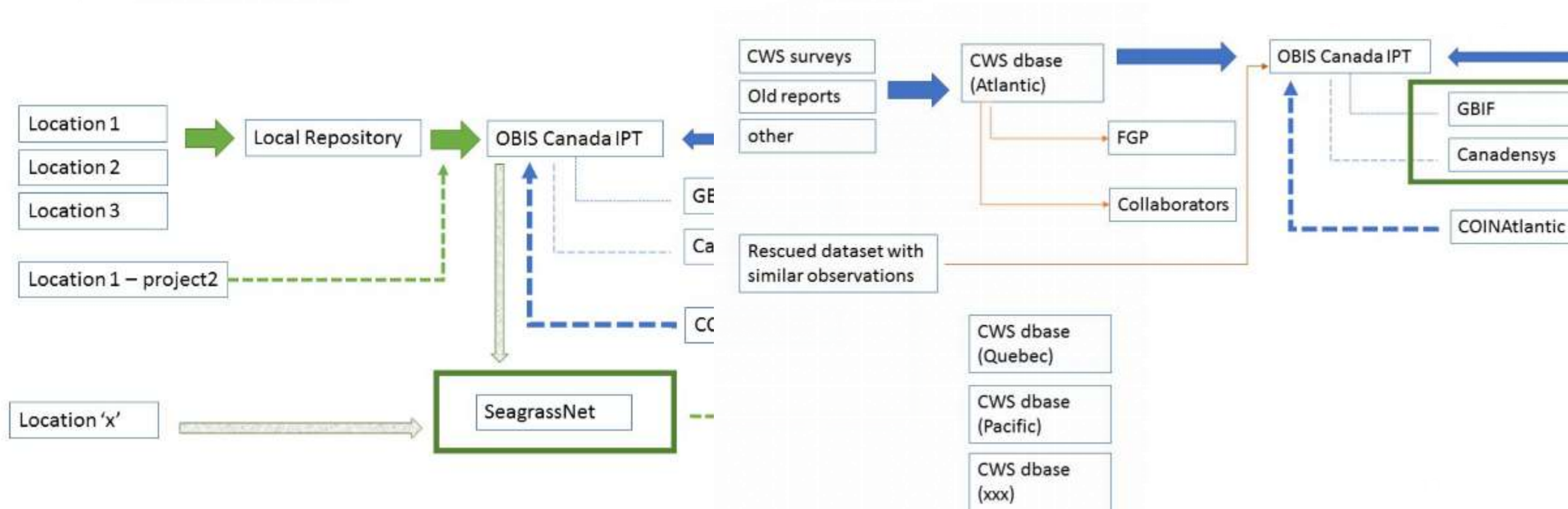
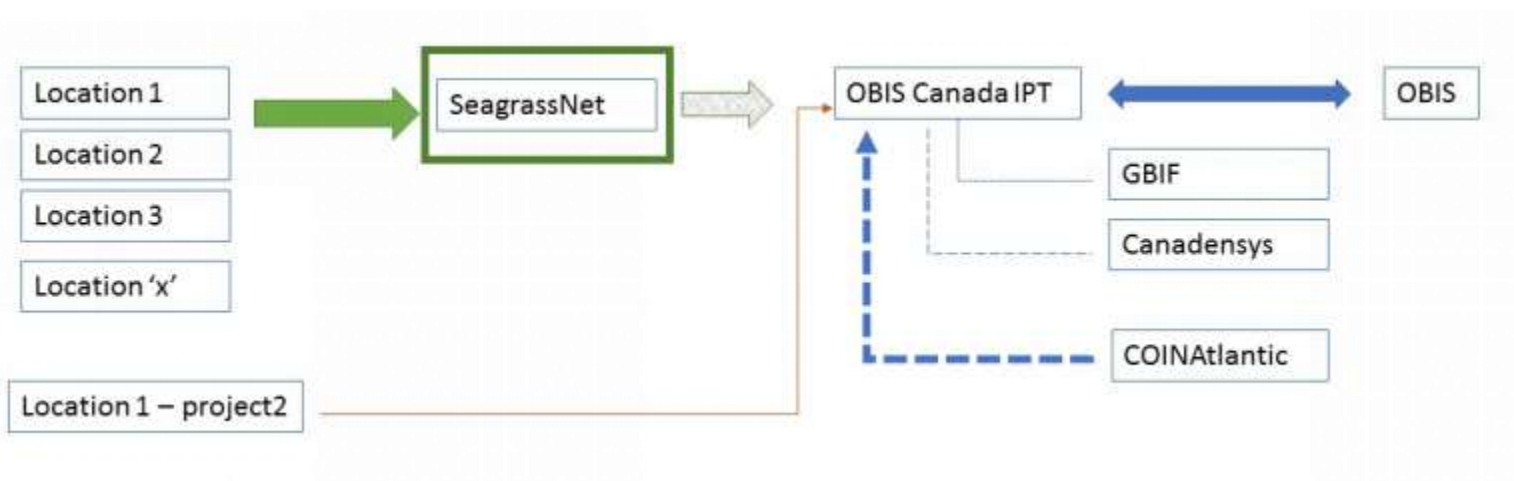
Learning Outcomes

- Knowledge and understanding of OBIS structure, mission and objectives
- Installation and management of IPT
- Use of Darwin Core standards for species occurrence records, taxonomy, event/sample records and additional biological and environmental parameters.
- Data quality control tools
- Publishing data through IPT and contributing datasets to OBIS
- Use of OBIS data access (SQL, web service, API/R).
- Data visualisation tools (ArcGIS online, CartoDB, QGIS, ...)

Target Audience

- Marine data managers
- Staff of NODCs or ADUs/OBIS nodes working with marine biodiversity data
- Principle Investigators of major marine biodiversity expeditions
- National marine biodiversity focal points

<http://classroom.oceanteacher.org/course/view.php?id=22>



Training requirements

- Define roles and responsibilities and determine where one fits and what one can contribute
- Data policies
- Data sharing – who is the rights holder? Who is the data custodian? Too much sharing?
- Alphabet soup
- Need a data landscape map... data is flowing where? And being used by who?
- Data repositories, data aggregators, data integrators
- Communities of practice.... sharing guidelines and lessons learned. Make recommendations
- ‘Cleaning’ data
- Standards and vocabularies
- DwC
- WoRMS, ITIS ...Lifewatch tools, mapping weird names
- measurements
- Gazetteers
- Georeferencing observations
- Recording contributions to other initiatives ...provide synonyms, improve are definitions, share R script
- Metadata (data required to properly interpret a dataset and facilitate reuse)
- Sharing questions and resolving issues, documenting methods,