An Introduction to the Ocean Biogeographic Information System

What is OBIS?

The Ocean Biogeographic Information System (OBIS) seeks to absorb, integrate, and assess isolated datasets into a larger, more comprehensive picture of life in our oceans. The system hopes to stimulate research about our oceans to generate new hypotheses concerning evolutionary processes, species distributions, and roles of organisms in marine systems on a global scale. The maps generated by OBIS contribute to the 'big picture' of our oceans: a comprehensive, collaborative, world-wide view of our oceans. Datasets of interest to OBIS are those that contain biogeographic information – in other words a scientific name and a location. Most datasets that contain this type of information also include many additional fields… OBIS is not meant to be an archive for the full datasets displaying only the relevant fields – rather the full dataset can be archived elsewhere and a subset submitted to OBIS.

OBIS provides a portal or gateway to many datasets containing information on where and when marine species have been recorded. The datasets are integrated so you can search them all seamlessly by species names, higher taxonomic level, geographic area, depth, and time; and/or dataset or data provider names. OBIS provides online mapping of distribution records and provides options to download the selected data in a variety of formats.

Browse the iOBIS site for more info http://www.iobis.org/home

What is OBIS Canada?

Data is provided to OBIS via Regional OBIS Nodes. Nodes are organizations that have committed to continued support of OBIS within a geographic and/or national region. Their responsibility is to ensure data are authoritative (describing specimens and observations using reliable species names and hierarchical classifications); discoverable (listing data collections and their characteristics in a searchable catalogue system); accessible (serving data as part of a global georeferenced ocean information system on marine species); and, interoperable (visualizing and analyzing data from several different sources and disciplines).

OBIS Canada is the Canadian regional node. Fisheries and Oceans Canada (DFO) supports OBIS, and DFO houses the data repository at the Bedford Institute of Oceanography. The OBIS Canada website is hosted by the Centre for Marine Biodiversity at Dalhousie University. The website provides information regarding the datasets contributed to OBIS Canada (see http://www.marinebiodiversity.ca/OBISCanada).

OBIS is interested in distributional information for all taxonomic groups. Within Canada there are many archives for different types of data or for specific taxonomic groups. For example, the DFO BioChem archive is an excellent repository for plankton datasets. Multispecies trawl survey databases exist in all DFO regions. The Canadian Wildlife Service archives seabird datasets. Benthic data on the other hand is less well organized and an 'archive' for this type of data does not yet exist. OBIS can provide a site where a standardized view of all these types of datasets can be accessed.

Who should contribute?

Are you interested on making your biogeographic data discoverable to the public as part of an initiative to mobilize Canadian biodiversity information? If yes, then data managers from OBIS Canada are offering to assist with collections that may contain marine or estuarine specimens.

Submission of a dataset to OBIS creates a view of the data and makes it discoverable to the public thereby contributing to the initiative to mobilize Canadian biodiversity information.   The minimum requirements for release are records that contain scientific names, latitude and longitude, collection code, catalogue number. More information can and should be included, such as date, sampling depths, life history, gender, etc.

If you think you have biogeographical data which might meet these requirements and would like to make it available, then please contact OBIS Canada data managers at OBISCanada@dfo-mpo.gc.ca

What are the benefits of contributing data to OBIS?

OBIS will facilitate integration of marine biodiversity data within an international and national framework of data standards and protocols.

OBIS will provide access to highly distributed data sets from a multitude of partners in areas of interest to Canada:
- Temporal coverage (time series datasets)
- Geographic coverage
- Taxonomic coverage (seaweed, plankton, invertebrates, fish, birds, mammals)

OBIS can provide access to data of use in understanding species (particularly stocks which straddle international borders) and ecosystems as well as monitoring, evaluating and forecasting change in our oceans.

OBIS will enable scientists to study biodiversity at both national and global scales, facilitating research in areas such as ecosystem-based management, species at risk, or invasive species which are best examined within the context of global biodiversity changes.

OBIS will bring increased global visibility to the very high standard of biodiversity research going on in Canada.

OBIS datasets are all associated with metadata pages which include the data provider's dataset title and citation. In addition to increasing the discoverability of a dataset the metadata page also provides information to help the end user interpret the data and determine fitness of use.

Information on this sheet extracted from

OBIS Canada (2012). An Introduction to the Ocean Biogeographic Information System, Version 0.1, released on 30 April 2012, (contributed by C. Rafuse, M.K. Kennedy, N.I. Lewis, J.M. Spry, L. de Montey, M-H. Theriault, and the CHONe Data Management Committee), 16 pp, accessible online at http://obiscanada.marinebiodiversity.ca/resources/obis-guides/obis-guide-an-introduction-to-obis/view

How can a data holder contribute data?

The procedure to contribute data can be broken down into a number of steps during which a series of questions will be addressed by the data holder:
- Do I have any suitable datasets?
- Does my data have to be in a database?
- What information must be included in the data file?
- How can I prepare my data file for speedy processing?
- How do I submit my prepared file to OBIS?

Step 1: Do I have suitable data?

Identify datasets of interest and then review the content.
- What type of data was collected?
- How many collections & datasets?
- Do the different datasets require separate citations?
- What format? (ASCII, spreadsheets, database)
 Once you've answered these questions you are ready to describe the dataset and start compiling the data.

Step 2: Dataset Metadata

All datasets submitted to OBIS must have a **metadata page** which includes a summary of the dataset and provides sufficient information to the reader so that they can properly interpret the data.

The metadata page includes keywords and describes the temporal and spatial extent of the dataset.

The metadata page also includes a title and citation for the dataset.

The OBIS node manager will assist with a creating a GCMD metadata page. http://gcmd.nasa.gov/

Step 3: What type of information should be provided to OBIS Canada?

- Scientific name *
- Latitude and longitude *
- Institute name *
- Collection name *
- Catalogue number *
- Date collected
- Depth
- Presence or Abundance/Biomass
- Type of gear used to collect the sample
- SampleID (or field number)
- Vessel name (if from an oceanographic cruise)

*These fields are required

Step 4: Data Format

OBIS Canada currently receives data in
- EXCEL spreadsheets
- ACCESS database tables
- Oracle database tables or views

The data must be formatted according to the OBIS schema. The OBIS schema is very specific about the content for each field.
The following required fields must be standardized as follows:
- scientific names matched to the World Register of Marine Species (WoRMS) accepted names and taxonomic classification.
- Position information (latitude and longitude) in decimal degrees.

Date and time fields are optional but if provided must be separated into day, month and year. Time information must be in decimal hours and the time zone must be included.

Required Data: Scientific Names

Data providers should review their species list. It is recommended that they use the WoRMS taxon match tool to standardize spelling and obtain the WoRMS code numbers (AphiaIDs).
http://www.marinespecies.org/

Required Data: Latitude and Longitude

OBIS requires position information. The coordinates must be in decimal degrees.
- If your position information is in degrees and minutes then you must convert to the correct format.
- If your position information is a location name you must obtain the coordinates. Coordinates for Canadian place names can be found at:
http://www.nrcan.gc.ca/earth-sciences/search/search_e.php

OBIS Schema

The OBIS web site contains information on its schema and includes a downloadable template.
In 'Search OBIS web pages' type 'schema'
➢ This will direct you to a page describing the data schema and metadata including definitions for all the schema fields.
http://www.iobis.org/data/schema-and-metadata

OBIS provides a template which can be utilized by the contributor. In the downloaded EXCEL file, hover over the column labels to view field definitions.
http://www.iobis.org/sites/default/files/DataSpreadsheet.xls

For more information please contact: **OBISCanada@dfo-mpo.gc.ca** or **mary.kennedy@dfo-mpo.gc.ca**