Harmonising Marine Species Traits for Mapping and Management

EMODnet (European Marine Observation and Data Network)

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EMODnet Biology

European Commission (DG MARE) is setting up a European Marine Observation and Data Network (EMODnet) under Marine Knowledge 2020. The aim is to migrate fragmented, inaccessible marine data into interoperable, continuous and publicly available data streams for complete maritime basins. Phase 1 (2009-2012) developed the EMODnet Pilot Portal for Biology; an online service to deliver and harmonise species distribution data and link it with physical, chemical, and geological parameter data (Figure 1; http://bio.emodnet.eu).

From the 453 marine biological data sets and sampling programmes identified, about 60% make presence and/or abundance data available through the portal. There are over 14 million records available in the EMODnet biological portal. The best represented groups are fish, benthos, plankton and birds. Most data come from the North Sea, English Channel, Celtic Sea, Skagerrak and Kattegat, between 1980-2005.

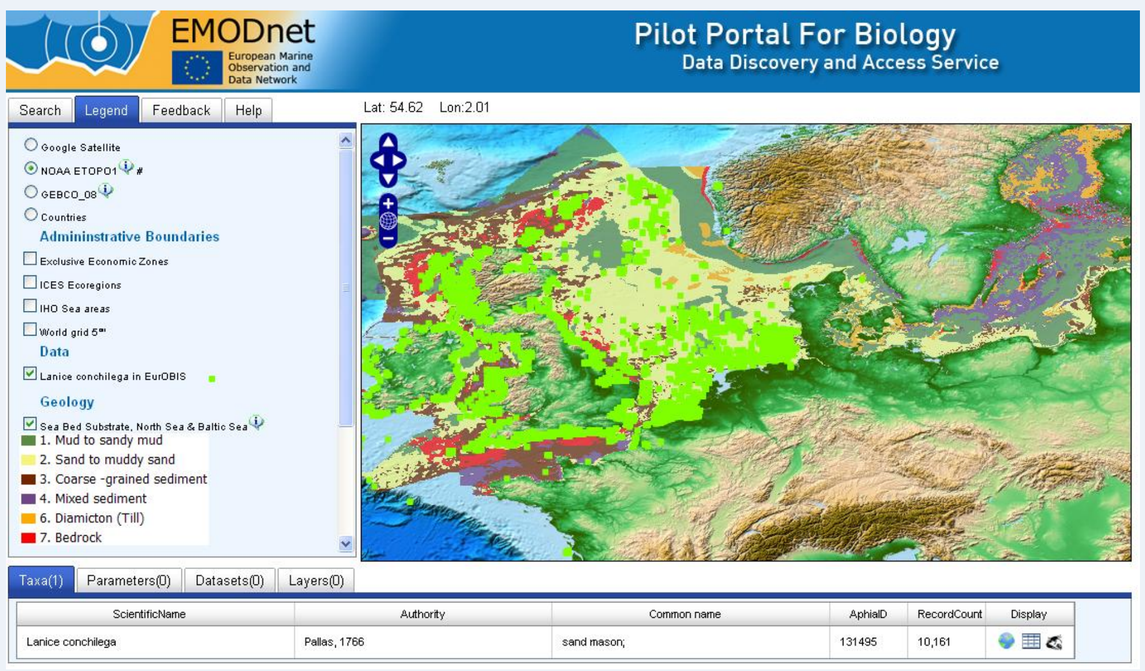

Figure 1. Example of EMODnet Biology Pilot Portal output.

Species, species attributes and species indicator information

EMODnet Biology Phase 2 (Sept. 2013-2016) will build on this pilot portal to become "an essential support infrastructure for the marine sciences, monitoring and environmental management in Europe. A standard based, quality controlled, expert validated, open-access infrastructure for research, education, data and resource management." The project includes a dedicated work package to collate and harmonise species traits.

Aims

1. Link data and data products to marine policy priorities within Europe, under EU Directives and international conventions. In particular, the data types, species, communities and indicators relevant to the Marine Strategy Framework Directive (MSFD).
2. Collate information on biological traits, ecosystem services and benefits, managerial and policy attributes in a systematic, standardised and interoperable format.

Deliverables

1. List of species tagged with role and importance within MSFD reporting and the linked descriptor for inclusion in European Register of Marine Species (ERMS[1)] and World Register of Marine Species (WoRMS[2])(end 2014).
2. Assessment of those species and communities identified by national MSFD leads as required for MSFD monitoring and reporting (end 2015).
3. Organisation of a data attributes workshop to discuss a standardised vocabulary and prioritise the biological attribute and trait information, in collaboration with WoRMS taxonomic editors (1st workshop held in Dec. 2012, 2nd mid 2014).
4. Publication of standardised species attributes vocabulary (2016).
5. Selected European marine species tagged with relevant species attribute information and available through WoRMS and the EMODnet biological portal (2016).

[1] ERMS - www.marbef.org/data/erms.php

[2] WoRMS - www.marinespecies.org

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Preparatory actions

EMODnet Biology 2 starts in earnest in Sept. 2013 but preparatory actions are already in place.

Species Traits Workshop

An EMODnet Biology workshop on species attributes (traits) was held at VLIZ, Oostende, in Dec 2012. The workshop examined current trait schemas and databases for marine benthos, fish, deep sea benthos, and plankton with WoRMS taxonomic editors and database curators.

Pilot Projects

As a result of the workshop, several comparative pilot studies to harmonise and identify common traits are already underway. These include:

- Benthic and demersal macrofauna (University of Sheffield);
- Planktonic species collected by the CPR (SAHFOS, Plymouth);
- Planktonic copepods (Natural History Museum, London);
- Seabirds and coastal birds (JNCC, UK); and
- Introduced and invasive species (University of Auckland).

A comparison of existing traits schemas is in process. It includes schemas from key databases and reviews.

- FishBase (global database of fish)
- SealifeBase (global database of sea life)
- BIOTIC (UK database of benthic invertebrate traits)
- MARBIGEN (trait database for Polychaetes)
- TRY (global database of plant traits)
- Cornelissen *et al.* (2003) (handbook of plant functional traits)
- Tyler *et al.* (2012) (review of traits for benthic marine macrofauna)
- Costello (2009) (review of marine habitat classification)
- Glover *et al.* (2012 in prep) (functional trait classification for deep sea fauna)

Summary

EMODnet Biology Phase 2 will:

- Develop the standard vocabulary and classification schema for species traits in Europe, for application in marine monitoring and management, policy, scientific studies of ecosystem structure and functioning, and ecosystem models.
- Provide the vocabulary/schema in a standard, interoperable format; linked to marine biological data via the EMODnet Biology Portal.
- Link marine data , species traits, and species and community distributions via management and policy relevant data products.

The standardised species attribute vocabulary and classification schema will be open to consultation during the life-time of the project and published online as part of the EMODnet portal in 2016.

References

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EMODnet Biology Portal - http://bio.emodnet.eu/ | BIOTIC - www.marlin.ac.uk/biotic | TRY – www.try-db.org

FishBase - www.fishbase.org | SealifeBase – www.sealifebase.org | MARBIGEN - www.marbigen.org

Project partners

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