EMODnet Biology: an EU service for the marine biology community and beyond

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EMODnet Biology is the EU's operational in situ service for marine biodiversity data, with actions focusing mainly on data publishing, creation of data products and publication of informative material covering the European Seas and the following groups: (macro)algae, angiosperms, benthos, birds, fish, mammals, phytoplankton, reptiles and zooplankton. The data work is supported by the EurOBIS data infrastructure (database and European OBIS node) hosted by the Flanders Marine Institute which has frequent updates to allow for the management and publication of new types of data, from imaging to species tracking and omics. On the IMDIS 2021 edition, EMODnet Biology was finishing Phase III; we are now in Phase V and will report not only on the progress achieved since 2021 but also on what we plan to do until the end of the current Phase, ending in May 2025.

Data Publication

Since 2021 the number of datasets with published data has increased by more than 20%, from 1077 to 1301 metadata records. This brought the total number of biological occurrence records from 25.5 million to 35.6 million and additional biotic and abiotic parameters, collected alongside the biological data, from 30.7 million to 92.4 million. A detailed breakdown of acquired occurrence records for each group and region, per EMODnet phase, is illustrated in Figure 1, comprising almost 15 years of data acquisition. With 98.9% open data and only 1.1% being restricted, this demonstrates the success the initiative has had over the past 1.5 decades in expanding its network of data providers and promoting Open Science and FAIR principles.
Our data infrastructure is now ready to receive not only species observations, but data from automated imaging systems, e.g., Zooscan and tracking data. Developments are underway to allow for the publication of omics data, adhering not only to the international community standards and guidance but also complying with the EU's requirements.

Data Products

In April 2023 (end of Phase IV), the number of available products increased to 38, including three from external sources. The latest products have their code and methodology available on the EMODnet GitHub (https://github.com/EMODnet) allowing users to implement the approaches to their own data.
The EMODnet centralisation in 2023, forced changes and updates to internal procedures as well as to the way our products were built, in order to comply with the software and systems set in place for the EMODnet Central Portal. This required, e.g., the drafting of guidance on how to create biological products in a format that was compatible with the systems in place (e.g., ERDDAP, GeoServer). Despite the work and efforts made, integration wasn't always straightforward and althought following the established conventions (e.g., CF conventions),

biological products are often not as easy to manipulate or integrate with other data types (e.g., Physics or Chemistry).
Within Phase V specific efforts will be dedicated to promote EMODnet biological data and data products towards major data users in charge of marine environmental status asessments, such as Regional Sea Conventions and EU institutions responsible for the implementation of marine environmental directives.

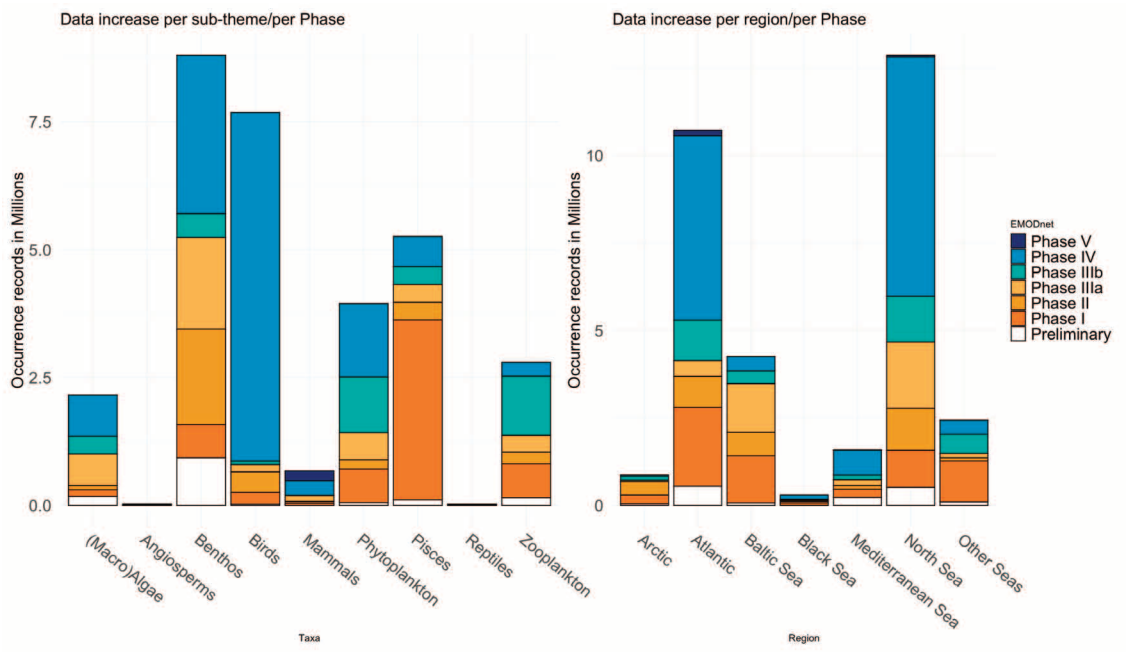

Figure 1 Data increase during each Phase per functional group (left) and European Sea region (right).

Outreach

An important line of work that has been maintained for a number of years consists in the sharing of our knowledge and experience by providing resources to the wider Marine Biology community and beyond. This work has been done by not only organising training workshops, developing an online and open 'Contributing datasets to EMODnet Biology' course, but also by a study on text mining software to capture ecological traits and sampling descriptors and developing R Packages (EMODnetWFS and EMODnetWCS) that allow for the search and download for all thematic lots data/products, using EMODnet's webservices. During Phase V we will continue with this line of work, by updating the existing data course, organising various workshops, creating training resources focusing on the R Packages and publishing various informative material.

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