

obtain further information about the 19 research projects within the MarBEF Responsive Mode Programme, you can visit the site <http://www.marbef.org/projects> where an overview of these research projects, together with their websites, is available.

MarBEF Publication Series (MPS)

After two years, the MarBEF Publication Series (MPS) boasts 27 papers (only five in 2004 because the initiative started in late 2004). It is likely that there was a general misconception about what the MPS stands for, particularly in the early phase of MarBEF when we observed that more than 60% of the papers were from our Italian researchers, portraying a geographic inequity. Without analysing this further here, we will define more clearly what the MPS is.

The MPS is an online archive for papers or reports that are directly or indirectly linked to MarBEF. This means that all the scientific publications that result from MarBEF work, and any of your recent papers on topics relevant to marine biodiversity and ecosystem functioning, can be archived on the web and

downloaded as a PDF. The only requirement to be considered for the MPS is that you acknowledge MarBEF.

The online archive is now restricted to registered MarBEF members, but we hope to open the MPS, in the not-too-distant future, to the general public within the framework of the Open Archives Initiative (Appeltans *et al.* 2005). Already 93% of the publishers do support the OAI, and you can find the list at: <http://romeo.eprints.org/publishers.html>. The benefits of having our own open MarBEF archive are innumerable, and therefore we hope that you understand the importance of joining the MPS.

To get even more out of the MPS papers, we have been screening them and are now providing all the species distribution data via the European Ocean Biogeographic Information System (EurOBIS). It is one of the aims of OBIS to act as a depository for published distribution data, in the same way as DNA sequences are generally required to be submitted to GenBank. MarBEF can play a central role in this process and again here make a difference.

The MarBEF Publication Series is available at <http://www.marbef.org/mps>.

The MarBEF Publication Series data are downloadable at <http://www.marbef.org/data/eurobissearch.php?dataprovder=29>.

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European Register of Marine Species (ERMS) – plans turning into reality!

By Daphne Cuvelier, Simon Claus, Ward Appeltans, Bart Vanhoorne, Edward Vanden Berghe & Mark Costello

SINCE THE START of the MarBEF project, much effort from both the data management team and the editorial board has gone into the improvement and completion of the European Register of Marine Species. A board of Associate Editors (including all the taxonomic experts) have been identified, and are responsible for the management and the content of the Register. The entire list of people involved can be found on the MarBEF website at www.marbef.org/data/erms.php. More than 69,000 visitors have browsed these web pages since 24 November 2004.

A little bit of history

The European Register of Marine Species (ERMS) was initiated in 1998 by a project funded under the European Union MAST research programme. It resulted in a species list of almost 30,000 species from European marine waters (Costello *et al.* 2001). Since the update of the ERMS remains a continuous process, a clear data management plan and an Intellectual Property Rights Agreement were created. The copyright of ERMS was assigned to the Society for the Management of European Biodiversity data (SMEBD) (see website:

<http://www.smebd.org/>), a society where all contributors are life members (Costello 2004).

From a static list to a fully dynamic database

Thanks to MarBEF and SMEBD, the data from the ERMS project have been recovered and the static species lists from ERMS 1 (2001) have been transformed into a fully relational database. Another EU project, Species 2000 Europa, provided some of the funding to do the initial conversion. The expertise and

motivation of the data centre of the Flanders Marine Institute (VLIZ) was indispensable and enhanced the process considerably.

Since some months, an online editing tool has been developed and allows the taxonomic editors to add, edit and delete taxa and synonyms, geographic distribution, vernaculars, notes and bibliographic information and provide url links to related resources. A system of passwords was installed that takes into account the taxonomic hierarchy; this means that it is now possible to allocate edit rights very precisely, restricted to any taxon, of any rank, to selected taxonomic specialists.

The ERMS database can now also store pictures of species, which can be uploaded online through the MarBEF website. Anyone who holds copyright over photographs (or other multi-media documents) of reliably identified organisms is invited to contribute these to the system, and share them through ERMS with the rest of the world.

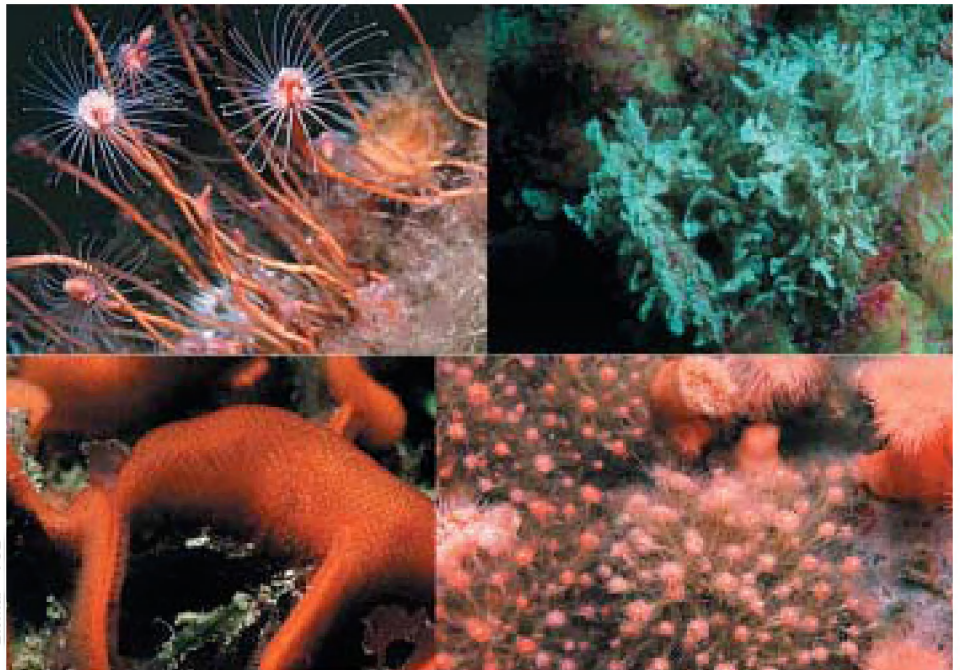
Links with other taxonomic databases (Fishbase, Algaebase, CLEMAM, Marlin, NeMys, Rhabditophora) are established at taxon level, to enhance visibility and to prohibit duplication of data and to confine work-effort and workload.

Quality assurance

At the moment, the vast majority of the multicellular groups (exceptions are a few smaller taxa, e.g. Euphausiacea) in ERMS are represented by Associate Editors. All of these are renowned experts on the taxonomy of their respective taxa. A complete overview of the Associate Editors can be found on the ERMS website at www.marbef.org/data/ermspartner.php. Any Associate Editor can invite Review Editors responsible for a smaller sub-group e.g. a family, or who bring expertise on a particular geographic region. So far, six taxonomic groups (Oligochaeta, Halacaridae (Acarina), Rotifera, Phoronida, Proseriata and Kalyptorhyncha) have been revised and nine groups are under revision (Porifera, Mollusca, Nemertina, Fungi, Hydrozoa, Polychaeta, Pisces, Siphonophorae and Amphipoda).

ERMS: the taxonomic backbone of EurOBIS

The European Register of Marine Species is the taxonomic backbone of the European node of the Ocean Biogeographical Information System (EurOBIS). Through EurOBIS, there are distribution records for over 15,000 marine species available. At the moment, EurOBIS covers 1,393,730 distribution records from 31 different datasets. Every incoming dataset's species list is matched with ERMS, which ensures quality control of the



Clockwise from top left: *Tubularia indivisa*, *Chartella papyracea*, *Tubularia larynx*, *Pentapora* sp.

scientific names used in the contributing datasets, adds a higher taxonomic hierarchy and allows the user to find geographic information present in the database. And last but not least, by using the Register every day, mistakes and omissions are detected, which can be passed on to the taxonomic editors for their action.

ERMS in a global context

Species 2000, a project that aims at indexing the world's known species by bringing together an array of global and regional species databases, is linked dynamically with ERMS. In partnership with ITIS, Species 2000 (<http://www.sp2000.org/>) is contributing to the Global Biodiversity Information Facility (GBIF). The participation of ERMS is technically achieved by installing a provider on top of the ERMS database. It is a distributed system that makes sure the central hub (in this case Species 2000) stays up-to-date with its 'spokes' (e.g. ERMS) via regular harvesting of newly-added records. Species 2000 Europa (associated with Species 2000, <http://sp2000europa.org/>), has provided resources to enable the installation of the necessary software.

The European Register of Marine Species (ERMS) is, of course, a continuous process as the nomenclature of some groups remains unstable and new discoveries are regularly made. ERMS is also open to new improvements, application and ideas. Suggestions to improve the system are welcome.

In order to disseminate the current activities and new additions, an ERMS web newsletter is issued every two months. This news bulletin was launched for the first time in December 2005. Please inform us if you want to receive the *ERMS Web News* (data@marbef.org).

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What you can do with ERMS...

- Search by species name
- Browse an alphabetical list of species names per taxonomic group
- Browse a taxonomic hierarchy
- Query a list of all species in a taxon known to occur in Europe

For a taxon...

- Find synonyms
- Find vernacular names in Dutch, English, French and German
- Find species location in a taxonomic tree
- Plot distribution in EurOBIS
- Check specific links with other relevant websites
- Search for the taxon in Google, Google Scholar and Google Images

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