

## “MARBEF”

### Creating an interdisciplinary network for marine biodiversity and ecosystem functioning

*Europe has the longest coastline of all continents relative to its surface and has seas covering millions of square kilometers, extending from the high Arctic to the sub-tropical waters in the south and from the open Atlantic Ocean to the enclosed and semi-enclosed waters of the Baltic, Black and Mediterranean Seas. Europe's oceans are home to tens of thousands of species of microbes, plants and animals. Its marine biodiversity also represents a rich variety of marine habitats and ecosystems, including the deep sea, open oceans and coastal, estuarine and intertidal waters. But this marine biodiversity is threatened by the fact that many of the goods and services provided by marine ecosystems are exploited in a non-sustainable way.*

Europe's marine biodiversity provides a vast but fragile resource of great significance to its people. In some cases, marine ecosystems are threatened to the extent that their structure and function is being jeopardized. The most serious threats to marine biodiversity are (recreational as well as commercial) overexploitation, pollution, habitat destruction and fragmentation, invasions from non-native species and finally also the effects of global climate change. These threats may have widespread social, economic, and biological consequences, the combination of which could threaten our own existence, including:

- economic losses through unemployment and reduced productivity;
- dramatic reductions in the numbers of many popular edible fish and shellfish;
- extinction of species that might be useful in developing new medicines;
- reduced ability of ecosystems to respond to disaster, both natural (floods) and man-made (pollution);
- accelerated global climate change; and
- social and political instability.

Research in this field is currently of a very fragmented nature, but it is rapidly developing. To ensure that future research into the socio-economic importance of marine biodiversity is undertaken in a cohesive manner, an **integrated view of our marine resources needs to be taken**, in which each sector will consider its effects on other sectors and the entire system. For this reason, the MarBEF Network of Excellence (NoE) was called into existence.

**MarBEF, the Marine Biodiversity and Ecosystem Functioning network**, comprises over 700 marine scientists in Europe from 91 institutes and 24 countries throughout Europe. It functions as a **platform to integrate interdisciplinary marine research and to disseminate knowledge on marine biodiversity** with links to researchers, industry, stakeholders and the public through unique training, exchange and outreach initiatives.

At the core of the network lie three concurrent research programmes. The first MarBEF research programme, “Global Patterns of Marine biodiversity across Ecosystems”, explores how patterns of marine life in Europe, from the level of genes to ecosystems, change over large areas and long time periods. This research programme will help



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MarBEF

**Full title of Project:**

Marine biodiversity and ecosystem functioning

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scientists to develop methods to detect significant change in biodiversity resulting from human impacts o global events such as climate change.

The second MarBEF research programme, "Marine Biodiversity and Ecosystem Functioning", aims to unravel the complex relationship between marine biodiversity and ecosystem functioning. While theories of the relationship between marine biodiversity and ecosystem functioning exist for the terrestrial environment, the relationship remains elusive for the marine realm. Scientists within MarBEF are comparing rates of ecosystem processes for a variety of systems and seasons across Europe and are investigating the validity of transposing terrestrial paradigms in ecological theory into marine ecology.

The third research programme within MarBEF, "Socio-economic Importance of Marine Biodiversity", aims to establish the economic, social and cultural values of marine biodiversity for a set of reference sites across Europe. These values will be determined by integrating perspectives from natural scientists, economists, sociologists, and socio-anthropologists and will effectively translate natural science into an accessible format, enabling educated and balanced management functions.

Over the past four years, MarBEF has been reaching out to the wider scientific community through a widely distributed 6-monthly newsletter, and has been raising public awareness of marine biodiversity through online resources ([www.marbef.org/outreach](http://www.marbef.org/outreach)) and through public participation and educational initiatives, including a travelling exhibition on marine biodiversity. It has also facilitated the easy and free exchange of data between partners ([www.marbef.org/data](http://www.marbef.org/data)) and the integration of taxonomists and ecologists through a Taxonomy Clearing System, allowing speedy and accurate identification of species. Finally, expertise and knowledge from MarBEF has been extended through unique outreach, exchange and training initiatives.

**"THE KNOWLEDGE GAINED FROM MARBEF WILL BE USED TO INFORM SOCIETY OF THE RISKS WE FACE BY PLACING EXCESSIVE PRESSURE ON OUR MARINE RESOURCES AND TO AID DECISION-MAKERS IN FINDING EFFECTIVE STRATEGIES TO MANAGE THESE RESOURCES"**

**The MarBEF project consortium is currently summarizing and synthesising its actions and the knowledge acquired, and preparing the communication of its results to the scientific audience, to the policy makers at national and international level and to the public. These results will be presented in the World Conference on Marine Biodiversity, taking place 11-15 November 2008 in Valencia, Spain. Registration for the conference is possible at [www.marbef.org/worldconference](http://www.marbef.org/worldconference).**