

PROSPECTS FOR A SEABED AND HABITAT MAP OF EUROPE

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In our planning and management of the terrestrial environment, we take for granted the availability of high quality maps, such as those provided by satellite images, which show the terrain and land cover. Yet for decades, the activities in our oceans have been developed and planned with only a scant understanding of the nature of the seabed and its biological resources. It is often said that we know more about the surface of Mars than we do about the seabed around Europe.

The ever increasing uses of our seas place continued demand upon the resources it holds. To use both space and resource wisely, we must plan effectively for its long term sustainable use. This draw on our marine resources is now coupled with increasing policy requirements to protect the marine environment. Perhaps the most significant is the EU Marine Strategy Framework Directive (MSFD), adopted in 2008, which requires Member States to achieve Good Environmental Status (GES) across all European waters by 2020. Achieving GES needs to include protection of biodiversity, including seabed habitats, and maintaining the integrity of the seafloor for ecosystem functioning. The Directive places a specific requirement on Member States to produce maps of special habitat types, whilst effective delivery of the Directive more generally will be hampered without a sound understanding of the nature and distribution of seabed habitats and the pressures upon them from human activities. In addition to MSFD requirements, seabed habitat maps are required to help develop a network of marine protected areas and to support marine spatial planning.

Our level of knowledge on the topography of our seas away from coastal areas (where navigational safety demands high resolution data) is often limited. Our knowledge of seabed sediments is poorer still, whilst the availability of high quality seabed habitat maps (including their biology) is extremely limited. For example, the Interreg-funded MESH project (2004-2008; www.searchMESH.net), which collated available habitat maps across north-west Europe, found that only about 10% of UK waters were properly mapped. Some countries, such as Ireland (www.infomar.ie) and Norway (www.mareano.no) have embarked upon extensive seabed mapping programmes, using state of the art acoustic mapping techniques (e.g. multi-beam echosounder), in recognition of the importance of having high resolution data to support future management of their seas. The task, at a European scale, is both enormous and costly, but the long-term benefits are also very significant.

Whilst the momentum for seabed survey across European states is growing, the prospect of having full coverage high resolution habitat maps for European seas is still many years, perhaps decades, away. However, the need for such information, to meet both industry and policy requirements, is right now. To help fill this vacuum, broad-scale predictive seabed habitat maps are being developed, which provide an interim solution by integrating available physical and oceanographic data. Trialled at a UK scale by Connor *et al.* (2006) (update in 2010), the methodology has been extended to the Baltic Sea (Al-Hamdani and Reker, 2007) and north-west Europe (Coltman *et al.*, 2008). This work is now being expanded within the EUSeaMap project (www.jncc.gov.uk/EUSeaMap) to include the western Mediterranean, as part of the EC-funded EMODnet initiative (http://ec.europa.eu/maritimeaffairs/emodnet_en.html#1).

This presentation will outline the development of European-scale seabed (bathymetric, substratum) and habitat maps and demonstrate the emerging maps from the EUSeaMap project; it will explore future prospects for achieving full coverage mapping of European waters.

References

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