

How can marine and coastal data be put to better use?

Marine Theme Objective: Human Pressures and Impacts on the Marine Environment

What's the problem?

Marine and coastal data are collected by many organisations, across a range of industry, academic and public sectors, covering a wide variety of natural science and socio-economic disciplines. Some of these data are difficult and expensive to obtain. At the inception of the project, it was apparent that much greater awareness was required both of those collecting data and those who would benefit from its wider dissemination.

It was perceived that structural and cultural changes were required to make better use of existing data and information; i.e., to collect once and use many times. This approach has benefits both within and between organisations. In addition, emerging EU policy and consequential UK legislation required that organisations make freely available any environmental data and information, obtained at public expense, covered by the Freedom of Information Act (2000) and the Environmental Information Regulations (2004). This provided an additional driver to facilitate improved data management, access and interoperability between systems.

What are the aims of the project?

The initial aim of the project was to develop an easily accessible, coherent & harmonised maritime data information system, facilitating interoperability with other coastal and marine data gathering organisations.

It was intended this would lead to the development of a tool to support assessments of cumulative environmental impacts and ecosystem change. In a series of related developments, the management of marine environmental data – in the UK, Europe and internationally - has been transformed in recent years.

The project provided a vehicle for Cefas to contribute to these developments, on behalf of Defra, with the objectives being re-focused throughout the lifetime of the project. This applied especially to the development of the UK-wide MEDIN (Marine Environmental Data & Information Network).



Figure 1: Historic fishing fleet

Which policy areas will the research inform?

The project was relevant to a number of policy areas, by improving Defra's ability to respond to national & international requests for environmental data as well as enhance the manipulation and integration of information for legislative purposes, e.g. in relation to the Water Framework Directive, Marine Strategy Framework Directive, Charting Progress & OSPAR requirements.



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What are the results from the project and how will they be used?

At an early stage a consultation exercise was undertaken to explore the needs and perceptions of Defra and other potential end users. At the same time we examined data management practices within Cefas and initiated improved data management principles at a corporate level, such that 'Cefas at a corporate level would know what Cefas at an individual scientist level knew'. This resulted in a formal Cefas Data Management Strategy and the creation of a central metadata database (iMET). The original objectives were re-visited several times during the course of the project, with modifications designed to take account and advantage of technical and organisational developments in the UK, Europe and internationally. This included the emergence of the UK Marine Monitoring and Assessment Strategy (UKMMAS), and associated group structure. Thus, what had started out as an R&D project became transformed, at least in part, to an initiative supporting an emerging management need to service the UKMMAS, as well as providing a lasting contribution to developing robust mechanisms for long-term data stewardship and to promoting the optimal use of marine data. In the latter stages we entered discussions with several other agencies on the need for a Data Archive Centre (DAC) for fisheries data, as part of the MDIP/MEDIN family.

This led to the creation of FishDAC, developed as a collaborative exercise with the Marine Biological Association using Cefas' experience with iMET and the MBA's with DASSH (Data Archive Centre for Seabed Species & Habitats). This is being developed further within the MEDIN framework to include the main UK sources of fisheries data.

In addition to providing technical solutions, the project was able to make a significant contribution to a number of data initiatives. For example, this included support for the development of data handling and analysis techniques allowing the application of integrated ecosystem assessment approaches, in a novel manner, to regions extending beyond national boundaries. When applied to the North Sea, we were able to conclude that the North Sea had been subject to a regime shift in the late 1980s, on the basis of systematic changes to a wide range of

biotic and abiotic characteristics and indicators of human pressures. We were able to demonstrate links between changes in oceanic conditions, biological response and human pressures, by organising and analysing the data from many sources covering many disciplines. This underlines the benefits of making optimal use of data collected for a wide variety of purposes, and provides added justification to promoting the development of UK initiatives such as MEDIN, linked to wider European and international developments.



Figure 2: Sampling seabed sediments

Where can I find further information about this and related research?

For information about Cefas research: www.cefas.co.uk; or peter.kershaw@cefas.co.uk

For information about MEDIN: www.oceannet.org

Alternatively, please contact Defra's Marine and Fisheries Science Unit: marinescience@defra.gsi.gov.uk

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