

Before we can plan to protect our important intertidal and sea-bed habitats from development we need to know more about the existing variety and distribution of habitats. **Dave Long, Alan Stevenson and Heather Stewart** describe how we are working with other European organisations to plug the gaps in our knowledge.

# Offshore habitat mapping

In the past the seas around north-west Europe supported important fishery industries. More recently other natural resources have been exploited including hydrocarbons and aggregates. Now there are increasing pressures from new developments, such as for renewable energy (e.g. wind farms) and coastal developments for leisure activities and coastal defences. These multiple uses lead to increased risk of conflict between users plus greater potential for degradation of the marine environment and the essential physical, chemical and biological processes that maintain our marine ecosystem.

Habitat mapping is increasingly important in helping to mitigate conflicts and to meet the need for integrated spatial planning of our seas, such as the new requirement for strategic environmental assessments (SEAs). In addition there is an increasing commitment to international requirements, from the EC Habitats Directive and OSPAR, to protect certain marine habitats. Further, the EC Water Framework Directive and OSPAR require periodic assessment of ecosystem health, including its sea-bed biological communities.

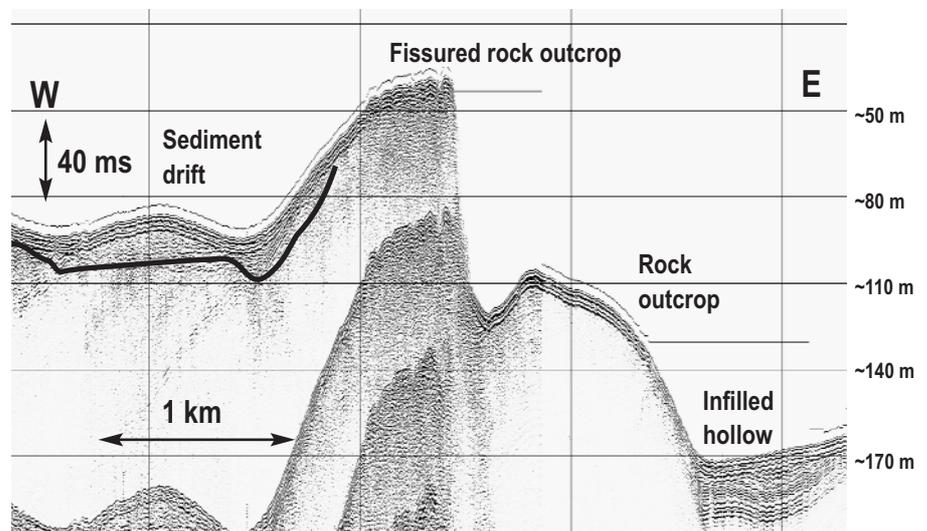
All this creates a substantial demand for information about intertidal and sea-bed habitats, but is set against a background of patchy, inconsistent and poorly collated information on their distribution, extent and quality. There are almost no national programmes in the north-west Europe region which collate such information and the information that is available is difficult to access. This makes very poor use of data

that is expensive to collect. The recent increase in demand, coupled with advances in remote-sensing technologies over the past ten years, has led to a burgeoning of sea-bed mapping studies.

The lack of international standards for these studies means the resulting data cannot readily be compared or aggregated and leads to an absence of regional, national and international perspectives on the sea-bed resource in spatial planning and decision making.

## MESH

A pilot study conducted by Joint Nature Conservation Committee (JNCC) in 2003 covering the Irish Sea showed that the BGS's sea-bed sediment maps were a



Sparker profile collected 2005 from North Channel.

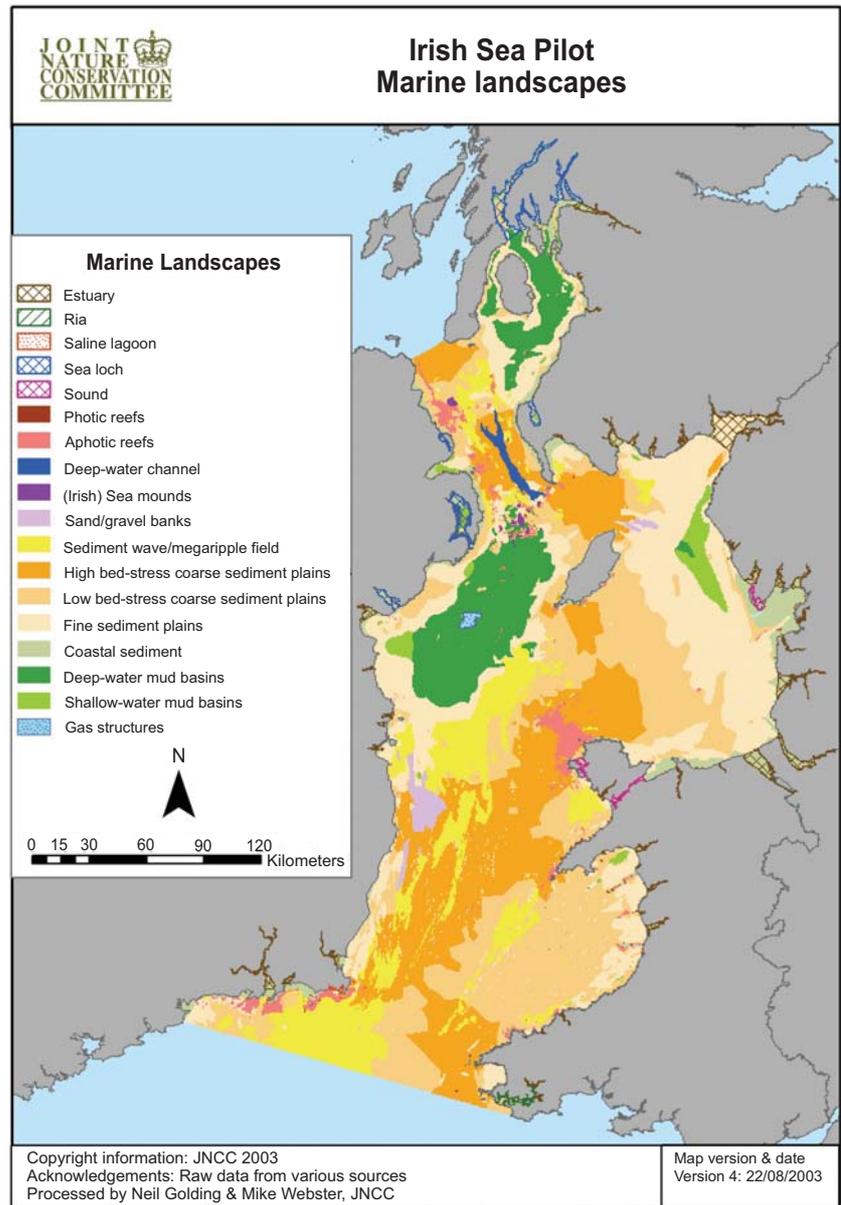
principal component in differentiating sea-bed habitats. This project led to an EU Interreg project 'Mapping European Sea-bed Habitats' (MESH) which is examining how the wide range of mapping techniques available can be applied, and the protocols that are needed. It will also examine how the information gathered can be used by the various users of the sea bed. The BGS is one of twelve institutes from France, Belgium, the Netherlands, Ireland and the UK looking at how data can be collected and compiled to common standards.

“ the lack of international standards for sea-bed mapping means the results cannot readily be compared or aggregated and leads to an absence of regional, national and international perspectives in spatial planning and decision making ”

As part of this project we are working with the Northern Ireland Department of Agriculture and Rural Development and the Marine Institute, Galway. We are examining a range of sea-bed morphologies from the North Channel westwards to the shelfbreak by applying a range of techniques, including swath survey and high-resolution seismic together with ground-truthing using sampling and video. This allows information at a wide range of scales to be used in evaluating and mapping habitats.

### GeoHab 2006

On a wider scale, the BGS is the leading agency organising GeoHab 2006 in Edinburgh. This is the most important international habitat mapping conference linking acoustic sea-bed mapping to marine biology and it will be coming to the UK for the first time in May 2006. Previous meetings have provided an opportunity to show how marine geological mapping has been used in biological assessments of the sea bed from a regional scale to discrete sites.



### Irish Sea Pilot.

Data we collected during the summer of 2005 showed rock outcrop around the North Maidens, Laconia Bank and Shamrock Pinnacle off the coast of Northern Ireland with sea-bed morphology strongly controlled by the lithology. The upstanding highs are probably Tertiary igneous intrusives and the surrounding sea bed is probably made of Permo-Triassic sandstones and siltstones. The latter show a fine scale step-like topography reflecting the bedding, creating a range of ecological niches on treads and rises. Sediment waves were examined off the coasts of Donegal and Islay. These occur on sediment banks and over other sediment types that make the

substrate within the troughs variable and which influence the faunal assemblage. A survey over parts of the Stanton Banks showed channels were present of various scales, some of which may be active and worthy of detailed examination.

MESH provides a good example of a multidisciplinary, multi-institutional project generating information on the environment around us and will be used in marine policy planning.

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