

# Areas of Rock in UK marine waters – where is it and why is it important to know?

Marine Objective Theme: State of the Marine Environment

## What's the problem?

Seabed substrates are extremely important in determining the composition of benthic communities and areas of rock substrate indicate where different habitats may be found in marine waters. Rock habitats are important for conservation purposes as they are often an area where a diversity of plants and animals are found. Our National geological maps of the sea bed are based on sea bed sampling and seismic data, but more problematic, the main suite of maps show the particle size of sea bed sediments and the bedrock beneath the Quaternary sediments but do not highlight areas where the sediments are thin or locally absent. This means that these maps may not identify some areas where rock habitat exists (but is covered by a very thin layer of sediment). We need to improve our understanding of the distribution of sea bed habitats to ensure that we can select the right sites for marine conservation. Knowing where rock habitat is may also be important for marine planning more generally, and so this project has been established to help rectify the current problem.

## What are the aims of the project?

We need up to date maps which better define areas where rock is outcropping seabed where sediment cover is thin or absent.

This project will involve BGS reassessing the sample information and shallow seismic database to highlight areas where rock outcrop is likely to occur. In many areas new data are now available including Olex and multibeam data. This information will also be used to update the maps and to increase confidence in the interpretation of features that were previously only recognised from seismic records. The distribution of moraines, (that is, any glacially formed accumulation of unconsolidated glacial debris) on the sea floor is a classic example where detailed feature mapping can be used to identify areas where boulders and cobbles are more likely to occur at the seabed due to glacial deposition of coarse materials.

One of the aims of the project is to define areas where more detailed mapping of the seabed is required in the future to give improved resolution of seabed geology and habitat information.

This project will complete in December 2009 and covers English and Northern Irish territorial waters and UK offshore waters.



Figure 1. Example of marine rocky reef habitat (Image: Crown copyright DTI)

## Which policy areas will the research inform?

This work will support the delivery of a network of Marine Protected Areas as required to meet existing international and national obligations and commitments, including Marine Conservation Zones (MCZs), a new measure to be delivered as part of the Marine and Coastal Access Bill.

The availability of these data layers will also be of importance in underpinning Marine Planning (e.g. licensing) in our marine area.

Funded by:



## Gathering data to plan for marine protected areas – what do we need?

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

The main aim of this project is to deliver new data layers showing where rock is outcropping at the surface. This will help inform the selection of sites for MCZ purposes, and also be of use in informing marine planning. For those not familiar, 'data layer' is a term used to describe information that is represented graphically on maps. See Figure 2 for an illustration.

Because of the scale of the work, the UK seas have been divided into regional project areas (South West; Irish Sea English Channel, North Sea), and Northern Ireland territorial seas, and delivery of the outputs have been staggered throughout 2009. It's intended that all data layers will be made available between September and December 2009 to all regional Marine Protected Area (MPA) projects to inform the selection of MCZs. More widely these data layers will be available to the funding bodies and other public bodies (for non commercial purposes), who will find them useful in other aspects of marine planning and the management of human activities.

The new map layers will also be used to update the BGS sea bed sediments maps (DigSBS250, see <http://www.bgs.ac.uk/products/digitalmaps/seabed.html>) and the results will be available to support the many offshore industries, such as marine renewables, aggregate extraction, cable companies, oil and gas companies and the fishing industry.

The outputs from this project will include a data layer presenting an assessment of confidence for the interpretation of hard substrate at the sea bed. This will be based on data density and quality, including the range of data sources used.

### Future Work

This project will provide the first clear, comprehensive picture of the distribution of seabed rock in our waters. However for most of the UKCS coverage of multibeam data is absent. The results will be enhanced by more detailed work based on utilising single beam digital bathymetry (available from SeaZone) and more detailed analysis of new and existing multibeam.

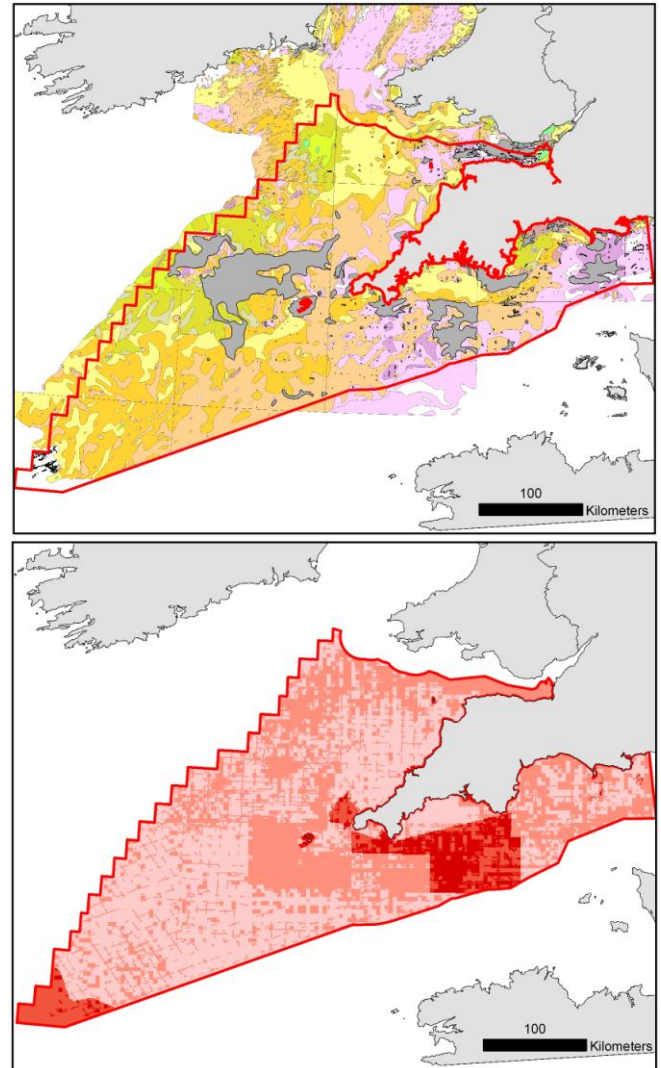


Figure 2. Upper map shows the distribution of hard substrate at the sea bed in dark grey, overlain on the sea bed sediments for the Finding Sanctuary project area. Lower map represents the confidence levels for this data set, darker shading indicates higher confidence.

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

This project is being delivered by British Geological Survey. For further information, please contact Robert Gatliff ([rwga@bgs.ac.uk](mailto:rwga@bgs.ac.uk)), Dave Long ([dal@bgs.ac.uk](mailto:dal@bgs.ac.uk)), or Alan Stevenson ([agst@bgs.ac.uk](mailto:agst@bgs.ac.uk)), British Geological Survey, Murchison House, West Mains Road, Edinburgh, EH9 3LA

Or alternatively, the Marine and Fisheries Science Unit, Defra, Nobel House, London.

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