

# Rocky reef systems and gravel habitats in the eastern and central English Channel – where are they?

Marine Objective Theme: Science for Integrated Marine Management

## What's the problem?

Our knowledge of the UK's seabed is limited from a 'habitat' point of view, with historical surveys of the seafloor primarily completed for bathymetry (depth) to ensure safe navigation. Under the EU Habitats Directive, the UK is obliged to protect a representative proportion of our rocky reef habitats, but we have very poor information about how much reef we have, where it is and what it is like in terms of species present. We need this information to select areas to protect as Special Areas of Conservation (SACs), and we need cost effective survey methods given our sea area is three times our landmass. Aggregates are also extracted from the eastern English Channel, and these activities need to be managed and monitored. To do this we need to know how uniform or variable the gravel communities are throughout this region of 'gravel substrate' which stretches across most of the eastern and central Channel. This project has helped to gather this important data.

## What are the aims of the project?

The aim of the project was to fill the information gaps and provide evidence to support management and policy decisions relating to the conservation and use of our seabed resources. Specifically the project aimed:

- To provide information on the distribution, extent and character of potential Habitats Directive Annex I reef habitat within the central English Channel region to facilitate the selection of sites to be put forward for consideration as SACs;
- To compare and contrast communities of gravel habitats across the central and eastern Channel to underpin regulatory decisions relating to gravel regions likely to be affected by dredging;
- To facilitate the development of adaptive survey strategies and provide guidance on best practice for surveying hard-substrate reef habitats;

For the reefs study, two areas in the central Channel identified as having a high probability of containing rocky reefs were surveyed. For the aggregates study, new and existing data from grab samples were analysed to look at longitudinal (east-west) variability in gravel communities. This project completed in March 2009 with a final report now available from the Defra website.



Figure 1. Cobble area in the English Channel with brittle stars (Image: Cefas)

## Which policy areas will the research inform?

This research has provided valuable information that will inform policy relating to the management of the marine environment, including the selection of marine SACs under the requirements of the EC Habitats Directive; the regulation of marine aggregate extraction and the conservation and sustainable use of the UK's marine resources.

Funded by:



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

The Reefs Study identified a rocky reef system about four times the size of the Isle of Wight, covering nearly all of Area 1 in Figure 2a, and extending to the north, and maps closely to the underlying solid geology of the area. The area was far more extensive than the few small rock patches depicted on BGS seabed sediment charts. The complex geology of the area has produced a series of low lying rock ridges (up to 4 metres high) exposed at the seabed surface and interspersed with gravel and sand and there is evidence of an ancient river valley system. The reef area was clearly visible on acoustic images of the seabed, and its boundaries could be accurately mapped. Seabed video showed substantial epifaunal communities attached to the rock ridges and ten classes of rock biotope were recorded. No significant reef features were found Area 2, where the bedrock was mostly covered by a thin layer of gravel (<1 m thick).

This is the first time that such a large area of reef has been mapped in UK waters to this level of confidence. It provides incontrovertible evidence of the location, extent and nature of the reef system to those tasked with deciding which sites in UK offshore waters should be designated as Special Areas of Conservation.

The Aggregates Study showed that gravel communities were not uniform across the central and eastern Channel; neither was there a simple longitudinal gradient. Instead, the communities towards the western and eastern ends of the study area (Figure 2b) were more similar to each other than to those from the central area (south of the Isle of Wight). There was a similar pattern in the distribution of sediments, and this reflects the presence of a 'bedload parting zone' in the central area; a divergent tidal system that continually moves finer sediments away from the central area.

The results suggest that the gravel region should be managed as several small units, rather than one large one, and that the immediate environs of the aggregate extraction sites should be treated as a single management unit. Management decisions should be mindful that the scale of impacts likely to arise from aggregate extraction appear small when considered in the context of the natural forces that have been shaping the environment for millennia.

Using the experience gained in this project we have developed an adaptive survey strategy that will help maximise the efficient use of vessels time when surveying hard-substrate habitats. This is a departure from traditional survey designs in that it focuses survey effort on the target substrate and offers a real opportunity as a cost-effective method for surveying large areas of the marine environment where appropriate and applicable.

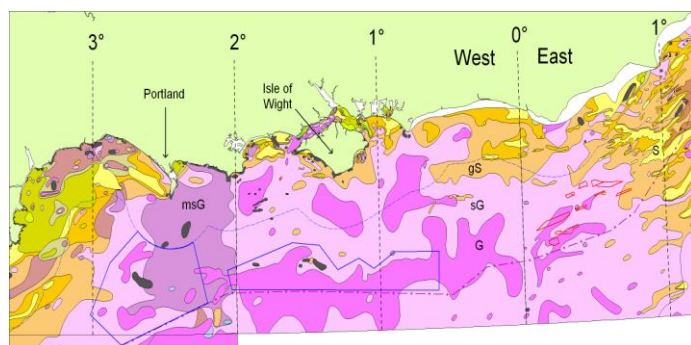
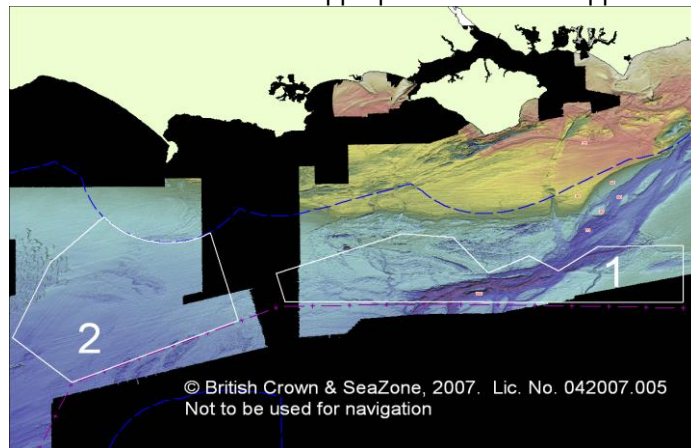


Figure 2a. Locations of the two 'Areas of Search' used in the rocky reef surveys, overlain on a topographic model for the seabed derived from available acoustic survey data. 2b. Seabed sediment chart of the study area showing licensed aggregate extraction sites (red polygons) and Areas of Search for the rocky reef surveys (blue polygons) (Images: Cefas)

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

For further details on the project contact Roger Coggan the Project Leader at [roger.coggan@cefass.co.uk](mailto:roger.coggan@cefass.co.uk) or alternatively to download the project reports see: <http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=ProjectList&Completed=0&AUID=1557>

Further information can also be obtained from the Marine and Fisheries Science Unit, Defra, Nobel House, London.

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