



> **Sea spiders and feather stars on cobble reef, Wyville Thomson Ridge, off N Scotland**
The Wyville Thomson Ridge is an extensive area of stony reef thought to have been formed by the ploughing movement of icebergs at the end of the last ice age. The distinct hydrographic regime has led to the development of unique ecological communities. This area is being considered as a future Special Area of Conservation (SAC).



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> Marine mapping and area protection

8

JNCC provides advice on mapping the marine environment for nature conservation and on identifying marine protected areas

Detailed maps of marine habitats are becoming increasingly important as activities such as energy development and aggregate extraction make further demands on our marine resources. At the same time, the UK Marine Bill and the EU Marine Strategy Framework Directive are creating substantial requirements for new information on the distribution of undersea habitats.

A major step towards establishing a shared framework on marine mapping was made with the completion of the JNCC-led Mapping European Seabed Habitats (MESH) project in January 2008 (www.searchMESH.net). This collaboration between 12 partners, including organisations from the UK, the Netherlands, Belgium, Ireland and France has been co-funded by INTERREG and began in 2004.

Before MESH, mapping was undertaken only at a local level, with little consistency in the way maps were produced. The lack of shared standards and international co-operation presented a considerable obstacle to many aspects of marine management. MESH's aim has been to correct that situation, by creating seabed habitat maps for the whole of north-west Europe. At the same time, the project has put in place a framework for future mapping and promoted the use of habitat maps in environmental management.

The project has produced a series of outputs. An international conference to promote MESH's achievements was held in Dublin just before the reporting year began, and the proceedings of that conference were published in July 2007. In addition, JNCC has made MESH mapping information available on the web as an interactive, online system and we have also led the production of a comprehensive guide to marine habitat mapping. Completed as the reporting year came to a close, the guide is available in two versions. There is a short printed edition that provides an overview for

a lay audience, while a more detailed online version delivers the level of detail required by the practitioner.

> **Thornback ray** *Raja clavata*

JNCC continued to support government's contribution to the work of the OSPAR Convention for the Protection of the Marine Environment of the North-East Atlantic, particularly focused on the work of its Biodiversity Committee. Ongoing work on the protection of threatened species and habitats led to the recommendation for a further four bird species, nine species of fish and two habitats to be added to the Initial OSPAR List. JNCC continued its role as co-ordinator for the OSPAR habitat mapping programme, which has now collated over 20,000 records on the distribution of 14 threatened habitats across the OSPAR region.

JNCC led a significant new area of work in developing a strategic framework for biodiversity assessment and monitoring. This is aimed at ensuring OSPAR's work is most effectively focused on priority areas of concern (i.e. in addressing key impacts from human activities) and complements work undertaken in other fora (e.g. EC Directives). An 'assessment matrix' has been developed to aid this process and has been adapted for reporting on the status of biodiversity (habitats, fish and birds) as part of the forthcoming OSPAR Quality Status Report.



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**Squat lobster and feather star,
South-West Approaches, off SE England**

In June, a team of European scientists led by the JNCC explored underwater canyons deep below the Atlantic, 320 km from Land's End. Part of the MESH project, the cruise set out to test the project's standards and protocols.

It also presented an opportunity for the scientists to collect data from an unmapped area on the edge of the Continental Shelf, and to feed vital information into the process of identifying possible candidate sites for protection under the Habitats Directive. The survey was conducted in partnership with the British Geological Survey and the Irish Marine Institute, and was an excellent example of trans-national co-operation.

The canyons reach depths of more than 4,000 m in places and almost nothing is known of the seabed communities. The team surveyed an area of 850 km square using a range of techniques including a remote camera.

Areas of bright orange cold-water coral reef were found that are home to anemones, starfish, fish and feather stars. There were also signs of reef damage, probably caused by trawling for fish.



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JNCC has also made progress on computer modelling to deliver a reliable tool for predicting the distribution of seabed habitats. This will be of use in marine spatial planning for the very extensive areas of seabed that await mapping by modern survey techniques.

In another strand of activity, JNCC's Jane Hawkrige continued to chair the biodiversity group of the Healthy and Biologically Diverse Seas Evidence Group. The group is part of the UK Marine Monitoring and Assessment Strategy and aims to deliver ecosystem-based assessments and management of the UK's marine environment.

JNCC is continuing to co-ordinate work to complete the Natura 2000 protected site series in relation to marine habitats and species. Co-ordination of the site series in inshore waters is achieved through the JNCC's Marine Natura Project Group, chaired by Committee member Professor Lynda Warren. Work to progress the offshore component of the site

series is also overseen by the Project Group and is being undertaken by JNCC staff.

During the year, JNCC continued to collate and collect data to complete the series of offshore Special Areas of Conservation (SACs) to be designated under the Habitats Directive. JNCC collaborated with, or commissioned, surveys on Rockall Bank, underwater canyons of the south-west approaches, and the Dogger Bank (the last undertaken in April 2008).

In August 2007 the Offshore Marine Conservation (Natural Habitats) Regulations 2007 came into force. These Regulations enable the designation of SACs and Special Protection Areas (SPAs, designated under the Birds Directive) in UK offshore waters. The regulations also give JNCC several formal nature conservation roles for the offshore area, including consulting on site proposals, providing advice on sites, and promoting public awareness of the need to protect habitats and species in UK offshore waters.

In December 2007, JNCC undertook formal consultation on seven possible SACs in the offshore area covering nearly 4,000 square miles of sea. Unlike previous SAC consultations for inshore waters, JNCC consulted European stakeholders as the possible sites are in offshore waters where management of fisheries is through the European Commission. At the close of this consultation in March 2008, 38 detailed responses had been received and these will be considered by JNCC prior to recommendations being made to ministers in summer 2008.

The sites proposed include the Wyville Thomson Ridge, a rocky ridge below the Atlantic Ocean 150 km north-west of Scotland. The seabed is between 600 m and 1000 m deep and has unusually fast water currents across it. Because of these currents the ridge supports thriving communities of bright orange and red feather stars, anemones, soft corals and sea spiders.

In 2005, JNCC made recommendations to extend existing seabird colony SPAs into the marine environment. The Scottish Government is now acting on this advice, and Scottish Natural Heritage is drawing up proposed extensions to some 31 SPAs.

Also during the year, JNCC continued to assist the country conservation bodies in identifying possible inshore SPAs important for their aggregations of seaduck, divers and other seabirds during the non-breeding season. This work has involved surveys from land, ships and aircraft of 10 inshore areas around Scotland, four areas in Northern Ireland and eight areas in England to determine bird numbers. Data from these surveys and other sources for five inshore areas around Scotland were analysed to assess whether birds were regularly present in sufficient numbers for the area to be considered for classification as an SPA. Additionally, new scientific methods for determining possible SPA site boundaries were developed.

JNCC also undertook analysis of the available seabird data to determine whether there are potential SPAs in offshore waters. Significant progress has been made with this work, enabling clusters of seabird species using offshore waters to be identified, and it is expected that further analysis of the data in 2009 will identify sites for consideration as possible offshore SPAs.

Data on how breeding red-throated divers use their marine environment were collected by JNCC in the Western Isles during 2007. These data, along with data from previous summers, are being used to build a computer-based habitat model to identify the location of the most suitable marine habitats for breeding red-throated divers, with a view to making SPA recommendations for this species.

MESH South-West Approaches Canyons Survey

The Mapping European Seabed Habitats (MESH) project made use of existing data and new survey work to create maps of the marine habitats around north-west Europe. One of the project's starting points was to locate all existing seabed habitat maps held by a wide range of organisations.

To make use of these maps, the project team had to overcome a number of problems, including the fact that they did not share a common set of terms to describe habitats, and that files were held in different formats. The maps were first translated to the European Nature Information System (EUNIS) habitat classification and then their quality was assessed before the maps were combined to form a single map layer.

It revealed that many areas of the seabed in north-west Europe had not been mapped. To fill the gaps, the JNCC project team used data on the physical environment to predict the likely distribution of habitats; for example, the dark blue areas shown here are deep-sea sands and muddy sands, the yellow areas are sandy habitats, while the pink areas are coarse gravelly-sand habitats.

