briefing

Rockall Bank - A Potential MPA

Location

The Rockall Bank extends in SE-NW direction between 55-58.30° N and 18-13° W (1000 m isobath). Its eastern slopes are within the UK offshore limits of jurisdiction and/or EEZ of Ireland, the western part lies in international waters, however claimed by the UK and/or Ireland with regard to the continental shelf.

Potential Reasons for Selection

Despite the patchiness of data, the Rockall Bank is probably the best known offshore bank rising from the deep-sea in the north Atlantic. It represents a continuum of ecosystems from typical deep sea environments in the Rockall Trough and Hatton-Rockall Basin to the shallow and shelf-type upper plateau conditions. It is of great significance in the North-East Atlantic region due to its extensive coral-associated communities from 150-1000 m depth which support rich biological resources in terms of fish populations. Probably, decades of trawling have already caused substantial damage to the *Lophelia pertusa* colonies, thickets and possibly reefs, as well as to the soft sediment of the slope regions. Oil and gas exploration has been licensed on its eastern margins.

Offshore Banks

Underwater elevations from the seafloor with extended summit regions are called banks, in comparison to small topped seamounts. However, as both features modify the oceanographic conditions in a similar way, they are often considered together as '*seamounts and related underwater features*'. Ocean currents are enhanced at offshore banks, amplifying the overall food web production. In current-swept regions, sessile suspension feeder communities may predominate and form habitats such as cold water corals and deep-water sponges. These may form essential fish habitat, e.g. by providing spawning grounds and refuges.

Rockall Bank - a Showcase Example for the OSPAR System of Marine Protected Areas

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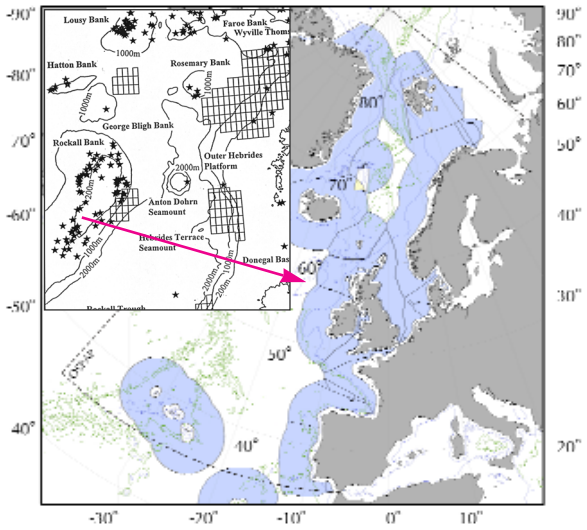

Fig. 1: Location of the Rockall Bank in UK, Irish and international waters. The detailed map shows the tranches licenced for oil and gas exploration up to 1998 and sampling positions of *Lophelia pertusa* (from: Rogers 1999).

Deep-Water Fishing

The fishery around Rockall dates back about two centuries. It first targeted cod, haddock and halibut on the shallower parts of the bank. In the 1970s, Russian, German and French trawlers started exploiting blue ling, roundnose grenadier, black scabbardfish and deep-water sharks. Since the UK relinquished its claim to a 200 nm fishery zone around Rockall, an international fishery has developed both on the top of the bank and the deeper water. The unregulated fishery for haddock in the shallower water is currently a concern. The more recent deep-water fisheries concentrate on the slopes of the continental shelf as well as comparable banks and seamounts. They mainly target anglerfish on the upper slope (trawl, gillnet), roundnose grenadier and blue ling with black scabbardfish and deep-water shark by-catch on the mid slope (bottom trawl), and orange roughy on the lower slope. At depths greater than 1500 m, the fish biomass declines and the species caught have little or no commercial value. Demersal trawling is considered to cause the highest damage to benthic habitats and fish populations due to its physical impact and unselectivity. Longlining is more selective, but discard rates for both gears often exceed 50 % of the catch, most of it being true deep-sea fishes like grenadiers, smoothheads and sharks. The rapid expansion of deep-water fisheries by far exceeds the advance in knowledge on fish biology, stock structures and the ecosystem. Adaptation to the deep-sea environment has produced life history traits such as increased longevity, slow growth rates and high age at sexual maturity, and low reproduction. This led Merrett & Haedrich (1997) to consider deep-sea fish to be a non-renewable resource.

Site Description

The Rockall Bank is a very large feature, oriented SW-NE and rising from more than 1000 m depth to break the surface towards the NE (Rockall). The shallow part of the bank is about 150 km long and max. 60 km wide at depths ranging from 220 m to 65 m. The substrate changes gradually, from low rock ridges and boulder fields covered in coarse sand to a cover of fine sand. While the near-bottom currents appear to circulate clockwise, the surface currents circulate in an anti-clockwise direction. The resulting gyre produces upwelling conditions for a rich planktonic life.

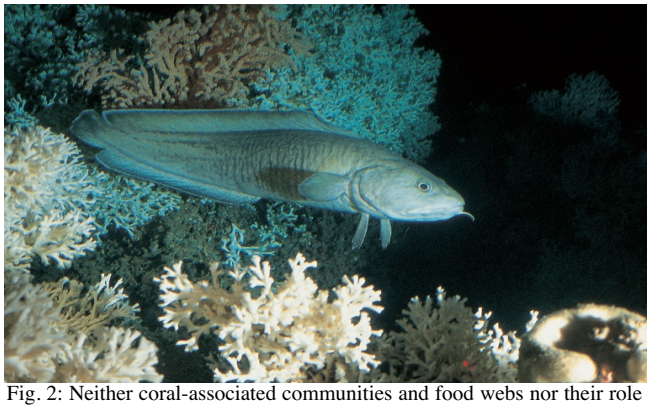

Fig. 2: Neither coral-associated communities and food webs nor their role in the oceanic ecosystems are understood yet - nonetheless exploitation increases. © André Freiwald, University of Erlangen

Biological Features

Surveys on the flanks of the Rockall Bank and along the UK continental margin have revealed cold-water coral communities down to 1000 m depth consisting of *Lophelia pertusa, Madrepora oculata*, coral debris and an associated community. Coral colonies and thickets are scattered around the shallower parts of the bank from 150-400 m depth whereas large reef structures are found below 500 m on the eastern flank. These reefs partly form mounds up to 350 m high. The fauna of the sampled mounds consists of sponges, hydroids, bryozoans, ascidians, including the coral *Desmophyllum dianthus* and the hydroid *Stylaster sp*. Polychaetes such as *Eunice norvegicus,* the common inarticulate brachiopod *Crania anomala* and molluscs including *Arca sp., Acesta excavata, Heteronomia squamula, Epitonium clathratus* have been found as well. Between 400 m and abyssal depths, there is a diverse demersal fish fauna (>130 species). At any given depth down to 1500 m, a research trawl will yield between 40 -50 species of fish. Further below, the number rapidly declines.

Threats

The Rockall Bank has been targeted by trawlers for cod, hake and blue whiting for many years, and for deep-water fish more recently. Hence, *Lophelia pertusa* on the shallower parts of the bank is almost certainly impacted. Whether or not the deeper reefs have been significantly impacted is still uncertain. It is known, however, that the UK continental margin to the east of the Rockall Bank shows trawl scars from as early as 1988. The exploitation of hydrocarbon resources remains an unquantified threat.

Management Considerations

The establishment of an MPA at Rockall Bank will be most beneficial to the benthic habitats and species, and to a lesser extent to target and non-target fish species. Since 1998, ICES ACFM has been pointing to the fact that deep-water stocks including anglerfish, are being exploited '*outside safe biological limits*'. Information on age distribution and stock identification is inadequate and more reliable assessments need to be carried out. Landings data are not always at species level and there are concerns about the accuracy and location of the landings. In 2002, the EC has stopped short of implementing a moratorium on these fisheries but instead, from January 2003, begun the process of regulation by introducing quotas and various methods of reducing the fishing effort. In international waters, the Contracting Parties to the North-East Atlantic Fisheries Commission (NEAFC) agreed to freeze fishing effort at current levels from January 2003.

Legal Aspects

The "freedom of the high seas" guaranteed by the UN Convention on the Law of the Sea (UNCLOS) has led to unregulated exploitation of the living resources which were thought to be shared by all nations. However, as recognised at the World Summit on Sustainable Development (WSSD) and endorsed by the UN General Assembly in its resolution A/57/L.48 in 2002, it is time for nations to take action to *„develop ... programmes for halting the loss of marine biodiversity, in particular fragile ecosystems*" through *„tools including ... the elimination of destructive fishing practices, the establishment of MPAs ...*".

Action Required

Gordon (2001a) concluded that „*there is general agreement amongst scientists, the fishing industry and the politicians that the deep-water stocks are seriously overexploited but political imperatives dictate that uncertainties and inconsistencies in the scientific assessment and advice are used to postpone the urgent action that is required*". OSPAR has to take responsibility for the preservation of the species and habitats in the North-East Atlantic by *inter alia* advocating a management of human activities including deep-water fisheries which helps conserve, and where necessary, restore ecosystems and biological diversity.

Text prepared by Sabine Christiansen and John Gordon

References/Further Reading

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