

The Celtic Shelf Break - A Potential MPA

Potential Reasons for Selection

The Celtic Sea/south-western Approaches represent a potentially important marine area. However, large knowledge gaps still exist with regard to particular aspects of the marine ecology. The area is known to have a relatively diverse assemblage of certain planktonic species. The number of planktonic, benthic and fish species currently recorded include 13 species considered common or abundant, 14 considered uncommon, and 51 considered rare.

Summer migrations of the leatherback turtles are also likely to cross the Celtic Sea, in pursuit of jellyfish upon which they feed almost exclusively. Significant populations of small cetaceans have also been recorded. These cetacean populations are currently believed to be under threat due to by-catch resulting from set-net fisheries in the area.

Site Description

The Celtic Sea is located to the south of Ireland, to the extreme south-west of England and to the west of France. Generally, the area of the Celtic Sea is considered to extend from 48° 30'N and 52 °N to 4 °W and the 1000m at the edge of the continental slope. It is

bounded to the east by the English Channel, and to the south and west by the continental slope. The majority of the Celtic Sea area ranges between 100 and 200m in depth.

A number of shallower areas do, however, exist to the west of Cornwall (UK) and to the south-east of Ireland.

There are also a number of relatively shallow banks encountered in the deeper parts of

the Sea, including Labdie Bank, Jones Bank and the Great Sole Bank.

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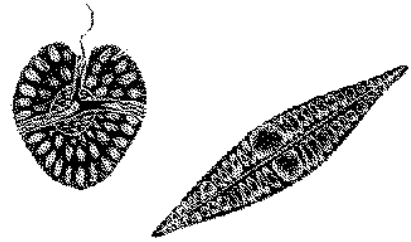
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Where the continental shelf gives way to the continental slope, in the boundary area of the Celtic Sea, a number of geomorphological features, such as canyons and ridges, are seen to intersect the continental slope. In terms of sedimentology, the seabed of the Celtic Sea ranges between gravel and sand. It is, however, somewhat muddier in nature to the south of Ireland.

Plankton

Relatively little information is available regarding the plankton of this region. Of particular note is the enhanced planktonic production observed in a band of cold water (approximately 100km broad), which is located at the edge of the Celtic Sea shelf during summer. This band has been described as being some 1-2 °C colder than adjacent surface waters of the Celtic Sea and Atlantic Ocean.



The cold band exhibits higher than background surface values for inorganic nitrate and chlorophyll A. Although these values are generally low compared with values that have been observed near the neighbouring shelf tidal fronts, the increased surface values along the shelf break in summer appear to be significant. Such conditions are thought to be related to physical processes associated with the slopes, ridges and canyons of the shelf edge where enhanced mixing, particularly due to internal waves or upwelling, results in nutrient renewal and subsequent phytoplankton growth along the shelf-break region of the Celtic Sea (Pingree and Mardell, 1981).

Benthos

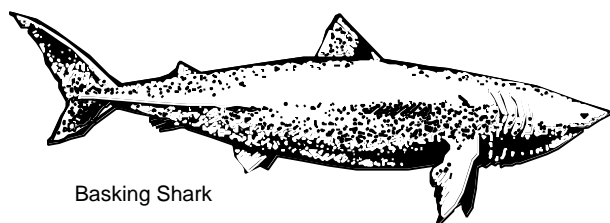
As is the case with plankton, relatively little information appears to be available with regard to the benthos of the Celtic Sea. It has been noted that there are potentially important assemblages of 'pseudoceanic' species encountered in the area of the shelf-break.

Justification for the Potential Selection of the Celtic Shelf Break as an Offshore Marine Protected Area

These have distributions restricted to bathymetric ranges of 200-1500m and are therefore endemic to the slope habitats. Latitudinally, these species are sectioned by major ocean boundaries and some are almost certainly restricted to specific features within these zones, such as the canyons that intersect the slope in the south-western Approaches (Angel, unpublished).

Fish

The Celtic Sea is known to be an important spawning ground for commercial species such as megrim, blue whiting and mackerel, the area being of particular importance for the latter species. Research has also indicated that the Celtic Sea possesses quite diverse ichthyoplankton assemblages within excess of 70 species being identified.



Basking Shark

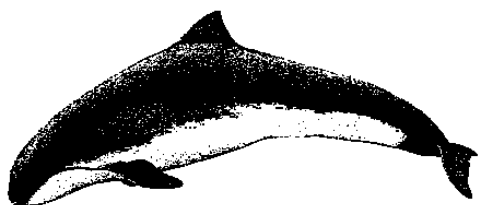
The area is also considered to be important for the migration of basking sharks. It should also be noted that the Celtic Sea possesses a significant gill-net fishery, targeted primarily for hake (see also the section on cetaceans).

Birds

The shelf-break region in the Celtic Sea/south-western Approaches is a major feeding ground for oceanic birds, particularly young and non-breeding individuals. During many periods of the year species including gannets, fulmars, kittiwakes, petrels and shearwaters are seen to be present in this region.

Cetaceans

In the Celtic Sea the population of harbour porpoise is estimated to be 36 thousand (confidence limits 13k-103k), of white-sided dolphin to be 800 (130-5500) and of common dolphin to be 75 thousand (23k-285k). These small cetaceans are known to be subject to a high mortality rate as by-catch in set-net fisheries within the area, and are



Harbour porpoise

also highly likely to be taken as by-catch in pelagic trawl fisheries. In relation to the population of harbour porpoise, while the by-catch as a result of the set-net fishery cannot presently be accurately quantified, there is serious cause for concern about the ability of the population to which these animals belong to sustain an annual by-catch of the magnitude currently indicated.

Existing / Proposed Protection

There is currently no specific protection for the Celtic Sea/south-western Approaches region.

Likely Management Issues

The most apparent management issue is that relating to by-catch of small cetaceans. The area has been of interest in terms of potential offshore oil and gas resources, with some exploration activity already having been licensed by both the UK and Irish Governments.

Text prepared by Chris Berry and Sarah Jones

References / Further Reading

This paper is based on: Angel, M.A. (Unpublished) Case for a Marine Protected Area in the Regions of the Celtic Sea and south-western Approaches.

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