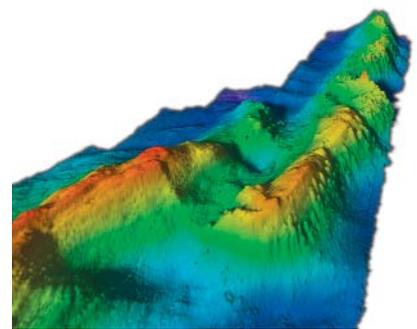


Think of a coral reef and most of us picture a tropical lagoon. But, as **Dave Long** explains, coral reefs are an important habitat for sea life in colder, deeper waters and closer to home than many of us would have imagined.

# Cold-water corals

Most people think of coral reefs as being in tropical climes with azure skies and clear blue waters so it may come as a surprise to discover that corals occur in the waters around the UK and in even colder areas. These are true hard corals, formed by a colony of individual coral polyps producing a calcium carbonate skeleton. However, they are not found in shallow waters relying on algae and sunlight to grow, but often live hundreds of metres below the photic zone where they catch their food from the surrounding water.



*Multibeam echosounder image of Mingulay Reef, east of the Outer Hebrides.*

In the 1990s the BGS was involved in a project called Managing Impacts in the Marine Environment (MIME), compiling a database of coral finds north and west of the UK. The database showed the coral *Lophelia pertusa* to be common in waters deeper than about a hundred metres. Examples were found on oil installations in the northern North Sea. However, the evidence came from spot finds and didn't provide evidence of extensive reefs like those reported from offshore Ireland and Norway. Hydrocarbon exploration in Norwegian waters led to the discovery of the Sula Ridge, a reef 13 km in length, 400 m wide and, in places, more than

30 m high. Systematic sea-bed mapping off Ireland has revealed numerous mounds in the Porcupine Bight and in the Rockall Trough. These mounds are constructed of coral and some are 100 m in height. They provide a very important habitat and are home to numerous species of fish and anemones.

In 2003 a multidisciplinary study of several topographical highs in the Minch showed the existence of a reef just 11 km east of the Outer Hebrides where coral mounds can be seen covering various ridges of outcropping rock. They appear to be constrained to water depths greater than 110 m. Video surveys have shown individual coral mounds up to 5 m in height and 30 m in diameter. This reef has been termed the Mingulay Reef Complex and is the subject of ongoing studies.

Seismic profiles collected by the BGS on behalf of the Rockall Consortium since 2000 have shown several enigmatic mounds on the Hatton Bank, which have been confirmed to be covered in living coral, predominantly *Lophelia pertusa*. The Hatton Bank mounds are 30 to 40 m in height, often occurring at breaks in slope between 600 and 800 m water depth. They were found in areas where fishermen have reported coral finds since the 1920s.

This area has recently been highlighted in the International Council for the

Exploration of the Sea (ICES) report on coral for the North East Atlantic Fisheries Commission. Coral habitats around the world face many threats, particularly from destructive fishing practices such as bottom trawling and, as coral grows so very slowly (*Lophelia* grows about 2.5 cm per year), they are easily destroyed. The Sula Ridge is protected by the Norwegian Ministry of Fisheries.

Detailed studies of the Hatton Bank were carried out during summer 2005 by the UK Department of Trade and Industry as part of its strategic environment assessment (SEA) studies. They should indicate whether the UK too has deep-water coral reefs similar to those off Ireland and Norway and assess the role that they play today. They could also help us understand what fossil coral reefs can tell us about former water depths and temperatures.

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*Example of Lophelia coral.*