

# Mid-Atlantic Ridge / Charlie-Gibbs Fracture Zone - Proposal for an OSPAR MPA in Areas Beyond National Jurisdiction Executive Summary\*

## Location

The proposed area covers the northern part of the Mid-Atlantic Ridge (MAR) between 55° N and 49° N, including the Charlie-Gibbs Fracture Zone (Fig. 1). The proposed boundaries reflect the scientific agreement reached at OSPAR ICG MPA in April 2008, acknowledging that the enclosed area will fully incorporate representative sections of the MAR north and south of the Charlie-Gibbs Fracture Zone, adjacent abyssal plain and the meandering subpolar front which separates cool northern from warmer southern waters and sustains a relatively high abundance and biomass across the foodweb. The boundaries include also a variety of seamount communities of different types and depths, including Faraday and Hecate Seamount, as well as a section of the Reykjanes Ridge where bottom trawling and fishing with static gear, including bottom set gillnets and longlines, has been prohibited since 2004 (NEAFC Recommendation VII, 2008).

## Aim of MPA

1. protect, conserve and restore species, habitats and ecological processes which are adversely affected as result of human activities;
2. prevent degradation of and damage to species, habitats and ecological processes following the precautionary principle;
3. protect and conserve areas that best represent the range of species, habitats and ecological processes in the OSPAR area.

## Legal status of the location

The Mid-Atlantic Ridge is located in OSPAR region V, beyond the limits of national jurisdiction of the coastal states in the OSPAR maritime area. The site proposed is also beyond the potential Outer Continental Shelf of Iceland, Greenland and Portugal (Part IV, Art. 76 UNCLOS).

According to Article 134 (2) UNCLOS, activities in the Area (sea-bed, ocean floor and subsoil thereof) shall be governed by the provisions of Part XI. According to Article 137 (2) UNCLOS "All rights in the resources of the Area are vested in mankind as a whole, on whose behalf the Authority shall act. These resources are not subject to alienation. The Minerals recovered from the Area may only be alienated in accordance with this Part and the rules, regulations and procedures of the Authority."

According to Article 86 et seq. UNCLOS the superjacent waters are considered as High Seas, which are open to all States, including the freedom of scientific research.

According to Article 238 UNCLOS all States have the right to conduct marine scientific research.

## Boundaries proposed

The coordinates proposed for the boundaries of the MPA enclose ca. 306000 km<sup>2</sup> (latitude/longitude):

55° N	37° W
55° N	32° W
53.5° N	32° W
53.5° N	27° W
49° N	27° W
49° N	32° W
51° N	32° W
51° N	37° W

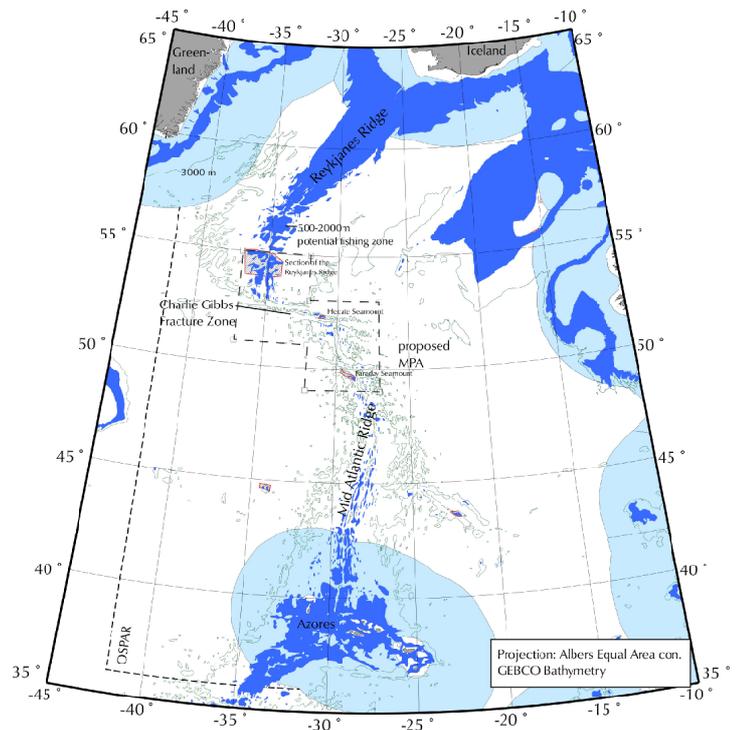


Fig. 1: Location of the proposed MPA on the Mid-Atlantic Ridge. In blue the area potentially suitable for deep water bottom fishing. The NEAFC closures within the proposed area are outlined in red (Hecate, Faraday Seamounts and Reykjanes Ridge).

## Characteristics of the area

The Mid-Atlantic Ridge is the only mid-ocean ridge in the OSPAR maritime region and is representative of this type of geological feature. The area is nominated for its importance as a section of the northern Mid-Atlantic Ridge, including a major biogeographic east-west and north-south divide. The Mid Atlantic Ridge provides the only hard substrate and relatively shallow depths in the otherwise sedimentary abyssal plains of the North Atlantic.

The proposed MPA is representative of an especially complex section of the Mid-Atlantic Ridge, including a large number of identified seamounts with shallower than 1500 m summit depth, and a permanent front. At 52° N, a major fracture zone, the Charlie-Gibbs Fracture Zone, offsets the ridge by 5° to the east and opens a deep sea connection between the northwest and northeast Atlantic.

The proposed MPA provides an important functional habitat to deep water fish like orange roughy and deep-water sharks, marine mammals, deep-sea corals and sponge aggregations listed as priority threatened and/or declining species/habitats by OSPAR (2003, last revisions accepted by BDC 2008). The same and more species and habitats qualify as "Vulnerable Marine Ecosystems" in relation to high seas fisheries according to draft criteria developed by FAO (FAO 2008, Rogers *et al.*, 2008). It also contains seamount communities, coral and sponge aggregations, a frontal area (the subpolar front) and potential areas of upwelling, which are habitats listed as examples of ecologically significant marine areas according to draft criteria developed by CBD for identifying candidate sites for protection on the high seas (UNEP 2007).

\* source: merged MAR/CGFZ MPA proposal based on independent WWF/NL and University of York proposals for the same area  
<http://www.ngo.grida.no/wwfneap/Publication/subm.htm#Ospar08>

## OSPAR ecological selection criteria

### 1. Is the area important for threatened and/or declining species and habitats on the OSPAR List?

**Yes**, several of the species and habitats listed occur in the proposed area and depend on its ecological features:

#### **Orange roughy (*Hoplostethus atlanticus*)**

Orange roughy is considered to be an obligate seamount associated fish, depending on the seamount topography-induced hydrographic patterns for spawning aggregations and spawning. Due to its life history traits, ICES (2002) considers orange roughy to be one of the most sensitive species to impacts from deep water fishing. A ridge like the MAR with numerous seamount-like peaks suitable for orange roughy aggregations, may have a special importance for maintaining the global population of orange roughy.

#### **Blue Whale (*Balaenoptera musculus*)**

Blue whales are roaming all oceans. As plankton feeders, they particularly depend on zones of rich plankton production during their migrations. Blue whales were sighted in the vicinity of the Mid-Atlantic Ridge and the Charlie Gibbs Fracture Zone during the MAR-ECO. It is likely that blue whales spend some time in the subpolar frontal area with its increased pelagic biomass, such as observed for sei and sperm whales.

#### **Deepwater sharks**

Among the 44 species of deep water sharks known from the area, portuguese dogfish (*Centroscygnus coelolepis*), gulper shark (*Centrophorus granulosus*), and leafscale gulper shark (*Centrophorus squamosus*) were accepted for the OSPAR List in 2008. Generally, deepwater sharks are confined to the upper 2000 m of the ocean, all within fishing depth, and extremely sensitive to overfishing due to their life history traits. They require a high energy environment such as around seamounts, the peaks of the ridge and near the subpolar front.

#### **Deepwater sponge aggregations**

Recent video dives and sampling in the proposed area revealed rich hexactinellid sponge communities or 'gardens' around the Charlie Gibbs Fracture Zone and the associated seamounts down to 3000 m depth.

#### ***Lophelia pertusa* reefs**

Within the area proposed, living *Lophelia pertusa* and 40 taxa of other corals have been observed at all depths and locations surveyed although not in the extensive reef-type structures found off the coast of Norway. The MAR provides otherwise scarce hard substrate and suitable current and feeding conditions to be an important stepping stone in the regional dispersal of cold water corals.

#### **Seamounts**

Seamounts as a "habitat" is a substitute for the multitude of habitats seamounts provide vertically and horizontally to a range of taxa including to migratory species. The MAR provides the most extensive habitat for the reproduction of seamount-aggregating deepwater fish species (roundnose grenadier, alfonso, orange roughy, redfish) off the continental shelves in the OSPAR maritime area.

### 2. Is the area ecologically significant?

**Yes**. Due to its relatively high faunal biomass and probably elevated pelagic productivity near the subpolar front, the area is of particular importance as a feeding area for marine mammals, such as blue, sei and sperm whales. The ridge structure is important for deep water sharks, its topographically induced hydrographic conditions enhance deepwater teleost fish aggregations, and it is an important reproduction area for roundnose grenadier, orange roughy and bathypelagic fish. The diversity of corals is assumed to be higher than on the northern continental shelves.

### 3. Is the diversity particularly high?

**Yes**. The benthic and pelagic species diversities recorded so far, and the range of habitats found within the proposed MPA are extensive. The inclusion of at least two faunal biogeographic provinces raises the diversity above similar or smaller areas comprising fewer habitats and e.g. only a single province.

### 4. Is the area representative for OSPAR Region V?

**Yes**. The area proposed is large enough to represent all functional habitats and communities of the northern Mid Atlantic Ridge around the Charlie Gibbs Fracture Zone and adjacent abyssal plains.

### 5. Does the area host a high proportion of sensitive fauna?

**Yes**. Although an elevation compared to the surrounding abyssal plains, the MAR still is a deep sea environment. In particular deep water species and biogenic habitats are considered vulnerable, as often fragile, and slow (if at all) to recover due to slow growth, retarded maturity, irregular reproduction and high generation length of the fauna, as well as community characteristics of high diversity at low biomass. This is an adaptation to stable, low food environments. Propagation and dispersal of larvae is largely unknown and therefore little can be said about a possible recovery of neither invertebrates nor fishes.

### 6. Is the area pristine?

**No**. Past fishing has been the most significant impact, today's fishing effort being significantly reduced. Since the 1970s, a Soviet/Russian-dominated multinational fishing effort has exploited all and depleted some of the predominant seamount-aggregating populations of demersal deepwater fish (roundnose grenadier, redfish, orange roughy, sharks) in the area with decreasing effort and catch, in particular since the early 1990s. Though no direct destruction on the seafloor from trawls was documented yet, the frequency of lost longlines entangled in corals observed during video transects points to a possibly longlasting significant impact.

### 7. What value does the area have for science?

**Very high**. The Mid Atlantic Ridge is one of the last frontiers of science, being subject to several multinational research efforts until at least 2010 (MarEco, ECOMAR). The recently published results of the first MarEco phase and in particular the invaluable comments and additions of experienced scientists have enabled this MPA proposal.