Towards implementing UNGA Resolution 61/105 in the North-East Atlantic

WWF proposals for a way forward

WWF message

The North East Atlantic Fisheries Commission (NEAFC) is the responsible managing body in the North East Atlantic for implementing UNGA Resolution 61/105 by 31 December 2008. WWF acknowledges the early efforts of NEAFC to close to fishing several seamounts, a section of the northern Mid Atlantic Ridge and some parts of offshore banks in order to protect sensitive habitats, namely cold water coral occurrences, from the risks of bottom fishing activities.

WWF recognizes that the remote waters managed by NEAFC are particularly poor in data. However, recent research programmes (e.g. MarEco, http://www.mar-eco.no) have significantly improved the knowledge base for species and habitats on the Mid Atlantic Ridge. For a seamount like Josefine, the historic data clearly point to very vulnerable habitats and species which require urgent protection from likely damaging fishing activities.

Howcver, the implications of UNGA 61/105 go beyond a science-based approach to the implementation of the ecosystem based fisheries management. It recalls the precautionary principle outlined in the FAO Code of Conduct to Responsible Fisheries, emphasising that where no or insufficient scientific data are available, the mere likelihood of occurrence of sensitive species and habitats in areas frequented by fishing has to be taken as evidence for action.

ICES, in its advice to NEAFC and EC in recent years clearly indicated the damaging potential of different fishing gears to sensitive species and habitats, and also alerted managers to the vulnerability of deep sea fishes to fishing. Seamounts and the elevations of the Mid Atlantic Ridge are a focal point where

- topographically induced current patterns provide for sheer hard substrate for sessile filter feeding epifauna, such as diverse cold water coral formations, sponge aggregations, and enhanced food web interactions,
- the enhanced dynamic energy attracts spawning aggregations of otherwise dispersed, large bodied teleost fish and deepwater elasmobranchs, both groups being particularly vulnerable to overfishing,
- the deep ocean floor rises to within fishing depth.

WWF therefore urges NEAFC to implement UNGA Resolution 61/105 by

- following scientific advice to stop fishing on seamount-aggregating species until the stock identities, population size and reproduction patterns are clarified with certainty and allow for determining the sustainable yield, where it exists,
- prohibiting the use of all bottom contacting fishing gear in areas where vulnerable benthic species and habitats are likely to occur, such as on the flanks of seamounts and ridges, until it can be shown that the activities do not pose a threat,
- establishing a precautionary closure to all fishing beyond 2000 m.

This briefing serves to demonstrate potential areas of conflict between bottom fishing activities and vulnerable marine habitats and species *sensu* UNGA 61/105. It shows that a substantial amount of information is already available if a more detailed analysis of conflict should be desired. The quality of information of course could be improved by further research; however, this must not delay immediate management action.

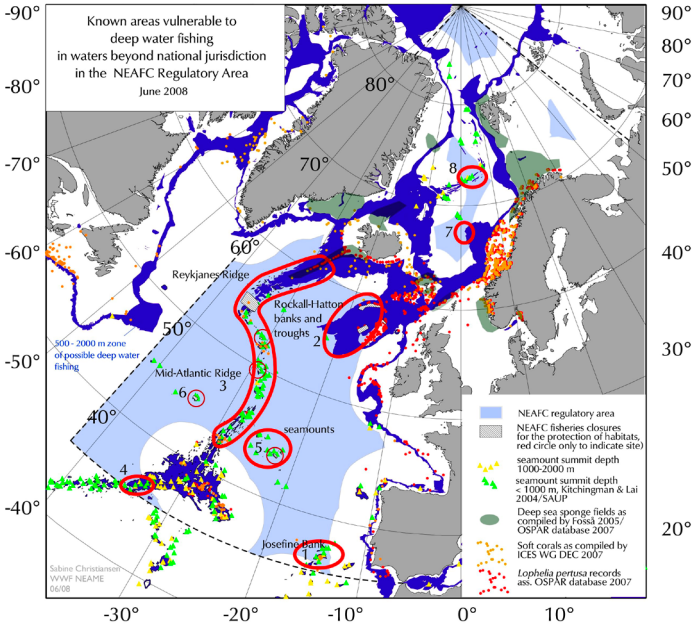

Fig. 1: Likely Vulnerable Marine Ecosystems (red circles) in the NEAFC Regulatory Area (light blue). In dark blue the potentially suitable for deep water bottom fishing. The NEAFC closures within the proposed area are outlined in red (Hekate, Faraday Seamounts and Reykjanes Ridge). The numbers correspond to the areas described in the text below.

Background

Since 2004, NEAFC has implemented the ecosystem approach to fisheries and has closed 9 areas in order to protect cold water coral habitat.

The UN General Assembly (UNGA) Resolution 61/105 calls on Regional Fisheries Management Organisations like NEAFC and States *to adopt and implement measures, in accordance with the precautionary approach, ecosystem approaches and international law (…) as a matter of priority*, in accordance with a package of key elements that constitute a rigorous management regime for high seas bottom fisheries. The UNGA calls for the adoption and implementation of these measures by 31 December 2008 at the latest.

In order to provide tools and guidance to RFMOs/As and States towards *sustainable use of marine living resources exploited by deep-sea fisheries, the prevention of significant adverse impacts to deep-sea vulnerable marine ecosystems (VMEs) and the protection of marine biodiversity that these ecosystems contain*, FAO (2008) developed (draft) guidelines, partly agreed by FAO COFI 2008[1].

The concept of Vulnerable Marine Ecosystems (VMEs)

According to the draft FAO guidelines (2008), *the most vulnerable marine ecosystems are ones that are both easily disturbed and are very slow to recover, or may never recover. Vulnerable ecosystem features may be physically fragile, but some may be functionally fragile even if physically robust*. The guidelines mention as examples

- coldwater corals of various types, e.g., reef builders and coral forest, likely to be found on edges and slopes of oceanic islands, continental shelves, seamounts, canyons and trenches,

- sponge dominated communities, and structural biogenic habitats made by e.g. large protozoans, hydrozoans or bryozoans, with a distribution similar to cold water corals
- endemic or rare types of hydrothermal vent and cold seep communities.
- fish species which sustain low exploitation rates

The actual vulnerability has to be assessed relative to specific threats which all RFMOs and flag states are called to assemble and analyse all necessary data required to *identify areas or features where VMEs are known or likely to occur, and the location of fisheries in relation to these areas and features*. The risks to a marine ecosystem shall be determined by its vulnerability, the probability of a threat occurring and the mitigation means applied to the threat.

Rogers *et al*. (2008[2]) provide the scientific background to the concept of VMEs and adverse effects affecting those. They conclude that "*any bottom-contact fishery that is taking place in the same location as a deep-sea VME, comprising emergent epifaunal communities of corals, sponges or other invertebrates, will result in damage to the habitat-forming species that will only recover very slowly, or not recover at all, on the basis of current evidence arising from observations by scientists*." This has to be considered a Significant Adverse Impact, and managers must therefore ensure to preserve these VMEs unless there is evidence that the fishery does not pose a threat (e.g. does not take place in the same location).

Deep water fishing in the NEAFC Regulatory area

Fig. 1 shows where demersal or semi-pelagic deep water fishing is most likely to occur in the NEAFC regulatory area. The largest suitable fishing areas are the Rockall and Hatton Banks west of the UK and Ireland EEZs (see 2. below), the Reykjanes Ridge south of Iceland and the Mid Atlantic Ridge outside the Azores EEZ (see 3. + 4. below). In the northern North Atlantic, the NEAFC regulatory area only straddles bottom fishable areas on the western end of the Voehring Plateau (see 7. below) and where it coincides with the Mid Atlantic Ridge (see 8. below).

Vulnerable marine areas

Fig. 2. Dense beds of the gorgonian *Callogorgia verticillata* on the summit of Josefine Bank. Photo: NOC/ DeepSeas Group

1. Josefine Bank[3, 4]

Josefine is a NNW-SSE trending, oval-shaped seamount which arises from 2,000 - 3,700 m depth to within 170 m of the surface and is located outside the EEZ of Portugal. It has a current swept, almost flat top with an area of 150 km^2 within the 400 m contour and a wide diversity of surface types. Here, 12 species of gorgonian corals, 14 species of solitary scleractinian corals, 2 species of stylasterid corals, 2 species of black corals and the large hexactinellid sponge *Asconema setubalense* were reported (see review in [4]). At least two species of gorgonians, namely *Callogorgia verticillata* and *Elisella flagellum,* and hexactinellid sponges grow in high densities and can be considered as highly vulnerable and slow recovering biogenic habitats. Patches of bioclastic sands are inhabited by the ascidian *Seriocarpa rhizoides* that can reach impressive densities of up to 250-750 specimens per 1m^{-2}. As known from other areas, dense gorgonian coral habitat-forming aggregations may represent important feeding and sheltering grounds for seamount fishes and also potential shark nurseries (e.g. for the threatened leafscale gulper shark (*Centrophorus squamosus*[5]).

To date about 150 species of invertebrates and 31 species of fish from Josephine Seamount have been identified, among these a number of previously unknown, rare or endemic species. The relatively high biological productivity found on Josefine represents a potentially important feeding and resting ground for migrating pelagic fish and the North Atlantic population of loggerhead sea turtle (*C. caretta*), on its migration to the Mediterranean basin.

Occasional fishing activity was identified by VMS records made available to ICES.

2. Western Rockall and Hatton Bank area with Lyonesse Bank[6, 7, 8]

Rockall and Hatton Bank are probably the most important demersal fishing locations in the NEAFC area. The whole area, including the western Rockall and Hatton Banks and adjacent seamounts is located on the outer continental shelves of the UK and Ireland, which will be responsible for implementing the EU Habitats Directive (1992) to maintain/recover to a favourable conservation status the benthic reef habitats. Therefore, fisheries management which is in NEAFC responsibility, has a particular responsibility to safeguard the sedentary species of the coastal states. In order to protect known occurrences of cold water corals, in particular *Lophelia pertusa*, NEAFC has consecutively closed several parts of both banks to demersal fishing (see Fig. 3) since 2006.

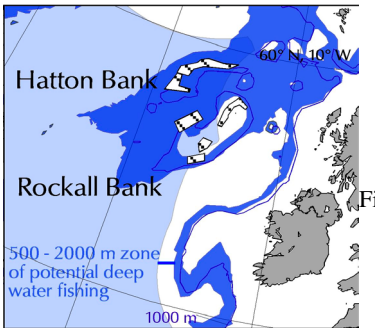

Fig. 3: NEAFC closures to demersal fishing on the Rockall and Hatton Banks 2008. NEAFC Regulatory area in light blue, the potentially fisheable depths in darker blue

However, the reasoning for fisheries closures so far has not considered any other type of vulnerable marine ecosystem, such as soft coral beds (coral gardens), sponge accumulations or habitat for sensitive species such as deep-water sharks. The data collected during the the UK DTI research for identifying reefs in the area (Narayanaswami *et al*. 2006[9], Howell et al. 2007[10]) and the Spanish ECOVUL/ ARPA project (Duran Muños *et al*. 2007[11]) give valuable information on likely VMEs in this area.

For example, Duran Muños *et al*. (2007) found that large sponge by-catches were negligible in the habitual sedimentary fishing grounds of the Spanish fleet, but were quite relevant in a few restricted deeper locations on the eastern flank.

And within the so-called Hatton Drift on the western flank of Hatton Bank between 700 and 1600 m depth, a principal trawling area along the slope, ridges with carbonate mound crests have been discovered, likely to host cold water coral associations[12].

Lyonesse Bank[13] is a volcanic rock outcrop that rises out of the Rockall-Hatton basin to the south west of Hatton Bank. The extensive areas of bedrock and boulder reef are

colonised by encrusting fauna such as sponges, sessile sea cucumbers, serpulid worms, saddle oysters and occasional anemones. A diverse range of corals including scleractinians (*Lophelia pertusa* and *Madrepora oculata*), cork-screw shaped black corals, stylasterid corals, soft corals and gorgonians were also frequently observed. Although a first analysis of snapshot VMS data did not confirm trawling activities on the Bank, it is nonetheless likely to occur based on Scottish blue ling landings data.

3. Mid Atlantic Ridge between Iceland and the Azores[14, 15, 16, 17]

The MAR to the north of the Azores has over 20 seamounts with a depth of less than 1000m, more than 70 seamounts with roundnose grenadier aggregations of which some 30 seamounts were profitable to exploit in the 1970s. Therefore, although the absolute size of the area within fishing depth is small and decreasing from north to south, these sites penetrating the upper 2000 m of the water column may be of particular ecological importance. Here, topographically-induced hydrographic patterns may increase the otherwise very limited open ocean pelagic productivity, fostering the aggregation and possibly reproduction of commercially relevant Greenland halibut, redfish, roundnose grenadier, orange roughy and alfonsino (from north to south).

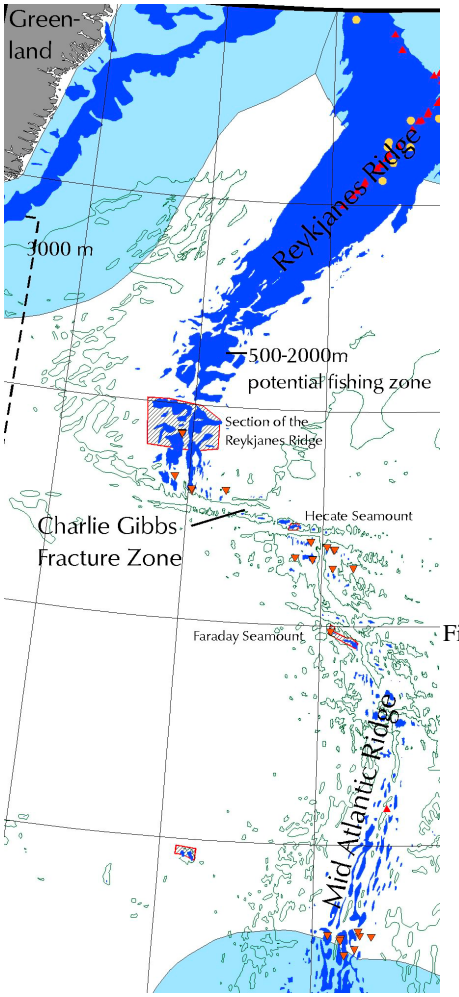

Fig. 4. The Mid Atlantic Ridge north of the Azores and south of Iceland. Records of *Lophelia pertusa* (red triangles, OSPAR database 2007), soft corals (orange triangles, ICES WGDEC 2007) and sponge grounds (yellow dots, OSPAR database 2007) indicated. The current NEAFC closures are indicated by the red

Some 80 species of benthopelagic fish, and at least 68 species of mainly mesobenthopelagic bathyal fishes associated to the seamounts of the northern MAR are estimated to occur between Iceland and the Azores, including 44 species of deep water sharks. such as leafscale gulper shark (*Centrophorus squamosus*), gulper shark (*C. granulosus*) and Portuguese dogfish (*Centroscymnus coelepis*) listed as being threatened/declining by OSPAR (2008).

In 2001, ICES ranked deep water fishes, mostly demersal species, with regards to their vulnerability, based on their longevity, growth, natural mortality, fecundity and length and age at first maturity. The deep water sqalid sharks *Centroscymnus coelolepis* and *Centrophorus squamosus*, together with orange roughy (*Hoplostethus atlanticus*) came out as by far the most vulnerable. Roundnose grenadier (*Coryphaenoides rupestris*), redfish (*Sebastes* spp.) and Greenland halibut (*R. hippoglossoides*) were considered the next most vulnerable species (ICES ACFM 2001, advice to EC and NEAFC).

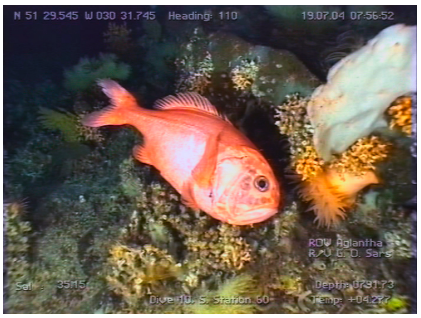

Fig. 5. An orange roughy in a coral and sponge habitat (Photo: MarEco/ Mortensen et al. 2008)

For the benthic fauna, the Mid-Atlantic Ridge provides the only extensive hard substrate available for propagation of benthic suspension feeders off the continental shelves and the isolated seamounts, and is a biogeographic divide for east-west dispersal. Likewise, the Charlie-Gibbs Fracture Zone and the areas south and north of it have a distinct fauna in some taxa. Due to the transition of water masses at 800-1000 m depth there is also a vertical zonation of the bathyal fauna.

The cold water coral and sponge formations ("ostur") found around Iceland have their natural prolongation on the ridge. Hexactinellid sponge "gardens" also occur around the Charlie Gibbs Fracture Zone and the associated seamounts down to 3000 m depth. Recent research confirms that cold water coral taxa of at least 40 species occur on the ridge, corals to be encountered anywhere sampling is done, with gorgonian corals being the most diverse.

The risk to these habitats is demonstrated by the number and amount of coral bycatch in the research trawls and longline sets, as well as the lost gear documented during visual inspections also on the deepest sections of the MAR sampled. Although the total fishing effort excerted on the MAR seems to be decreasing, as currently the catch per unit effort is not commercially viable, this may change in the future.

4. Mid Atlantic Ridge SW of the Azores

This part of the ridge hosts several active and cold hydrothermal vents, including the Rainbow hydrothermal vent field which is now protected as a marine protected area under Portuguese jurisdiction. Most likely, this is an area suitable for alfonsino fishery, a species aggregating near seamount peaks.

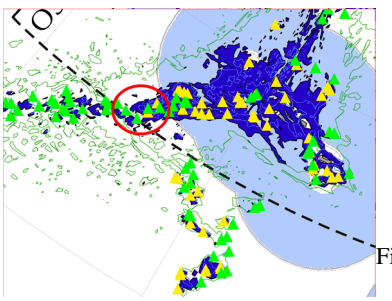

Fig. 6: Seamounts southwest of the Azores (4)

5. Seamounts NE of the Azores[18]

This group of seamounts includes Antialtair Seamount which is currently closed to bottom fishing activities by NEAFC. Generally, the surface area accessible to bottom fishing seems to be very small, and the topography is rugged. This makes it likely that sessile epifauna, including cold water corals grow here. Very limited information on the biota exists, however, a Spanish survey suggests that orange roughy (*Hoplostethus atlanticus*) is the main species that can be trawled over several of the banks and seamounts near Antialtair (Duran-Muños *et al*. 2000[19]).

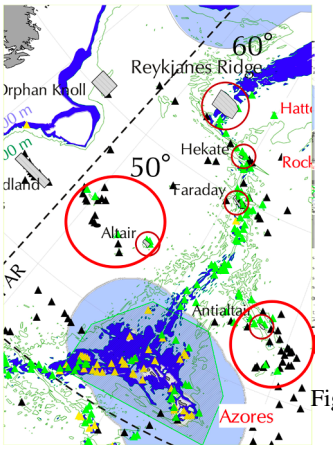

Fig. 7: Seamounts northeast (5) and northwest (6) of the Azores

6. Seamounts west of Mid Atlantic Ridge[20]

The deep seamounts west of the Mid Atlantic Ridge, with likely only Altair (currently closed by NEAFC) and Milne further to the west within fishing depth, provide the biogeographic link to the New England seamount chain in the NAFO area. No biological studies are known, but Duran Muños et al. (2000) report steep, hard bottom topography and trawl catches of black scabbard fish (*Aphanopus carbo*) and lantern shark (*Etmopterus princeps*) from Altair.

7. Voehring Plateau

The Voehring Plateau is a sedimentary deep sea extension of the Norwegian shelf. VMS data show that intense fishing effort is taking place[21], however, most of this maybe due to pelagic trawling.

8. Mid Atlantic Ridge south of Svalbard

No biological data are known from this area

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The literature listed in support of the text for the regions 1-8, where vulnerable marine habitats and species are likely to come into conflict with bottom fishing activities, is focussing on recent reviews of original literature. Therefore, this literature is not quoted here.

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