

New information regarding the impact of fisheries on other components of the ecosystem

Advice summary

ICES has received more than 200 new records of vulnerable marine ecosystems (VMEs) in EU waters; the majority of these are on the Irish continental shelf slope, Rockall Bank, and Rosemary Bank. Evidence is presented of serious damage to VME habitats on the Rockall Bank, just outside the existing closed area, but inside an area that ICES advised should be closed in 2011.

Request

As part of the MoU with the European Commission, ICES is requested to: *Provide any new information regarding the impact of fisheries on other components of the ecosystem including small cetaceans and other marine mammals, seabirds and habitats. This should include any new information on the location of habitats sensitive to particular fishing activities.*

Elaboration on the advice

1. New information on the location of habitats sensitive to particular fishing activities

ICES received 201 new VME records, 192 of which were VME indicator records and nine VME habitat records within EU waters. The majority of these records were from the Irish continental shelf slope, Rockall Bank and Rosemary Bank (Figure 1). Within EU waters, further records were submitted for the Ymir Ridge, Anton Dohrn Seamount, George Bligh Bank, Porcupine Bank, and the Faroe–Shetland Channel. These habitats will be particularly sensitive to mobile bottom-contacting gear.

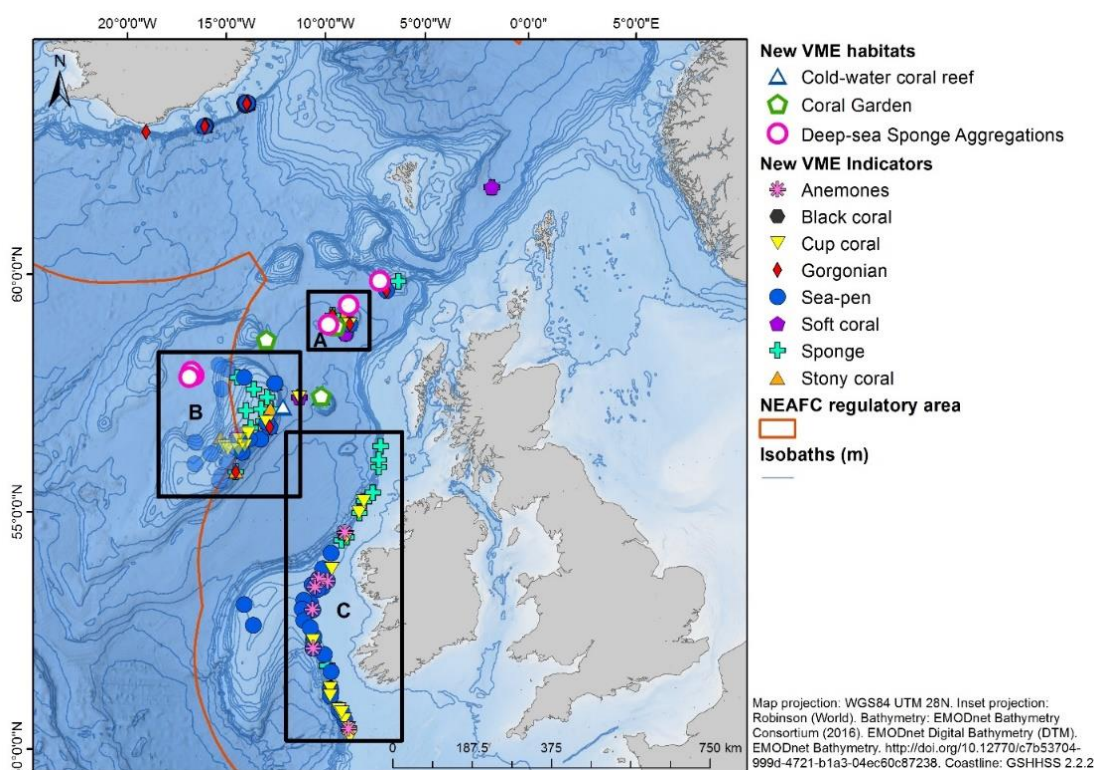


Figure 1 New VME habitat and VME indicator records for areas within EU waters bordering the Northeast Atlantic. The rectangles indicate the areas covered by more detailed maps A= Rosemary Bank (Figure 8), B= Rockall Bank (Figure 5), C= continental shelf slope off Ireland (Figure 2).

The three areas with the highest numbers of VME records and highest probability in EU waters are mapped below. The maps for each of these three areas indicate (i) new records of VMEs; (ii) likelihood of encountering a VME for each grid cell in these areas, based on all VME records (both new and existing); and (iii) the confidence ranking of the VME information.

Irish continental shelf slope

A total of 66 new VME Indicator records were submitted to ICES (Figure 2) for the continental shelf slope off Ireland, including Porcupine Bank. Figure 3 shows the VME index (based on all records for the area) and Figure 4 its associated confidence for the continental shelf slope off Ireland.

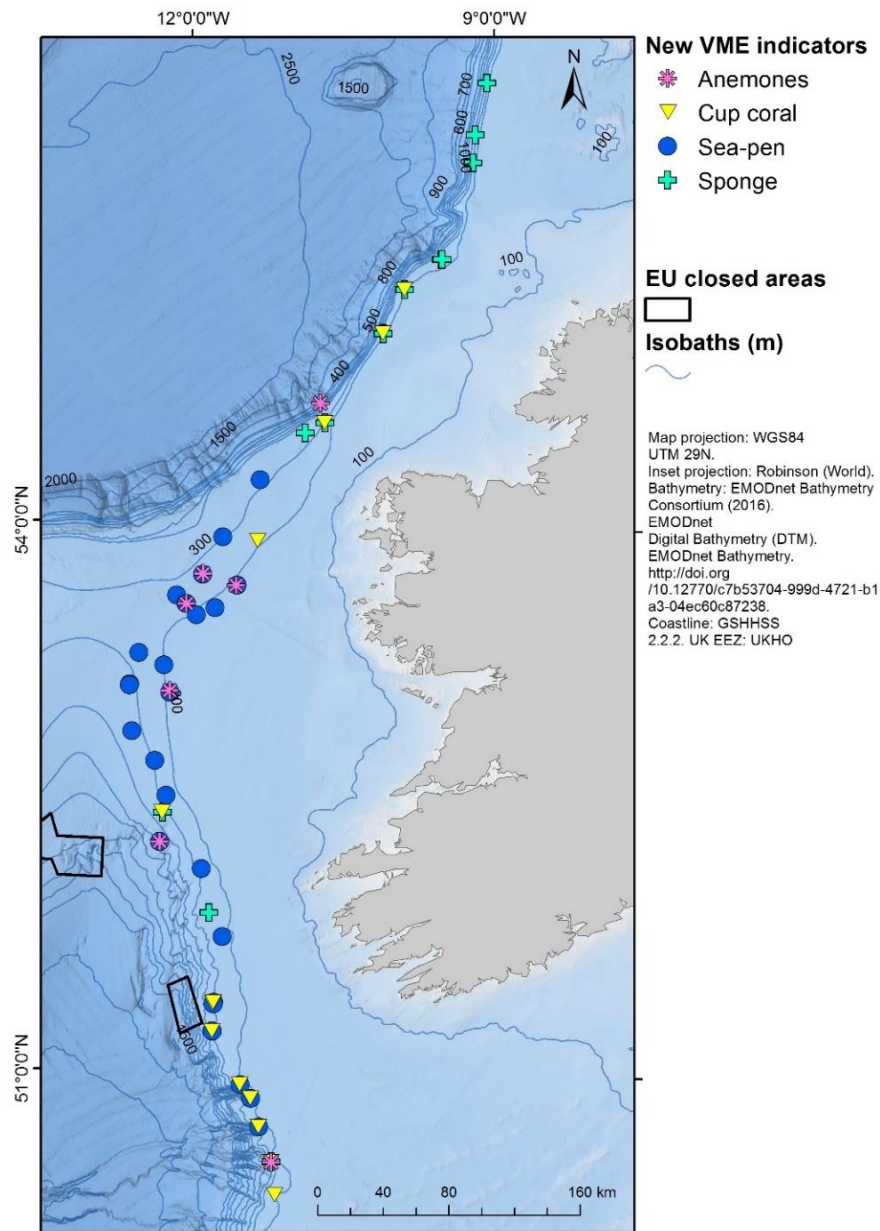


Figure 2 New VME indicator records submitted to ICES for the continental shelf slope off Ireland. Records outside the EEZs are displayed as transparent.

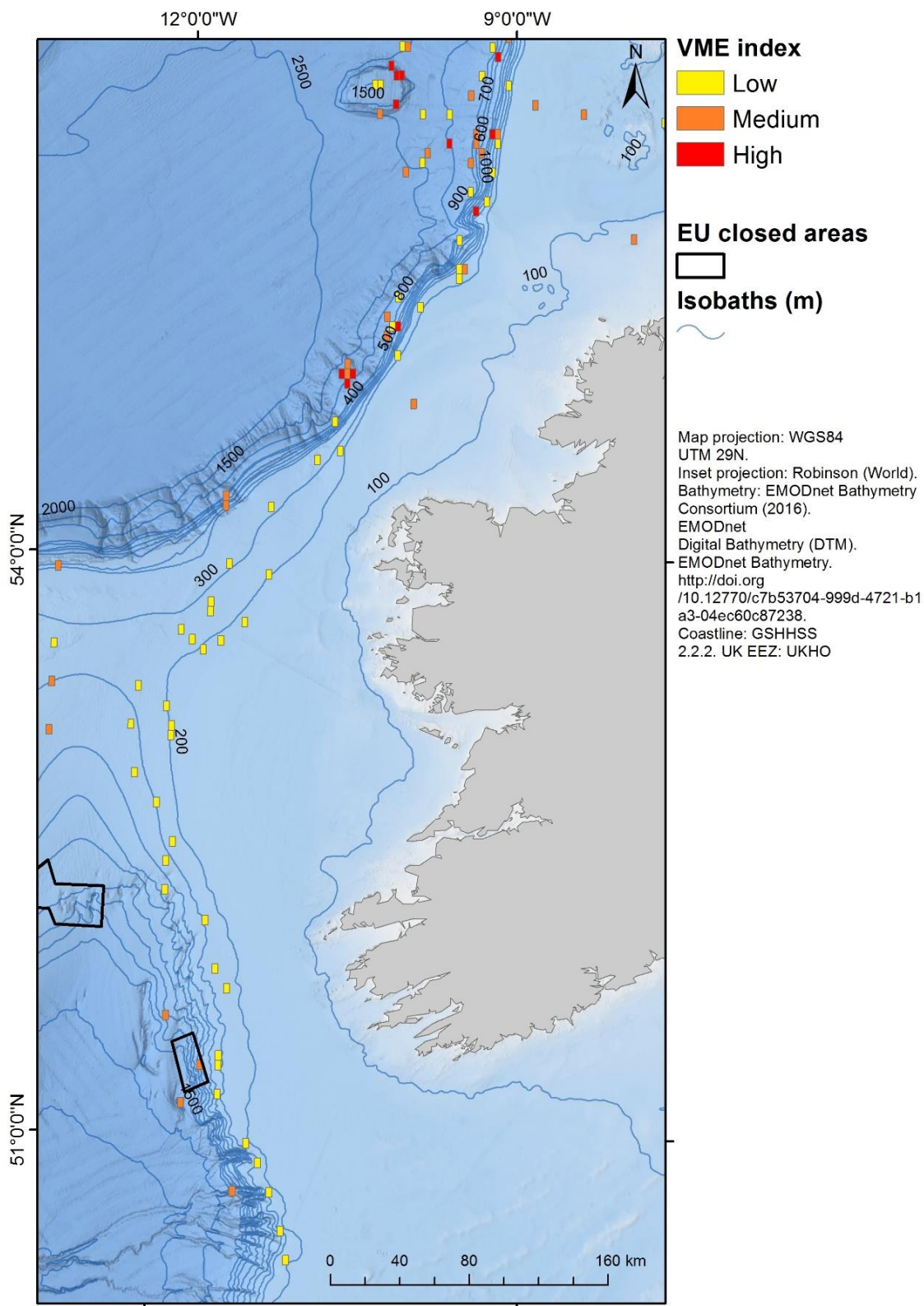


Figure 3 VME index for the continental shelf slope off Ireland, showing the likelihood of encountering a VME within each grid cell (ranging from low to high).

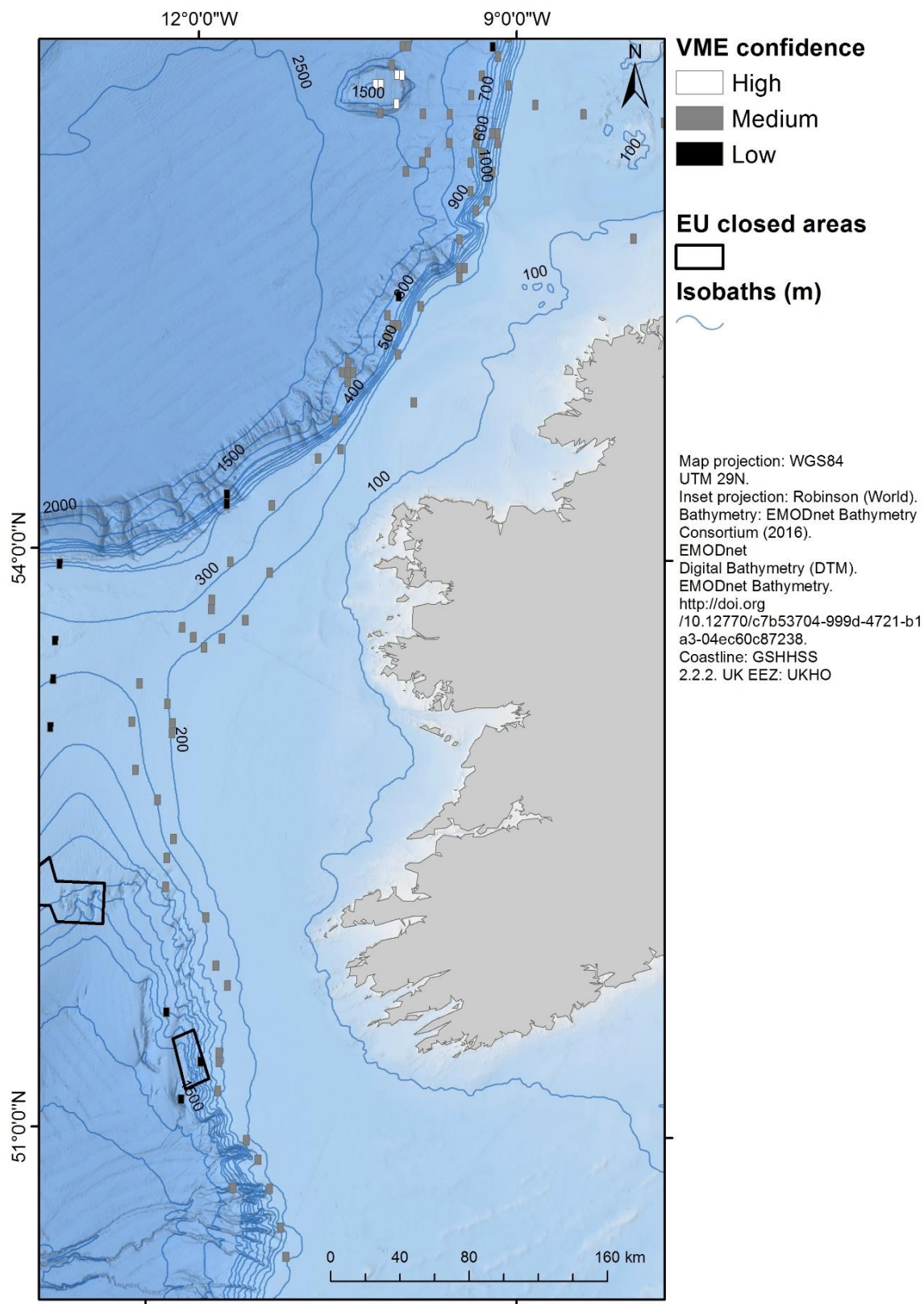


Figure 4 VME index confidence for the continental shelf slope off Ireland (ranging from low to high).

Rockall Bank

A total of 61 new VME indicator records and one VME habitat record were submitted to ICES (Figure 5). Fifteen of these new records, including the cold-water coral reef VME, are located within a UK marine protected area (MPA) that includes two special areas of conservation (SACs) to the east of Rockall (purple dotted line in Figure 5). Draft fisheries management measures have been proposed among relevant EU Member States by the UK.

Figure 6 shows the VME index (based on all records for the area) and Figure 7 its associated confidence for the Rockall Bank.

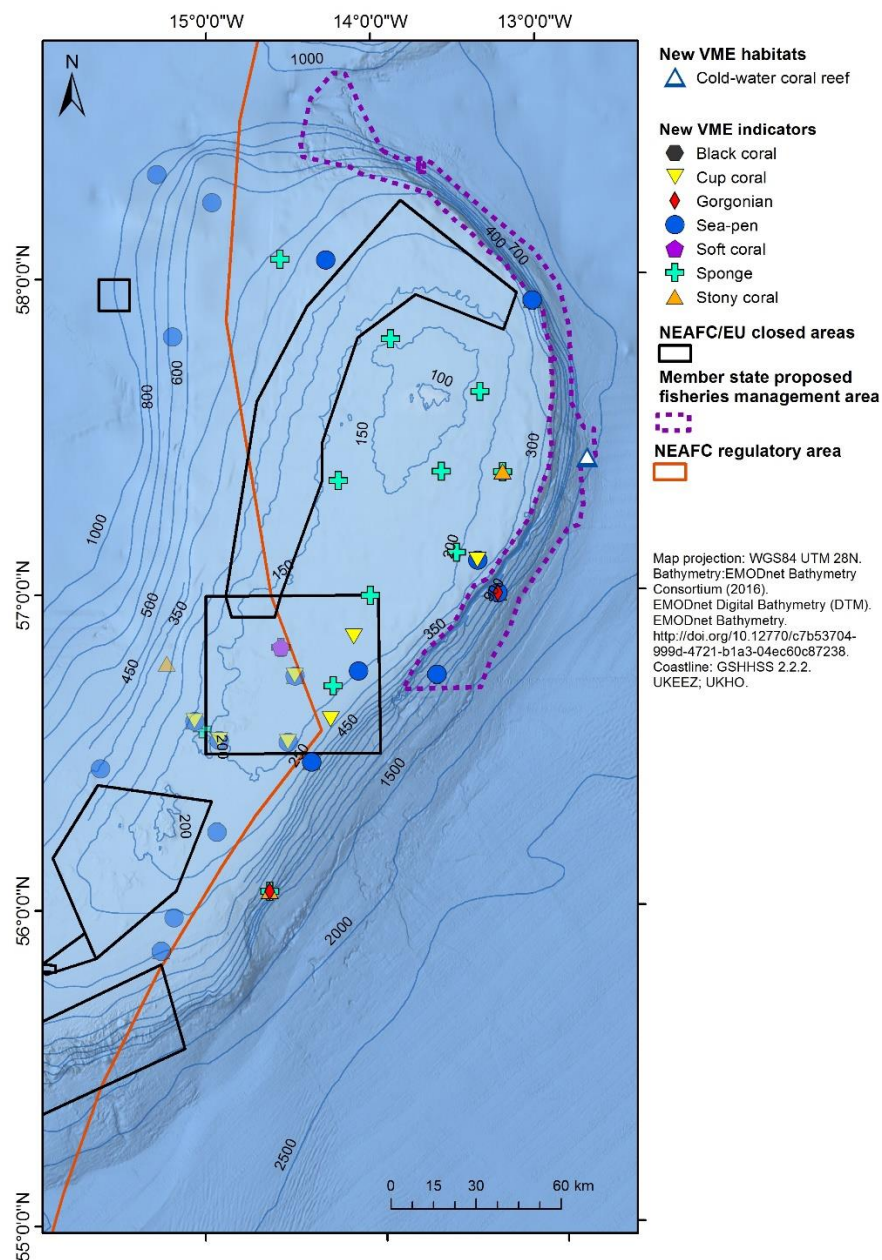


Figure 5 New VME habitat and VME indicator records submitted to ICES for the Rockall Bank area. Records outside the EEZs are displayed as transparent.

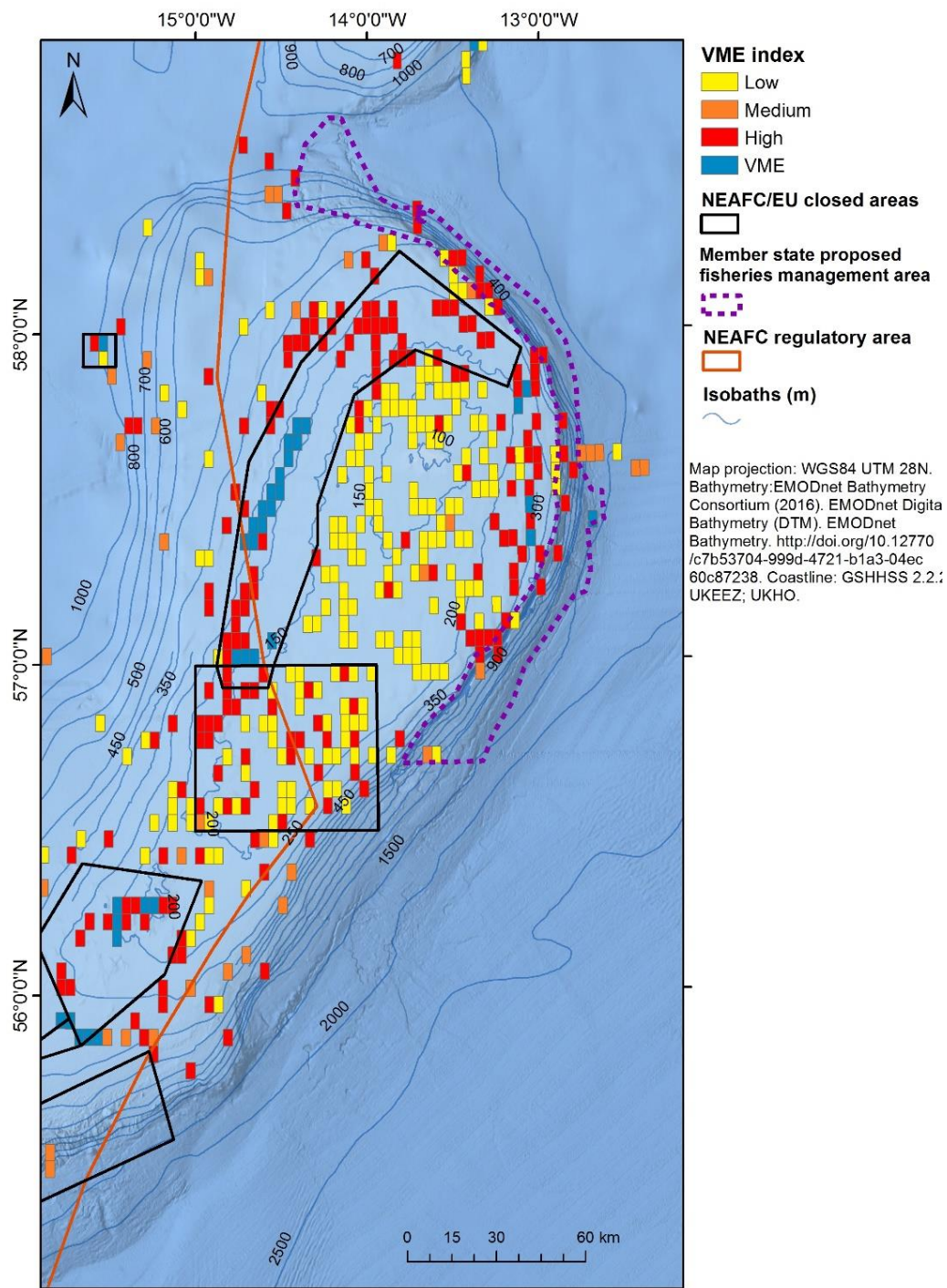


Figure 6 VME index for the Rockall Bank area, showing the likelihood of encountering a VME within each grid cell (ranging from low to high).

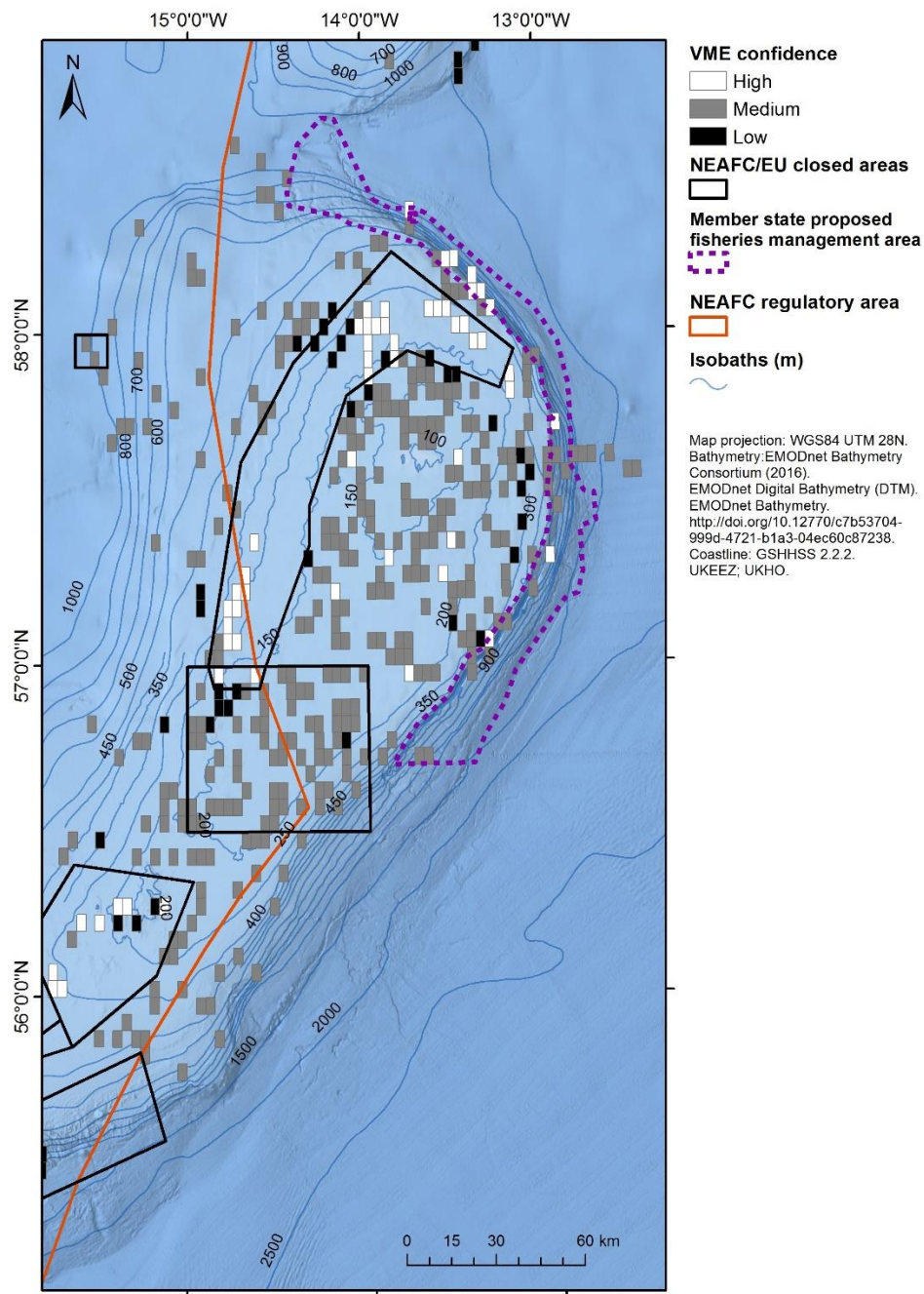


Figure 7 VME index confidence for the Rockall Bank area (ranging from low to high).

Rosemary Bank

A total of 54 new VME indicator records and four VME habitat records were submitted to ICES (Figure 8). All of these new records are located within a UK marine protected area. Draft fisheries management measures for this MPA have been proposed among relevant EU Member States by the UK.

Figure 9 shows the VME index (based on all records for the area) and Figure 10 its associated confidence for the Rosemary Bank.

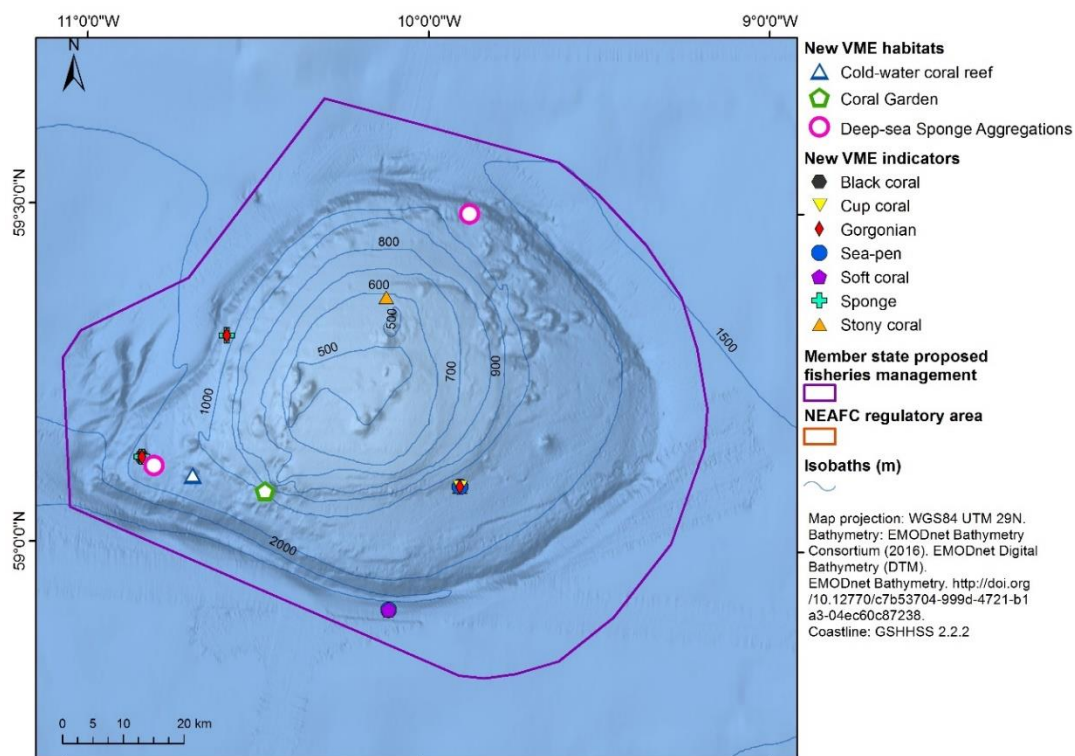


Figure 8 New VME habitat and VME indicator records submitted to ICES for the Rosemary Bank.

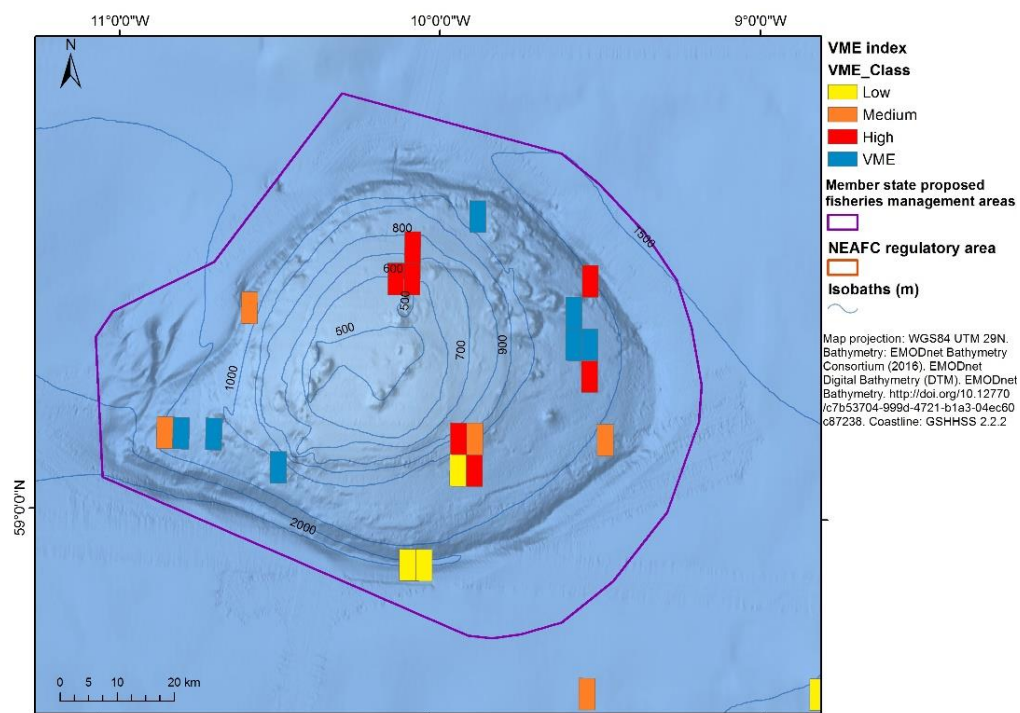


Figure 9 VME index for the Rosemary Bank, showing the likelihood of encountering a VME within each grid cell (ranging from low to high).

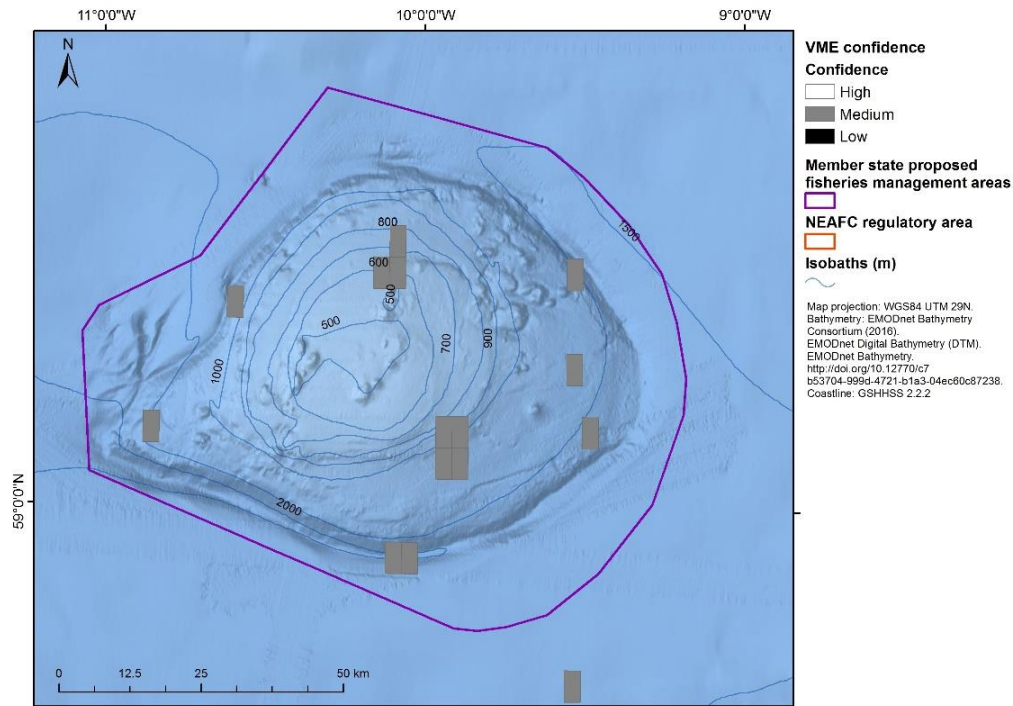


Figure 10 VME index confidence for the Rosemary Bank (ranging from low to high).

2. New information regarding the impact of fisheries on other components of the ecosystem, including VMEs

Impacts on VMEs

A comparison between 2011 and 2016 ROV imagery on the Rockall Bank showed substantial damage has occurred to a coral mound at 57° 50' 52.439"N and 14° 0' 18.977"W. Underwater video footage from 2011 shows an elevated cold-water coral reef in a distinct circular shape, with an indicative diameter of 10 m and with extensive areas of live (white-coloured) coral (Figure 11). In 2016, the same cold-water coral feature appeared with a reduced elevation, estimated at < 50 cm across much of the feature with occasional patches reaching approximately one metre high. In addition, in 2011, there were no areas of coral rubble visible in the ROV imagery, whereas the 2016 survey showed coral rubble dispersed up to approximately 180 m away from the edge of the cold-water coral mound mapped in 2011.

It is unlikely that the damage to the coral mound feature between 2011 and 2016 can be associated with any natural event; the damage is more likely to have been caused by mechanical damage from fishing activity. Clear linear scars in the seabed, with scattered coral rubble, were observed near the coral mound in 2016 (Figure 12), between 7 m and 168 m away from the mound. These linear scars are consistent with marks made on the seabed by trawl doors; examination of VMS data showed that there had been some fishing activity in the area, but it is not possible to identify conclusively the kind of activity these scars relate to.

The mound is located approximately 450 m southeast of the current bottom-fishing closure (EU, 2013). ICES (2011) advised in 2011 that this bottom-fishing closure be modified in the light of new fishing industry records. The modification included the area around this coral mound (Figure 13). ICES advice was reiterated in 2012 (ICES, 2012) on the basis of 2011 survey data that showed evidence of cold-water coral reefs (including this mound) outside the current fishing closure area.

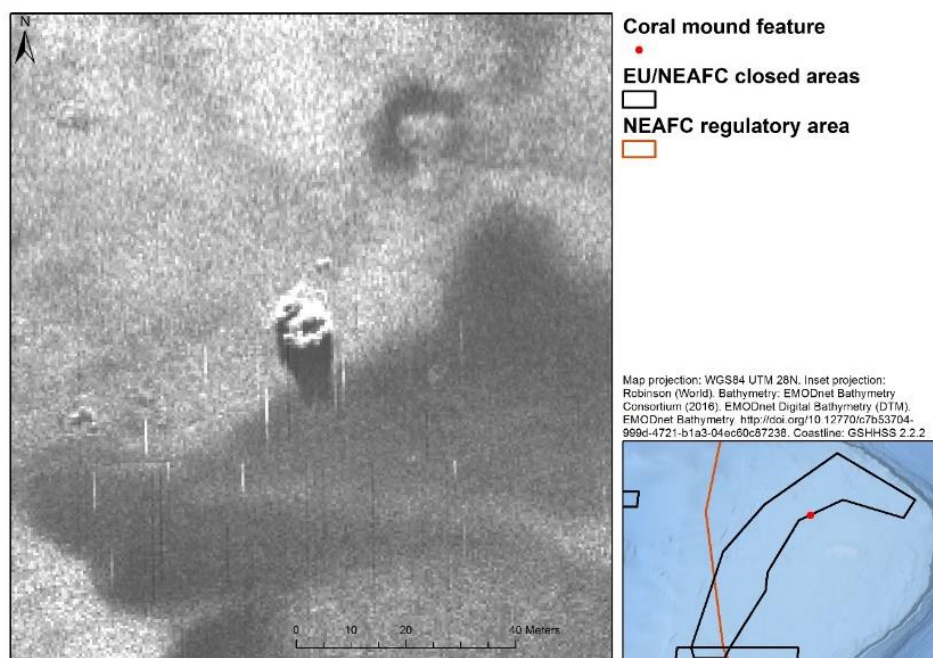


Figure 11 A coral mound sonar image and its location in relation to the northwestern Rockall Bank bottom fishing closure area (main black outline). Sidescan sonar data © NOC, 2011.

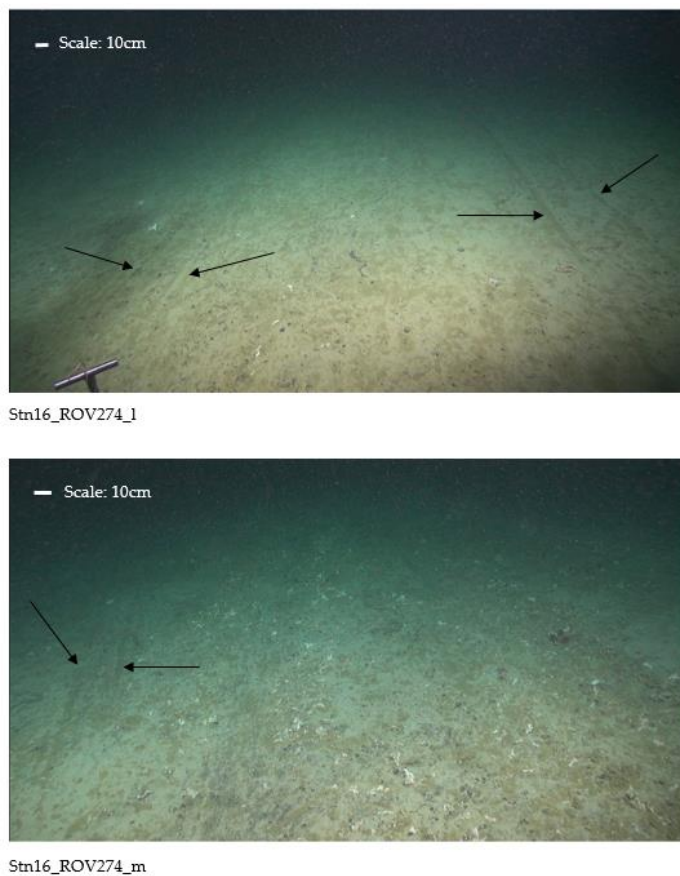


Figure 12 Linear scars photographed in 2016 on the seabed near to (upper image 168 m, lower image 7 m) the coral mound location found in 2011 (Figure 11). A sandy seabed with dispersed coral rubble can be seen. Both images ©NERC-funded Deep Links Project – Plymouth University, Oxford University, JNCC, 2016.

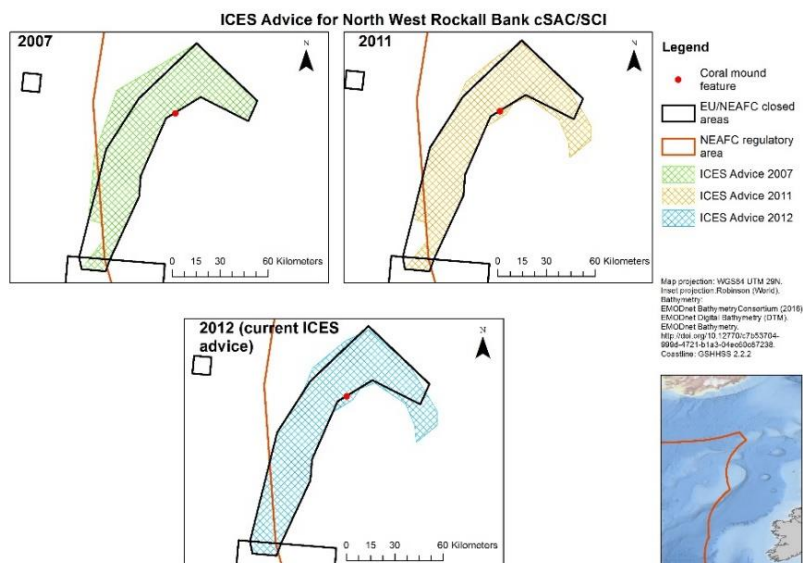


Figure 13 Evolution of ICES advice for bottom fishing closure areas on Rockall Bank in 2007, 2011, and 2012 (currently valid ICES advice).

Basis of the advice

Methods

ICES has applied its standard VME weighting algorithm to VME information for the Hatton–Rockall Basin and Rockall Bank, held within the ICES VME database. This database consists of two main types of records: (1) confirmed VMEs that are based on, e.g. high quality underwater imagery; and (2) “VME Indicators” records with varying degrees of confidence, e.g. trawl bycatch records or low-quality underwater imagery. These two types of records are treated separately. The VME weighting system assigns each VME indicator a score of between 1 and 5, based on expert judgement for each of the five FAO criteria for what classifies a habitat as a VME, and examining also whether records are above or below NEAFC weight thresholds. The final VME weighting output, shown in Figures 5 and 7 for the Hatton–Rockall Basin and Rockall Bank, shows the likelihood of encountering a VME for each 5' × 5' grid cell. Those grid cells that contain *bona fide* records of VME habitat are shaded blue, and are excluded from the VME weighting algorithm.

Associated with the VME index layer is a confidence layer, which includes a consideration of the survey method, number of surveys, and age of the data. For the Hatton–Rockall Basin and Rockall Bank, this information is shown in Figures 6 and 8. Cells range from low confidence (black) to high (white).

Sources and references

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