

New information regarding vulnerable habitats in the NEAFC Regulatory Area

Advice summary

ICES advises to maintain the existing closed areas to protect vulnerable marine ecosystems (VMEs). No additions to, or extensions of the existing closed areas to protect VMEs in the NEAFC Regulatory Area are advised at this time.

This year, the quality of the vessel monitoring system (VMS) data, provided by NEAFC to ICES, has significantly improved compared to previous years.

ICES notes that fishing activity is taking place outside of the existing NEAFC bottom-fishing areas in the Mid-Atlantic Ridge, the Josephine Seamount area, and the Reykjanes Ridge. Any bottom fishing on VME habitats will result in damage to these habitats.

Request

NEAFC requests ICES to continue to provide all available new information on distribution of vulnerable habitats in the NEAFC Convention Area and fisheries activities in and in the vicinity of such habitats, and provide advice relevant to help ensure the implementation by NEAFC of effective measures to prevent significant adverse impact of bottom fishing activity on vulnerable marine ecosystems known to occur or likely to occur in the NEAFC Regulatory Area.

Elaboration on the advice

Rockall Bank

There were 15 new VME habitat records submitted to the ICES VME database in 2020, all on the Rockall Plateau in the Logachev Mounds VME closure area (Figure 1).

The VME closures on the eastern side of Rockall Bank are generally well observed, although a small number of bottom-trawl tows appear to extend into the northwestern quadrant of the Haddock Box (Figures 2 and 3); however, these incursions are limited. Similarly, a small number of bottom-trawl tows are present in the larger closed area in southwestern Rockall and in the Logachev Mounds closure, but again, the occurrence of these are limited (Figures 2 and 3). Vessels registered as using static gears were active, at low levels, in the very northern part of the existing fishing areas on Rockall Bank and in the northwestern quadrant of the Haddock Box (Figure 4).

See the Methods section for explanation of VME habitats and indicators and VME index.

Hatton Bank

In 2020, no new VME habitat or indicator was submitted for the Hatton Bank.

The closures to the northern side of Hatton Bank are generally well observed, although a small number of bottom-trawl tows appear to extend into the closed area at its northernmost edge, but these incursions are limited (Figure 5). The highest intensities of trawling are closely associated with the boundary of the closed areas, particularly to the northeast (Figure 6). There was little evidence in this area of vessels using static bottom-contacting gears or of activity of vessels without a registered gear type. Closures on the western side of the bank are also well observed (Figures 7 and 8), with no observed activity of static gears in the area and only very limited activity from vessels fishing with non-registered gear types (Figure 9).

Reykjanes Ridge

In 2020, one new VME habitat record for the Reykjanes Ridge within the NEAFC Regulatory Area was submitted to the VME database (Figure 10).

The quality of data provided on bottom-contacting fishing activity around the Reykjanes Ridge has improved, compared to recent years. Activity is concentrated in an area north of the existing fishing area on the Reykjanes Ridge (Figure 11), at water depths of around 2000 m. There is also evidence of some low levels of fishing in an area west of the Reykjanes Ridge[†] (Figure 11). Activity is comprised of bottom-contacting trawling gears (Figure 12) and vessels fishing with non-registered gear types (Figure 13).

Mid-Atlantic Ridge

In 2020, no new VME habitat or indicator data records were submitted for the Mid-Atlantic Ridge (MAR).

As seen in previous years, bottom-trawling activity appears to be occurring at low intensities on an unnamed seamount to the south of the MAR closure, outside the existing bottom-fishing area (black arrows in Figures 14 and 15). Further south, bottom trawling occurs at low levels in and around the existing bottom-fishing areas, as well as on a seamount west of the Olympus knoll (red arrows in Figures 14 and 15). There is no evidence of static gears, or of vessels fishing with non-registered gear types operating in the area.

Josephine Seamount

In 2020, no new VME habitat or indicator data records were submitted for the Josephine Seamount area.

This area shows low levels of bottom-contacting static gear activity outside the existing fishing area (Figures 16 and 17). The low-intensity use of static gears in the area northwest of the Josephine Seamount occurs across a larger area than that observed last year. Bottom-trawling activity or vessels fishing without a registered gear type have not been detected in the area.

Barents Sea

In 2020, no new VME habitat or indicator data records were submitted for the Barents Sea.

Bottom trawling appears to have taken place within the boundaries of existing fishing areas in the NEAFC Regulatory Area (Figure 18). No gridded fishing-intensity data were provided for this area; hence, activity of static gears and of vessels fishing with non-registered gear types could not be reviewed.

NEAFC VMS and catch data supplied to ICES

This year, the quality of the speed data, provided by NEAFC to ICES, was significantly improved compared with previous years. However, a large proportion of the vessels still have no gear specified. The Data Flow Schematics publication (ICES, 2020a) shows the NEAFC VMS and catch data flow into the ICES data management systems and subsequent quality control steps used in the production of this advice. For this advice, ICES has plotted both bottom-trawling tow tracks and gridded (0.05° x 0.05°) fishing hours for 2019 bottom-contacting gears from NEAFC VMS and catch data.

Use of the VME vulnerability and confidence index

The inclusion of VME indicators is considered to aid the detection and representation of VME habitats. ICES uses VME indicators to calculate the likelihood of occurrence, known as the VME index. Presently, three likelihood of occurrence classes are in the classification (low, medium, and high), together with an associated confidence score of low, medium, or high. This is used to support the understanding of the likelihood of VME presence, based on the underlying data.

[†] Version 2: Danish EEZ removed from text according to Figure 11.

Presence of VMEs in areas that are closed to fishing for purposes other than protection of VMEs in the NEAFC Regulatory Area

ICES has provided advice separately on the presence of VMEs in areas that are closed to fishing for purposes other than the protection of VMEs in the NEAFC Regulatory Area (Rockall Haddock Box; ICES, 2020b).

Basis of the advice

New records of VME habitats on Rockall Bank have been added to the ICES VME database (Figure 1). There are 15 new records of deep-sea sponge aggregations, coral gardens, tube-dwelling anemone aggregations, and cold-water coral reefs within the existing Logachev Mounds VME closure area. A further five VME habitat records of coral gardens, tube-dwelling anemone aggregations, and deep-sea sponge aggregations, occurring outside of all existing closure areas, were submitted. Although they represent rare occurrences of habitat-forming species, they are preliminary and further work is required before they can be fully incorporated into the ICES VME database. This work will take place in 2021 and will be incorporated into subsequent advice.

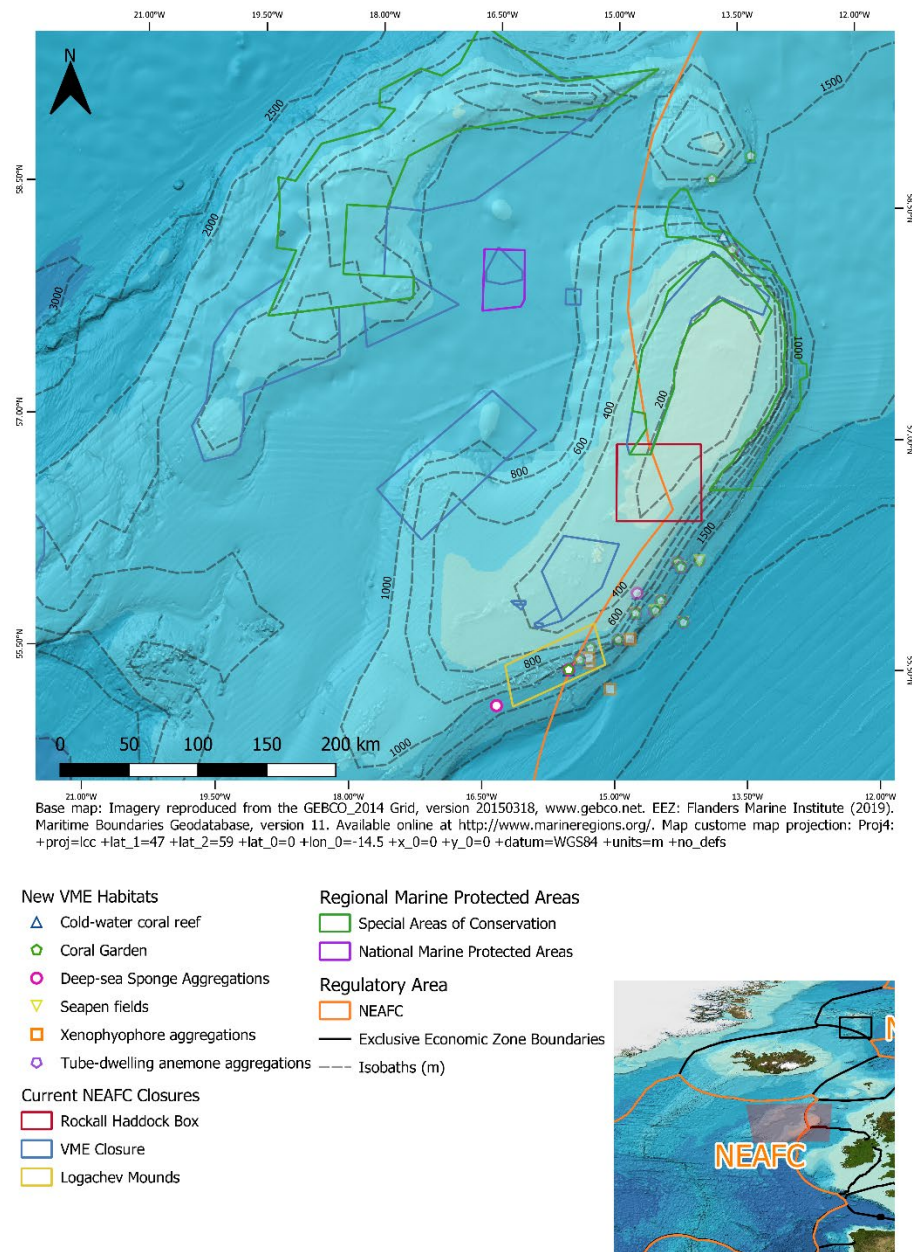


Figure 1 New VME habitat records within the NEAFC Regulatory Area, submitted to the VME database in 2020 for Rockall Bank (new records outside of the NEAFC Regulatory Area are displayed as transparent). Note that other VME records from the VME database for this area are not displayed.

In addition, one VME habitat record of a *Solenosmilia variabilis* cold-water coral reef on the Reykjanes Ridge within the NEAFC Regulatory Area was submitted to the ICES VME database (Figure 10). It is located close to, but outside of the northern MAR VME closure. As this was limited to one new record, no modification to the existing NEAFC closure is recommended at this time.

No new VME data were provided for other areas within the NEAFC Regulatory Area.

Fishing activities in and near NEAFC closed areas

ICES plotted bottom-trawling tow tracks and gridded fishing hours for bottom-contacting gears from NEAFC VMS data, received in and near the Rockall Bank (Figures 2–4) and Hatton Bank closures (Figures 5–9). Only minor infringements

occurred in these closures. Some bottom trawling still takes place in the southwestern Rockall and Logachev Mounds closures, but this is limited (Figures 2 and 3).

VMS trawl tracks and gridded fishing hours for bottom-contacting gears were also plotted from NEAFC VMS data, received in and near the Reykjanes Ridge (Figures 11–13) and takes place outside of the existing bottom-fishing area. On the Mid-Atlantic Ridge, bottom trawling also appears to occur at low intensities outside of the existing bottom-fishing areas, as indicated with red and black arrows in Figures 14 and 15. Furthermore, low-intensity use of static gears appears to take place within the Josephine Seamount area, outside of existing fishing areas (Figures 16 and 17).

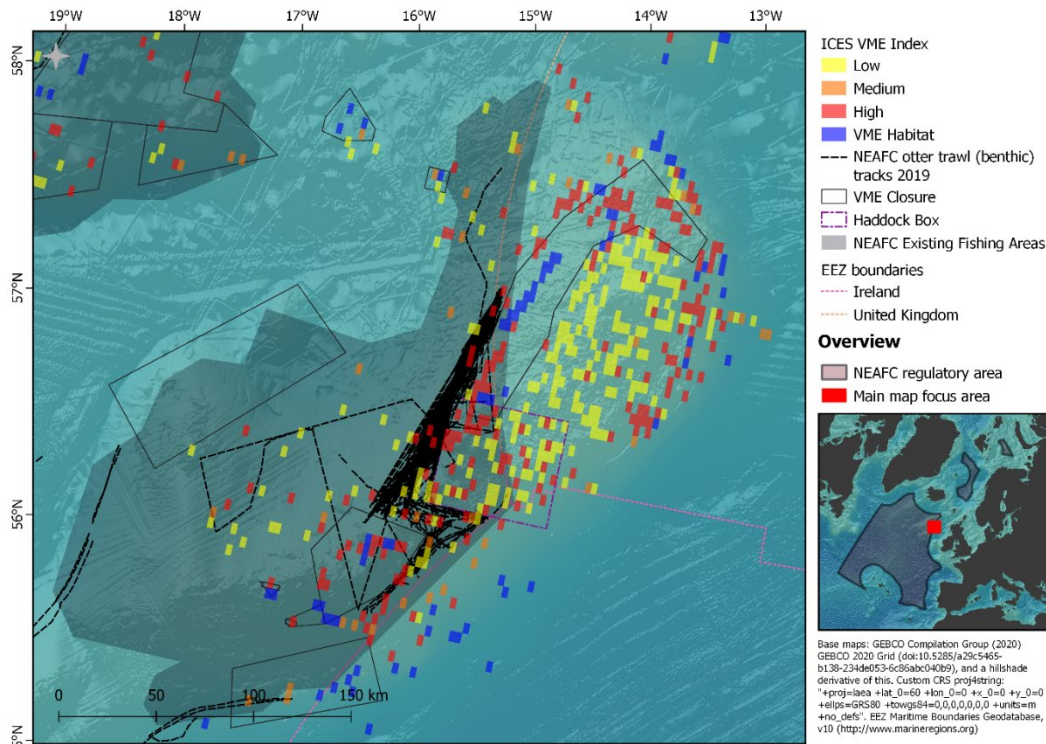


Figure 2 Bottom-contacting otter-trawl tow tracks (black lines) on Rockall Bank, overlain with the ICES VME index (based on all records for the area), the likelihood of encountering a VME within each grid cell (ranging from low to high), and the presence of VME habitats.

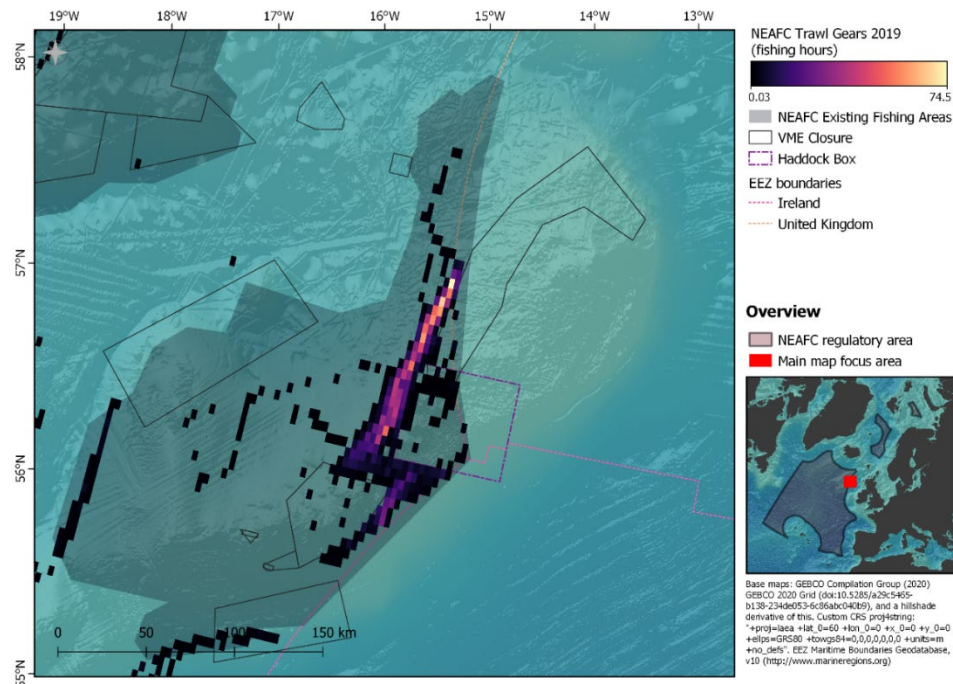


Figure 3 Gridded data (fishing hours) for bottom-contacting trawl gears on Rockall Bank, overlain with VME closures, the Haddock Box, existing NEAFC fishing areas, and EEZ boundaries.

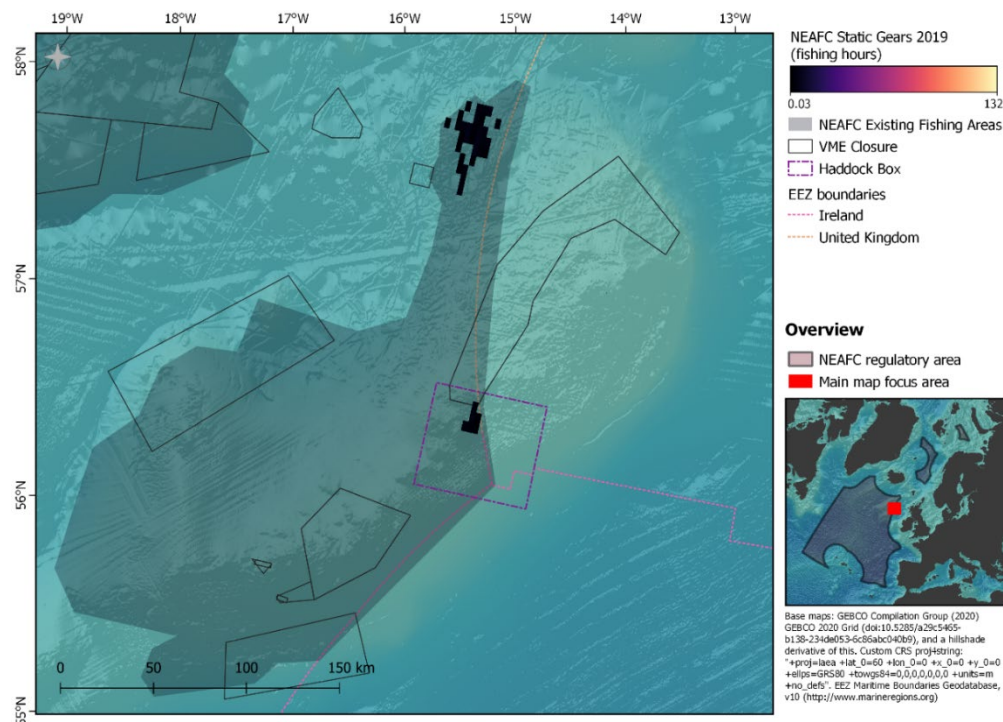


Figure 4 Gridded data (fishing hours) for bottom-contacting static gears on Rockall Bank, overlain with VME closures, the Haddock Box, existing NEAFC fishing areas, and EEZ boundaries.

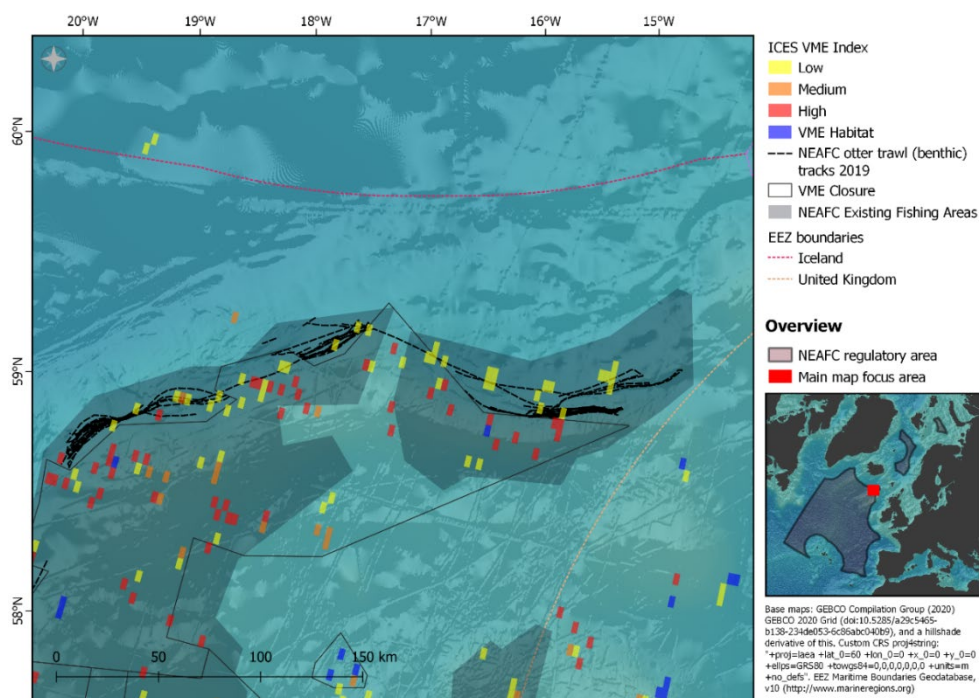


Figure 5 Bottom-contacting otter-trawl tow tracks north of Hatton Bank, overlain with the ICES VME index (based on all records for the area), the likelihood of encountering a VME within each grid cell (ranging from low to high), and the presence of VME habitats.

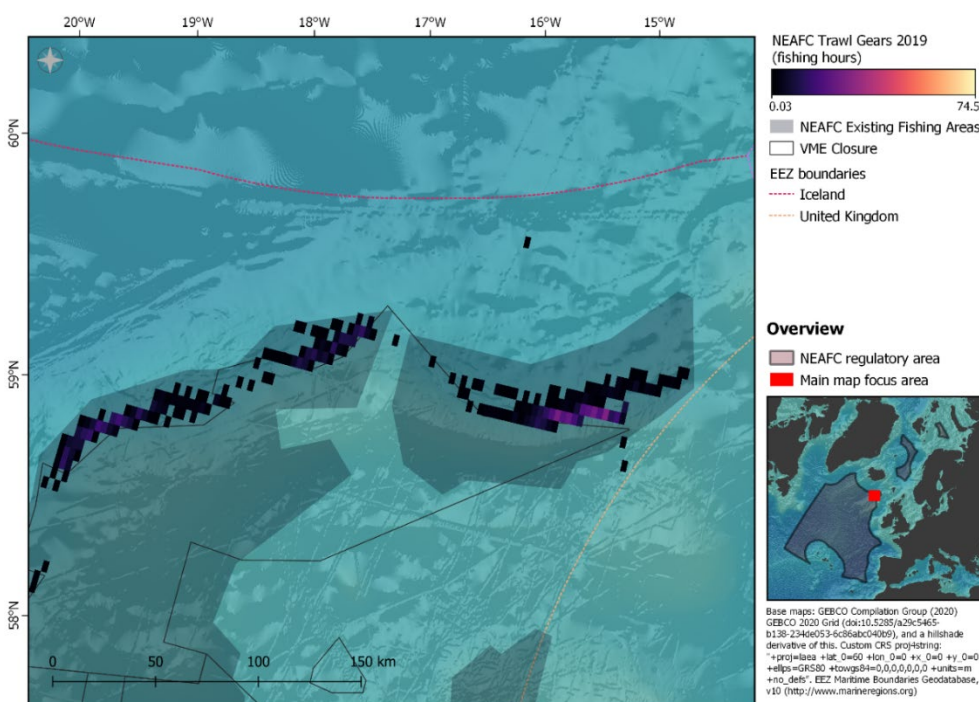


Figure 6 Gridded data (fishing hours) for bottom-contacting trawl gears north of Hatton Bank, overlain with existing NEAFC fishing areas and EEZ boundaries.

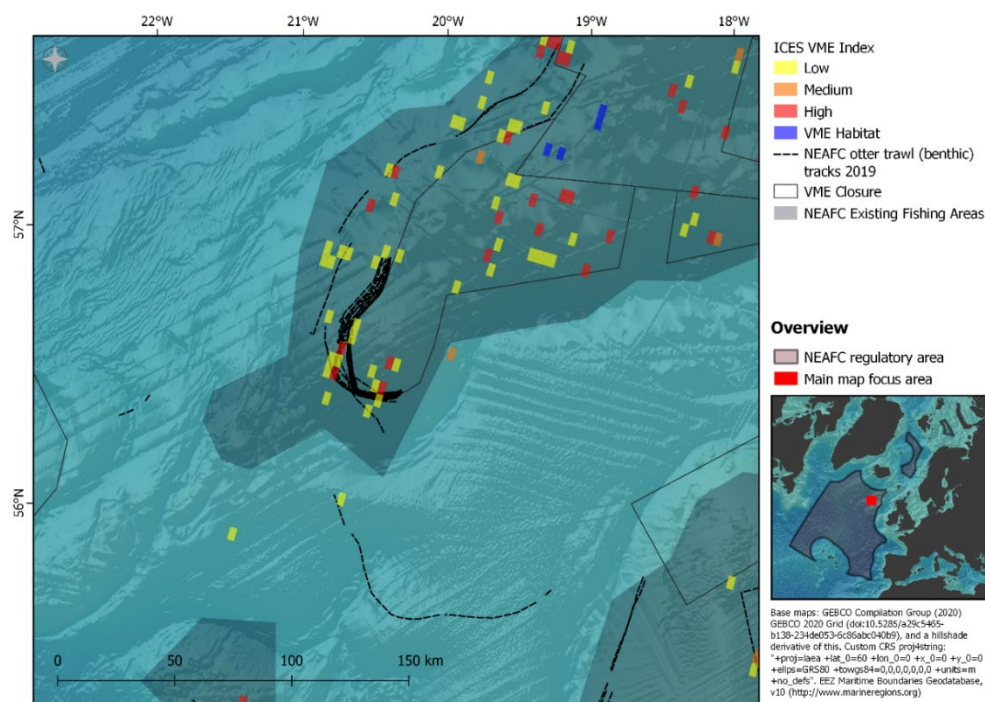


Figure 7 Bottom-contacting otter-trawl tow tracks west of Hatton Bank, overlain with the ICES VME index (based on all records for the area), the likelihood of encountering a VME within each grid cell (ranging from low to high), and the presence of VME habitats.

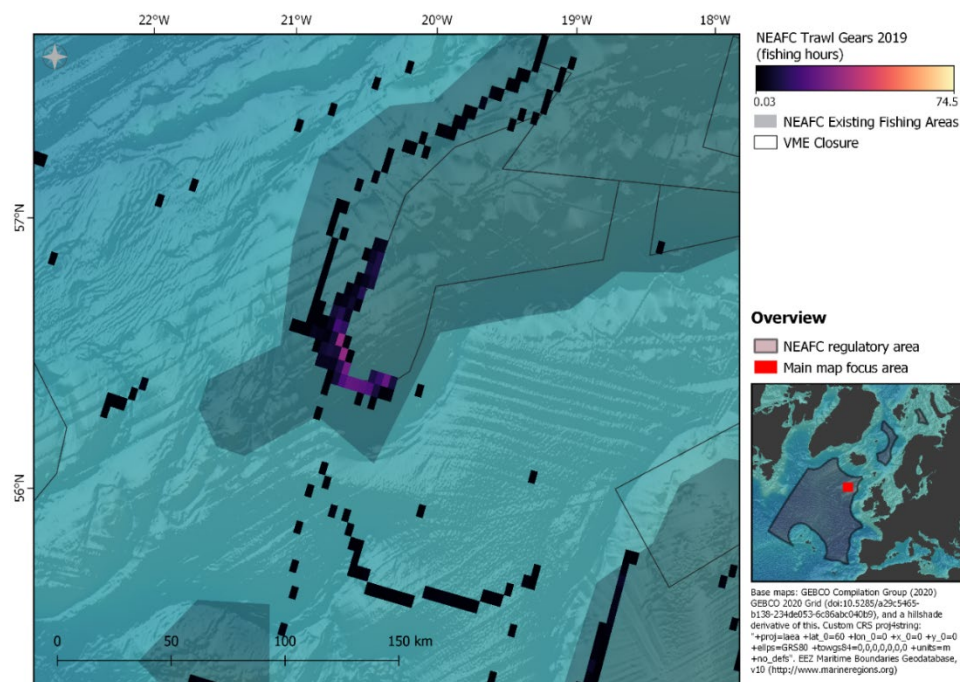


Figure 8 Gridded data (fishing hours) for bottom-contacting trawl gears west of Hatton Bank, overlain with VME closures and existing NEAFC fishing areas.

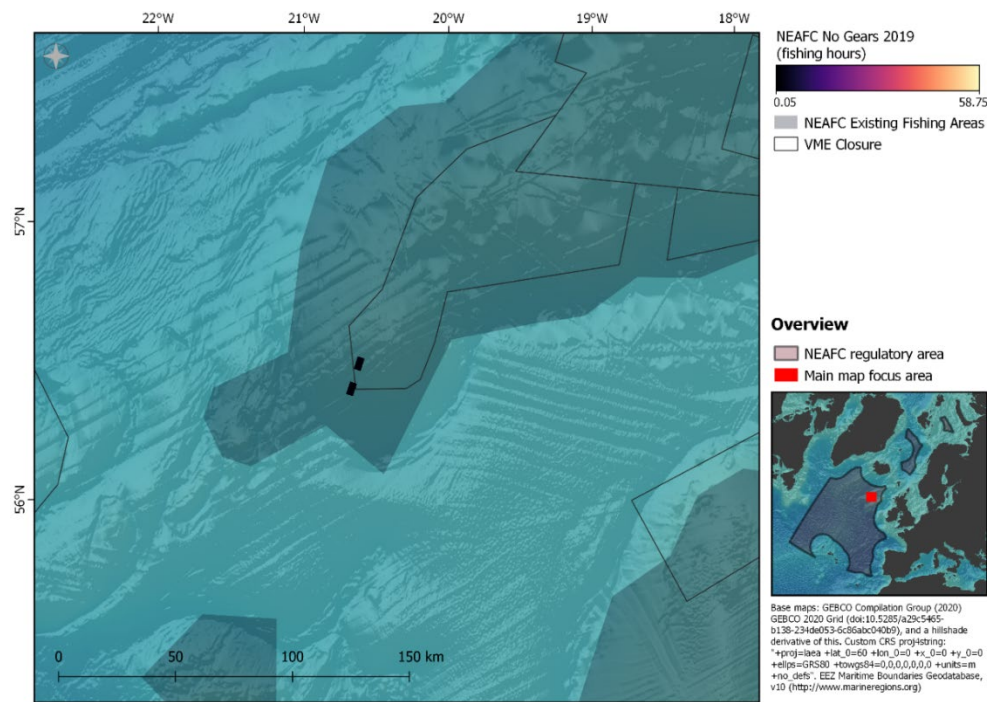


Figure 9 Gridded data (fishing hours), where no gear was registered west of Hatton Bank, overlain with VME closures and existing NEAFC fishing areas.

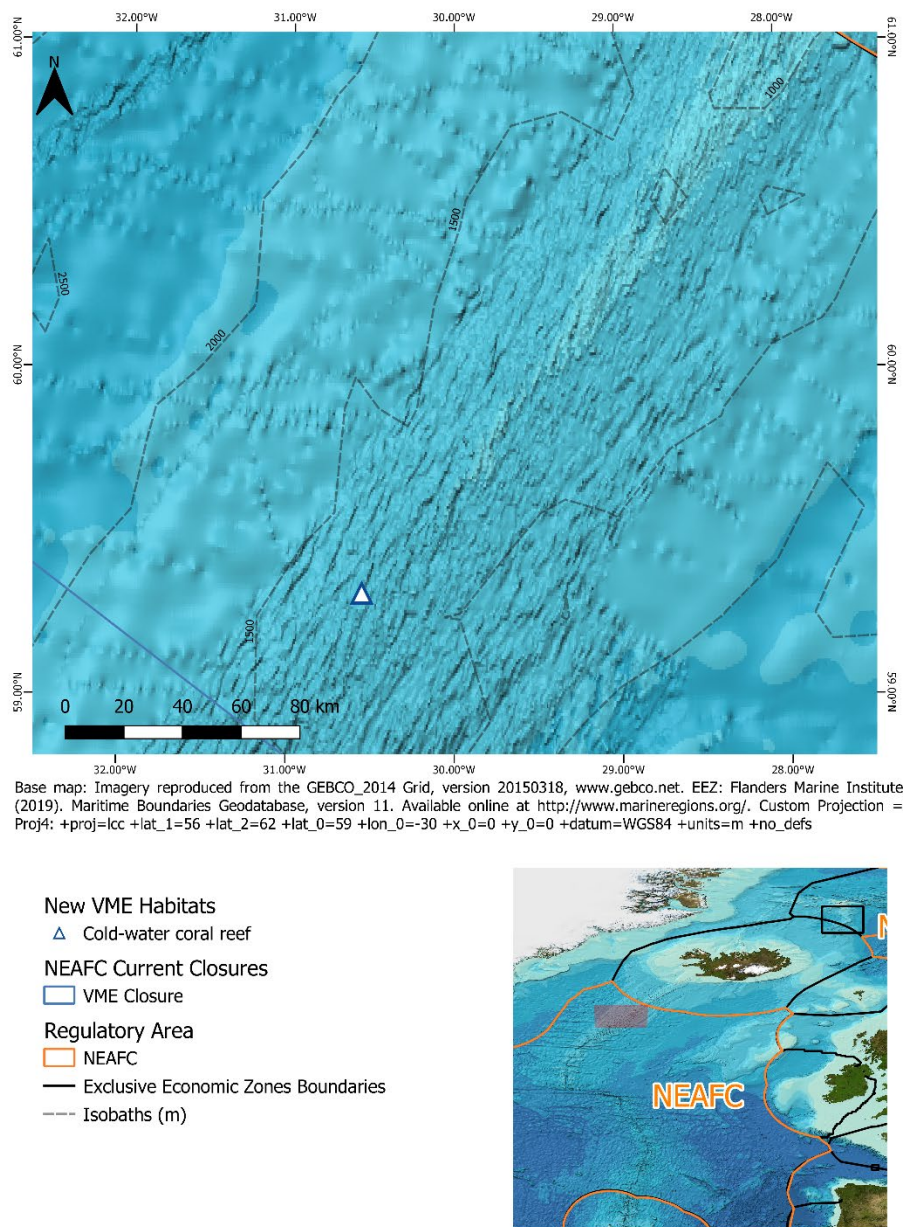


Figure 10 New VME habitat record within the NEAFC Regulatory Area, submitted to the VME database in 2020 for the Reykjanes Ridge. Note that other VME records from the VME database for this area are not displayed.

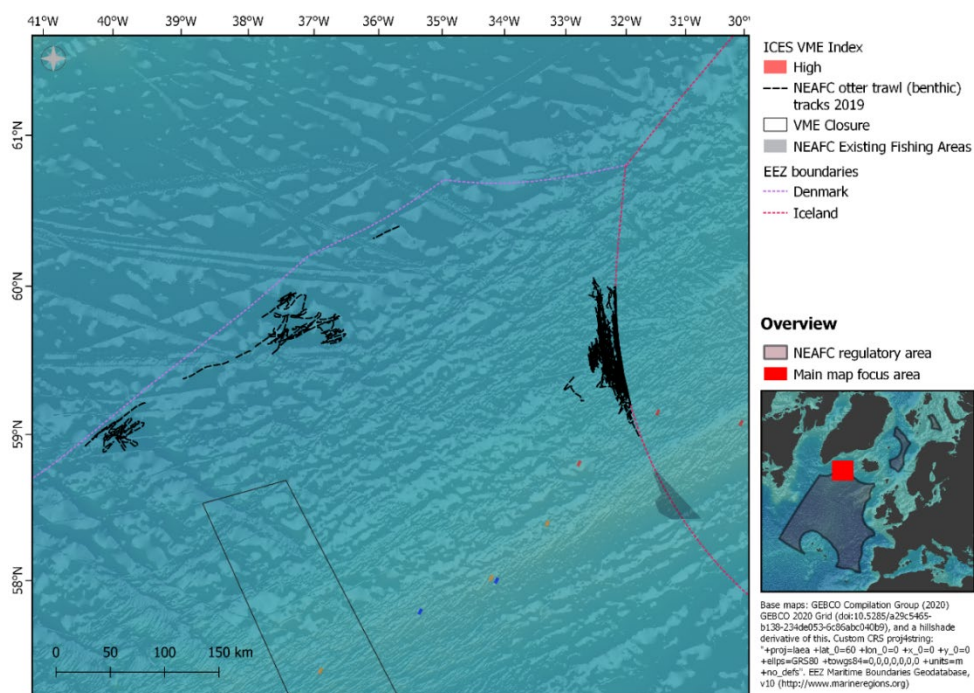


Figure 11 Bottom-contacting otter-trawl tow tracks south of Iceland, overlain with the VME index, VME closures, existing NEAFC fishing areas, and EEZ boundaries.

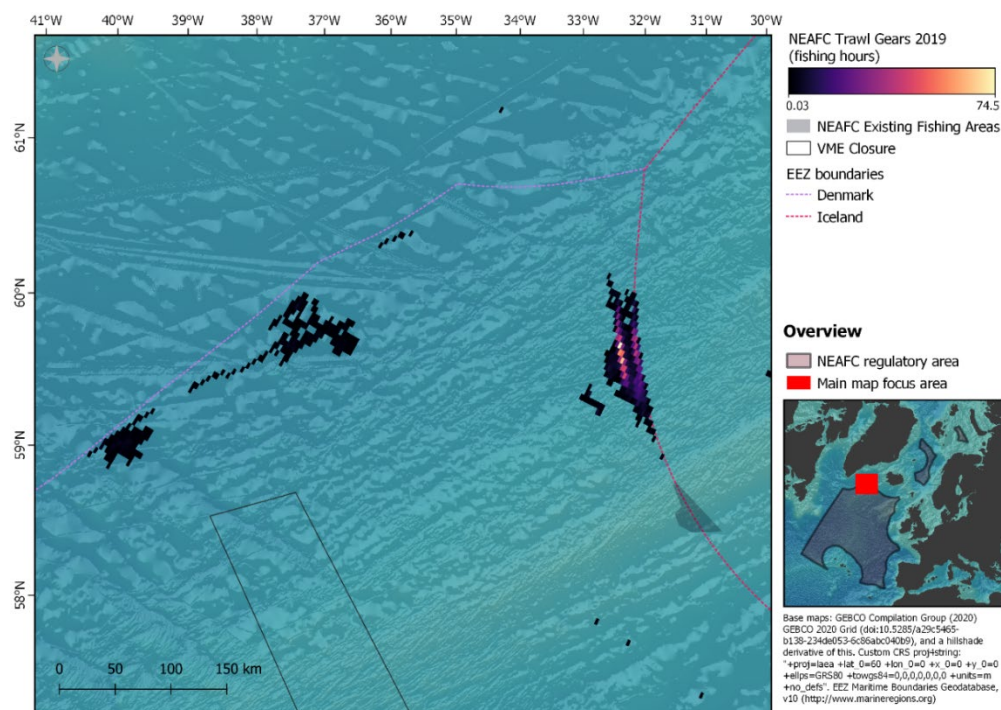


Figure 12 Gridded data (fishing hours) for bottom-contacting trawl gears south of Iceland, overlain with existing NEAFC fishing areas and EEZ boundaries.

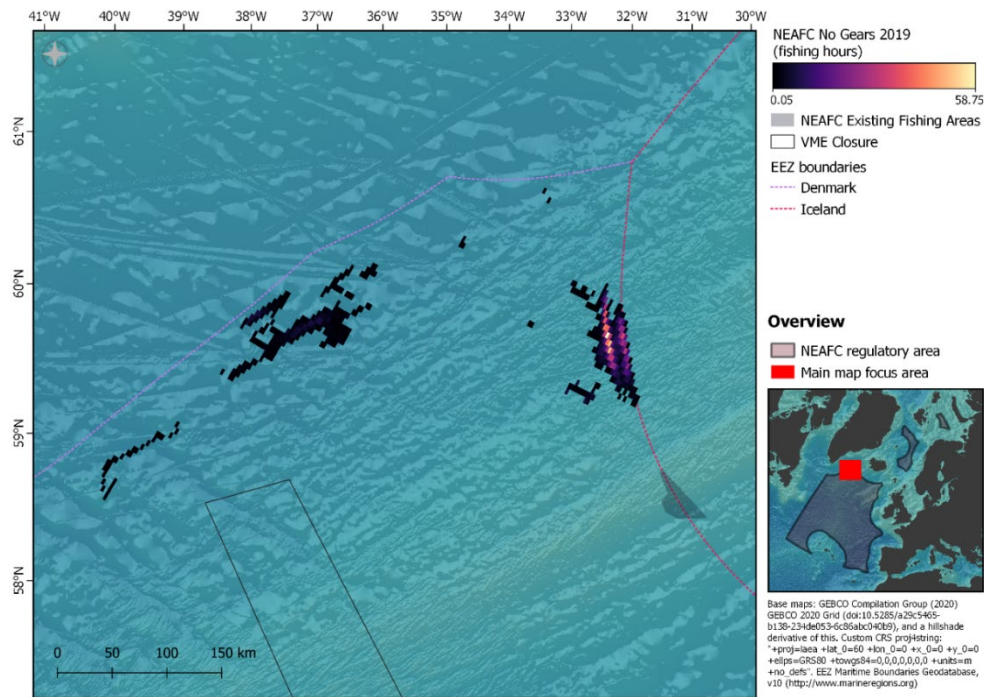


Figure 13 Gridded data (fishing hours), where no gear was registered south of Iceland, overlain with VME closures, existing NEAFC fishing areas, and EEZ boundaries.

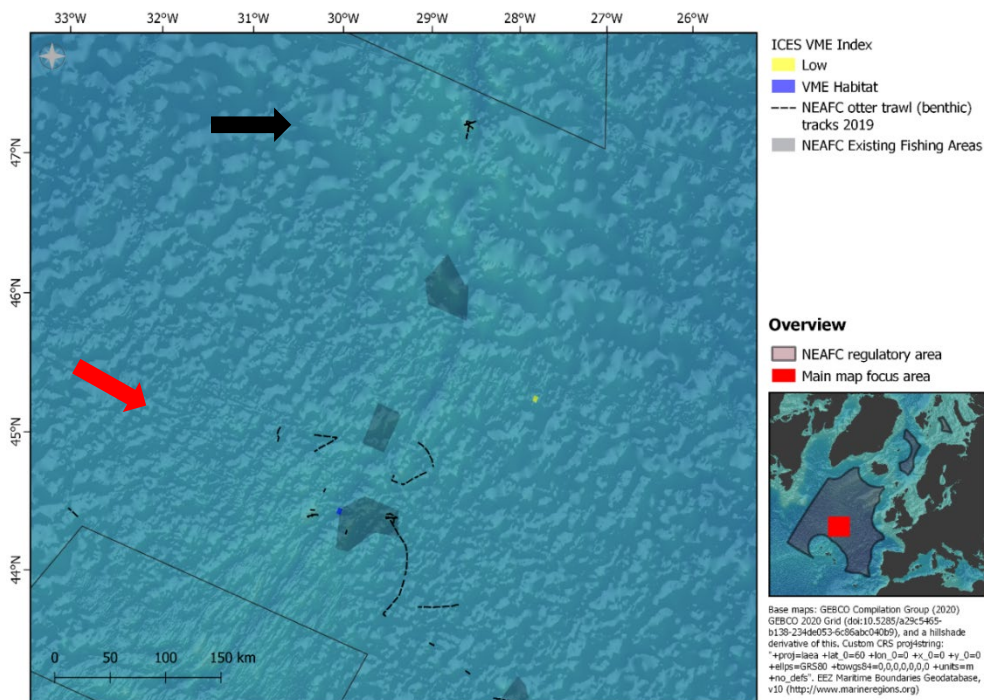


Figure 14 Bottom-contacting otter-trawl tow tracks on the Mid-Atlantic Ridge seamounts, overlain with the ICES VME index (based on all records for the area), the likelihood of encountering a VME (low to high only), and the presence of actual VME habitats within each grid cell. The black and red arrows indicate areas where bottom-trawling activity appears to be taking place at low levels outside the existing bottom-fishing areas.

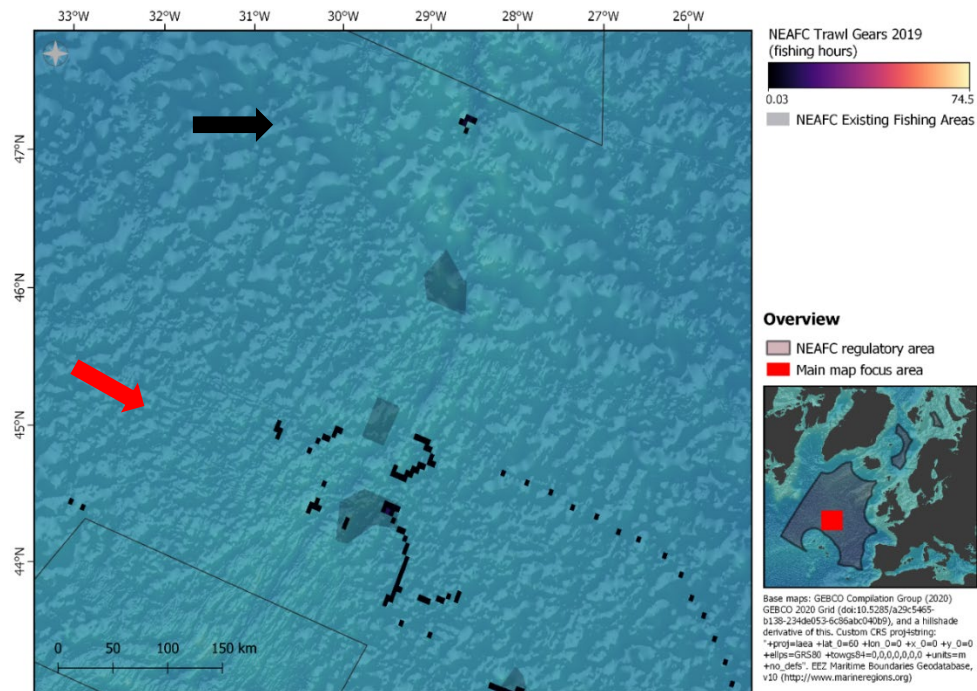


Figure 15 Gridded data (fishing hours) for bottom-contacting trawl gears on the Mid-Atlantic Ridge Seamounts, overlain with existing NEAFC fishing areas. The black and red arrows indicate areas where bottom-trawling activity appears to be taking place at low levels outside the existing bottom fishing areas.

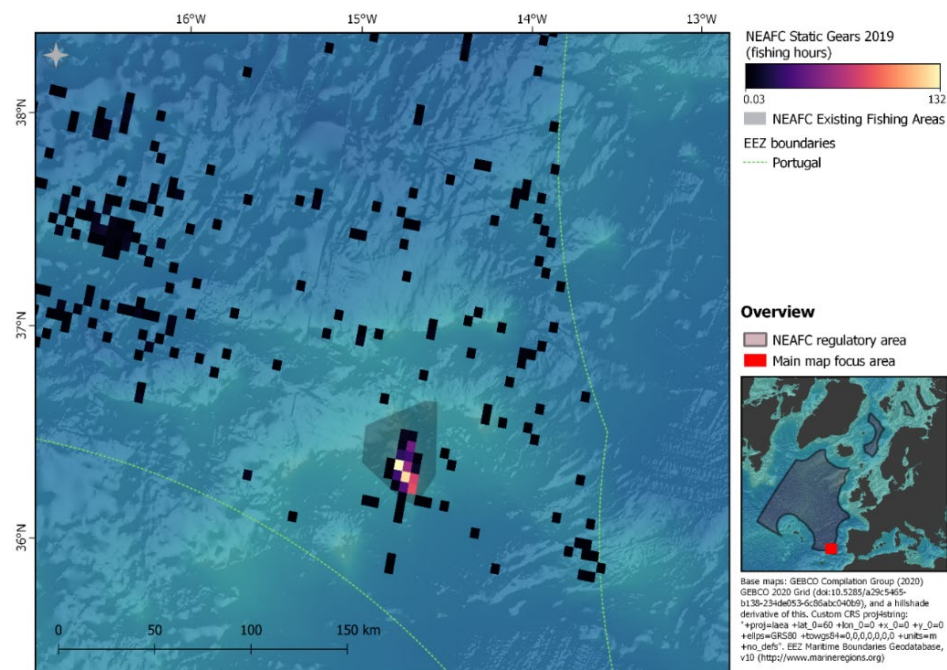


Figure 16 Gridded data (fishing hours) for bottom-contacting static gears in the Josephine Seamount area, overlain with existing NEAFC fishing areas and EEZ boundaries.

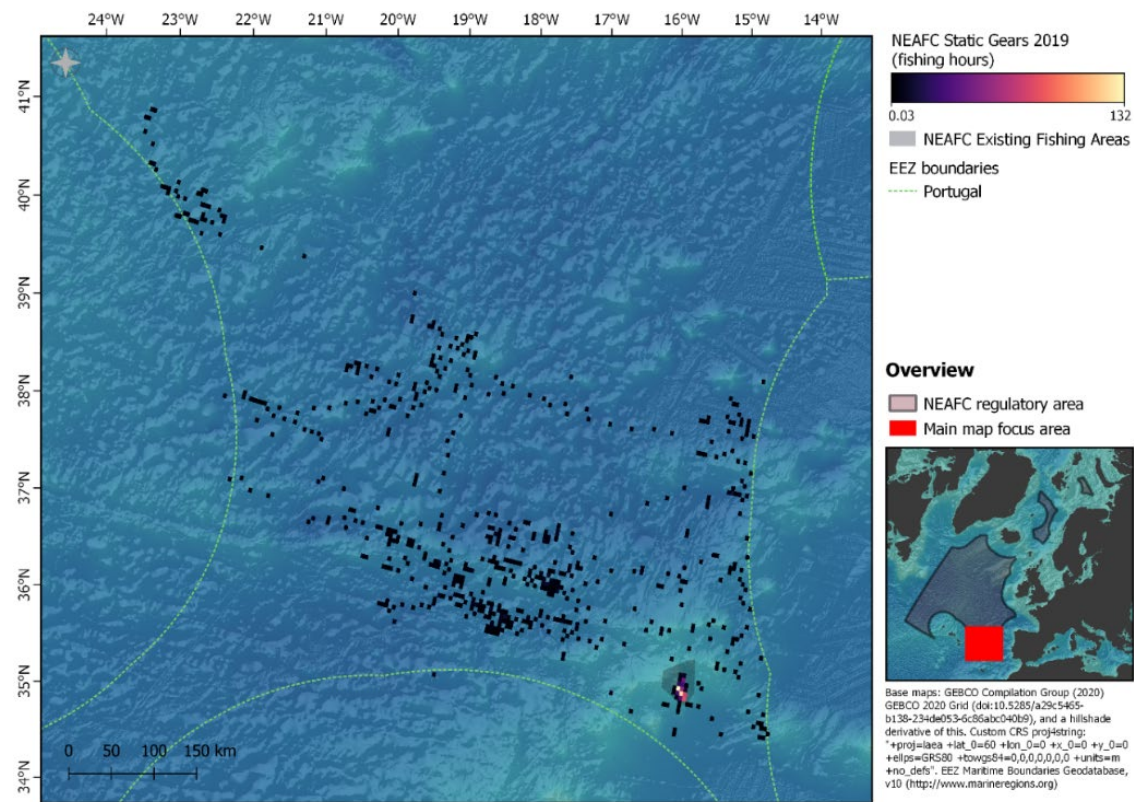


Figure 17 Gridded data (fishing hours) for bottom-contacting static gears in the area northwest of the Josephine Seamount, overlain with existing NEAFC fishing areas and EEZ boundaries.

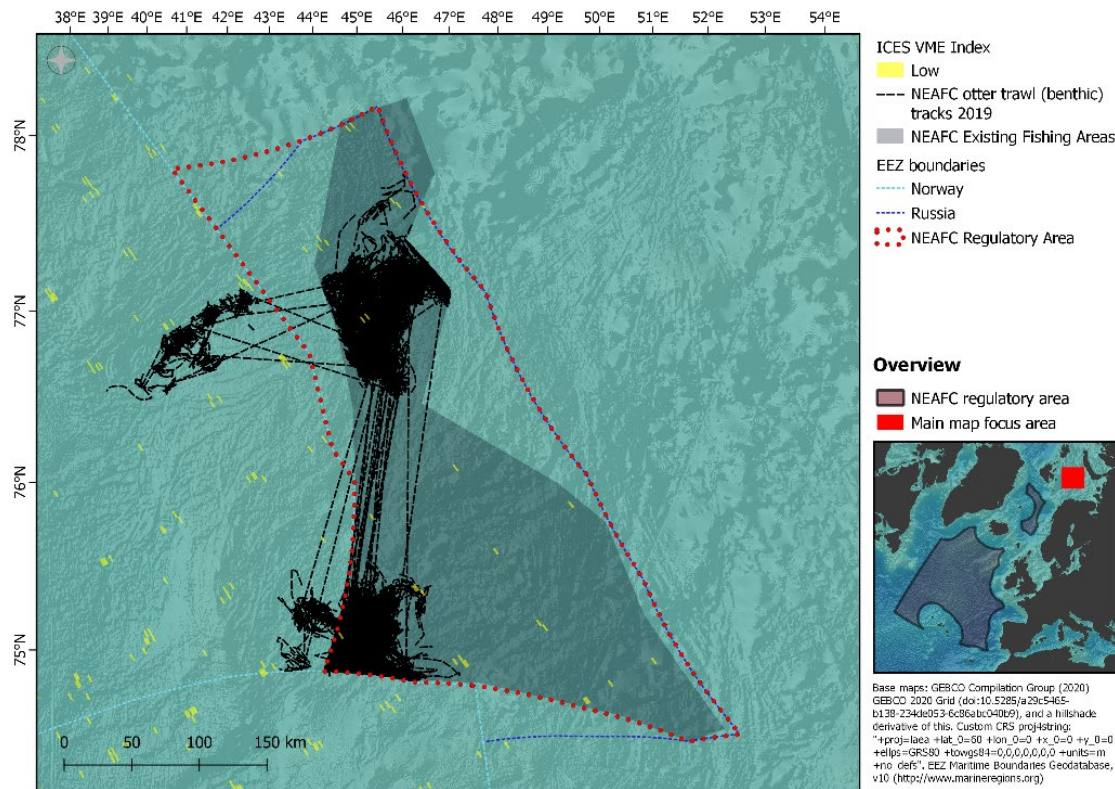


Figure 18 Bottom-contacting otter-trawl tow tracks in the Barents Sea, overlain with the ICES VME index (based on all records for the area) and the likelihood of encountering a VME within each grid cell (ranging from low to high).

Methods

ICES has applied its standard VME weighting algorithm (ICES, 2018) to new VME information submitted to the ICES VME database in 2020 for regions within the NEAFC Regulatory Area. 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 indicator 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 also examines whether the quantity of VME indicators is above or below NEAFC weight thresholds. The final VME weighting output shows the likelihood of encountering a VME for each for each c-square ($0.05^\circ \times 0.05^\circ$) grid cell. Those grid cells that contain bona fide records of VME habitats are shaded blue, e.g. from an ROV transect surveying a cold-water coral reef, and are excluded from the VME weighting algorithm. The VME indices are shown in Figures 2, 5, 7, 11, 14, and 18. A confidence layer associated with the VME index layer can also be generated, which includes a consideration of the survey method, the number of surveys, and the age of the data. Cells range from low confidence to high.

The Data Flow Schematics publication (ICES, 2020a) shows the NEAFC VMS and catch data flow into the ICES data management systems and subsequent quality control steps used in the production of this advice. For this advice, ICES has plotted both bottom-trawling tow tracks and gridded ($0.05^\circ \times 0.05^\circ$) fishing hours for 2019 bottom-contacting gears from NEAFC VMS and catch data.

Sources and references

ICES. 2018. Report of the ICES/NAFO Joint Working Group on Deep-water Ecology (WGDEC), 5–9 March 2018, Dartmouth, Nova Scotia, Canada. ICES CM 2018/ACOM:26. 126 pp.

ICES. 2020a. Vessel Monitoring System (VMS) and Catch Data in the North East Atlantic Fisheries Commission (NEAFC) regulatory area. ICES Data Flow Schematics, Vol. 1: Ed. 1. 8 pp. <https://doi.org/10.17895/ices.advice.6101>.

ICES. 2020b. Vulnerable marine ecosystems in the NEAFC Regulatory Area closed to fishing for purposes other than VME protection. *In* Report of the ICES Advisory Committee, 2020. ICES Advice 2020, vme.neafc.2, <https://doi.org/10.17895/ices.advice.7427>.

ICES. 2020c. ICES/NAFO Joint Working Group on Deep-water Ecology (WGDEC). ICES Scientific Reports, 2:62. 171 pp. <http://doi.org/10.17895/ices.pub.6095>.

ICES. 2020. Working Group on Spatial Fisheries Data (WGSFD). ICES Scientific Reports, 2:58. <https://www.ices.dk/sites/pub/Publication%20Reports/Forms/DispForm.aspx?ID=36778>.

ICES. 2020. NEAFC request on new information regarding vulnerable habitats in the NEAFC Regulatory Area. <i>In</i> Report of the ICES Advisory Committee, 2020. ICES Advice 2020, vme.neafc.1. https://doi.org/10.17895/ices.advice.7426 .
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