

## EU request to provide an update on the list of areas where VMEs are known to, or likely to occur, and on the existing deep-sea fishing areas for 2009–2011

### Service summary

ICES has collected relevant Vessel Monitoring System (VMS) and logbook data to describe, as a technical service to the European Commission, the existing deep-sea fishing areas for 2009–2011 in EU waters of the Northeast Atlantic. ICES provides maps with the deep-sea ( $\geq 800$  m depth) fishing footprint for all bottom-contacting gears, and provides a set of coordinates for the three largest deep-sea fishing areas. ICES also provides a list of areas where VMEs either occur or are likely to occur, with a set of coordinates for the three largest VME areas in the Northeast Atlantic. In addition to static PDF maps, interactive maps showing the same information with a number of selectable layers are provided to the European Commission as an update from last year. This is to aid in the interpretation of the advice and assist the implementation process of the deep-sea access regulation (ICES, 2018a, 2018b). Furthermore, ICES provides to the European Commission, as csv files<sup>†</sup>, the full coordinates of all 2009–2011 deep-sea fishing areas, and also of areas where VMEs occur or are likely to occur.

### Request

On 28 June 2018, ICES provided advice to DG MARE on “locations and likely locations of VMEs in EU waters of the NE Atlantic, and the fishing footprint of 2009–2011” (ICES, 2018b) to assist the implementation of the deep-sea access regulation (EU) 2016/2336 (EU, 2016). On 30 November 2018, ICES provided a further technical service (ICES, 2018a) to aid the interpretation of the advice.

In both deliverables, ICES indicated that “*missing information*” and “*(late) submission*” of data were hindering the scientific process to deliver a full advice on the deep-sea fishing footprint and on the locations and likely locations of VMEs. ICES indicated: “*ICES will, in 2019, be able to better describe the overall bottom fishing footprint of 2009–2011 in EU waters of the NE Atlantic*”.

Further to the reception of the missing information and the evaluation of all data, EU DG MARE requests that ICES deliver the following to assist the European Commission with the implementation of Regulation (EU) 2016/2336:

- *Provide a description of the existing deep-sea fishing areas based on the reference years 2009–2011 in EU waters of the North-East Atlantic. This description should be translated into static coloured maps and their specific coordinates entitled “Existing Deep-Sea Fishing Areas” and listed in map and tables on the model of Annex 1 of the “NEAFC Recommendation 19- 2014: Protection of VMEs in NEAFC Regulatory Areas”.*

- *Provide a list of areas where VMEs are known to occur or likely to occur. This list should be translated into static coloured maps and their specific coordinates entitled “List of areas where VMEs are known to occur or are likely to occur” and listed in map and tables on the model of Annex 2 of the “NEAFC Recommendation 19- 2014: Protection of VMEs in NEAFC Regulatory Areas”.*

- *Make the interactive map available beyond 31/03/2019 until 31/12/2019.*

### Elaboration of the service

#### 1. Description of existing deep-sea fishing areas based on the reference years 2009–2011 in EU waters of the Northeast Atlantic

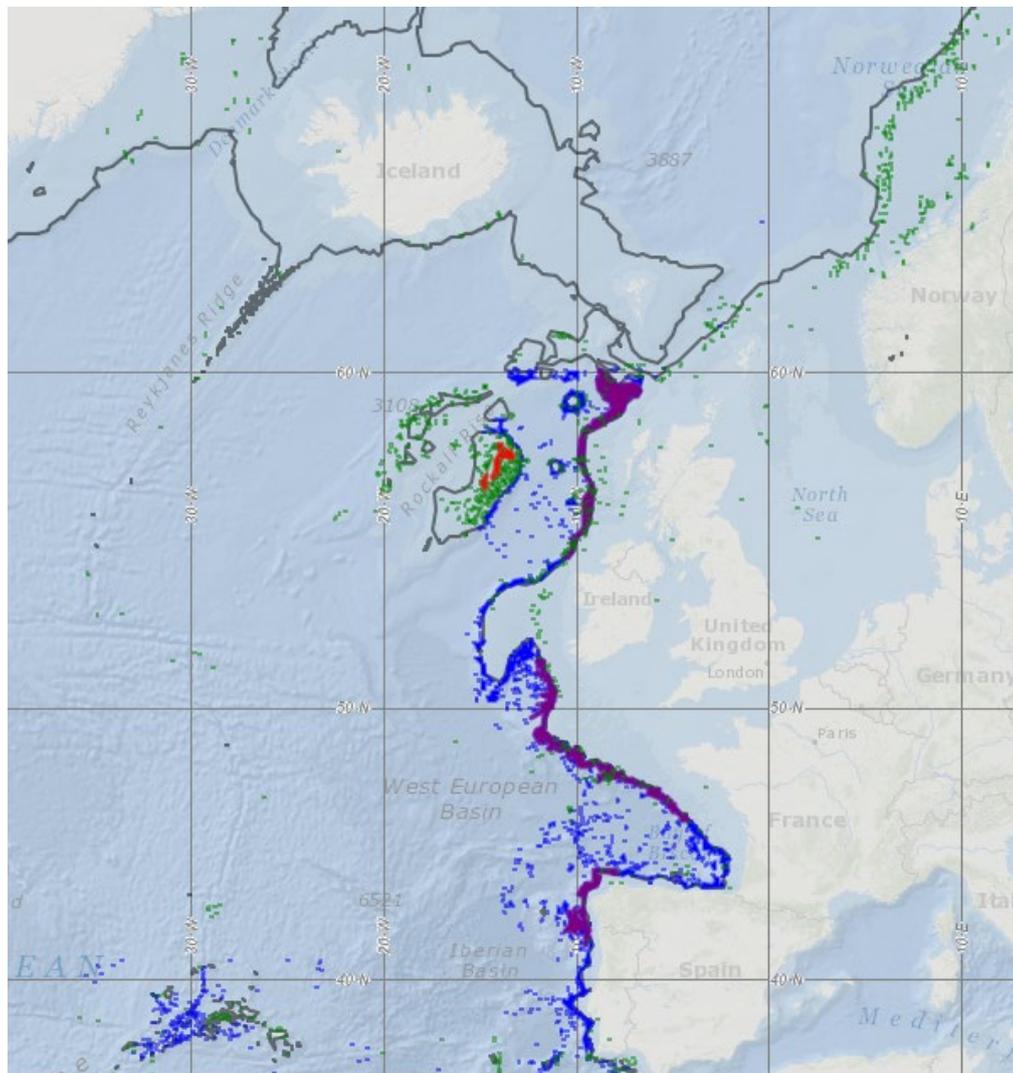
The spatial extent of the existing deep-sea fisheries footprint for all bottom-contacting gears for 2009–2011 is presented in Figure 1. C-squares that occur in areas  $\geq 800$  m depth are displayed in this figure as the fishing activity footprint (blue

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<sup>†</sup> Updated text.

and purple – Option 1 in ICES [2018a], see Methods). Other options to describe the footprint of bottom fisheries are also available (ICES, 2018a). The 800 m depth contour was based on the General Bathymetric Charts of the Ocean (GEBCO).

The fisheries footprint at > 800 m depth is extracted using VMS and logbook data over the reference period (see Methods). EU waters of the Northeast Atlantic have a total of 1061<sup>‡</sup> existing fishing areas. The three largest deep-sea fishing areas are shown as purple shapes in Figure 1 and presented later at a higher resolution (Figures 2, 3, and 4). Furthermore, a reduced set of coordinates to describe the fishing areas 1, 2, and 3 are shown in Annex 1. Full coordinates for all fishing areas are provided as a working tool for the European Commission as csv files<sup>§</sup>.

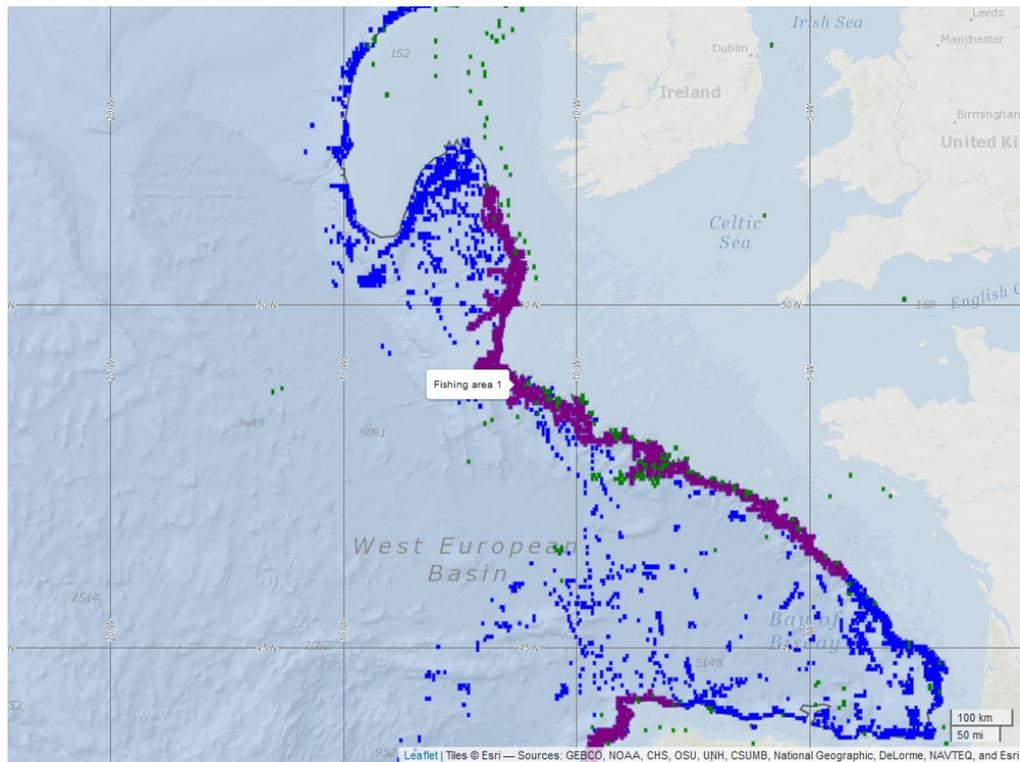


**Figure 1\*\*** The fisheries footprint (blue and purple) at depths  $\geq 800\text{m}$  (black line denotes the depth contour) in the EU waters of the Northeast Atlantic. The three largest deep-sea fishing areas are shown in purple. Areas where VMEs are known to, or likely to occur are shown in green. Three selected VME areas as an example are shown in red.

<sup>‡</sup> Number of deep-sea fishing areas updated

<sup>§</sup> Updated text

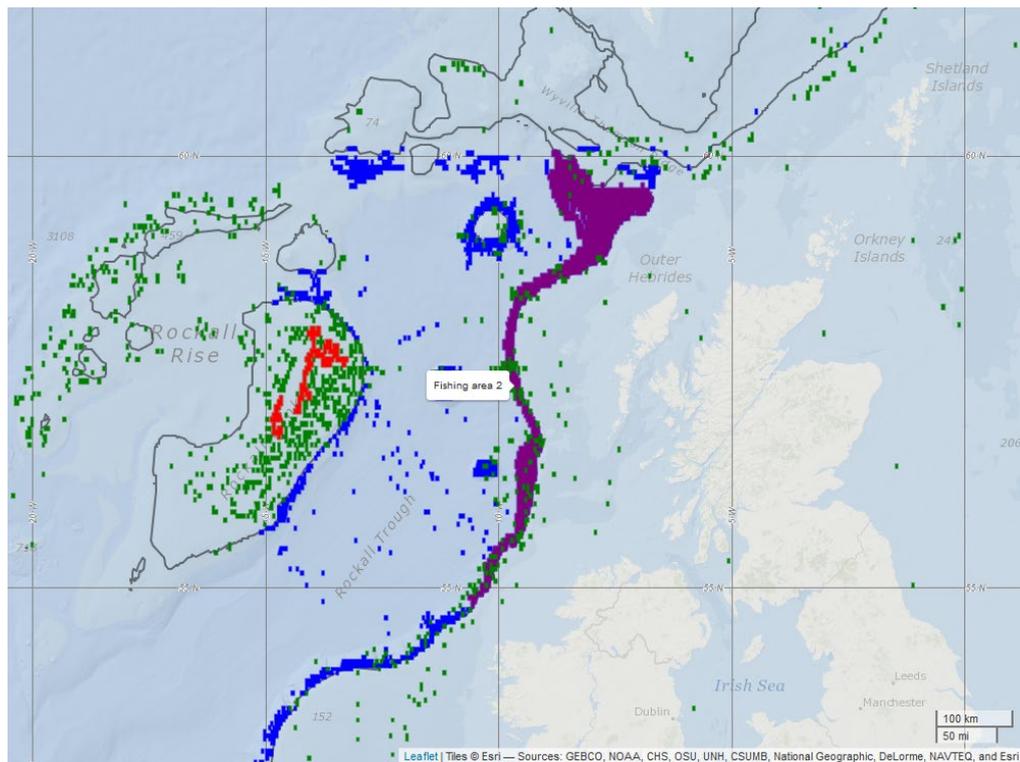
\*\* Figure 1 updated



**Figure 2<sup>††</sup>** Fishing area 1 (purple) for the EU waters of the Northeast Atlantic and areas where VMEs are known to, or likely to occur are shown (green) in relation to the 800 m depth contour (black line).

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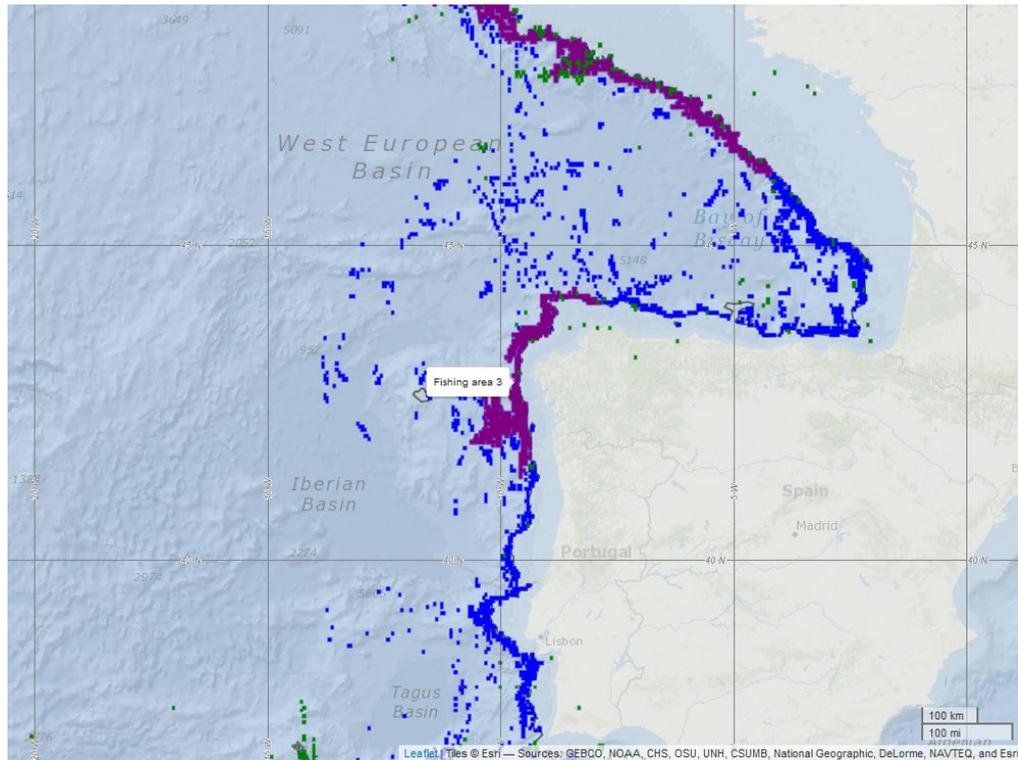
<sup>††</sup> Figure 2 updated



**Figure 3<sup>††</sup>** Fishing area 2 (purple) for the EU waters of the Northeast Atlantic and areas where VMEs are known to, or are likely to occur (green) in relation to the 800 m depth contour (black line). Three selected VME areas as an example are shown in red.

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<sup>††</sup> Figure 3 updated



**Figure 4<sup>§§</sup>** Fishing area 3 (purple) for the EU waters of the Northeast Atlantic and areas where VMEs are known to, or are likely to occur (green) in relation to the 800 m depth contour (black line). Three selected VME areas as an example are shown in red.

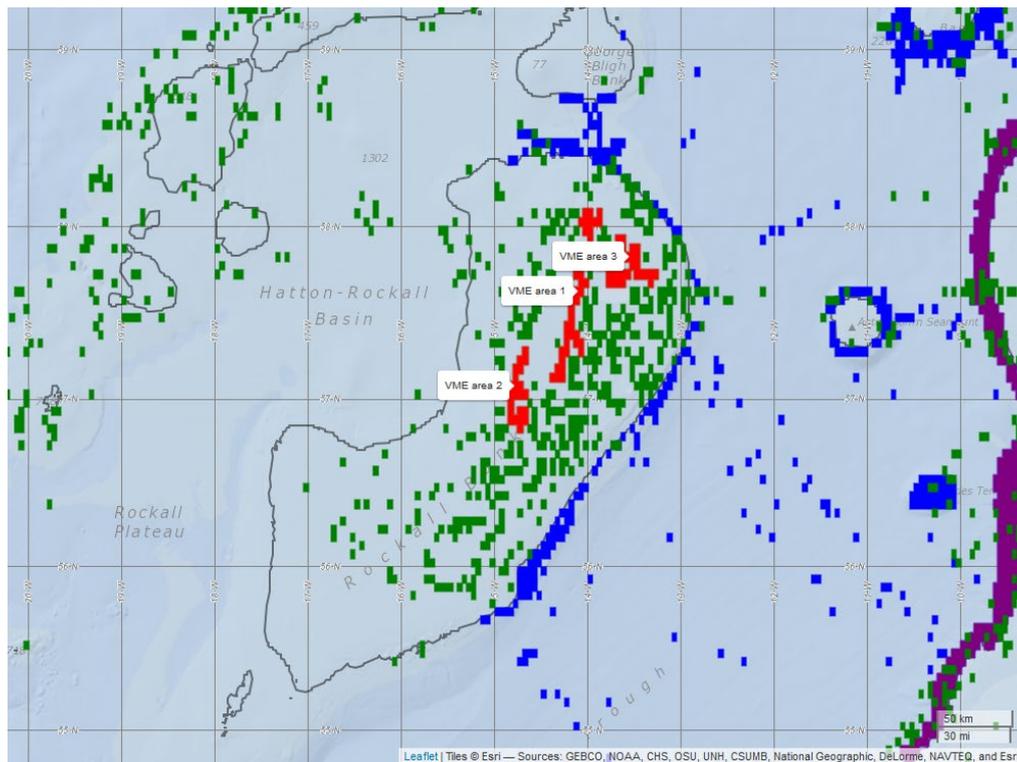
## 2. List of areas where VMEs are known to, or likely to occur

The distribution of VMEs is presented in Figure 5 (green and red). C-squares containing VME habitats and/or likely VMEs that are adjacent to each other are considered a “VME area”. Based on this approach, there are a total of 1943 VME areas. Of these, the three largest areas were selected and are shown in red. A set of coordinates for three such areas are provided in Annex 2. Full coordinates for all VME areas are provided as a working tool for the European Commission as csv files. \*\*\*

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<sup>§§</sup> Figure 4 updated

<sup>\*\*\*</sup> Updated text



**Figure 5<sup>+++</sup>** Location of VME habitats and VME likely habitats (green) in relation to the 800 m depth contour (black line) for the Northeast Atlantic. The three VME areas for which coordinates are given in annex 2 are shown in red.

### 3. Update interactive maps

In addition to the static PDF maps in the ICES Advice (ICES, 2018a, 2018b), ICES has developed interactive maps showing the same information with the selectable layers as requested. These maps are a working tool for the European Commission, and are not publicly available at the moment.

## Basis of the service

### Background

This technical service complements previous advice to the European Commission to establish a fishing footprint for deep-sea fisheries, and helps fulfil a requirement under Article 7 of the European Union’s deep-sea access regulation (EU, 2016) for deep-sea fisheries. Fishing with bottom trawls is prohibited at depths deeper than 800 m (Article 8 in EU, 2016), so these areas within the fishing footprint are also identified. Article 9 of the same EU Regulation requires the establishment of a list of areas where VMEs occur or are likely to occur. In the earlier advice, ICES provided maps of VMEs that occur in European Union waters of the North Sea and the Atlantic (ICES, 2019). ICES is aware of some VMEs missing from these maps, but does not at present have the information on these sites.

### Methods

The area contacted by fishing gear is provided by geographically distinct VMS points, for which speed and course are available at intervals of maximum 2 hours. These are coupled with information on vessel size and gear used, derived from EU logbooks (ICES, 2018a; Eigaard *et al.*, 2016). Vessel speeds which are considered to represent fishing activity are assigned to a 0.05°× 0.05 grid, about 15 km<sup>2</sup> at 60°N latitude, which is the spatial resolution adopted by ICES known as the c-square approach (Rees, 2003).

<sup>+++</sup> Figure 5 updated

Due to the nature of the spatial fisheries data being mapped at a c-square resolution (0.05 x 0.05 degrees), it is difficult to describe the bottom-fisheries footprint for different depth bands. For example, to select c-squares where bottom fishing is occurring > 800 m, a bathymetric dataset such as GEBCO or EMODnet can be used to identify the 800 m depth contour. However, some c-square grid cells are inevitably cut by the contour line, and parts of the grid square that is cut may thus be misclassified. For this technical service, the fisheries footprint > 800 m is extracted using an 800 m depth contour created from the GEBCO or EMODnet bathymetry. C-squares that occur in areas  $\geq$  800 m depth are displayed as the fishing activity footprint. Using this option, all c-squares that occur at depths greater than the 800 m depth contour are included. The VMS c-squares that overlap with the 800 m depth contour will be maintained in full, so some c-squares may be overlapping into areas slightly shallower than 800 m.

### Post-processing

ICES Secretariat and the ACOM leadership prepared and guided the process, with the relevant ICES expert group (Working Group on Spatial Fisheries Data; WGSFD) reviewing the steps taken. An ICES VMS/logbook data call covering the years 2009–2018 was issued to all ICES Member Countries (EU Data Collection Framework [DCF] contacts and all ACOM delegates) on 21 February 2019, with a deadline for response by 31 March. The call followed the ICES VMS data policy (ICES, 2014).

After the submission deadline, and prior to the WGSFD meeting (24 June 2019), ICES quality-checked the submitted data. This involved frequent correspondence with submitting countries to ensure that submission of data complied with the data call specifications. The process included generating a standard quality control (QC) report for the submission of each country, with checks undertaken by the expert group chairs. This was done upon submission and, where relevant, for any resubmission, with the aim of detecting discrepancies in the submitted data. Any feedback was communicated back to the data submitters, and countries were either congratulated on a good submission or asked to re-submit corrected data.

**Table 1** Data submission status: ICES Member Countries to whom the 2019 ICES data call was sent on VMS and logbook data for 2009–2018.

Country	Data submission	Country	Data submission
Belgium	✓	Lithuania	✓
Denmark	✓	The Netherlands	✓
Faroe Islands	✗	Norway	✓
France	✓	Portugal	✓
Germany	✓	Russia	✗
Greenland	✗	Spain	✓
Iceland	✓	Sweden	✓
Ireland	✓	United Kingdom	✓

✓: Submitted data meeting quality control requirements

✓: Submitted data not meeting quality control requirements

✗: No data submitted

This technical service was prepared using the methods established by ICES in its 2017 advice on the production of spatial data layers of fishing intensity/pressure (ICES, 2017).

All R scripts and SQL code used to access and process the VMS data are available on GitHub ([https://github.com/iceseg/wg\\_WGSFD](https://github.com/iceseg/wg_WGSFD)).

### Interactive maps

Exclusive Economic Zones (EEZs) are sourced from the Marine Regions (Flanders Marine Institute, 2018) and the interactive maps are developed for scientific, educational, and research purposes (see the Terms of use section below).

## Terms of use

At the Marine Regions site it is stated that “Marine Regions is not meant to be used for legal, economical (in the sense of exploration of natural resources) or navigational purposes. It is developed solely for scientific, educational and research purposes.”

## Sources and references

Eigaard, O. R., Bastardie, F., Breen, M., Dinesen, G. E., Hintzen, N. T., Laffargue, P., and Mortensen, L. O. 2016. Estimating seabed pressure from demersal trawls, seines, and dredges based on gear design and dimensions. *ICES Journal of Marine Science*, 73 (supplement 1): i27–i43. <https://doi.org/10.1093/icesjms/fsv099>.

EU. 2016. Regulation (EU) 2016/2336 of the European Parliament and of the Council of 14 December 2016 establishing specific conditions for fishing for deep-sea stocks in the north-east Atlantic and provisions for fishing in international waters of the north-east Atlantic and repealing Council Regulation (EC) No 2347/2002. *Official Journal of the European Union*, L 354: 1–19. <http://data.europa.eu/eli/reg/2016/2336/oj>.

Flanders Marine Institute. 2018. Maritime Boundaries Geodatabase, version 10. Available online at <http://www.marineregions.org/>.

ICES. 2014. Conditions for VMS data use. Access and use conditions for Vessel Monitoring System (VMS) data made available through ICES Data calls. June 2014. 3 pp. [http://ices.dk/marine-data/Documents/VMS\\_DataAccess\\_ICES.pdf](http://ices.dk/marine-data/Documents/VMS_DataAccess_ICES.pdf).

ICES. 2017. OSPAR request on the production of spatial data layers of fishing intensity/pressure. *In* Report of the ICES Advisory Committee, 2017. ICES Advice 2017, ICES Technical Service, sr.2017.17. 8 pp. <https://doi.org/10.17895/ices.advice.5595>.

ICES. 2018a. EU request to provide a further technical service to aid in the interpretation of ICES advice on locations and likely locations of VMEs in EU waters of the NE Atlantic, and the fishing footprint of 2009–2011 (sr.2018.10). *In* Report of the ICES Advisory Committee, 2018. ICES Advice 2018, sr.2018.28. 10 pp. <https://doi.org/10.17895/ices.pub.4645>.

ICES. 2018b. Advice on locations and likely locations of VMEs in EU waters of the NE Atlantic, and the fishing footprint of 2009–2011. *In* Report of the ICES Advisory Committee, 2018. ICES Advice 2018, sr.2018.10. 12 pp. <https://doi.org/10.17895/ices.pub.4429>.

ICES. 2019. New information regarding the impact of fisheries on other components of the ecosystem. *In* Report of the ICES Advisory Committee, 2019. ICES Advice 2019, vme.eu. 21 pp. <https://doi.org/10.17895/ices.advice.5579>.

NEAFC. 2015. Recommendation 19:2014 on the protection of vulnerable marine ecosystems in the NEAFC Regulatory Area, as amended by Recommendation 09:2015. 26 pp. <http://extwprlegs1.fao.org/docs/pdf/mul165665.pdf>.

Rees, T. 2003. “C-squares”, a new spatial indexing system and its applicability to the description of oceanographic datasets. *Oceanography*, 16(1): 11–19. <https://doi.org/10.5670/oceanog.2003.52>

*Recommended citation:* ICES. 2019. Advice on the list of areas where VMEs are known to occur or are likely to occur and on the existing deep-sea fishing areas. *In* Report of the ICES Advisory Committee, 2019. ICES Advice 2019, sr.2019.19, <https://doi.org/10.17895/ices.advice.5597>

## Annex 1 Fishing area coordinates

**Table A1.1<sup>\*\*\*</sup>** Fishing area 1.

Coordinate	lat	lon	LAT	LON
1	48.6000101	-11.4000121	48°36.00	-11°24.00
2	48.5500101	-11.4000121	48°33.00	-11°24.00
3	48.5500101	-11.4500121	48°33.00	-11°27.00
4	48.6000101	-11.4500121	48°36.00	-11°27.00
5	48.6000101	-11.5000121	48°36.00	-11°30.00
6	48.6500101	-11.5000121	48°39.00	-11°30.00
7	48.7000101	-11.5000121	48°42.00	-11°30.00
8	48.7000101	-11.4500121	48°42.00	-11°27.00
9	48.7000101	-11.4000121	48°42.00	-11°24.00
10	48.7000101	-11.3500121	48°42.00	-11°21.00
11	48.7000101	-11.3000121	48°42.00	-11°18.00
12	48.7500101	-11.3000121	48°45.00	-11°18.00
13	48.7500101	-11.3500121	48°45.00	-11°21.00
14	48.8000101	-11.3500121	48°48.00	-11°21.00
15	48.8000101	-11.4000121	48°48.00	-11°24.00
16	48.8000101	-11.4500121	48°48.00	-11°27.00
17	48.8500101	-11.4500121	48°51.00	-11°27.00
18	48.8500101	-11.5000121	48°51.00	-11°30.00
19	48.8500101	-11.5500121	48°51.00	-11°33.00
20	48.9000101	-11.5500121	48°54.00	-11°33.00
21	48.9500101	-11.5500121	48°57.00	-11°33.00
22	48.9500101	-11.6000121	48°57.00	-11°36.00
23	49.0000101	-11.6000121	49°00.00	-11°36.00
24	49.0000101	-11.6500121	49°00.00	-11°39.00
..	...	...	...	...
...	...	...	...	...
884	48.6500101	-11.3000121	48°39.00	-11°18.00
885	48.6000101	-11.3000121	48°36.00	-11°18.00
886	48.6000101	-11.3500121	48°36.00	-11°21.00
887	48.6000101	-11.4000121	48°36.00	-11°24.00

<sup>\*\*\*</sup> Table A1.1 updated

**Table A1.2<sup>§§§</sup>** Fishing area 2.

Coordinate	lat	lon	LAT	LON
1	54.8000101	-10.5500121	54°48.00	-10°33.00
2	54.7500101	-10.5500121	54°45.00	-10°33.00
3	54.7500101	-10.6000121	54°45.00	-10°36.00
4	54.8000101	-10.6000121	54°48.00	-10°36.00
5	54.8500101	-10.6000121	54°51.00	-10°36.00
6	54.8500101	-10.6500121	54°51.00	-10°39.00
7	54.9000101	-10.6500121	54°54.00	-10°39.00
8	54.9000101	-10.6000121	54°54.00	-10°36.00
9	54.9000101	-10.5500121	54°54.00	-10°33.00
10	54.9000101	-10.5000121	54°54.00	-10°30.00
11	54.9500101	-10.5000121	54°57.00	-10°30.00
12	54.9500101	-10.4500121	54°57.00	-10°27.00
13	54.9500101	-10.4000121	54°57.00	-10°24.00
14	55.0000101	-10.4000121	55°00.00	-10°24.00
15	55.0500101	-10.4000121	55°03.00	-10°24.00
16	55.0500101	-10.3500121	55°03.00	-10°21.00
17	55.0500101	-10.3000121	55°03.00	-10°18.00
18	55.1000101	-10.3000121	55°06.00	-10°18.00
19	55.1500101	-10.3000121	55°09.00	-10°18.00
20	55.2000101	-10.3000121	55°12.00	-10°18.00
21	55.2500101	-10.3000121	55°15.00	-10°18.00
22	55.3000101	-10.3000121	55°18.00	-10°18.00
23	55.3000101	-10.2500121	55°18.00	-10°15.00
24	55.3500101	-10.2500121	55°21.00	-10°15.00
..	...	...	...	...
...	...	...	...	...
470	54.8500101	-10.4500121	54°51.00	-10°27.00
471	54.8500101	-10.5000121	54°51.00	-10°30.00
472	54.8000101	-10.5000121	54°48.00	-10°30.00
473	54.8000101	-10.5500121	54°48.00	-10°33.00

§§§ Table A1.2 updated

**Table A1.3\*\*\*\*** Fishing area 3.

Coordinate	lat	lon	LAT	LON
1	41.4000101	-9.5500121	41°24.00	-9°33.00
2	41.3500101	-9.5500121	41°21.00	-9°33.00
3	41.3500101	-9.6000121	41°21.00	-9°36.00
4	41.4000101	-9.6000121	41°24.00	-9°36.00
5	41.4500101	-9.6000121	41°27.00	-9°36.00
6	41.5000101	-9.6000121	41°30.00	-9°36.00
7	41.5500101	-9.6000121	41°33.00	-9°36.00
8	41.6000101	-9.6000121	41°36.00	-9°36.00
9	41.6500101	-9.6000121	41°39.00	-9°36.00
10	41.7000101	-9.6000121	41°42.00	-9°36.00
11	41.7500101	-9.6000121	41°45.00	-9°36.00
12	41.7500101	-9.5500121	41°45.00	-9°33.00
13	41.8000101	-9.5500121	41°48.00	-9°33.00
14	41.8500101	-9.5500121	41°51.00	-9°33.00
15	41.9000101	-9.5500121	41°54.00	-9°33.00
16	41.9500101	-9.5500121	41°57.00	-9°33.00
17	42.0000101	-9.5500121	42°00.00	-9°33.00
18	42.0000101	-9.6000121	42°00.00	-9°36.00
19	42.0500101	-9.6000121	42°03.00	-9°36.00
20	42.1000101	-9.6000121	42°06.00	-9°36.00
21	42.1000101	-9.6500121	42°06.00	-9°39.00
22	42.1000101	-9.7000121	42°06.00	-9°42.00
23	42.0500101	-9.7000121	42°03.00	-9°42.00
24	42.0500101	-9.7500121	42°03.00	-9°45.00
..	...	...	...	...
...	...	...	...	...
372	41.5000101	-9.5000121	41°30.00	-9°30.00
373	41.4500101	-9.5000121	41°27.00	-9°30.00
374	41.4500101	-9.5500121	41°27.00	-9°33.00
375	41.4000101	-9.5500121	41°24.00	-9°33.00

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\*\*\*\* Table A1.3 updated

## Annex 2 VME area coordinates

**Table A2.1** VME area 1.\*\*\*\*

Coordinate	lat	lon	LAT	LON
1	56.9000101	-14.8000121	56°54.00	-14°48.00
2	56.9000101	-14.7500121	56°54.00	-14°45.00
3	56.9500101	-14.7500121	56°57.00	-14°45.00
4	56.9500101	-14.7000121	56°57.00	-14°42.00
5	56.9500101	-14.6500121	56°57.00	-14°39.00
6	56.9000101	-14.6500121	56°54.00	-14°39.00
7	56.8500101	-14.6500121	56°51.00	-14°39.00
8	56.8500101	-14.7000121	56°51.00	-14°42.00
9	56.8000101	-14.7000121	56°48.00	-14°42.00
10	56.8000101	-14.7500121	56°48.00	-14°45.00
11	56.8500101	-14.7500121	56°51.00	-14°45.00
12	56.8500101	-14.8000121	56°51.00	-14°48.00
13	56.8500101	-14.8500121	56°51.00	-14°51.00
14	56.9000101	-14.8500121	56°54.00	-14°51.00
15	56.9500101	-14.8500121	56°57.00	-14°51.00
16	57.0000101	-14.8500121	57°00.00	-14°51.00
17	57.0000101	-14.9000121	57°00.00	-14°54.00
18	57.0500101	-14.9000121	57°03.00	-14°54.00
19	57.0500101	-14.8500121	57°03.00	-14°51.00
20	57.1000101	-14.8500121	57°06.00	-14°51.00
21	57.1000101	-14.8000121	57°06.00	-14°48.00
22	57.1500101	-14.8000121	57°09.00	-14°48.00
23	57.2000101	-14.8000121	57°12.00	-14°48.00
24	57.2000101	-14.7500121	57°12.00	-14°45.00
..	...	...	...	...
...	...	...	...	...
40	57.0000101	-14.7500121	57°00.00	-14°45.00
41	57.0000101	-14.8000121	57°00.00	-14°48.00
42	56.9500101	-14.8000121	56°57.00	-14°48.00
43	56.9000101	-14.8000121	56°54.00	-14°48.00

\*\*\*\* Version 2: Header to table updated

**Table A2.2** VME area 2.

Coordinate	lat	lon	LAT	LON
1	56.9000101	-14.8000121	56°54.00	-14°48.00
2	56.9000101	-14.7500121	56°54.00	-14°45.00
3	56.9500101	-14.7500121	56°57.00	-14°45.00
4	56.9500101	-14.7000121	56°57.00	-14°42.00
5	56.9500101	-14.6500121	56°57.00	-14°39.00
6	56.9000101	-14.6500121	56°54.00	-14°39.00
7	56.8500101	-14.6500121	56°51.00	-14°39.00
8	56.8500101	-14.7000121	56°51.00	-14°42.00
9	56.8000101	-14.7000121	56°48.00	-14°42.00
10	56.8000101	-14.7500121	56°48.00	-14°45.00
11	56.8500101	-14.7500121	56°51.00	-14°45.00
12	56.8500101	-14.8000121	56°51.00	-14°48.00
13	56.8500101	-14.8500121	56°51.00	-14°51.00
14	56.9000101	-14.8500121	56°54.00	-14°51.00
15	56.9500101	-14.8500121	56°57.00	-14°51.00
16	57.0000101	-14.8500121	57°00.00	-14°51.00
17	57.0000101	-14.9000121	57°00.00	-14°54.00
18	57.0500101	-14.9000121	57°03.00	-14°54.00
19	57.0500101	-14.8500121	57°03.00	-14°51.00
20	57.1000101	-14.8500121	57°06.00	-14°51.00
21	57.1000101	-14.8000121	57°06.00	-14°48.00
22	57.1500101	-14.8000121	57°09.00	-14°48.00
23	57.2000101	-14.8000121	57°12.00	-14°48.00
24	57.2000101	-14.7500121	57°12.00	-14°45.00
..	...	...	...	...
...	...	...	...	...
40	57.0000101	-14.7500121	57°00.00	-14°45.00
41	57.0000101	-14.8000121	57°00.00	-14°48.00
42	56.9500101	-14.8000121	56°57.00	-14°48.00
43	56.9000101	-14.8000121	56°54.00	-14°48.00

**Table A2.3** VME area 3.

Coordinate	lat	lon	LAT	LON
1	56.9000101	-14.8000121	56°54.00	-14°48.00
2	56.9000101	-14.7500121	56°54.00	-14°45.00
3	56.9500101	-14.7500121	56°57.00	-14°45.00
4	56.9500101	-14.7000121	56°57.00	-14°42.00
5	56.9500101	-14.6500121	56°57.00	-14°39.00
6	56.9000101	-14.6500121	56°54.00	-14°39.00
7	56.8500101	-14.6500121	56°51.00	-14°39.00
8	56.8500101	-14.7000121	56°51.00	-14°42.00
9	56.8000101	-14.7000121	56°48.00	-14°42.00
10	56.8000101	-14.7500121	56°48.00	-14°45.00
11	56.8500101	-14.7500121	56°51.00	-14°45.00
12	56.8500101	-14.8000121	56°51.00	-14°48.00
13	56.8500101	-14.8500121	56°51.00	-14°51.00
14	56.9000101	-14.8500121	56°54.00	-14°51.00
15	56.9500101	-14.8500121	56°57.00	-14°51.00
16	57.0000101	-14.8500121	57°00.00	-14°51.00
17	57.0000101	-14.9000121	57°00.00	-14°54.00
18	57.0500101	-14.9000121	57°03.00	-14°54.00
19	57.0500101	-14.8500121	57°03.00	-14°51.00
20	57.1000101	-14.8500121	57°06.00	-14°51.00
21	57.1000101	-14.8000121	57°06.00	-14°48.00
22	57.1500101	-14.8000121	57°09.00	-14°48.00
23	57.2000101	-14.8000121	57°12.00	-14°48.00
24	57.2000101	-14.7500121	57°12.00	-14°45.00
..	...	...	...	...
...	...	...	...	...
40	57.0000101	-14.7500121	57°00.00	-14°45.00
41	57.0000101	-14.8000121	57°00.00	-14°48.00
42	56.9500101	-14.8000121	56°57.00	-14°48.00
43	56.9000101	-14.8000121	56°54.00	-14°48.00