Environmental Impact Assessment Report

NISA
North Irish Sea Array

Volume 9: Appendices (Offshore)

Appendix 16.1
Commercial Fisheries Technical Report

Statkraft

CIP
Copenhagen Infrastructure Partners

GoBe
APEM Group

ARUP

North Irish Sea Array Offshore Wind Farm

Appendix 16.1:

Commercial Fisheries Technical Report

May 2024

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Report Information

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Figures and Tables

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Acronyms

Term	Definition
AIS	Automatic Identification System
DCF	Data Collection Framework
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
ES	Environmental Statement
EU	European Union
FLO	Fisheries Liaison Officer
GIS	Geographic Information System
ICES	International Council for the Exploration of the Sea
MAP	Multi Annual management Plan
MCRS	Minimum Conservation Reference Size
MMO	Marine Management Organisation
NRA	Navigational Risk Assessment
PEIR	Preliminary Environmental Information Report
SAR	Swept Area Ratio
STECF	Scientific, Technical and Economic Committee for Fisheries
TAC	Total Allowable Catch
UK	United Kingdom
UKFEN	UK Fisheries Economic Network
VMS	Vessel Monitoring System

Units

Term	Definition
€	Euros
£	Pound sterling
°C	Degrees Celsius
cm	Centimetres
hp	Horsepower
kg	Kilograms
km	Kilometres

Term	Definition
knots	Nautical mile per hour
kW	Kilowatts
m	Metres
mm	Millimetres
NM	Nautical Mile
t	Tonne

1. Introduction

1.1 Overview and purpose of this report

1 This report has been prepared by Poseidon Aquatic Resource Management Ltd (Poseidon) to support the Environmental Impact Assessment Report (EIAR) of the North Irish Sea Array (NISA) Offshore Wind Farm (the proposed development), which is being developed by North Irish Sea Array Windfarm Limited (the Developer).

2 The information on commercial fisheries activity presented in this report is intended to inform the EIAR for the proposed development, by providing a detailed understanding of the commercial fisheries baseline, against which the potential impacts of the proposed development can be assessed. An overview of the information presented in this technical report is provided in Volume 3, Chapter 16: Commercial Fisheries of the EIAR (hereon referred to as the Commercial Fisheries Chapter).

3 Commercial fisheries activity described in this report, is defined as fishing activity legally undertaken where the catch is sold for taxable profit. A description of charter angling activity, defined as fishing for marine species where the purpose is recreation and not sale or trade, is provided in Chapter 20: Infrastructure and Other Users (hereon referred to as the Infrastructure and Other Users Chapter). The ecology of the fish and shellfish species targeted by commercial fishing activity is described in, Chapter 13: Fish and Shellfish Ecology (hereon referred to as the Fish and Shellfish Ecology Chapter).

1.2 Report structure

4 This report is structured as follows:

- **Section 1 (Introduction)** introduces the report and outlines its purpose;
- **Section 2 (Methodology)** presents the methodology and data sources applied to characterise the baseline environment;
- **Section 3 (Baseline environment)** presents the characterisation of the existing environment for the commercial fisheries assessment;
- **Section 4 (Fisheries activity assessments)** presents the characterisation of the existing environment for the commercial fisheries assessment by country, gear type and fishery;
- **Section 5 (Future baseline environment)** presents the characterisation of the future baseline environment;
- **Section 6 (Data limitations and uncertainties)** describes the limitations of each data source analysed, ranking the level of uncertainty;
- **Section 7 (Summary)** summarises the findings of this report; and,
- **Section 8 (References)** provides a detailed bibliography for the data sources, scientific papers and information reviewed within this report.

2. Methodology

2.1 Approach

5 This technical report has been developed following a detailed and rigorous desk-based assessment of data and literature. Both publicly available data sets; and data results from specific requests, have been analysed. Landings statistics have been analysed using Excel; and Vessel Monitoring System (VMS) data have been evaluated using ArcMap Geographic Information System (GIS) software.

6 This quantitative data has been supplemented with qualitative information gained through direct consultation with the fishing industry; and communication and discussion between the Fisheries Liaison Officer (FLO), the Fishing Industry Representative (FIR) and the fishing industry.

2.2 Study area

7 The proposed development boundary seaward of the High Water Mark (HWM) consists of the array area and the offshore Export Cable Corridor (ECC), collectively referred to as 'offshore development area hereafter, is located within the western portion of the International Council for the Exploration of the Sea (ICES) Division 7a (Irish Sea) statistical area; within Irish Exclusive Economic Zone (EEZ) waters. The majority of the offshore development area is located inside the 12 nautical mile (NM) territorial seas limit, with the north east section extending beyond this 12 NM boundary. For the purpose of recording fisheries landings, ICES Division 7a is divided into statistical rectangles which are consistent across all Member States operating in the Irish Sea.

8 The offshore development area is located within ICES rectangles 36E3 and 36E4, which represents the local commercial fisheries study area; note that the offshore development area occupies only a portion of these ICES rectangles. In order to understand fishing activity in waters adjacent to the offshore development area, a regional commercial fisheries study area has been defined to include 36E3 and 36E4 together with adjacent ICES rectangles 35E3, 35E4, 37E3 and 37E4, as shown in Figure 2.1.

9 While landings statistics data analysis has focused on the local and regional study areas, a wider scale has been presented for spatial activity, including VMS and automatic identification system (AIS) datasets. For context, the location of the offshore development area and commercial fisheries local and regional study areas within the wider Irish Sea is presented in Figure 2.2.

10 There are two nephrops (*Nephrops norvegicus*, also known as Norway lobster or prawn, hereon referred to as nephrops) stocks, defined as Functional Units (FUs), in the Irish Sea, these are:

- FU14: Irish Sea East; and
- FU15: Irish Sea West.

11 The offshore development area overlaps with FU15, which is illustrated in Figure 2.2.

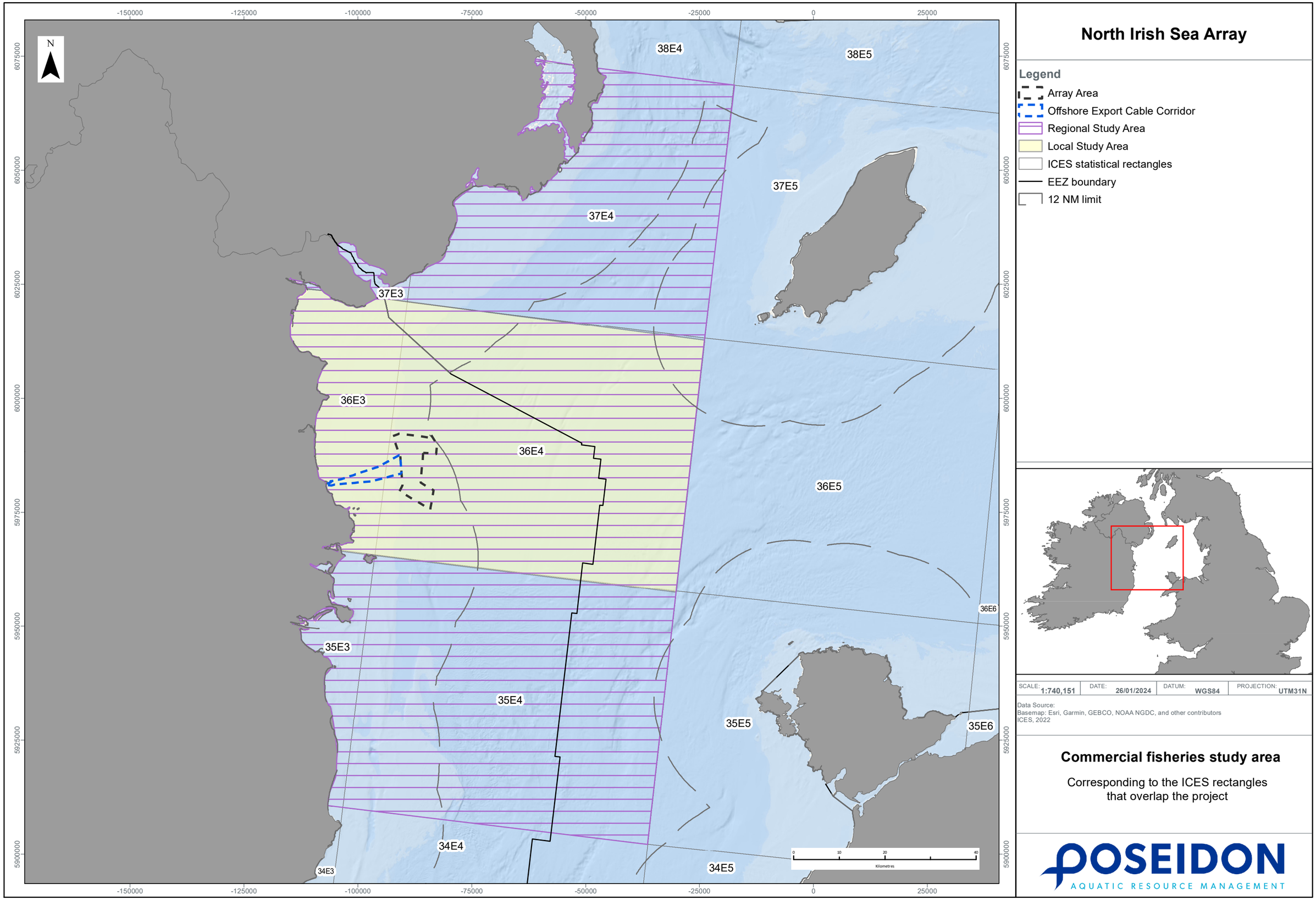
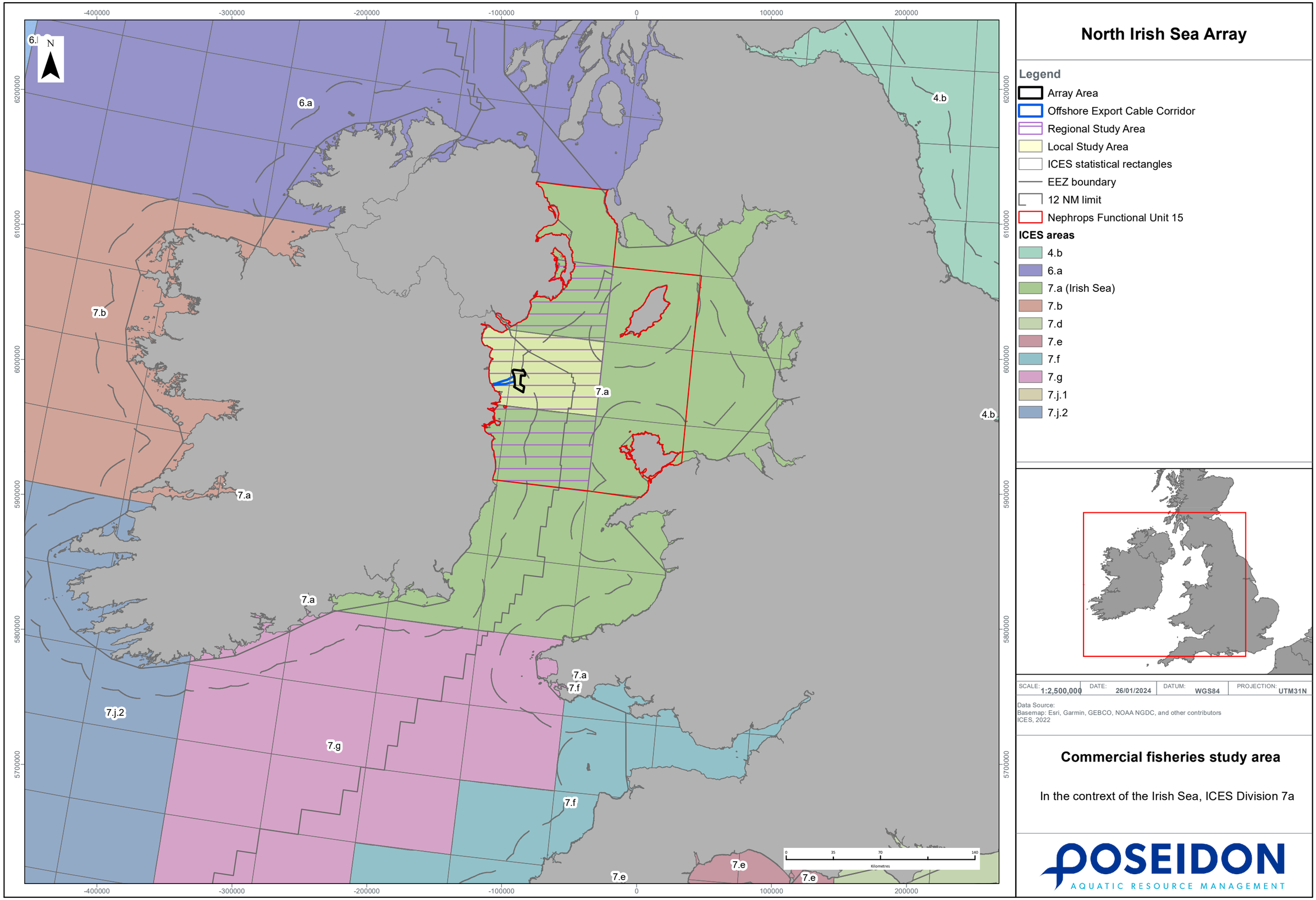


Figure 2.1: Commercial fisheries study areas



North Irish Sea Array

Legend

- Array Area
- Offshore Export Cable Corridor
- Regional Study Area
- Local Study Area
- ICES statistical rectangles
- EEZ boundary
- 12 NM limit
- Nephrops Functional Unit 15

ICES areas

- 4.b
- 6.a
- 7.a (Irish Sea)
- 7.b
- 7.d
- 7.e
- 7.f
- 7.g
- 7.j.1
- 7.j.2

SCALE:	DATE:	DATUM:	PROJECTION:
1:2,500,000	26/01/2024	WGS84	UTM31N

Data Source:
Basemap: Esri, Garmin, GEBCO, NOAA NGDC, and other contributors
ICES, 2022

Commercial fisheries study area

In the contrext of the Irish Sea, ICES Division 7a

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Figure 2.2: Commercial fisheries study areas in the context of the Irish Sea, Division 7a and indicating location of Nephrops Functional Unit 15

2.3 Data sources

12 A range of data sources have been analysed and presented within this report and these are listed in Table 2.1. Each data source provides information for a specific set of parameters dependant on the geographic scope, target species and method of recording the data (e.g., logbook records, landing declarations, sales notes, questionnaire, VMS data). Due to this range and variation in the scope of data sets, each has been presented in a separate sub-Section, thereby avoiding inappropriate comparisons across data.

13 Data has been sourced from the Scientific, Technical and Economic Committee for Fisheries (STECF), ICES, the Irish Sea Fisheries Protection Agency (SFPA), Bord Iascaigh Mhara (BIM; Ireland's Seafood Development Agency), the Irish Marine Institute, the EU Data Collection Framework (DCF), the UK Marine Management Organisation (MMO) and the European Maritime Safety Agency (EMSA).

14 Where data sources allow, a five to six-year trend analysis has been undertaken, using the most recent annual datasets available at the time of writing. The temporal extent of this five-year period is dependent on each data source analysed, e.g. 2012 to 2016 or 2016 to 2021, as annotated in Table 2.1.

15 Relevant literature from a number of sources has also been reviewed in the preparation of this report. A full list of references is provided at the end of this report and are cited within the text where appropriate. Of particular note is the Marine Institute (2017) Shellfish Atlas, the Marine Institute and BIM (2019) Shellfish Stocks and Fisheries Review and the Marine Institute (2020) Stock Book. Information on fishing activity across the wind farm site has also been provided by the project FLO.

16 A full description of the associated data limitations is provided within Section 5.

Table 2.1 Data sources used to inform this report

Country	Data	Time period	Source
Landing statistics			
Ireland	Landings statistics data for Irish-registered vessels, with data query attributes for: species, weight of landing (kg) and first sales value (€) at the following geographic scales: • All ICES divisions • Irish Sea (7a) indicating port of landing • Irish Sea (7a) indicating ICES rectangle of catches	2015 to 2021	Sea Fisheries Protection Agency (SFPA)
Ireland	Landings statistics data for Irish-registered vessels, with data query attributes for: species, weight of landing (kg) at the following geographic scale: • Irish Sea (7a) indicating port of landing	2022	SFPA
All Europe	Landings statistics for EU registered vessels with data query attributes for: landing year; landing quarter; ICES rectangle; vessel length; gear type; species; and, landed weight (tonnes).	2012 to 2016	European Union (EU) Data Collection Framework (DCF) database
Ireland	Estimates of annual landings (tonnes) and value (€) of crustacean and bivalve shellfish (excl. prawns and mussels) into Ireland 2004-2019 (source: Logbook declarations and sales notes for vessels under 10 m, gatherer dockets, co-op data).	2004 to 2019	Marine Institute and BIM
UK	Landings statistics data for UK-registered vessels, with data query attributes for: landing year; landing month; vessel length category; ICES rectangle; vessel/gear type; port of landing; species; live weight (tonnes); and value.	2016 to 2021	Marine Management Organisation (MMO)

Country	Data	Time period	Source
	These landings statistics are published annually by the MMO and include vessels registered to the following UK administrations and British crown dependencies: England, Wales, Scotland, Northern Ireland, Isle of Man (IOM), Guernsey and Jersey. Commercial fishing vessels that are registered to the IOM are required to hold both IOM and UK fishing licences.		
Spatial data and Vessel Monitoring System (VMS) data			
All Europe	VMS data for EU registered vessels ≥12 m length. VMS data sourced from ICES displays the surface Swept Area Ratio (SAR) of catches by different gear types and covers EU (including UK) registered vessels 12 m and over in length. Surface SAR indicates the number of times in an annual period that a demersal fishing gear makes contact with (or sweeps) the seabed surface. Surface SAR provides a proxy for fishing intensity.	2017 to 2020	ICES
All Europe	Fishing vessel route density, based on vessel AIS positional data. AIS is required to be fitted on fishing vessels ≥15 m length.	2019 to 2022	European Maritime Safety Agency (EMSA)
Ireland	Fishing vessel effort data indicating high and low fishing effort. The data are available for all EU vessels of 12m and larger, operating inside the Irish EEZ; outside this zone only Irish VMS data are routinely available within the data sets.	2014 to 2018	Marine Institute
Ireland	Polygon data indicating fishing grounds for Irish vessels operating inshore.	Undefined	Marine Institute
UK	VMS data for UK registered vessels ≥15 m length. Note that UK vessels ≥12 m in length have VMS on board, however, to date, the MMO provide amalgamated VMS datasets for ≥15 m vessels only. VMS data sourced from MMO displays the first sales value (£) of catches.	2016 to 2020	MMO

2.4 Site specific surveys

17 Other surveys carried out across the offshore development area that are relevant to commercial fisheries include:

- Benthic ecology surveys;
- Geophysical surveys; and
- AIS and radar surveys.

2.5 Consultation

18 Consultation with commercial fisheries stakeholders undertaken to inform the EIA is detailed in the Commercial Fisheries Chapter.

19 Poseidon have worked closely with the FLO provided by Fisheries Liaisons Limited and the Developer that have led on fisheries communications related to the proposed development.

3. Fishing spatial activity mapping

3.1 Fishing intensity based on VMS data

20 This section presents the spatial mapping data and information available to inform the location and intensity of fishing across the regional study area, and at a wider spatial scale as available. Data is presented for the most recent available at the time of writing. Where possible, a five year time series of five-year average is provided. The key Irish fishing ports in the region are depicted in Figure 3.1.

21 VMS data has been obtained from four different sources, with varying details as follows:

- ICES VMS data displays the surface Swept Area Ratio (SAR) of catches by different gear types and covers EU (including UK) registered vessels 12 m and over in length. Surface SAR indicates the number of times in an annual period that a demersal fishing gear makes contact with (or sweeps) the seabed surface. Surface SAR provides a proxy for fishing intensity and has been analysed to determine an average annual SAR based on data from 2016 to 2020;
- Marine Institute Irish vessel VMS data sourced from the Marine Institute data catalogue indicating fishery effort data by gear type amalgamated across 2014 to 2018. The data are available for all EU vessels of 12 m and larger, operating inside the Irish EEZ; outside this zone only Irish VMS data are routinely available within the data sets;
- Marine Institute Irish vessel iVMS (inshore-VMS) data for vessels targeting razor clam species in the inshore area; and
- MMO VMS data displays the value of catches for UK registered vessels 15 m and over in length, displaying the first sales value (£) of catches and covers UK registered vessels 15 m and over in length in 2020.

22 Demersal otter trawl activity is depicted in Figure 3.2, Figure 3.3, Figure 3.4, and Figure 3.5. The VMS data sources corroborate the importance of the region to the nephrops targeted fishery.

23 Dredge activity is depicted in Figure 3.6, Figure 3.7, Figure 3.8, Figure 3.9, Figure 3.10. Two dredge fisheries occur in the area, one targeting king scallop using mechanical dredge, and another fishery targeting razor clam with suction dredge in the inshore waters adjacent to the shore.

24 Beam trawl activity is depicted in Figure 3.11 and Figure 3.12. Negligible beam trawl activity occurs across the offshore development area, with notable grounds located approximately 50 km south east of the array area.

25 Demersal seine activity is depicted in Figure 3.13 and Figure 3.14, indicating negligible activity across the offshore development area.

26 Pelagic trawl activity is depicted in Figure 3.15, indicating negligible activity across the offshore development area .

3.2 Inshore fishing grounds

27 Inshore fishing ground mapping is available for Irish vessels from Ireland's Marine Atlas for Irish vessels utilising potting and dredge. This data is for vessels less than 15 m in length targeting inshore waters.

28 Potting inshore mapping is depicted in Figure 3.16 for vessels less than 15 m in length targeting shrimp, brown crab and lobster and whelk. VMS data for potting vessels 15 m and over is shown in Figure 3.17, which displays whelk potting activity to the south of the offshore development area. Potting activity is understood to have altered significantly since the time period of these activity maps, with brown crab targeted across the ECC right up to the Array boundary, and whelk is targeted further north towards the Array boundary.

29 Dredge inshore mapping is shown in Figure 3.8 for all inshore dredging and in Figure 3.9 for inshore razor clam targeted dredging.

3.3 Fishing intensity based on AIS data

30 Fishing vessel route density, based on vessel AIS positional data is shown in Figure 3.18 for 2021, Figure 3.19 for 2022 and presented seasonally for 2022 in Figure 3.20 depicting activity in spring, summer, autumn and winter. AIS is required to be fitted on fishing vessels ≥15 m length. The data is specific to fishing vessels and indicated the route density per square km per year. This data does not distinguish between transiting vessels and active fishing, but does provide a useful source to corroborate fishing grounds.

31 High levels of fishing activity are seen across the offshore development area, particularly the array area in all years analysed. The AIS data corroborated the VMS data for demersal otter trawl and is associated with the highly significant nephrops fishery. The seasonal data indicates that the array area is targeted throughout the year, with peaks in spring and summer.

3.4 Fishing intensity based on marine traffic survey data

32 Project-specific marine vessel traffic surveys were undertaken in December 2021, July 2022, and December 2023, using AIS and radar tracking and visual observations to record vessel activity across the offshore development area (Anatec, 2024).

33 Throughout the summer survey period an average of 15 unique fishing vessels per day were recorded within the shipping and navigation study area (a buffer of 10nm around the array area). An average of five unique vessels per day were recorded within the array area, and an average of two unique fishing vessels per day were recorded within the ECC.

34 Throughout the winter survey period, an average of five unique fishing vessels per day were recorded within the study area. One unique fishing vessel per day was recorded every two to three days within the array area and one unique fishing vessel every one to two days was recorded within the ECC.

35 As noted by vessel counts, there is considerable seasonality in fishing vessel movements with greater volumes of fishing across the summer survey period (75% of all fishing tracks recorded). Most fishing vessels recorded in winter were seen transiting through the study area or close to the coast off Skerries, one vessel was recorded to be engaged in likely fishing activities to the north of the array area over multiple days. As for summer, fishing vessels were recorded on transit throughout the study area as well as engaged in likely fishing activities, most notably to the north and centre of the study area. Vessels on transit were primarily observed transiting between fishing grounds and Skerries Harbour or Port Oriel Harbour.

36 Of all fishing tracks recorded, it was possible to associate 72% of them with a fishing gear type and country of registration. The main gear types recorded were single (otter) demersal trawlers (69%) and pelagic trawlers (15%). The main country of registration was Ireland (66%) and Great Britain (32%).

37 Approximately 74% of fishing vessels throughout the two 14-day survey periods were recorded on AIS, and the remaining 26% on Radar.

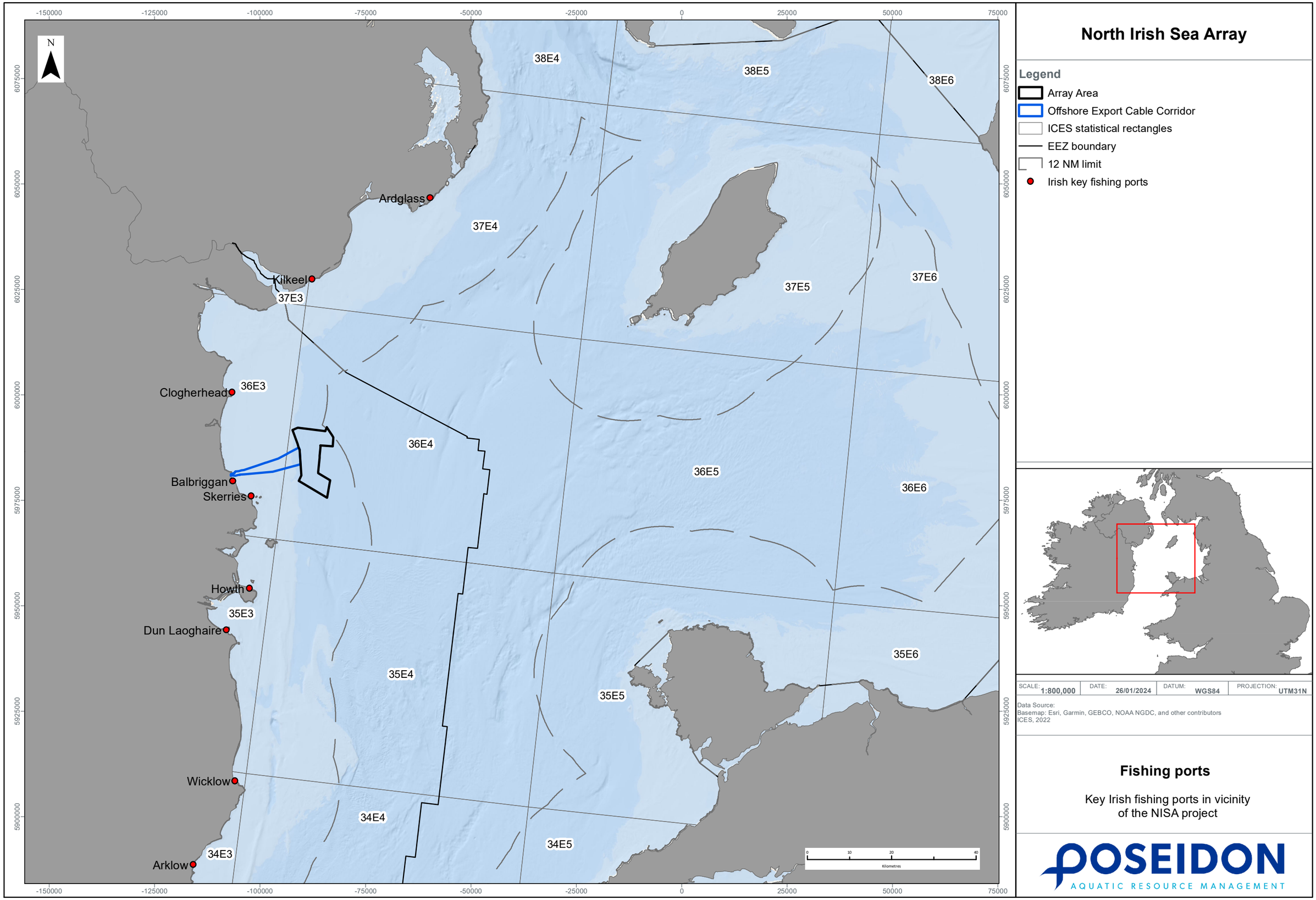


Figure 3.1: Key Irish ports in the region (Source: Marine Institute, 2021)

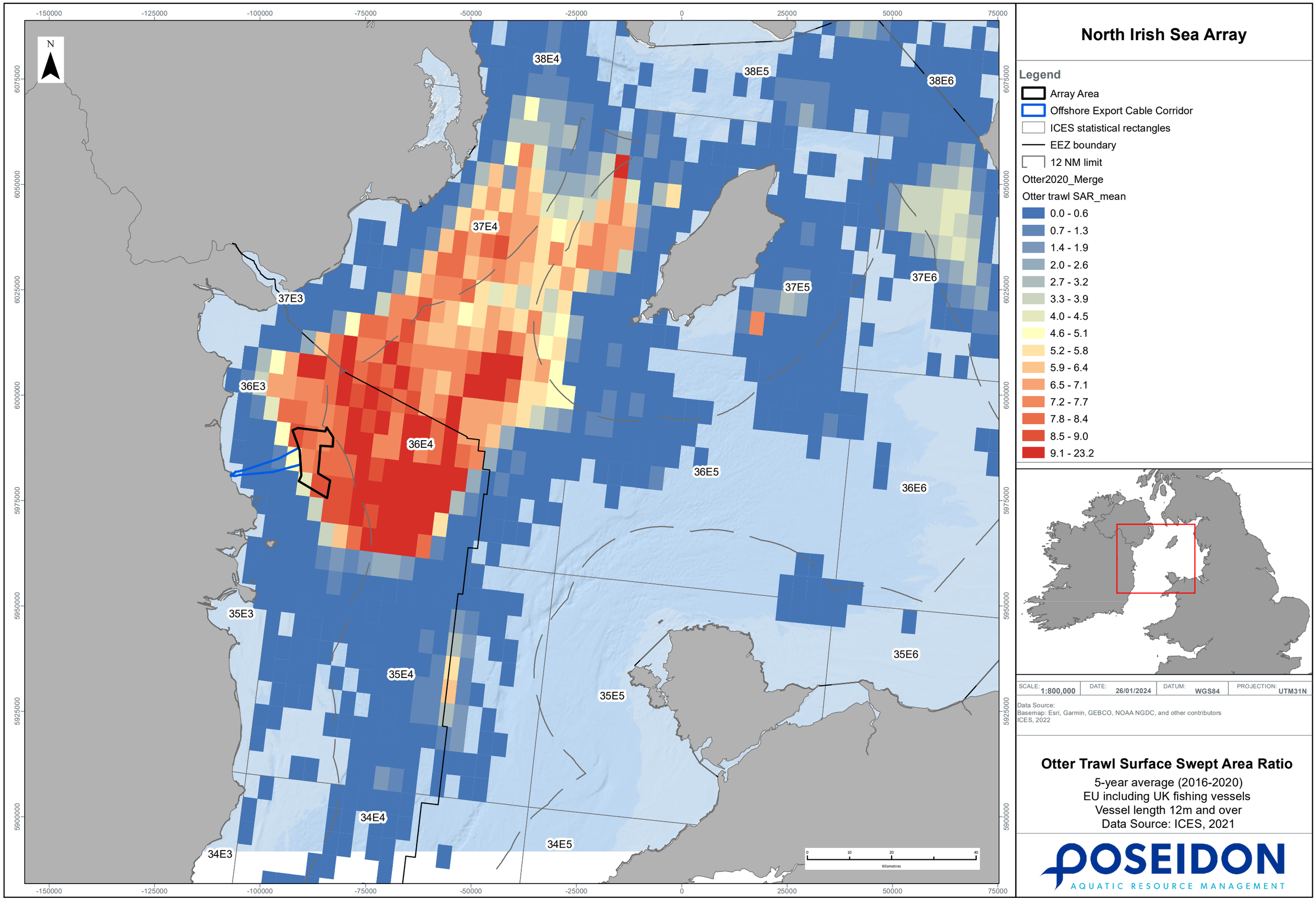


Figure 3.2: Surface Swept Area Ratio 2016 to 2020 for EU (including UK) vessels ≥ 12 m length using demersal otter trawl gear (Source: ICES, 2021)

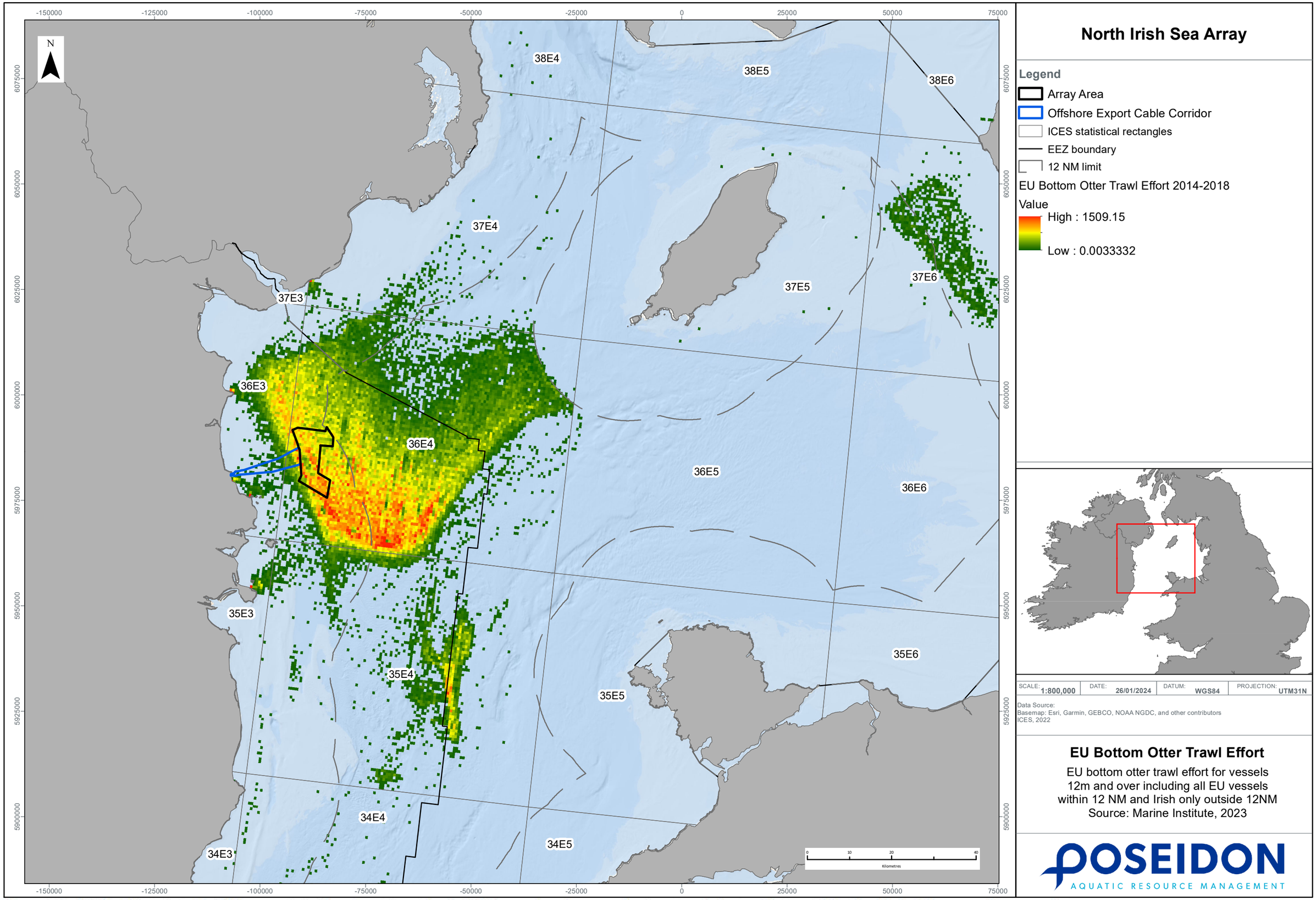


Figure 3.3: VMS effort data for EU vessels ≥ 12 m length actively fishing using demersal otter trawls (note that outside the Irish EEZ records are only routinely available for vessels registered in Ireland) (Source: Marine Institute, 2023)

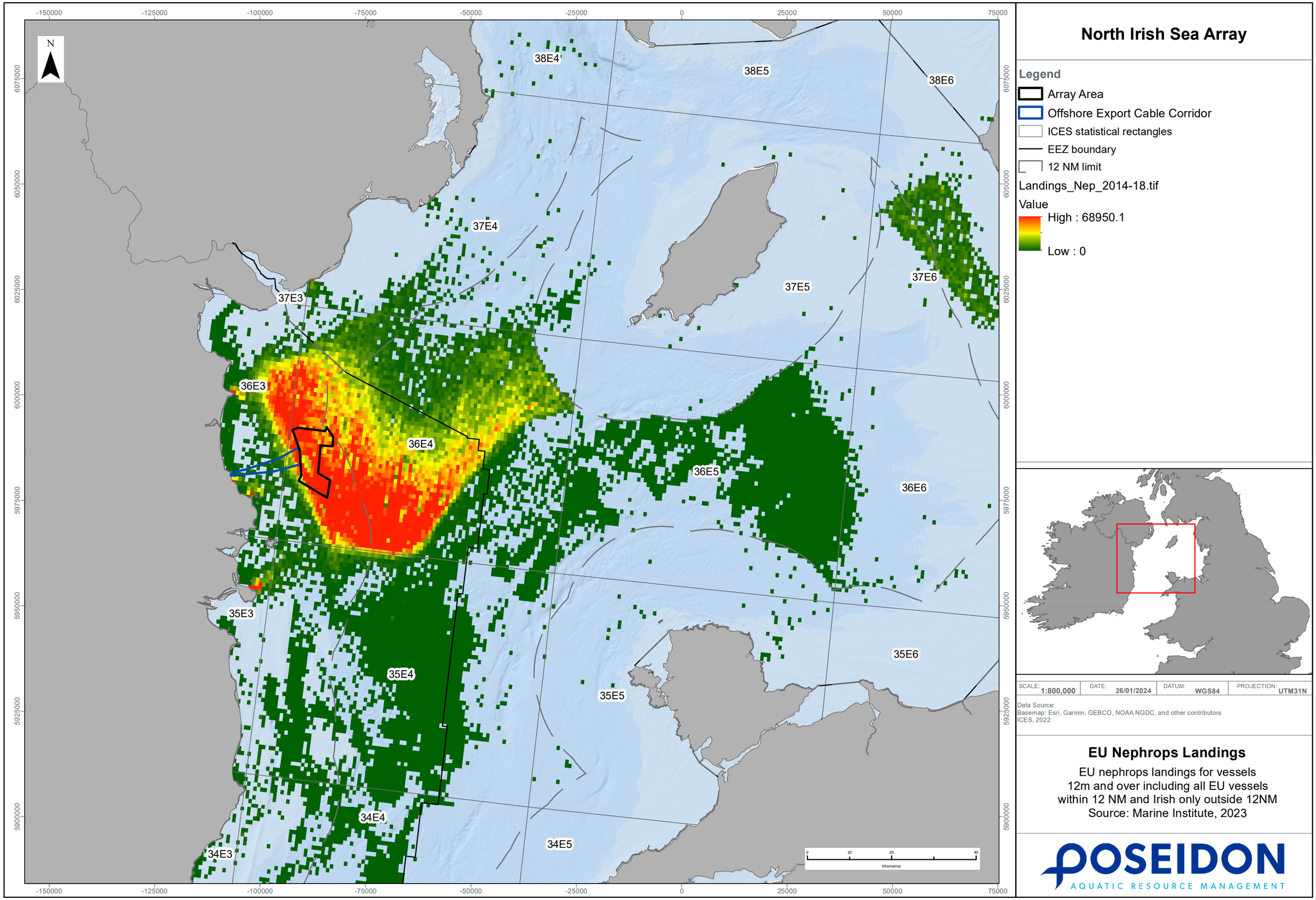
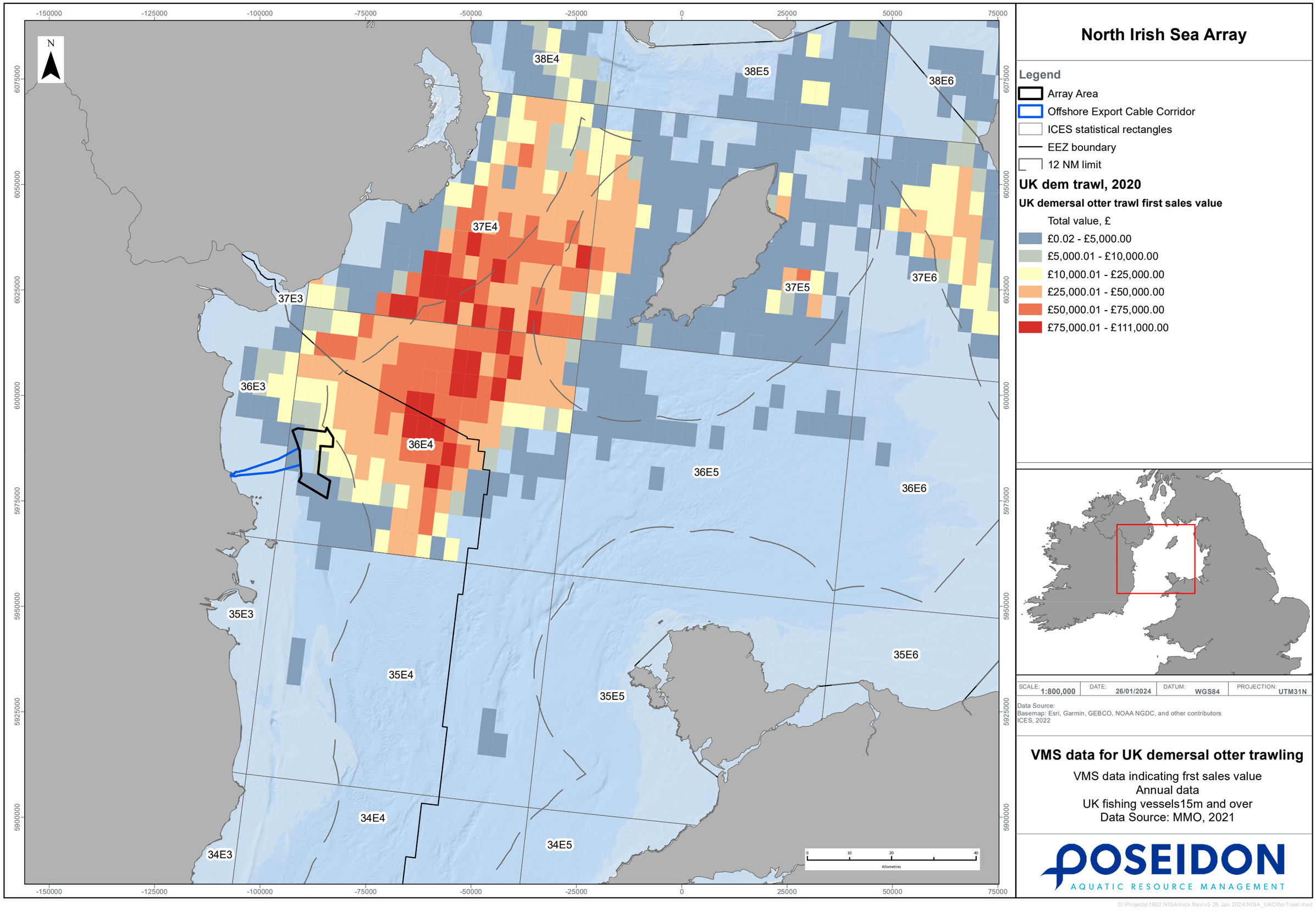


Figure 3.4: VMS data indicating nephrops landings for EU vessels ≥ 12 m length (note that outside the Irish EEZ records are only routinely available for vessels registered in Ireland) (Source: Marine Institute, 2023)



North Irish Sea Array

Legend

- Array Area
- Offshore Export Cable Corridor
- ICES statistical rectangles
- EEZ boundary
- 12 NM limit

UK dem trawl, 2020

UK demersal otter trawl first sales value

Total value, £

- £0.02 - £5,000.00
- £5,000.01 - £10,000.00
- £10,000.01 - £25,000.00
- £25,000.01 - £50,000.00
- £50,000.01 - £75,000.00
- £75,000.01 - £111,000.00

SCALE:	DATE:	DATUM:	PROJECTION:
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Data Source:
Basemap: Esri, Garmin, GEBCO, NOAA NGDC, and other contributors
ICES, 2022

VMS data for UK demersal otter trawling

VMS data indicating frst sales value
Annual data
UK fishing vessels15m and over
Data Source: MMO, 2021

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Figure 3.5: UK vessels ≥ 15 m length actively fishing using demersal otter trawls in 2020 (Source: MMO, 2021)

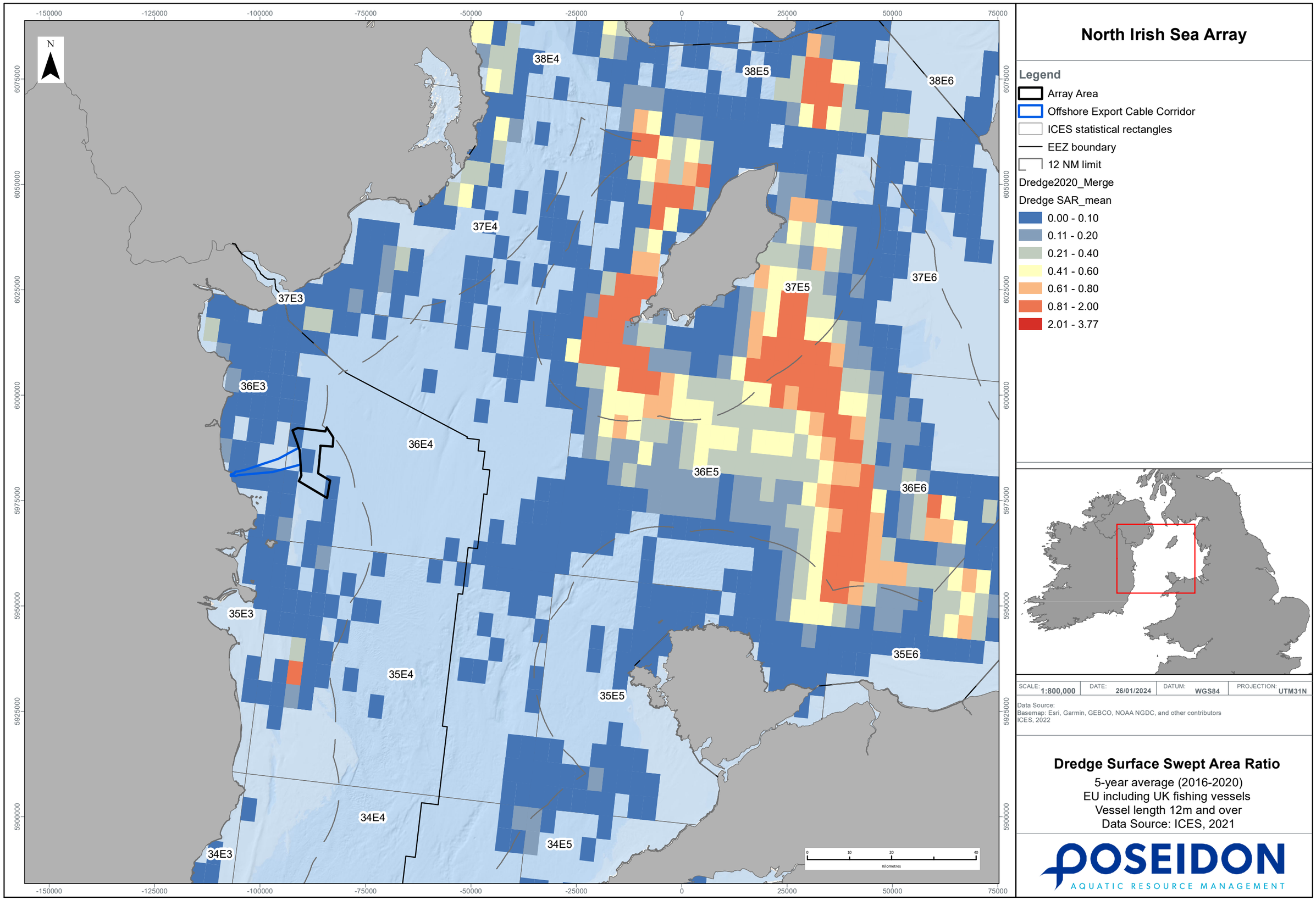
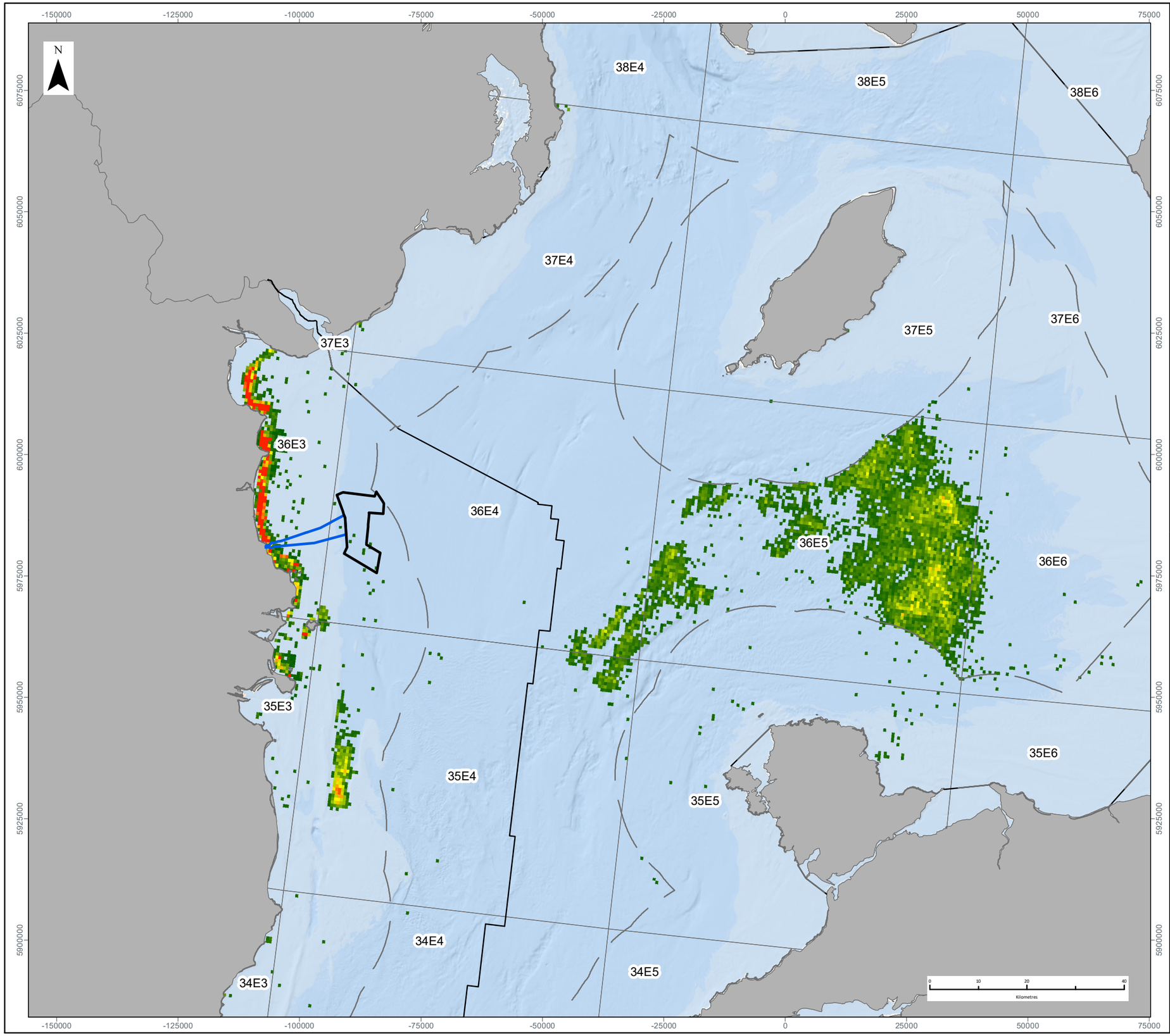


Figure 3.6: Surface Swept Area Ratio 2016 to 2020 for EU (including Irish and UK) vessels ≥ 12 m length using dredge gear (Source: ICES, 2021)



North Irish Sea Array

Legend

- Array Area
- Offshore Export Cable Corridor
- ICES statistical rectangles
- EEZ boundary
- 12 NM limit

EU Dredge Effort 2014-2018

Value

High : 262.76

Low : 0.0033332

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Data Source:
Basemap: Esri, Garmin, GEBCO, NOAA NGDC, and other contributors
ICES, 2022

EU Dredge Effort

EU dredge effort for vessels
12m and over including all EU vessels
within 12 NM and Irish only outside 12NM
Source: Marine Institute, 2023

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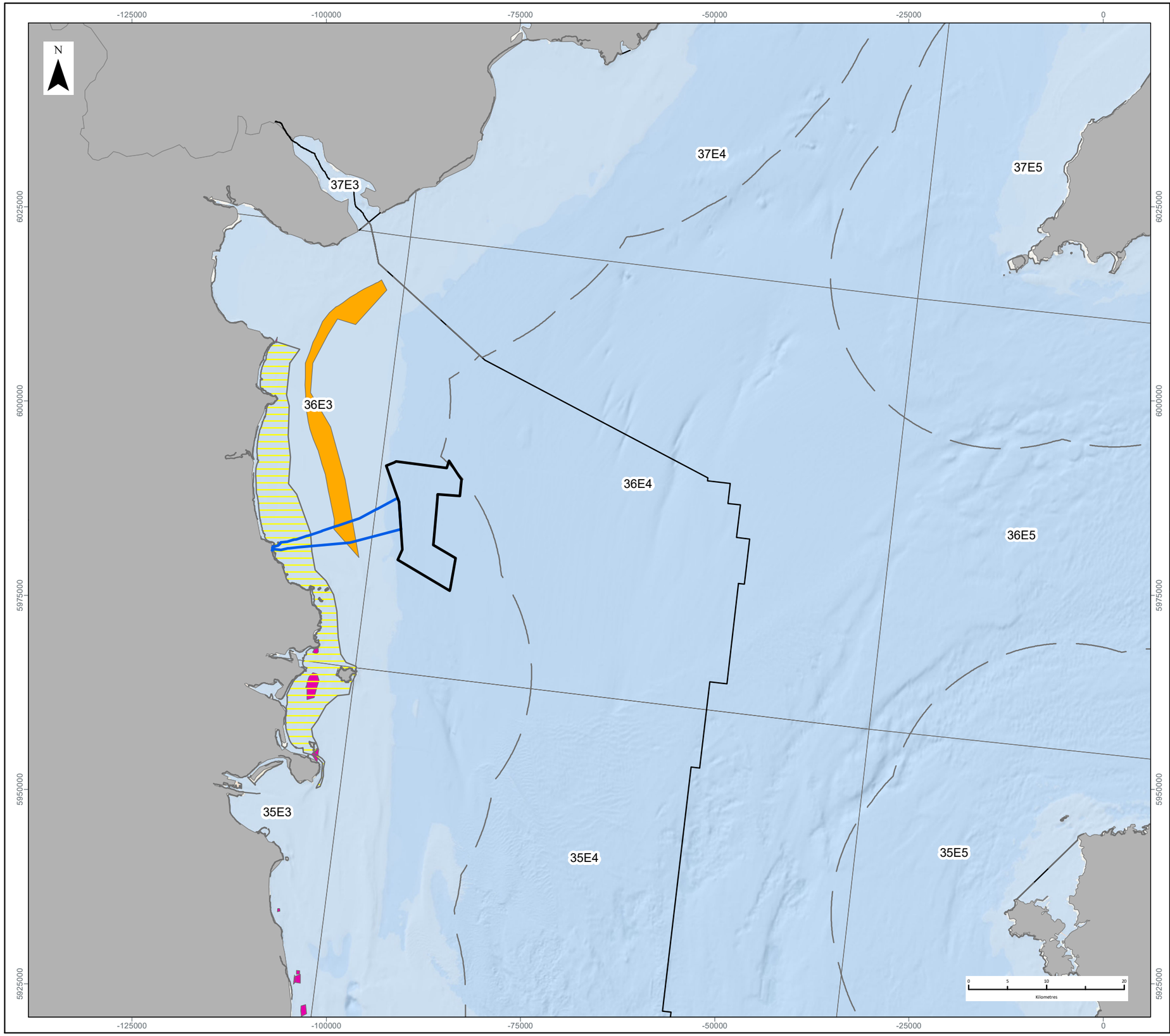
Figure 3.7: VMS effort data for EU vessels ≥ 12 m length actively fishing using dredge (note that outside the Irish EEZ records are only routinely available for vessels registered in Ireland) (Source: Marine Institute, 2023)



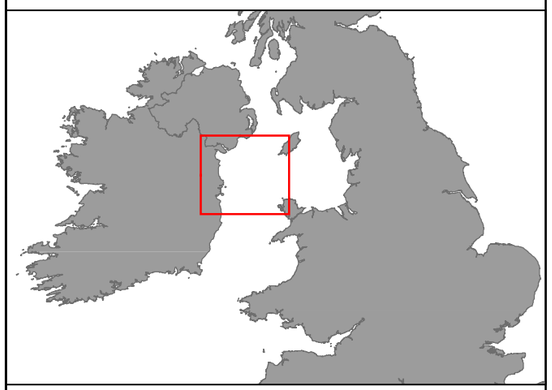
North Irish Sea Array

Legend

- Array Area
- Offshore Export Cable Corridor
- ICES statistical rectangles
- EEZ boundary
- 12 NM limit

Target species

- Clam
- Cockle
- Mussels
- Native oyster
- Seed mussel
- Razor clam
- Scallop
- Surf mlam



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Data Source:
Basemap: Esri, Garmin, GEBCO, NOAA NGDC, and other contributors
ICES, 2022

Irish dredging fishing grounds

Irish dredge fishing grounds
as defined by
Marine Institute Inshore Atlas

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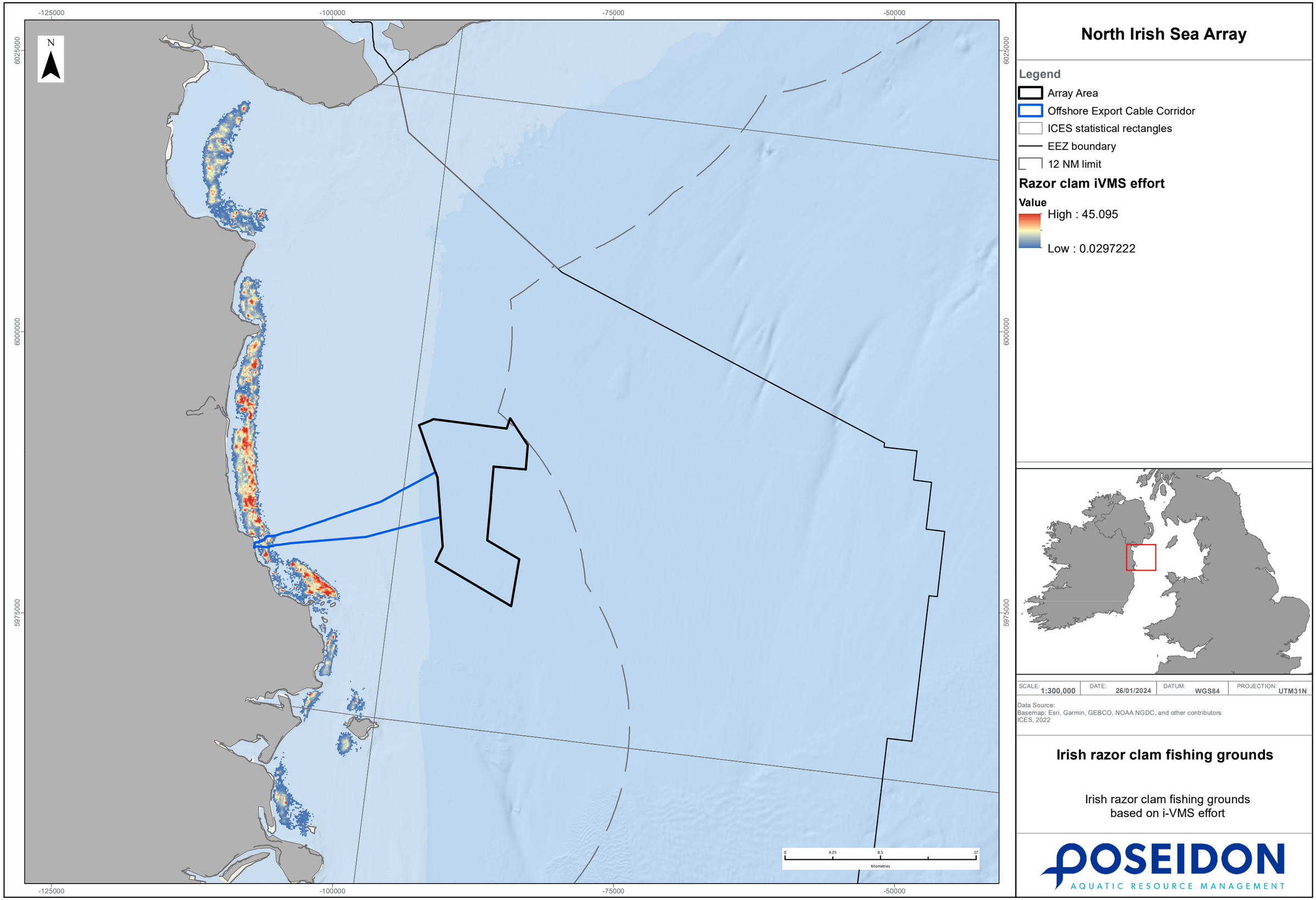
Figure 3.8: Irish inshore fishing marine atlas indicating grounds targeted by dredges (Source: Marine Institute, 2021)



North Irish Sea Array

Legend

- Array Area
- Offshore Export Cable Corridor
- ICES statistical rectangles
- EEZ boundary
- 12 NM limit

Razor clam iVMS effort

Value

High : 45.095

Low : 0.0297222

SCALE:	DATE:	DATUM:	PROJECTION:
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Data Source:
Basemap: Esri, Garmin, GEBCO, NOAA NGDC, and other contributors
ICES, 2022

Irish razor clam fishing grounds

Irish razor clam fishing grounds
based on i-VMS effort

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Figure 3.9: Irish inshore fishing grounds targeted for razor clam based on iVMS data (Source: Marine Institute, 2023)

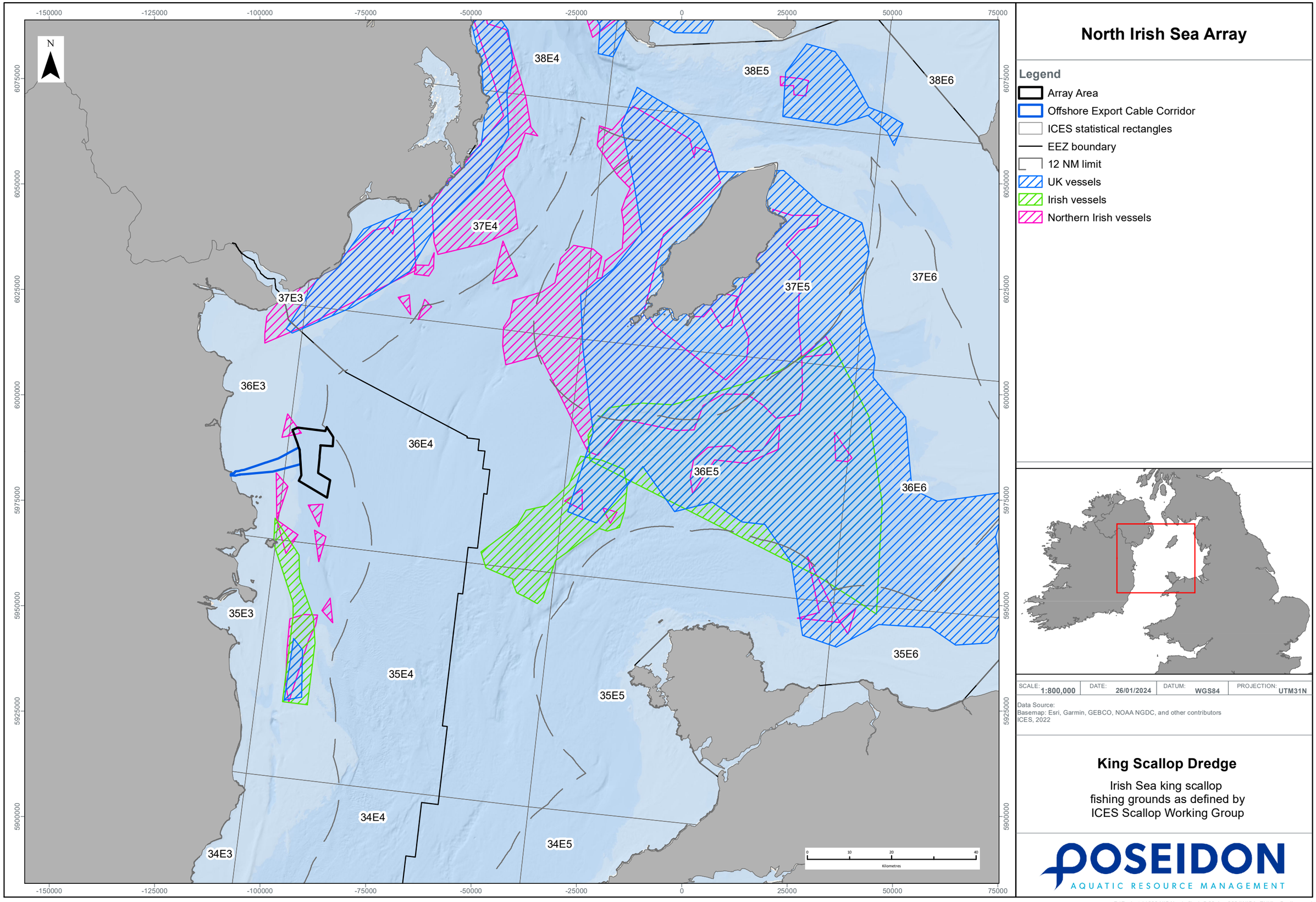


Figure 3.10: Irish Sea king scallop fishing grounds targeted by Irish, Northern Irish and other UK vessels (Source: ICES, 2021)

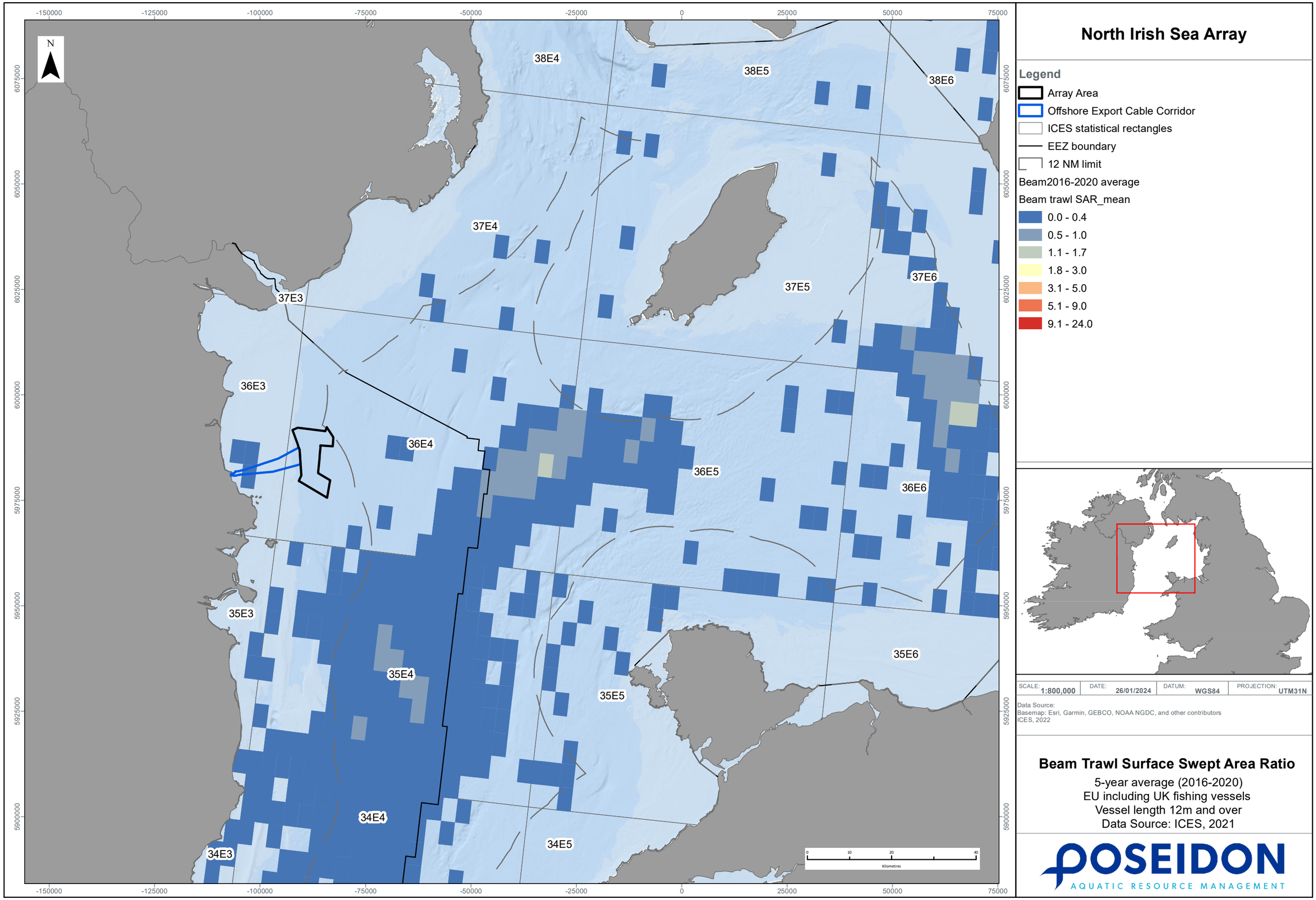


Figure 3.11: Surface Swept Area Ratio 2016 to 2020 for EU (including UK) vessels ≥ 12 m length using beam trawl gear (Source: ICES, 2021)

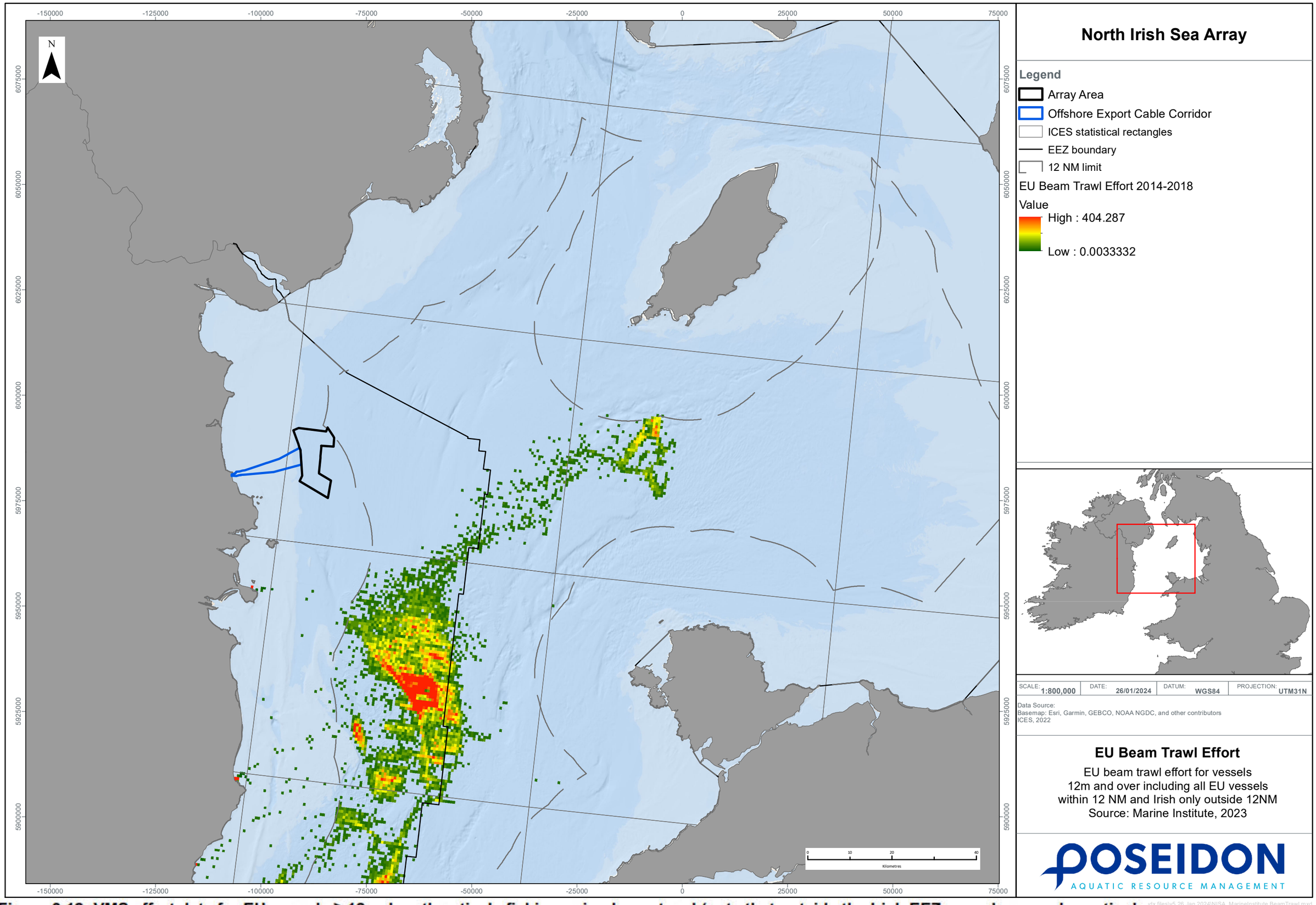
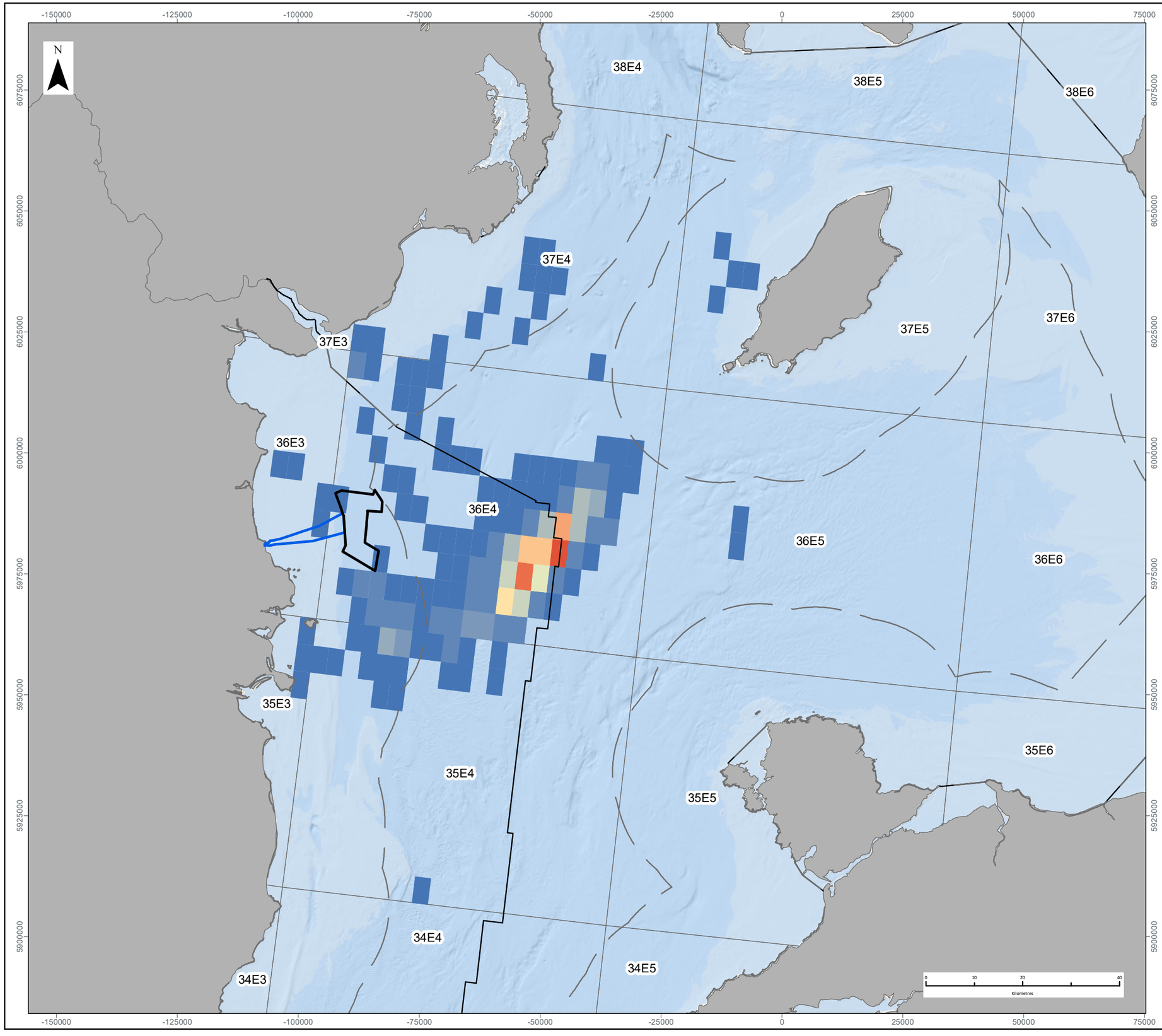


Figure 3.12: VMS effort data for EU vessels ≥ 12 m length actively fishing using beam trawl (note that outside the Irish EEZ records are only routinely available for vessels registered in Ireland) (Source: Marine Institute, 2023)



North Irish Sea Array

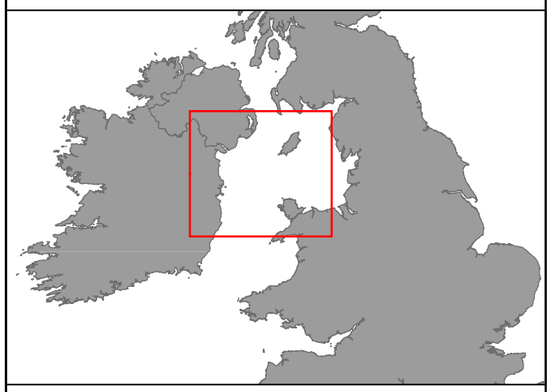
Legend

- Array Area
- Offshore Export Cable Corridor
- ICES statistical rectangles
- EEZ boundary
- 12 NM limit

Seine2020_Merge

Demersal seine SAR_mean

- 0.0 - 0.6
- 0.7 - 1.3
- 1.4 - 1.9
- 2.0 - 2.6
- 2.7 - 3.2
- 3.3 - 3.9
- 4.0 - 4.5
- 4.6 - 5.1
- 5.2 - 5.8
- 5.9 - 6.4
- 6.5 - 7.1
- 7.2 - 7.7
- 7.8 - 8.4
- 8.5 - 9.0
- 9.1 - 46.8



SCALE:	DATE:	DATUM:	PROJECTION:
1:800,000	26/01/2024	WGS84	UTM31N

Data Source:
Basemap: Esri, Garmin, GEBCO, NOAA NGDC, and other contributors
ICES, 2022

Demersal Seine Surface Swept Area Ratio

5-year average (2016-2020)
EU including UK fishing vessels
Vessel length 12m and over
Data Source: ICES, 2021

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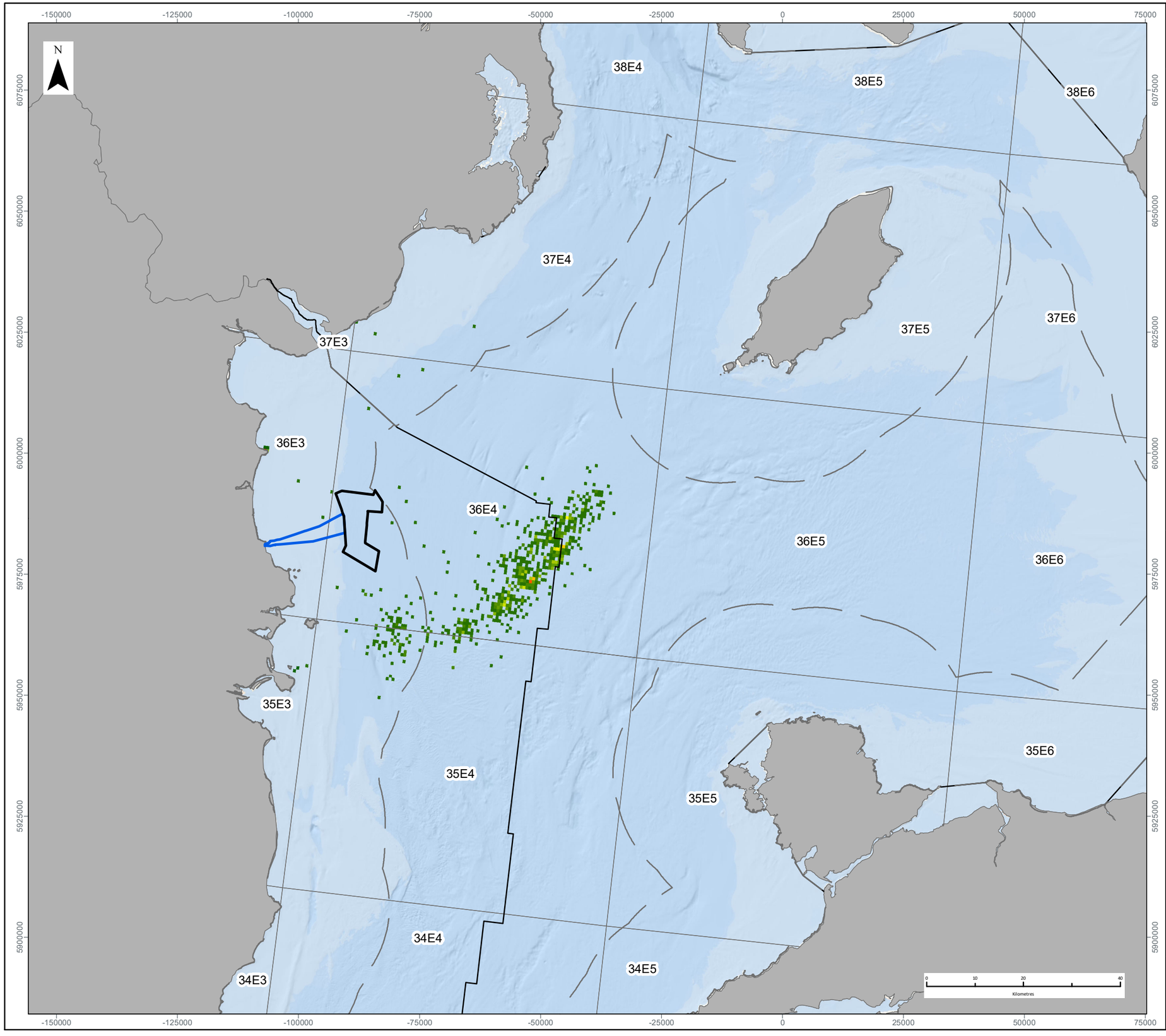
Figure 3.13: Surface Swept Area Ratio 2016 to 2020 for EU (including UK) vessels ≥ 12 m length using demersal seine (Source: ICES, 2021)



North Irish Sea Array

Legend

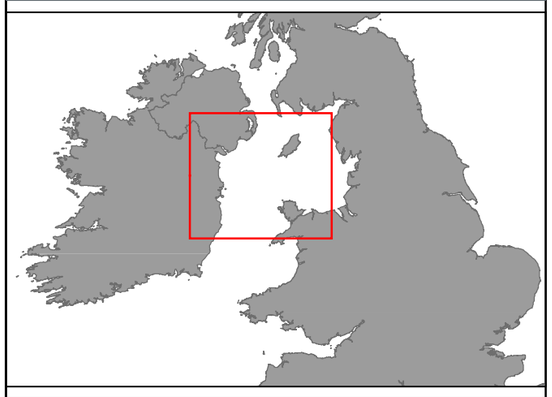
- Array Area
- Offshore Export Cable Corridor
- ICES statistical rectangles
- EEZ boundary
- 12 NM limit

EU Seine Effort 2014-2018

Value

High : 172.543

Low : 0.0033332



SCALE:	DATE:	DATUM:	PROJECTION:
1:800,000	26/01/2024	WGS84	UTM31N

Data Source:
Basemap: Esri, Garmin, GEBCO, NOAA NGDC, and other contributors
ICES, 2022

EU Seine Effort

EU seine effort for vessels
12m and over including all EU vessels
within 12 NM and Irish only outside 12NM
Source: Marine Institute, 2023

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Figure 3.14: VMS effort data for EU vessels ≥ 12 m length actively fishing using demersal seine (note that outside the Irish EEZ records are only routinely available for vessels registered in Ireland) (Source: Marine Institute, 2023)

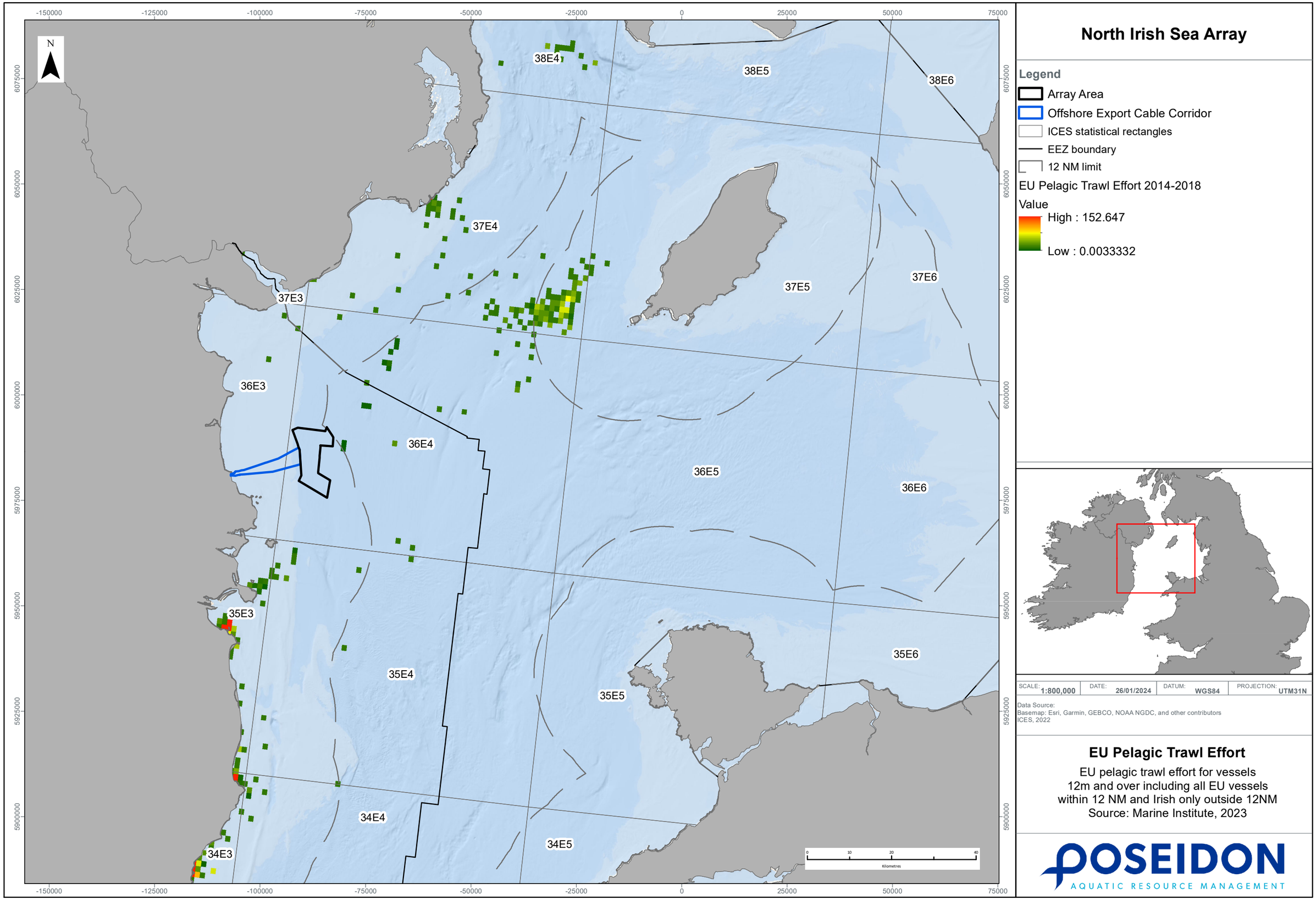


Figure 3.15: VMS effort data for EU vessels ≥ 12 m length actively fishing using pelagic trawl (note that outside the Irish EEZ records are only routinely available for vessels registered in Ireland) (Source: Marine Institute, 2023)

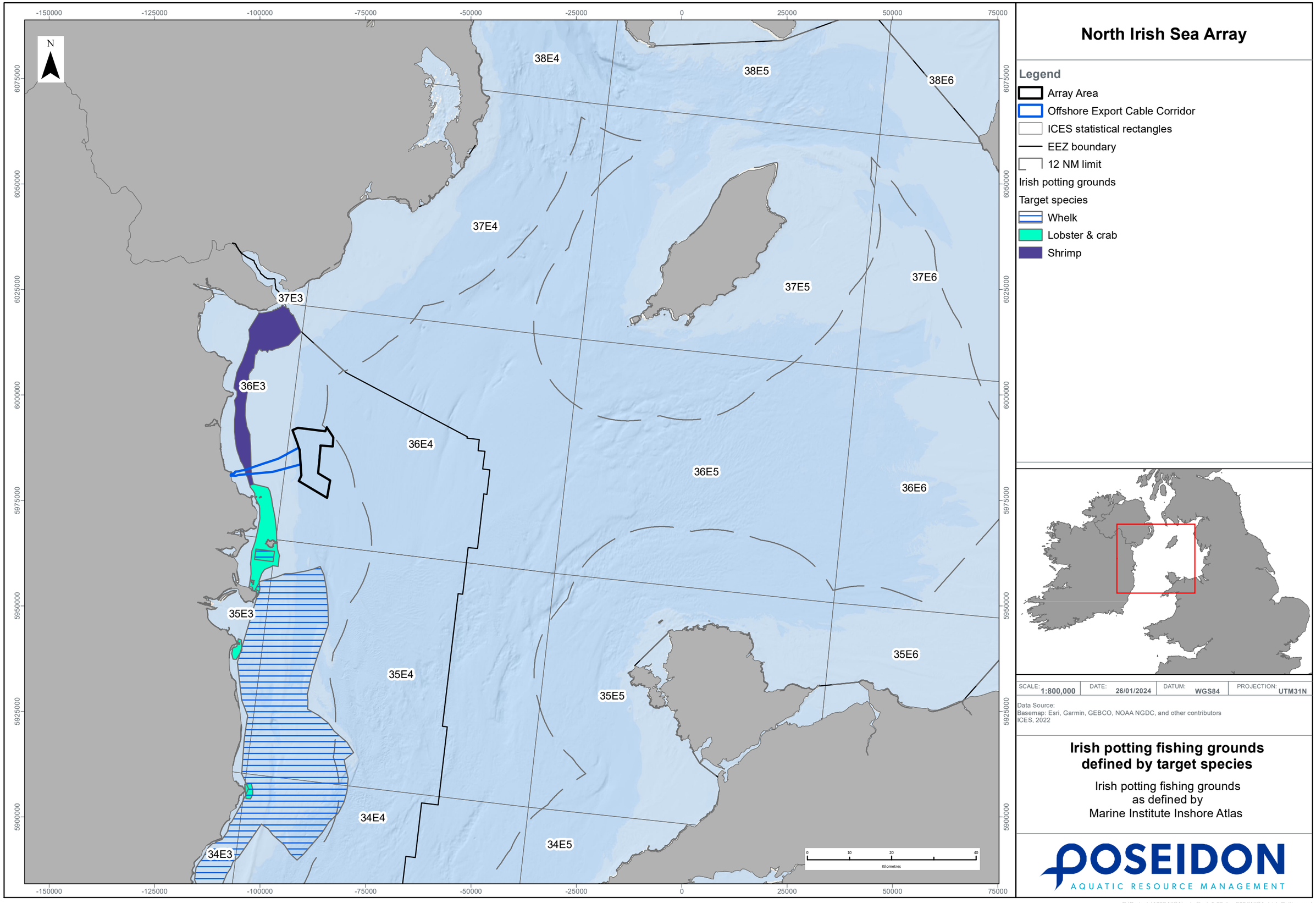


Figure 3.16: Irish inshore fishing marine atlas illustrating indicative grounds targeted by potting (Source: Marine Institute, 2021)

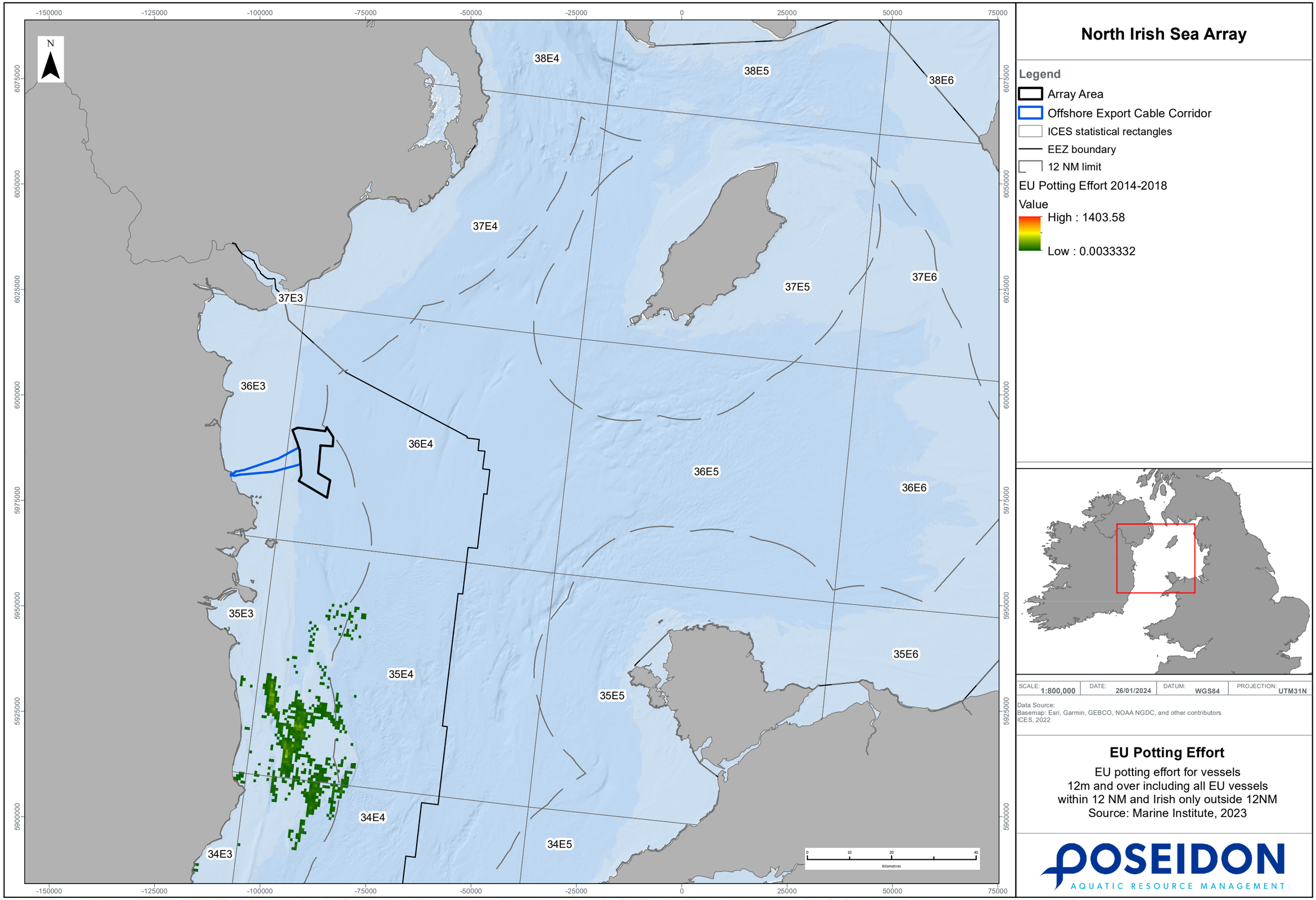
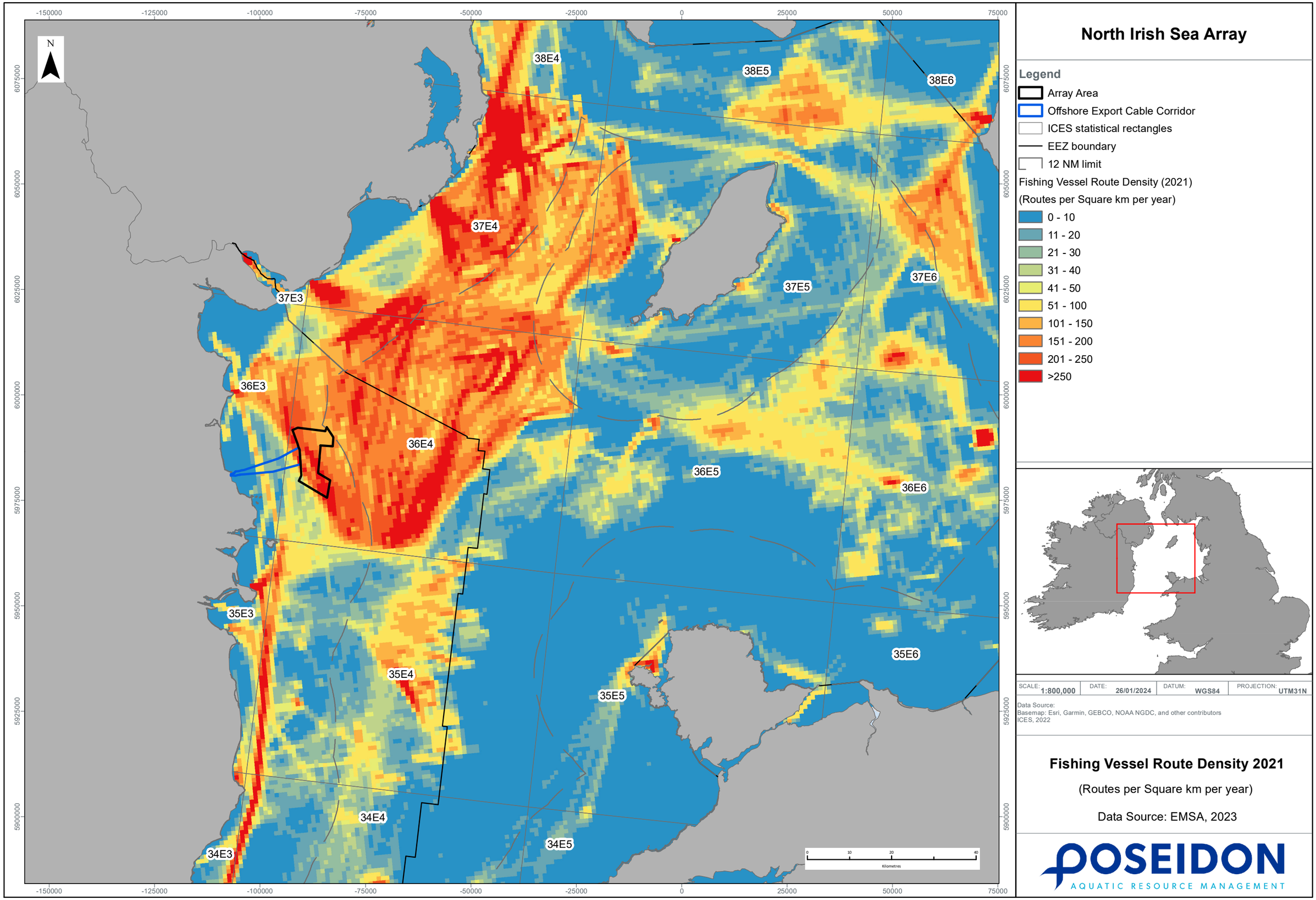


Figure 3.17: VMS effort data for EU vessels ≥ 12 m length actively fishing using pots (note that outside the Irish EEZ records are only routinely available for vessels registered in Ireland) (Source: Marine Institute, 2023)



North Irish Sea Array

Legend

- Array Area
- Offshore Export Cable Corridor
- ICES statistical rectangles
- EEZ boundary
- 12 NM limit

Fishing Vessel Route Density (2021)
(Routes per Square km per year)

- 0 - 10
- 11 - 20
- 21 - 30
- 31 - 40
- 41 - 50
- 51 - 100
- 101 - 150
- 151 - 200
- 201 - 250
- >250

SCALE:	DATE:	DATUM:	PROJECTION:
1:800,000	26/01/2024	WGS84	UTM31N

Data Source:
Basemap: Esri, Garmin, GEBCO, NOAA NGDC, and other contributors
ICES, 2022

Fishing Vessel Route Density 2021

(Routes per Square km per year)

Data Source: EMSA, 2023

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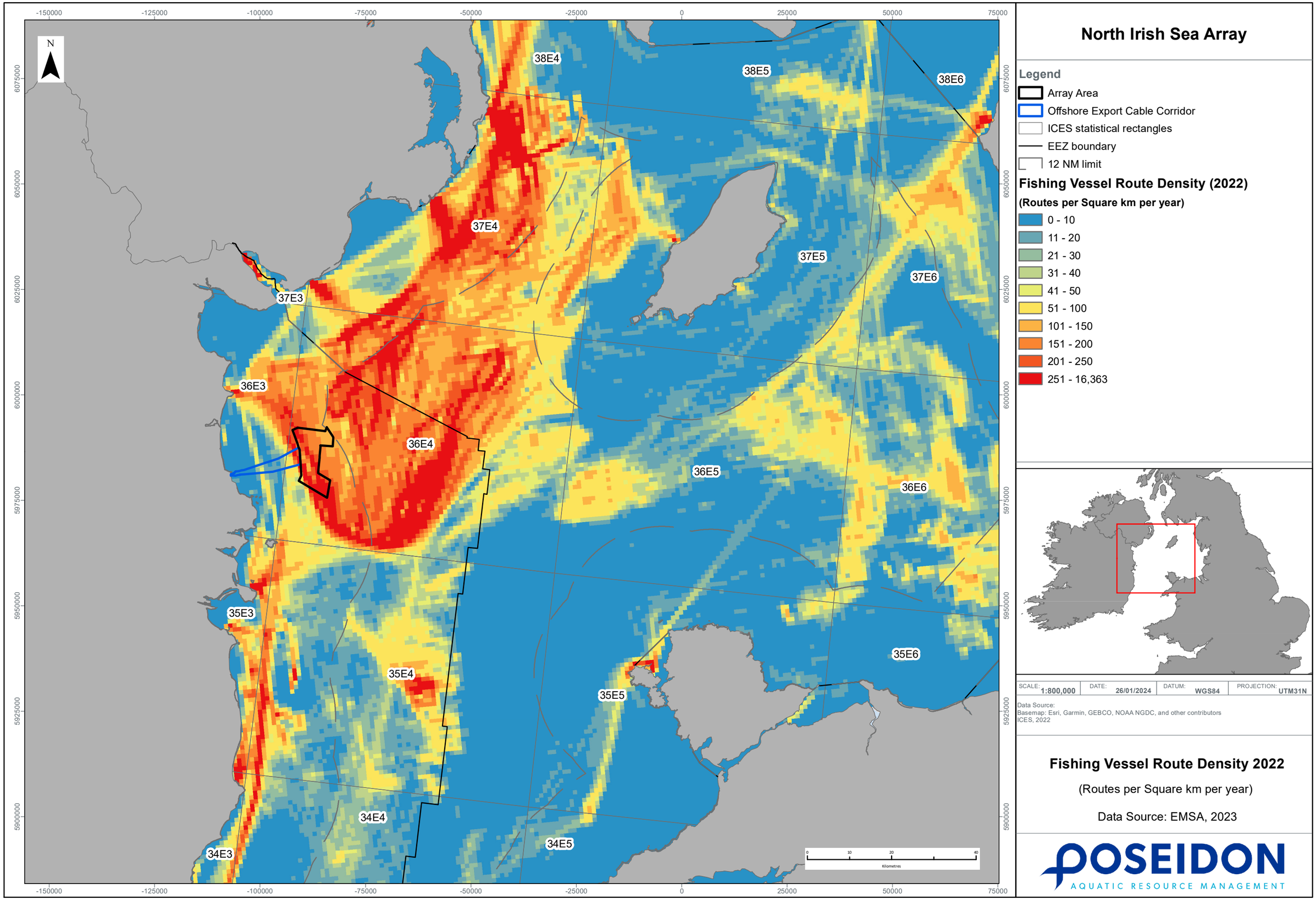
Figure 3.18: AIS fishing vessel route density in 2021 (Source: EMSA, 2023)



North Irish Sea Array

Legend

- Array Area
- Offshore Export Cable Corridor
- ICES statistical rectangles
- EEZ boundary
- 12 NM limit

Fishing Vessel Route Density (2022)

(Routes per Square km per year)

- 0 - 10
- 11 - 20
- 21 - 30
- 31 - 40
- 41 - 50
- 51 - 100
- 101 - 150
- 151 - 200
- 201 - 250
- 251 - 16,363

SCALE:	DATE:	DATUM:	PROJECTION:
1:800,000	26/01/2024	WGS84	UTM31N

Data Source:
Basemap: Esri, Garmin, GEBCO, NOAA NGDC, and other contributors
ICES, 2022

Fishing Vessel Route Density 2022

(Routes per Square km per year)

Data Source: EMSA, 2023

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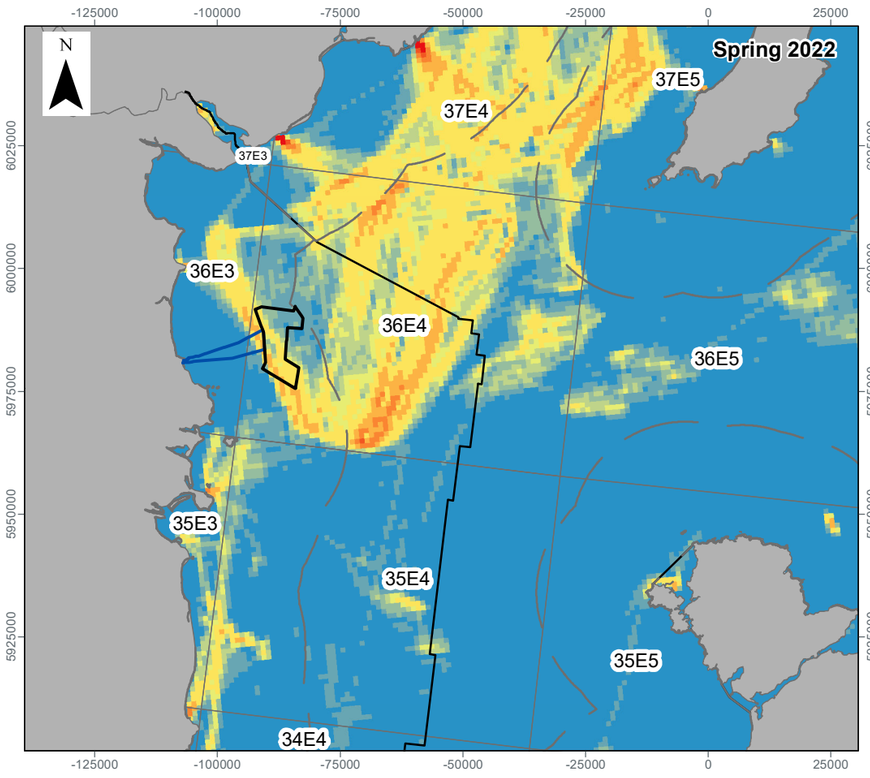
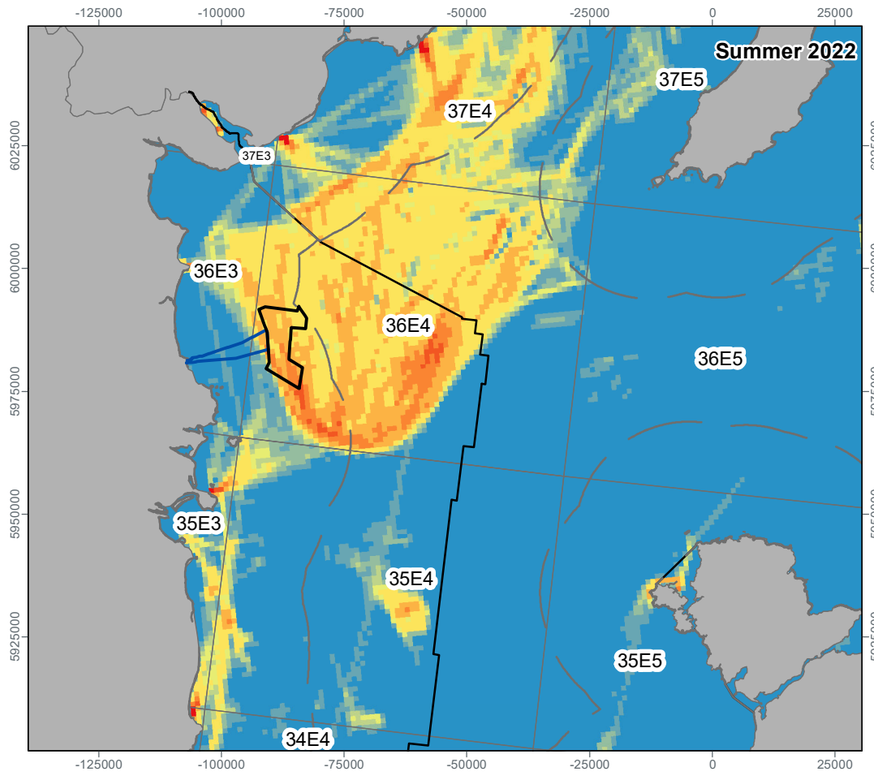
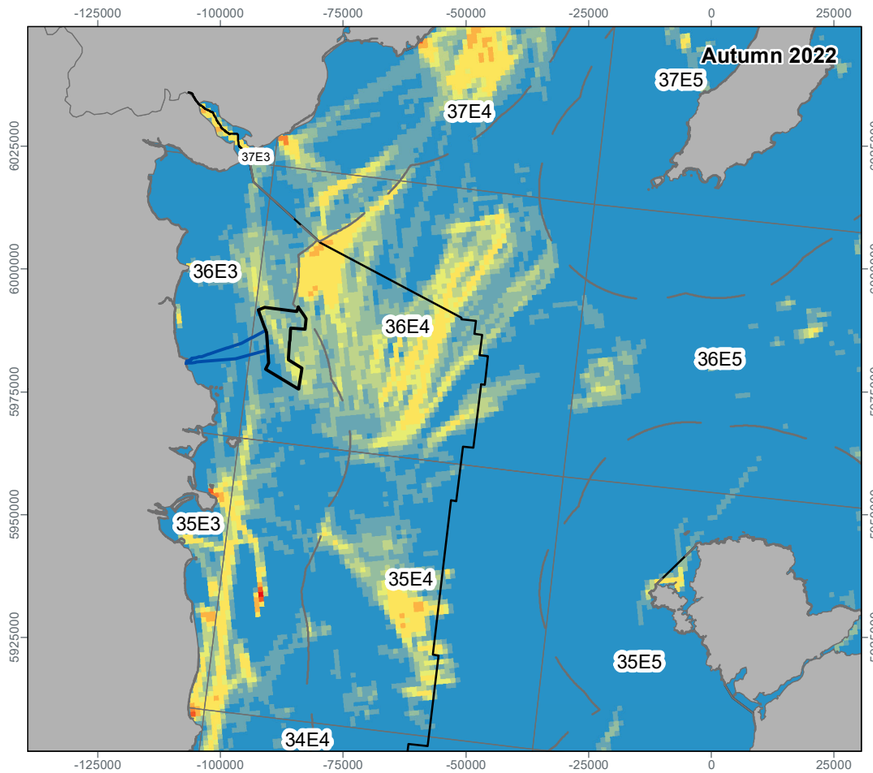
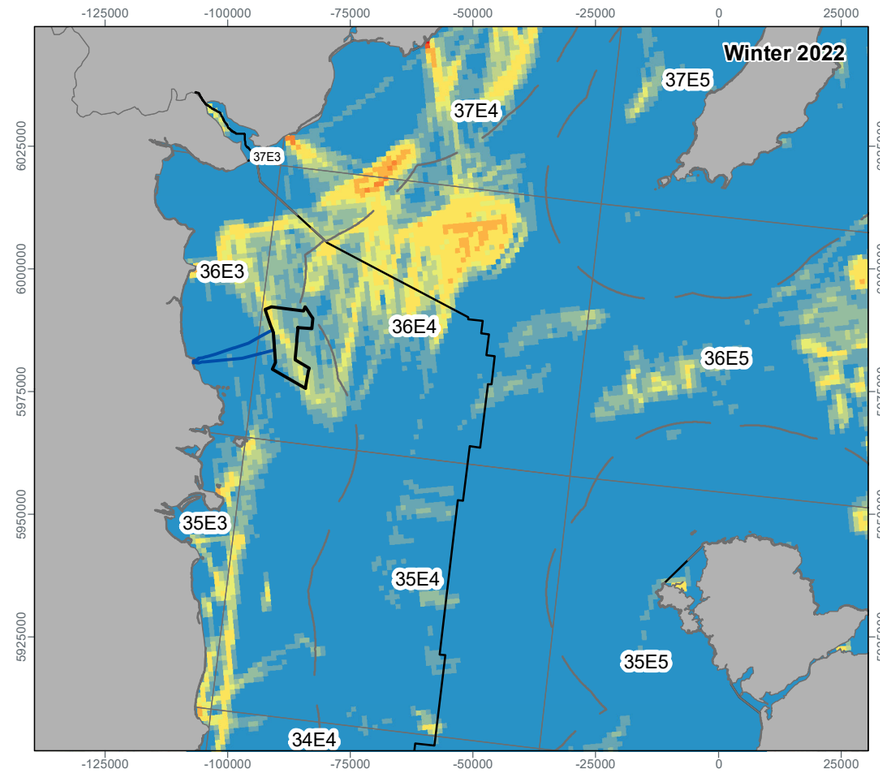
Figure 3.19: AIS fishing vessel route density in 2022 (Source: EMSA, 2023)









North Irish Sea Array

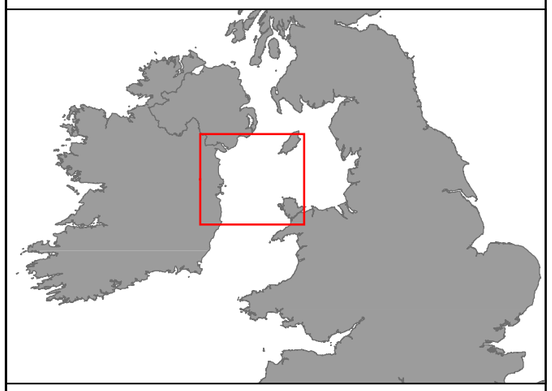
Legend

- Array Area
- Offshore Export Cable Corridor
- ICES statistical rectangles
- EEZ boundary
- 12 NM limit

Fishing Vessel Route Density

(Routes per Square km per year)

- 0 - 10
- 11 - 20
- 21 - 30
- 31 - 40
- 41 - 50
- 51 - 100
- 101 - 150
- 151 - 200
- 201 - 250
- 251 - 16,363



SCALE:	DATE:	DATUM:	PROJECTION:
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Data Source:
Basemap: Esri, Garmin, GEBCO, NOAA NGDC, and other contributors
ICES, 2022

Fishing Vessel Route Density Seasonality in 2022

(Routes per Square km per year)

Data Source: EMSA, 2023

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Figure 3.20: AIS fishing vessel route density presented seasonally for 2022 (Source: EMSA, 2023)

4. Fisheries activity assessments

4.1 Irish fisheries activity assessment

4.1.1 Landing statistics – Potting fleet

38 Data has been obtained from the SFPA for landings of brown crab (also known as edible crab), lobster and whelk for the period 2017 to 2021 (representing the most recent available data at the time of writing) indicating the landed weight and first sales value by port of landing (Figure 4.1). The data is provided for landings by vessels registered in Ireland, including vessels of all lengths, and landing catches from the Irish Sea (7a) and Celtic Sea (7g). Landings of brown crab, lobster and whelk are caught by potting gear.

39 Key ports for lobster and brown crab landings are Kilmore Quay (€1.5 million of brown crab and €800,000 of lobster) and Dunmore East (€875,000 of brown crab and €245,000 of lobster).

40 The highest value of whelk is landed into Wicklow with €2.4 million in first sales value landed annually. Hough, Dun Laoghaire, Wexford and Arklow also have high value landings of whelk annually (ranging from €600,000 to €1 million per port).

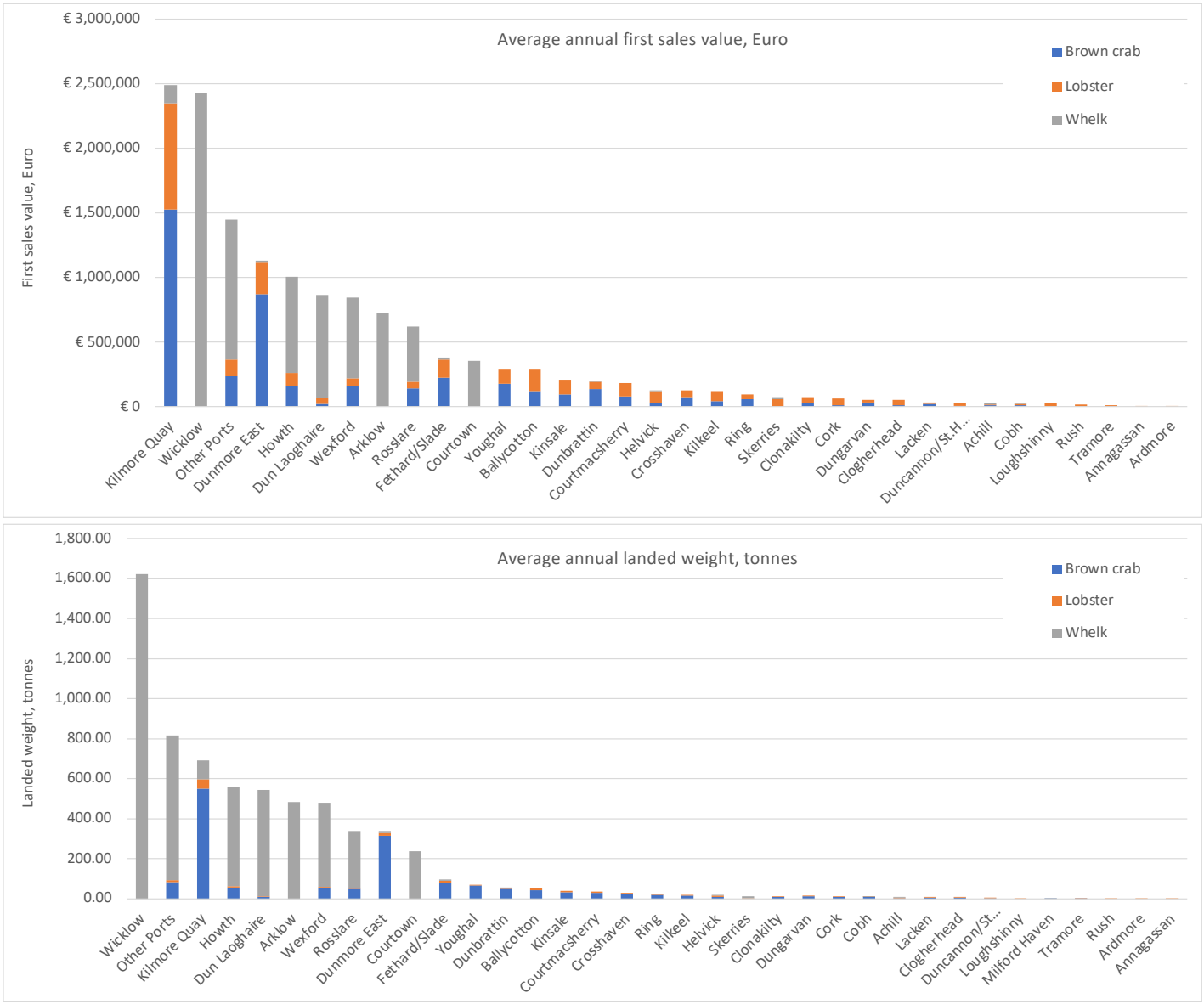


Figure 4.1: Average annual landings of brown crab, lobster and whelk into Irish ports from 2017 to 2021 indicating first sales value (top) and weight (bottom) (Source: SFPA, 2022)

41 Long term trends in brown crab, lobster and whelk landings are shown in Figure 4.2 and Figure 4.3 for first sales value and landed weight respectively across the period 2011 to 2021. As above, the data is provided for landings by vessels registered in Ireland, including vessels of all lengths, and landing catches from the Irish Sea (7a) and Celtic Sea (7g).

42 Substantial growth in whelk landings is notable from 2014 to 2016, followed by a slight drop and then relatively stable levels from 2017 onwards, with an average annual first sales value of €7.3 million (from 2017 to 2021) and approximately 5,000 tonnes.

43 Brown crab and lobster landings also peaked in 2016 at a value of €6 million and €4 million respectively; with an average annual first sales value of €4 million (from 2017 to 2021) and approximately 1,500 tonnes of brown crab and €2.5 million and 140 tonnes for lobster.

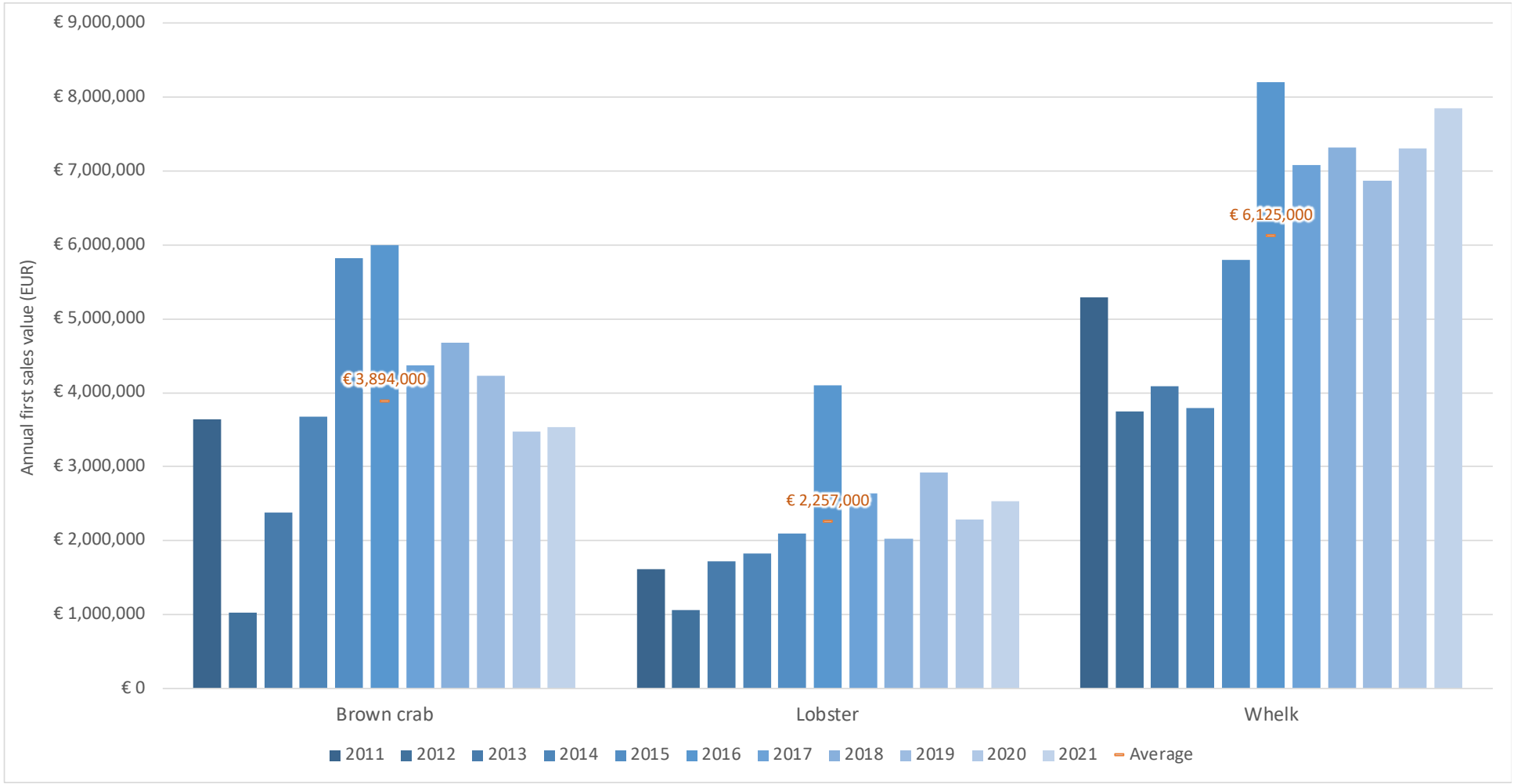


Figure 4.2: Long term trend in annual landings of brown crab, lobster and whelk by Irish vessels from the Irish Sea and Celtic Sea, landings into Irish ports from 2011 to 2021 indicating first sales value (Source: SFPA, 2022)

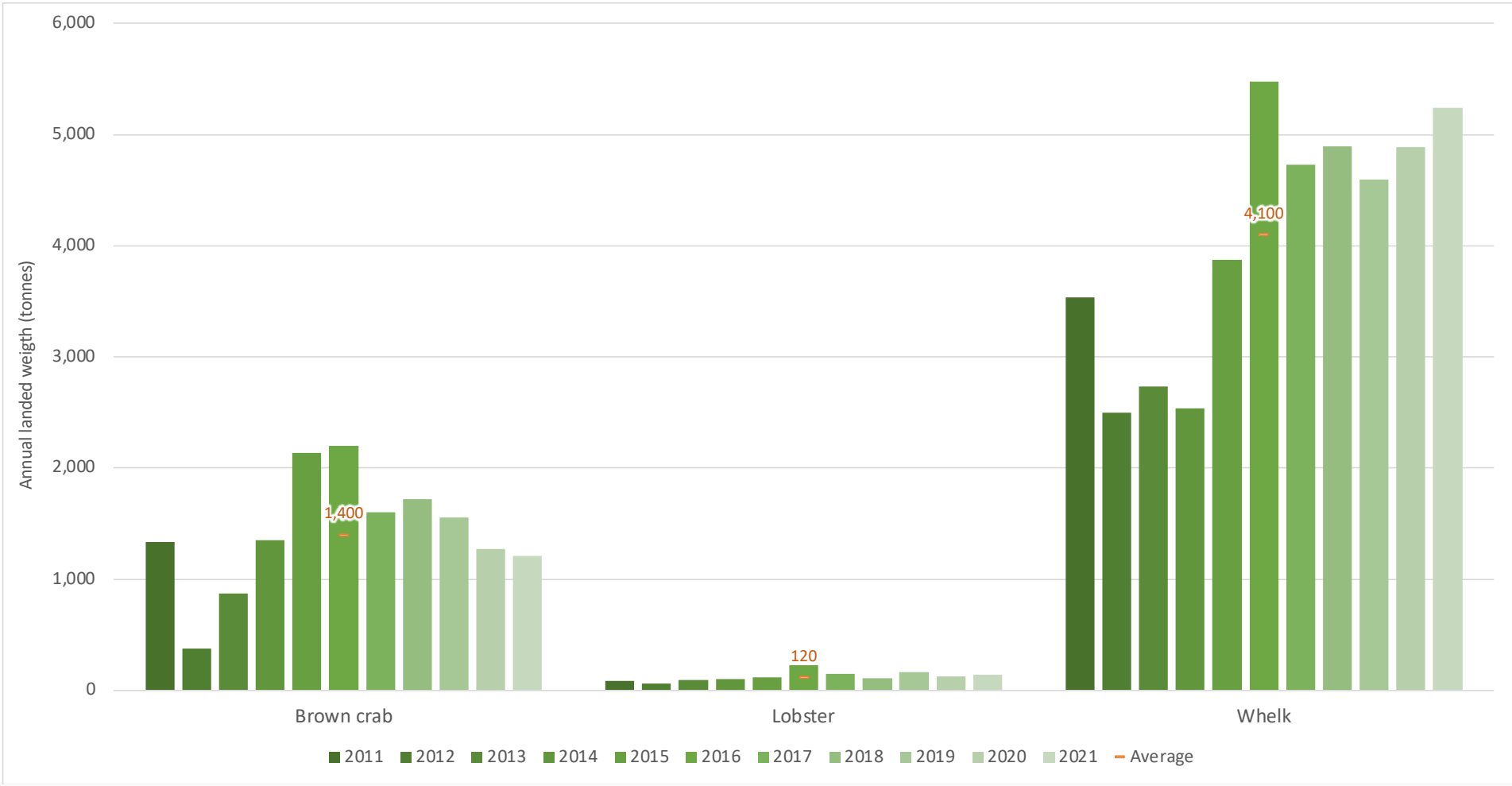


Figure 4.3: Long term trend in annual landings of brown crab, lobster and whelk by Irish vessels from the Irish Sea and Celtic Sea, landings into Irish ports from 2011 to 2021 indicating landed weight, tonnes (Source: SFPA, 2022)

4.1.2 Landing statistics – for Irish Sea in 2022

44 Data has been obtained from the SFPA for landings of all species during 2022 (representing the most recent available data at the time of writing) by Irish vessels from area 7a (Irish Sea) (Figure 4.4). The data is provided for landings by vessels registered in Ireland, including vessels of all lengths, although it is anticipated that landings by vessels ≤10 m in length are underrepresented due to confidentiality issues in amalgamating the dataset.

45 Key ports for landings of nephrops are:

- Clogherhead: 690 tonnes landed of nephrops in 2022, with a first sales value of €5.94 million; and
- and Howth: 780 tonnes landed of nephrops in 2022, with a first sales value of €4.6 million

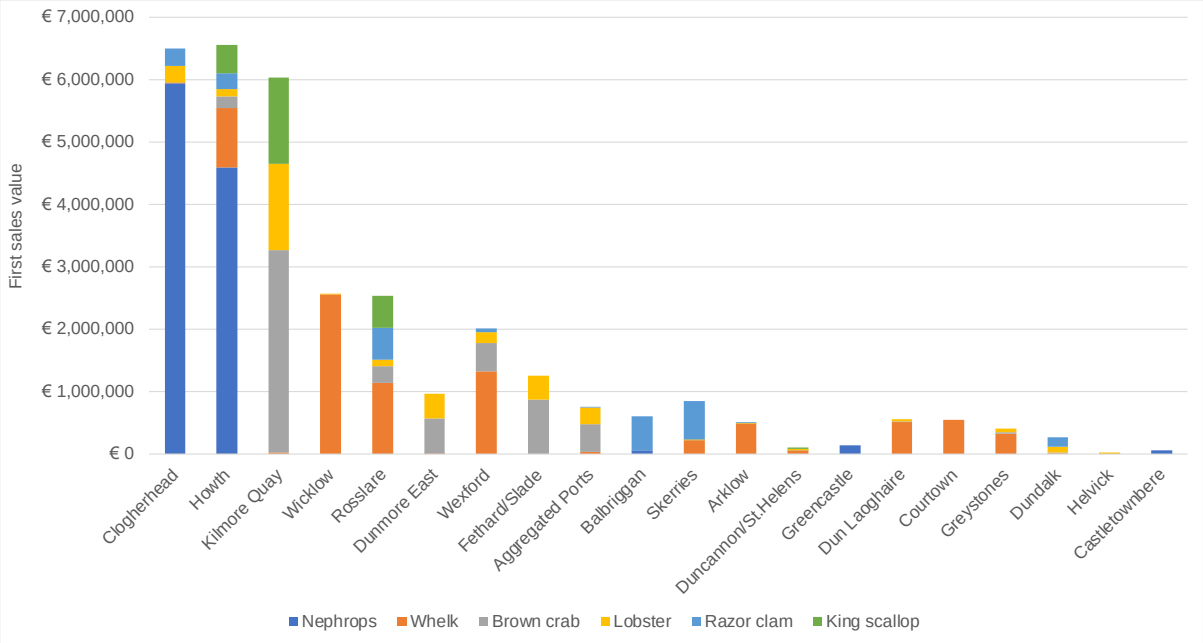


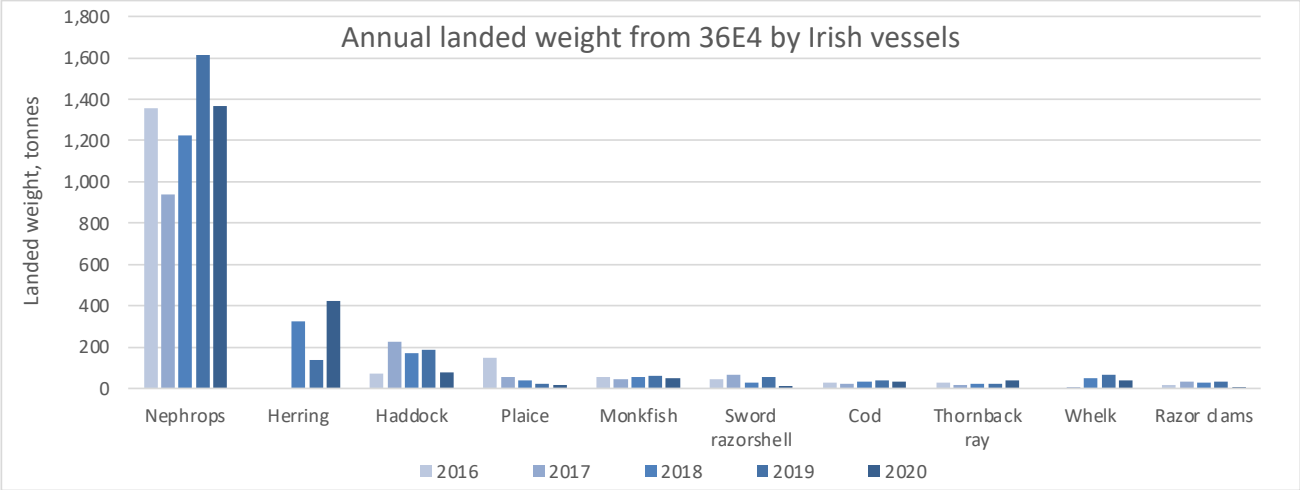
Figure 4.4: Landings by Irish vessels from area 7a (Irish Sea) in 2022 (Source: SFPA, 2023)

4.1.3 Landing statistics – by ICES rectangle for the local study area

46 Data has been obtained from the SFPA for landings of all species for the period 2016 to 2020 indicating the landed weight from ICES rectangles 36E4 and 36E3 (Figure 4.5). Data requested and received since 2020 has not been provided at ICES rectangle scale and is therefore not reported in this section. The data is provided for landings by vessels registered in Ireland, including vessels of all lengths, although it is anticipated that landings by vessels ≤10 m in length are underrepresented due to confidentiality issues in amalgamating the dataset.

47 The array area of the offshore development area overlaps with ICES rectangle 36E4, which is dominated by landings of nephrops. Demersal finfish species that will be caught in conjunction with the nephrops fishery are noted in the catch including haddock, plaice, monkfish, cod and thornback ray. Three out of the five years analysed saw landings of the pelagic species herring from 36E4, although this is understood to be outside the offshore development area and to the north east of the array area.

48 The ECC overlaps with ICES rectangles 36E4 and 36E3. Landed weight from 36E3 is dominated by sword razorshell, cockles, whelk and razor clam, as well as some catch of nephrops, likely taken to the north of the ECC. One sporadic catch of sprat is recorded in 2020. The data by ICES rectangles does not show significant landings of brown crab and lobster, which is unexpected and linked to the underrepresentation of vessels 10 m and under within the dataset.



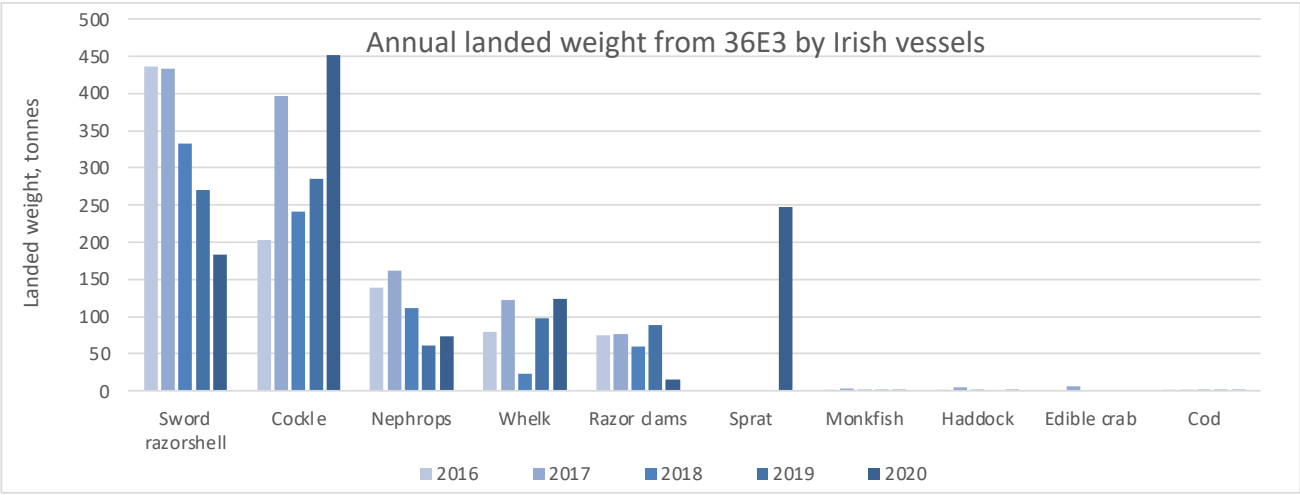


Figure 4.5: Weight of landings by Irish vessels from ICES rectangles 36E4 and 36E3 indicating species from 2016-2020 (Source: SFPA, 2022)

4.1.4 Landing statistics – nephrops fleet in the regional study area

49 SFPA landing statistics are presented in this section for nephrops landings by Irish vessels from FU15: Irish Sea West. The offshore development area overlaps with part of FU15, as indicated in Figure 2.2.

50 The data clearly indicates that the majority (**86%**) of nephrops landings by Irish vessels are taken from ICES rectangle 36E4 (Figure 4.6 and Figure 4.7).

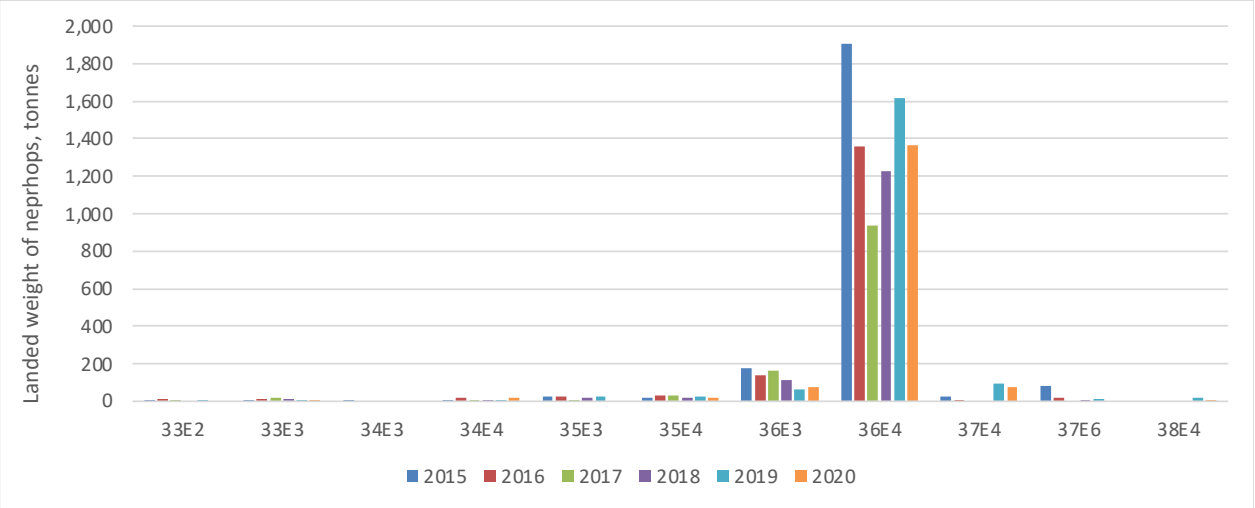


Figure 4.6: Landed weight of nephrops by Irish vessels by ICES rectangle from FU15 (2016-2020) (Data source: SFPA, 2021)

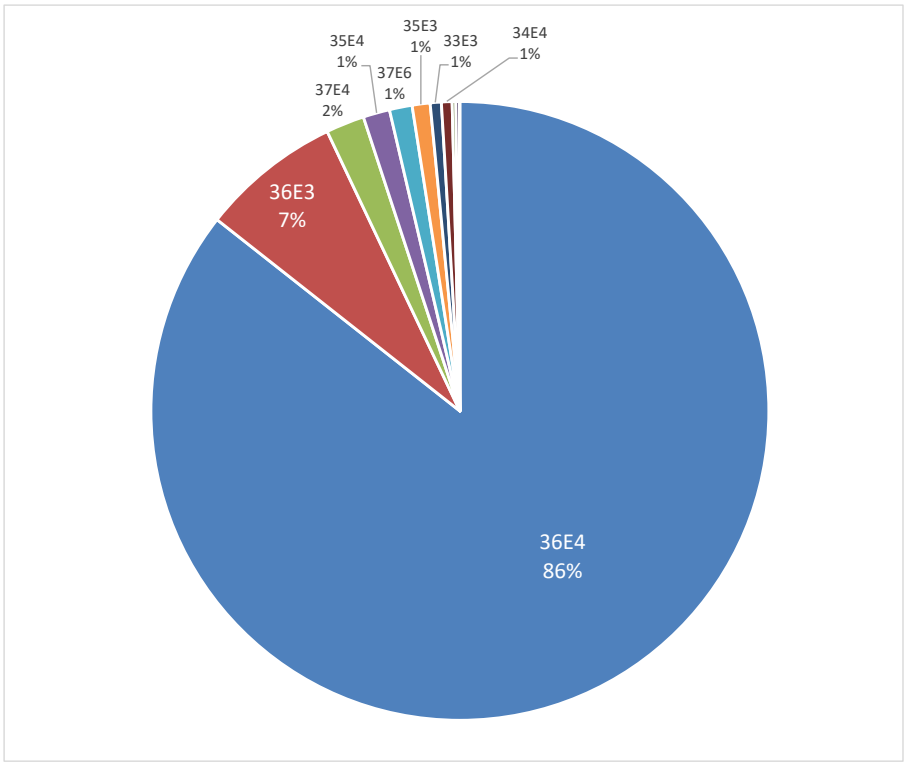


Figure 4.7: Proportion of Irish vessel nephrops landings by ICES rectangle from FU15 (based on average from 2016-2020) (Data source: SFPA, 2021)

51 The annual landed weight and first sales value of nephrops landed by Irish vessels from ICES rectangles 36E4 is shown in Figure 4.8 and Figure 4.9 respectively.

52 On average, 1,300 tonnes of nephrops are landed from 36E4 annually by Irish vessels, which equates to a first sales value of €5 million (based on €3,900 per tonne of nephrops).

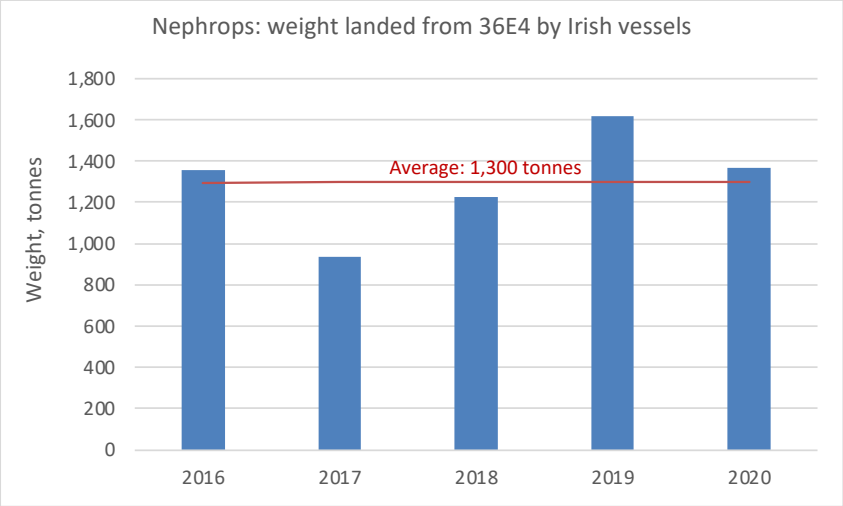


Figure 4.8: Annual landed weight of nephrops by Irish vessels from ICES rectangle 36E4 (2016-2020) (Data source: SFPA, 2021)

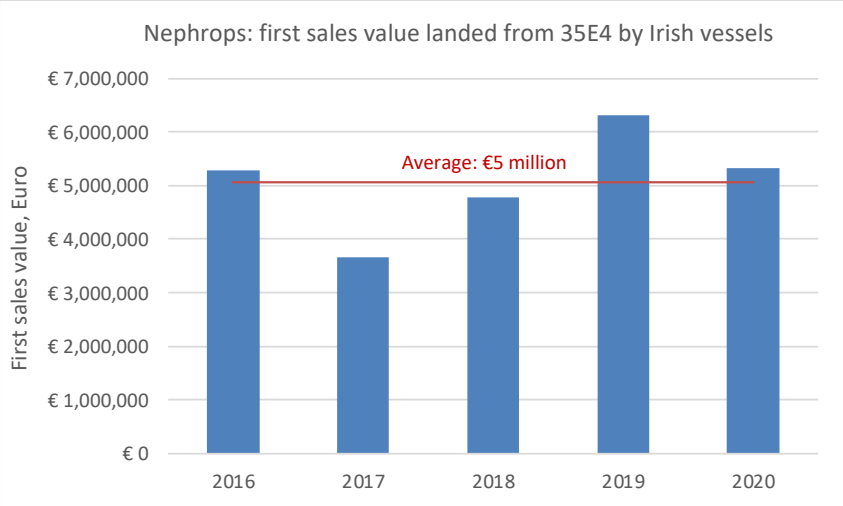


Figure 4.9: Annual first sales value of nephrops landed by Irish vessels from ICES rectangle 36E4 (2016-2020) (Data source: SFPA, 2021)

4.2 ICES stock assessment for Irish Sea West Nephrops FU15

53 The location and size of the nephrops Irish Sea West FU15 is shown in Figure 4.10. The Irish Sea West FU15 contains nine ICES statistical rectangles: 35E3-E5, 36E3-E5, 37E4-E5 and 38E4.

54 ICES provide annual stock assessments for each nephrops FU and catching advice, upon which a Total Allowable Catch (TAC) is defined collectively for ICES Division 7 (which contains seven FUs). TACs, or fishing opportunities, are catch limits (expressed in tonnes or numbers) that are set annually for commercial fish stocks based on scientific advice on the stock status from advisory bodies (i.e., ICES). This catch advice is based on reference points designed to maintain the stocks at Maximum Sustainable Yield (MSY), which is considered to be the largest yield (catch, in tonnes) that can be taken from a specific fish stock over an indefinite period under constant environmental conditions (European Commission, 2016). The catch advice from all seven FUs within ICES Division 7a-j are combined to inform the overall TAC set for ICES Division 7. There is not an individual TAC set for 7a (Irish Sea). In January 2024 the TAC set for nephrops in Division 7 is a total of 18,903 tonnes, of which Irish vessels hold quota for 6.095 tonnes (European Union, 2024).

55 The latest ICES advice for FU15 was published in October 2023 (ICES, 2023). ICES Division 7, 7a (Irish Sea) and FU15 are illustrated in Figure 2.2; all FUs in Division 7 are shown in Figure 4.10.

56 The ICES advice indicates that the stock abundance of nephrops in FU15 is well above MSY $B_{trigger}$ reference point and the fishing pressure is below F_{MSY} (Figure 4.11). Based on these biomass and fishing pressure reference points, the FU15 stock is considered to be in a good status and harvested at levels expected to maintain MSY of the stock biomass.

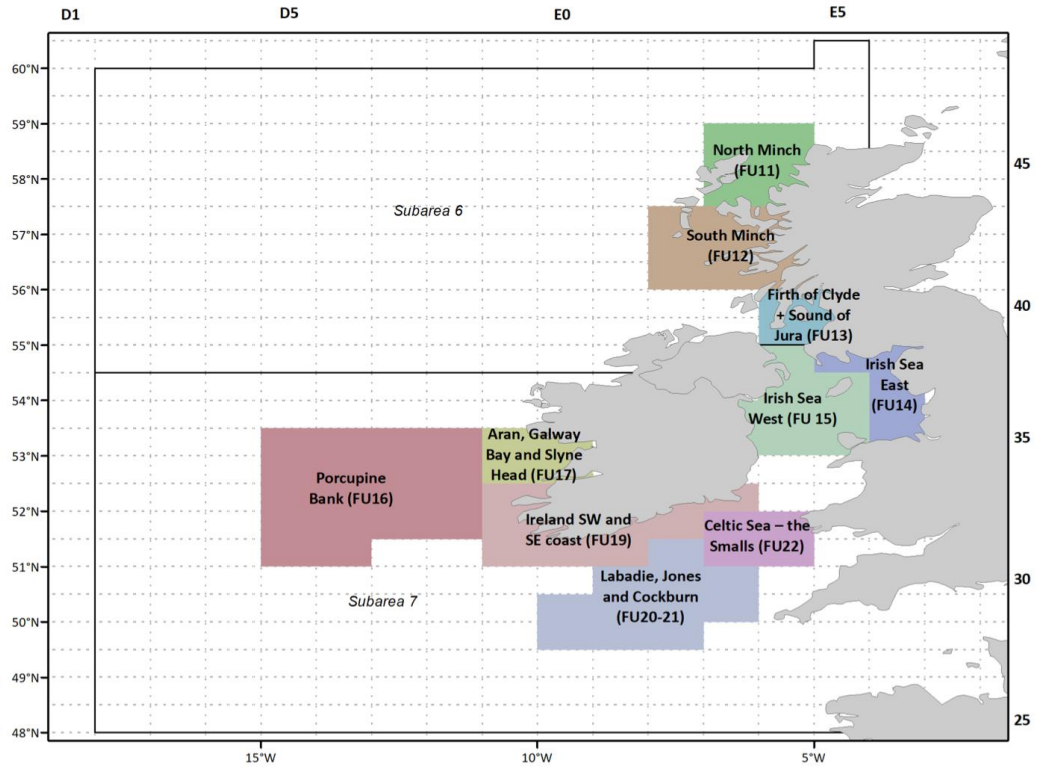


Figure 4.10: Nephrops Functional Units (FU) (ICES, 2022)

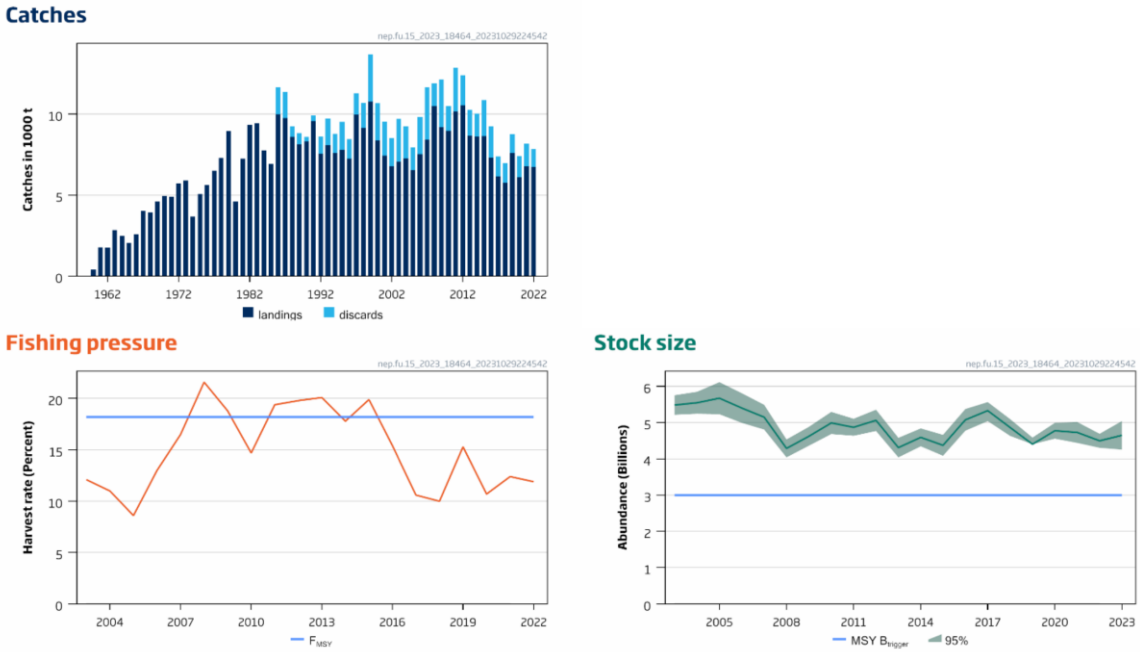


Figure 4.11: Nephrops in Division 7.a, Functional Unit 15. Summary of the stock assessment (ICES, 2023)

57 The ICES advice and stock assessment also provides estimates on the landings of nephrops from FU15 by country of vessel registration. This data is presented in Table 4.1 across a seven-year period from 2016 to 2022.

58 In total an average of 6,619 tonnes of nephrops are landed from FU15. The majority is taken by Northern Irish vessels (75.6%), followed by Irish vessels (23%), with other UK countries accounting for 1.3% (Table 4.1 and Figure 4.12).

59 Based on an average first sales price of €3,900 per tonne of nephrops (informed by the ICES VMS data), the total annual landings of nephrops from FU15 has an average first sales value of €25.8 million.

60 Based on the proportion of catch by country, this equates to a first sales value of €19.5 million landed by Northern Irish vessels and €6 million by Irish vessels from FU15.

61 While data has not been analysed on exactly the same time-series, based on VMS data for ICES rectangle 36E4 (average over 2015-2017) and the total landings data (from 2016-2022), approximately 62% of the nephrops landings from FU15 are taken from ICES rectangle 36E4. This emphasises the importance of ICES rectangle 36E4 with respect to the entire FU15.

Table 4.1: Estimates of nephrops landings from FU15 by country from 2016-2021 (Data source: ICES, 2023)

	Ireland	Northern Ireland	England and Wales	Scotland	Total
2016	1,609	5,638	52	25	7,324
2017	1,253	4,789	81	26	6,149
2018	1,387	4,293	69	7	5,756
2019	1,859	5,539	138	54	7,590
2020	1,555	4,550	4	6	6,115
2021	1,512	5,201	20	46	6,779
2022	1574	5116	40	10	6741
Average	**1,536**	**5,018**	**58**	**25**	**6,636**
% of catch	**23.14%**	**75.61%**	**0.87%**	**0.37%**	

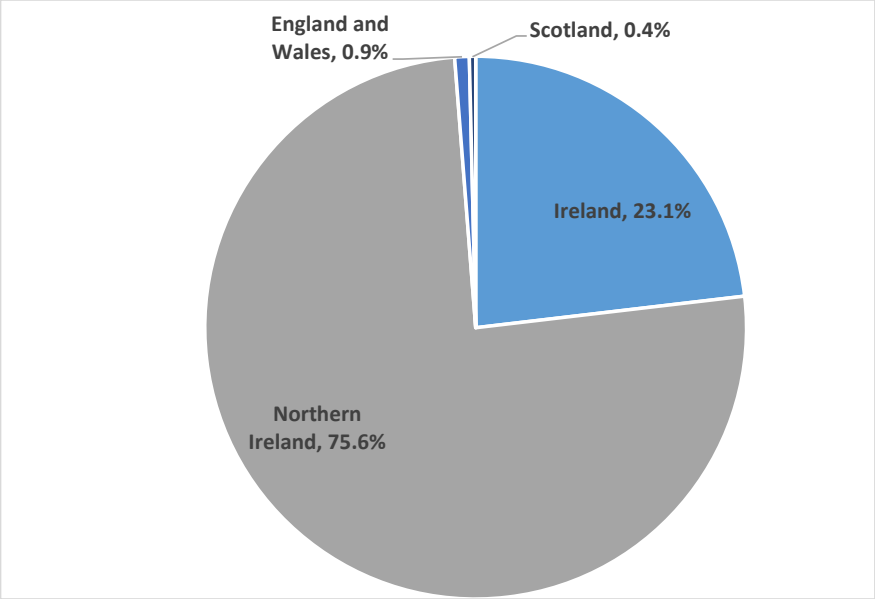


Figure 4.12: Average proportion of nephrops landed from Irish Sea West FU by country, based on five-year average (2016-2022) (Data source: ICES, 2023)

4.3 UK fisheries activity assessment

4.3.1 Landing statistics – by ICES rectangle

62 Data has been obtained from the UK MMO for landings of all species indicating the first sales value and landed weight from ICES rectangles 36E4 and 36E3 in 2021 (Figure 4.13). The data is provided for landings by vessels registered in the UK, including vessels of all lengths.

63 Key species landed by UK vessels from ICES rectangle 36E4 (which overlaps the array area) are nephrops and haddock, as well as cod, monkfish, sole and lesser spotted dogfish. In 2021, UK vessels landed £3.1 million of nephrops from 36E4. However, VMS data indicates that the majority of landings are taken from outside the Irish territorial waters (12 NM boundary) and therefore UK nephrops landings from 36E4 are not sourced from the grounds overlapping the offshore development area.

64 This is further evidenced by the recent legislation pertaining to the UK exit from the EU that prohibits UK vessels from operating within Irish territorial waters. However, this reciprocal access may be restored in the future.

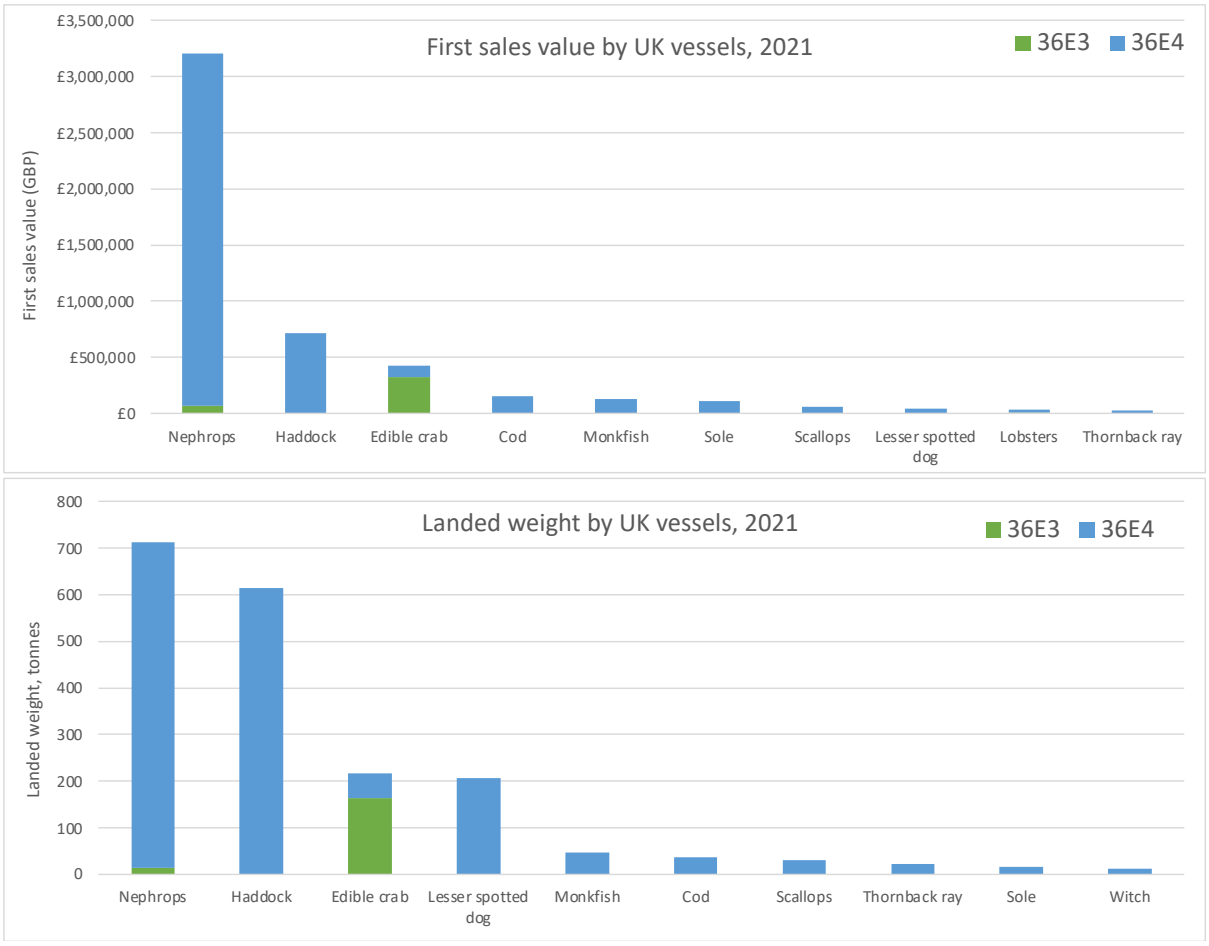


Figure 4.13: First sales value (top) and landed weight (bottom) of landings by UK vessels from ICES rectangles 36E4 and 36E3 indicating species in 2021 (Source: MMO, 2022)

65 For the regional study area, Figure 4.14 and Figure 4.15 indicate that the majority of landings are taken from ICES rectangles 36E4 (35%) and 37E4 (45%), noting that 36E4 overlaps with the offshore development area and 37E4 is outside and north of the offshore development area.

66 Landings from 36E4 show a significant drop from 2019 to 2020, and continue to drop from 2020 to 2021; this is likely to be due in part to restrictions on UK vessels fishing within the Irish EEZ, as a result of the UK exit from the EU.

67 Landing statistics indicate that within FU15, UK vessels land catch with an average first sales value of £16.4 million, based on a six year average (2016-2021). Of this £16.4 million, £5.8 million is from ICES rectangle 36E4.

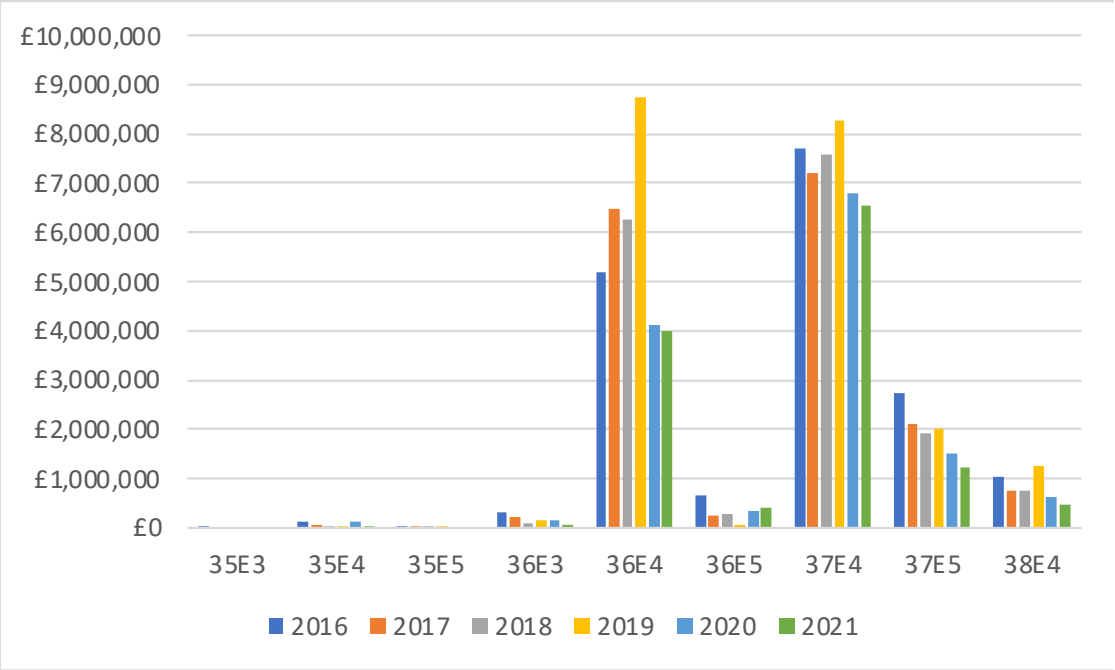


Figure 4.14: Annual first sales value of landings by UK demersal otter trawl vessels (all lengths) from FU15 by ICES rectangle (2016-2021) (Data source: MMO, 2022)

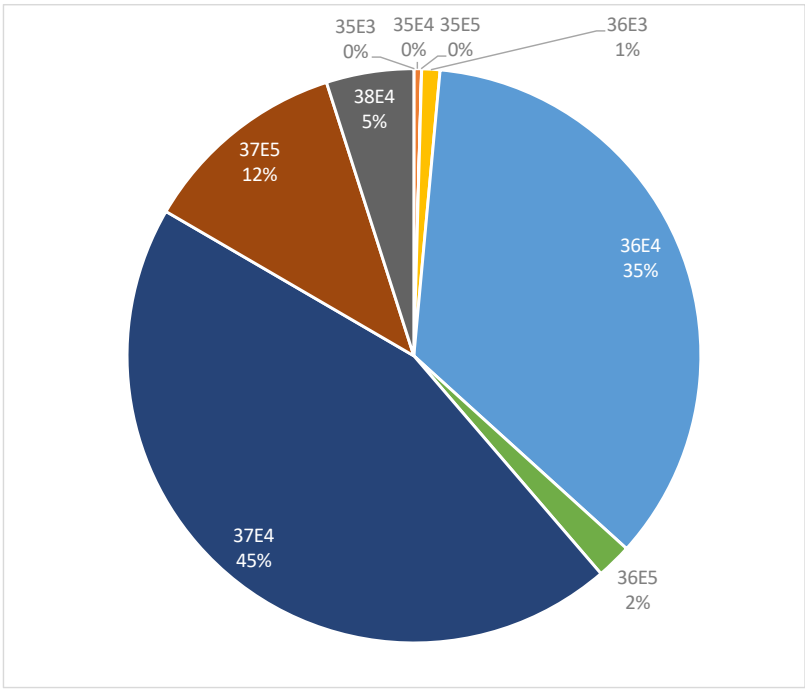


Figure 4.15: Average proportion of landings by UK demersal otter trawl vessels (all lengths) from FU15 by ICES rectangle, based on six-year average (2016-2021) (Data source: MMO, 2021)

68 Figure 4.16 presents the first sales value of landings by UK demersal otter trawling vessels from ICES rectangle 36E4 by estimated EEZ of capture. From 2021 onwards the landing statistics data is based on the reported zone for each EU and UK EEZ. Prior to 2021, the MMO estimated the EEZ of capture through spatial apportioning (MMO, 2023). Therefore care should be taken when interpreting the EEZ of capture prior to 2021.

69 A large drop in landings is noted from 2019 to 2020 and this is due to a decrease in landed value from both the UK and Irish EEZ. Landings in 2021 show a growth in landings from the UK EEZ, but a significant drop in landings from the Irish EEZ (from ICES rectangle 36E4).

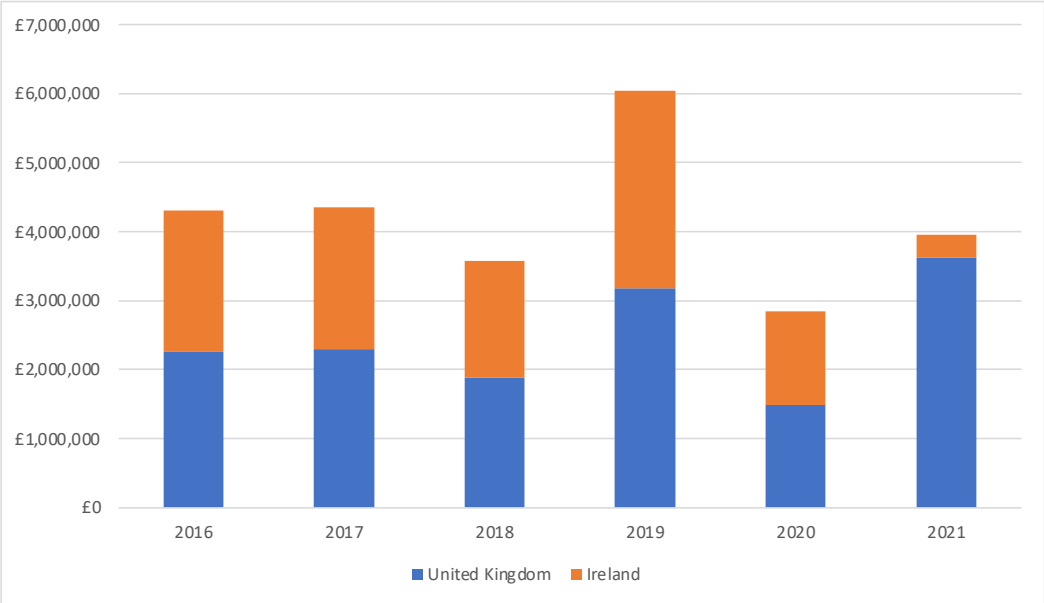


Figure 4.16: Annual first sales value of landings by UK demersal otter trawl vessels (all lengths) from 36E4 by EEZ of capture (2016-2021) (Data source: MMO, 2021)

70 Northern Irish vessels account for 99% of the UK landings, with the remainder taken by Scottish vessels Figure 4.17.

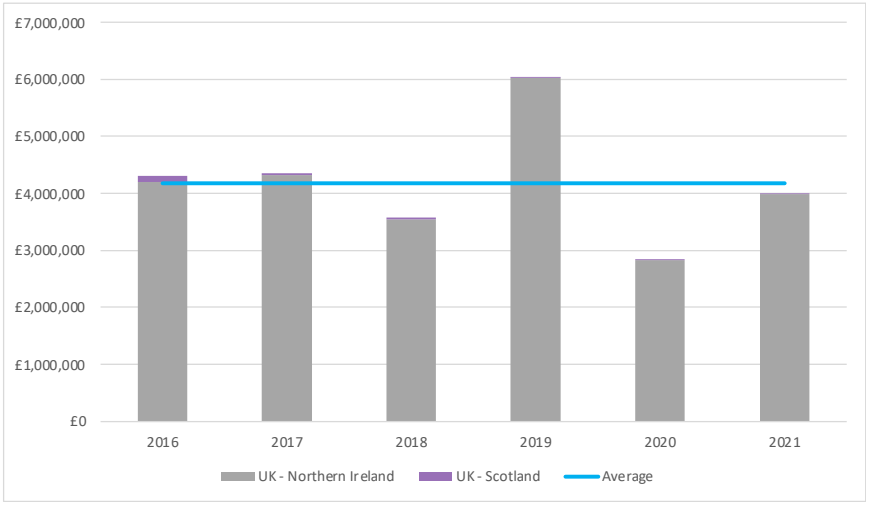


Figure 4.17: Average first sales value of landings by UK demersal otter trawl vessels (all lengths) from ICES rectangle 36E4 indicating vessel nationality (2016-2021) (Data source: MMO, 2022)

4.4 Key Fishing Fleets and Target Species

71 There are three descriptive units used for defining fisheries (Marchal, 2008):

- **Fishery** – a group of vessel voyages which target the same species or use the same gear;
- **Fleet** – a physical group of vessels sharing similar characteristics (e.g. nationality); and
- **Métier** – a homogenous subdivision, either of a fishery by vessel type or a fleet by voyage type.

72 A range of fleets target different fisheries across the local and regional study areas, as indicated by landings statistics for registered vessel nationality and gear type (Figure 4.18). Across the study area, the highest proportion of landings by weight are caught by vessels deploying demersal otter trawling gear, including single rig, twin-rigged and quad-rigged gear, as well as vessels operating mechanical and suction dredge gear and vessels deploying pots. Beam trawl, pelagic trawl and gill netting are also noted, to a lesser extent.

73 Vessel and gear types within the key fleets and fisheries that operate across the local and regional study areas are described within this section. The sequence is presented in no particular order, starting with mobile gear (demersal otter trawl, scallop dredge, suction dredge, beam trawl) and followed by static gear (potting, static netting).

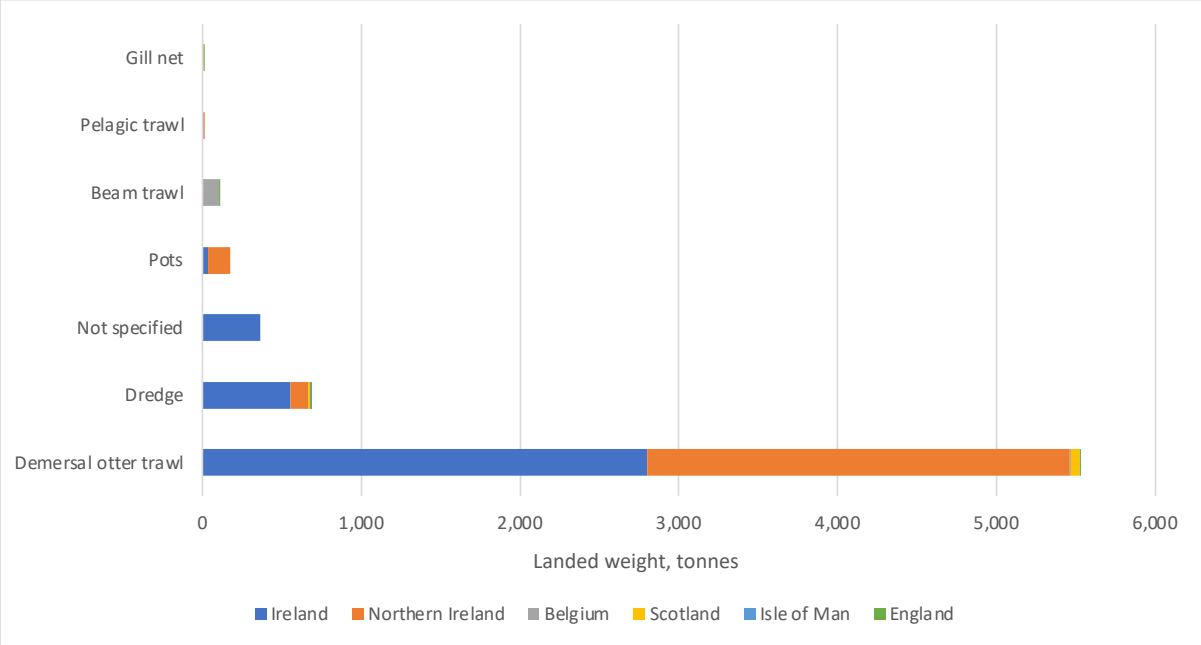


Figure 4.18 Annual average landed weight (2012 to 2016) by gear type and vessel origin for the local study area, 36E4 and 36E3 (Data source: EU DCF, 2022)

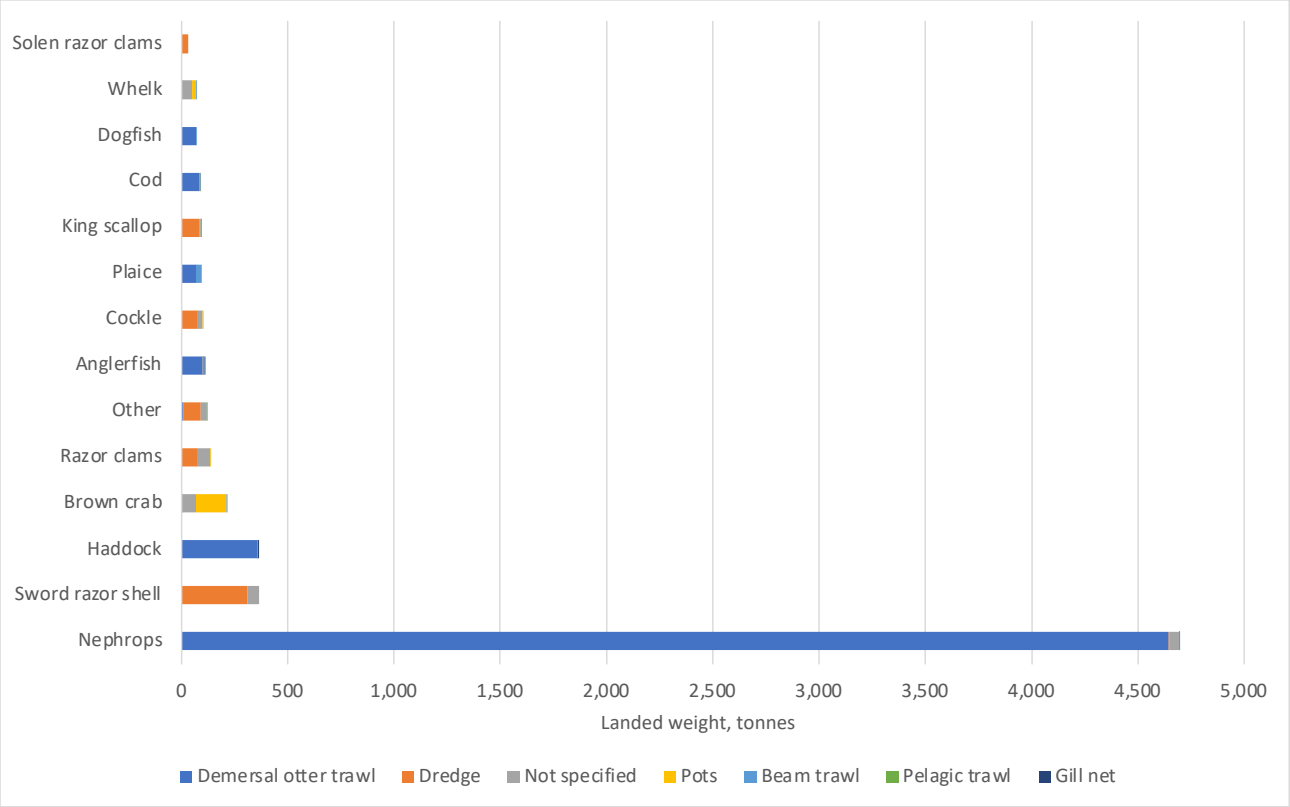


Figure 4.19 Annual average landed weight (2012 to 2016) by gear type and species for the local study area, 36E4 and 36E3 (Data source: EU DCF, 2022)

4.4.1 Demersal otter trawl

74 Otter trawling uses a cone-shaped net which is held open by water pressure on two otter boards. The net is towed either across the seabed (demersal otter trawl) or within the water column (pelagic otter trawl). Fish are herded between the boards into the mouth of the trawl and then forced along a funnel into the end of the net. Net mesh sizes can be altered to target different fish and shellfish species. Light otter trawling can be conducted by smaller boats using small doors. Demersal otter trawlers are highly active in the local study area targeting nephrops, also taking haddock, monkfish, cod, plaice, thornback ray, lesser spotted dogfish and other demersal species.

75 Nephrops trawlers from Ireland and Northern Ireland are active in the local study area. The prawn net used by these trawlers is a long winged low net with lightweight ground gear for towing over the soft, muddy areas where nephrops are found. Generally a traditional prawn net will have a headline height (the height of the trawl) in the region of 1 to 1.2 m. The net is designed to be very low to target the nephrops on the seabed and to minimise round fish bycatch that usually swim higher off the seabed. In some areas over time the traditional prawn net design has evolved to have longer wings to make the net more efficient for targeting bottom fish / a mixed fishery.

Table 4.2 Profile of typical otter trawl vessel active across the study area

Parameter	Indicative details
Main target species	Nephrops, haddock, monkfish, queen scallop
Nationality	Irish, Northern Irish and Manx
Vessel length	Under and over 10 m, majority of Nephrops trawlers over 10 m
Horsepower	50 hp to 300 hp
Typical towing speed	2 to 6 knots

Parameter	Indicative details
Typical duration of tow / dredge	1 to 2 hours, 2 to 4 hours for Nephrops
Seasonality of activity	Summer/autumn peak
Typical gear	Demersal otter trawl Two trawl doors hold the net open horizontally Various forms of ground gear depending on target species Nephrops trawl typically use multi-rig trawling, including twin-rigged and quad-rigged

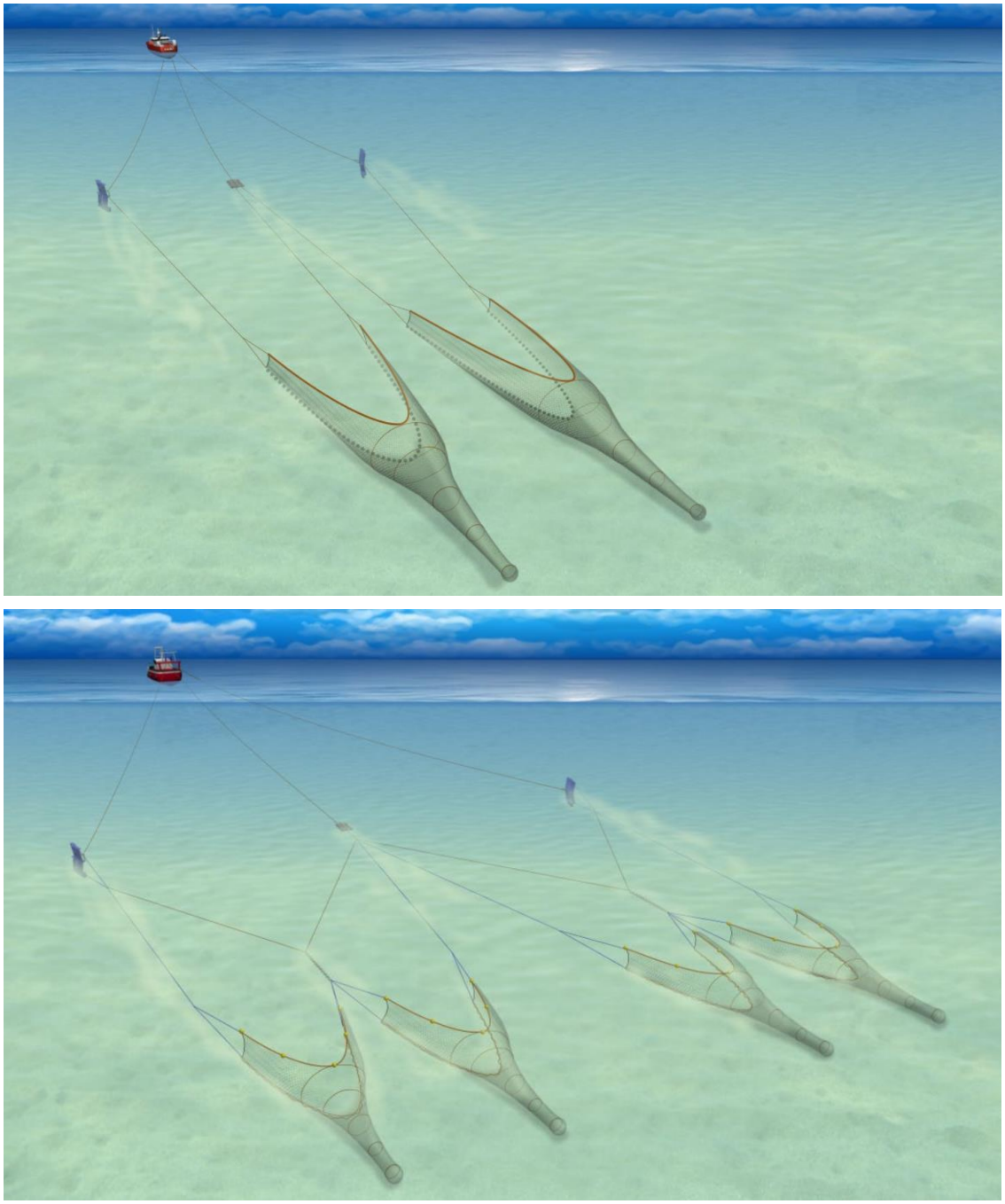


Figure 4.20 Typical otter trawl gear configuration for multi-rig trawling, indicating twin-rig trawling (top) and quad-rig trawling (bottom) (Source: Seafish, 2022)

Figure 4.21 Example of demersal otter trawling vessel (Source: BIM, 2023)

Key species caught by vessels operating demersal otter trawl

Nephrops

76 *Nephrops norvegicus* is a small lobster-like crustacean, pale orange in colour. It grows to a maximum total length of 25 cm (including the tail and clawed legs), although individuals are normally between 18 to 20 cm. Nephrops do not reach sexual maturity until 2 to 3 years. Life span in the Irish Sea is understood to be 8 to 9 years (NWIFCA, 2023).

77 They are found in soft sediment, commonly at depths of between 200 and 800 m, although considerable populations exist at depths <200 m (Hill and Sabatini, 2008). They live in shallow burrows and are common on grounds with fine cohesive mud which is stable enough to support their unlined burrows.

78 Nephrops stock assessments are conducted by ICES. The study area is located within FU15 (Irish Sea West) (Figure 4.5) (ICES, 2023). The density of nephrops in FU15 is considered to be high (~0.74 individual per m^2, in 2023) compared with other FUs (ICES, 2023). Stock abundance in FU15 was estimated to be 4,498 million individuals in 2021, which is significantly higher than the neighbouring FU 14 (Irish Sea East) which had a stock abundance of 393 million individuals in 2022. The Irish Sea West stock (FU15) is well above biological reference points and fishing pressure is relatively low, the stock is therefore considered to be harvested sustainably.

79 TACs are in place, but these are not specific to the stock in FU15. One TAC covers the whole of the Celtic Seas surrounding Ireland and southwest England (ICES Division 7a-j), encompassing eight different stocks. However, catches in Subarea 7 overall have been less than the TAC in recent years, as there has been a general decline in trawling fishing effort for nephrops. Total catches for FU15 have been somewhat below the advised limits, with total catches (landings plus discards) averaging approximately 70% of the advised limits between 2017 and 2021 (ICES, 2022).

80 There is a Minimum Conservation Reference Size (MCRS) of 20 mm for Irish and UK trawlers in the Irish Sea. The MCRS is the minimum size that a fish or shellfish individual specimen must be in order to be sold for human consumption (Marine Directorate, 2023). The EU Landing Obligation requires target species to be landed, and therefore prohibits the discarding of quota

species. For the nephrops trawl fishery in the Irish Sea, there is a de minimis exemption from the landing obligation consisting of a 6% discard rate by weight.

81 Two Fishery Improvement Projects (FIP) are operating relevant to the FU15: the Irish Prawn FIP (running until 2025) and Project UK (running until 2024). Both are looking to reduce bycatch and implement better management in their respective fleets.

82 Fishing activity typically increases through late spring and summer months, dropping in the late autumn and winter months.

Haddock

83 Haddock *Melanogrammus aeglefinus* are a demersal bottom feeding round fish that occur mainly in waters from 40–200m deep. Haddock matures at around 2–3 years of age and feed mainly on small bottom-living organisms including crustaceans, molluscs, echinoderms, worms and fishes.

84 In the Irish Sea, haddock are principally caught as part of a mixed fishery with cod and whiting (equating to 66% of landings of haddock), but are also taken as bycatch in the nephrops trawl fishery (equating to 8% of landings of haddock). The spawning stock biomass of haddock is currently well above biological limits and fishing pressure is low; indicating that the species is currently harvested sustainably.

85 Landings occur throughout the year and on average peak during autumn. Ireland had a 43% share of the Irish Sea (Division 7a) EU TAC in 2022. Landings of haddock from the Irish Sea by Irish vessels are mainly taken as part of a targeted fishery, with 70% of haddock landings coming from trips where haddock was the dominant species landed. The majority of these trips are in the south of Division 7a in ICES rectangles 33E2 and 33E3 (Marine Institute, 2020).

Anglerfish / monkfish

86 There are two closely related species of anglerfish; white anglerfish *Lophius piscatorius* and black anglerfish *L. budegassa*. White anglerfish occur throughout the North-East Atlantic and are more abundant than black anglerfish in northern areas. It is a very distinctive fish, recognizable by having its head and body depressed, a wide mouth, broad head and a fleshy 'lure' at the end of its first dorsal spine, which is used to attract prey. They can live up to 24 years and reach 200 cm in length, reaching maturity at 4-5 years at a length of 35 cm (Landa *et al.,* 2001).

87 Both species are most abundant from 200-500 m, with white anglerfish also occurring down to 800 m (the maximum depth in the Irish Sea is 315 m). It is found mostly on sandy or muddy bottoms but is also present on shell, gravel and occasionally rocky areas.

88 A minimum marketing weight is in place (EC 2406/96) of 500 g gutted or 200 g tail per individual. A single TAC applies to both species of anglerfish as they are often not separated in the landings. Ireland had a 7.1% share of the ICES area 7a-j EU TAC in 2024

89 Anglerfish are a highly valuable demersal fish species, caught almost exclusively by demersal otter trawls. Catches in the Irish Sea are relatively lower, compared to the Celtic Seas and West of Ireland.

Cod

90 Atlantic cod *Gadus morhua* is a demersal species, distributed across the continental shelves and in the coastal waters of the northern North Atlantic. Cod prefers water temperatures from 2°C to 8°C and water depth from 10 m to 200 m. Within its geographical range cod is a generalist, both in terms of habitat use and diet.

91 Cod around Ireland are very fast growing, reaching at least 35 cm in the first year and over 90 cm as adults. They can live up to 25 years and occasionally grow to lengths of 200 cm, reaching maturity at 2-3 years at a length of 41 cm.

92 A TAC is set for cod in the Irish Sea exclusively for by-catches, with no directed fishery permitted due to the state of the stock. Ireland had a 50% share of the Irish Sea (7a) EU TAC in 2024.

93 The majority of landings by the Irish fleet are from the Celtic Sea, with a small patch of activity within the west Irish Sea. Landings of cod are associated mainly with the nephrops targeted fishery.

Lesser spotted dogfish

94 *Scyliorhinus canicular* is a small shark has a slender shark-shaped body with a blunt head, rounded snout and small dorsal fin. The species is known by several names including lesser spotted dogfish, small spotted catshark, rough hound, rock salmon, small spotted dog fish and sandy dog. Lesser spotted dogfish are bottom-living sharks that occur in depths of 3 m to 400 m but are usually found no deeper than 100 m on sandy, gravelly or muddy seabeds. Lesser spotted dogfish grow to a maximum length of 85 cm in the British Isles and Irish Sea. Maximum age has been estimated at 20 years.

95 Information on the status of the stock is limited but there is currently no concern over fishing pressure.

96 Lesser spotted dogfish are typically not part of a targeted fishery, but taken as bycatch in trawl fisheries. They are often returned to the sea because of their low market value but those that are landed are utilised as bait for pot fisheries.

4.4.2 Scallop dredge

97 Dredges are rigid structures that are towed along the seabed to target various species of shellfish. A typical scallop dredging vessel is shown in Figure 4.22 and Table 4.3 describes the profile of scallop dredging vessels active across the study area.

98 Scallop dredgers fish as the tooth bar of each dredge rakes through the sediment lifting out scallops and the spring-loaded tooth bar swings back, allowing the dredge to clear obstacles on the seabed. The dredges are held in a series on two beams, which are fished on each side of the vessel. Generally, queen scallop is targeted using skid dredges. Skid dredges operate in much the same way as toothed dredges which target king scallop, but the tooth bar is replaced with a “tickler chain” which disturb queen scallops resting on the seafloor, causing them to swim upwards into the water column where they can be caught by the dredge.

99 Scallop dredgers operate around the entire coastline of Ireland. Scallop dredging takes place year-round. The Irish scallop fleet has two main components: a fleet of larger boats (> 20 m in length) which range in a nomadic fashion exploiting both inshore and offshore scallop stocks around Ireland; and smaller inshore boats (< 15 m in length) that are restricted in range to inshore waters. Larger nomadic vessels tend to fish intensely in an area until harvesting scallops becomes unprofitable. They will then move on to new areas but will return a number of years later when the scallop stocks have returned to a level where dredging for them has once again become viable. Due to this fishing pattern a large scallop dredger may operate in 4 or 5, or even more, areas and rotate around them over a period of several years. In this way, most of the suitable grounds around the Irish Sea are fished. At the other end of the spectrum are the smaller, inshore vessels, including some who will only fish for scallops on a part time basis, and others who rely on scallops for the majority of their income. These vessels are restricted, primarily by their size, in the areas and weather that they can fish meaning that they are likely to dredge for scallops only in their local area. The catching capacity of these vessels is significantly lower than the large vessels due to the lower number of dredges they can tow. In addition to the Irish fleet, visiting vessels from Scotland, England and Northern Ireland periodically fish scallop grounds in the Irish Sea.

100 Scallop dredging is an activity which is generally engaged by larger (>10 m vessel length) vessels due to the engine capacity required to tow this heavy fishing gear.

101 Not all scallops in the path of the dredge are retained by the dredges and efficiency of the dredge can vary between <10 % on soft ground to 51 % on hard ground. Dredge efficiency is affected by ground type (e.g. soft sand, gravel or cobble), towing speed, warp length, tide strength and direction and the experience of the skipper.

Table 4.3 Profile of typical dredging vessels active across the study area

Parameter	Indicative details
Main target species	King scallop and queen scallop
Nationality	Irish, UK and Manx.

Parameter	Indicative details
Vessel length	10 m to 25 m
Horsepower	200 hp to 400 hp
Typical speed when shooting and hauling gear	2 to 6 knots
Typical duration of tow / dredge	1 to 2 hours
Seasonality of activity	King scallop targeted primarily in winter months (November to February) Queen scallop targeted year-round with spring/summer peak, noting current seasonal Irish Sea closure April to June
Typical gear	Up to 16 dredges per side of vessel. Each dredge consists of a triangular frame leading to an opening, a tooth bar with spring-loaded teeth, and a bag of steel rings and netting back.

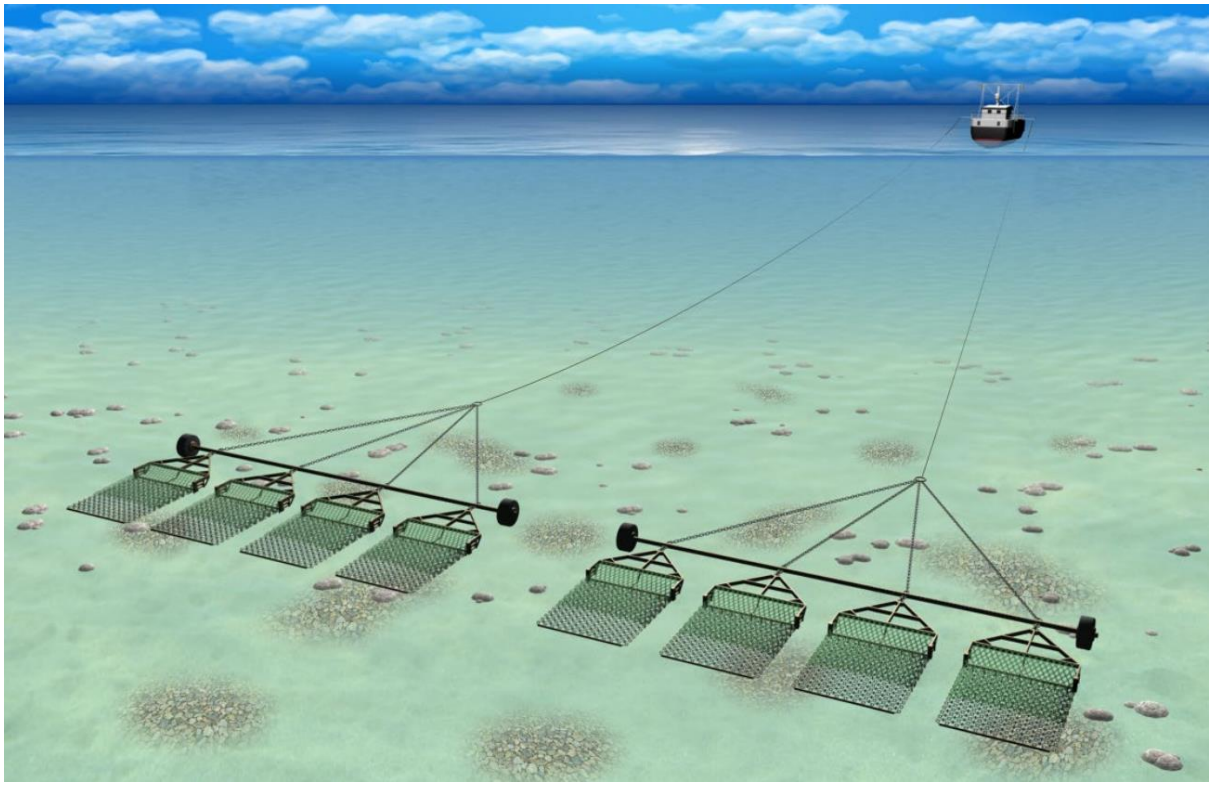


Figure 4.22 Typical dredge gear configuration (Source: Seafish, 2022)

Figure 4.23 Example of dredge vessel (Source: Fishing News)

Key species caught by vessels operating scallop dredge

King scallop

102 King scallop *Pecten maximus* are most common in water depths of 20 m to 70 m, in areas of clean firm sand and fine gravel exposed to water currents, which provide good feeding conditions for this bivalve mollusc. Adults are largely sedentary and usually found recessed in sediment. King scallop live to 10 to 15 years and reach reproductive maturity between 3 to 5 years, at a size of 60 mm; the average maximum size is 160 mm. Recruitment is usually unpredictable as it depends not only on successful spawning and larval production but also on retention of larvae or transport of larvae into areas suitable for settlement. Larvae are pelagic with settlement in a particular area somewhat unpredictable leading to an unstable age structure within stocks. As a consequence of this, scallop beds frequently show a regional separation of year classes and spatial variability in age structure.

103 There is no analytical assessment of king scallop stock status in this area. However, several administrations have responsibilities for this area and dredge surveys within the Irish Sea have been undertaken by Ireland, the Isle of Man and Wales.

104 There are no TAC or quotas in place for this species; instead, Irish scallop fisheries are controlled predominantly through the use of minimum legal landing sizes, gear restrictions, seasonal closures and some effort controls on the largest boats. An EU MCRS exists of 110 mm in the south Irish Sea and there is a cap on the level of effort (kWdays) that vessels ≥15 m can utilise in ICES area 7 by the Western Waters agreement (EC 1415/2004).

105 Landings of king scallop from the study area typically peak from winter through to late spring.

Queen scallop

106 Queen scallop *Aequipecten opercularis* is found down to depths of 100 m, on sand or gravel habitats. It is fished commercially in the Irish Sea, with particularly important commercial grounds around the Isle of Man. It can grow up to 90 mm in diameter. Queen scallop are targeted with demersal otter trawl by Manx vessels and by scallop dredge by UK and Irish vessels.

107 Queen scallop differ from king scallop in that they are smaller, and both shells (valves) are curved (convex), whereas for the king scallop the lower valve on which it lies is deeply convex and the upper valve is almost flat (Carter, 2008).

108 Most information available about the stock status of queen scallops in the Irish Sea is from research and stock assessments from Isle of Man territorial waters. The Isle of Man queen scallop stock could be an indicator of scallop stock status in the rest of the Irish Sea. Isle of Man queen scallop stock peaked at around 25,000 tonnes in 2010, and subsequently declined to around 1,200 tonnes in 2019, the lowest on record. Estimated biomass in 2021 is 2,004 tonnes: an improvement but still below the long term average. Therefore, there remains concern for the status of the stock. There are few management measures in place for Irish Sea queen scallop fisheries outside of territorial waters; an MCRS of 45 mm is in place for queen scallop; however, it is generally uneconomic to process queen scallops less than 55 mm. The queen scallop fishery in the Irish Sea is currently subject to closure between April and June each year (MMO, 2018). A TAC is in place within Isle of man Territorial Waters, but there are no queen scallop TACs elsewhere in Division 7a.

109 In general, landings of queen scallop are more variable and less valuable than king scallops. Queen scallop landings trends tend to have a cyclical nature with peaks and troughs on a 7 to 9 year cycle.

Key species caught by vessels operating hydraulic dredge

Razor shell

110 Razor shell *Ensis ensis, E. magnus* and *E. siliqua* (also known as sword razor shell) are bivalve molluscs that live in vertical burrows in fine sand and muddy habitats, from extreme low water down to 60 m depth.

111 The fishery operates in water depths of 4-14 m and is limited in depth due to the fishing method which uses hydraulically pressurised water to fluidise sediments in front of the hydraulic dredge (Marine Institute and BIM, 2020). The fishery therefore occurs in coastal shallow sub-tidal waters.

112 The fishery is managed by a weekly vessel TAC, a MCRS (125 mm), a prohibition of landing on Sundays and a voluntary closed season for the month of June (during spawning).

Key species caught by vessels operating mussel dredge

Mussel

113 Blue mussel *Mytilus edulis* is a sessile bivalve attached to the substratum by a byssus. Mussels can withstand wide variation in salinity, desiccation, temperature and oxygen concentration, resulting in the ability to occupy a large variety of microhabitats. Mussels can be found on any substratum providing a secure anchorage such as rocks, stones, gravel, shingle, dead shells, and even mud and sand. In soft bottom areas the mussels form stabilised mussel beds of interconnected mussels and dead shells. Mussels live to 5 years and recruit to the fishery age 0. Spawning occurs in early summer, with a pelagic larval dispersal phase (Marine Institute, 2017). Settlement of seed varies annually.

114 The mussel fishery targets seed, which are re-laid for on growing of bottom cultured mussel in aquaculture licence areas. The mussel beds targeted by Irish vessels are considered ephemeral, and therefore harvest rates can by up to 100% of a mussel bed, as seed is not required to be maintained for reproductive capacity (Marine Institute, 2017). An ephemeral mussel bed occurs when mussel seed settles, but after a short period of time, is dispersed due to hydrographic or storm conditions, and therefore the aim of the fishery is to harvest the seed before it is lost.

115 A fishing vessel requires authorisation to harvest mussel seed and a quota is allocated on an individual vessel basis. Vessels are typically over 18 m in length, using dredges to harvest the mussel seed during autumn months for onward growing in specified aquaculture licenced areas. The mussel seed authorisation and quota is allocated to specific Irish vessels, and is not managed as an internationally shared stock.

4.4.3 Beam Trawl

116 Beam trawl nets are held open by a heavy steel beam which is towed along the seabed on a line approximately three times the depth of the water. Some beam trawls include tickler chains,

which drag along the seabed in front of the net, disturbing fish in its path and encouraging them to rise into the net. Beam trawls can range in length from 4 m to 14 m and each trawler tows two beam trawls at a time from derricks on either side of the vessel.

Table 4.4 Profile of typical beam trawl vessel active across the study area

Parameter	Indicative details
Main target species	Sole, plaice, thornback ray
Nationality	Irish, Belgian
Vessel length	15 m to 45 m
Horsepower	500 hp to 2,000 hp
Typical towing speed	3.5 to 8 knots
Typical duration of tow / dredge	1 to 2 hours
Seasonality of activity	Peak activity in spring months
Typical gear	Twin beam, occasionally single beams; beam length up to 12 m Each beam weighing <10 tonnes. Chain matting or individual chains attached to underside.

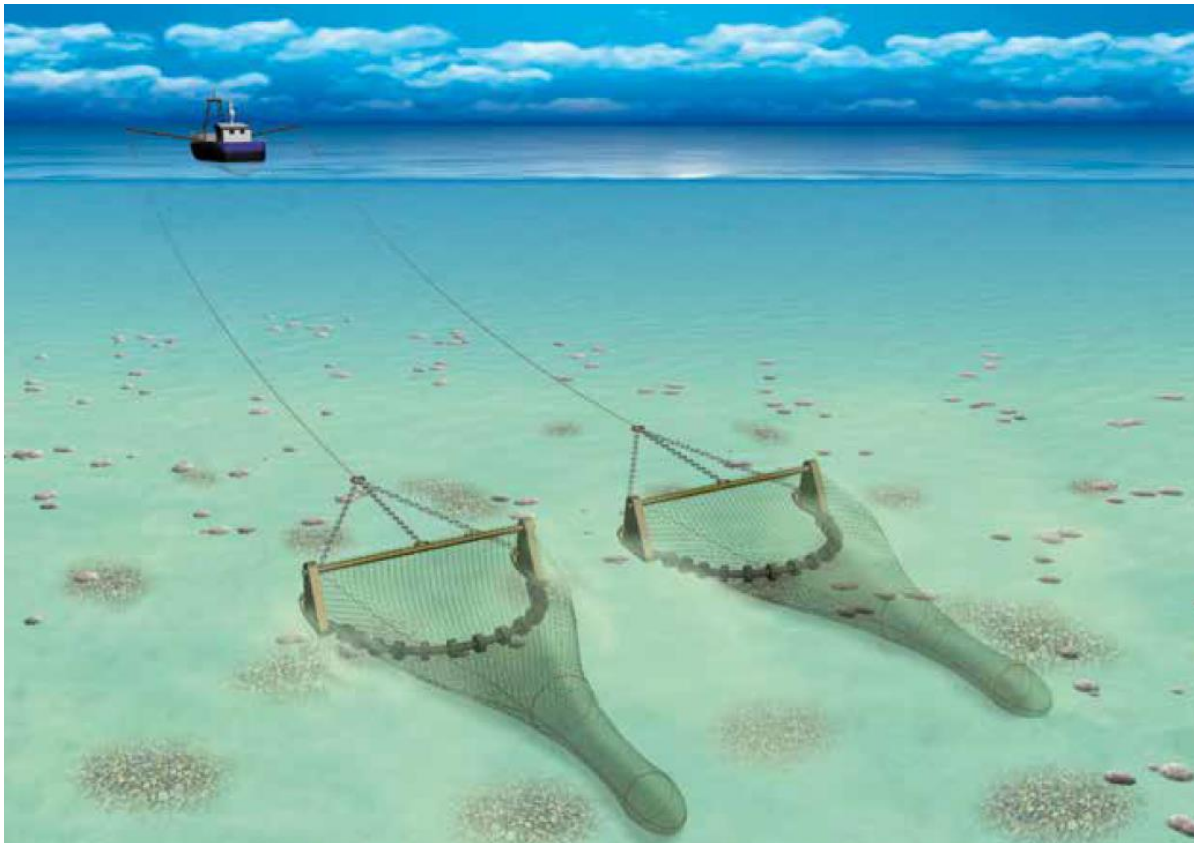


Figure 4.24 Typical beam trawl gear configuration (Source: Seafish, 2015)

Key species caught by vessels operating beam trawl

Plaice

117 Plaice *Pleuronectes platessa* is a bottom-dwelling flatfish. It spawns in the early months of the year (January to March) and sometimes makes long spawning migrations. They grow to around

50 cm to 60 cm in length but have been recorded up to 90 cm. Plaice are most commonly found on sandy bottoms but can live on gravel or mud. They are active at night and remain stationary during the day, usually buried within the sediment leaving only the eyes protruding. They have been recorded from between 0 and 200 m depth, but are mostly between 10 m and 50 m.

118 The Irish Sea plaice stock is in a very healthy state and fishing pressure is low (ICES, 2022), although the amount of fish discarded at sea is high. This stock is covered by the EU's Western Waters Multiannual Plan (MAP), in which it is considered bycatch. The TAC in recent years have been set in line with advice, and catches are usually below TACs, owing to limited market demand.

119 In the regional study area, plaice are taken year-round with landings peaking in summer months. Across the period 2016 to 2020, landings of plaice from the study area averaged ~ 9 tonnes annually.

Sole

120 Sole *Solea solea* is a flatfish and belongs to the family of flatfishes known as Soleidae. It spawns in spring and early summer in shallow coastal water, from April to June in the southern North Sea and from May to June off the coast of Ireland and southern England. The larvae remain in shallow inshore nursery areas such as estuaries, tidal inlets and shallow sandy bays, moving to join the spawning adult population at 2 to 3 years old. Adults are usually found at a depth range of between 10 m and 60 m; in winter adults move further offshore and can reach depths of up to 120 m. The juveniles can undertake extensive migrations, although once they reach maturity, will only carry out seasonal migrations from deeper water to shallower spawning habitat. They can reach 70 cm in length but are commonly between 30 cm and 40 cm.

121 Catches of sole have declined since the mid-1990s. After a record low spawning stock biomass in 2014, the latest ICES stock assessment observes that spawning stock biomass is estimated to be above the maximum sustainable yield trigger point (ICES, 2022b). Sole is subject to a TAC (set at 40 tonnes annually in the Irish Sea from 2016 to 2018, increasing more recently to 768 tonnes in 2021) and technical measures are applicable to the mixed demersal beam-trawl fishery (relevant to both sole and plaice), namely a minimum mesh size of 80 mm. A MCRS of 24 cm is in place.

122 Sole is caught in a mixed fishery with other flatfish as well as gadoids. In the regional study area, they are targeted using nets and demersal otter trawls, with landings peaking in summer months. Across the period between 2016 and 2020, landings of sole were less than 1 tonne per year between 2016 and 2018 reflecting the low TAC, increasing to 22 tonnes in 2020.

4.4.4 Pelagic trawl

123 Figure 4.25 shows a typical pelagic trawler and associated gear and Table 4.5 describes the profile of pelagic trawling vessels active across the wider Irish Sea.

124 Pelagic trawling is a method of towing a trawl in mid-water i.e. at any point in the water column between the surface and seabed. It is, generally, used to target shoaling species such as sprat and herring.

125 All classes of trawler can use pelagic trawls. From 10 m inshore vessels targeting shoals of pelagic fish in shallow water, up to the specialist pelagic vessels, over 40 m long.

126 Within the regional study area, landings data indicates that pelagic trawling is primarily undertaken by Irish registered vessels.

Table 4.5 Profile of typical pelagic trawl vessel active across the study area

Parameter	Indicative details
Main target species	Sprat, herring
Nationality	Irish
Vessel length	Up to 50 m

Parameter	Indicative details
Horsepower	500 hp to 1,200 hp
Typical towing speed	2 to 5 knots
Typical duration of tow	1-2 hours
Seasonality of activity	Peak activity in spring months
Typical gear	Pair or single trawls Net depth changed by altering either warp (rope) length or towing speed

Figure 4.25 Typical pelagic trawling vessel and gear configuration (Source: Poseidon; and Seafish, 2015)

Key species caught by vessels operating pelagic trawl

Sprat

127 Sprat *Sprattus sprattus* is a pelagic schooling fish usually found in inshore waters, sometimes entering estuaries. It can also be found down to depths of 150 m. Sprat is short-lived, with a maximum age of 6 and average age at maturity of 1-2 years. Catches are therefore dominated by young fish.

128 Sprat show strong migrations between winter feeding and summer spawning grounds. They also undertake vertical migrations, moving to the surface at night.

129 Sprat stock size is mostly driven by the recruiting year class and therefore annual catches of sprat is highly variable, meaning that fisheries targeting this species must be highly adaptive to change. There is no TAC for sprat in Irish waters, with main management being technical gear restrictions with mesh sizes of 16 mm and above when sprat is the target species.

130 On average, 25 Irish vessels over 10m in length participate in the sprat fishery annually. The majority of the catch is taken in ICES area 7j, as well as 7a, in an area off Dunmore East (Marine Institute, 2020), as depicted in Figure 4.26.

131 While this is a seasonal fishery, fishers are requested (by the Minister) to avoid fishing for sprat in the Dunmore Box during September to March, to avoid bycatch of Celtic Sea herring. Dunmore East and the Dunmore Box are located in the very south west of the Irish Sea, adjacent to Kilmore Quay and County Wexford.

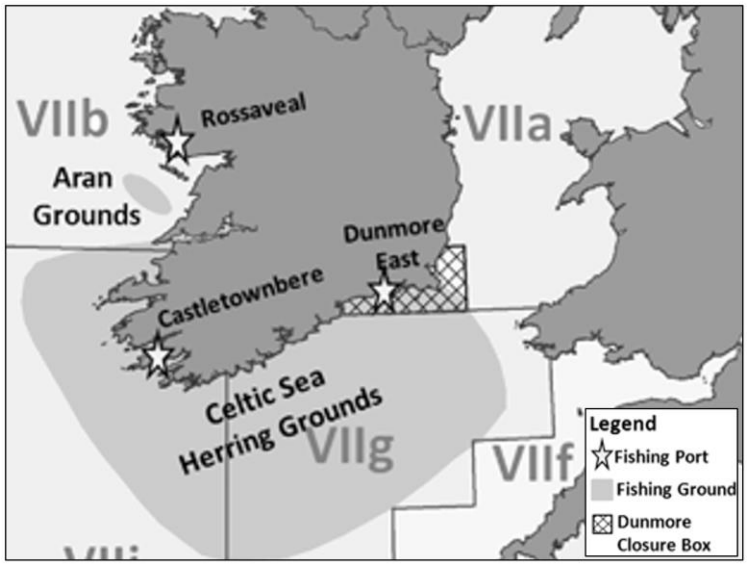


Figure 4.26 Location of Dunmore Box and Dunmore East (Source: Fitzpatrick, 2014)

Herring

132 Herring *Clupea harengus* is a pelagic species widely distributed throughout the North-East Atlantic. Herring spawn in coastal waters in areas where the substrate consists of gravel and small stones. The eggs are attached to the substrate and hatch after about three weeks depending on temperature. The requirement for a gravel substrate means that the spawning grounds are relatively small and well defined.

Herring in the Irish Sea is considered to be at full reproductive capacity and harvested sustainably (ICES, 2020). A TAC is set for herring in the Irish Sea annually and there is an EU MCRS of 20 cm.

4.4.5 Pots and Traps

133 Figure 4.28 and Figure 4.27 show typical potting vessels, gear and the configuration of set pots and Table 4.6 describes the profile of potting vessels active across the study area.

134 For the capture of whelks, modified, weighted 25 litre plastic drum purpose designed pots are often used. Pots are typically rigged in ‘fleets’ or ‘strings’ of between 15 to 60 pots, depending upon vessel size and area fished. Hundreds of pots can be deployed across a fishing location. Lengths of fleets may range from 100 m to over 1 mile, anchored at each end with anchors or chain clump weights. A variety of surface markers are used, including flagged dhans, buoys and cans. Soak times, the time between emptying and re-baiting the pots, can vary between six and 72 hours, but would typically be 24 hours. All pots are worked on a rotational basis; after hauling and emptying, pots are baited and re-set. Bait for the whelk fishery is often crab or dogfish. Large vessels, ‘super whelkers’, fish year-round offshore.

135 Creels are used for the capture of lobsters and crabs, and set in a similar configuration as described for whelk pots. Creel design is typically D shaped in section and made from steel rods covered in netting and protected or “bumpered” with rope or rubber strips. The number of pots fished in a location can range from 20 through to hundreds and soak times are typically between 24 and 168 hours. Pots are usually deployed in fleets of 10 to 60 on rocky substrate, though may less frequently be found on other softer substrates.

136 Larger potters working further offshore make fishing trips lasting around two days. Smaller potters under 10 m in length operate as day boats, returning to port after hauling, emptying, baiting and re-setting fleets of pots. Potting vessels may target a single or multiple shellfish species.

Table 4.6 Profile of typical potting vessels active across the study area

Parameter	Indicative details
Main target species	Whelk, brown crab, lobster
Nationality	Irish
Vessel length	Over 10 m (primarily whelk) and under 10 m
Horsepower	60 hp to 350 hp
Typical speed when shooting and hauling gear	0 to 9 knots
Typical soak time	1 to 2 days
Seasonality of activity	Whelk landings peak through summer and spring. Brown crab landings peak through late autumn and winter. Lobster landings peak in summer months and in December.
Typical gear	Fleets of baited pots placed on the seabed. Pots typically hauled daily but may be left a number of days. Generally, day boats that return to port daily.

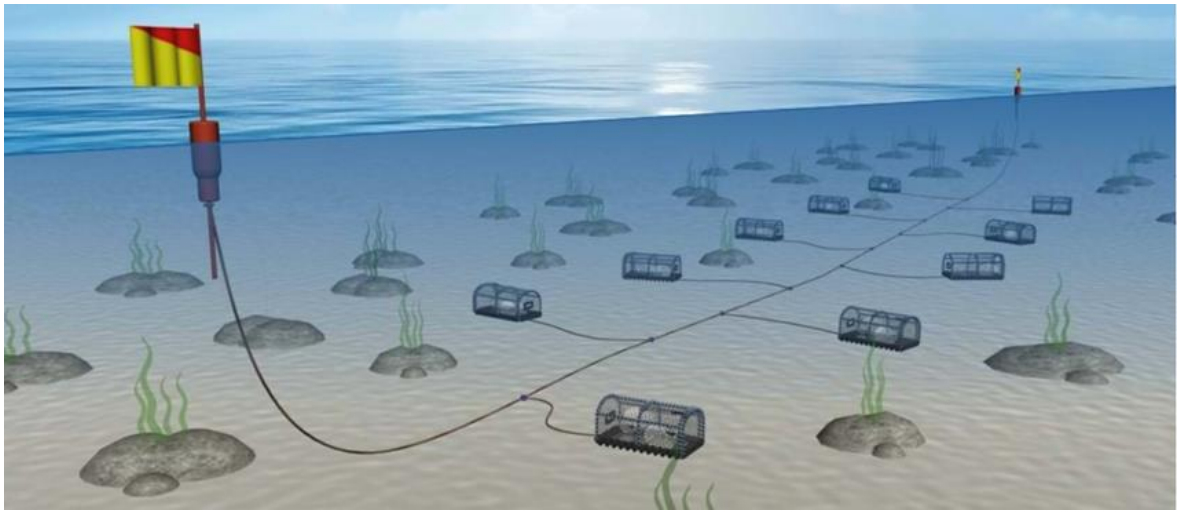


Figure 4.27 Typical potting gear configuration (Source: Seafish, 2015)

Figure 4.28 Example of potting vessels (Source: The Bosun's Watch; Poseidon)

Key species caught by vessels operating potting gear

Whelk

137 Common whelk *Buccinum undatum* is a gastropod mollusc that inhabits mixed sediment from the low water mark down to 1,200 m, being most common in water depths between 0 and 50 m. Whelk reach reproductive maturity at different sizes depending on their geographical location and environmental conditions. Whelks grow to 150 mm and live for up to 15 years, reaching maturity at 2 to 3 years. European populations are understood to breed from autumn to winter (Kideys et al., 1993). Eggs are fertilised internally and laid on hard benthic substrata, with juveniles emerging after approximately 3 to 5 months. The life cycle therefore has no pelagic phase, leading to limited dispersal between populations.

138 Whelk fisheries have typically been expanding on the east coast of Ireland in recent years as prices have increased and export to non-EU countries has grown.

139 Whelk are caught using plastic pots, which may be deployed by the same potting vessels that target crab and lobster. Whelk are cleaned and exported to Korea, Taiwan, Singapore and Europe in a variety of product types, including cooked whole in-shell or meat only, in fresh or frozen forms. The fishery is very dependent on market conditions and prices. Whelk landed by Irish vessels are processed in Ireland at three main processing companies.

140 No TAC or quotas are in place for whelk. A size limit of 50 mm length was introduced in 1994 (current regulation is S.I. No. 237/2006), which is based on the specified dimension of maximum shell width of 25 mm, which is approximately half the total length. This compares to an EU MCRS of 45 mm for whelk. Based on size at maturity (70-85 mm) being higher than MCRS (50 mm), there is a high chance of juveniles being removed before they can contribute to the spawning stock, which leads to potential for increased risk of recruitment overfishing (Skerritt and Durrance, 2018).

141 Whelk landings from the study area indicate a seasonal peak across spring and summer months, though they are landed year-round.

Brown crab

142 Brown crab *Cancer pagurus* is a long-lived, large decapod crustacean. Brown crabs are very productive animals, and each female can hatch between 1 and 4 million eggs. Post larvae are known to settle inshore and juvenile crabs are more common in shallow waters. Adult crabs undertake extensive migrations, which may be associated with their reproductive cycle. Brown crab is found across a wide range of habitat types, ranging from rocky reefs to soft mud and sand.

143 As with lobster, brown crab is caught by pots and have no TACs or quotas in place. Primary management is by the technical measure of an MCRS of 140 mm carapace width inside 6 NM and 130 mm outside 6 NM (Council Regulation 850/98).

144 Fishing activity typically increases through late summer months, peaking in autumn and winter in the study area.

Lobster

145 Lobster *Homarus gammarus* is a long-lived decapod crustacean. Lobster breed once per year in the summer and newly berried females begin to appear from September to December. Lobsters do not undertake any significant migrations and juveniles in the first three to four years of life may be particularly sedentary. From hatching it takes approximately five years for a lobster to recruit to the fishery. Lobsters typically inhabit rocky reef and rough ground, sheltering in crevices between rocks and boulders. The availability of suitable habitat is considered to influence the carrying capacity and size structure of lobster populations (Seitz et al., 2014).

146 There are no TACs or quotas in place for lobster. Primary management is by the technical measure of an MLS of 87 mm (Council Regulation 850/98).

147 Lobster is one of the highest value per kilogram, commercially exploited shellfish species found in Irish waters. Fishing activity typically peaks across summer months in the study area, with a second peak in December associated with supplying the Christmas-time market.

5. Future Baseline Environment

148 Commercial fisheries patterns change and fluctuate based on a range of natural and management-controlled factors. This includes the following:

- Market demand: commercial fishing fleets respond to market demand, which is impacted by a range of factors, including the 2020 to 2021 COVID pandemic;
- Market prices: commercial fishing fleets respond to market prices by focusing effort on higher value target species when prices are high and markets in demand;
- Stock abundance: fluctuation in the biomass of individual species stocks in response to status of the stock, recruitment, natural disturbances (e.g. due to storms, sea temperature etc.), changes in fishing pressure etc.;
- Fisheries management: including new management for specific species where overexploitation has been identified, or changes in TACs leading to the relocation of effort, and/or an overall increase/decrease of effort and catches from specific areas;
- Environmental management: including the potential restriction of certain fisheries within protected areas;
- Improved efficiency and gear technology: with fishing fleets constantly evolving to reduce operational costs e.g. by moving from beam trawl to demersal seine; and
- Sustainability: with seafood buyers more frequently requesting certification of the sustainably of fish and shellfish products, such as the Marine Stewardship Council certification, industry is adapting to improve fisheries management and wider environmental impacts.

149 The variations and trends in commercial fisheries activity are an important aspect of the baseline assessment and forms the principal reason for considering up to five years of key baseline data. Given the time periods assessed, the future baseline scenario would typically be reflected within the current baseline assessment undertaken. However, in this case, existing baseline data do not capture any potential changes in commercial fisheries activity resulting from the withdrawal of the UK from the EU.

150 Following withdrawal, the UK and the EU have agreed to a Trade and Cooperation Agreement (TCA), applicable on a provisional basis from 1 January 2021. The TCA sets out fisheries rights and confirms that from 1 January 2021 and during a transition period until 30 June 2026, UK and EU vessels will continue to access respective EEZs, (12 to 200 NM) to fish. In this period, EU vessels will also be able to fish in specified parts of UK waters between 6 to 12 NM.

151 25% of the EU's fisheries quota in UK waters will be transferred to the UK over the five-year transition period; most of this quota has already been transferred and distributed across the four nations of the UK. After the five-year transition period there will be annual discussions on fisheries opportunities.

152 Market changes have the potential to impact fishing activity in the study area. The key species landed by potters in the area, is whelk, which is primarily exported to non-EU countries, including Korea, Taiwan and Singapore. Market price fluctuations in whelk and also in shipping fuel costs may impact the first sales value of whelk, which may influence fishers decision on target species. Market price fluctuation may occur due to changing markets in Korea, Taiwan and Singapore, which would impact whelk targeted fisheries more than other species which enter Ireland and European markets.

6. Data Limitations and Uncertainties

153 A range of different data limitations and uncertainty exist for all of the commercial fisheries datasets assessed within this technical report. The level of uncertainty and confidence of each data set is defined in Table 6.1 based on the professional judgement of the assessment team.

154 The principal limitation is that reliable, verifiable landings statistics are not formally reported for the under 10 m vessel fleets, as formal logbooks are not required to be maintained and submitted. This leads to incomplete landing statistics datasets, where data for under 10 m vessels is either included (i.e. through sales notes), estimated or completely omitted.

155 In addition, limitations of landings data include the spatial size of ICES rectangles which can misrepresent actual activity across the offshore development area and care is therefore required when interpreting these data.

156 Lack of recent landings statistics for EU (non-Irish) fleets is also recognised as a data limitation; based on the most recent European Commission data call, more recent landings data (2017-2019) is no longer available by ICES rectangle (36E4 and 36E3). Data at a scale of ICES division (i.e. the whole of the Irish Sea) is less useful to understand fishing activity specific to the area overlapping the offshore development area.

157 Limitations of VMS data are primarily focused on the coverage being limited to vessels 12 m and over. It is important to be aware that where mapped VMS data may appear to show inshore areas as having lower (or no) fishing activity compared with offshore areas, this is not necessarily the case because VMS data do not include vessels typically operating in inshore area (i.e. which typically comprises of vessels <12 m in length). This is particularly important when assessing the activity across the ECC for the potting fleet.

158 Despite the data limitations and uncertainties, a good range of fisheries data has been available from a range of sources including:

- Fisheries dependant data from SFPA, EU DCF, ICES and MMO;
- Scientific stock assessments from Marine Institute and BIM and ICES;
- Officially amalgamated datasets covering logbook declarations, sales notes for vessels under 10 m, gatherer dockets and co-op data as assessed by Marine Institute and BIM.

159 Overall, the range of data sources available, coupled with industry consultation and expert judgement provide sufficient knowledge to characterise the receiving environment for the purpose of undertaking an EIA for commercial fisheries.

Table 6.1 Data limitations and uncertainty (the uncertainty and confidence levels are defined based on judgement and are intended to inform the appropriateness of data used to inform the EIA)

Data source	Type of data	Limitations and uncertainty
Landing statistics		
SFPA	Landings statistics (2011-2021) data for Irish-registered vessels, with data on year, species, landed weight, ICES division;, port of landing; and ICES rectangle.	The data has undergone a degree of suppression to ensure confidentiality of data, however, it is unknown which records are suppressed (i.e. for which species or fleets). Data for whelk is not consistent with other datasets analysed for the same period and area. • Data assessed with: medium-high uncertainty and medium-low confidence
Marine Institute and BIM	Estimates of annual Irish landings of shellfish into Ireland (2004-2019).	The data is based on a wide range of sources to provide an accurate landing estimation for all vessel lengths, including logbook declarations and sales notes for vessels under 10 m, gatherer dockets, and co-op data. Data assessed with: low uncertainty and medium-high confidence.
MMO	Landings statistics (2016 to 2021) data for UK-registered vessels.	The data is recorded from sales notes and landing declarations for all vessel lengths. Due to the UK

Data source	Type of data	Limitations and uncertainty
		legislation of Registration of Buyers and Sellers data is considered accurate and verifiable. • Data assessed with low uncertainty and high confidence.
EU DCF	Landings statistics (2012 to 2016) data for EU landings from ICES rectangle 36E3, 36E4, 35E3, 35E4, 37E3 and 37E4 by country, species and gear type.	The data is submitted by individual member states and therefore limitations vary per country. Vessels under 10 m may be omitted or mis-represented by the data. Accuracy is likely to be greater for landings rom larger vessels. • For UK vessels under 10 m length data is assessed with: high uncertainty and low confidence. • For all other EU vessels data is assessed with low uncertainty and high confidence.
Spatial data		
Marine Institute	Whelk and lobster and brown crab fishing grounds for Irish potting vessels <15m in length.	The data is based on interviews with the fishing industry undertaken by the Marine Institute, as well as expert knowledge. • Data assessed with: low uncertainty and medium-high confidence.
MMO	UK VMS data for vessels ≥15 m length.	The data is only available for 15 m and over vessels, so is not representative of <15 m vessels. • Data assessed with medium uncertainty and medium confidence.
ICES	EU SAR data for vessels ≥12 m length.	The data is only available for 12 m and over vessels, so is not representative of <12 m vessels. • Data assessed with medium uncertainty and medium confidence.
EMSA	AIS data for fishing vessels ≥15 m length.	The data is only available for 15 m and over vessels, so is not representative of <15 m vessels. • Data assessed with medium uncertainty and medium confidence.

7. Summary

160 This technical report has presented commercial fisheries activity data for the following countries: Ireland; UK; and other EU countries. Based on quota allocations and landing statistics it is understood that vessels registered to other countries do not operate across the local and regional study areas.

161 The key fleet métier operating across the local and regional study areas include (in no particular order):

- Irish demersal otter trawlers targeting nephrops and mixed demersal species;
- Irish demersal otter trawlers targeting haddock and mixed demersal species;
- Northern Irish demersal otter trawlers targeting nephrops and mixed demersal species;
- Northern Irish demersal otter trawlers targeting haddock and mixed demersal species;
- Irish potting vessels targeting whelk;
- Irish potting vessels targeting brown crab and lobster;
- Irish scallop dredgers targeting king scallop;
- UK scallop dredgers targeting king scallop;
- Irish hydraulic dredgers targeting razor shell;
- Irish dredgers harvesting mussel seed;
- Irish and Belgian beam trawlers targeting plaice, sole and mixed demersal species; and
- Irish pelagic trawlers targeting sprat and herring.

162 It is noted that a portion of vessels in the potting metiers listed above will inter-change gear (between plastic pots and creel) to target a mixture of shellfish species to adapt to seasonal variations in fisheries and market demands.

163 This technical report reviewed all datasets available to characterise the commercial fisheries activity across the local and regional study areas and wider Irish Sea.

164 Given the range of datasets assessed and the comprehensive analysis undertaken, it is considered that this technical report is adequate for the purposes of an EIAR assessment.

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