

BRITISH TELECOMMUNICATIONS PLC

R100 Scottish Isles Telecommunications Project

Technical Appendix F - Fishing Activity Study - Inner Hebrides



DOCUMENT RELEASE FORM

British Telecommunications Plc

P2308_R5436_Rev0

R100 Scottish Isles Telecommunications Project

Technical Appendix F - Fishing Activity Study - Inner Hebrides

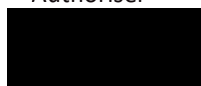
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GLOSSARY

AIS

Automatic Identification System

BT

British Telecommunications plc

FAS

Fishing Activity Study

FLMAP

Fisheries Liaison Mitigation Action Plan

FLO

Fisheries Liaison Officer

FPO

Fish Producers Organisation

ICES

International Council for the Exploration of the Sea

kw/h

Kilowatt per hour

MEA

Marine Environmental Appraisal

MMO

Marine Management Organisation

NM

Nautical Mile

R100 Project Area

Orkney, Shetland and Inner Hebrides

VMS

Vessel Monitoring System

UK

United Kingdom

1. INTRODUCTION

1.1 Project Overview

The marine elements of the R100 Project are to install sixteen telecommunication cables to extend superfast broadband (30Mbps+) coverage across Shetland, Orkney, and the Inner Hebrides. These new cables will form part of the Scottish Government's 'Reaching 100%' (R100) programme contracted to BT Plc. The sixteen cables are across three geographical regions: Orkney, Shetland and the Inner Hebrides, as follows:

- Orkney – Seven routes
- Shetland – Five routes
- Inner Hebrides – Four routes

This Fishing Activity Study (FAS) has been drafted to support the Marine Environmental Appraisal (MEA) for the Inner Hebrides geographical area. A full project description for installation of the R100 cable routes is provided in Section 2 of the MEA (Report, Document Reference P2308_R5368).

1.2 Scope and Objectives

This report focuses on the fishing activity within the Inner Hebrides geographical area (Figure 1-1, Drawing reference: P2308-FISH-001_IH).

The purpose of this report is to review fishing activity within the Inner Hebrides geographical area and identify the relative importance of the geographical area to the fishing industry. It has been informed by a review of the latest publicly available fisheries data and literature for the geographical area.

A separate Fisheries Liaison Mitigation Action Plan (FLMAP) has been prepared which details the potential impacts of the proposed R100 Project on fisheries and provides a mitigation plan. The FLMAP also includes an overview of the fisheries liaison and consultation that has been undertaken. A full list of consulted fish producer organisations (FPO's) is provided in the FLMAP (Appendix F to the MEA).

The findings of this FAS and the FLMAP have been used to inform Section 6 of the MEA Report – The Human Environment.

1.3 Inner Hebrides Geographical Area

The UK Government take International Council for the Exploration of the Sea (ICES) scientific advice on fisheries management. ICES gather data across the UK Continental Shelf and divide the area into ICES areas. The ICES areas are subdivided into ICES statistical rectangles. Each ICES rectangle is used for statistical purposes and is '30 min latitude by 1 degree longitude' in size (approximately 30 nautical miles by 30 nautical miles, NM). The Inner Hebrides geographical area falls within three ICES rectangles, as shown in Figure 1-1 (Drawing reference: P2308-FISH-001_IH). Table 1-1, provides a breakdown for the ICES rectangles crossed for each proposed cable route in the Inner Hebrides geographical area. Comparison of the statistics for each rectangle provides a spatial picture of the differences in species caught and fish landings for each rectangle.

Figure 1-1 Inner Hebrides Geographical Area Cable Routes and ICES Rectangle (P2308-FISH-001_IH-B)

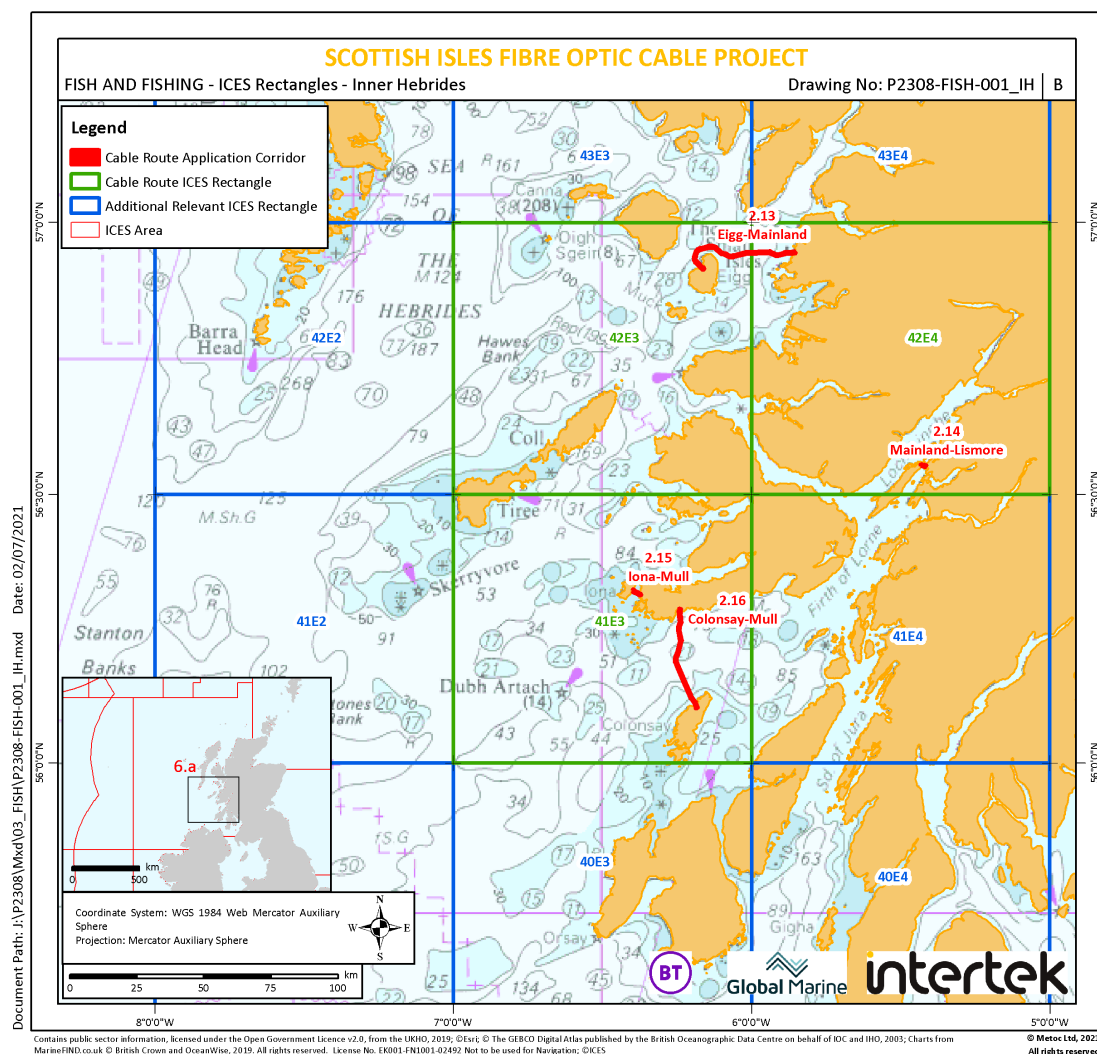


Table 1-1 Summary of ICES Rectangles in Relation to Inner Hebrides Geographical Area

Orkney Cable Routes	ICES Area	Length through ICES rectangle (km)		
		41E3	42E3	42E4
2.13 Eigg – Mainland	IVa		✓	✓
2.14 Mainland – Lismore	IVa			✓
2.15 Iona – Mull	IVa	✓		
2.16 Colonsay – Mull	IVa	✓		

2. DATA SOURCES

This report presents the latest fisheries information gathered as part of a desktop geographical to provide relevant details of the fishing methods and fisheries activity that takes place in the vicinity of the R100 Project. The most recently available and / or most relevant (at the time of writing) data sources have been used throughout this report. The primary sources of information used to inform the description of the fisheries activities are as follows:

Statistics on the Scottish fleets

- Scottish Sea Fisheries Statistics 2019 (Scottish Government 2020).
- 2019 UK Sea Fisheries Statistics (MMO 2020a).

Mapping tools for Scotland

- National Marine Planning Interactive (NMPI) tool (Marine Scotland 2021).

GIS data set

- 2019 Fishing Vessel Density (EMODnet 2020).
- 2017 Fishing – tonnage, effort, and value maps for UK vessels over 15 m (MMO 2020b).
- 2009 - 2013 amalgamated Vessel Monitoring system (VMS) intensity layers (Marine Scotland 2016).

Consultation with fisheries stakeholders as part of the FLMAP (Seagard 2021) has been incorporated into the FAS and is referenced where applicable.

Important target species presented in Section 4 were identified through the Argyll & the Islands Strategic Fishery Management Plan (Argyll Fisheries Trust 2009), Clyde inshore Fisheries Management Plan (Draft) (Clyde Inshore Fisheries Group 2011) and Mull and Small Isles Inshore Fisheries Group Management Plan (Marine Scotland 2013).

The main fishing methods and gear types presented in Section 4 were also identified through analysis of the statistics and landings data (Scottish Government 2020, MMO 2020a). Descriptions of the fishing gear and methods were based on British Seafishing (2020), Seafish (2019) and Galbraith & Rice (2004).

Where possible this data set has been supplemented by information from consultation with the appropriate fish producer organisations (FPOs). Additional data resources are referenced throughout this report.

3. SCOTTISH FISHING FLEETS

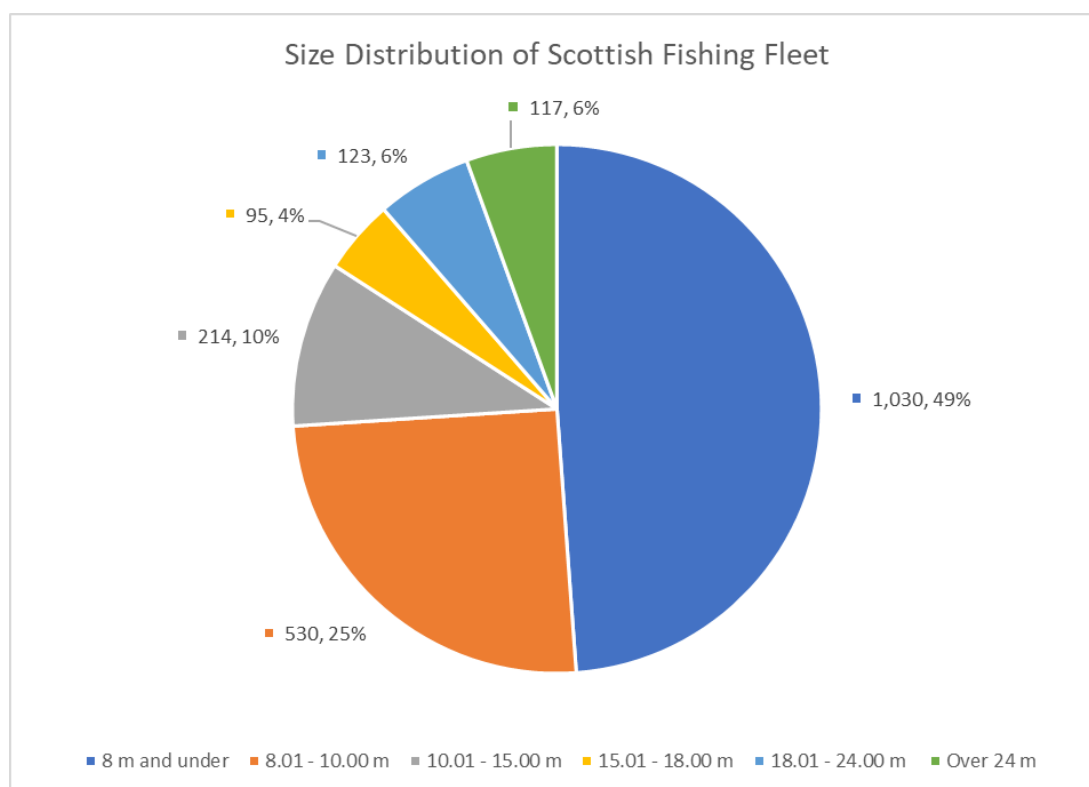
3.1 Fleet Size and Composition

3.1.1 Scotland

The total number of active fishing vessels registered in the United Kingdom in 2019 was 5,911 (MMO 2020a). It should be noted that more recent data is published than 2019 but does not include data split by type, only by length, therefore the previous year data provides a reflection of the Scottish fleet by type and length.

The Scottish fleet consists of 2,109 vessels (36 % of the total UK vessels) and is predominantly made up of vessels under 10 m in length. The breakdown of vessels by length is shown in Figure 3-1 below:

Figure 3-1 Size Distribution of Scottish Fishing Fleet



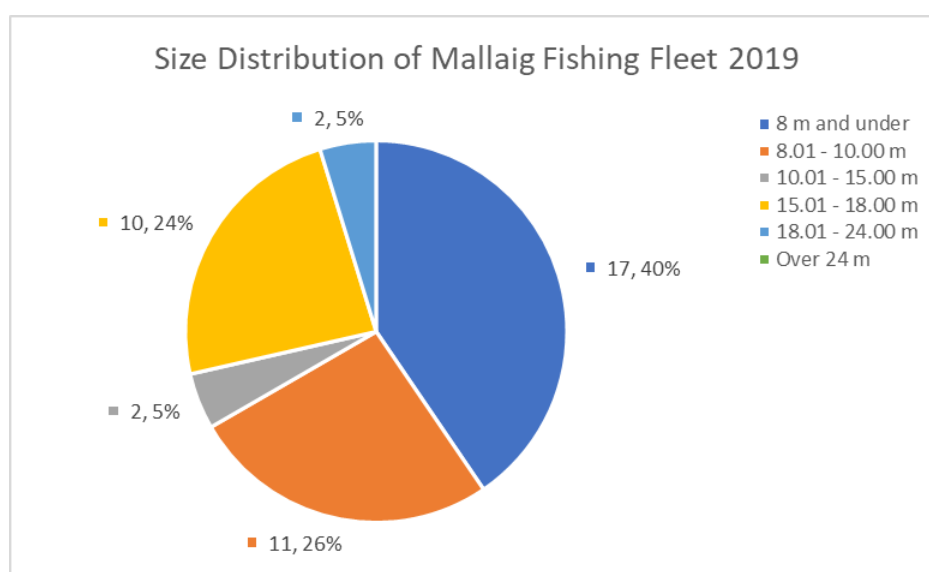
Source: MMO (2020)

The size distribution of fishing vessels has a significant impact on the interpretation of recorded fishing activity and landings data. Only vessels over 10 m in length are required to record their landing data, and only vessels over 15m in length are required to have Automatic Identification System (AIS) equipment to record their position. These two factors mean that it is likely that there is an under-representation of fishing activity in the available statistics and spatial patterns due to the large percentage of vessels that fall under 10 m (74 %) and 15 m (84 %). The fisheries management data that cover the Inner Hebrides Geographical Area have been used to inform the report in addition to fisheries consultation to identify the gaps and a reflection of the fishing activity within the Inner Hebrides geographical area (Marine Scotland 2013).

3.2 Fishing Ports

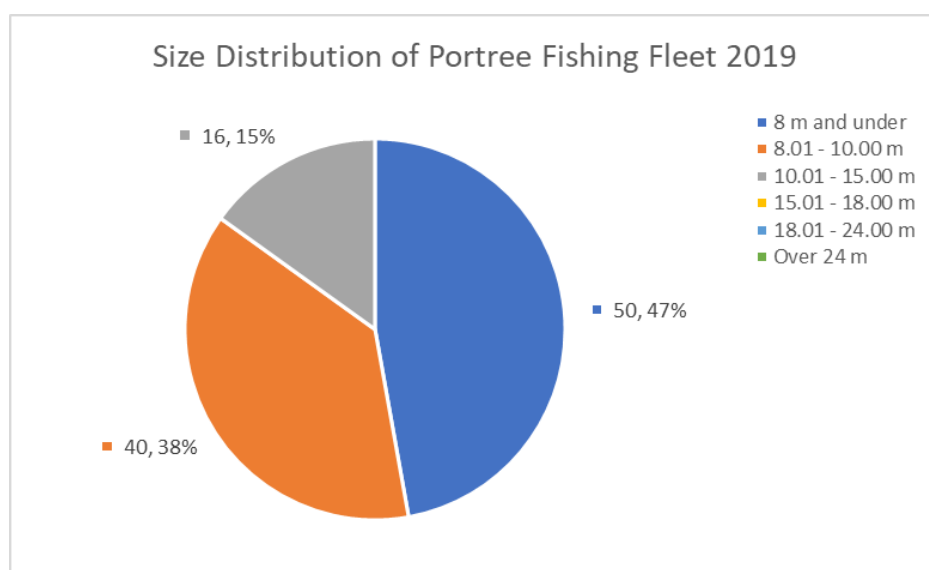
In Scotland, there are a total of 148 fishing ports divided over 18 districts. The fishing ports in the Inner Hebrides geographical area are generally associated with the Mallaig, Oban, Campbeltown and Portree district Fishery Offices. The distribution of the size of vessels registered in these districts is shown in Figures 3-2 – 3-5 below. These show that whilst Mallaig has a higher proportion of vessels over 15m than the other ports, 71% of the vessels are less than 15m in length. The percentage of vessels under 15m in length for Portree, Oban and Campbeltown, are 100%, 88%, and 86% respectively. This shows that the vessels registered in the ports in the Inner Hebrides geographical areas are fairly representative of the Scottish Fleet as a whole with the majority being smaller vessels. Figure 3-2 (Drawing reference: P2308-FISH-002_IH) provides the location of the Inner Hebrides fishing ports in relation to the proposed cable routes.

Figure 3-2 Size Distribution of Mallaig Fishing Fleet



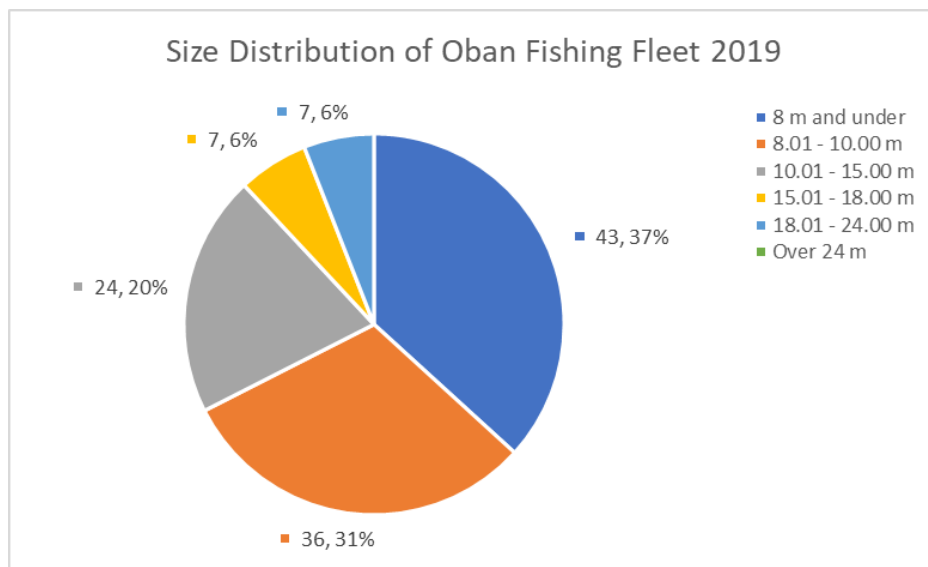
Source: MMO (2020)

Figure 3-3 Size Distribution of Portree Fishing Fleet



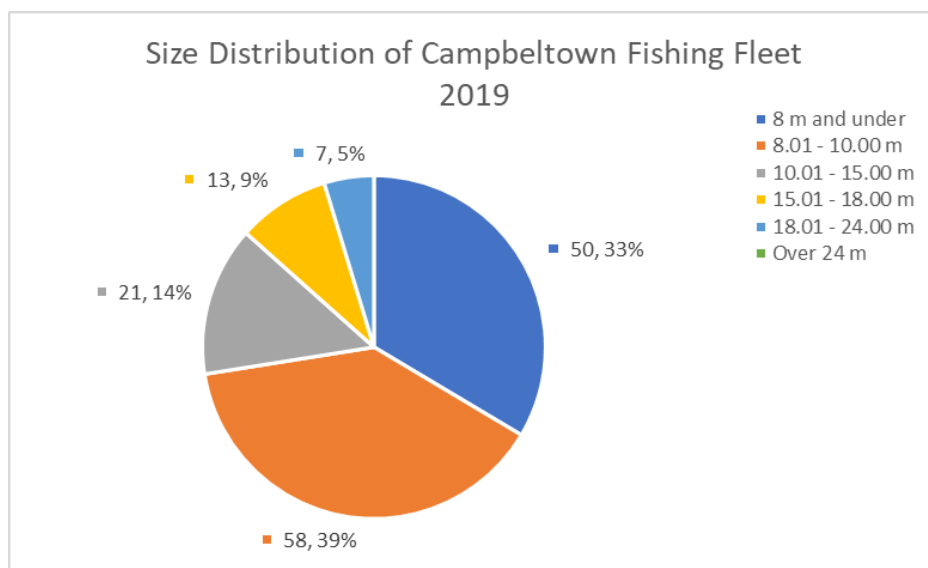
Source: MMO (2020)

Figure 3-4 Size Distribution of Oban Fishing Fleet



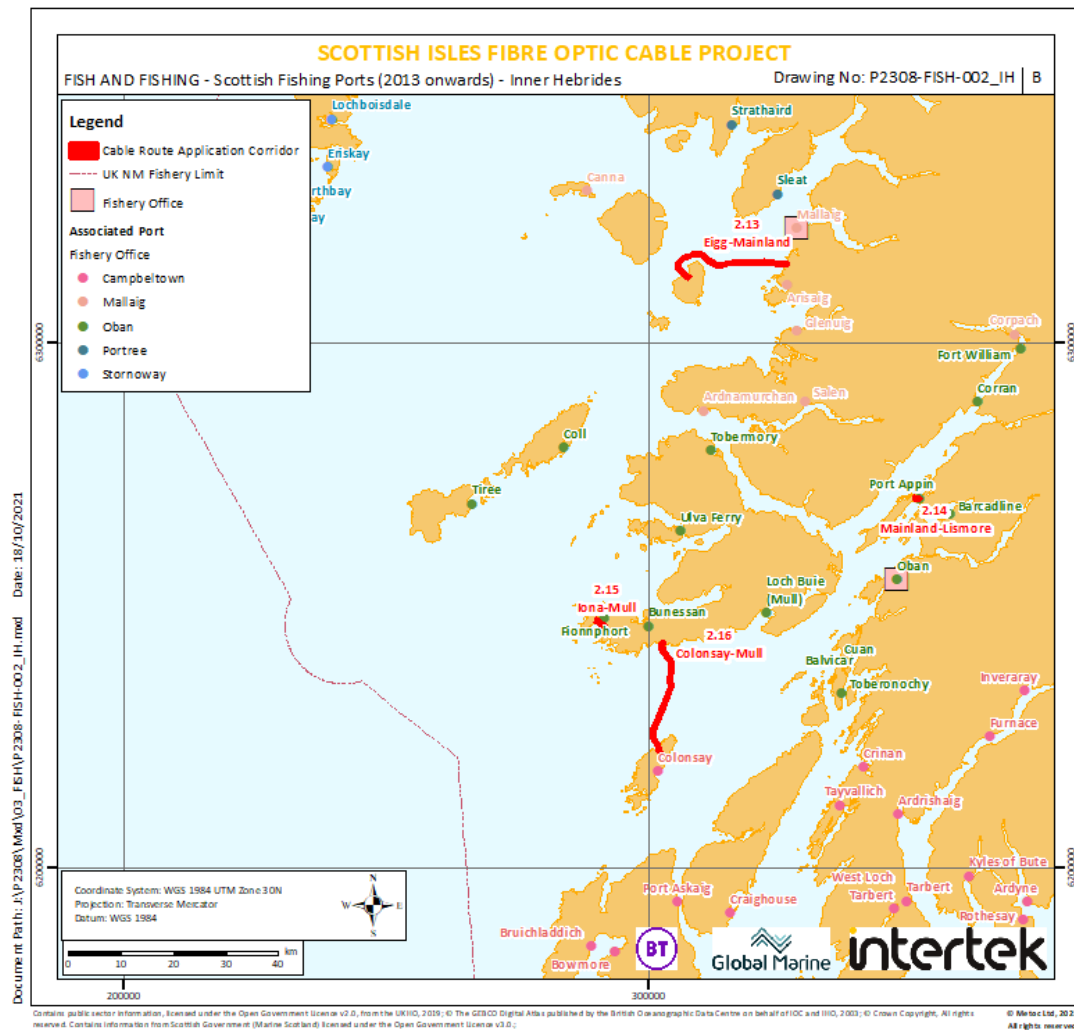
Source: MMO (2020)

Figure 3-5 Size Distribution of Campbeltown Fishing Fleet



Source: MMO (2020)

Figure 3-6 Scottish Fishing Ports (2013 onwards) – Inner Hebrides (P2308-FISH-002_IH)



4. TARGET SPECIES AND FISHING METHODS

4.1 Introduction

The following section provides the details of the target species and fishing methods used in the Inner Hebrides geographical area. Fishing techniques used within the geographical area include trawling, potting, dredging, diving and aquaculture. The spatial distribution of fishing vessels within the MMO statistical data indicate that larger vessels likely to be engaged in trawling for pelagic and demersal species and located further offshore. Fishing methods likely to come into contact with the application corridors have been described here.

4.2 Target Species

The proposed cable installation within the Inner Hebrides geographical area will be within the inshore fisheries area (within 6NM of the coast). Table 4-1 provides an overview of the key fisheries markets in the Inner Hebrides inshore area (Clyde Inshore Fisheries Group 2011 and Marine Scotland 2013), with weight and value information for 2019 (Scottish Government 2020).

Table 4-1 Target Species within the Inner Hebrides Inshore Area (2019)

Target species	Total Weight Landed (tonnes)	Total First Sale Value (£)	Fishing Method
Norway lobster (<i>Nephrops norvegicus</i>)	498	£2,254,582	Trawling, Pots
Brown crab (<i>Cancer pagurus</i>)	904	£ 2,113,020	Pots
Scallops (<i>Pectinidae</i>)	542	£ 1,294,222	Dredging/ trawling, diving
European lobster (<i>Homarus gammarus</i>)	62	£ 874,444	Pots
Velvet swimming crab (<i>Necora puber</i>)	89	£ 284,798	Pots
Razor clam (<i>Siliqua patula</i>)	36	£ 266,671	Trawling

Sources: (Scottish Government 2020)

4.3 Trawl Fisheries

Trawling is towing a net (trawl) through the water behind a fishing vessel. Trawling can be divided into bottom trawling and midwater trawling, based on the position of the net. Bottom trawling is towing the net along the seabed (benthic trawling) targeting species such as *Nephrops* or just above the seabed (demersal trawling) for species such as cod and haddock. Midwater trawling, also known as pelagic trawling, targets species in the water column such as herring and mackerel.

Trawl nets comprise of a body of net ending in a cod-end where the fish are collected. The mouth of the net must be held open and it is the method used to keep the mouth of the net open which distinguishes the type of trawl.

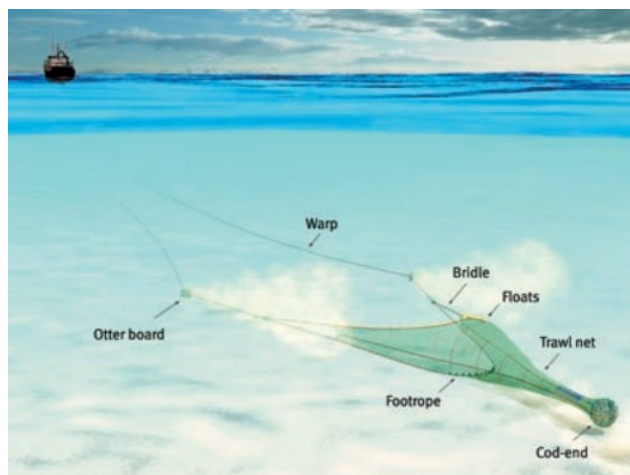
4.3.1 Beam Trawling

Beam trawling is the original and simplest form of bottom trawling, whereby the mouth of the net is held open by a solid metal beam, attached to two "shoes", which are solid metal plates, welded to the ends of the beam, which slide over and disturb the seabed. This method is mainly used on smaller vessels, fishing for flatfish or *Nephrops*, relatively close inshore.

4.3.2 Otter Trawling

Otter trawling derives its name from the pair of trawl doors (otter boards) which are used to keep the mouth of the trawl net open (Figure 4-1). Otter boards are made of timber or steel and are hydrodynamically designed in such a way that, when the net is towed along the seabed at a certain speed, they push outwards and prevent the mouth of the net from closing. They may also act like a plough digging up the seabed, to create a turbid cloud and scare fish towards the net mouth. Targeting both whitefish and Nephrops, the otter trawl is by far the most commonly used of the towed gears in Scotland (Galbraith & Rice 2004).

Figure 4-1 The Principal Features of Demersal Otter Trawl (Bottom Trawling) Gear



Galbraith and Rice (2004)

4.4 Scallop Dredging

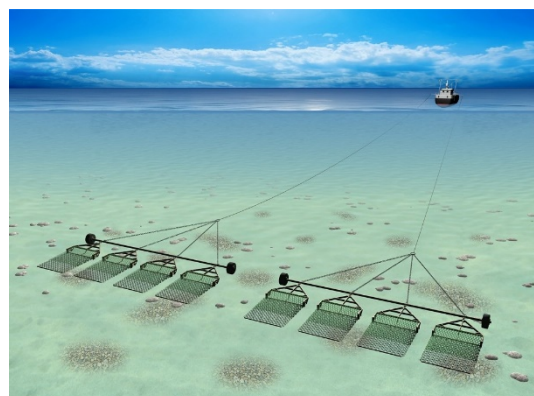
Dredging is a fishing method by which metal dredgers are towed across the seabed to collect shellfish and bivalves. Each dredge consists of a rigid triangular steel frame and a tooth bar, behind which a mat of linked steel rings is secured (Figure 4-2). As scallops usually lie buried in sand and fine gravel, they are raked out by the teeth and swept into a collecting bag. Hydraulic dredgers also exist which spray jets of water onto the shellfish to dislodge them from their location. Large vessels can drag as many as twenty cages behind them (Figure 4-3).

Figure 4-2 Photo of Four Dredges



Source: Seafish (2019)

Figure 4-3 Schematic Showing Dredges Towed Behind a Vessel

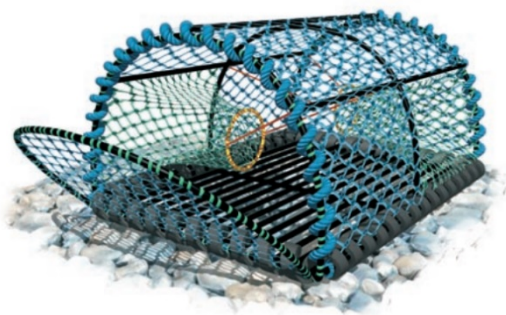


Source: Seafish (2019)

4.5 Pot Fisheries

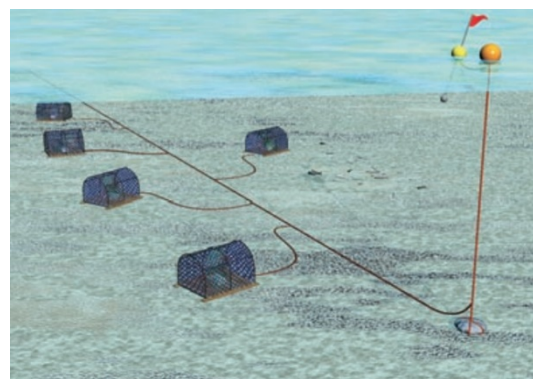
Pots and creels, static traps made of metal or wood and rope (Figure 4-4), are used to target active scavenging crustaceans such as brown crab, velvet swimming crab, European lobster and Nephrops. Their design lets crabs, lobsters and Nephrops enter the pot to take the bait, after which they cannot escape. The pots and creels are baited with dead fish and lowered to the seabed on ropes, usually about a dozen at a time. A buoy is used to mark the location (Figure 4-5), with fishermen returning to retrieve their catch after a day or two (British Sea Fishing 2020).

Figure 4-4 Traditional 'D' Shaped Creel



Source: Galbraith & Rice (2004)

Figure 4-5 Creels Attached to a Buoy



Source: Galbraith & Rice (2004)

4.6 Diving

Diving for scallops involves collecting scallops by hand from the seabed. Although this method requires much more effort and quantities landed through diving are considerably lower than through dredging, scallops are landed in pristine condition so are more valuable. Dive-caught scallops are generally regarded as more sustainable than traditionally caught scallops. However, as divers can get to areas where vessels cannot, there are concerns that dive fishing has impacts on the stock by collecting from potential sources of spawning.

4.7 Aquaculture

Within the Inner Hebrides geographical area, aquaculture is an important contribution to the local and regional economy (Figure 4-6, Drawing Reference: P2308-Fish-007-IH) and is permitted out to 3 nautical miles (NM) within the region. Aquaculture includes farming of finfish and shellfish species. There are no aquaculture sites within the Inner Hebrides application corridors. There are several active aquaculture sites for finfish and shellfish located within 5km of the cable corridors as identified within Table 4-2. Of these the closest is the active Eilean Nam Meann site which is 1.43km from cable corridor 2.14 Mainland – Lismore (Marine Scotland 2021).

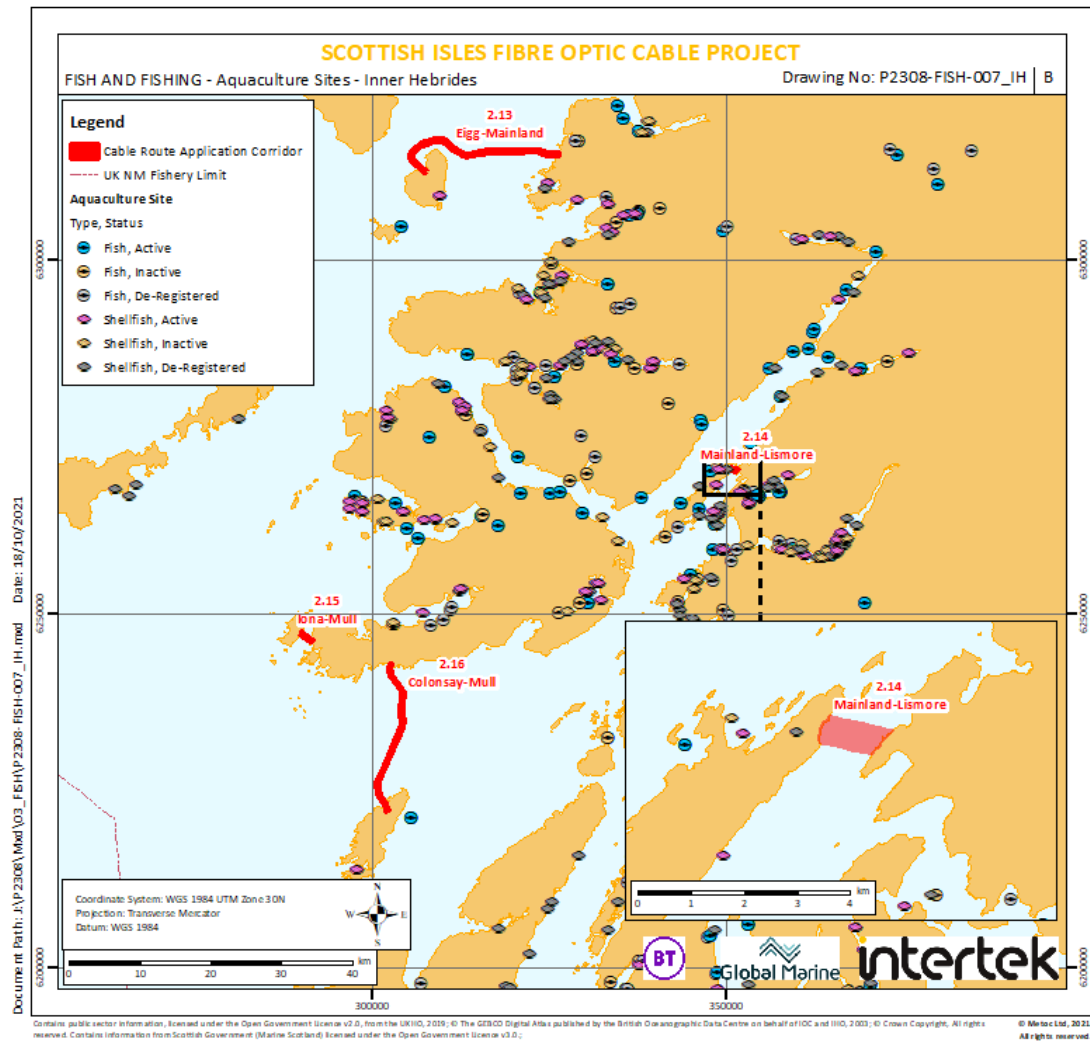
Table 4-2 Summary of ICES Rectangles in relation to Inner Hebrides geographical area

Inner Hebrides Cable Routes	Aquaculture Sites within 5km of cable corridor
2.13 Eigg-Mainland	None within the application corridor. Two active fish and shellfish aquaculture sites within 5km: Kildonan Bay and Loch nan Ceall
2.14 Mainland-Lismore	None within the application corridor. Ten active fish and shellfish aquaculture sites within 5km: Eilean Nam Meann, Lismore North, Lynn of Lorn, South Shian Bay 2, Site 7 Shuna Island, Loch Creran (D), Rubha Mor, Shuna, Loch Creran (B), South Ardnacloch Farm.
2.15 Iona-Mull	No active aquaculture sites within 5km of the application corridor.

Inner Hebrides Cable Routes	Aquaculture Sites within 5km of cable corridor
2.16 Colonsay-Mull	None within the application corridor. One active aquaculture site within 5km: Colonsay

Source: Marine Scotland (2021)

Figure 4-6 Aquaculture Sites within the Inner Hebrides Geographical Area (P2308-Fish-007_IH)



5. SPATIAL FISHING PATTERNS

5.1 Introduction

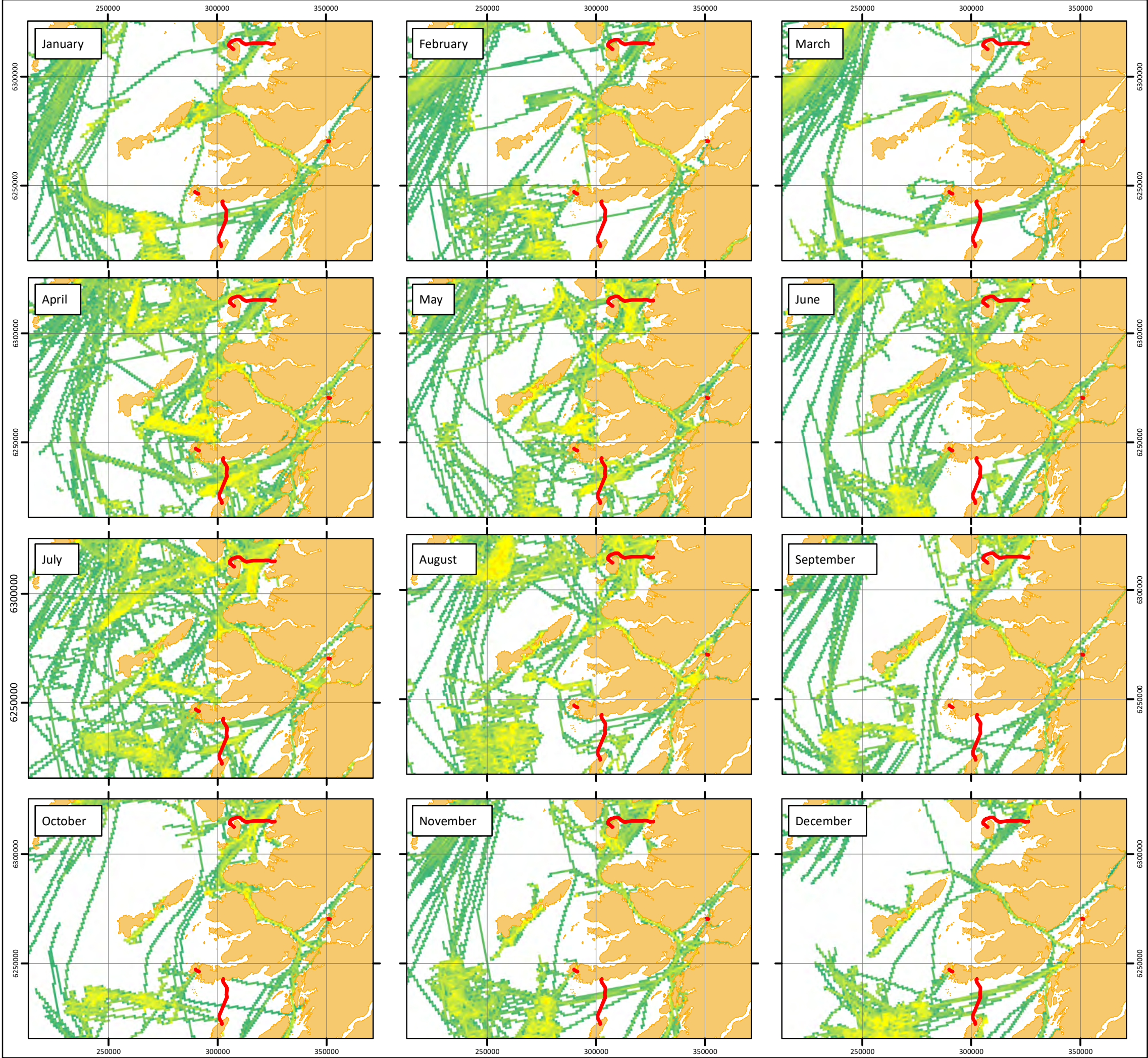
This section summarises the spatial patterns of fishing activity. Vessel Monitoring System (VMS) data is provided through the use of AIS equipment for all vessels over 15 m in length. Whilst this can show a good representation of the larger scale fishing efforts from larger vessels, it cannot be used to infer the patterns of smaller, particularly inshore fishing vessels.

5.2 Vessel Density

Figure 5-1 (Drawing reference: P2308-SHIP-001_IH) shows the monthly vessel density of fishing vessels over 15 m in length in relation to the four proposed cable routes. Monthly AIS vessel density is low all year round with the exception of Cable Route 2.13 during the summer months and Cable Route 2.16 for the period April – May which are low - moderate (EMODnet 2020 and Marine Scotland 2016).

5.3 Fisheries

Figure 5-2 (Drawing reference: P2308-FISH-006_IH) shows the amalgamated VMS fishing intensity for targeted species for the period 2009-2013 (EMODnet 2020 and Marine Scotland 2016). This reinforces the provided summary of key species as being shellfish such as crab, scallops and nephrops particularly within the north of the geographical area. The VMS intensity data shows that demersal and pelagic fishing with vessels over 15 m is low or absent within proposed cable corridors.



SCOTTISH ISLES
FIBRE OPTIC CABLE PROJECT

AIS VESSEL DENSITY
Monthly Vessel Density
Fishing Vessels - Inner Hebrides

Drawing No: P2308-SHIP-001_IH

B

Legend

Cable Route Application Corridor

2019 Vessel Density

Vessel Hours (per km²)

0

< 0.05

0.05 - 0.1

0.1 - 0.2

0.2 - 0.5

0.5 - 1

1 - 2

2 - 5

5 - 10

10 - 20

20 - 50

50 - 100

100 - 200

200 - 500

> 500

N

W

E

S

NOTE: Not to be used for Navigation

Date	18 October 2021
Coordinate System	WGS 1984 UTM Zone 30N
Projection	Transverse Mercator
Datum	WGS 1984
Data Source	EMODnet; GEBCO; ESRI; MarineFind
File Reference	J:\P2308\Mxd\04_SHIP\ P2308-SHIP-001_IH.mxd
Created By	Chris Dawe
Reviewed By	Abigale Nelson
Approved By	Paula Daglish

BT

Global Marine

intertek

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50

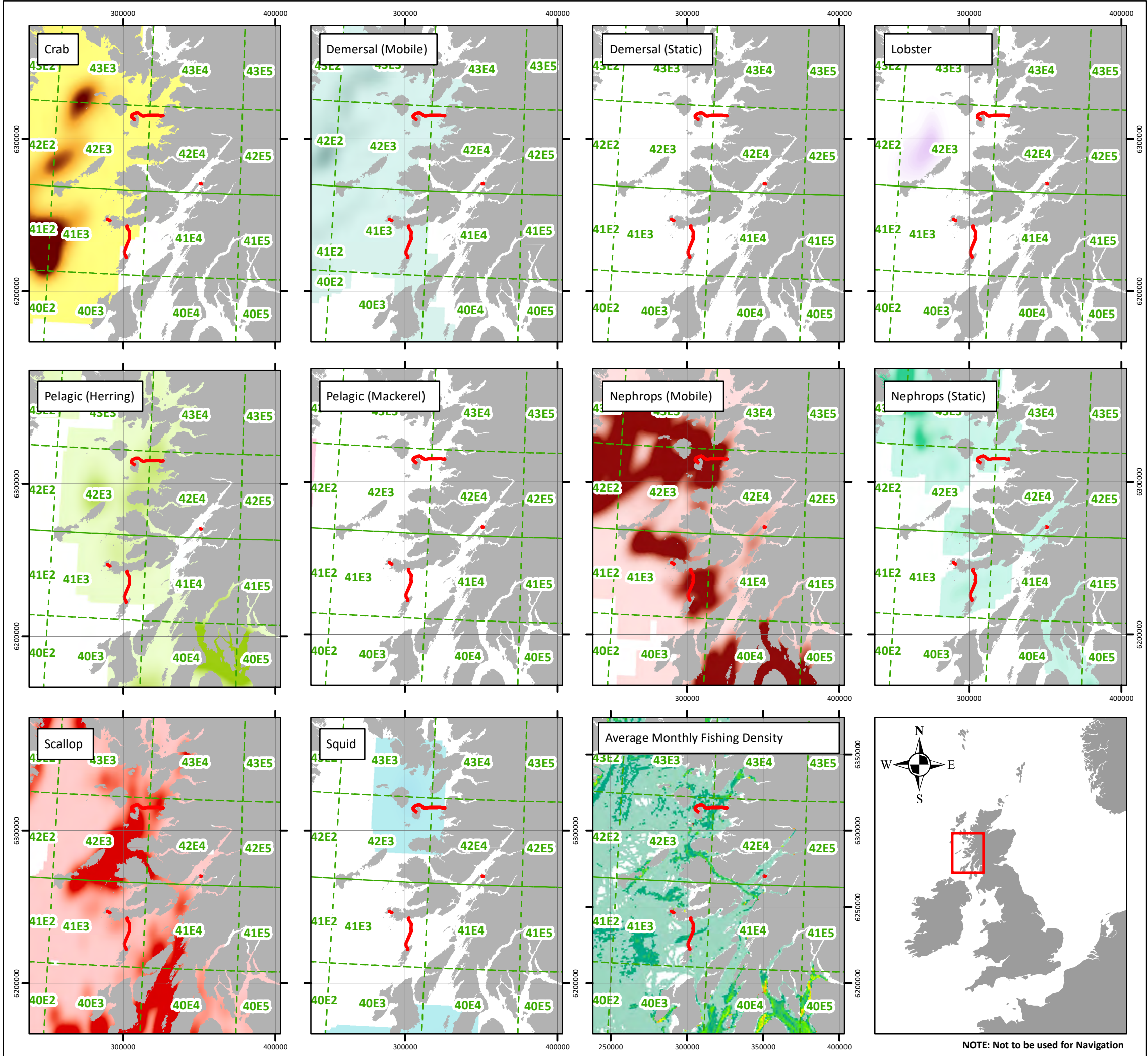
75

100

km

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SCOTTISH ISLES
FIBRE OPTIC CABLE PROJECT

FISH AND FISHING
Average Fishing Intensity (Hours) 2009-2013
Inner Hebrides

Drawing No: P2308-FISH-006_IH

B

Legend

Cable Route Application Corridor

ICES Rectangle

Monthly Average Fishing Vessel Intensity (2019)
Vessel Hours per km² (log scale)
High : 100
Low : 0

Amalgamated VMS Intensity
2009 - 2013 - by Species

Crab

High : 0.96
Low : 0

Pelagic - Herring

High : 0.73
Low : 0

Scallop

High : 0.81
Low : 0

Demersal mobile

High : 0.47
Low : 0

Pelagic - Mackerel

High : 1.69
Low : 0

Squid

High : 5.33
Low : 0

Demersal static

High : 1.19
Low : 0

Nephrops mobile

High : 0.62
Low : 0

Lobster

High : 2.22
Low : 0

Nephrops static

High : 19.86
Low : 0

Date	18 October 2021
Coordinate System	WGS 1984 UTM Zone 30N
Projection	Transverse Mercator
Datum	WGS 1984
Data Source	UKHO; GEBCO; MS: EMODnet; Esri
File Reference	J:\P2308\Mxd\03_FISH\ P2308-FISH-006_IH.mxd
Created By	Chris Dawe
Reviewed By	Chris Carroll
Approved By	Paula Daglish

BT

Global Marine

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km

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6. FISH LANDINGS DATA

6.1 Scottish Sea Fisheries Statistics

6.1.1 Landing Data

Landing tonnage and their respective value provide a good indication of the importance of commercial fishing in an area. The proposed cables in Inner Hebrides are located within ICES rectangles 41E3, 42E3, and 42E4.

The Scottish Sea Fisheries Statistics have been used for the most recently available 5 years data (2015 – 2019), using Scottish Government (2020) data. The average annual value of fish and shellfish landed per ICES rectangle during this period for the specified rectangles was approximately £3.2 million, with 42E4 having the lowest average of £1.5 million and 42E3 the highest average of £4.7 million. The average annual tonnage was 1,132 tonnes (Scottish Government 2020) with the same pattern showing 42E4 having the lowest average of 311 tonnes and 42E3 the highest average of 1,670 tonnes. The overall catch data is sub-divided into fisheries targeting bottom living (demersal) fish, mid-water and surface (pelagic) fish and shellfish (including squid), with information available at species level within each group.

6.1.2 Species Type

Tables 6-1 to Table 6-3 summarise the annual catch value and species type per ICES rectangle for each fisheries type over the past 5 years within the Inner Hebrides geographical area.

ICES rectangle 41E3 is located to the south-west of Inner Hebrides and encompasses two of the proposed cable routes: 2.15 Iona - Mull and 2.16 Colonsay - Mull. The statistical data in Table 6-1 indicate that rectangle 41E3 is important for shellfish both by quantity and value over the period considered. Pelagic fisheries are important by value. Demersal species are valuable, but the catch is low and variable across the years within rectangle 41E3.

Table 6-1 Annual Catch Quantity and Value per Species Type for ICES Rectangle 41E3

Year	Quantity (tonnes)				Price (£)			
	Demersal	Pelagic	Shellfish	Total	Demersal	Pelagic	Shellfish	Total
Average	14	255	1,146	1,415	£22,110	£63,391	£3,390,185	£3,475,686
2015	17	37	966	1,020	£23,929	£9,757	£2,568,502	£2,602,188
2016	9	565	1,196	1,770	£12,361	£129,882	£2,635,436	£2,777,679
2017	13	149	1,163	1,325	£20,982	£40,084	£3,441,866	£3,502,933
2018	9	0	1,100	1,109	£20,305	£347	£4,043,306	£4,063,958
2019	21	524	1,303	1,848	£32,970	£136,882	£4,261,814	£4,431,667

Source: Scottish Government (2020)

ICES rectangle 42E3 is located to the north-west of the Inner Hebrides and encompasses the western section of Route 2.13 Eigg - Mainland. The statistical data in Table 6-2 indicate that rectangle 42E3 is also of key importance to the shell fishermen by value and quantity landed over the period considered. Demersal species are highly valuable as these species are lowest in quantity but greater in value than pelagic fishing.

Table 6-2 Annual Catch Quantity and Value per Species Type for ICES Rectangle 42E3

Year	Quantity (tonnes)				Price (£)			
	Demersal	Pelagic	Shellfish	Total	Demersal	Pelagic	Shellfish	Total
Average	91	266	1,313	1,670	£343,667	£62,073	£4,335,372	£4,741,112
2015	102	107	1,138	1,347	£303,353	£25,817	£3,468,909	£3,798,079
2016	115	497	1,588	2,200	£696,950	£114,923	£5,103,301	£5,915,174
2017	74	443	1,421	1,938	£218,920	£90,421	£4,670,465	£4,979,807
2018	108	0	1,219	1,327	£314,954	£240	£4,280,163	£4,595,357
2019	57	281	1,201	1,539	£184,160	£78,962	£4,154,022	£4,417,144

Source: Scottish Government (2020)

ICES rectangle 42E4 is located to the north-east of the Inner Hebrides and encompasses two proposed cable routes: Route 2.13 Eigg – Mainland and 2.14 Mainland - Lismore. The statistical data in Table 6-3 indicate that rectangle 42E4 is highly important for shellfish both by quantity and value. As with 42E3, catches of demersal species are low across the years considered, with a high value. The pelagic fishery component is relatively low within this ICES rectangle.

Table 6-3 Annual Catch Quantity and Value per Species Type for ICES Rectangle 42E4

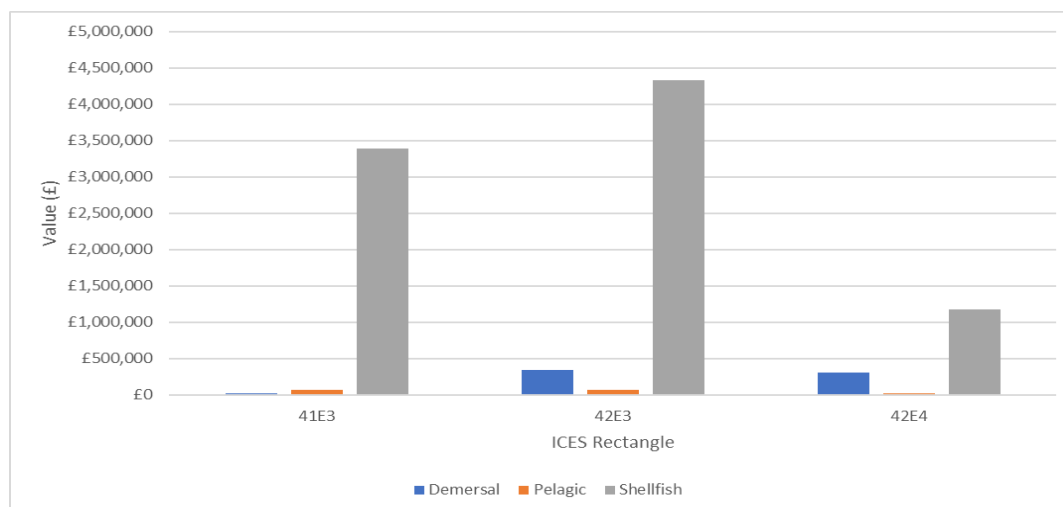
Year	Quantity (tonnes)				Price (£)			
	Demersal	Pelagic	Shellfish	Total	Demersal	Pelagic	Shellfish	Total
Average	9	42	260	311	£309,615	£16,001	£1,172,988	£1,498,604
2015	6	79	313	398	£39,558	£19,100	£974,495	£1,033,153
2016	6	0	280	286	£137,620	-	£986,710	£1,124,330
2017	6	87	247	340	£92,194	£16,028	£1,134,630	£1,242,851
2018	11	0	203	214	£748,665	-	£1,221,238	£1,969,903
2019	14	45	258	317	£530,037	£12,875	£1,547,867	£2,090,779

Source: Scottish Government (2020)

The data within the tables above is summarised in Figure 6-1 and Figure 6-2 below. The figures provide an overview of the value and quantity of landings by fisheries within the ICES rectangles relevant to the Inner Hebrides geographical area. The graphs highlight the importance of Shellfish to the region particularly within ICES rectangles 41E3 and 42E3.

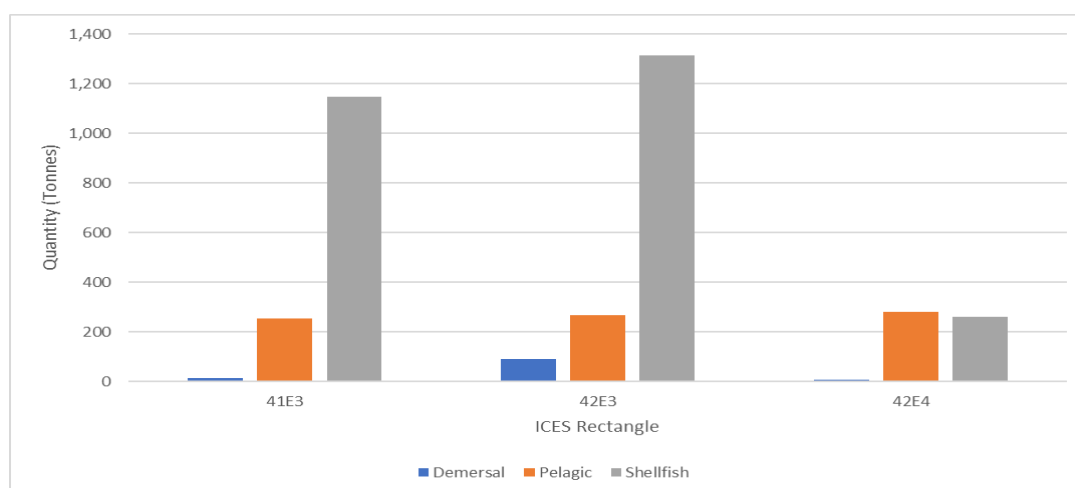
Pelagic fishing is shown to be low with similar quantities landed across the geographical area, however the value of this fishery is low. Closer analysis of the temporal data shows that shellfish is a stable fishery with similar quantities landed across the years considered, while pelagic and demersal fisheries are more varied across the years assessed.

Figure 6-1 Annual Average Value (2015 - 2019) by Species Type within the Inner Hebrides Geographical Area



Source: Scottish Government (2020)

Figure 6-2 Annual Average Quantity (2015 - 2019) by Species Type within the Inner Hebrides Geographical Area



Source: Scottish Government (2020)

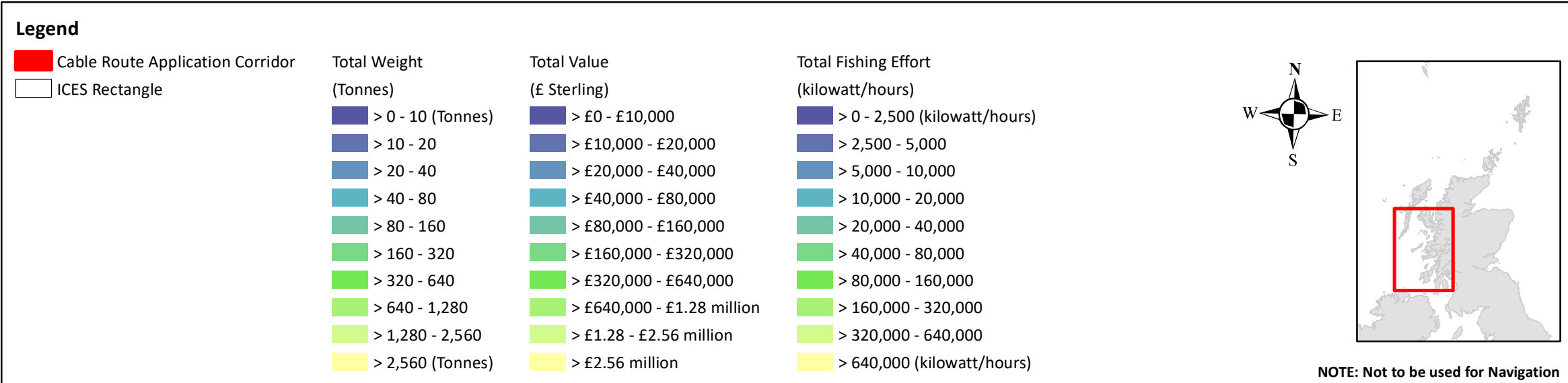
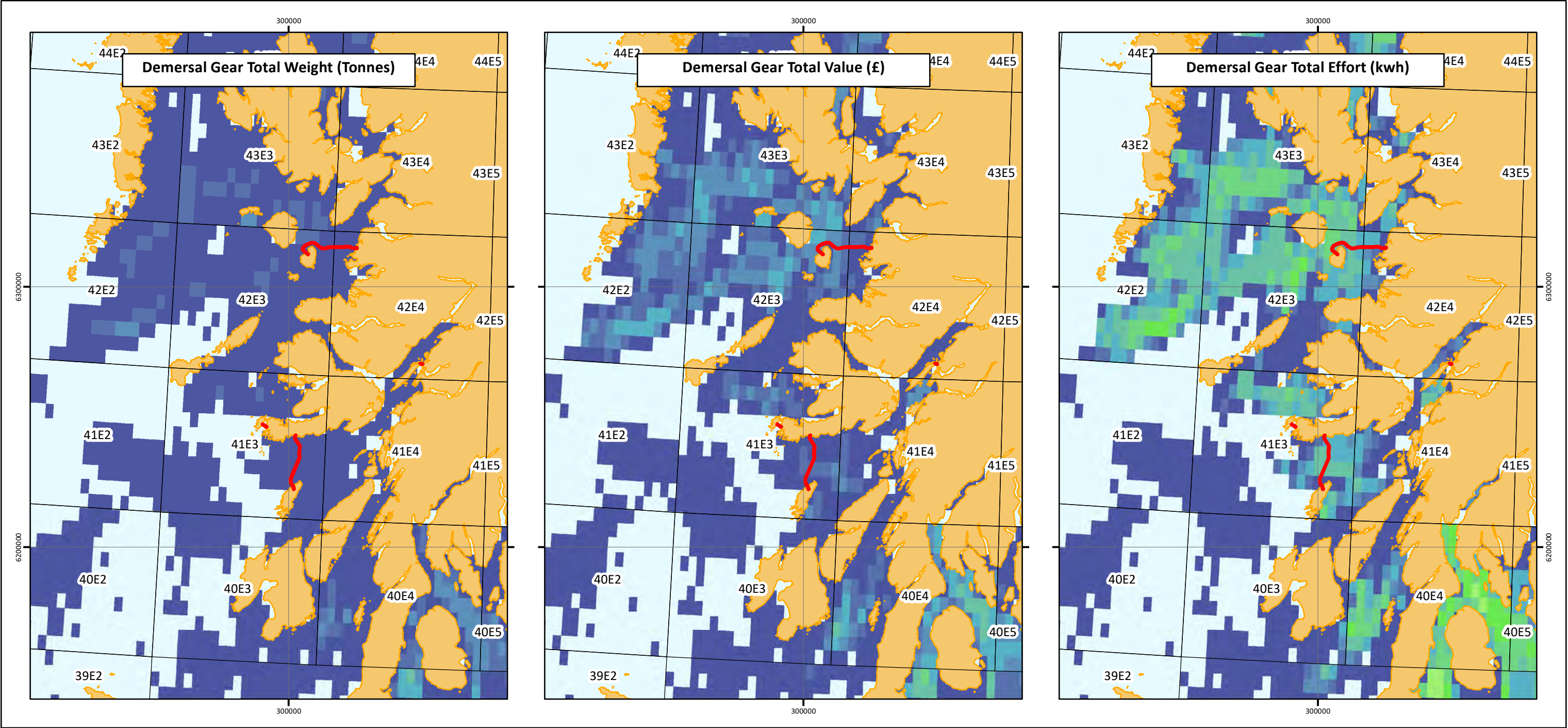
6.2 Spatial Patterns of Species Type for Vessels Over 15 m

Figure 6-3 (Drawing reference: P2308-FISH-003_IH), Figure 6-4 (Drawing reference: P2308-FISH-004_IH) and Figure 6-5 (Drawing reference: P2308-FISH-005_IH) show the spatial patterns of fishing activities within the Inner Hebrides geographical area per gear type in terms of weight, value, and fishing effort, at a resolution of ICES sub-rectangles (20x10 per ICES rectangle). This allows for a refinement in viewing where fishing activity is taking place relating to specific species type. The most recent data published by the Marine Management Organisation (MMO) with this level of spatial resolution is for 2017 (MMO 2020b). As with other spatial datasets, this information is collected for only vessels with AIS equipment and is limited to vessels over 15 m in length and as such does not represent the spatial patterns of smaller fishing vessels.

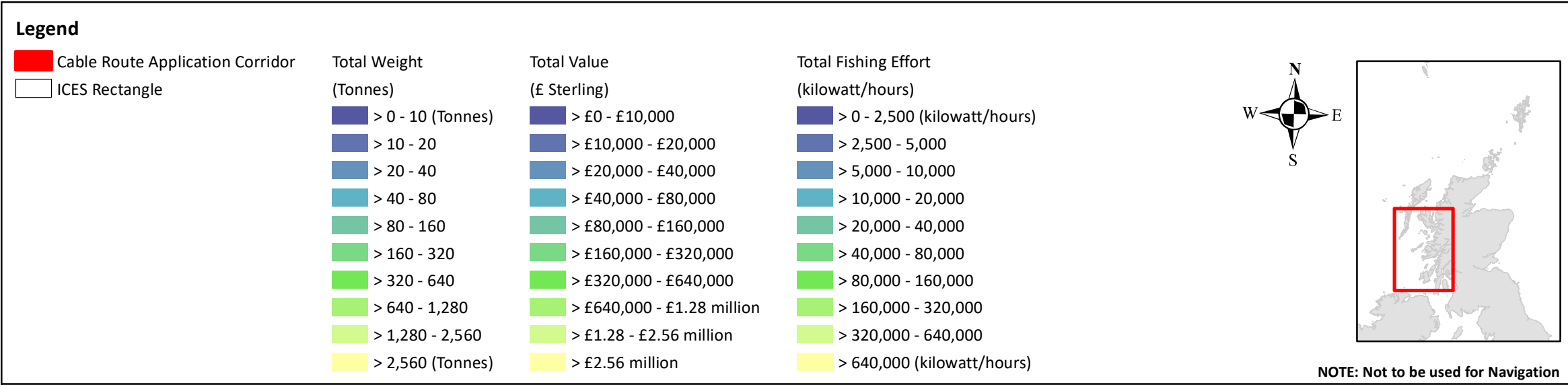
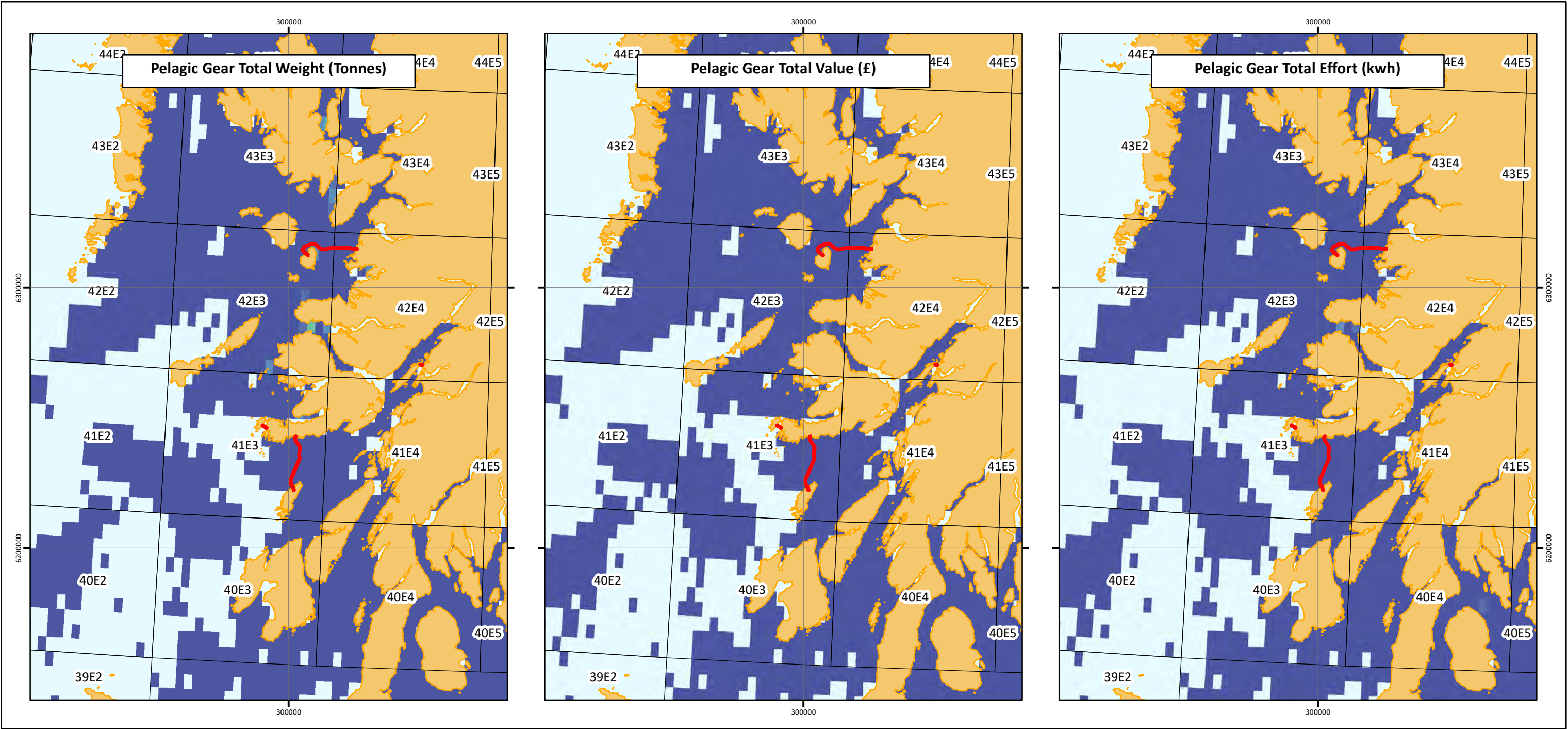
Based on the figures below, demersal fishing is low across the Inner Hebrides geographical area. The cable corridors where the most demersal fishing occurs are Route 2.16 Colonsay to Mull with between



5,000 and 20,000 kw/h effort; and Route 2.13 Eigg to Mainland where effort is highest with between 2,500 and 80,00 kw/h. Pelagic fishing and passive fishing within the Inner Hebrides geographical area is generally low across all cable routes with up to 2,500kw/h across the period considered.

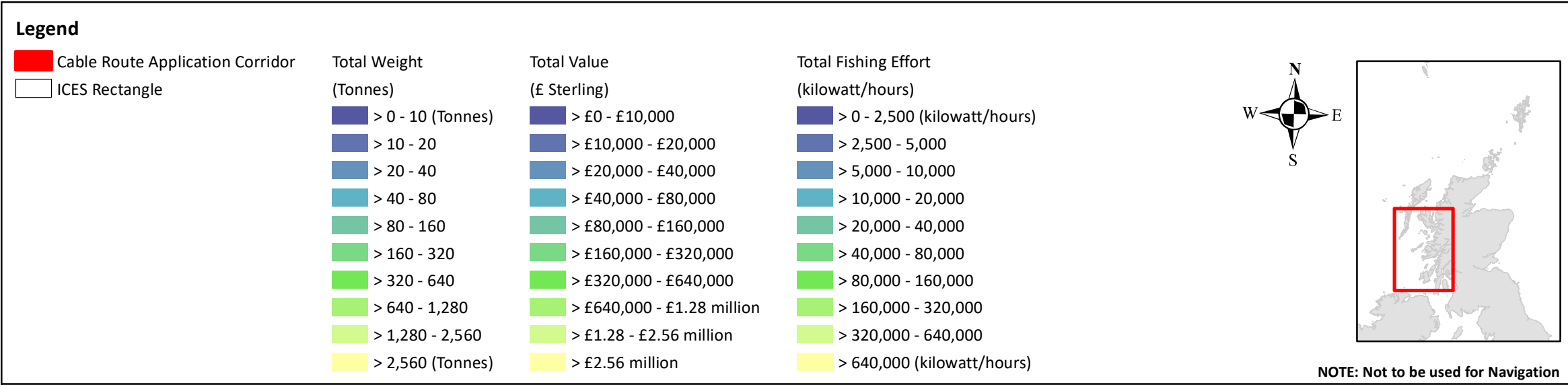
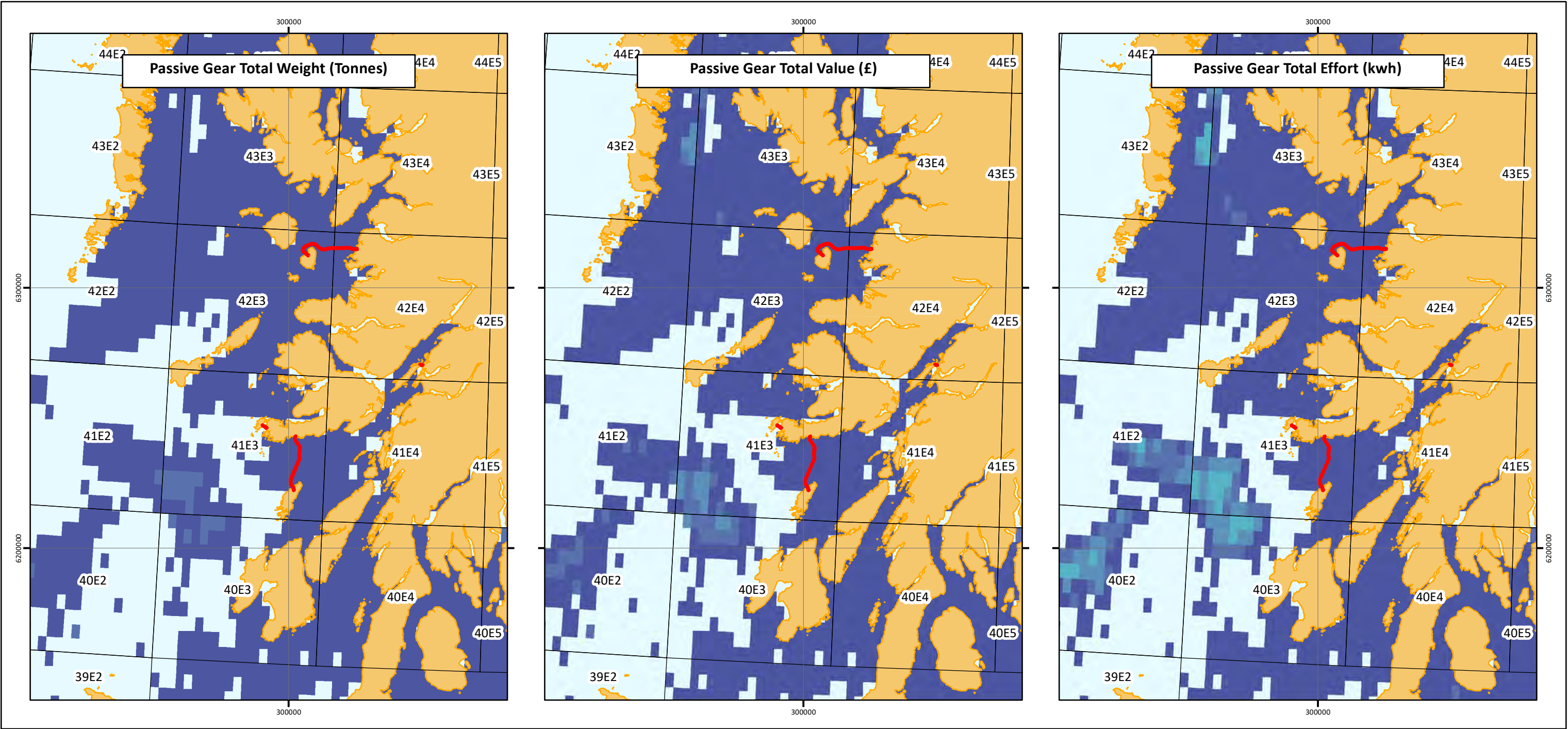


Date	18 October 2021
Coordinate System	WGS 1984 UTM Zone 30N
Projection	Transverse Mercator
Datum	WGS 1984
Data Source	MarineRegions; UKHO; MMO; OSOD; ICES; ESRI;
File Reference	J:\P2308\Mxd\03_FISH\ P2308-FISH-003_IH.mxd
Created By	Chris Dawe
Reviewed By	Chris Carroll
Approved By	Nick Archibald



Date	18 October 2021
Coordinate System	WGS 1984 UTM Zone 30N
Projection	Transverse Mercator
Datum	WGS 1984
Data Source	MarineRegions; UKHO; MMO; OSOD; ICES; ESRI;
File Reference	J:\P2308\Mxd\03_FISH\ P2308-FISH-004_IH.mxd
Created By	Chris Dawe
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Approved By	Nick Archibald

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7. LANDINGS BY SPECIES

7.1 Introduction

This section summarises the key species targeted and landed within the ICES rectangles which lie in the Inner Hebrides geographical area. The data used to inform this section is the Scottish Sea Fisheries Statistics 2019 (Scottish Government 2020).

7.2 Key Species Landed in Inner Hebrides

The top species landed in the Inner Hebrides geographical area by value and quantity in 2019 include crabs, nephrops, and scallop. The top five species landed by value and quantity in the Inner Hebrides geographical area are dominated by shellfish (as described in Section 6).

Table 7-1 Top Five Landed Species by Value (£) in 2019 per ICES Rectangle

Rank	41E3	42E3	42E4
1	Crabs (C.P.Mixed Sexes)	Crabs (C.P.Mixed Sexes)	Nephrops (Norway Lobster)
2	Haddock	Lobsters	Scallops
3	Lobsters	Nephrops (Norway Lobster)	Crabs (C.P.Mixed Sexes)
4	Nephrops (Norway Lobster)	Wrasses	Lobsters
5	Monks or Anglers	Crabs - Velvet (Swim)	Razor Clam

Source: Scottish Government (2020)

Table 7-2 Top Five Landed Species by Quantity (tonnes) in 2019 per ICES Rectangle

Rank	41E3	42E3	42E4
1	Crabs (C.P.Mixed Sexes)	Crabs (C.P.Mixed Sexes)	Scallops
2	Haddock	Nephrops (Norway Lobster)	Nephrops (Norway Lobster)
3	Nephrops (Norway Lobster)	Crabs - Velvet (Swim)	Sprats
4	Monks or Anglers	Lobsters	Crabs (C.P.Mixed Sexes)
5	Megrim	Haddock	Razor Clam

Source: Scottish Government (2020)

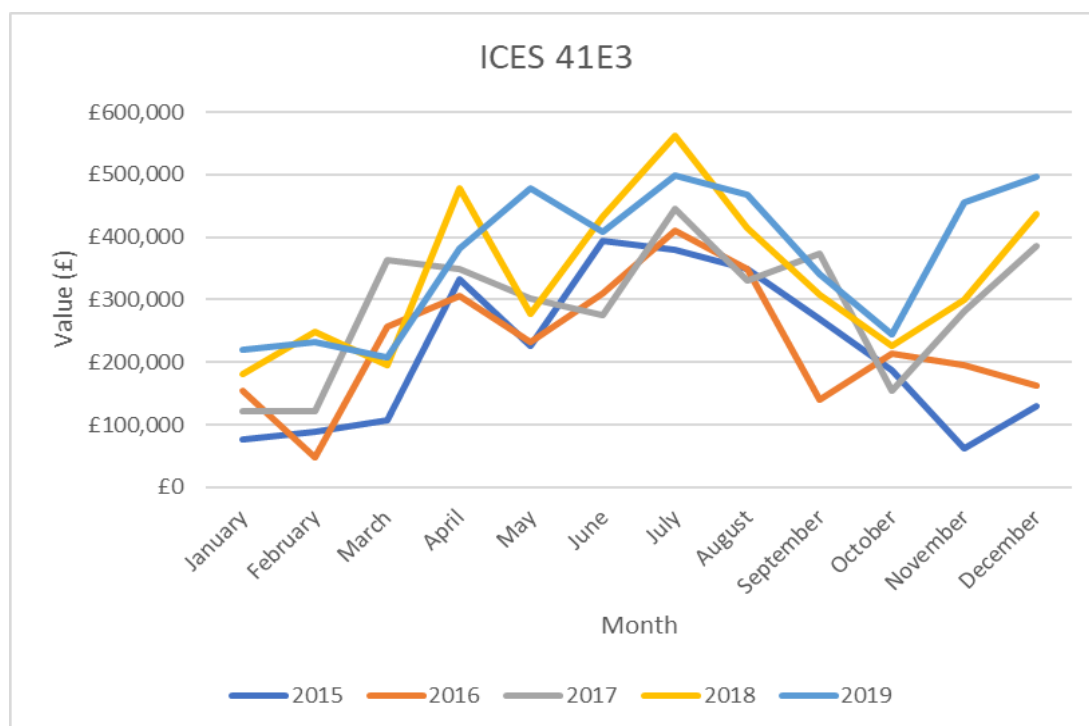
8. SEASONAL TRENDS

8.1 Value

Figures 8-1 to 8-4 show the monthly landings in terms of value. Seasonal trends within the Inner Hebrides geographical area are variable. Analysis of the figures shows:

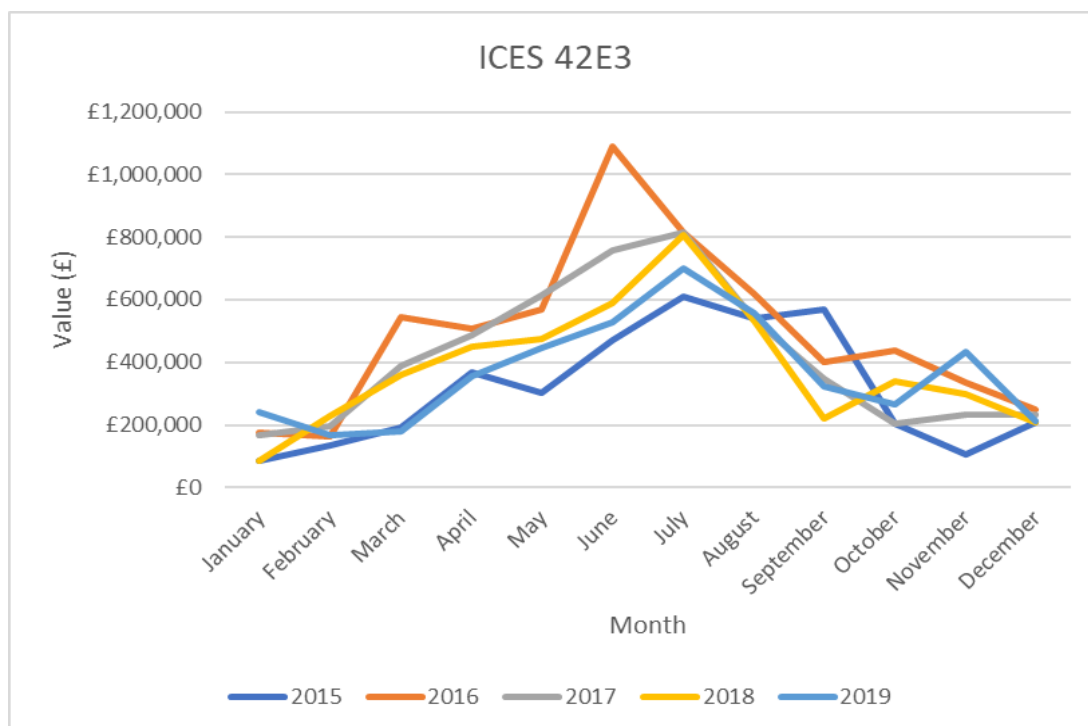
- ICES rectangle 41E3 landings value has an average of over £3,475,685 across all 5 years considered. The value is variable across the year and between the years dependant on species landed and market value. There appears to be an increase in value in July - August and November - December for the years considered (2015 – 2019).
- Within ICES rectangle 42E3, landings value has an average of £4,741,112 across all 5 years considered. The value is variable across the years and between the years dependant on the pelagic and demersal species landed (and market value). There is a seasonal trend of increasing value from May until September, when value falls again for the years considered (2015 – 2019).
- Within ICES rectangle 42E4 landings value has an average of £1,498,604 across all 5 years considered. The value is relatively similar across the years increasing in more recent years which may reflect increased market value. The value and was worth over £2 million in 2019.

Figure 8-1 Landing Value per Month for ICES Rectangle 41E3



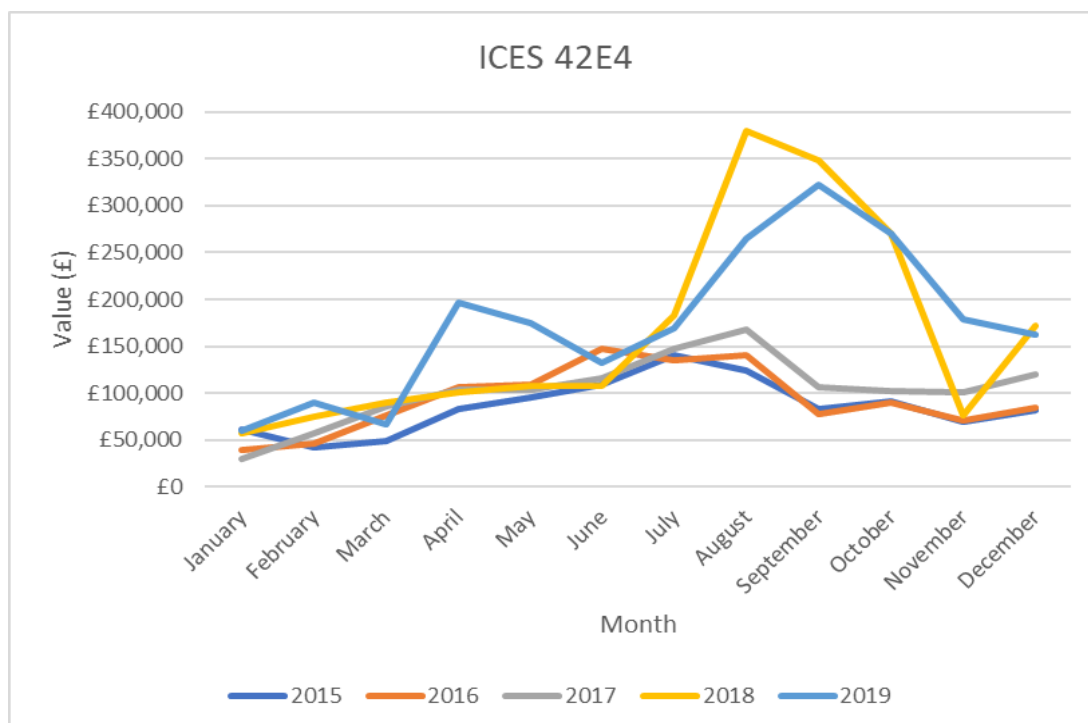
Source: Scottish Government (2020)

Figure 8-2 Landing Value per Month for ICES Rectangle 42E3



Source: Scottish Government (2020)

Figure 8-3 Landing Value per Month for ICES Rectangle 42E4



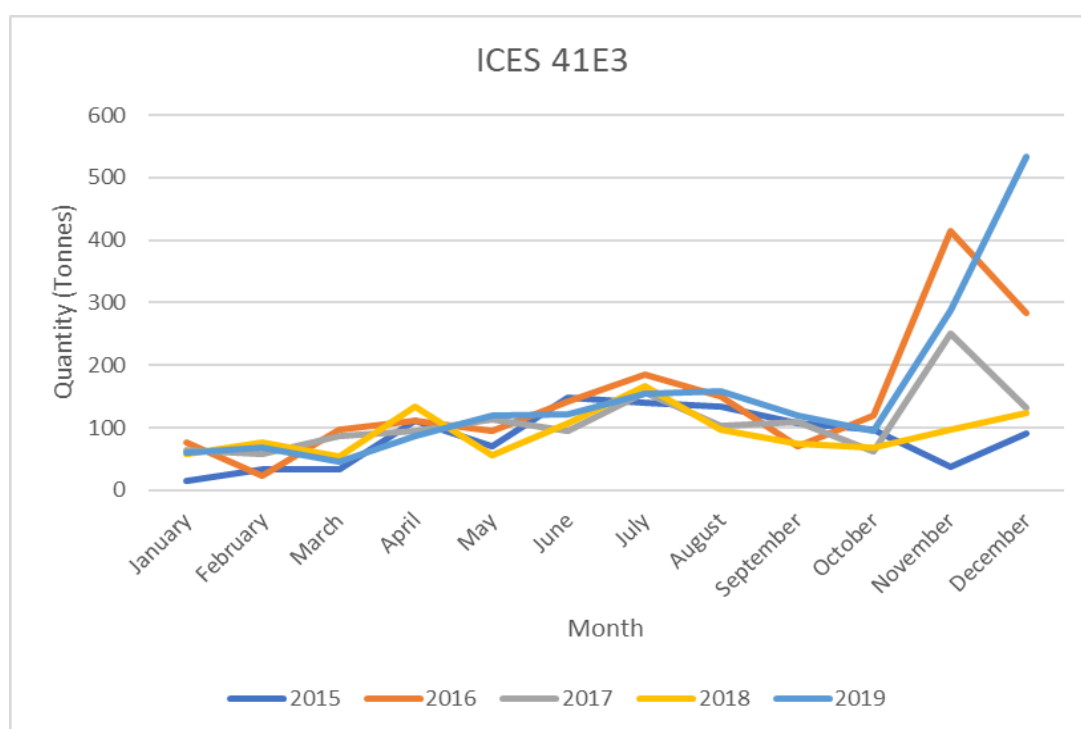
Source: Scottish Government (2020)

8.2 Quantity

Figures 8-4 to 8-7 show the monthly landings in terms of quantity (tonnage). Similarly, to the trends by landings value, they vary within each ICES rectangle within the Inner Hebrides geographical area. Analysis of the data indicates:

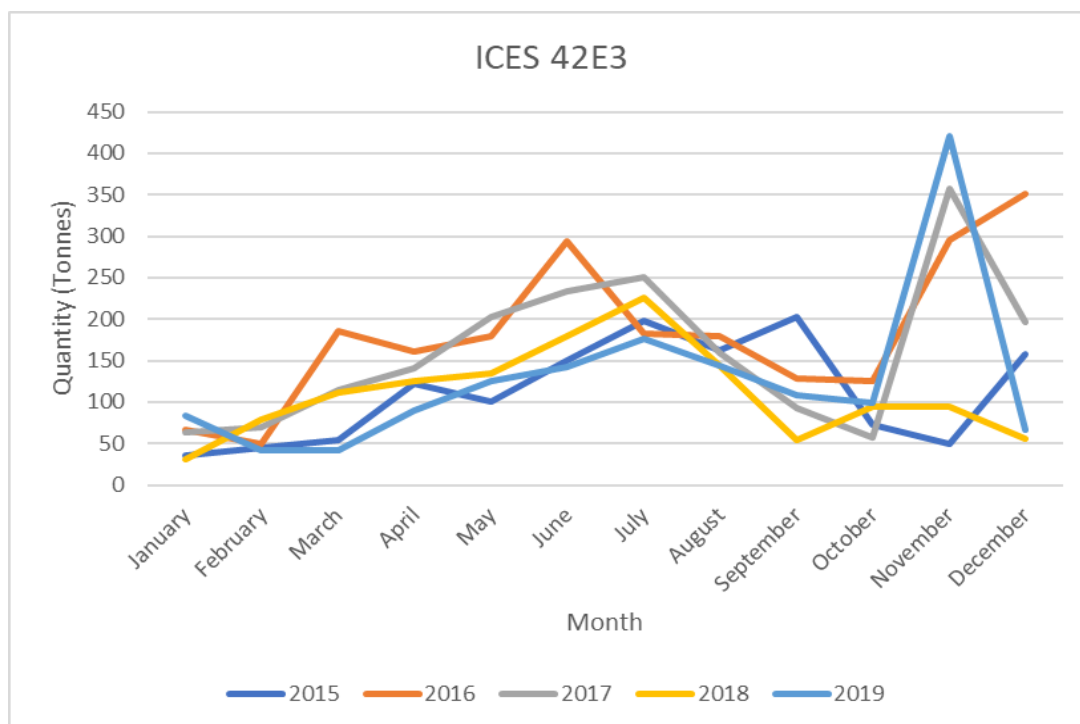
- The peak landings quantity within ICES rectangle 41E3 mirrors the peak landings value, with peaks in October - December across all the years considered.
- Within ICES rectangle 42E3, the peak landings by quantity increase May – June and then have a distinctive peak in November.
- In ICES rectangle 42E4, there is a slight increase in quantity landed in July and again a distinctive peak November - December.

Figure 8-4 Landing Quantity per Month for ICES Rectangle 41E3



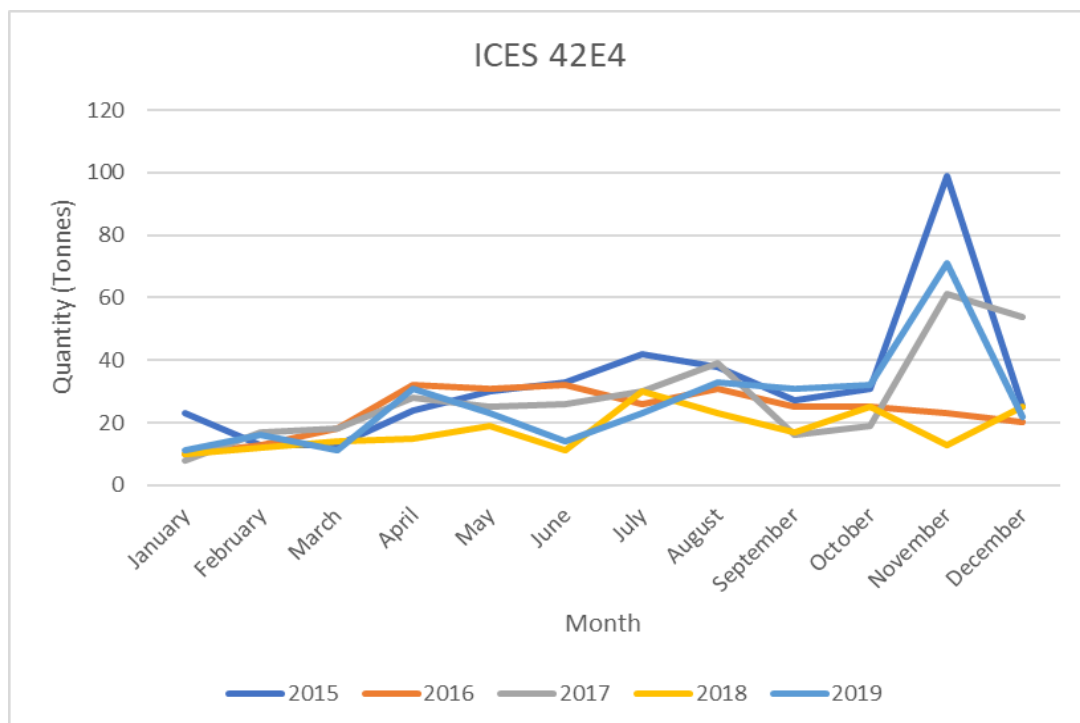
Source: Scottish Government (2020)

Figure 8-5 Landing Quantity per Month for ICES Rectangle 42E3



Source: Scottish Government (2020)

Figure 8-6 Landing Quantity per Month for ICES Rectangle 42E4



Source: Scottish Government (2020)

9. SUMMARY OF FISHING ACTIVITY FOR INNER HEBRIDES GEOGRAPHICAL AREA

9.1 Overview

This report has reviewed publicly available fisheries data and has identified the fishing activity across the Inner Hebrides geographical area. This includes a review of target species and fishing methods, spatial patterns, landings data and seasonal trends. The findings have been summarised for each cable route within the Inner Hebrides geographical area in Table 9-1 below.

Table 9-1 Summary of Fisheries Activity by Cable Route

Cable Route	ICES rectangle	Target Species	Dominant Fishing type			Peak season
			Shellfish	Demersal	Pelagic	
2.13 Eigg-Mainland	42E3	Crab, haddock, lobster, nephrops, scallop, lobster,	✓			June, July and November
	42E4	Nephrops, scallop, crabs, lobster, razor clam	✓			November
2.14 Mainland - Lismore	42E4	Nephrops, scallop, crabs, lobster, razor clam	✓			November
2.15 Iona - Mull	41E3	Crabs, haddock, lobster, nephrops, monks or anglers	✓			November – December
2.16 Colonsay - Mull	41E3	Crabs, haddock, lobster, nephrops, monks or anglers	✓			November – December

10. CONCLUSION

The Scottish fishing fleet is largely comprised of vessels of 10m and under (74% of the fleet). These vessels are not required to record their landings or be traced using VMS, therefore may be under-represented within fishing statistics. From the information available, key fishing activities within the Inner Hebrides geographical area in relation to the proposed cable corridors is shell fishing, with low levels of pelagic and demersal fishing. Nephrops, crab, European lobster, and scallop are key target shellfish species. Sprats and haddock are the key pelagic fish species caught within the Inner Hebrides geographical area. Static gear is widely used across the Inner Hebrides geographical area for shellfish and it is likely that these activities will occur within each of the Inner Hebrides application corridors. Aquaculture for predominantly shellfish is licensed within the region, however there are no active aquaculture sites within 500m of the proposed cable corridors.

The waters in the north-west of the Inner Hebrides geographical area are the most important ICES rectangle in terms of value (42E3) (Scottish Government 2020) with average annual landings of over £4.7M. Cable corridor 2.14 has the highest levels of fishing activity within the Inner Hebrides geographical area. The seasonality of fishing activity is similar across all cable corridors with the peak time for shellfish November to December.

The Project Fishing Liaison Officer is in regular communication with the Inner Hebrides fishing interests and has held pre-application meetings and workshops to seek the opinion of fishing interests. These communications will continue through the Marine Licence determination and into the installation phase of the R100 Project. A Fisheries Liaison Mitigation Action Plan (FLMAP) has been developed which considers the fishing interest opinions. The mitigation measures proposed will seek to minimise displacement and disturbance to commercial fishers within the Inner Hebrides geographical area as far as possible. The best practice mitigation measures proposed in the FLMAP (Appendix F to the MEA), are summarised in the MEA Section 8 (Report Ref: P2308_R5368_Rev0).

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