Kincardine Offshore Windfarm
Environmental Statement
Appendix E: Commercial Fisheries Baseline

August 2015

ATKINS

Plan Design Enable

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Document History

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1	Commercial Fisheries Baseline Report	AC	AP	KW	RW	4/8/15
2	Amendments to Commercial Fisheries Baseline Report following review	AC	AP	KW	RW	17/8/15

Table of Contents

Chapter

Tables

Figures

1. Introduction

1. The interaction and possible impacts that the Kincardine Offshore Windfarm Development could have on the commercial fishing industry is one of the key considerations that must be taken into account, to ensure that the potential development does not have a significant impact on this stakeholder group whether direct or indirect. This report provides the commercial fisheries baseline data that is used to support the commercial fishing assessment (Chapter 14) of the proposed development (the Project). The data in this report are part of an Environmental Impact Assessment (EIA) for the Project and identify any propose mitigation strategies required to minimise the possible impact from the Project.

2. Throughout the UK, the fishing industry is subject to a variety external factors that have had an impact on the industry, including increased operating costs (i.e. fuel, gear changes due to regulatory changes, increased cost of quota and the variable state of key target species). These factors have the potential to have a direct or indirect influence on the profitability of fishing businesses and thus influence the nature of commercial fisheries throughout the region.

2. Legislation and Guidance

3. There is no current method or model for establishing commercial fisheries baselines for offshore wind farm developments. In addition no single data source exists for all commercial fishing data. A variety of sources have, therefore, been used to collect relevant information for this baseline report.

4. In order to provide a detailed and robust baseline description of fisheries operating within the site and the wider region surrounding the area, the compilation of the available data for the assessment takes into consideration the requirements laid out in the following:

- Guidance note for Environmental Impact Assessment In respect of FEPA and CPA requirements (Cefas, 2004);
- Recommendations for Fisheries Liaison: FLOWW (Fishing Liaison with Offshore Wind and Wet Renewables Group) (BERR, 2008);
- Best Practice Guidance for Offshore Renewables Developments: Recommendations for Fisheries Liaison (FLOWW, 2014);and
- Guidance on Environmental Considerations for Offshore Wind Farm Development. Reference Number: 2008-3 (OSPAR, 2008).

3. Commercial Fisheries

3.1. Study Area

5. The Project sits within ICES rectangles 43E7, 43E8 and 42E8 (to a small extent). The following three study areas have been defined for the assessment of commercial fisheries (Figure 3-1):

- National Study Area (NSA) in order to provide a Scottish national overview allowing fishing grounds in the general area of the site to be described within a national context.
- Regional Study Area (RSA) – a wider study area which incorporates the Kincardine Development Area and the Offshore Export Cable Corridor as well as the wider region.
- Local Study Area (LSA) - study area specifically accounting for the Kincardine Development and the Offshore Export Cable Corridor and comprises of ICES Rectangles 43E7, 43E8 and 42E8. The local study area can be defined as the smallest spatial unit available for the collection and collation of relevant fisheries data to the site.

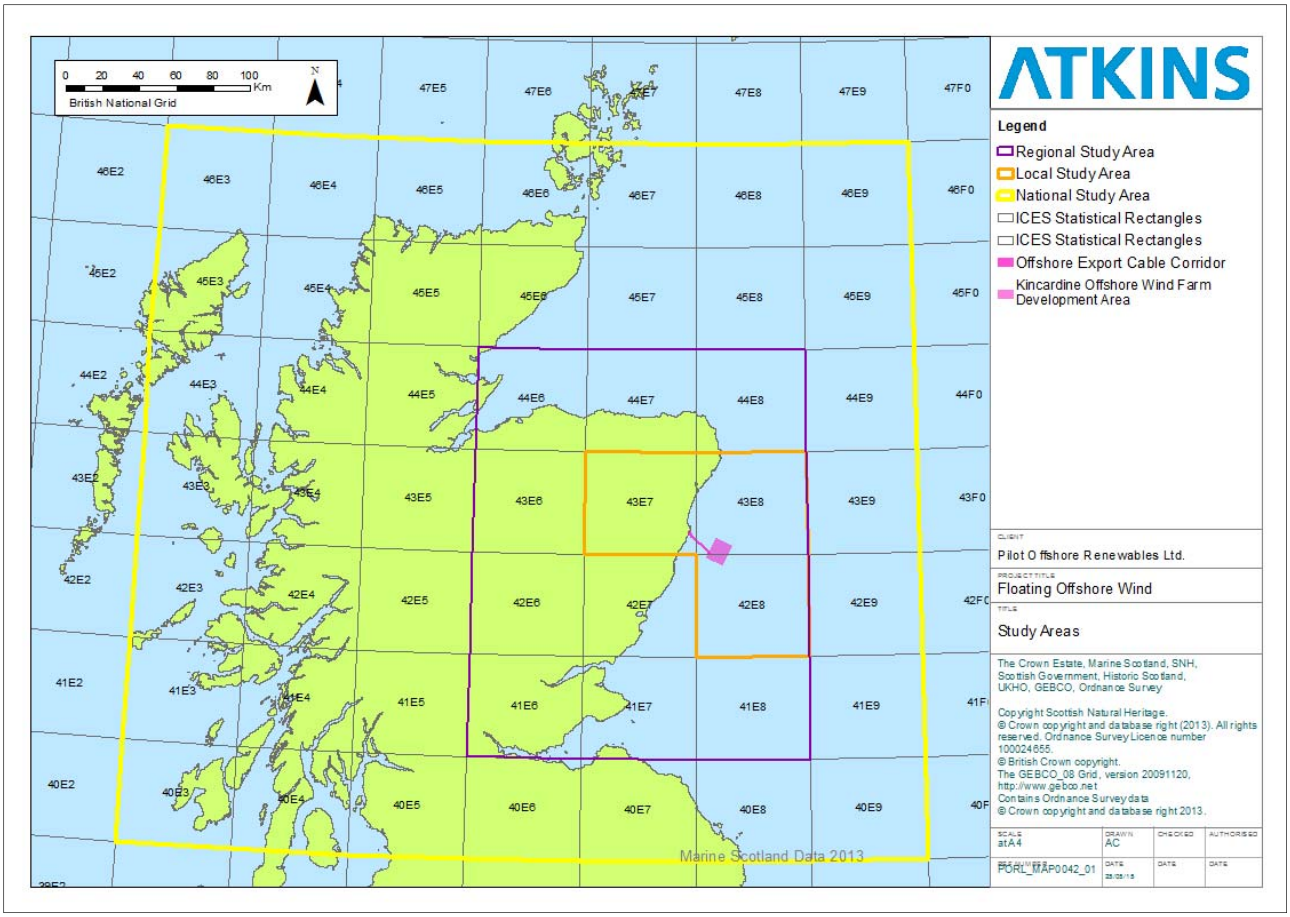


Figure 3-1 Commercial Fisheries Study Area

3.2. International Council for the Exploration of the Sea (ICES) Rectangle Areas

6. International Council for the Exploration of the Sea (ICES) statistical rectangles are the smallest unit used in the collection and collation of fisheries statistics (landings/catch data) from vessel logbook data (except for those UK under 10m vessels targeting shellfish, which are subject to a separate catch return system). ICES rectangles align to 1° of longitude and 30' of latitude, an individual ICES rectangle for the most part cover an area of 900nm^2.

7. The area of ICES rectangles is much larger than the Project. The majority of the Development Area is located within ICES rectangle 43E8, with a very small section falling in 42E8. The Offshore Export Cable Corridor falls within rectangle 43E7. The regional study area for this assessment encompasses the ICES rectangles 42E8, 43E7 and 43E8.This has been defined to enable assessment of the activities within the proposed development area and cable route compared to the activities of vessels in the adjacent grounds.

3.3. Data and Information

8. Baseline data has been collected and collated from a variety of sources as fisheries data cannot be accurately depicted from a single data set. Data has included fisheries statistical datasets, grey and peer reviewed literature and consultation with fishermen and their representatives.

9. The following information sources and key data used for this baseline are:

- International Council for the Exploration of the Seas(ICES);
- Marine Management Organisation (MMO);
- Marine Scotland;
- Marine Scotland Science (MSS);
- Centre for Fisheries, Agriculture and Science (CEFAS);
- Scottish Fishermen's Federations (SFF);
- District Fishery Officers (DFO);
- Fishermen and their representatives ;
- Grey & peer reviewed literature;
- Official fisheries statistics; and
- Known commercial fishing grounds, spawning grounds and nursery areas.

10. Each source of data has its own sensitivities and limitations which are discussed further in Section 3.5. MS-LOT advised that data over a five year period should be used to accurately reflect fishing activity within the region when analysing landings statistics and effort data. This timescale accurately reflects fishing activity within the region when averaging landings and effort data over years.

3.4. Consultation

11. The local and wider fishing industry has been contacted from the early stages of the project to enable effective dialogue to be undertaken. Consultation with fishermen has been undertaken by Atkins, The Crown Estate and MacAskill Associates. A fisheries liaison officer (FLO) has been appointed to oversee consultation with the fishing industry during the development phase. Pre-application consultation was undertaken at a public event on the 18th December 2014. Adverts for the event details, a brief project description, location and time of the event were publicised in the local newspaper and on the dedicated project website [http://pilot-renewables.com/]. There were no comments related to commercial fishing from this event, with no fishermen recorded as present at the consultation event.

12. In addition, consultation as part of the Scoping phase was undertaken with regards to specific commercial fisheries issues. This is detailed within the Environmental Statement (ES), Chapter 14.

3.5. Data - Limitations and Sensitivities

13. Within fisheries data sets there are a variety of limitations with regard to accuracy of data. The majority of this variance is due to the reporting system used to input the data and this can include accidental misreporting. Individual data sources and limitations are explored further below.

3.5.1. Fisheries Vessel Monitoring System (VMS)

14. A VMS unit is a type of satellite tracking device using on board transmitters on fishing vessels. VMS is a legal requirement under EC Regulation 2244/2003 and Scottish Statutory Instrument (SI) 392/2004 for all vessels over 15m long (>15m). Information sent via VMS includes:

- vessel identification;
- geographical position;
- date/time of position fixing; and
- course and speed.

15. Each vessel transmits every two hours to the Marine Scotland Fisheries Monitoring Centre (FMC). Marine Scotland is responsible for all Scottish-based vessels anywhere in the world

as well as non-UK vessels operating within Scottish waters. Positional data is extracted from VMS data and is presented as a 0.05 degree grid, referred to as sub-rectangles.

16. As only vessels >15m are covered by VMS, there may be significant elements of fishing activity undertaken by UK fishing vessels which are not covered by this data, namely smaller inshore vessels. In addition the representation of fishing effort as 'number of vessels' per sub-rectangle per time period does not demonstrate the length of time that individual vessels have spent in each sub-rectangle over the period. Vessels that repeatedly visit the same areas will therefore be under-represented compared to vessels that frequently move. Furthermore, VMS position plots do not distinguish individual vessel identity due to data protection issues under the Data Protection Act (1998).

17. Marine Scotland provided VMS data for 2009-2013. VMS data was produced by applying VMS records to the Fisheries Information Network (FIN), which is the Scottish Government's sea fisheries database. FIN holds information on catch, gear type, landings (weight, price at sale).The log time identifies the date and time of each VMS transmission, this enables the location of a vessel to be linked to the gear type used and the weight of the landings (Holmes *et al.,* 2011). Weights and rules separate the data into groups representing key sectors of the UK fishing fleet such as crab, lobster, squid, *Nephrops* (mobile and static gear), demersal (mobile and static gear), scallop, mackerel and herring (Kafas *et al.,* 2012).

3.5.2. Marine Management Organisation (MMO) and Marine Scotland Statistics

18. Under EC Regulation 2847/93 of 12 October 1993, establishing a control system applicable to the common fisheries policy, the Masters of community fishing vessels are required to keep a logbook of their operations on vessels over 15m. These logbooks are used to record the quantities of species caught and retained on board, the date and location (ICES rectangle) of such catches and the type of gear used. The species recorded are those subject to Total Allowable Catch (TACs) or quotas, as well as those included in lists decided by the EU Council of Fisheries Ministers (EC, 2015).

19. Landings statistics include information on:

- Species targeted;
- Fishing methods used;
- Annual variations;
- Seasonal variations; and
- Landings values and weight.

20. Vessels under 10m length were previously exempt from these requirements, however in Scotland under 10m vessels provide equivalent information to Marine Scotland on NEP1 and HELL1 paper returns.

21. In addition to this scheme, there is the 'Registration of Buyers and Sellers of First Sale Fish and Designation Auction Site Scheme' (2005).This legislation states that all buyers and sellers of first sale fish must be registered and auction sites must be designated. The scheme was implemented in 2005 in order for individuals and/or companies to be registered buyers and sellers of first sale fish and shellfish and to assist fisheries administrations to keep track of actual amounts of fish species sold. In addition to this the scheme enables monitoring and controls of fish landings to improve and increase traceability in fish by ensuring landings are recorded.

22. Although fishing activity is logged by ICES rectangle it is highly unlikely that the spread of fishing activity is equal throughout the rectangles and therefore this should be recognised and taken into consideration during any assessment. In addition it should be noted that information prior to 2005 may under estimate the amount of actual fishing in the area as a

large proportion of activity is undertaken in the inshore areas by vessels in the under 10m category.

23. Allocation of catch by under 10m vessels is undertaken using sales note data. Therefore as sales notes do not record area of fishing there is a tendency for local offices to aggregate landings on fishing grounds used by local fleets. This means that the pattern of exploitation can be subject to potentially significant discrepancies in the areas fished by local under 10m vessels.

24. Landings data includes limitations as part of the data sets are 'confidential' which may cause some slight misrepresentation of data. This is not likely to be significant but should be noted. Specific landings data cannot be released if the number of unique vessels within the data request fall below five vessels. The assumption is made therefore that where 'confidential' sections of data are missing only five or less vessels are engaged in fishing in that particular fishery.

25. Landings data for this baseline report were sourced from the MMO and Marine Scotland for the years 2009-2013.

3.5.3. UK Fisherman's Information Mapping (UKFIM) Data

26. UK Fisherman's Information Mapping Project (UKFIM) data, collected as part of a Crown Estate initiative, has been released exclusively to KOWL for background information on the site as a result of consultation with SFF and the Crown Estate in early 2014. Due to extreme sensitivities surrounding the data, KOWL has signed a license agreement stating that data will only be used internally, and that data will not enter public domain through GIS maps or other visual representation or statement of data. As the data is confidential, it cannot be made public or referred to directly. We have however used the information to check and confirm our findings using other data sources, to ensure they are consistent with UKFIM information. KOWL are thankful to SFF for allowing access to this data to provide valuable knowledge in determining site selection and to allow KOWL to reduce the impacts on the fishing effort within the area.

3.5.4. ScotMap

27. ScotMap data is presented in a grid system. These data are based on interviews with the inshore fleet (representing <15m vessel length). ScotMap provides the best available data for the inshore area but notable gaps include:

- Not all vessels were interviewed;
- Earnings information was not available; and
- The way some fishermen have defined their fishing areas affected the output resolution of the maps dispersing value and giving a false impression of where some types of fishing are taking place.

3.6. Fisheries Controls and Legislation

3.6.1. Common Fisheries Policy

28. Fisheries within the European Union (EU) are managed under the European Commission Common Fisheries Policy (CFP), although management of territorial seas up to the 12 nautical mile (nm) limit remains responsibility of the nation state, except where Member States had historical access (between 1st January 1953 and 31st December 1962 within the 6-12nm zone (Daan, 1998; HM Government, 2014). A reform to the CFP was proposed by the EC in 2011, following this the new CFP has been effective from 1st January 2015.

Additional information included the discard ban, Maximum Sustainable Yield (MSY), Regionalisation, Social Dimension and Transferable Fishing Concessions.

29. The primary aim of the CFP is to ensure rational and sustainable exploitation of fish stocks through conservation and management policies designed to protect resources and reflect the needs of the fishing industry.

3.6.2. Quota and Total Allowable Catch (TAC)

30. Quota Allocations for 2014 for the UK in ICES Division IV are depicted in Table 3-1 (EU, 2014). It should be noted that these figures are subject to change dependent on the uptake of quota throughout the year.

Table 3-1 2014 Quota Allocations (EU, 2014)

Species	2014 UK Quota allocation (tonnes)
Haddock	27 002
Whiting	10,193
Lemon Sole	3,904
Plaice	29,633
Herring	238
Cod	10,827
Nephrops	13,424

3.7. Fisheries Regulation and Management Fishing licenses

31. There are a range of fisheries regulations and management measures which are in place for UK fishing vessels. These include:

- Fishing Licences (Category A,B and C)
- Effort (days at Sea) Restrictions - Scottish Government's scheme for managing fishing effort is called the Conservation Credits Scheme (CCS) which is managed by Marine Scotland for the over 10m fleet.
- Shellfish entitlements – allowances for unrestricted amounts of crabs and lobsters to continue to be caught were issued to owners if vessels could demonstrate that they landed more than 200kgs lobsters or more than 750kgs of crabs between 1st January 1998 and 31st March 2004. Vessels which have a shellfish entitlement must submit weekly log sheets to the local Fishery Office.
- Scallop dredging restrictions:
  - Minimum landing size for king scallop is currently 100mm; and
  - Limits on the number and type of dredges used by vessels under the Prohibition of Fishing for Scallops (Scotland) Order 2003 (SSI 2003/371).
- Statutory Instrument (SI) (Scottish specific legislation) - Inshore Fishing (Prohibition of Fishing and Fishing Methods) (Scotland) Order 2004, No. 276. The SI prohibits all mobile/active gear from 1st January to 31st March and 1st October to 31st December each year for the following area as described in the SI:
  - 'Aberdeen to Mons Craig, being the area of waters within one half mile of the mean high-water mark of ordinary springtides on the mainland coast bounded at the northern end by a line drawn from a point on the mainland at 57º08'.38 North latitude and 02º02'.8 West longitude (Girdleness Lighthouse) at a bearing of 90º true, and at the southern end by a line drawn from a point on

the mainland at 56º56'.1 North latitude and 02º11'.8 West longitude (Mons Craig) at a bearing of 135º true'

3.8. Baseline

3.8.1. Physical Background

32. The Project is located approximately 17km (9.2nm) south-east of Aberdeen off the east coast of Scotland. The seabed in the area mainly consists of marginally mobile sands, which is reflected in the presence of sand waves throughout the study area. Sand and shell fragments dominate the development area, with more detail described in Chapter 4. There is a deep trench at the centre of the Development Area with cliffs of over 30m noted. Associated with this feature, there is also evidence of glacial moraines within the site boundaries.

3.8.2. Fisheries Background

33. Improvements to fishing vessel and gear technologies have meant that the intensity of fishing has increased in recent years (Frid *et al.,* 2000). However although intensity has increased, the fishing industry in the UK is generally in decline. The fishing industry in the UK remains a key industry for many coastal fishing towns and villages.

34. On the north east coast of Scotland the main industry centres have been identified as Peterhead and Fraserburgh (Scottish Government, 2013a). During 2013, Scottish based vessels landed a total of 367,000t of fish and shellfish with an associated value of £430 million, demonstrating a 9% decrease compared to 2012.

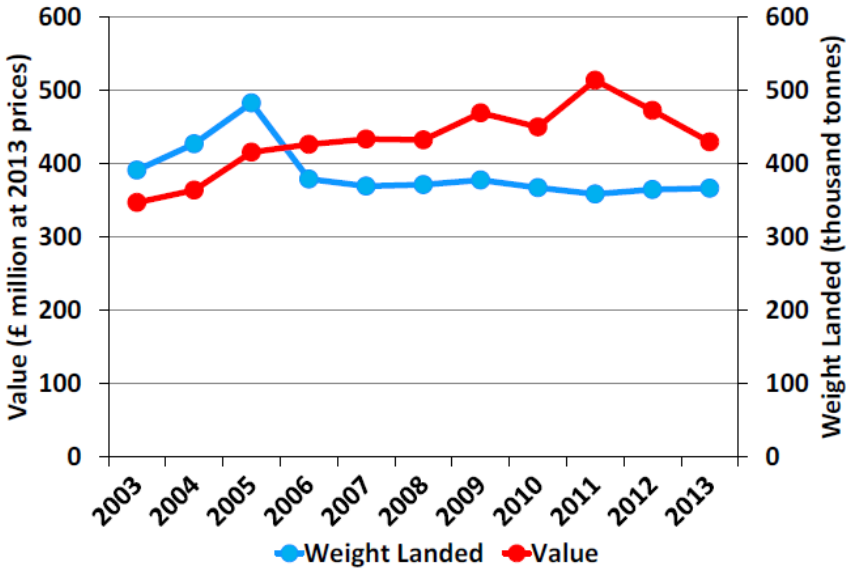


Figure 3-2 Quantity & value of landings of all species by Scottish vessels (Source: Scottish Government 2013a).

3.8.2.1. Size of the Scottish Fleet

35. Records of the size of the Scottish fleet are currently held by Marine Scotland which state that the number of active Scottish based vessels fell by 1% (26 vessels) to 2,020 at the end of 2013 and is the smallest recorded fleet size (305 vessels) compared to 10 years ago. 71% of the Scottish fleet is made up of vessels 10m and under totalling 1,426 vessels in 2013 (Scottish Government, 2013a).

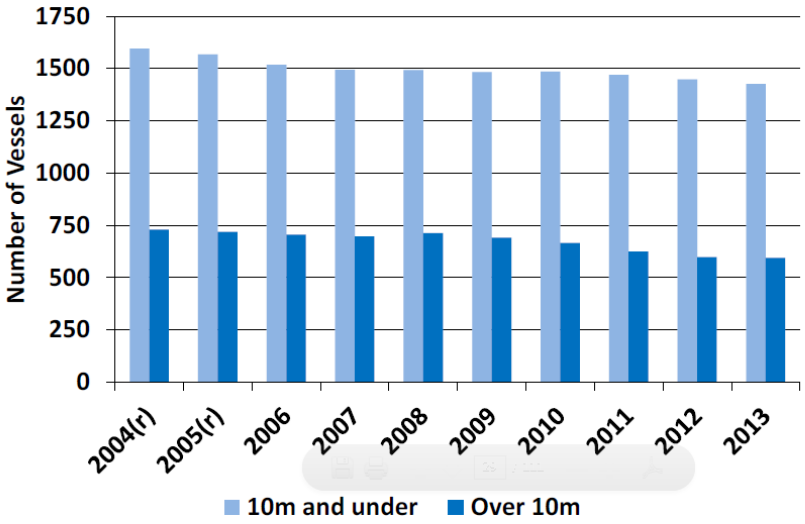


Figure 3-3 Size of the Scottish fleet: 2004-2013

3.8.2.2. Employment

36. Site specific information on employment levels in the Regional Study Area is very limited, with more data available at a national level. At the end of 2013, the number of fishermen employed on Scottish based vessels increased by 245 individuals (a 5% increase) from 4,747 to 4,992 from 2012 (MMS, 2012).

37. The number of fishermen employed on Scottish based vessels by district in 2013 is displayed in Table 3-2 below. Fraserburgh has the highest number of individuals employed in the fishing industry with a total of 783, followed by Peterhead with 394. Aberdeen, the closest port to the Project has the smallest number of individuals (111) employed within the fishing industry.

Table 3-2 the number of fishermen employed on Scottish based vessels by district, 2013 (MSS, 2014)

District	Regularly Employed	Part-Time	Total
Aberdeen	73	38	111
Anstruther	99	52	151
Buckie	130	52	182
Eyemouth	204	18	222
Fraserburgh	646	137	783
Peterhead	344	50	394
Scarbster	148	2	151
Total	**1,644**	**35**	**1,994**

3.8.3. Identified Fisheries in the Region

38. Commercial fisheries activities identified in Regional Study Area include:
- Demersal Trawling for *Nephrops* and squid;
- Dredging for scallops; and
- Creeling for lobster, edible carb and velvet crab.

39. Information on species life history traits, spawning and nursery grounds are described in Chapter 5.

3.8.3.1. Demersal Trawl Fishery

40. The demersal trawl fishery is one of the most important fisheries in the North Sea, primarily targeting cod, haddock and whiting. However, demersal trawling within the Local Study Area mainly target squid (*Loligo forbesi)* and *Nephrops norvegicus.* Demersal species live on or near the seabed and feed on benthic organisms and other fish. Demersal species contributed 32% of the overall landings values by Scottish vessels in 2013 with landings made up from haddock, (34%), cod (11%), saithe (11%), whiting (10%) and monkfish (7%) (The Scottish Government, 2013a). The main demersal fleet in Scotland is based in the north east (Peterhead and Fraserburgh) and Shetland. Gear used to target demersal fisheries include towed trawls and Scottish seine nets. Demersal otter trawling is currently the most common commercial fishing method within Scottish waters (Figure 3-4).

41. Demersal trawling for squid has seen an increase in activity since 2005 with fisheries continuing in the Firth of Forth and Moray Firth and new small scale fisheries establishing in the Inner and Outer Hebrides and on the Aberdeenshire coast (Young *et al.,* 2006, Hastie *et al*., 2009).

42. A large proportion of the Scottish squid landings are caught in and around the Moray Firth to the North of the development site. Squid fishing has increased in popularity in recent years as it is not covered by the quota system (ICOL, 2012). ICOL (2012) determined that the squid fishery has become increasingly important to local inshore fishermen with an increase in vessels targeting the species from Fraserburgh and Peterhead. In addition ICOL also determined that squid grounds are not fixed, with fishermen stating that they were targeting species further offshore than previously.

43. The Nephrops fishery in Scotland has increased from a few tonnes in 1960 to in excess of 31,000 tonnes in 2009. *Nephrops* are the most valuable commercial shellfish species to the Scottish fishing industry having a value of £64.6 million in 2013, this represents 15% of the value of all Scottish landings. A large proportion of *Nephrops* are caught using trawls (figure 4), however on the west coast of Scotland creeling is still an important practice. In the North Sea, the Farn Deeps, Firth of Forth, Moray Firth and Fladen ground are the areas targeted by most fishermen for the exploitation of *Nephrops* (The Scottish Government, 2013b).

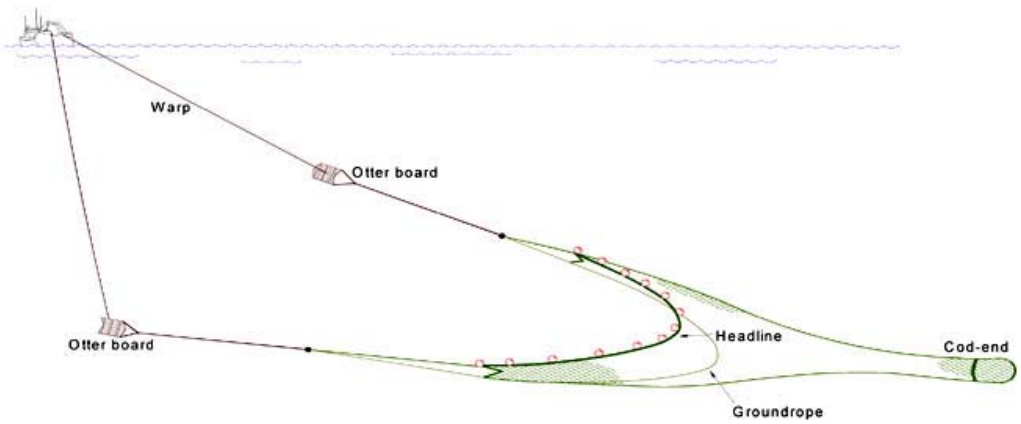


Figure 3-4 Components of an otter trawl (FAO, 2005)

3.8.3.2. Pelagic Fishery

44. The Scottish pelagic fleet predominately targets herring and mackerel and is based mainly in Fraserburgh and Shetland consisting of approximately 27 vessels (DECC, 2004). The pelagic fishery in the Local Study Area primarily exploits mackerel using pelagic trawls. Typically these stocks are highly mobile and migratory, for example mackerel are known to

move from the west of Ireland in the summer months to the North Sea in the winter. Trawling gear mainly consist of single or pair trawlers with pelagic trawl nets. Nets are generally towed until the sensors on the nets indicate a good catch has been made (The Scottish Government, no date).

3.8.3.3. Dredge Fishery

45. The main shellfish landed by Scottish dredging vessels throughout Scotland and within the Local Study Area (Section 3.9) is king scallop (*Pecten maximus).*

46. King scallop is the most important exploited mollusc and second most valuable shellfish species landed in Scotland. Landings have increased since the 1970s and it is now classed as one of the top 5 most valuable species in the UK. The mostly common method to exploit the species in Scottish waters is by mechanical dredging with the main fisheries off the east coast of Scotland, Orkney and Shetland Isles. The main fishing gear used for the capture of scallops is by towing spring-loaded “Newhaven” scallop dredges. Each dredge is designed to ‘rake’ the seafloor to lift the scallops from their recessed position. A steel and nylon mesh bag is placed behind the tooth bar to retain the catch (Beaukers-Stewart & Beaukers-Stewart, 2009). Generally vessels undertaking scallop dredging are usually <15m in length and exploit inshore waters around the UK, there is a small number of over 20m vessels which target both inshore and offshore waters.

47. There is a small commercial hand-diving sector which fluctuates at around 5% of the total landings of scallop in Scotland.

48. Key ports in Scotland for landing of scallops are Oban, Aberdeen, Peterhead, Port Ellen and Kikcudbridge (Cappell *et al*., 2013) Management regimes for this fishery is mostly through minimum landing sizes, restrictions on dredge numbers and in some areas seasonal closures (Beaukers-Stewart & Beaukers-Stewart, 2009). As of December 2012 there were 153 recorded vessels classed as actively dredging for scallops, out of these 46 have not recorded any landings of scallops between 2003-2012. 97 of the 107 vessels using their license exploit scallops via use of mechanical dredges.

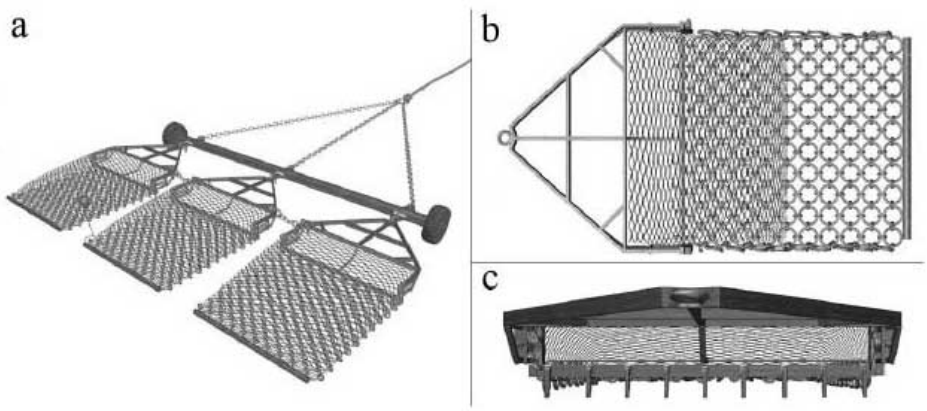


Figure 3-5 Newhaven Dredge (Boulcott *et al*., 2012)

3.9. Fisheries Statistics (MMO and Marine Scotland)

3.9.1. Landings Values

3.9.1.1. National Overview

49. Figure 3-6 displays the total landings values (£) (averaged 2009-2013) by species in the National Study Area. The figures illustrate that ICES Rectangles in the LSA (43E7, 43E8 and 42E8) contain fishing grounds of low to moderate value. 43E7, which contains the majority of the export cable corridor, has a very low average value of £176,187, with 43E8 having the highest value in the LSA containing the majority of the Development Area at £1,940,587. ICES rectangle 42E8 containing a small part of the Development Area has a value of £1,248,521.

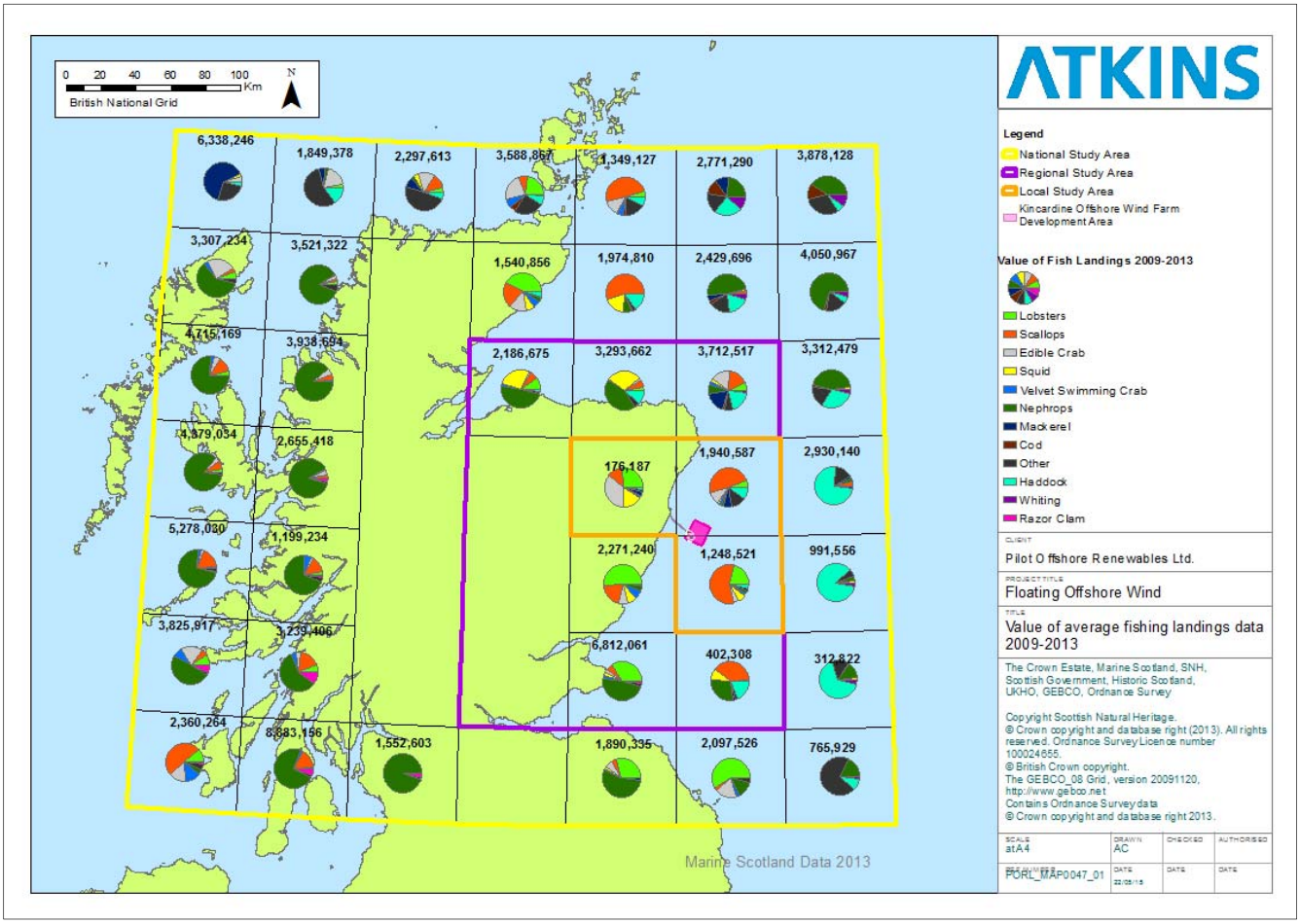


Figure 3-6 Landings Values (£) by Species (Average 2009-2013) in the National Study Area (Source: MMO, 2014)

3.9.1.2. Regional Study Area

50. The majority of averaged landings in 43E7, in the inshore area, are comprised of lobsters and edible crab, while landings in 43E8 and 42E8, in the offshore areas, comprise of scallops (Figure 3-7). Squid has also been recorded in all parts of the Local Study Area. *Nephrops* heavily dominate landings values in ICES areas elsewhere within the RSA. Squid landings are prevalent thought the RSA however the highest values of landings are towards the Moray Firth to the North of the Development Area. Landings values of lobsters are highest to the south of the Development Area in ICES area 42E7 and 41E7.

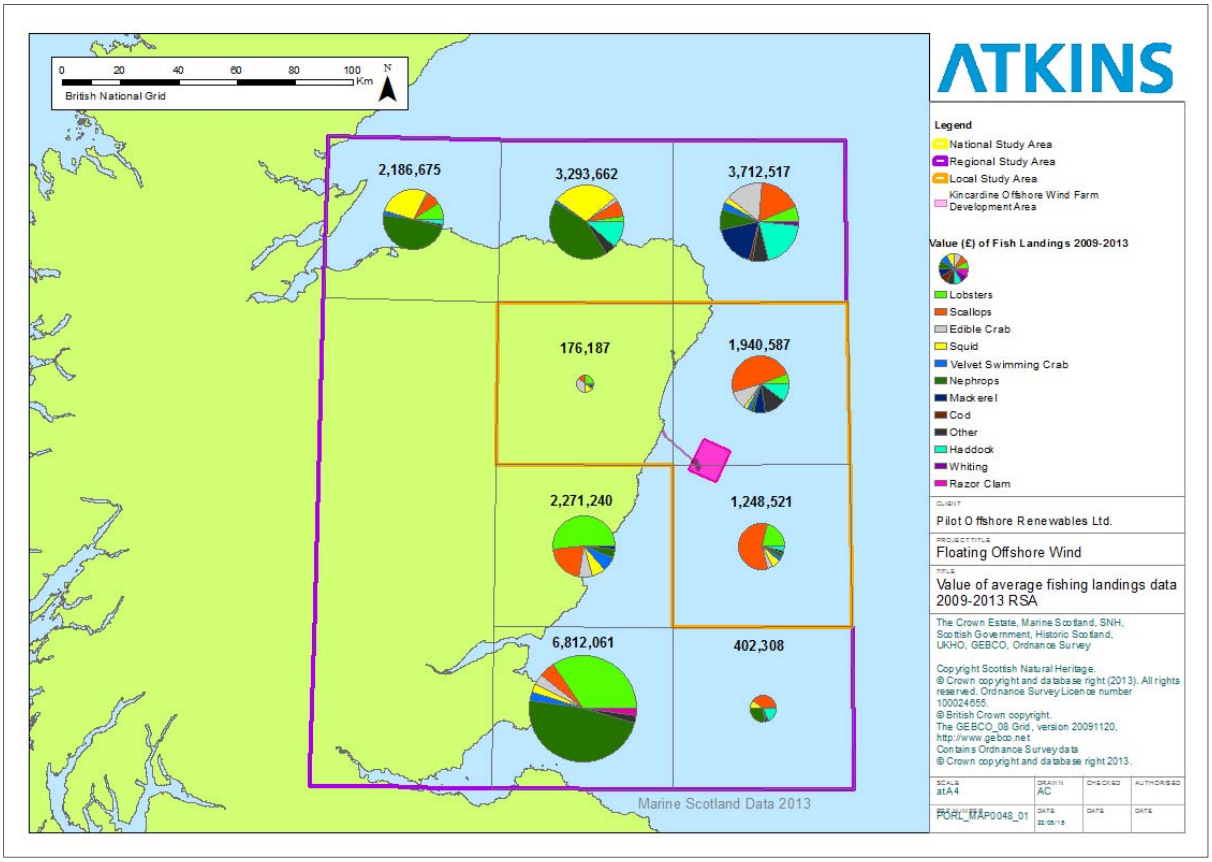


Figure 3-7 Landings Values (£) by Species (2009-2013) in the Regional Study area

3.9.1.3. Local Study Area (ICES Rectangles 43E7, 43E8 and 42E8)

51. Figure 3-8 shows that crustaceans represent the highest landings values followed by squid and scallop in ICES rectangle 43E7 on average 2009-2013. Table 3-3 below provides a breakdown of landings values.

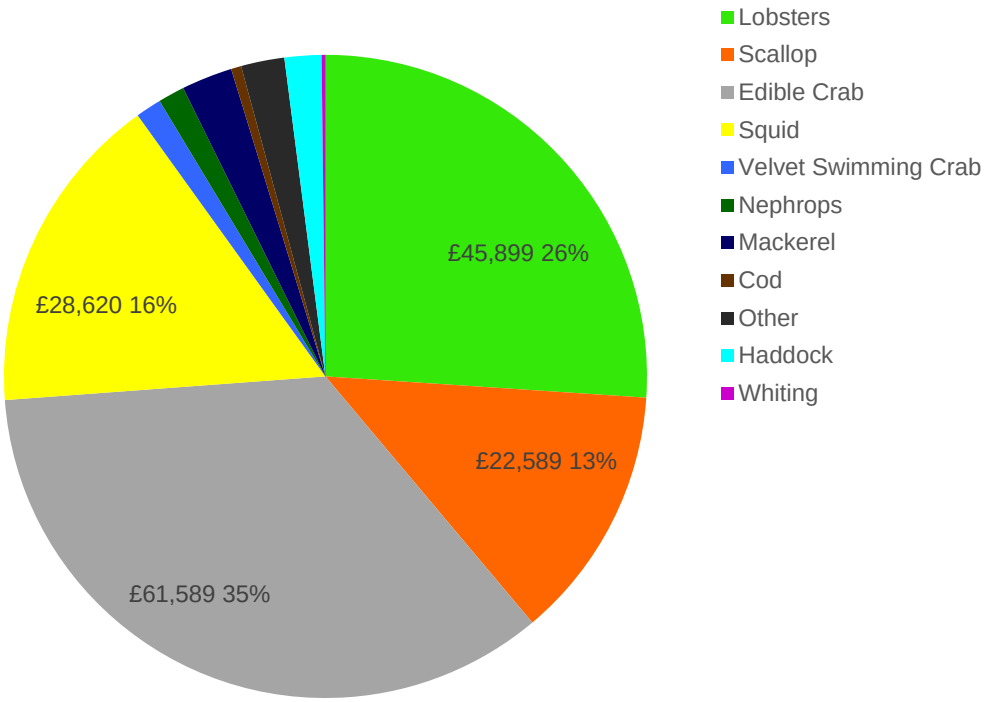


Figure 3-8 Landings Values and % Distribution by Species in ICES Rectangle 43E7

Table 3-3 Landings values in ICES rectangle 43E7

Species	Value (£)	Percentage of total landings
Edible crab	£62,589	35%
Lobster	£45,899	26%
Squid	£28,620	16%
Scallop	£22,589	13%
Mackerel	£4,504	3%
Other	£3,845	2.6%
Haddock	£3,269	2%
Nephrops	£2,337	1%
Velvet Swimming Crab	£2,300	1%
Cod	£899	0.5%
Whiting	£336	0.2%

52. Figure 3-9 shows that scallops represent the highest landings values on average 2009-2013 in ICES rectangle in 43E8 on average 2009-2013. Table 3-4 provides a breakdown of landings.

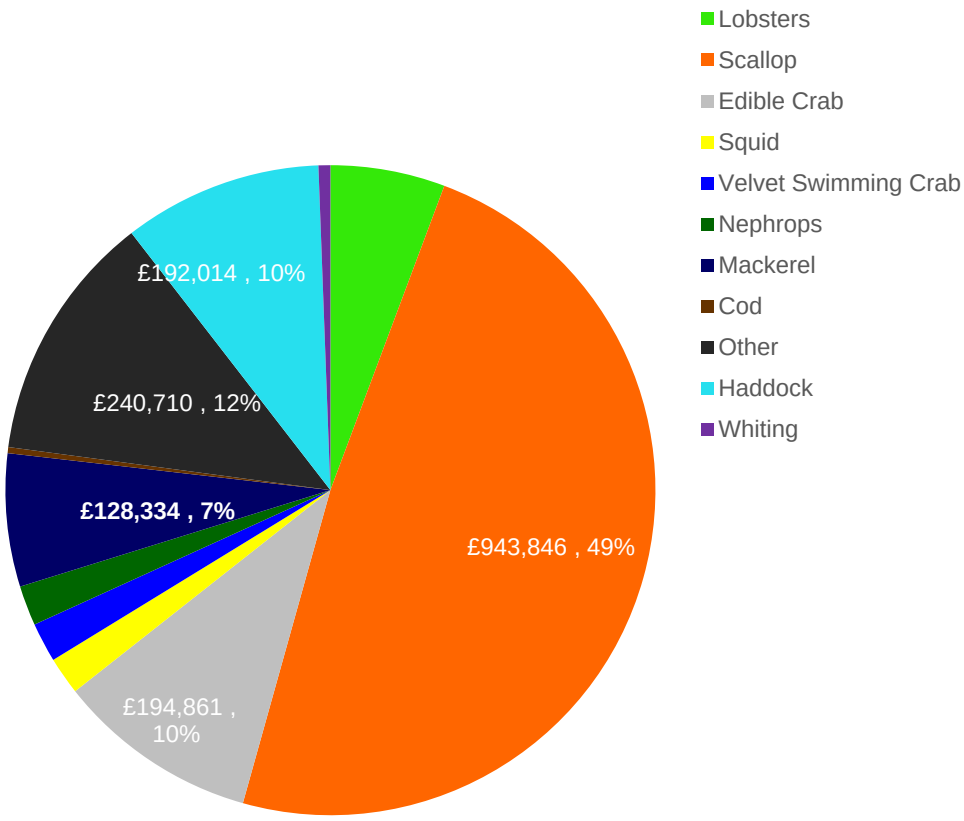


Figure 3-9 Landings Values and % Distribution by Species in ICES Rectangle 43E8

Table 3-4 Landings Values in ICES rectangle 43E8

Species	Value (£)	Percentage of total landings
Scallop	£943,846	49%
Other	£240,710	12%
Edible Crab	£194,861	10%
Haddock	£192,014	10%
Mackerel	£128,334	6.6%
Lobster	£110,598	5.7%
Nephrops	£38,669	2%
Velvet Swimming Crab	£38,025	2%
Squid	£36,447	2%
Whiting	£11,340	0.6%
Cod	£5,744	0.3%

53. Figure 3-10 shows that scallops represent the highest landings values ICES rectangle in 42E8 on average 2009-2013. Table 3-5 below provides a breakdown of landings values.

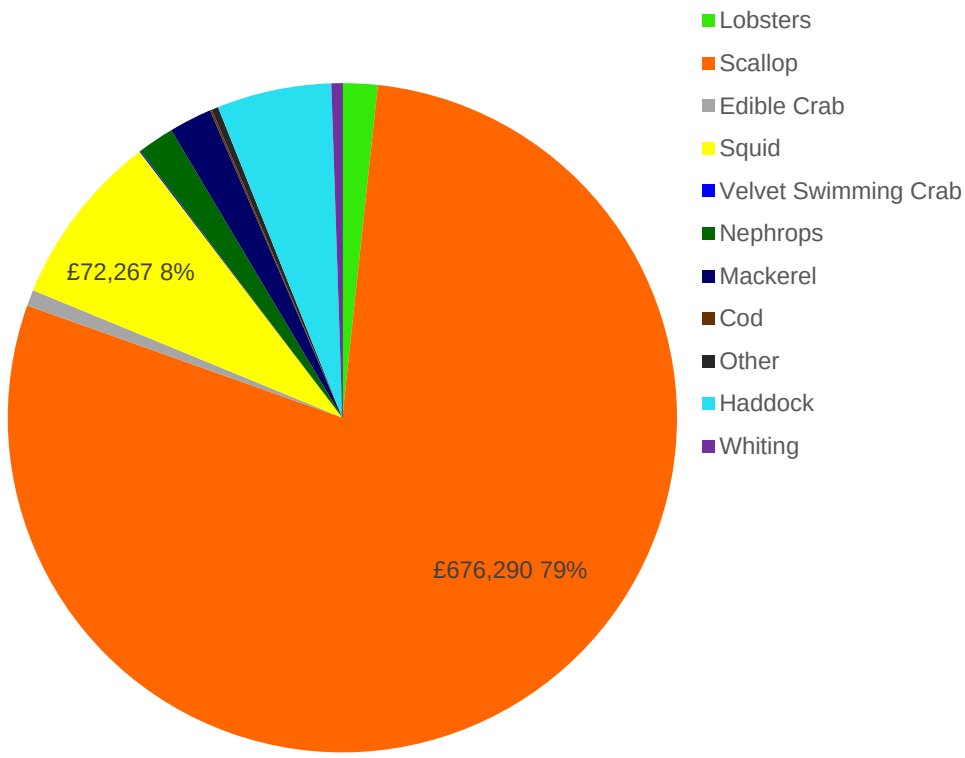


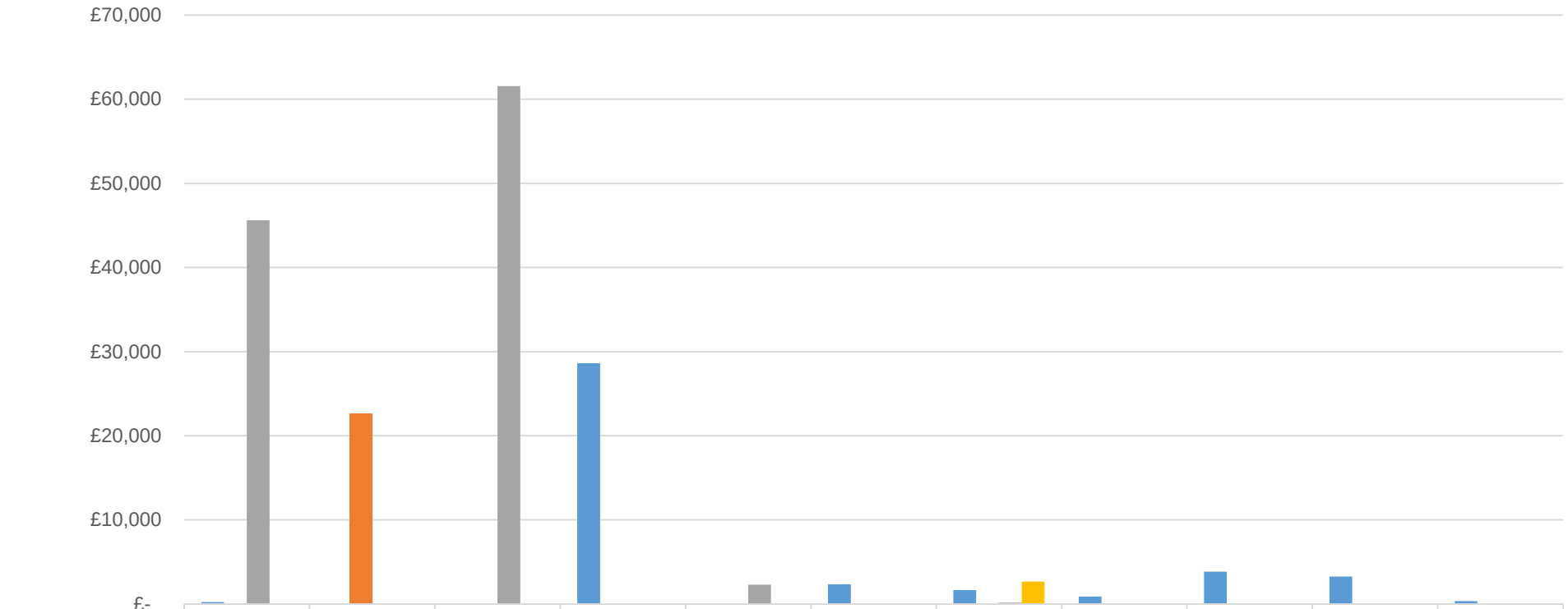
Figure 3-10 Landings Values and % Distribution by Species in ICES Rectangle 42E8

Table 3-5 Landings Values in ICES rectangle 42E8

Species	Value (£)	Percentage of total landings
Scallop	£676,290	79%
Squid	£72,267	8.4%
Haddock	£47,514	5.5%
Mackerel	£17,782	2%
Nephrops	£15,118	1.8%
Lobster	£14,488	1.7%
Edible Crab	£6,632	0.8%
Whiting	£4,554	0.5%
Other	£2,761	0.3%
Cod	£762	0.1%
Velvet Swimming Crab	£542	0.1%

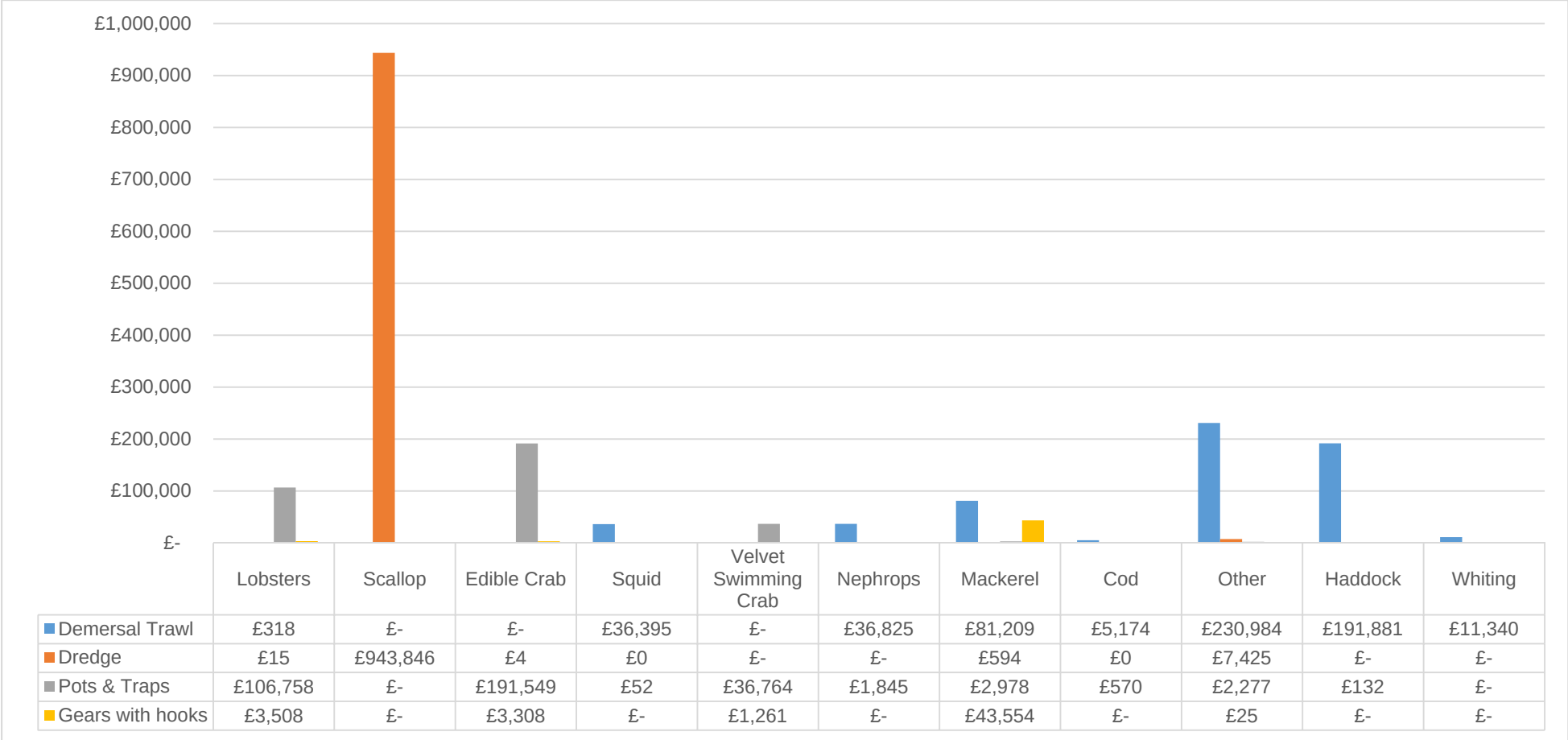
54. Figures 3-12-3-14 illustrate that within ICES rectangles 43E7, 43E8 and 42E8 dredging is the dominant method of scallop fishing. Trawling is the dominant method of fishing for squid, *Nephrops,* mackerel, haddock and whiting. Pots and traps (also known as creeling in Scotland) were the dominant method of fishing for lobsters, edible crab and velvet swimming crab. Cod values are also highest in pots and traps, but this is likely to be by-catch rather than the target species. Gears using hooks predominantly catch a small number of pelagic fish such as mackerel.

55. Figures 15-17 show that the majority of scallop dredgers are vessels over 10m in length. The majority of potters are under 10m in length with the exception of ICES rectangle 43E7 where landings are predominantly from vessels over 10m in length. Demersal trawlers consist mainly of vessels over 10m in length. Only vessels under 10m in length use gears with hooks in the LSA.



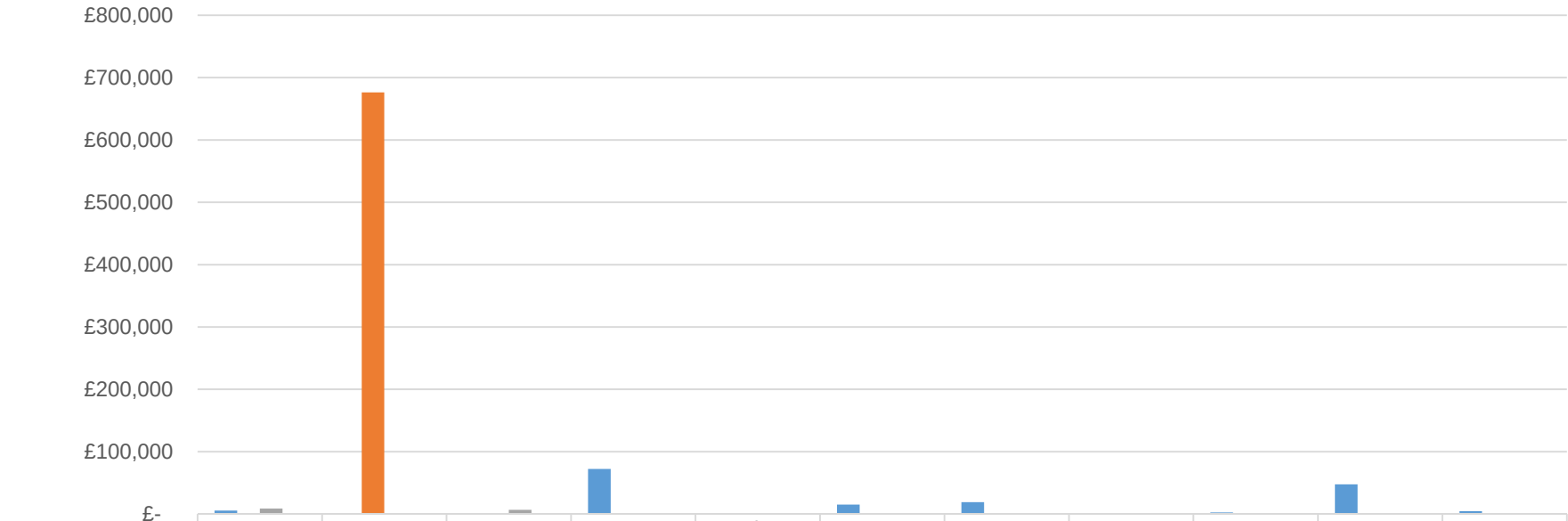
	Lobsters	Scallop	Edible Crab	Squid	Velvet Swimming Crab	Nephrops	Mackerel	Cod	Other	Haddock	Whiting
Demersal Trawl	£236	£-	£10	£28,620	£-	£2,337	£1,655	£881	£3,845	£3,269	£336
Dredge	£-	£22,589	£-	£-	£-	£-	£-	£-	£-	£-	£-
Pots & Traps	£45,609	£-	£61,557	£-	£2,300	£-	£173	£18	£-	£-	£-
Gears with hooks	£55	£-	£22	£-	£-	£-	£2,676	£-	£-	£-	£-

Figure 3-11 Average Annual Landings by Species and Gear Type 43E7



	Lobsters	Scallop	Edible Crab	Squid	Velvet Swimming Crab	Nephrops	Mackerel	Cod	Other	Haddock	Whiting
Demersal Trawl	£318	£-	£-	£36,395	£-	£36,825	£81,209	£5,174	£230,984	£191,881	£11,340
Dredge	£15	£943,846	£4	£0	£-	£-	£594	£0	£7,425	£-	£-
Pots & Traps	£106,758	£-	£191,549	£52	£36,764	£1,845	£2,978	£570	£2,277	£132	£-
Gears with hooks	£3,508	£-	£3,308	£-	£1,261	£-	£43,554	£-	£25	£-	£-

Figure 3-12 Average Annual Landings by Species and Gear Type 43E8



	Lobsters	Scallop	Edible Crab	Squid	Velvet Swimming Crab	Nephrops	Mackerel	Cod	Other	Haddock	Whiting
Demersal Trawl	£5,623	£-	£20	£72,267	£-	£15,118	£18,966	£758	£2,533	£47,514	£4,554
Dredge	£-	£676,290	£-	£0	£-	£-	£-	£1	£217	£0	£-
Pots & Traps	£8,755	£-	£6,611	£-	£527	£-	£57	£3	£11	£-	£-
Gears with hooks	£111	£-	£1	£-	£15	£-	£57	£-	£-	£-	£-

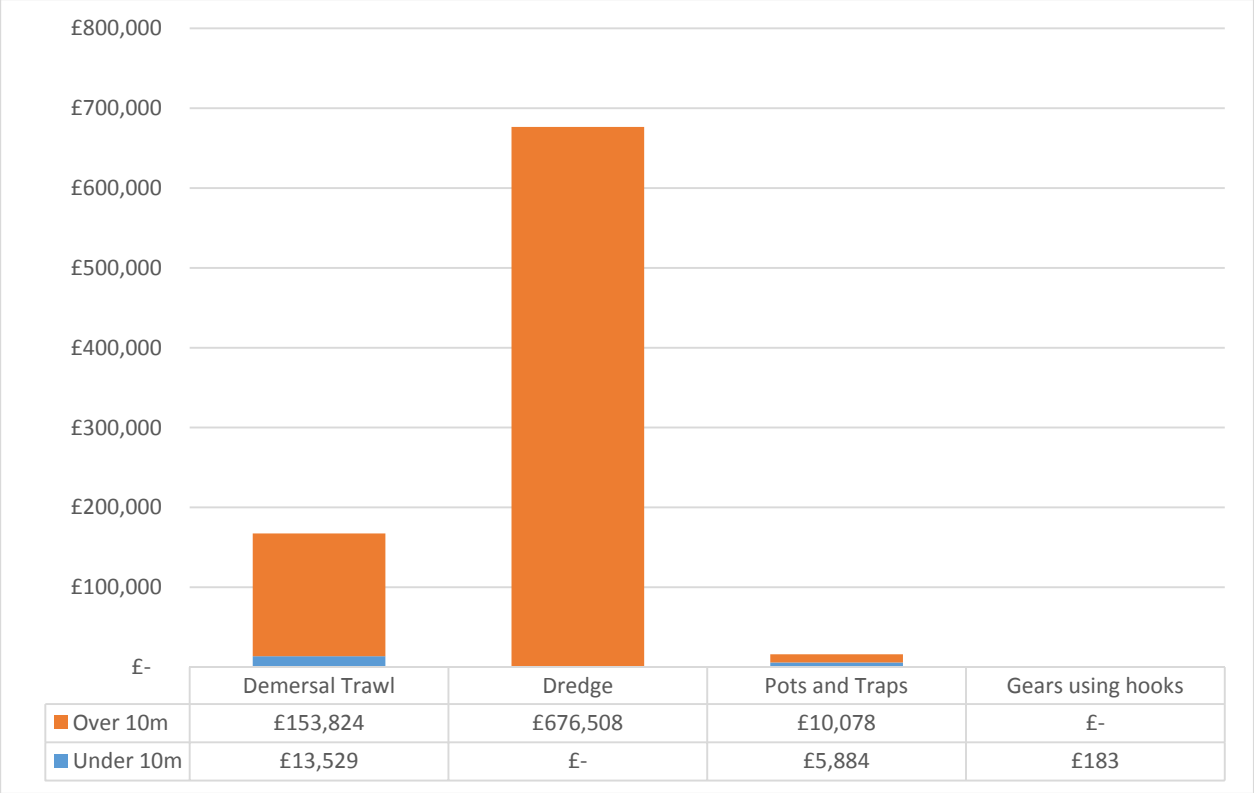
Figure 3-13 42E8 Average Annual Landings by Species and Gear Type 42E8

	Demersal Trawl	Dredge	Pots and Traps	Gears using hooks
Over 10m	£40,621	£22,589	£90,036	£-
Under 10m	£566	£-	£19,621	£2,753

Figure 3-14 Average Annual Landings by Methods and Vessel Category in ICES Rectangle 43E7

	Demersal Trawl	Dredge	Pots and Traps	Gears using hooks
Over 10m	£591,685	£951,289	£-	£-
Under 10m	£2,440	£594	£342,924	£51,655

Figure 3-15 Average Annual Landings by Methods and Vessel Category in ICES Rectangle 43E8



	Demersal Trawl	Dredge	Pots and Traps	Gears using hooks
Over 10m	£153,824	£676,508	£10,078	£-
Under 10m	£13,529	£-	£5,884	£183

Figure 3-16 Average Annual Landings by Methods and Vessel Category in ICES Rectangle 43E8

3.9.1.4. Annual Landings

56. Figure 3-17 below shows the annual variations in values of landings by species in rectangle 43E7. Landings of lobster increased from £18,618 in 2009 to a high of £64,181 in 2011 before decreasing slightly in 2012-13. Scallop landings followed a similar pattern of increasing from £20,599 in 2009 to £47,078 in 2011 before decreasing significantly to £9,087 in 2012 and £12,069 in 2013. Landings of edible crab gradually increase from £51,620 in 2009 to a high of £77,480 in 2013. Similarly landings of squid generally increased from £4,514 in 2009 to £65,833 however there was a significant drop to £2,375 in 2012.

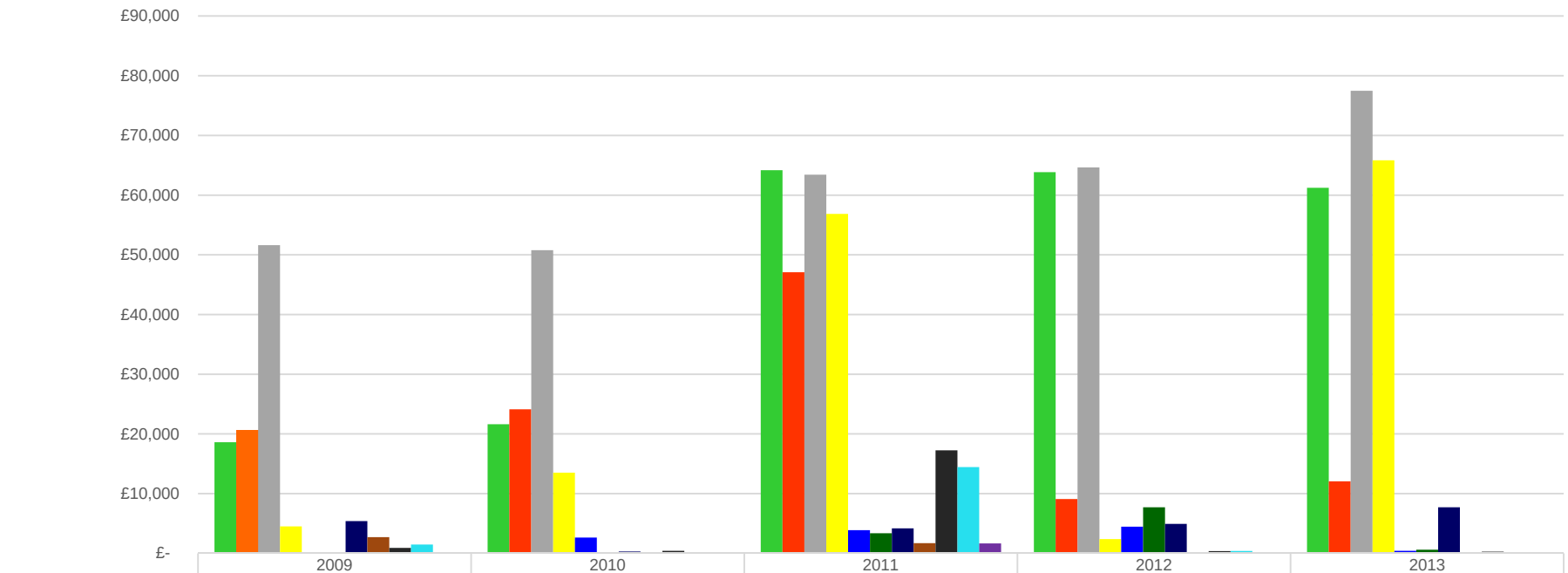
57. Landings of velvet swimming crab increased from £92 in 2009 to a high of £4,466 in 2012 before dropping to £423 in 2013. *Nephrops* landings have increased from zero in 2009 and 2010 to a high of £7,710 before declining to £613. Mackerel landings have decreased form £5,398 in 2009 to a low of £305 in 2010 before increasing to £7,709 in 2013. Landings of cod have declined from £2,706 in 2009 to £0 in 2013. Landings of haddock increased from £40 in 2010 to a high of £14,438 in 2011 before decreasing to £0 in 2013.Whiting landings have been minimal with £1,648 in 2011 and only £30 in 2012.

58. Figure 3-18 shows the annual variations in values of landings by species in rectangle 43E8. Landings of lobsters have fluctuated from £53,481 in 2009 to £198,343 in 2010. Values then gradually decline from £124,656 in 2011 to £83,459 in 2013. Scallop landings show a general increase in value of landings from £797,140 2009 to £1,320,266 in 2013. Landings values of edible crab gradually increase from £109,195 in 2009 to £242,280 in 2012 before slightly dropping to £214,140 in 2013. Landings of squid have fluctuated over the 5 year period with lows of £4,469 and £7,155 in 2009 and 2012 respectively and a high of £108,684 in 2011.

59. Velvet swimming crab landings have generally declined from £62,071 in 2010 to £17,720 in 2013. Landings of *Nephrops* have increased gradually from £5,359 in 2009 to £115,077 in

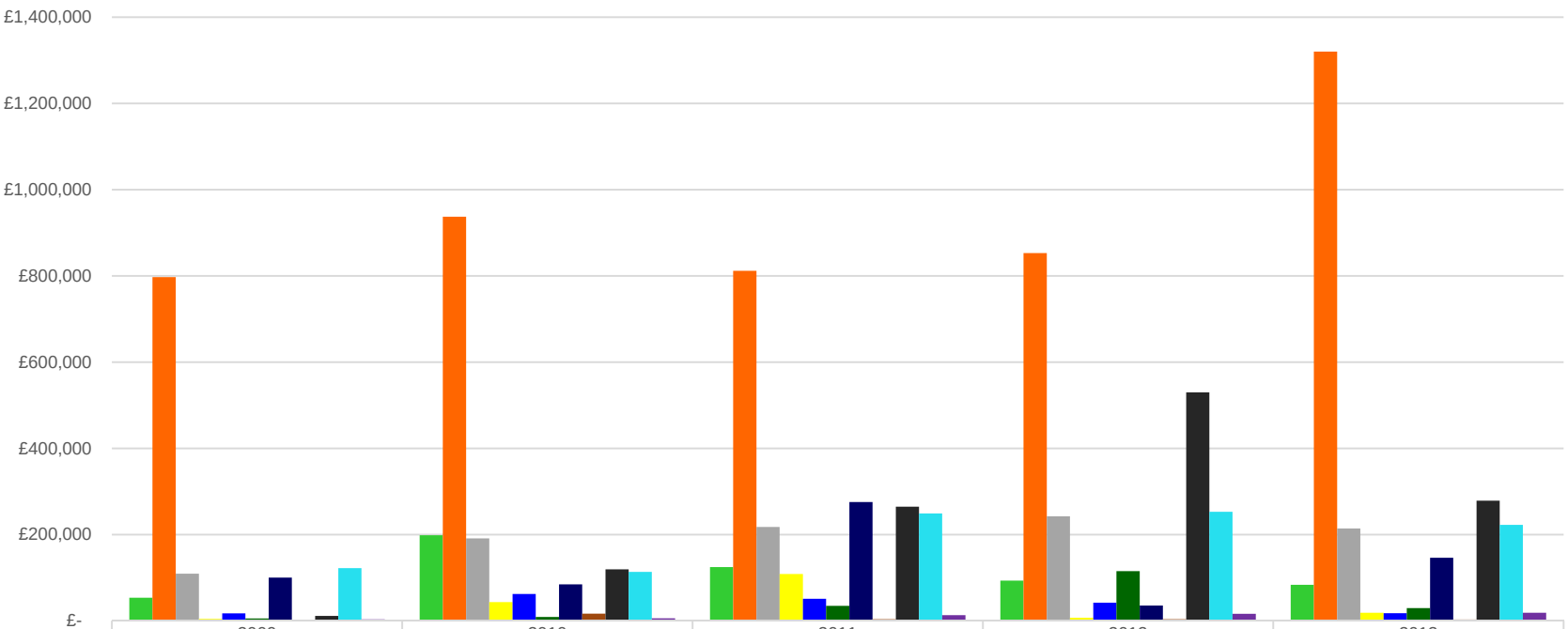
2012 followed by a decline to £29,434 in 2013. Mackerel landings have fluctuated over the 5 year period with a high of £275,342 in 2011 and low of £35,272 in 2012. Landings of cod generally fluctuate between £2,161 and £3,687 with the exception of a high of £16,495. Haddock landings increase from £122,017 in 2009 to £252,278 in 2012 before declining to £222,635 in 2013. Landings of whiting increase from £3,316 to £18,455 over the 5 year period 2009-2013.

60. Figure 3-19 illustrates the total annual landings by species for ICES rectangle 42E8. Landings values for scallops have fluctuated in the last 5 years with landings having increased from £427,089 in 2009 to £648,452 in 2010, declining to a low of £318,602 in 2011. Values then rose to a high of £1,202,579 in 2012 before falling again to £789,691. Landings of squid steadily increased from £2,165 in 2010 to a high of £186,706 in 2011. Values then declined to £9,994 in 2012 before starting to increase to £54,885 in 2013. Haddock landings have also fluctuated in the period 2009-2013 with landings at a low of £3,092 in 2010, increasing to a high of £128,916 in 2011. In 2012 landings declined to £71,624 then to £20,615 in 2013. Mackerel landings generally have increased between 2009 and 2013 with the exception on 2010 when landings declined to £10,988 before rising again to £63,000. *Nephrops* landings similarly follow this pattern with a decline from £26,420 in 2011 to £2,115 in 2012 before rising to £34,830 in 2013.



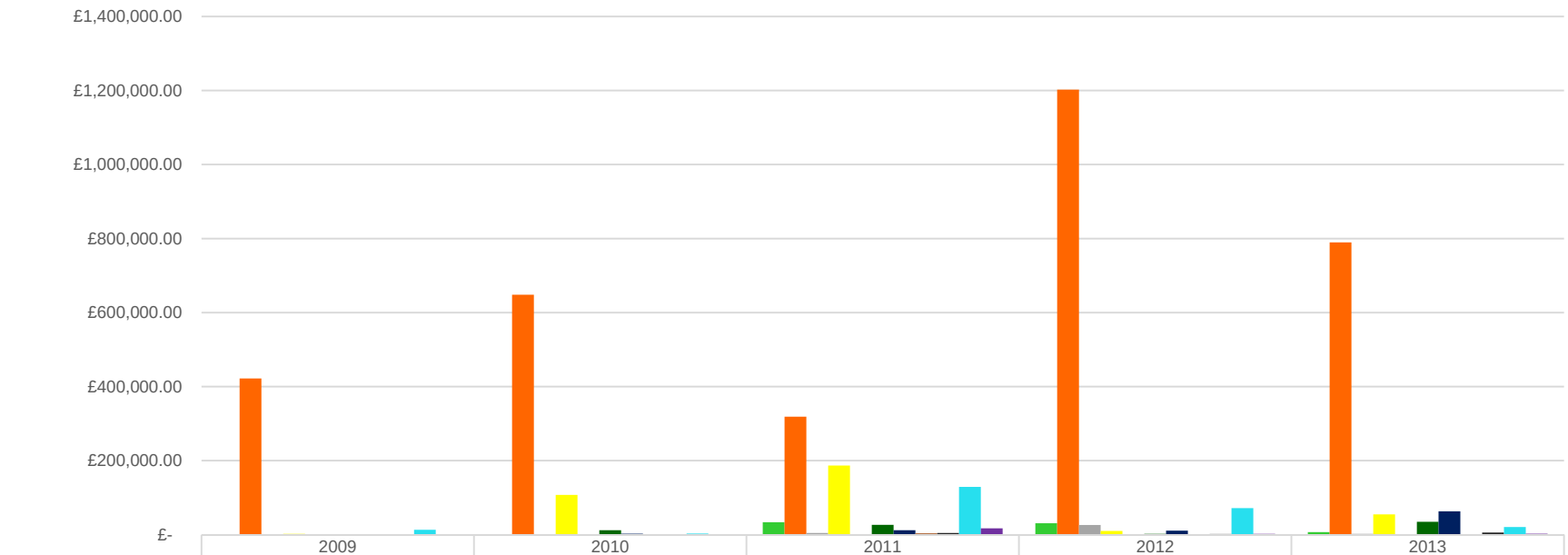
	2009	2010	2011	2012	2013
Lobsters	£18,618	£21,630	£64,181	£63,850	£61,218
Scallop	£20,599	£24,115	£47,078	£9,087	£12,069
Edible Crab	£51,620	£50,785	£63,430	£64,631	£77,480
Squid	£4,514	£13,518	£56,858	£2,375	£65,833
Velvet Swimming Crab	£92	£2,633	£3,886	£4,466	£423
Nephrops	£-	£-	£3,363	£7,710	£613
Mackerel	£5,398	£305	£4,172	£4,938	£7,709
Cod	£2,706	£-	£1,698	£91	£-
Other	£904	£424	£17,254	£363	£280
Haddock	£1,466	£40	£14,438	£400	£-
Whiting	£-	£-	£1,648	£30	£-

Figure 3-17 Annual variations by species in ICES rectangle 43E7



	2009	2010	2011	2012	2013
Lobsters	£53,481	£198,343	£124,656	£93,049	£83,459
Scallop	£797,140	£937,236	£811,766	£852,822	£1,320,266
Edible Crab	£109,195	£191,250	£217,438	£242,280	£214,140
Squid	£4,469	£43,224	£108,684	£7,155	£18,704
Velvet Swimming Crab	£17,363	£62,071	£51,026	£41,945	£17,720
Nephrops	£5,359	£8,766	£34,710	£115,077	£29,434
Mackerel	£100,290	£84,447	£275,342	£35,272	£146,318
Cod	£2,161	£16,495	£3,503	£3,687	£2,874
Other	£11,132	£119,228	£264,708	£529,745	£278,736
Haddock	£122,017	£113,575	£249,113	£252,728	£222,635
Whiting	£3,316	£5,683	£13,181	£16,064	£18,455

Figure 3-18 Annual variations by species in ICES rectangle 43E8



	2009	2010	2011	2012	2013
Lobsters	£55.00	£735.20	£33,687.42	£30,983.38	£6,979.84
Scallop	422123.41	£648,451.33	£318,602.28	£1,202,579.90	£789,691.75
Edible Crab	£-	£100.00	£4,464.66	£26,187.08	£2,406.75
Squid	£2,165.00	£107,583.25	£186,706.47	£9,994.68	£54,885.35
Velvet Swimming Crab	£-	£-	£1,497.20	£1,173.58	£36.92
Nephrops	£-	£12,223.85	£26,420.81	£2,115.76	£34,830.94
Mackerel	£90.00	£2,606.29	£12,223.85	£10,988.70	£63,000.31
Cod	£246.55	£-	£3,535.73	£6.36	£21.31
Other	£102.75	£1,287.51	£4,657.61	£1,825.53	£5,929.26
Haddock	£13,319.24	£3,092.58	£128,916.65	£71,624.76	£20,615.52
Whiting	£12.78	£784.80	£16,990.08	£2,375.38	£2,606.81

Figure 3-19 Annual variations by species in ICES rectangle 42E8

3.9.2. Seasonality

61. Figure 3-20 illustrates the seasonal trend of landings for all species in rectangle 43E7. It can be seen that average total landings (2009-2013) are broadly highest in late summer (July- September). August has the highest total average landings with a value of £39,566, followed by September with £24,774 and July with £20,233. The lowest values of landings are in January and February with values of £6,128 and £4,335 respectively.

62. Landings of lobster peak in August with a total of £15,450 followed by £14, 341 in September. The lowest landings were recorded in January (£361) and February (£341).Landings of scallops fluctuate over the year in 43E7, going from £447 in February to £5,140 in April. Landings decline to £2,342 in May before increasing again to £4,649. Landings then decrease to £2,066 in September, £539 in October to £0 in November and December.

63. Landings of edible crab fluctuate slightly from January to December. The highest values of landings are recorded in October (£6,075), November (£10,754) and December (£7,625). The lowest values for edible crab are actually recorded during the summer months with values of £2,129 in July and £2,989 in August.

64. Landings of squid are by far the highest in July and August with a value of £8,431 in July and peaking at £16,336 in August. Landings steadily decline to £2 in December. From January to June there are £0 landings for squid. Landings for velvet swimming crabs is generally very low with the highest value of landings at £699 in October. Landings of *Nephrops* in 43E7 are minimal with records only in July at a value of £2,215 and December at £123.

65. Landings of mackerel are only recorded June to September with a high of £2,617 in July and August £1,033. Cod landings are minimal with records only for August (high of £541) to November (£243). Landings of haddock are also minimal with landings generally increasing from £8 in June to a high of £2,767 in October before declining to £0 in November and £17 in December. Landings of whiting are minimal with low value records in August (£6) and October (£330) only.

66. Figure 3-21 illustrates the seasonal trend of landings for all species in rectangle 43E8. It can be seen that average total landings (2009-2013) are highest in May and June with values of £306,483 and £223,641 respectively. Landings of lobster generally increase from January (£3,882) to peak in August with a value of £22,528 and £21,041 in September. The lowest recorded landings were £1,683 in February.

67. Scallop landings are relatively high for area 43E8 with landings increasing from January (£13,485) to peak at £253,145 in May. Values then decline steadily to £2,631 in November ant £7,294 in December. Landings of edible crab increase from lows of £9,911 in January and £8,776 in February to a high of £23,288 in June. Values then decline slightly to £15,472 in October before increasing again to £22,086 in December.

68. Values of squid are relatively low with values being sporadic. The highest values are recorded in July (£12,713) and August (£18,308), values then decline to £447 in December. Landings for velvet swimming crab ae highest in June (£5,879), August (£8,212) and September (£6,014). The lowest values of landings of edible crab were recorded between January (£595) and April (£2,873).

69. Landings values for *Nephrops* in 43E8 are sporadic throughout the year with the highest value of *Nephrops* recorded in July with a value of £9,491 followed by £6,189 in October. The lowest values of landings were recorded in February (£151), March (£174).Landings for mackerel generally increase from £0 January to March to £24,675 in July. Landings then decrease to £7,834 in August and £4,881 in September. Landings values for mackerel are highest in October with a value of £76,978. Landings then significantly decrease to £95 in November and £0 in December.

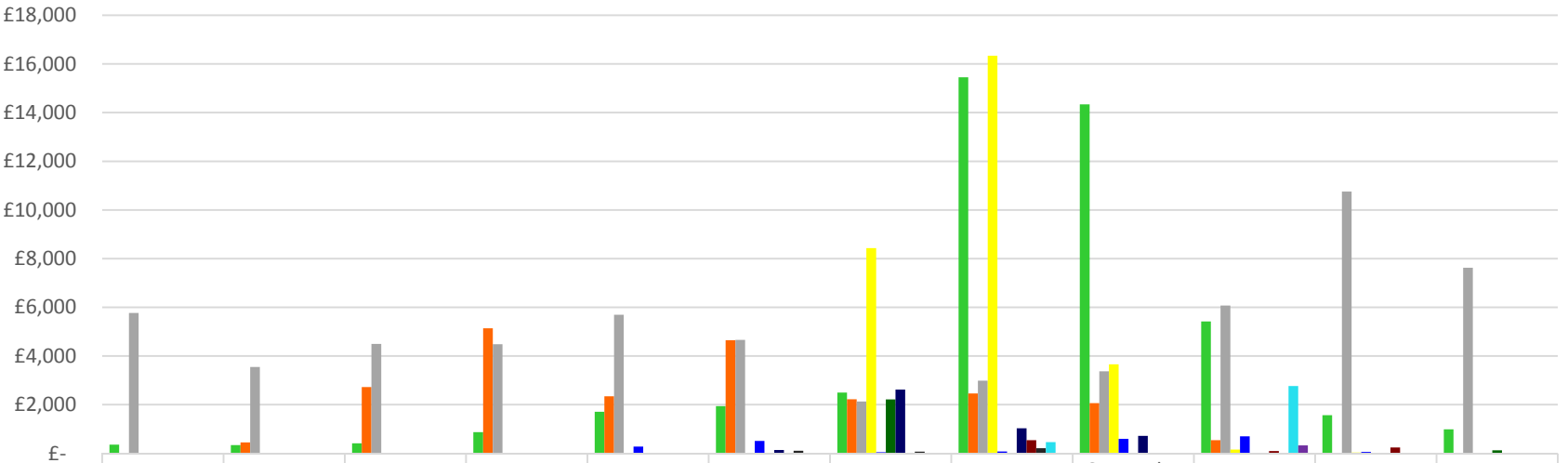
70. Landings values of cod are generally very low ranging from £64 in February to £822 in August before peaking at £2,902 in October. Values then decline to £340 in November and £58 in December. Landings values of haddock are sporadic with values of £10,389 in January then declining to £67 in April before increasing to £24,170, £27,926 in May and June respectively. Values then peak at £37,481 in August before decreasing to £17,792 in September. Values then increase to £23,473 in October and then decrease to £13,117 in November and £7,297 in December. Landings of whiting in 43E8 are relatively low, the highest values of landings are recorded in August (£2,320) and September (£1,953). The lowest landings are in April with a value of £58.

71. Figure 3-22 illustrates the seasonal trend of landings for all species in rectangle 42E8. Landings for lobster were highest in September with a value of £4,707. Generally landings values are relatively low, with the lowest values recorded in January (£464), February (£119) and December (£476).Scallop landings steadily increase from £19,860 in January to a high of £123,036 in April. Values then decrease slightly to £52,575 in May and £43,259 in June before increasing slightly to £86,776 and £82,224 in July and August respectively. There is then a slight dip in values to £40,744 in September and £39,991 in October. In November there is a slight increase to £58,951 before values drop again to £50,386.

72. Landings of edible crab remain relatively low across the season with slight peaks of £811 in February and £890 in October. The lowest values were recorded in August (£347) and December £316. Landings of squid were very low from January (£2) to March (£0), values then increased slightly to £400 in April. From July landings values increased from £9,057 to highs of £20,700 and £33,099 in August and September respectively. Landings values then decline to £8,881 in October, £74 in November and £2 in December.

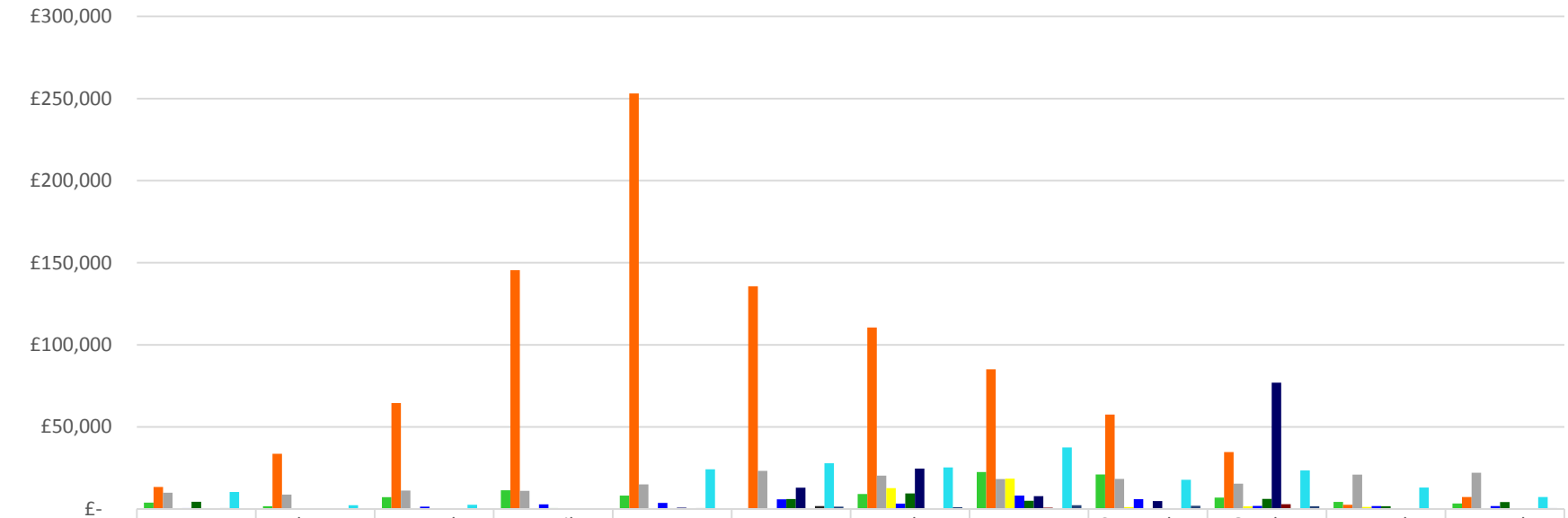
73. Landings values for velvet swimming crab are low from January to December in 42E8. The lowest values are £0 recorded in February, March, June and August with the highest landings of £136 in July. Landings *Nephrops* are sporadic in the spring and summer months with landings fluctuating from £1,383 in February to £0 April to June. Landings then increase to £1,775 in July before decreasing to £1,543 in August and £646 in September. Values then increase to £3,676 before peaking at £5,029 in November then drop to £0 in December.

74. Landings values of cod are very low with the highest landings being £439 in September and £200 in October. For the rest of the months the highest value is £51 in August. Landings of haddock are £1-£0 from January to April. Landings values then peak in May with a value of £16,298 before declining to £6,640 in June and £3,287 in July. Values then increase to £9,433 and £9,622 in August and September respectively before fluctuating from £950 in October, £1,278 in November and £4 in December. Whiting follows a similar pattern as haddock with £0 of landings from January to April, a high of £2,633 in May, declining to £15 in June. Values then increase from £40 in July, £453 in August and £752 in September. Values then decrease again to £441, £219 and £0 in October, November and December respectively.



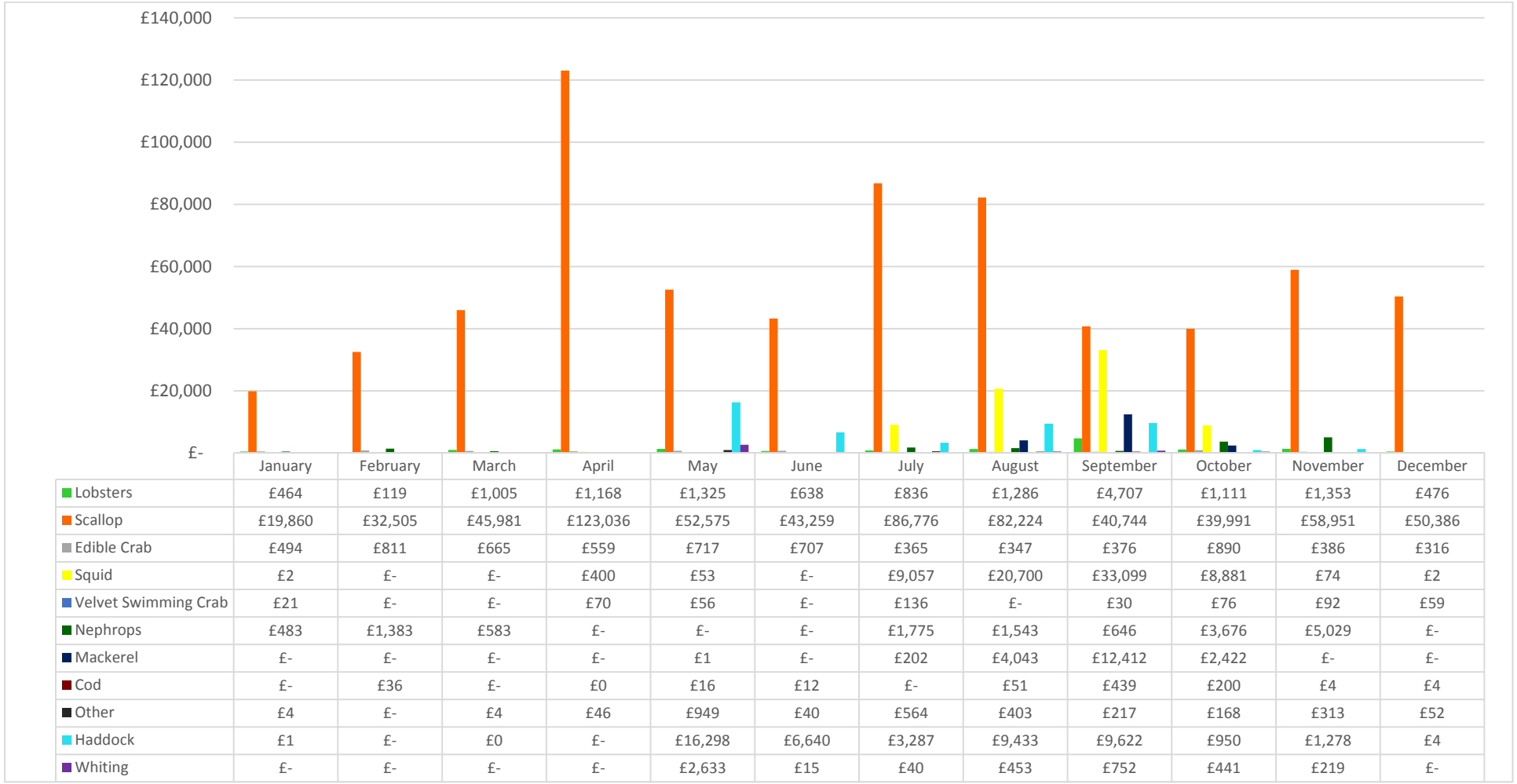
	January	February	March	April	May	June	July	August	September	October	November	December
Lobsters	£361	£341	£415	£870	£1,708	£1,940	£2,495	£15,450	£14,341	£5,422	£1,567	£990
Scallop	£-	£447	£2,723	£5,140	£2,342	£4,649	£2,219	£2,464	£2,066	£539	£-	£-
Edible Crab	£5,767	£3,547	£4,494	£4,485	£5,694	£4,660	£2,129	£2,989	£3,370	£6,075	£10,754	£7,625
Squid	£-	£-	£-	£-	£-	£-	£8,431	£16,336	£3,658	£159	£34	£2
Velvet Swimming Crab	£-	£-	£-	£22	£279	£508	£44	£78	£596	£699	£59	£13
Nephrops	£-	£-	£-	£-	£-	£-	£2,215	£-	£-	£-	£-	£123
Mackerel	£-	£-	£-	£-	£-	£137	£2,617	£1,033	£717	£-	£-	£-
Cod	£-	£-	£-	£-	£-	£-	£-	£541	£18	£96	£243	£-
Other	£20	£-	£-	£-	£-	£110	£72	£210	£-	£-	£-	£-
Haddock	£-	£-	£-	£-	£-	£8	£11	£460	£6	£2,767	£-	£17
Whiting	£-	£-	£-	£-	£-	£-	£-	£6	£-	£330	£-	£-

Figure 3-20 Average Annual (2009-2013) Seasonality of Species in ICES Rectangle 437



	January	February	March	April	May	June	July	August	September	October	November	December
Lobsters	£3,882	£1,683	£7,196	£11,473	£8,202	£-	£9,117	£22,528	£21,041	£6,992	£4,380	£3,344
Scallop	£13,485	£33,624	£64,579	£145,479	£253,145	£135,664	£110,570	£85,132	£57,553	£34,691	£2,631	£7,294
Edible Crab	£9,911	£8,776	£11,273	£11,110	£15,063	£23,288	£20,326	£18,245	£18,308	£15,472	£21,002	£22,086
Squid	£370	£54	£52	£175	£3	£14	£12,713	£18,517	£1,209	£1,648	£1,245	£447
Velvet Swimming Crab	£595	£405	£1,470	£2,873	£3,707	£5,879	£3,336	£8,212	£6,014	£1,928	£1,839	£1,767
Nephrops	£4,404	£151	£173	£572	£251	£6,083	£9,491	£5,084	£258	£6,189	£1,724	£4,290
Mackerel	£-	£-	£-	£20	£868	£12,983	£24,675	£7,834	£4,881	£76,978	£95	£-
Cod	£311	£64	£238	£75	£63	£339	£300	£822	£231	£2,902	£340	£58
Other	£556	£331	£414	£419	£556	£1,769	£-	£-	£-	£-	£-	£-
Haddock	£10,389	£2,306	£2,612	£67	£24,170	£27,926	£25,382	£37,481	£17,792	£23,473	£13,117	£7,297
Whiting	£443	£170	£491	£58	£456	£1,494	£1,148	£2,320	£1,953	£1,748	£441	£618

Figure 3-21 Average Annual (2009-2013) Seasonality of Species in ICES Rectangle 43E8



	January	February	March	April	May	June	July	August	September	October	November	December
Lobsters	£464	£119	£1,005	£1,168	£1,325	£638	£836	£1,286	£4,707	£1,111	£1,353	£476
Scallop	£19,860	£32,505	£45,981	£123,036	£52,575	£43,259	£86,776	£82,224	£40,744	£39,991	£58,951	£50,386
Edible Crab	£494	£811	£665	£559	£717	£707	£365	£347	£376	£890	£386	£316
Squid	£2	£-	£-	£400	£53	£-	£9,057	£20,700	£33,099	£8,881	£74	£2
Velvet Swimming Crab	£21	£-	£-	£70	£56	£-	£136	£-	£30	£76	£92	£59
Nephrops	£483	£1,383	£583	£-	£-	£-	£1,775	£1,543	£646	£3,676	£5,029	£-
Mackerel	£-	£-	£-	£-	£1	£-	£202	£4,043	£12,412	£2,422	£-	£-
Cod	£-	£36	£-	£0	£16	£12	£-	£51	£439	£200	£4	£4
Other	£4	£-	£4	£46	£949	£40	£564	£403	£217	£168	£313	£52
Haddock	£1	£-	£0	£-	£16,298	£6,640	£3,287	£9,433	£9,622	£950	£1,278	£4
Whiting	£-	£-	£-	£-	£2,633	£15	£40	£453	£752	£441	£219	£-

Figure 3-22 Average Annual (2009-2013) Seasonality of Species in ICES Rectangle 42E8

3.9.3. Landings Values by Port

75. Tables 3-6, 3-7 and 3-8 list the top 10 ports by landings values in 42E8, 43E7 and 43E8 respectively and the percentage of each ports total income that this represents (percentages have been rounded to the nearest once decimal place.

76. Table 3-6 shows that the highest percentage of landings from 42E7 are into the port at Aberdeen (49.3%) which represents 20.1% of the port's total income from fisheries. Peterhead recorded the second highest percentage of landings from 42E7 with 30.9% which represents only 0.2% of the ports total annual income. Macduff and Gourdon had the lowest recorded percentages of landings with 0.0% and 0.4% respectively.

Table 3-6 Top 10 Ports by Landings Values from ICES Rectangle 42E8 (MMO, 2015)

Port	Average annual landings values (£) in the local study area	% of average annual values in the local study area	Total average annual port value (£)	% of total average annual port value that the local study area represents
Aberdeen	£414,666	49.3	£2,060,123.49	20.1
Arbroath	£11,430	1.4	£1,256,652.74	0.9
Buckie	£15,170	1.8	£2,339,351.49	0.6
Eyemouth	£18,638	2.2	£2,813,855.52	0.7
Fraserburgh	£64,381	7.7	£41,745,445.13	0.2
Gourdon	£3,664	0.4	£365,605.38	1.0
Macduff	£0	0.0	£1,021,828.29	0.0
Montrose	£42,569	5.1	£397,658.46	10.7
Peterhead	£260,418	30.9	£135,340,511.54	0.2
Stonehaven	£10,481	1.2	£206,905.94	5.1

77. Table 3-7 shows that the highest percentage of landings from 43E7 are into the port at Aberdeen (77.7%) which represents 6.0% of the port's total annual income. Peterhead recorded the second highest percentage of landings with 12.0% which represents 0.01% of the port's total annual income.

Table 3-7 Top 10 Ports by Landings Values from ICES Rectangle 43E7 (MMO, 2015)

Port	Average annual landings values (£) in the local study area	% of average annual values in the local study area	Total average annual port value (£)	% of total average annual port value that the local study area represents
Aberdeen	£122,638	77.7	£2,060,123	6.0
Arbroath	£578	0.4	£1,256,653	0.0
Buckie	£567	0.4	£2,339,351	0.0
Eyemouth	£0	0.0	£2,813,856	0.0
Fraserburgh	£12,110	7.7	£41,745,445	0.0
Gourdon	£310	0.2	£365,605	0.1
Macduff	£0	0.0	£1,021,828	0.0
Montrose	£1,819	1.2	£397,658	0.5
Peterhead	£18,876	12.0	£135,340,511	0.01
Stonehaven	£889	0.6	£206,906	0.4

78. Table 3-8 shows that the highest percentage of landings from 43E8 are into the port at Peterhead (69.1%) which represents 1.0%. of the ports total income.

Table 3-8 Top 10 Ports by Landings Values from ICES Rectangle 43E8 (MMO, 2015)

Port	Average annual landings values (£) in the local study area	% of average annual values in the local study area	Total average annual port value (£)	% of total average annual port value that the local study area represents
Aberdeen	£273,980	13.3	£2,060,123	13.3
Arbroath	£40,772	2.0	£1,256,653	3.2
Buckie	£48,815	2.4	£2,339,351	2.1
Eyemouth	£3,709	0.2	£2,813,856	0.1
Fraserburgh	£237,898	11.6	£41,745,445	0.6
Gourdon	£2,981	0.1	£365,605	0.8
Macduff	£21,966	0.0	£1,021,828	2.1
Montrose	£1,910	0.1	£397,658	0.5
Peterhead	£1,419,529	69.1	£135,340,511	1.0
Stonehaven	£2,609	0.1	£206,906	1.3

3.10. Fishing Effort Values

3.10.1. National Overview (2013)

79. Figure 3-23 shows the VMS density of all UK vessels over 15m in 2013 within the National Study Area. Areas of highest density are concentrated to the north of the Development Area and mostly offshore. The Development Area shows patchy activity with most concentrated in the Offshore Export Cable Corridor.

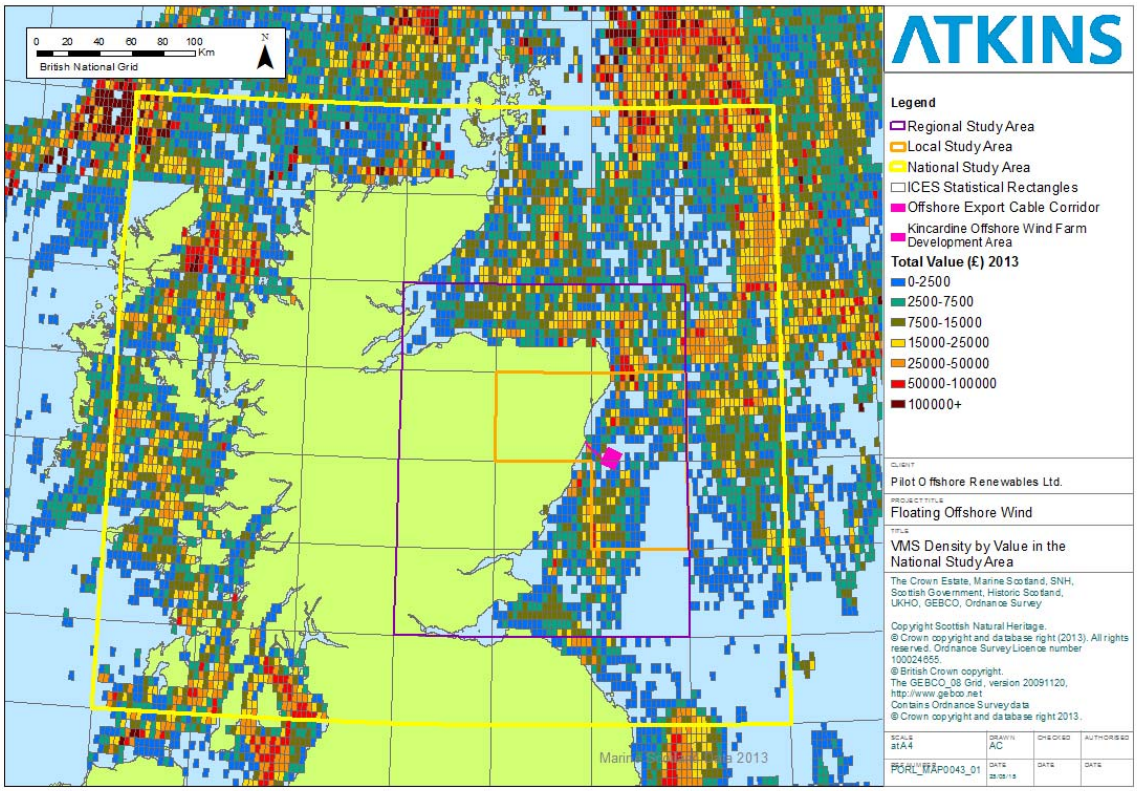


Figure 3-23 VMS Density by Value (2013) in the National Study Area (Source: MMO)

3.10.2. Regional Area Overview (2013)

80. Figure 3-24 shows the VMS density by value for all UK vessels over 15m in 2013 within the regional study area. The Development Area is located in an area which records low landings from 2013 with values between zero and £15,000. Higher values can be seen to the south and north of the Development Area. The highest values for the Offshore Export Cable Corridor is in the category £25,000-£50,000 for a small section inshore, however the majority of values for the area range between zero and £7,500.

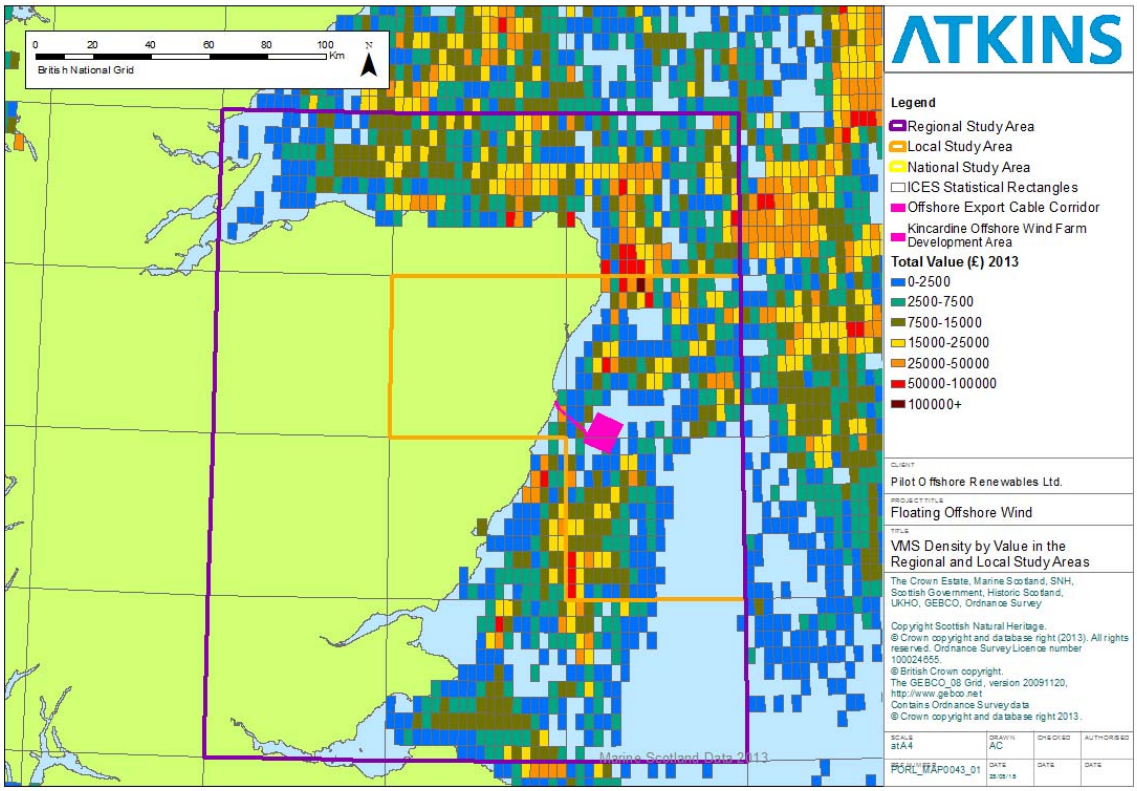


Figure 3-24 VMS Density by Value (2013) in the Regional Study Area

3.10.3. Marine Scotland Fishing Intensity

81. The following charts have been produced by Marine Scotland Science and the data provided to Atkins to support the establishment of a commercial fisheries baseline in the Development Area. Limitations of the data set are explained in Section 3.5.

82. Figures 3-26 to 3-29 show the distribution of commercial fishing activities in the Development Area for over 15m vessels between 2009-2013 by scallop, *Nephrops*, squid and demersal fisheries.

83. The Kincardine Offshore Wind Farm is in an area predominantly used by vessels targeting scallops with relatively low activity for targeting squid and *Nephrops* and no activity recorded for vessels using demersal gear.

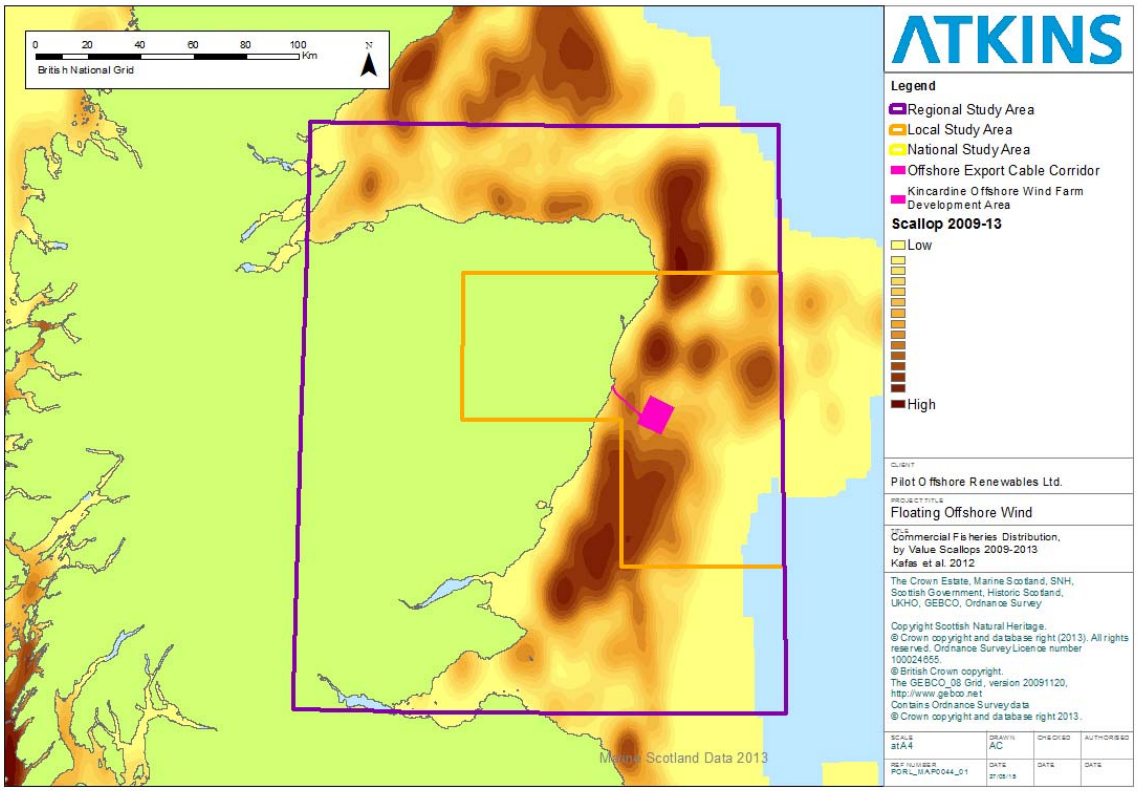


Figure 3-25 Commercial Fisheries Distribution by Value Scallops 2009-2013

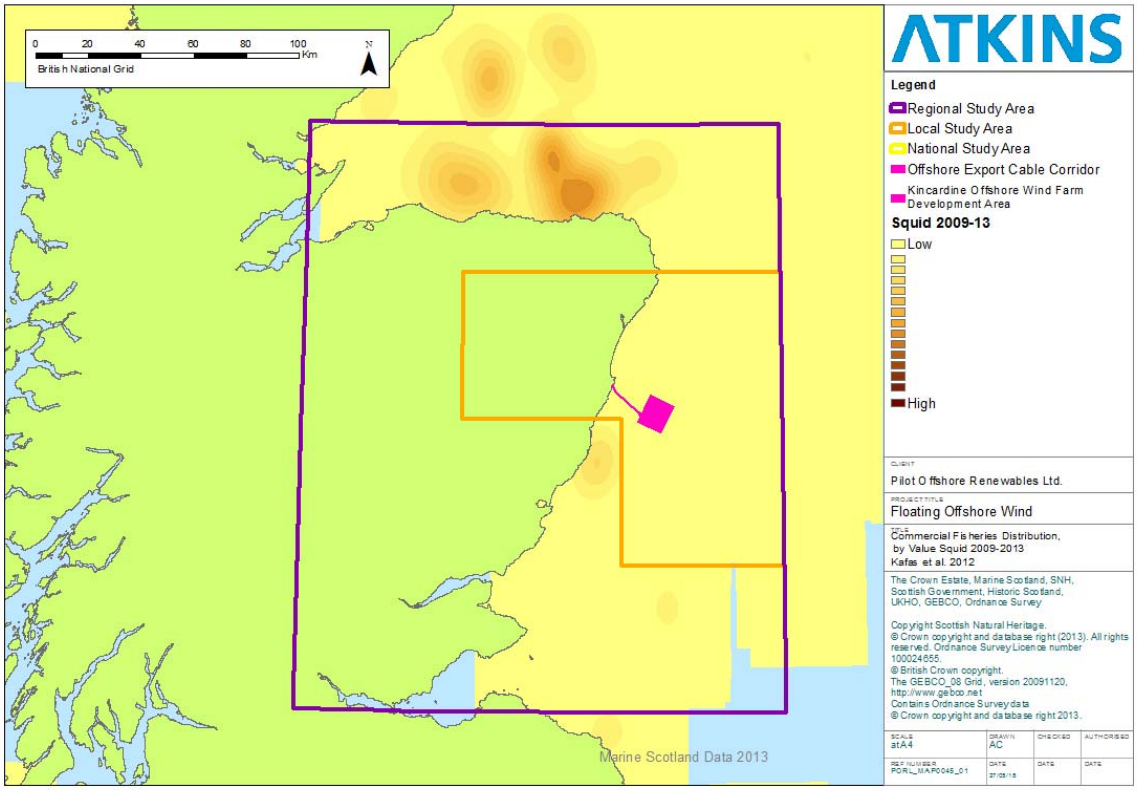


Figure 3-26 Commercial Fisheries Distribution by Value, Squid 2009-2013

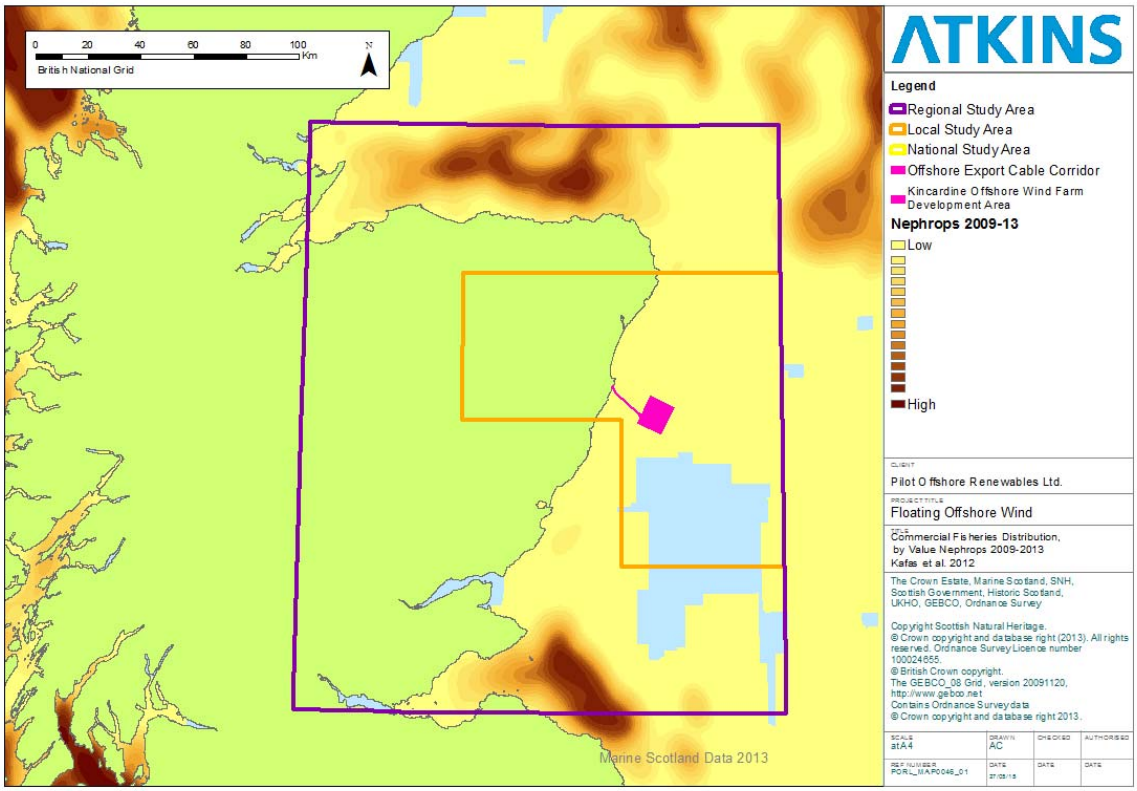


Figure 3-27 Commercial Fisheries Distribution by Value, *Nephrops* 2009-2013

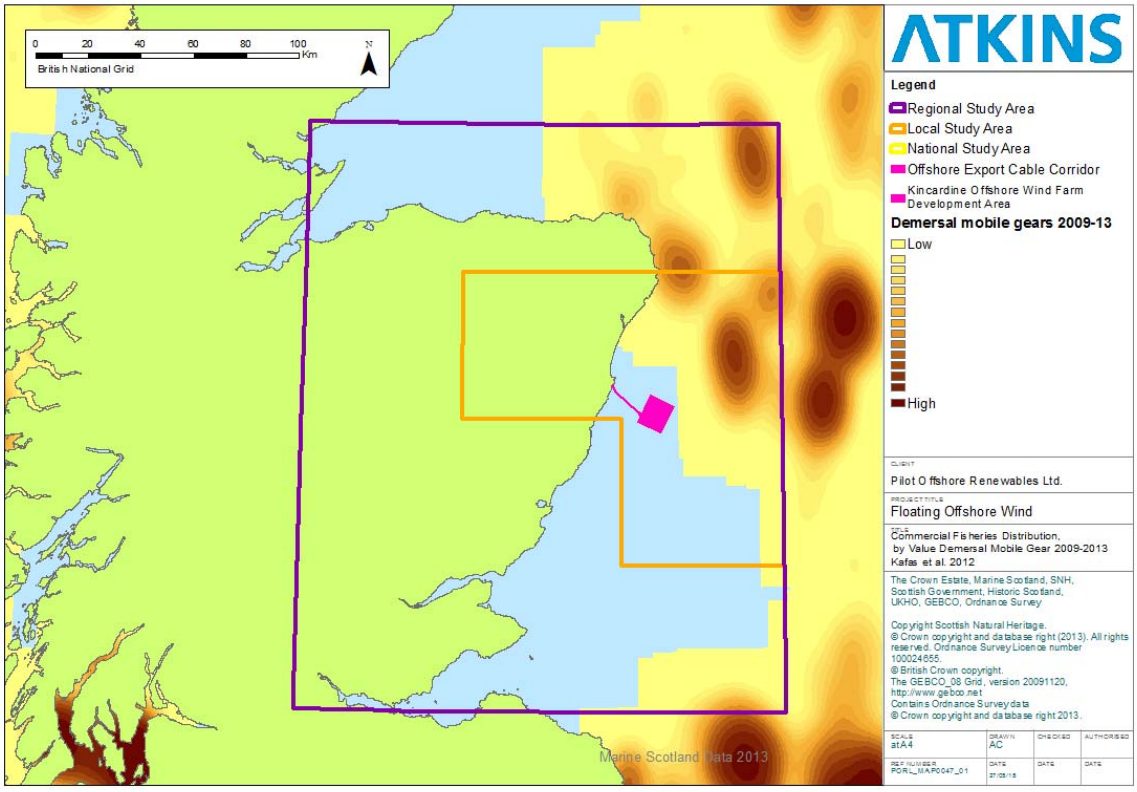


Figure 3-28 Commercial Fisheries Distribution by Value, Demersal Mobile Gear 2009-2013

3.10.4. ScotMap Data

84. Figure 3-29 indicates the relative value of the inshore fishery based on ScotMap data and demonstrates the importance of the inshore areas of the Offshore Export Cable Corridor, relative to the north east coast of Scotland.

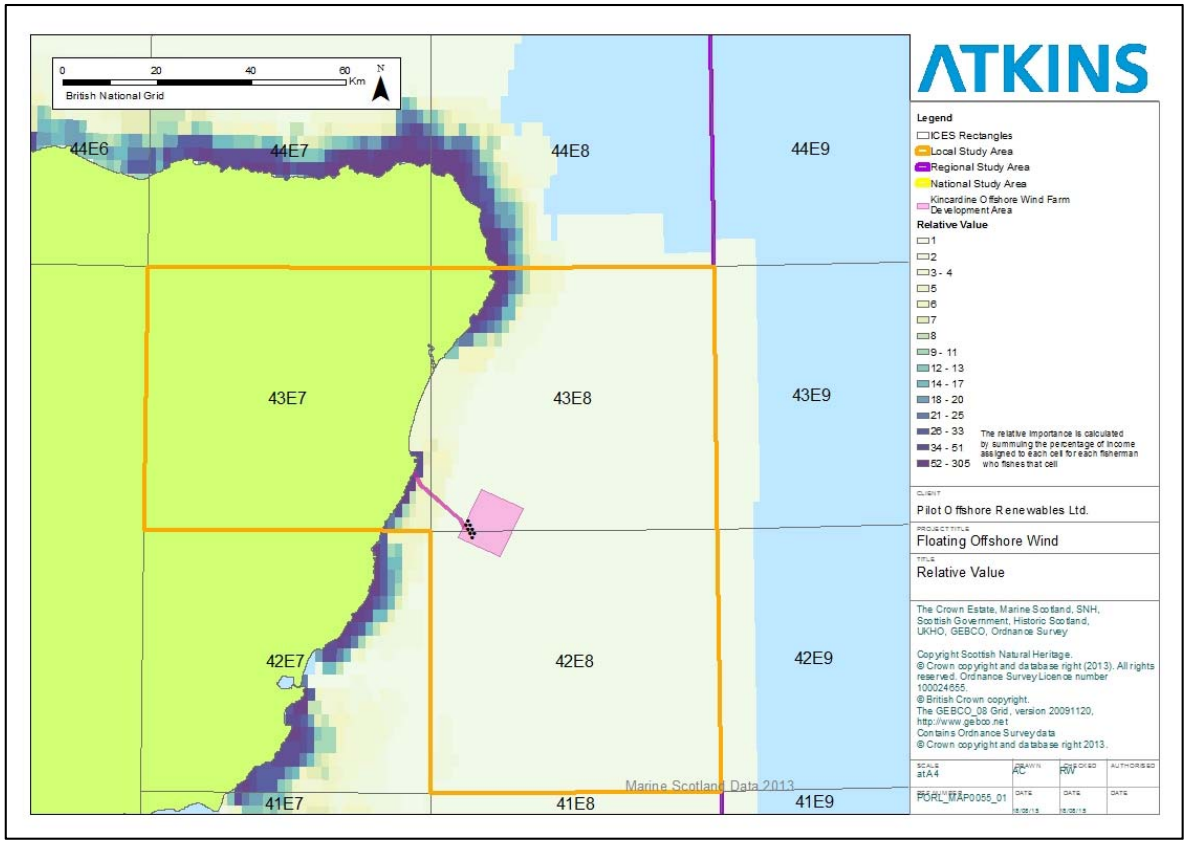


Figure 3-29 Relative Value of Inshore Fisheries (ScotMap, 2014)

3.10.5. Combined ScotMap and VMS Data

85. Figure 3-30 illustrates the combined data from VMS and ScotMap data averaged from 2007-2011. It illustrates the relatively low value of fishing activity (£0-10,000) within the Development Area and the slightly higher value of the Offshore Export Cable Corridor (£10,000-£50,000).

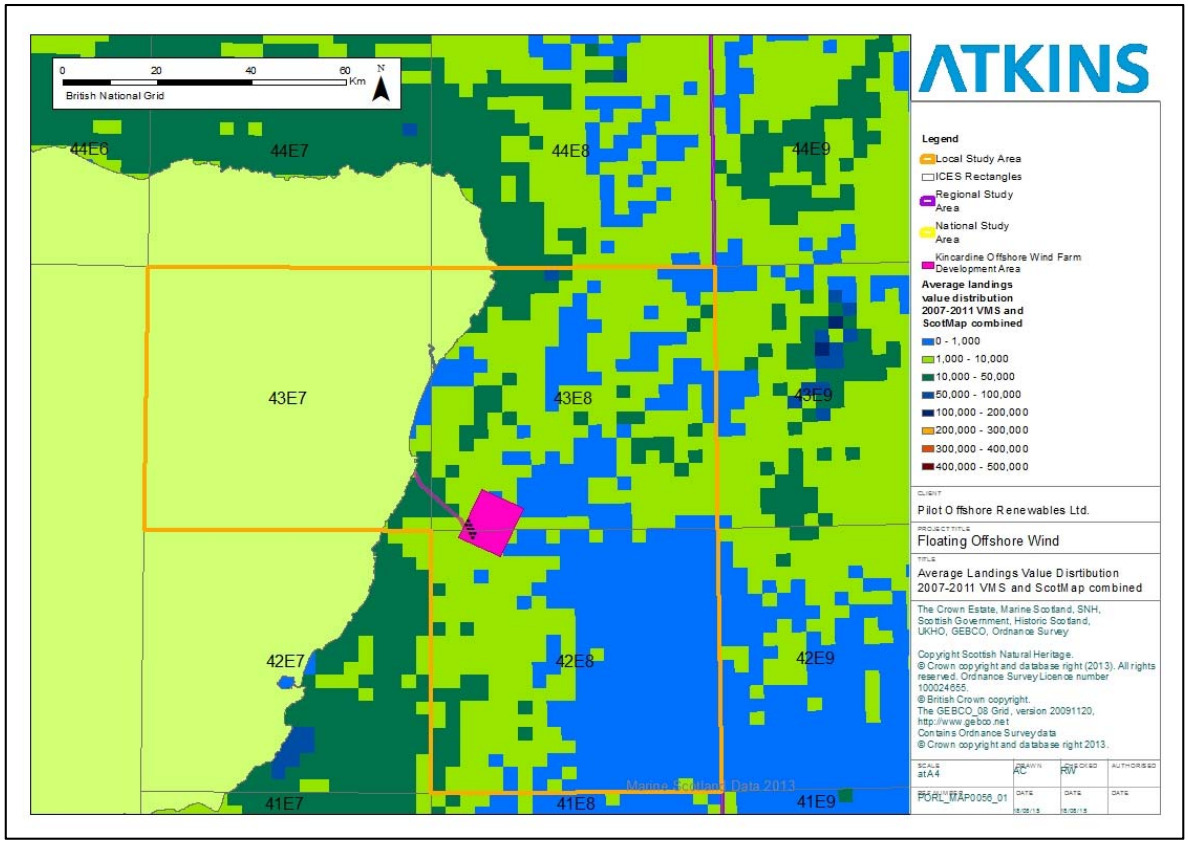


Figure 3-30 Average landings value distribution 2007-2011 VMS and ScotMap combined

3.11. Future Fisheries

86. Commercial fishing activities are not constant with fluctuations occurring annually due to the variability in the fish stocks. As a result predictions of future fishing activity in the regional and national study area are complicated. In addition, changes to fisheries management as a result to changes in relevant legislation may affect future fishing activities.

87. Landings of squid have been sporadic. Squid are sensitive to environmental factors and some species have an annual life cycle so the fishery can vary considerably year to year. This has a role to play in future fisheries. As climate change occurs and sea temperatures change squid (along with other species) may move to different latitudes (Hastie *et al*., 2009). Future fishing practices for squid may change through the gear types used to target squid. Gears such as 'jigging' (fishing using a multi-hooked line and mechanised 'jigger') may increase in areas as an alternative to towed gear. A study undertaken by Seafish considers that there are productive marketing opportunities for squid in the UK than are currently not exploited (Hastie *et al*., 2009).

88. The size of the current fleet on a national scale is considered to be proportionate with sustainable stock levels and therefore it is considered that fishing practices may alter a small amount in the future. Other pressures such as rising fuel and crew costs and national quota cuts may result in a decrease in the number of commercial fishing vessels in action. In addition if future pressure on stocks is deemed to be unsustainable further rounds of voluntary or compulsory decommissioning may be introduced.

4. Salmon and Sea Trout

4.1.1.1. Salmon Fishery Regions and Districts

89. For the purpose of salmon fisheries management, Scotland is divided into 41 statutory Salmon Fishery Districts each with a catchment area which includes either a single river or a group of rivers (ASFB, 2015). The different districts apply their own conservation code (volunteer or statutory), closure times, policies and regulations. Each district has different management and conservation schemes and a District Salmon Fishery Board (DSFB) made up of the owners/leaseholders of the fishing rights. Management schemes can include:

- Hatcheries;
- Fish counters;
- Water quality control; and
- Monitoring schemes.

90. The Association of Salmon Fishery Boards (ASFB) is the representative body for Scotland's 41 DSFBs which are depicted in Figure 4-1.

91. Marine Scotland oversees the fishery, promoting legislation and creating regulations under various Salmon and Fisheries Acts. Marine Scotland Science Fisheries Laboratories provides scientific advice on salmon and their fisheries.)

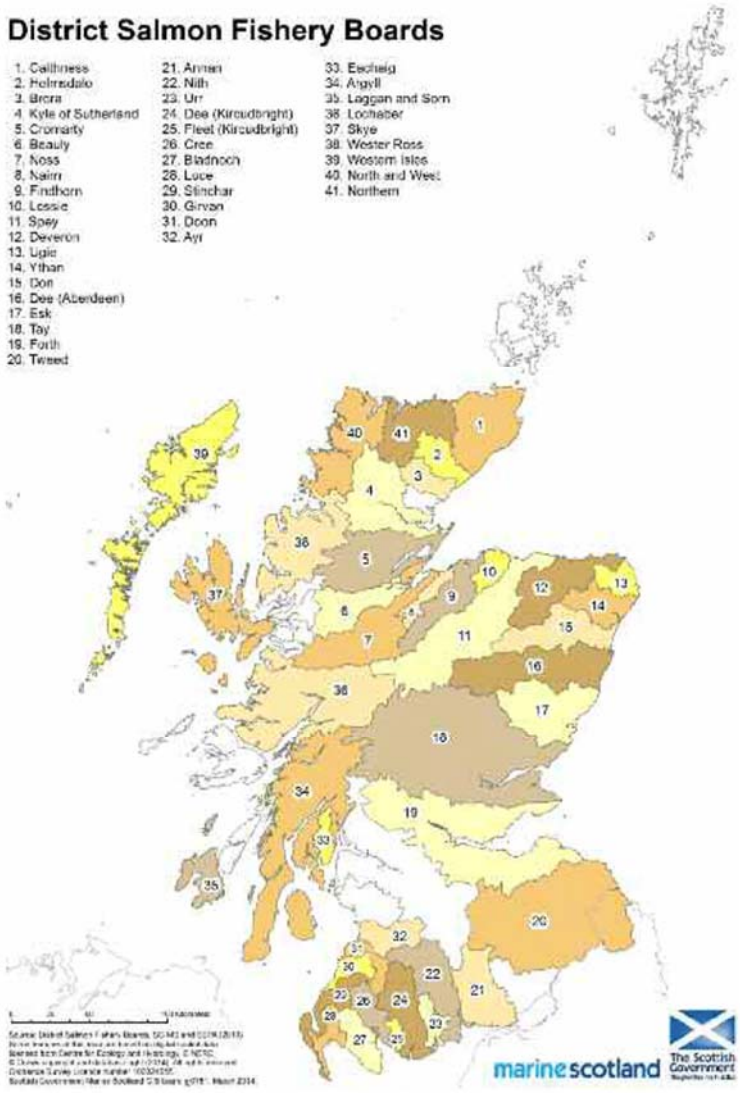


Figure 4-1 District Salmon Fishery Boards

92. The principle Districts in relation to the Project are all located in the North East Region and are:
    - Ythan (14)
    - Don (15)
    - Dee (16)
    - Esk (17)

93. Note that districts Don and Dee are located within Aberdeenshire.

4.1.1.2. Limitations

94. Distribution patterns, migration routes and behaviour of salmon and trout in the marine environment, particularly in waters off the east coast of Scotland are poorly understood. As a result accurate estimates of numbers, origin and period of migration of salmon and sea trout potentially using the Development Area or Offshore Export Cable Corridor cannot be made.

4.1.1.3. Fishing Methods

95. Principle methods for catching salmon in Scotland are:

- Fixed Engines (Bag and Stake Nets);
- Net-and-cobble; and
- Rod-and-Line.

96. The only legal fishing methods to catch salmon and sea trout in UK inland waters are rod-and-line and net-and-cobble. At sea all three principle methods are legal.

97. All Scottish salmon fisheries are closed for a minimum of 168 days per year. Dates for closure may vary annually and may be different for different fisheries but are mostly from late August to mid-February.

4.1.1.4. Salmon and Sea Trout Catch Information

98. The proposed cable landfall is located within the jurisdiction of the Dee Salmon Board District with management carried out jointly by the Dee District Salmon Fishery Board (DDSFB) and the River Dee Trust.

4.1.1.4.1. Historical Data

99. An indication of current trends in salmon and sea trout catches in Scotland in relation to historical levels (1952-2014) is given below for the rod-and-line fishery. Salmon catches are known to fluctuate annually (Figure 4-2)

100. **Error! Reference source not found.** shows that the river Dee has shown a general decline in catch between 1960 and 2000 with a few minor recoveries. Summer and autumn rod catches increase significantly between 2000 and 2012 but show a decline over the last 2 years.

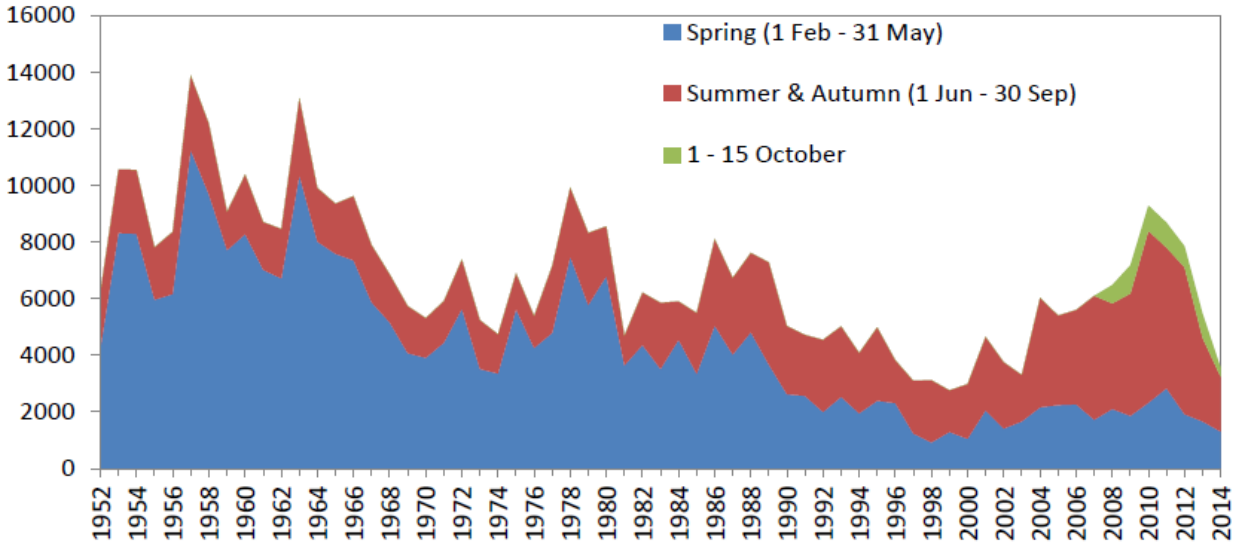


Figure 4-2: Dee District Salmon Rod Catches 1952-2014 (Source: DDSFB, 2015)

101. Catch of sea trout in the Dee show high annual variability with there being a slight increase since the 1980s (Figure 4-3).

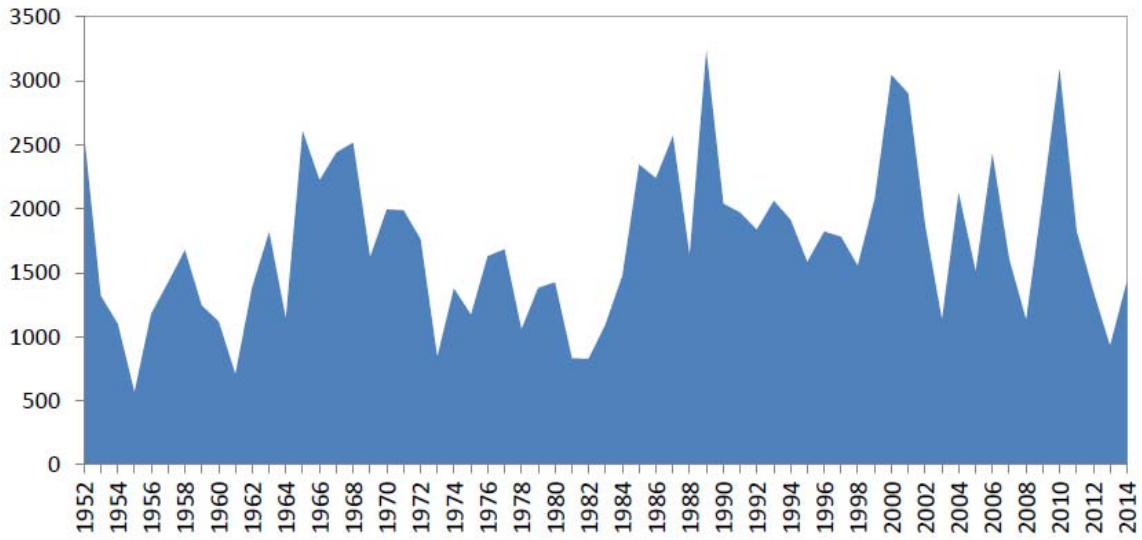


Figure 4-3: Dee District sea trout rod catches 1952-2014 (Source: DDSFB, 2015)

102. The majority of fishing undertaken in in the District is by rod and line in-river. Net and coble fishing operations in the River Dee stopped in 1986 and no fixed engines have been used since 1999.

103. It should be noted that the fisheries statistics do not take account of fishing effort.

104. The current five-year average rod catch (2010-2014) for the whole season is 7000 salmon and 1726 sea trout (DDSFB, 2015).

4.1.1.4.2. Landings Statistics

105. In general rod-and-line (catch and release) accounts for the majority of the reported catch in most salmon fishery regions. Netting by both fixed engines and net-and-cobble occurs at varying degrees in the Esk and Ythan.

The Rod-and Line Fishery

106. Data from Marine Scotland Science for 2014 show that within the North East region the highest number of Atlantic salmon and grilse (combined retained and released) were caught within the Dee District followed by the North Esk. The total number of individuals caught in the Districts are described in Table 4-1.

Table 4-1: Number of salmon and grilse caught in the relevant districts (Source: MSS, 2014)

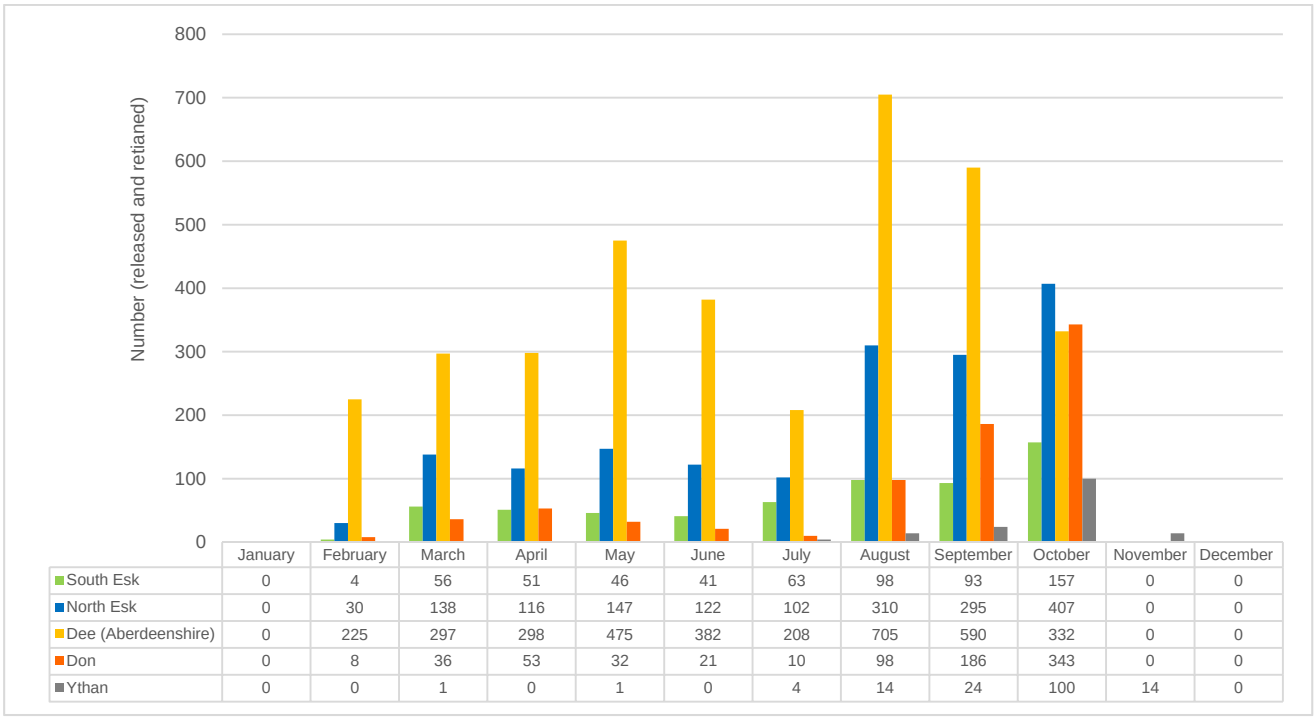
District	Number of Individuals
Dee	3492
North Esk	1667
Don	723
South Esk	607
Ythan	209

107. Data from Marine Scotland Science for 2014 show that within the North East region the highest number of sea trout (combined retained and released) were caught within the Ythan followed by the Dee.

Table 4-2: Number of sea trout caught in the relevant districts (Source: MSS, 2014)

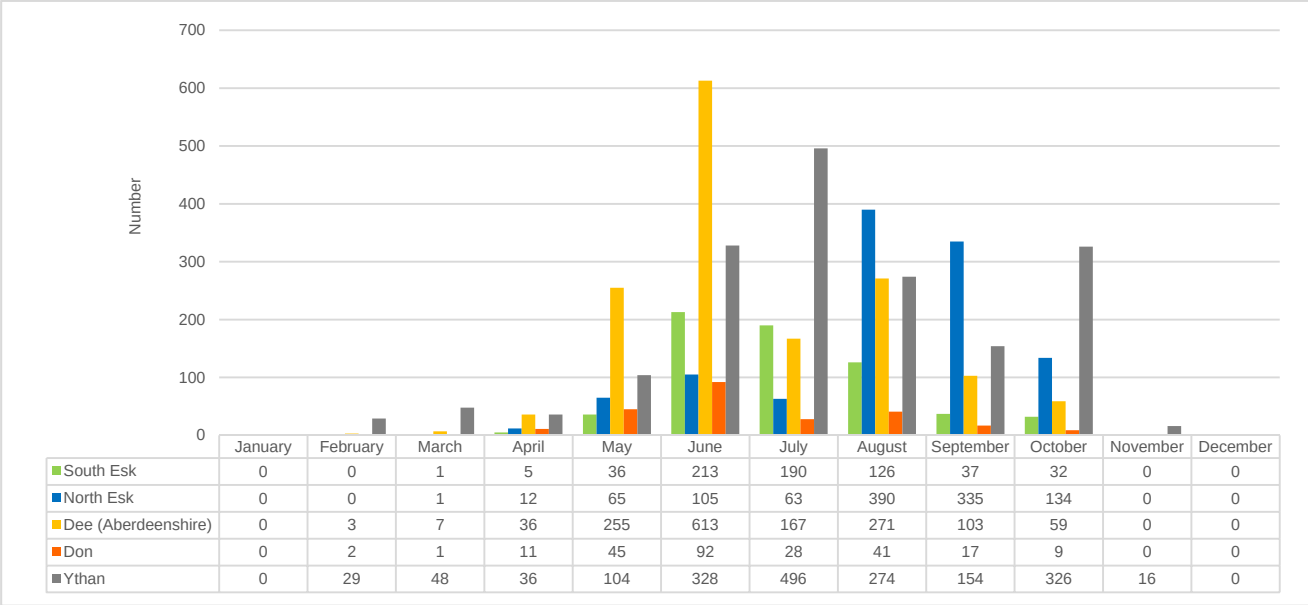
District	Number of Individuals
Ythan	1820
Dee	1521
North Esk	1110
South Esk	644
Don	254

108. An indication of the seasonality for the rod-and-line fishery for salmon by district in 2014 is illustrated in Figure 4-4 below. An indication of the seasonality for the rod-and-line fishery for sea trout by district in 2014 is illustrated in Figure 4-5 below.



	January	February	March	April	May	June	July	August	September	October	November	December
South Esk	0	4	56	51	46	41	63	98	93	157	0	0
North Esk	0	30	138	116	147	122	102	310	295	407	0	0
Dee (Aberdeenshire)	0	225	297	298	475	382	208	705	590	332	0	0
Don	0	8	36	53	32	21	10	98	186	343	0	0
Ythan	0	0	1	0	1	0	4	14	24	100	14	0

Figure 4-4: Rod-and-Line Fishery Seasonality (Retained and Release) including Grilse (Source: MSS, 2015)



	January	February	March	April	May	June	July	August	September	October	November	December
South Esk	0	0	1	5	36	213	190	126	37	32	0	0
North Esk	0	0	1	12	65	105	63	390	335	134	0	0
Dee (Aberdeenshire)	0	3	7	36	255	613	167	271	103	59	0	0
Don	0	2	1	11	45	92	28	41	17	9	0	0
Ythan	0	29	48	36	104	328	496	274	154	326	16	0

Figure 4-5: Seasonality of the Sea Trout Rod-and-Line Fishery (Retained and Released) including Finnock (Source: MSS, 2015)

The Net and Coble Fishery

109. According to MSS catch statistics, net and coble catches for sea trout were only recorded in the North Esk with a total of 2256 caught from May to August, there were zero landings in other months due to management measures. The highest number of individuals caught was in July with a total of 478.

110. According to MSS catch statistics, net and coble catches for sea trout were only recorded in the North Esk and Ythan in 2014. Catch totalled 1832 in the North Esk from May to August with the highest number caught in May (931). The only recorded catch for Ythan was in July with a total of 35.

Fixed Engine Fishery

111. In 2014 the only catches using fixed engines were recorded in the South Esk, North Esk and Ythan. The highest catches were recorded in South Esk with a total of 5210 followed by 315 for the North Esk and 139 in Ythan. In the South Esk salmon were caught using fixed net gear from May to August with the highest catch being 2179 in July.

112. In 2014 the only catches using fixed engines were in the South Esk, North Esk and Ythan. The highest catches were recorded in the South Esk with a total of 398 followed by 126 in the North Esk then 58 in the Ythan. In the South Esk the highest catches were recorded in May at 228.

4.1.1.4.3. Designated Sites

113. Three rivers in the Study Area are designated as Special Areas of Conservation (SACs), with salmon being a qualifying feature for selection of the site. These are discussed in detail in Chapter 6 and within the Habitat Regulations Appraisal (detailed in a separate report) and include the following:

- River South Esk SAC;
- River Dee SAC; and
- River Spey SAC.

4.1.2. Aquaculture

114. There are no active aquaculture sites within the vicinity of the Project (NMPI, 2015).

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