

Neart na Gaoithe



Commercial Fisheries Monitoring Report 2 – Pre-construction

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1 Introduction

1.1 Background

1. Conditions attached to the Offshore Consents granted to Neart na Gaoithe Offshore Wind Limited (NnGOWL) for the Neart na Gaoithe (NnG) wind farm require that the Project Environmental Monitoring Programme (PEMP) considers commercial fisheries. In line with this requirement, and as set out in the approved PEMP (NnGOWL, 2020), NnGOWL will undertake pre-, during and post-construction commercial fisheries monitoring to better understand the effect of construction activities associated with the Project, and the presence of the operational Project, on commercial fisheries in its vicinity.
2. The Environmental Impact Assessment (EIA) for the Project did not identify any potential significant effects upon commercial fisheries, assuming proposed mitigation measures were enacted. The Fisheries Management and Mitigation Strategy (FMMS) confirms the NnGOWL commitment to mitigation. NnGOWL intend that the reporting outputs of the commercial fisheries PEMP are used to monitor any changes in the commercial fisheries activity, and inform any future updates to the FMMS. Given the range of factors that affect fishing patterns, together with the granularity of the data being monitored, it is not the intention of the PEMP monitoring to attempt to define any attribution of change in fishing activity to the Project or other factors. The monitoring seeks to better understand the effect, rather than to attribute any changes to a specific source.

1.2 Consent Conditions

3. Consent conditions relevant to commercial fisheries monitoring are summarised in Table 1.1.

Table 1.1. NnGOWL Consent Conditions relevant to commercial fisheries

RELEVANT CONDITIONS	CONDITION SUMMARY	DISCHARGE STATUS
S36 Consent Condition 23.a.3 OfTW Marine Licence Condition 3.2.2.14 a.3	The PEMP must cover, but not be limited to the following matters: a. Pre-construction, construction (if considered appropriate by the Scottish Ministers) and post-construction monitoring or data collection as relevant in terms of the Application, and any subsequent monitoring or data collection for: 3. Commercial Fisheries;	Pre-construction: NnGOWL will seek confirmation from MS-LOT on discharge of the pre-construction element of Condition 23.a.3 at the appropriate time.
		Construction: NnGOWL will seek confirmation from MS-LOT on discharge of the construction element of Condition 23.a.3 at the appropriate time.
		Post-construction: NnGOWL will seek confirmation from MS-LOT on discharge of the post-construction element of Condition 23.a.3 at the appropriate time.
S36 Consent Condition 23.b OfTW Marine Licence Condition 3.2.2.14 b	b. The participation by the Company to contribute to data collection or monitoring of wider strategic relevance, identified and agreed by the Scottish Ministers.	Monitoring strategy developed in collaboration with FTRAG to take into account regional considerations. NnGOWL will seek confirmation from MS-LOT on discharge of the post-construction element of Condition 23.b at the appropriate time.
S36 Consent Condition 24 Regional Monitoring	The Company must participate in any Forth and Tay Regional Advisory Group ("FTRAG") or any successor group, established by the Scottish Ministers for the purpose of advising the Scottish Ministers on research, monitoring and mitigation programmes for, but not limited to, commercial fish.	Monitoring strategy developed in collaboration with FTRAG to take into account regional considerations. NnGOWL will seek confirmation from MS-LOT on discharge of Condition 24 at the appropriate time.

1.3 Aim and Objectives of Data Collection and Monitoring

4. The aim of the NnGOWL commercial fisheries monitoring, as outlined in the PEMP, is to better understand variations in commercial fisheries activity throughout pre-, during and post-construction works at NnG, and use this understanding to inform updates to the FMMS.
5. The objectives are to:
 - Collate data on commercial fisheries landings by port on a monthly basis;
 - Collate all other sources of evidence of commercial fisheries activity on a regular basis; and
 - Monitor data and evidence to better understand any variations and patterns in commercial fisheries activity.

1.4 Time period of this report

6. The commercial fisheries monitoring will be delivered through a number of reports for various stages of the Project, as follows:
 - Post-consent: covering period 01 January 2017 to 30 April 2019 [Report 1 - complete];
 - Pre-construction: covering period 01 May 2019 up to the start of construction in August 2020 [**this report**];
 - Construction: 6-monthly reporting from the start of construction to the completion; and
 - Post-construction phase: end of construction to three years after the completion of construction, or as agreed with Marine Scotland.
7. This pre-construction report provides an analysis of baseline data for commercial fisheries landings and activity from 2019 to 2020; the time period for pre-construction is specifically 01 May 2019 to 01 August 2020 and has been specified because pre-construction surveys commenced in May 2019 and construction commenced in early August 2020. Data is presented in either annual datasets, or monthly for each entire annual period, to ensure ease of comparison across previous (and future) years.

1.5 Fisheries overview

8. A detailed characterisation of commercial fisheries in the area is available within the Commercial Fisheries Technical Report and ES Chapter (NnG, 2018), and is further supported by the Commercial Fisheries Monitoring Report 1.
9. The fisheries in operation across the NnG offshore wind farm and export cable, and surrounding area include:
 - Lobster and crab creel fishery;
 - Nephrops demersal trawl fishery;
 - Squid demersal trawl fishery; and
 - Occasional activity from other mixed demersal trawlers and scallop dredgers.
10. Vessels land to a range of ports on the north and south side of the Firth of Forth, including but not limited to (and in no particular order): Pittenweem, Dunbar, North Berwick, Cove, Eyemouth; Port Seton, Anstruther and St Monans (sometimes also referred to as St Monance).

2 Methodology

11. The overall approach throughout this report is to analyse and present data for comparison with previous years of data, to build on the information provided in the previous report, including the Environment Statement baseline and PEMP Report 1.

2.1 Landing statistics

12. A range of sources of landing statistics are available from the Marine Management Organisation (MMO) and Marine Scotland. The MMO data provides the most detail in terms of annual landings by ICES rectangle and monthly landings by port. The dataset for landings by port and month is sourced from the MMO (2021).
13. The MMO landing statistics data by port data is updated regularly and allows monitoring at a port level. One weakness of this dataset, is that landings are not attributed to an ICES rectangle. Data confidentiality requires each data value to be an amalgamation of at least five individual landing declarations. This ensures that individual vessels cannot be identified within the dataset. As a consequence, data is rarely available by port of landing and ICES rectangle combined (e.g. it is not possible to determine to which port a species caught in a particular ICES rectangle is landed).
14. Nevertheless, the landings data by port will allow monitoring by vessel size, target species, tonnage of catch and first sales value on a monthly basis. This is considered appropriate for monitoring the commercial fishery activity across the region on a regular and continual basis.

2.1.1 Vessel Monitoring System data

15. All UK fishing vessels that are ≥ 12 m in length, are required to have a vessel monitoring system (VMS) on board. This reports the vessels' position to fisheries management authorities every two hours. Since 1 January 2012, this obligation has applied to vessels that are ≥ 12 m in length (before 1 January 2012 it applied to vessels ≥ 15 m in length).
16. The MMO publish amalgamated VMS data by gear type to show annual activity for all UK vessels ≥ 15 m. Data for vessels 12-14.99m is not publicly available. VMS data for UK potting vessels ≥ 15 m in length has been analysed for the purposes of this report for the years 2018 and 2019, which represent the most up-to-date data available at the time of writing. It is noted that VMS data for 2020 is not yet publicly available and therefore the VMS data analysed only partially covers the study period.
17. Particular care is required when interpreting VMS data for fishing activity across the Project and surrounding area, as the majority of vessels active across this area are < 15 m in length and therefore not represented within the VMS dataset. This is particularly important for the potting fleet, with the large majority being < 15 m in length and not represented within VMS data mapping. Other sources of information have been analysed to understand the activity patterns of potting vessels, including landing statistics, consultation and other sources of information as detailed below.

2.2 Other sources of evidence

18. A range of other sources of evidence will inform the NnG commercial fisheries monitoring reports, including navigational surveys and records made during offshore Fisheries Liaison Officer (FLO) activities, these are summarised in Table 2.1.

Table 2.1. Summary of other evidence sources to inform commercial fisheries monitoring

SOURCE	SUMMARY OF CONTENT	FREQUENCY/DURATION
Offshore Fisheries Liaison Officer records and fishing vessel register	Record of fishing vessels sighted, their approx. position relative to the wind farm and their activity (i.e. steaming, fishing).	Records kept daily during all offshore surveys and during construction.
Guard vessel reports	Record of fishing vessels sighted, their approx. position relative to the wind farm and their activity (i.e. steaming, fishing).	Records kept daily during all offshore surveys and during construction.
2019 Marine Traffic Survey	Anatec-led radar and AIS survey to detect vessels that are active in the Project area, with radar being used to detect those smaller vessels not carrying AIS.	Survey undertaken in summer 2019 for 1 month.
Marine Coordination Centre records	The Marine Coordinator monitors all project and third party vessel activity within the construction area (to ensure safe construction works and monitor safety zones) and reports any incidents and communications.	From start of construction onwards into operation and maintenance phase, operates 24/7, 365 days/yr.

3 Landings by ICES rectangle

19. Landing statistics from the period January 2017 to December 2020 are presented in this section. Where practicable and/or when annual datasets are compared, data for the entire 2020 period is presented within figures.
20. Data across two spatial study areas are assessed as shown in Figure 3.1 and described as:
 - Commercial fisheries local study area: ICES rectangles 40E7 and 41E7
 - Commercial fisheries regional study area: 42E7-E8, 41E6-E8 and 40E6-E8.

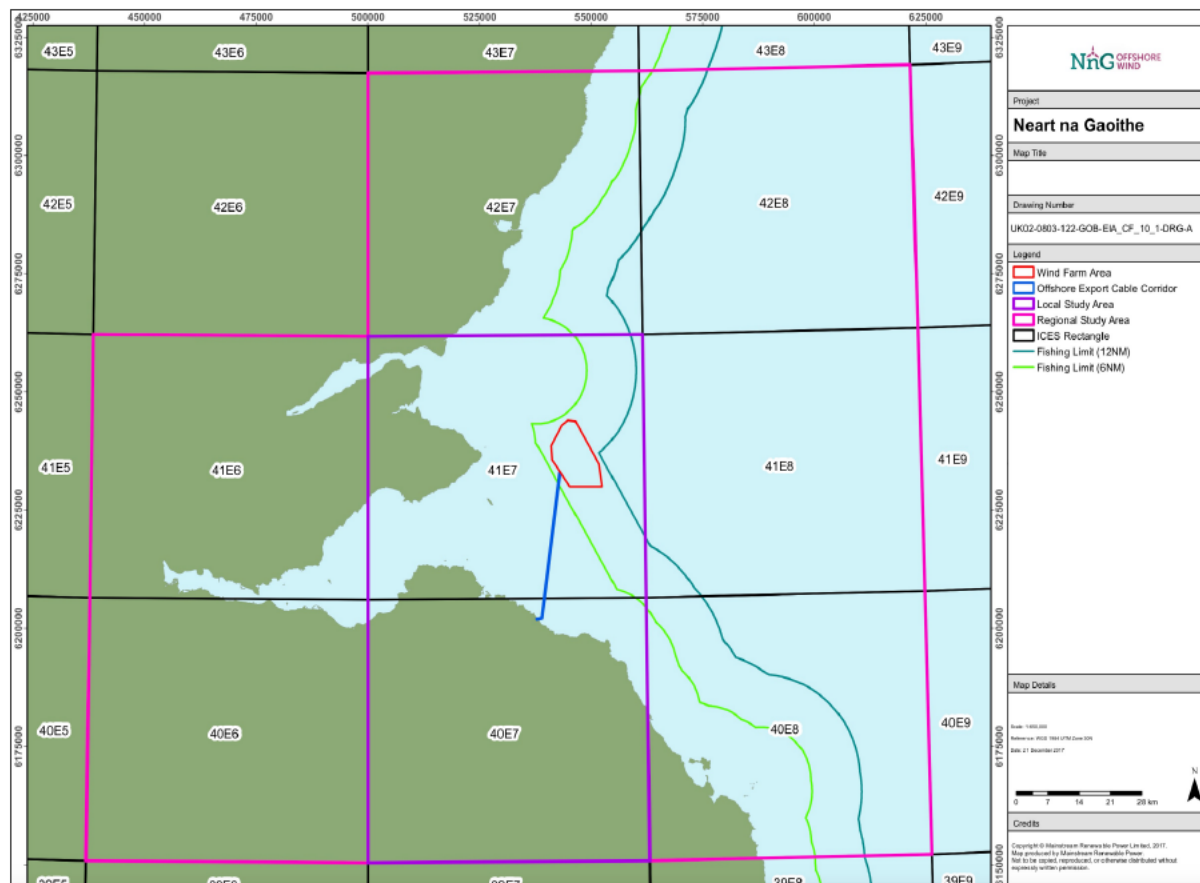


Figure 3.1. Commercial fisheries local and regional study areas.

3.1 Regional landings

21. Landings from the regional study area are presented in Figure 3.2 indicating the landed weight by species and first sales value by species, gear type and vessel length category for the period 2017 to 2020.
22. Nephrops were landed in the highest quantities from the regional study area at an average of 1,600 tonnes per year and a first sales value of £7.4 million (based on the average across the four year period). Nephrops are caught by demersal trawl, predominately deployed by vessels over 10 m in length which account for approx. £5.5 million of first sales value, with under 10m vessels landing approx. £825,000 of nephrops from the regional study area. Regional landings of nephrops have remained relatively consistent between 2017 and 2019, falling in 2020.
23. Lobster represent the most economically important species in terms of total regional landings, with just under £8.8 million in annual first sales landings (based on 4-year average), equating to 650 tonnes and an average price of £13.5 per kg. Regional landings of lobster have remained fairly consistent over the time period analysed, showing more marked decline in 2020.
24. Brown crab landings have declined over 2017 to 2020. An annual average value of just under £2.7 million of brown crab is landed from the regional study area, equating to 1,300 tonnes.

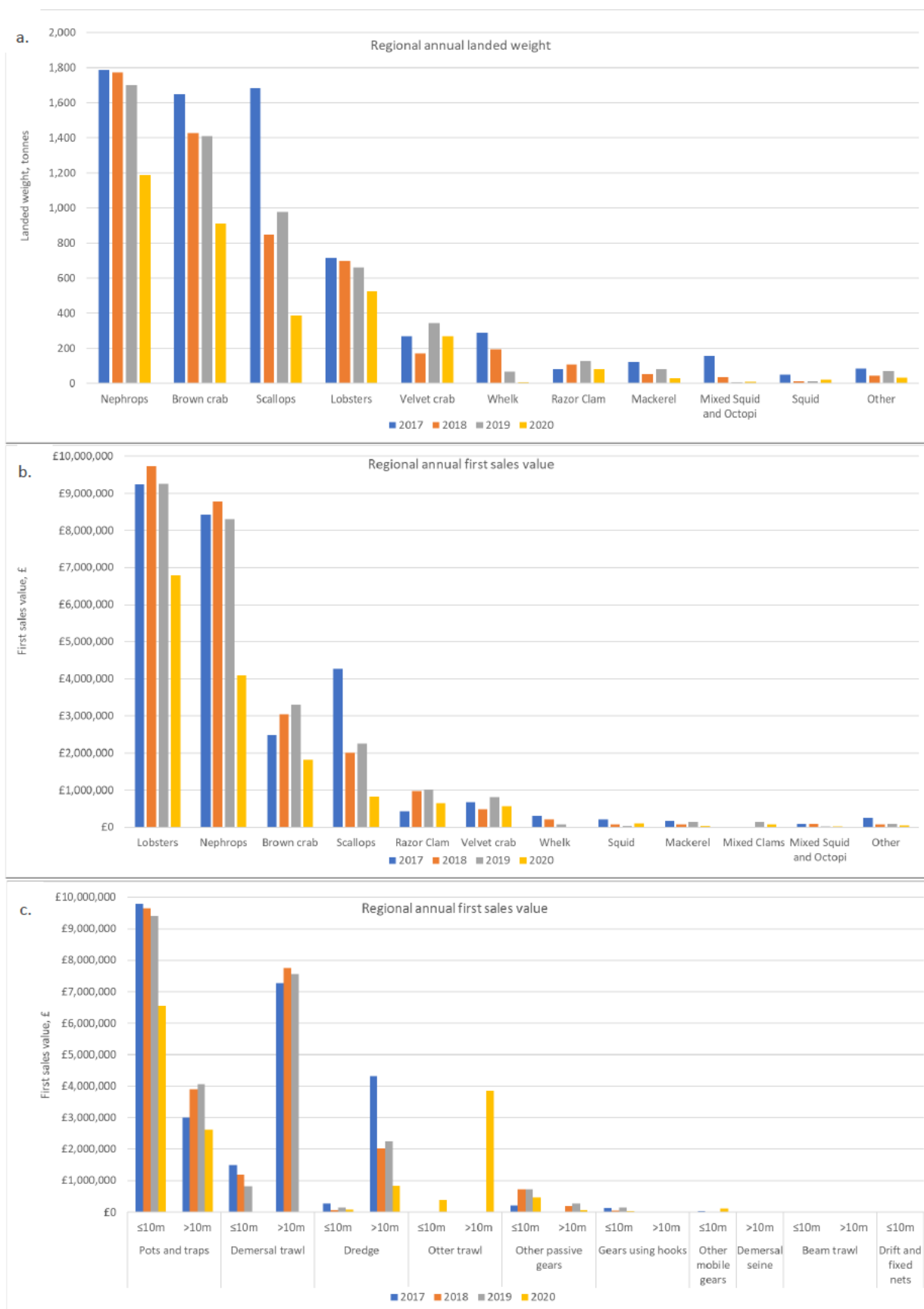


Figure 3.2. Landings from regional study area indicating landed weight(tonnes) by species (a.) and annual first sales value by species (b.) and by gear type and vessel length category (c.) for period 2017 to 2020 (data source: MMO, 2021)

25. Lobster and brown crab are caught using pots (also known as creels), predominately by vessels that are 10m and under in length. From the regional study area, approx. £8.8 million is landed annually by potting vessels 10m and under, compared to £3.4 million landed by >10m potting vessels. It is understood that lobster are targeted in inshore waters, while brown crab are caught further offshore.
26. Other notable species from the regional study area include king scallop (hereon referred to as scallop), landed by over 10m vessels using dredge, with an average first sales value of £2.3 million. Annual variations in landings are notable for scallop, which peaked in 2017 at 1,700 tonnes (first sales value of £4.3 million) and dropped to 900 tonnes in 2018 and 2019 and 400 tonnes in 2020 (£800,000).
27. Landings of razor clam (100 tonnes, first sales value £760,000), velvet crab (260 tonnes, £640,000), whelk (140 tonnes, £150,000), mackerel (70 tonnes, £100,000), and squid/mixed squid and octopi (24/50 tonnes, £100,000/£54,000) are recorded from the regional study area (based on 4-year average from 2017-2020).
28. The velvet crab landings have fluctuated with peaks in 2017 and 2019 and are caught in inshore waters, close to shore including as bycatch within the lobster fishery. Whelk are caught in baited plastic pots/drums and landings have dropped significantly from 2017 to 2020; this is understood to have been an exploratory fishery targeted by one vessel, which was then deemed not to be viable, explaining the subsequent drop in landings. Landings from the squid fishery are variable year-on-year, noting that this is a highly seasonal fishery targeted by demersal trawlers.
29. The razor clam fishery has grown from 2017 to 2019, declining in 2020. The majority are caught in ICES rectangle 41E7, by gear classified in MMO statistics as 'other passive gear' and likely to be hand collection by divers. Some razor clams are also harvested utilising suction dredge. The biggest increase in landings of razor clam is by divers, which highlights potential for an emerging fishery.
30. Comparing average annual landings across the regional study area by ICES rectangle and vessel length category, it can be seen that the highest value of catches are landed from ICES rectangle 41E7 (the ICES rectangle in which the NnG Project is located) (Figure 3.3). An annual average of £8.2 million is landed from 41E7, 58% of which is by vessels >10m in length. £4.7 million is landed from 42E7 (75% by vessels 10m and under), £4.1 million is landed from 40E8 (70% by vessels 10m and under), and £2.8 million from 40E7 (59% by vessels 10m and under).
31. Overall, Figure 3.3 highlights the importance of ICES rectangle 41E7 at a regional level.

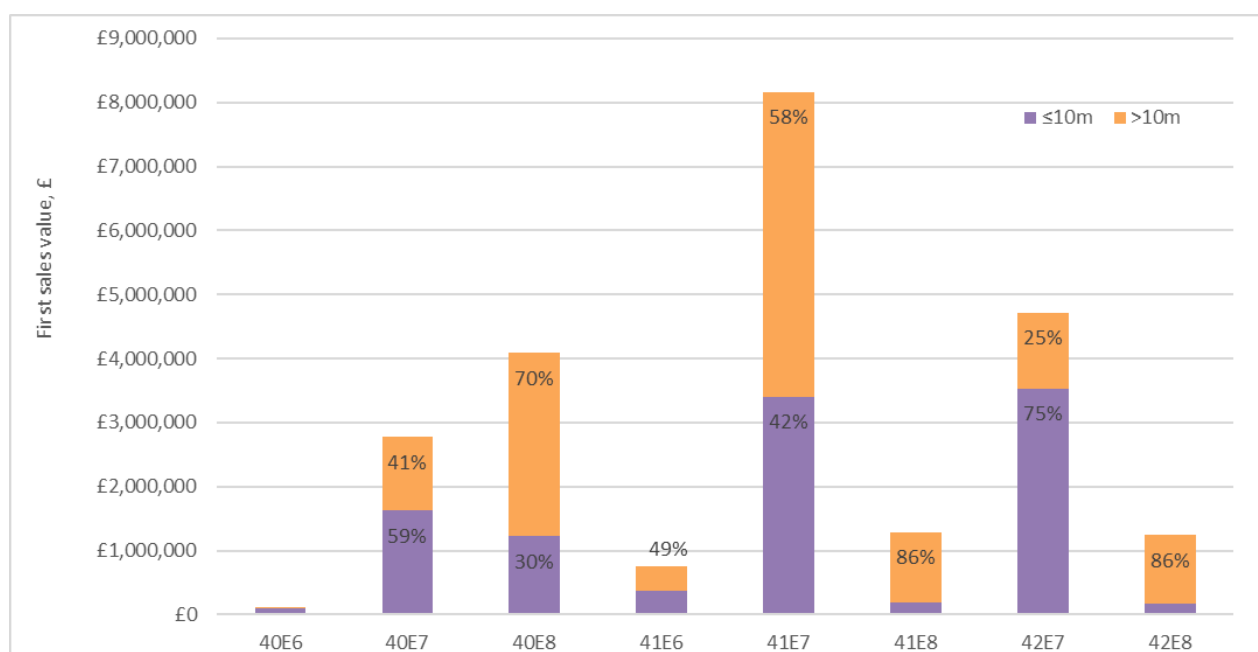


Figure 3.3. Average annual landed first sales value by ICES rectangle and vessel length category, based on three-year period from 2017 to 2020 (data source: MMO, 2021)

32. Landings by UK nationality for Scottish, English and Northern Irish registered vessels are shown in Figure 3.4 by first sales value for each ICES rectangle in the regional study area, indicating that the large majority of landings are by Scottish vessels, as expected. Only ICES rectangle 40E8 has the majority of landings by non-Scottish vessels, with 60% landed by English vessels targeting lobster and brown crab using pots.

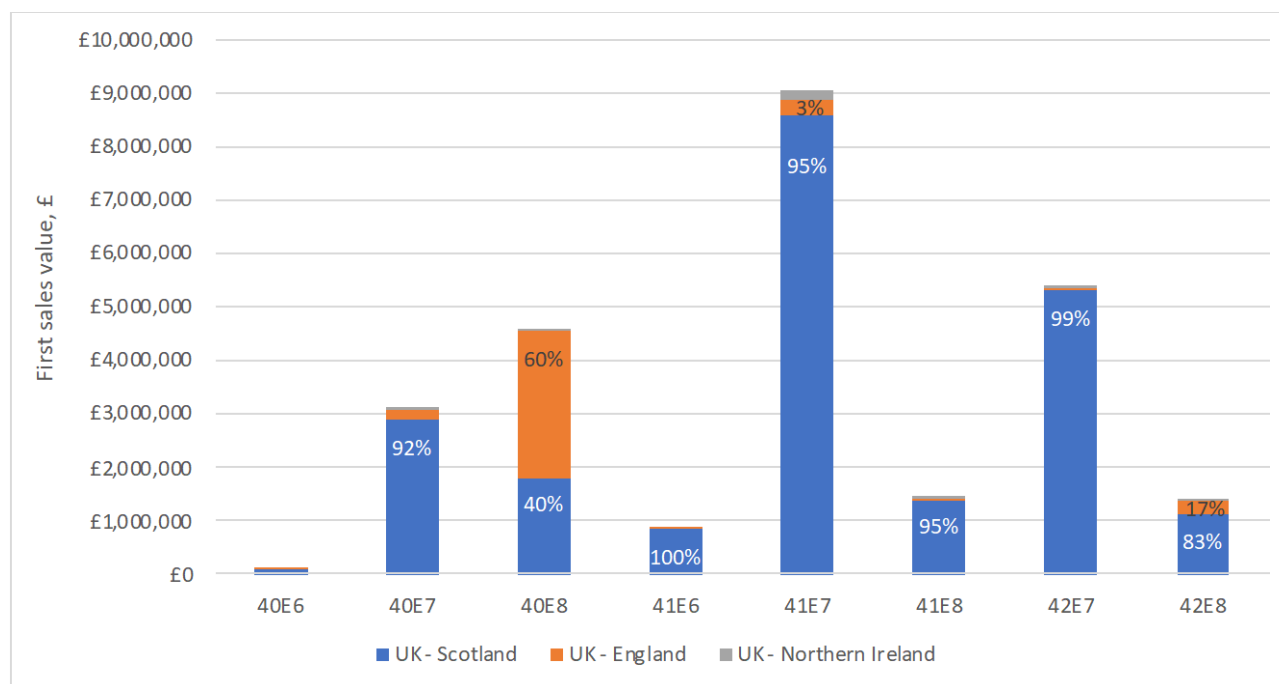


Figure 3.4. Average annual landed first sales value by ICES rectangle and UK vessel nationality, based on three-year period from 2017 to 2020 (data source: MMO, 2021)

33. Landed weight and first sales value of landings from 2017 to 2020 across the regional study area are presented by species and ICES rectangle in Figure 3.5 and Figure 3.6 for the following species:
- Nephrops;
 - Lobster;
 - Brown crab;
 - Scallop;
 - Razor clam;
 - Velvet crab;
 - Whelk; and
 - Squid.
34. The intention of these figures is to allow inter-annual comparison for each species across the commercial fisheries monitoring timeline.

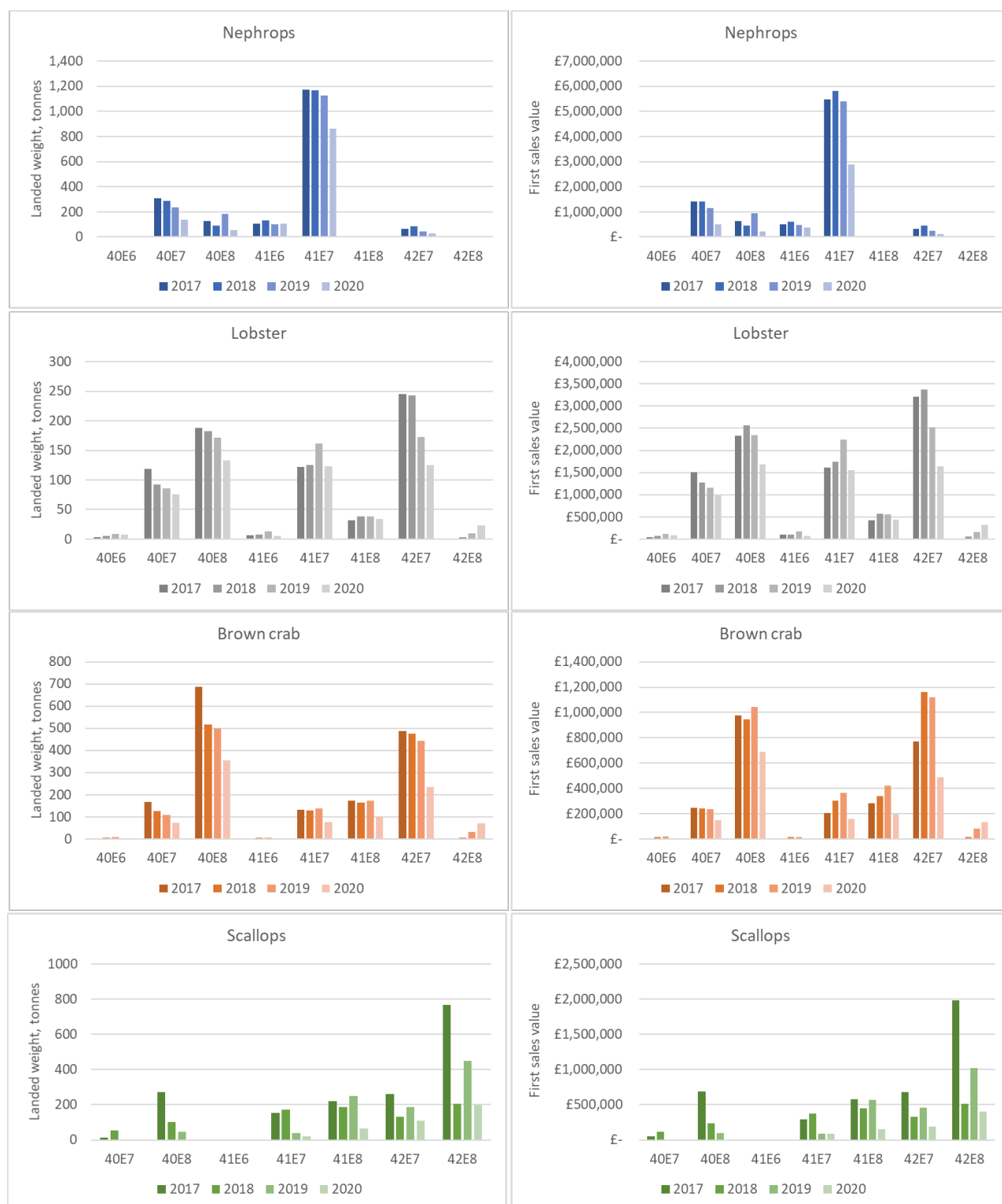


Figure 3.5. Landings from regional study area for the period 2017 to 2020 indicating landed weight (tonnes) and annual first sales value (£) by ICES statistical rectangle and species for nephrops, lobster, brown crab and scallops (data source: MMO, 2021)

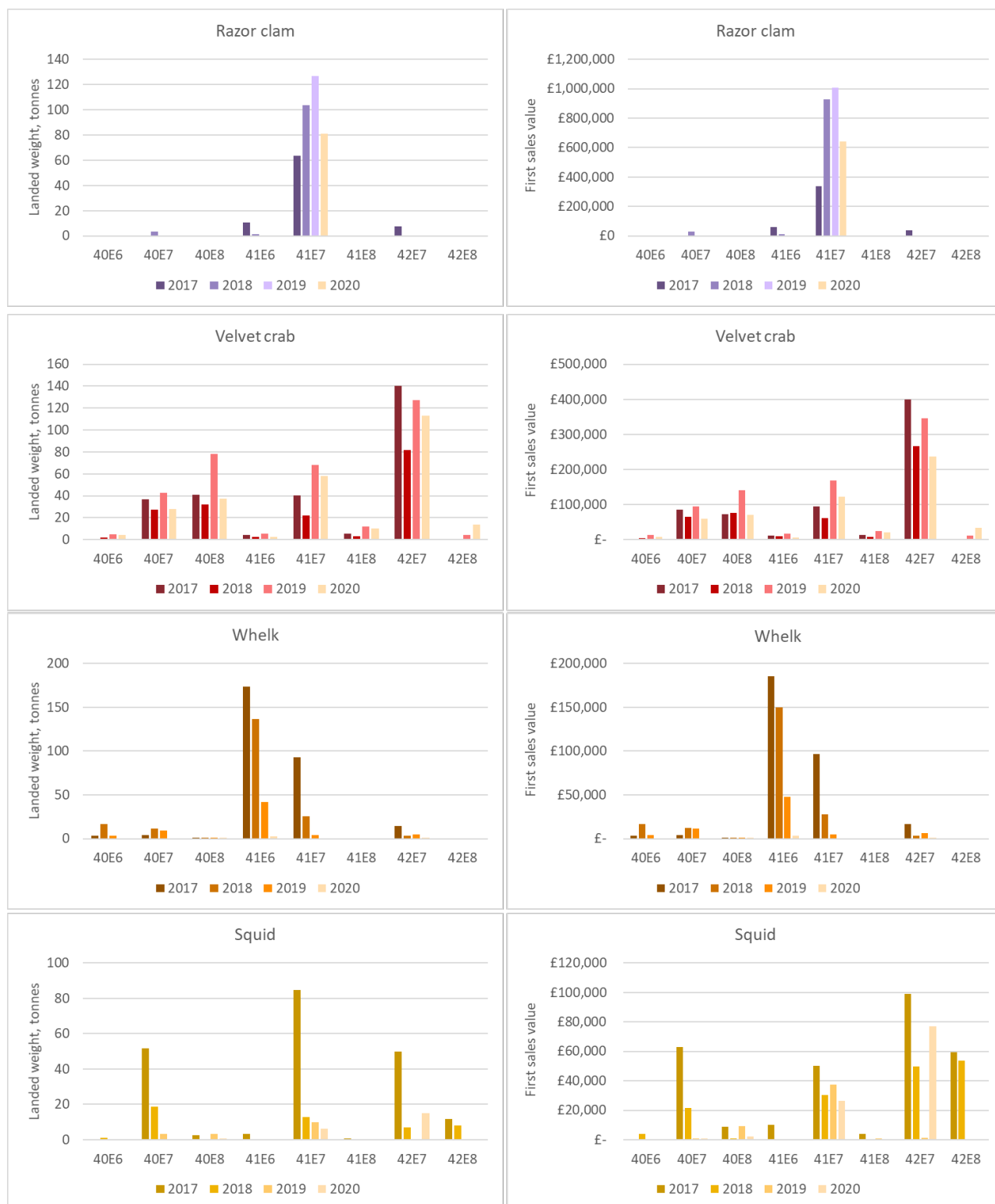


Figure 3.6. Landings from regional study area for the period 2017 to 2020 indicating landed weight(tonnes) and annual first sales value (£) by ICES statistical rectangle and species for razor clam, velvet crab, whelk and squid (data source: MMO, 2021)

3.2 Local study area

35. Landings from the local study area (40E7 and 41E7) are presented in Figure 3.7 indicating the landed weight by species and first sales value by species, gear type and vessel length category for the period 2017 to 2020. Note that in 2020 landings by demersal otter trawlers targeting nephrops are categorised as 'otter trawl' within MMO statistics, while previous to 2020 they were categorised as 'demersal trawl'.
36. Nephrops were landed in the highest quantities from the local study area at an average of 1,300 tonnes per year and a first sales value of £6 million (based on the average across the four year period). Nephrops represent the most economically important species in terms of total landings from the local study area. Nephrops are caught by demersal/otter trawl, predominately deployed by vessels over 10 m in length which account for approx. £5.5 million of first sales value, with under 10m vessels landing approx. £600,000 of nephrops from the local study area. Landings of nephrops have remained relatively consistent over the 2017 to 2019 period, declining significantly in 2020, likely to be related to COVID.
37. Lobster accounted for approx. £3 million in annual first sales (based on 4-year average), landed from the local study area, equating to 220 tonnes and an average price of £13.4 per kg. Landings of lobster have remained fairly consistent over the time period analysed.
38. Brown crab landings have also remained relatively consistent from this local study area, but with lower first sales value compared to lobster, at an average of £0.5 million per annum.
39. As noted under the regional study area, a razor clam fishery has grown in terms of landed weight and value, with significant catches coming from 41E7 (100 tonnes, first sales value £740,000). The majority are taken by divers via hand collection.
40. Compared to these other species, smaller landings of mackerel, whelk, velvet crab and squid are also noted from the local study area.
41. Seasonality of monthly landings from the local study area (40E7 and 41E7) are presented by individual species for landed weight and first sales value in Figure 3.8 and Figure 3.9. A summary of the seasonality findings is provided in Table 3.1.

Table 3.1. Seasonality of landings across the local study area (40E7 and 41E7) by species

SPECIES	OBSERVATIONS IN SEASONALITY OF LANDINGS
Nephrops	Landed throughout the year, peaks in summer (July-August) and late autumn (November).
Lobster	Landed throughout the year, but in smaller quantities from January to June, increasing in July and with a marked peak in August, dropping slightly in September, and continued drop from Oct-Dec, back to lower levels from January onwards.
Brown crab	Landed throughout the year, peaks in July.
Scallop	Mainly targeted from April to July, with low levels in August and September and minimal landings from October to February.
Razor clam	Landed throughout the year, with highest catches from May to December.
Velvet crab	Landed throughout the year, with highest catches from May to December.
Whelk	Landed throughout the year, with much fluctuation and no obvious seasonality pattern.
Squid	Landed from August to November, peaking in October.
Mackerel	Landed from June to October, peaking in July.

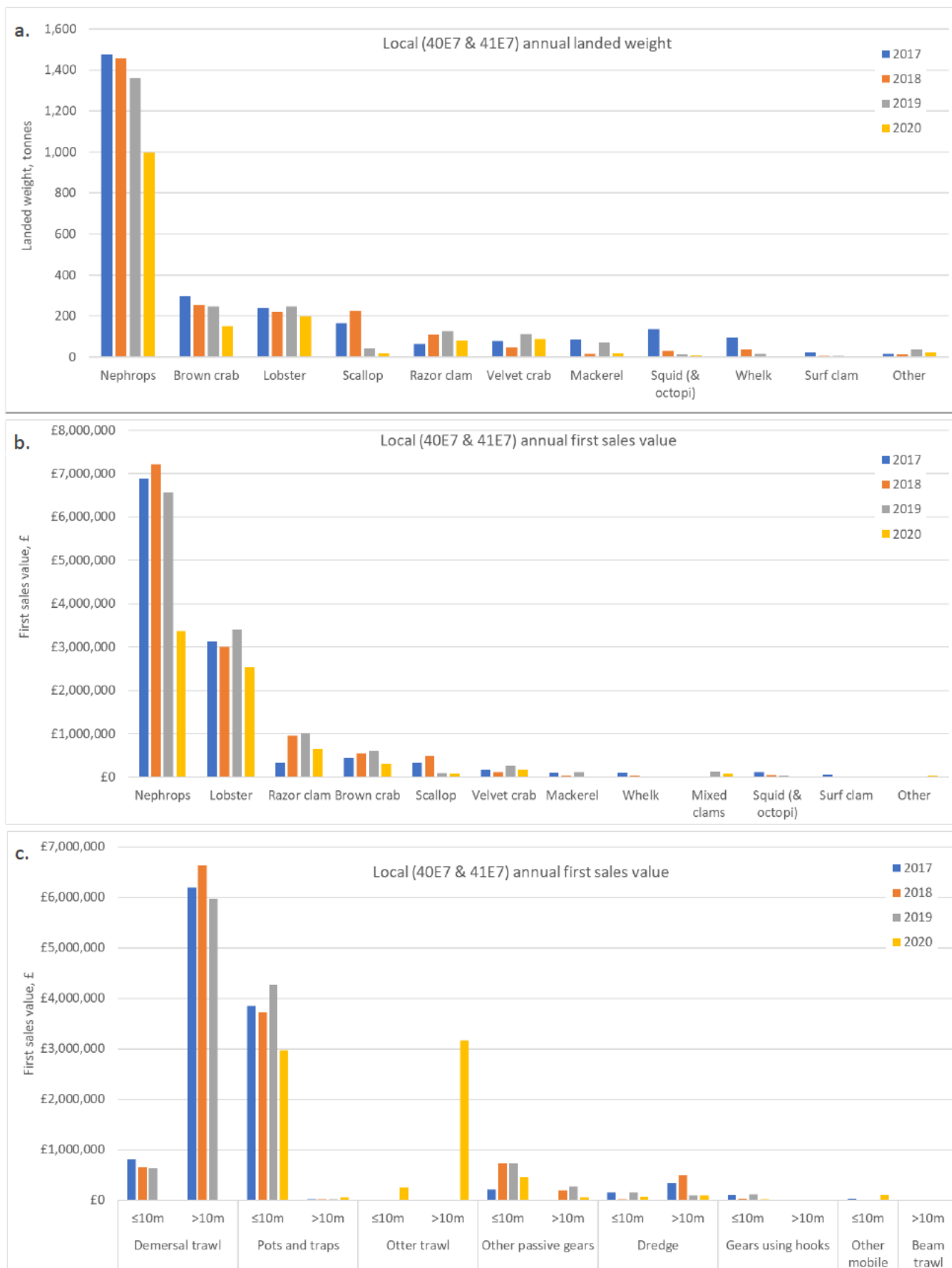


Figure 3.7. Landings from local study area indicating landed weight(tonnes) by species (a.) and annual first sales value by species (b.) and by gear type and vessel length category (c.) for period 2017 to 2019 (data source: MMO, 2020)

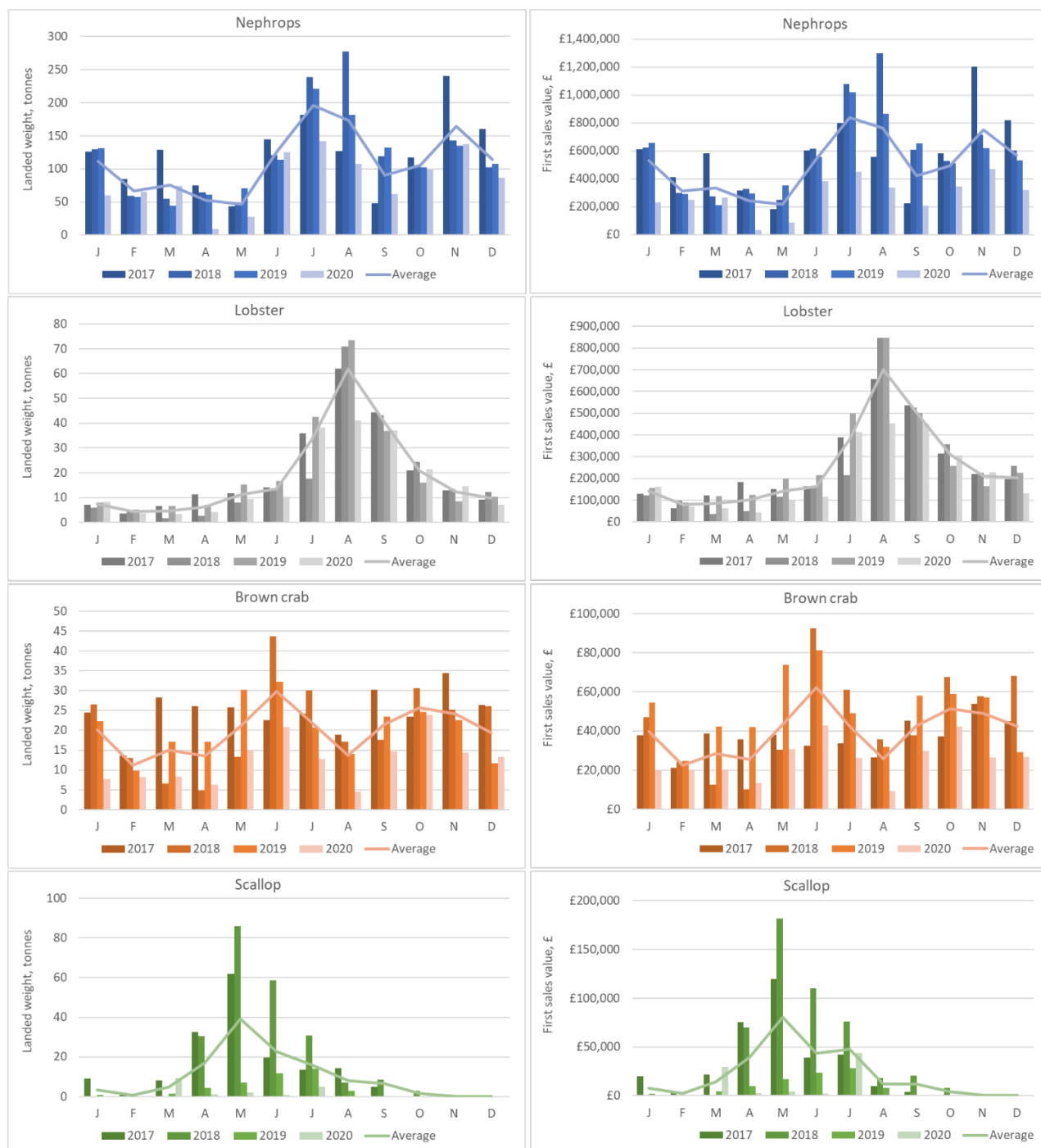


Figure 3.8. Landings from the local study area (40E7 and 41E7) for the period 2017 to 2020 indicating landed weight(tonnes) and annual first sales value (£) by month and species for nephrops, lobster, brown crab and scallops (data source: MMO, 2021)

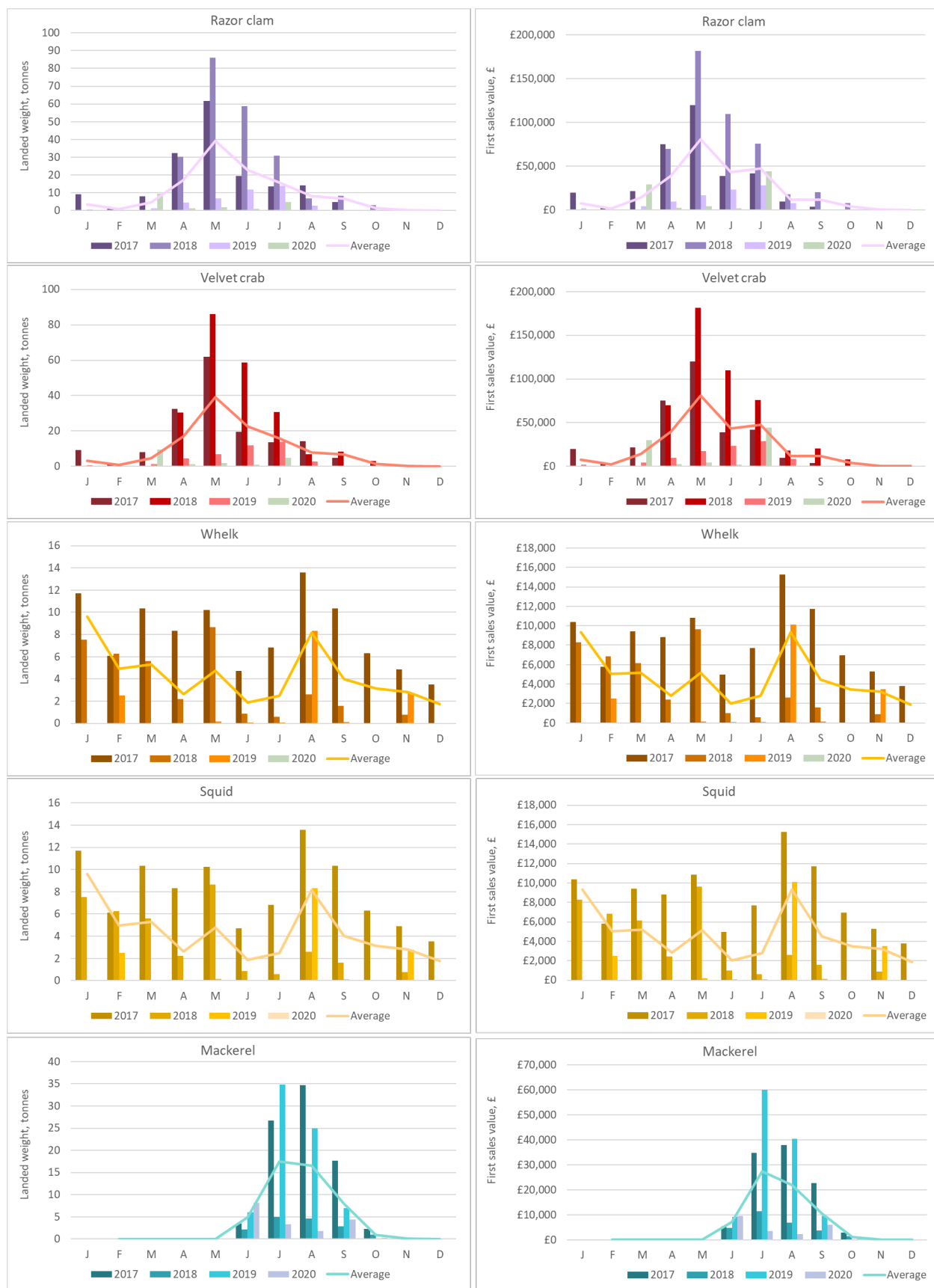


Figure 3.9. Landings from the local study area (40E7 and 41E7) for the period 2017 to 2020 indicating landed weight(tonnes) and annual first sales value (£) by month and species for razor clam, velvet crab, whelk, squid and mackerel (data source: MMO, 2021)

4 Landings by port

42. Overall, there is a clear general trend of declining landings in 2020, this is likely to be due to a combination of COVID-19 Government restrictions and the UK exit from the EU. While there are declines, the same key target species remain dominant, but with some increases noted in demersal species (Aberdeenshire) and in squid.

4.1 Fife

43. Fife ports considered in this section include: Pittenweem, Anstruther, Crail, St Andrews, Methil and Leven, and St Monans. Total landings into all of these ports collectively is presented by species in Figure 4.1 for landed weight and first sales value from 2017 to 2020. This includes landings taken from any area, including both inside the local and regional study areas and outside these study areas.
44. Average annual landings (based on 4-years from 2017-2020) by species and individual port are presented in Figure 4.2.
45. Landings for the Fife region are dominated by nephrops landed into Pittenweem (Figure 4.1 and Figure 4.2). Landings of nephrops were relatively stable across 2017 to 2019, but declined in both landed weight and value in 2020. On average, nephrops with a first sales value of £3 million is landed into Pittenweem annually.
46. Lobster is the second most valuable species in the Fife region under assessment, with average annual first sales value of £1.2 million, with notable landings into Pittenweem, Anstruther, Crail and St Andrews.
47. Just under £900,000 value of razor clam is landed into Pittenweem annually, and small landings of brown crab are noted in Pittenweem and Anstruther.

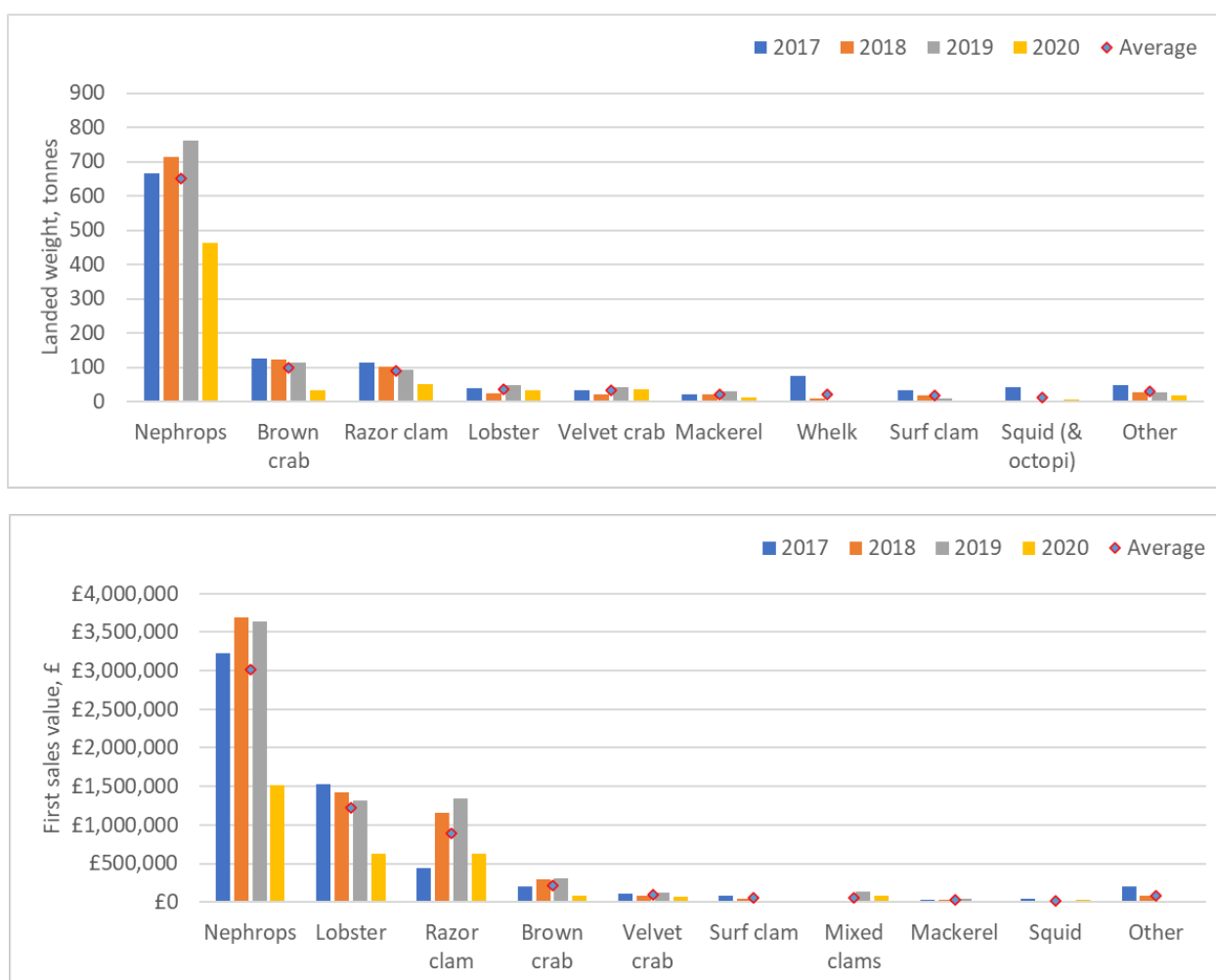


Figure 4.1. Annual landings by species into Fife ports including Pittenweem, Anstruther, Crail, St Andrews, Methil and Leven and St Monans for the period 2017 to 2020 indicating landed weight (tonnes) and annual first sales value (£) (data source: MMO, 2021)

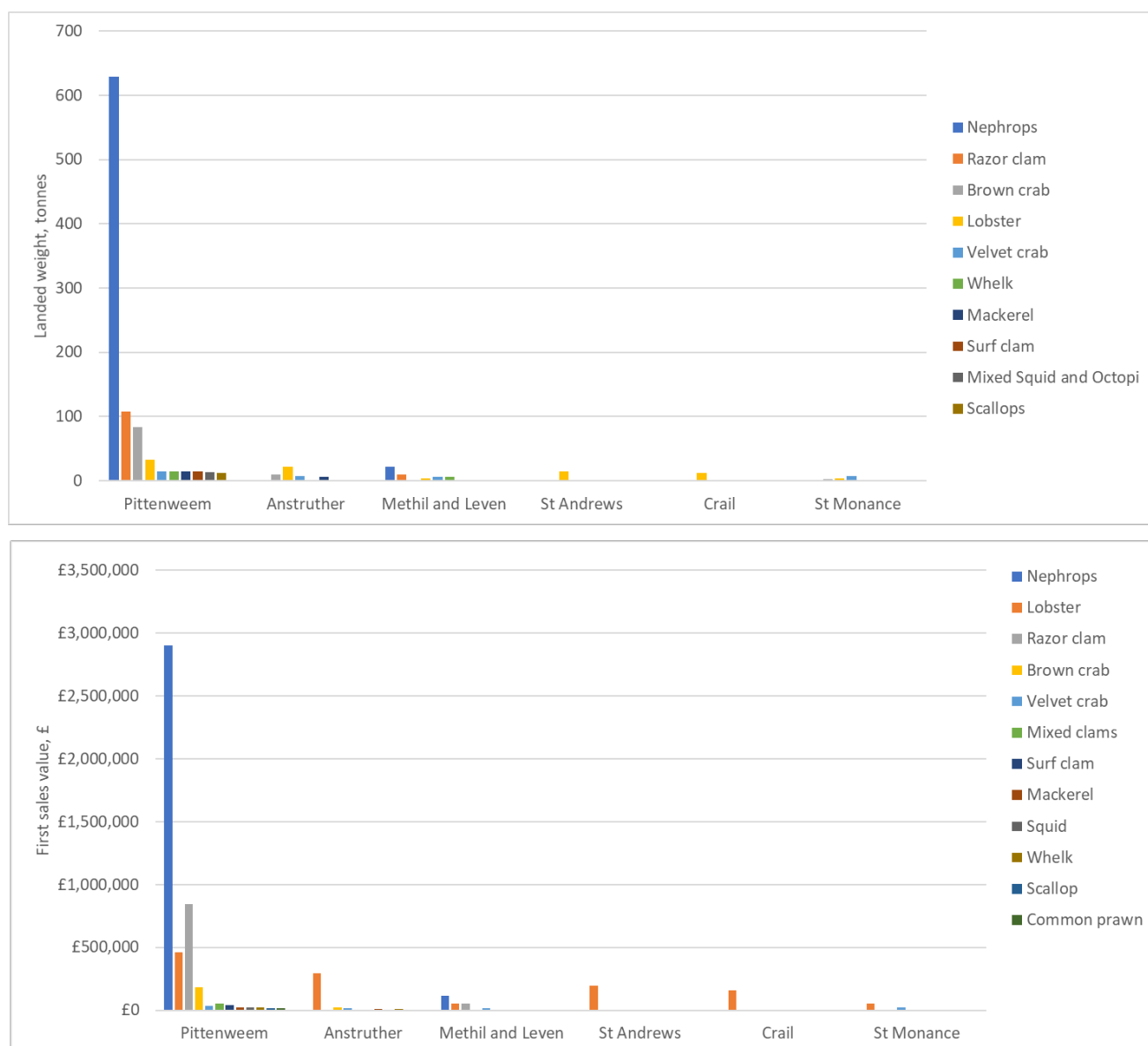


Figure 4.2. Average annual landings by species into Fife ports including Pittenweem, Anstruther, Crail, St Andrews, Methil and Leven and St Monans for the period 2017 to 2020 indicating landed weight (tonnes) and annual first sales value (£) (data source: MMO, 2021)

4.1.1 Seasonality of landings to individual ports

48. Seasonality of landings for key species landed into Fife ports correlate with the seasonality patterns observed in Table 3.1 and are presented graphically as follows:

- Nephrops, razor clam, lobster and brown crab landed into Pittenweem (Figure 4.3);
- Lobster landed into Anstruther, St Andrews, Crail and St Monans (Figure 4.4).

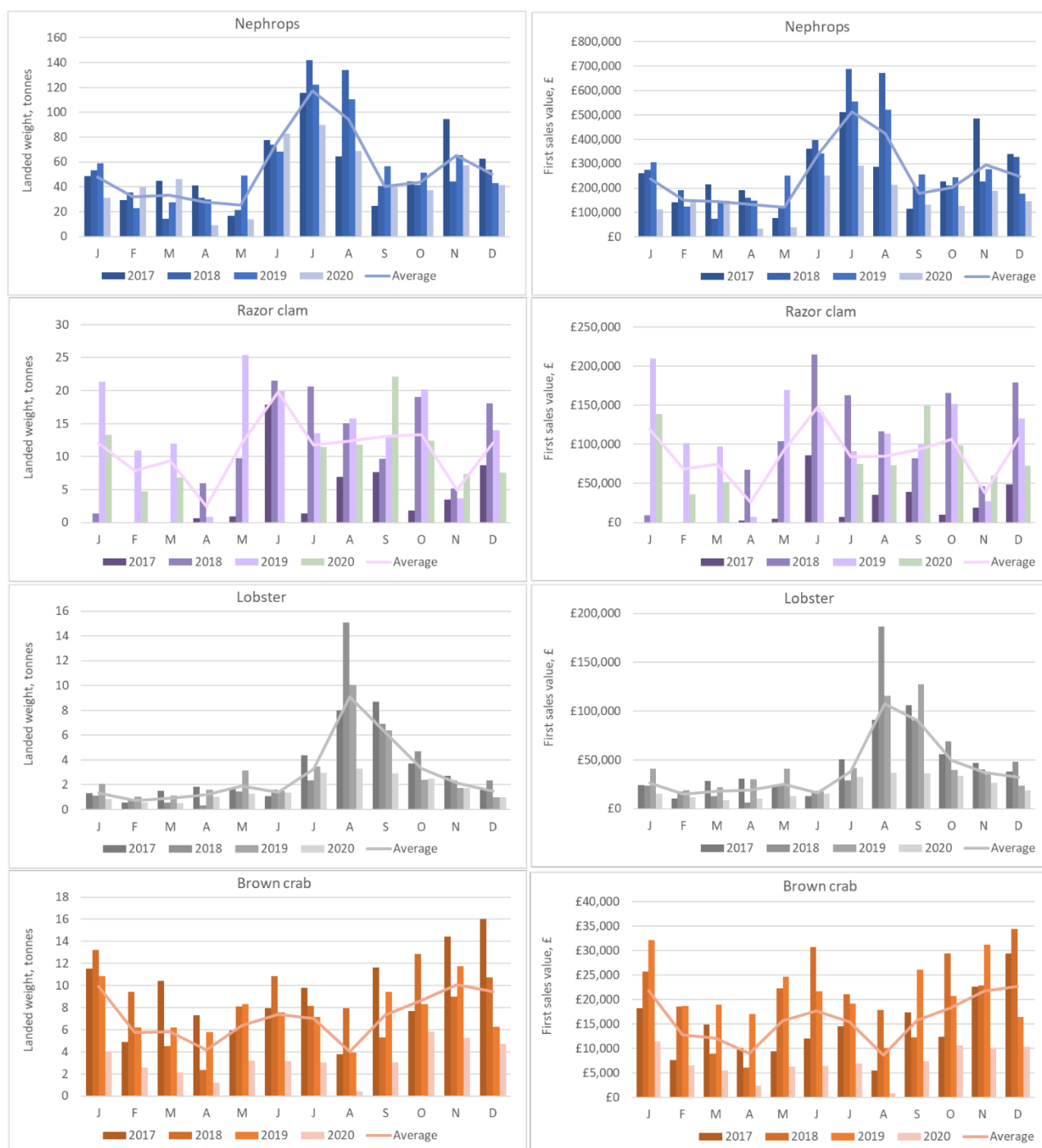


Figure 4.3. Seasonality of nephrops, razor clam, lobster and brown crab landed into Pittenweem by UK vessels (all lengths) from 2017-2021 (data source: MMO, 2021)

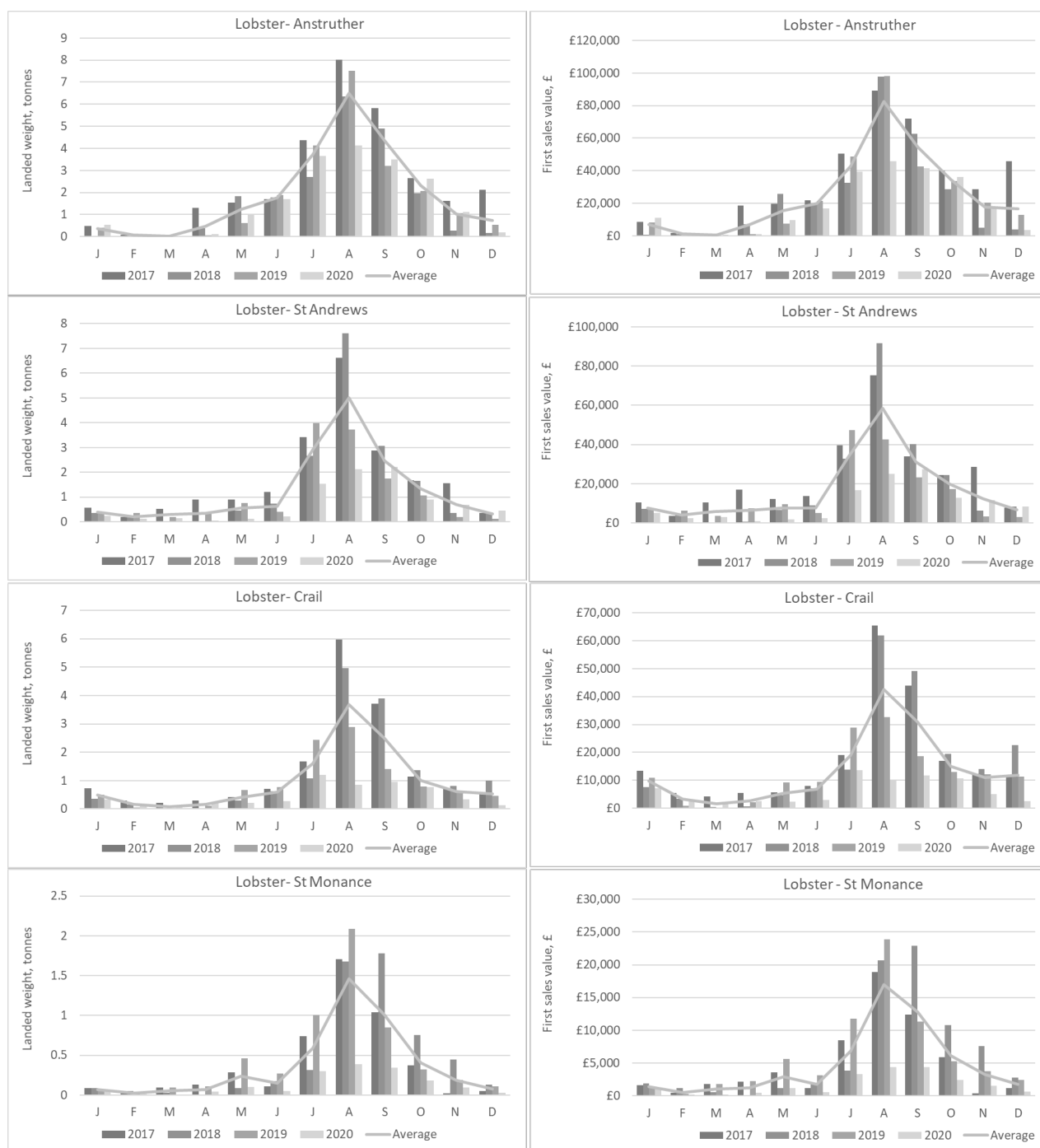


Figure 4.4. Seasonality of lobster landed into Anstruther, St Andrews, Crail and St Monans by UK vessels (all lengths) from 2017-2020 (data source: MMO, 2021)

4.2 East Lothian and Scottish Borders

49. Ports in the East Lothian and Scottish Borders region considered in this section include: Burnmouth, Cove, Dunbar, Eyemouth, Granton, Newhaven, North Berwick, Port Seton and St Abbs. Total landings into all of these ports collectively is presented by species in Figure 4.5 for landed weight and first sales value from 2017 to 2020. This includes landings taken from any area, including both inside the local and regional study areas and outside these study areas.
50. Average annual landings (based on 4-years from 2017-2020) by species and individual port are presented in Figure 4.6.

51. Landings for the East Lothian and Scottish Borders region are dominated by nephrops, with a total average annual first sales value of £3.9 million (Figure 4.5). In the region, that highest proportion of landings are into Eyemouth (Figure 4.6). Landings of nephrops have been relatively stable, peaking in value and weight in 2018. On average, nephrops with a first sales value of £2.6 million are landed into Eyemouth annually, with an additional £750,000 into Port Seton and £700,000 into Dunbar.
52. Lobster is the second most valuable species, with average annual first sales value of £3.2 million, with notable landings into Dunbar (£1 million), Burnmouth (£970,000), Eyemouth (£470,000), St Abbs and Cove.
53. Scallop are landed into Eyemouth (average first sales value of £380,000) and brown crab into Burnmouth and Eyemouth (£450,000 and £250,000 in first sales value respectively).
54. Whelk are noted to be landed into Granton, but are relatively lower value at £65,000 per annum.

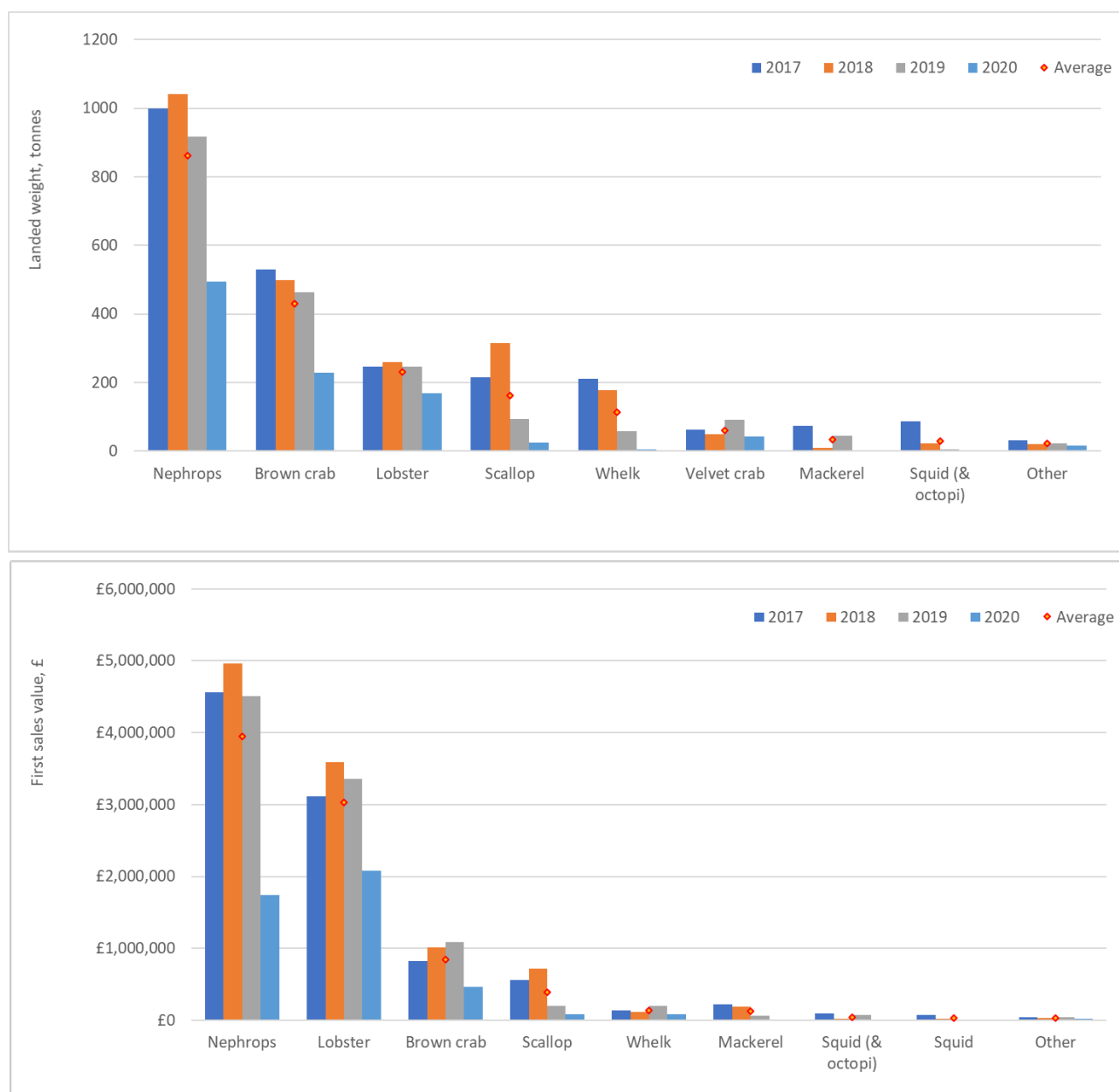


Figure 4.5. Annual landings by species into East Lothian and Scottish Border ports including Burnmouth, Cove, Dunbar, Eyemouth, Granton, Newhaven, North Berwick, Port Seton and St Abbs for the period 2017 to 2020 indicating landed weight (tonnes) and annual first sales value (£) (data source: MMO, 2021)

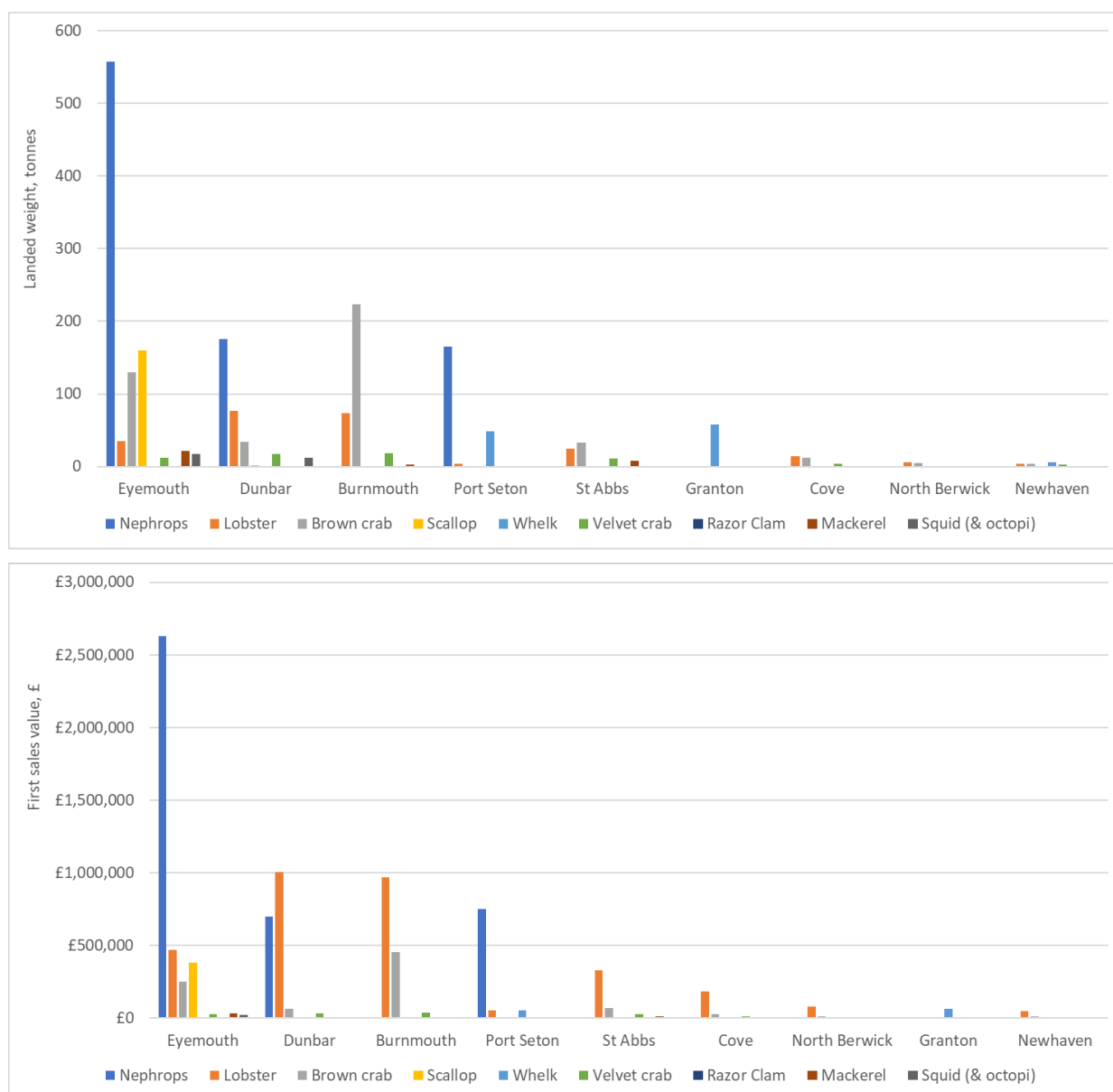


Figure 4.6. Average annual landings by species into East Lothian and Scottish Border ports including Burnmouth, Cove, Dunbar, Eyemouth, Granton, North Berwick, Port Seton and St Abbs for the period 2017 to 2020 indicating landed weight (tonnes) and annual first sales value (£) (data source: MMO, 2021)

4.2.1 Seasonality of landings to individual ports

55. Seasonality of landings for key species landed into East Lothian and Scottish Border ports correlate with the seasonality patterns observed in Table 3.1 and are presented graphically as follows:

- Nephrops, lobster, scallop and brown crab landed into Eyemouth (Figure 4.7);
- Nephrops and lobster landed into Dunbar (Figure 4.8);
- Lobster and brown crab landed into Burnmouth (Figure 4.9);
- Nephrops landed into Port Seton (Figure 4.10);
- Lobster landed into St Abbs, Cove and North Berwick (Figure 4.11);
- Whelk landed into Granton (Figure 4.12).

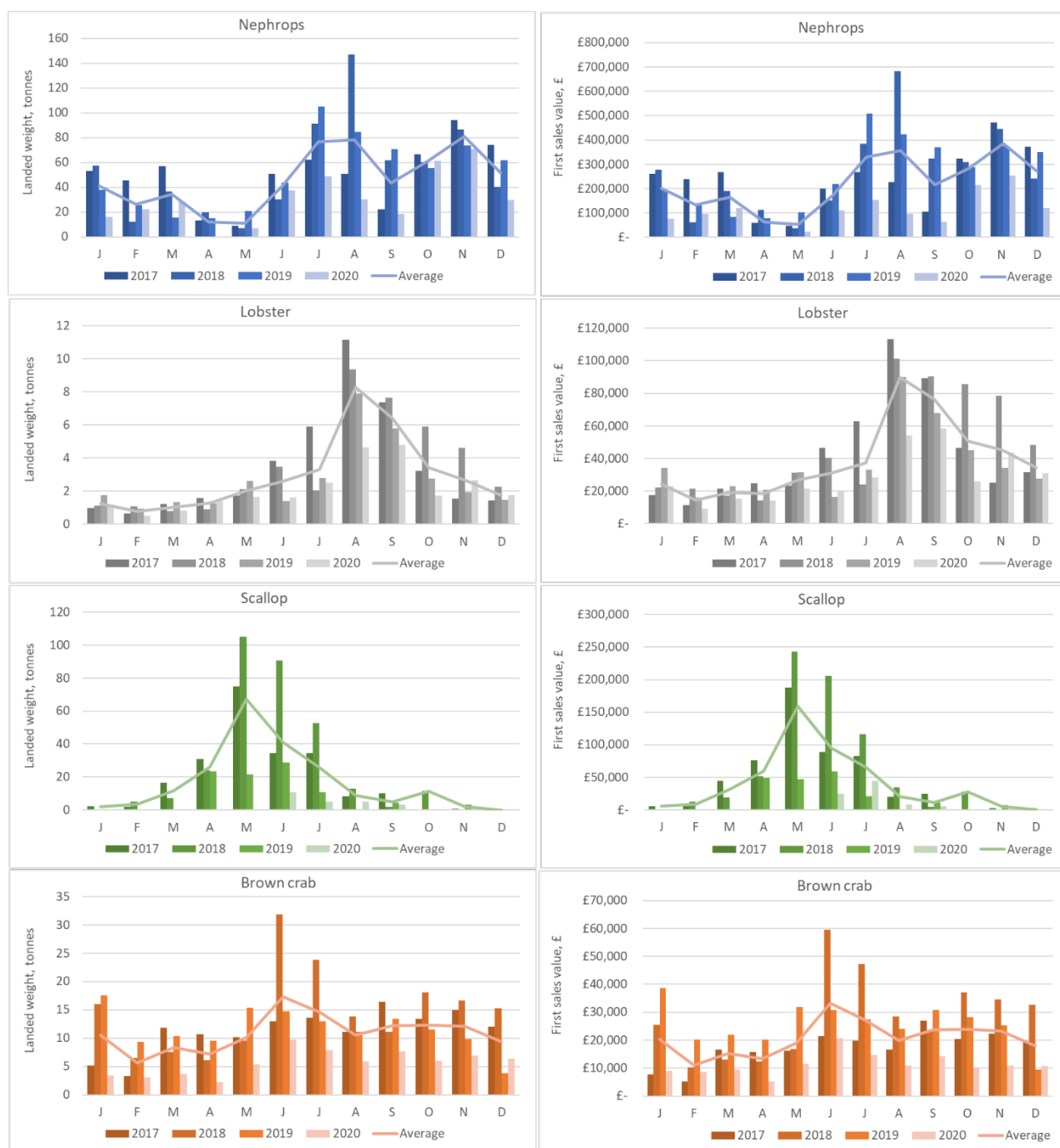


Figure 4.7. Seasonality of nephrops, lobster, scallop and brown crab landed into Eyemouth by UK vessels (all lengths) from 2017-2020 (data source: MMO, 2021)

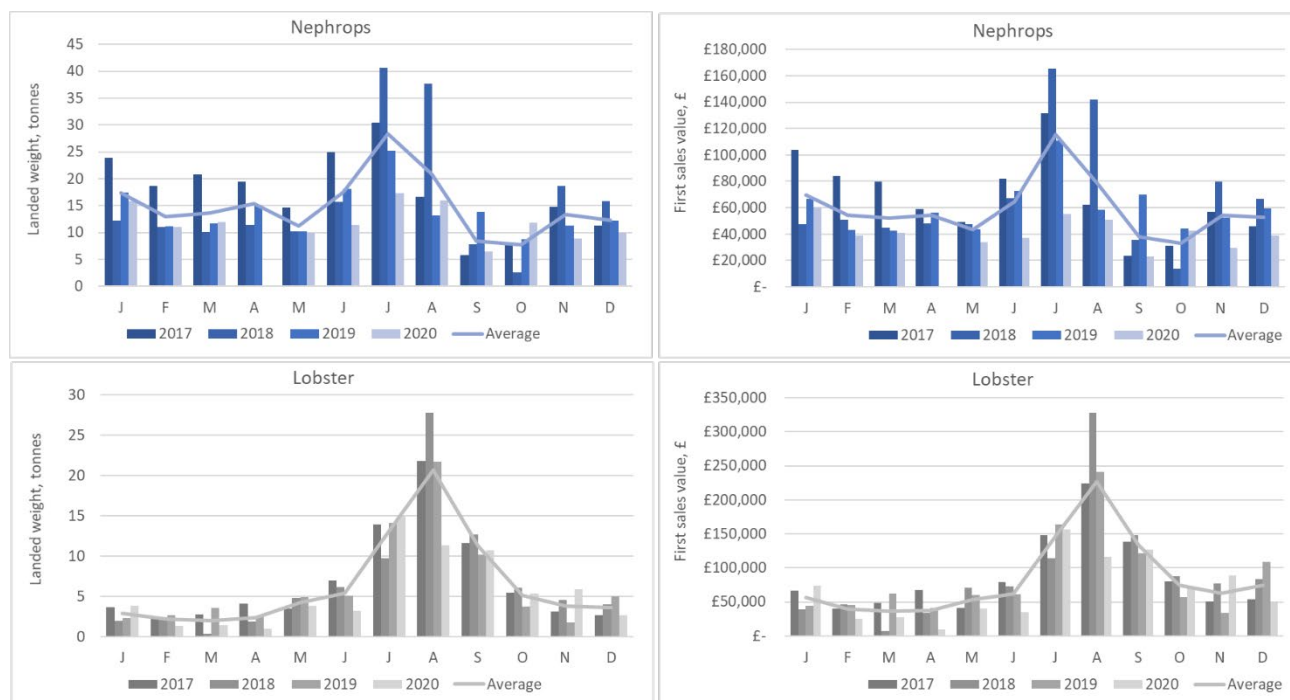


Figure 4.8. Seasonality of nephrops and lobster landed into Dunbar by UK vessels (all lengths) from 2017-2020 (data source: MMO, 2021)



Figure 4.9. Seasonality of lobster and brown crab landed into Burnmouth by UK vessels (all lengths) from 2017-2020 (data source: MMO, 2021)



Figure 4.10. Seasonality of nephrops landed into Port Seton by UK vessels (all lengths) from 2017-2020 (data source: MMO, 2021)

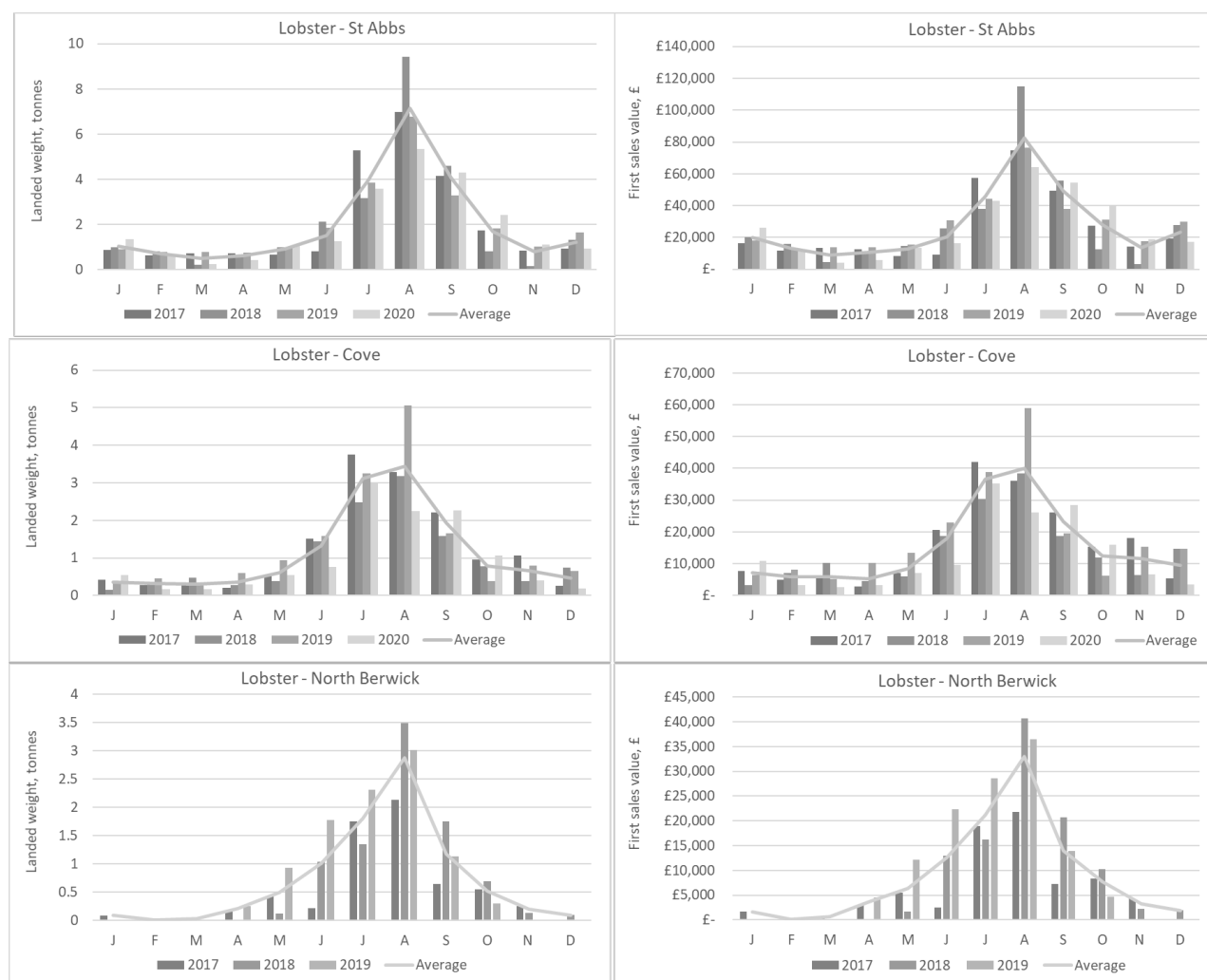


Figure 4.11. Seasonality of lobster landed into St Abbs, Cove and North Berwick (no lobster landings were recorded in North Berwick in 2020) by UK vessels (all lengths) from 2017-2020 (data source: MMO, 2021)

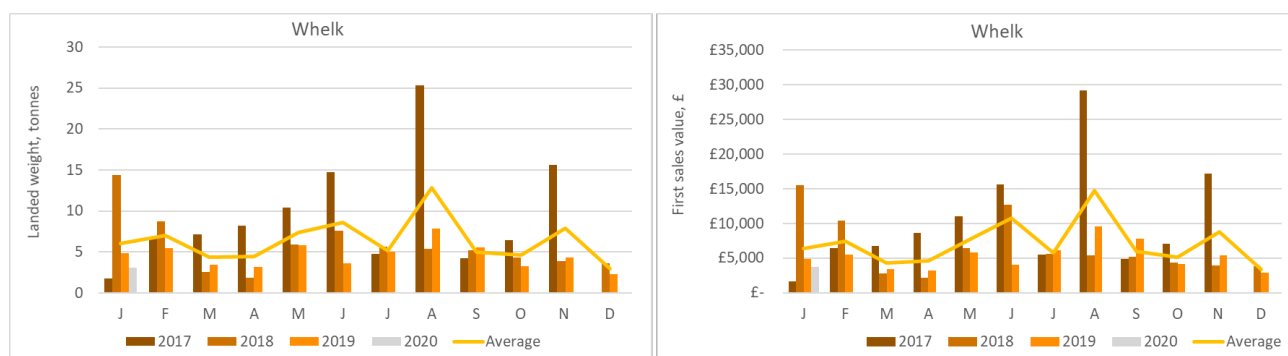


Figure 4.12. Seasonality of whelk landed into Granton by UK vessels (all lengths) from 2017-2020 (whelk landings were only recorded in January in 2020) (data source: MMO, 2021)

4.3 Aberdeenshire and Angus

56. Ports in the Aberdeenshire and Angus region considered in this section include: Aberdeen, Arbroath, Gourdon, Johnshaven, Montrose and Stonehaven. Total landings into all of these ports collectively is presented by species in Figure 4.13 for landed weight and first sales value from 2017 to 2020. This includes landings taken from any area, including both inside the local and regional study areas and outside these study areas.
57. Average annual landings (based on 4-years from 2017-2020) by species and individual port are presented in Figure 4.14.
58. Landings for the Aberdeenshire and Angus region are dominated by lobster and brown crab, with a combined total average annual first sales value of £3.7 million (Figure 4.13). In the region, that highest proportion of landings are into Arbroath (Figure 4.14). Landings of lobster and brown crab have been relatively stable, peaking in value and weight in 2019 for brown crab and 2018 for lobster. On average, lobster with a first sales value of £1.6 million are landed into Arbroath annually, with an additional £390,000 into Montrose. Highest values of brown crab are landed into Arbroath, with an average first sales value of £430,000 annually.
59. Scallop are landed into Aberdeen (average first sales value of £277,000) and Arbroath (£86,000).
60. Velvet crab are noted to be landed into Arbroath, at a first sales value of £197,000 per annum.
61. In 2020, landings data indicate a relative increase in the weight and value of demersal landings, particularly of haddock, cod, whiting, monks or anglers and lemon sole.

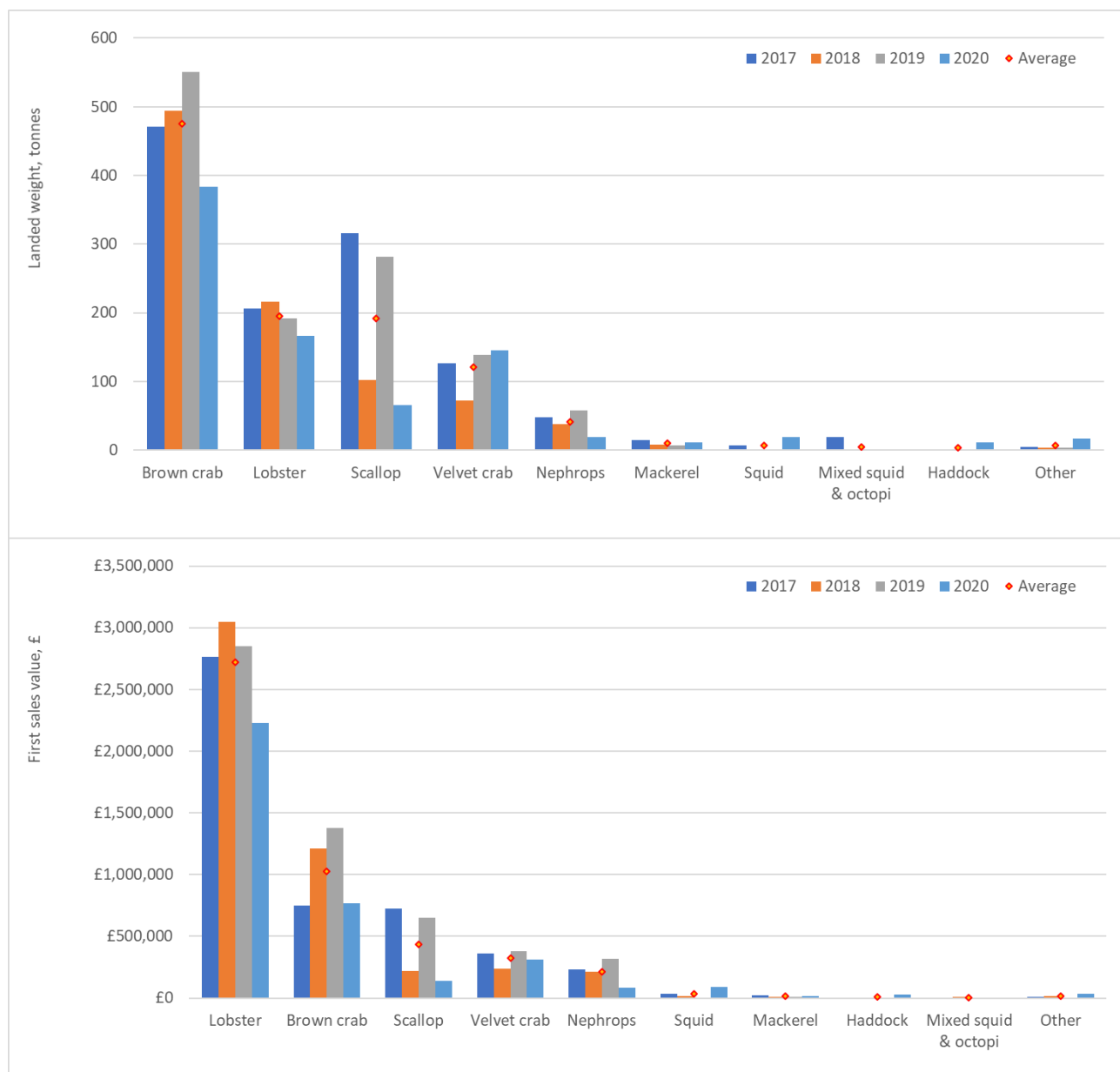


Figure 4.13. Annual landings by species into Aberdeenshire and Angus ports including Aberdeen, Arbroath, Gourdon, Johnshaven, Montrose and Stonehaven for the period 2017 to 2019 indicating landed weight(tonnes) and annual first sales value (£) (data source: MMO, 2020)

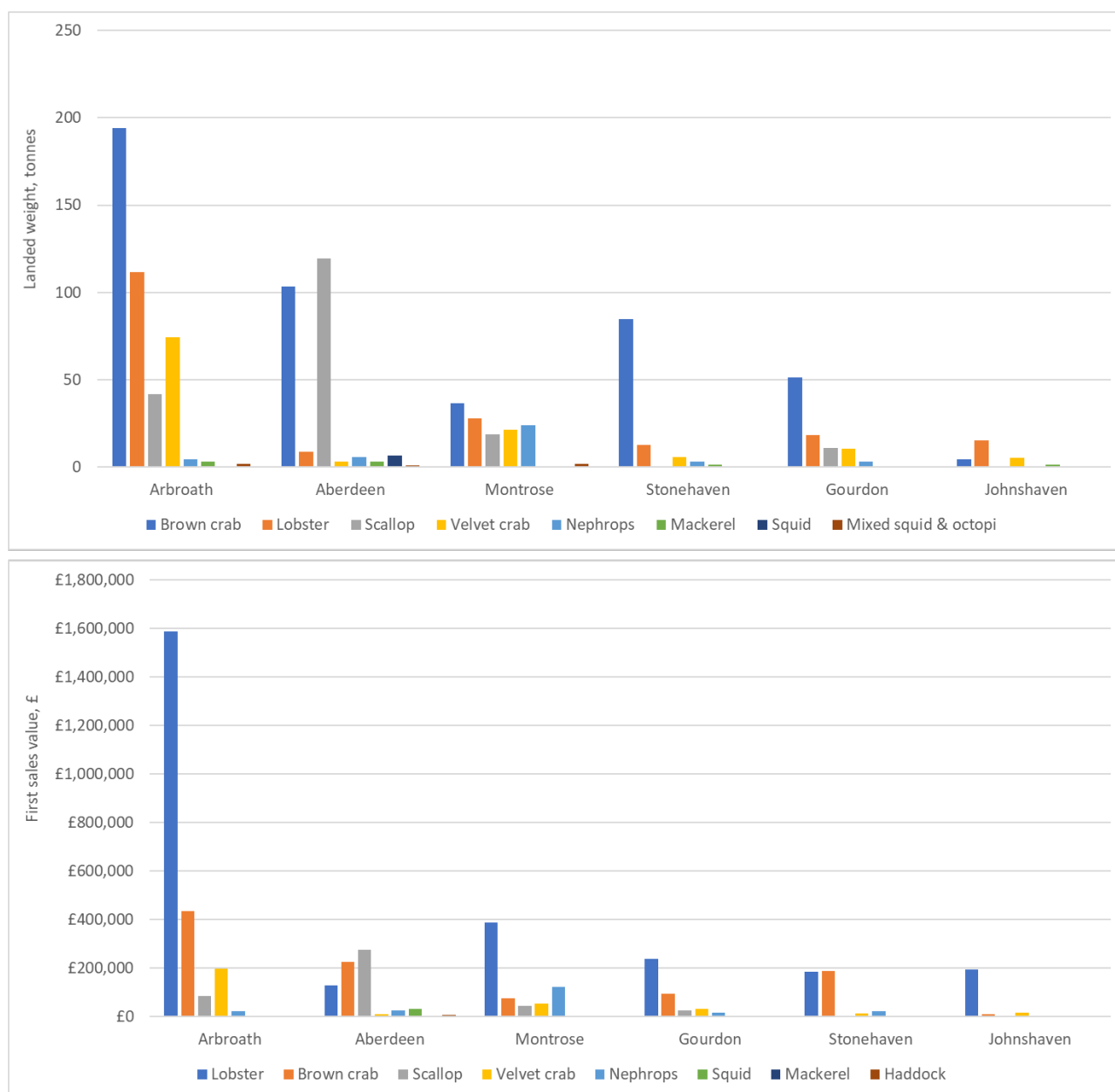


Figure 4.14. Average annual landings by species into Aberdeenshire and Angus ports including Aberdeen, Arbroath, Gourdon, Johnshaven, Montrose and Stonehaven for the period 2017 to 2020 indicating landed weight(tonnes) and annual first sales value (£) (data source: MMO, 2021)

4.3.1 Seasonality of landings to individual ports

62. Seasonality of landings for key species landed into Aberdeenshire and Angus ports correlate with the seasonality patterns observed in Table 3.1 and are presented graphically as follows:

- Lobster and brown crab landed into Arbroath (Figure 4.15);
- Scallop landed into Aberdeen (Figure 4.16);
- Lobster landed into Montrose, Johnshaven and Gourdon (Figure 4.17);
- Brown crab landed into Stonehaven (Figure 4.18).



Figure 4.15. Seasonality of lobster and brown crab landed into Arbroath by UK vessels (all lengths) from 2017-2020 (data source: MMO, 2021)

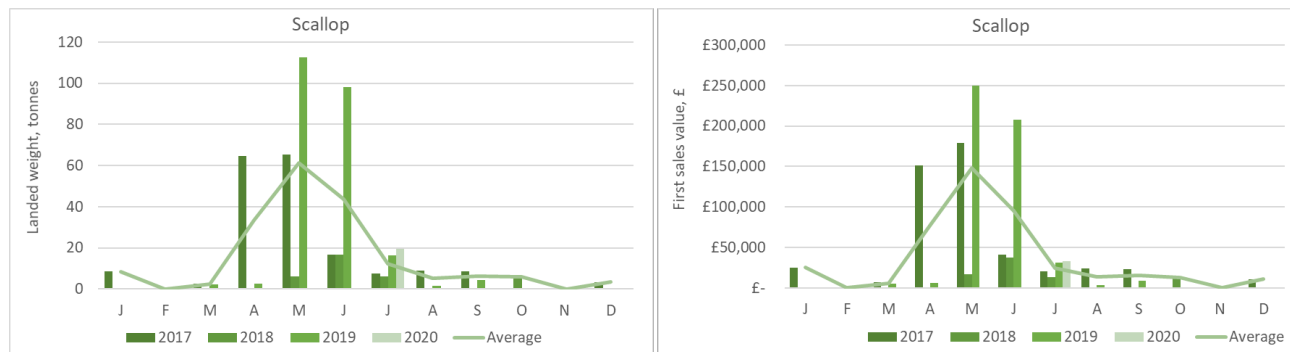


Figure 4.16. Seasonality of scallop landed into Aberdeen by UK vessels (all lengths) from 2017-2020 (data source: MMO, 2021)

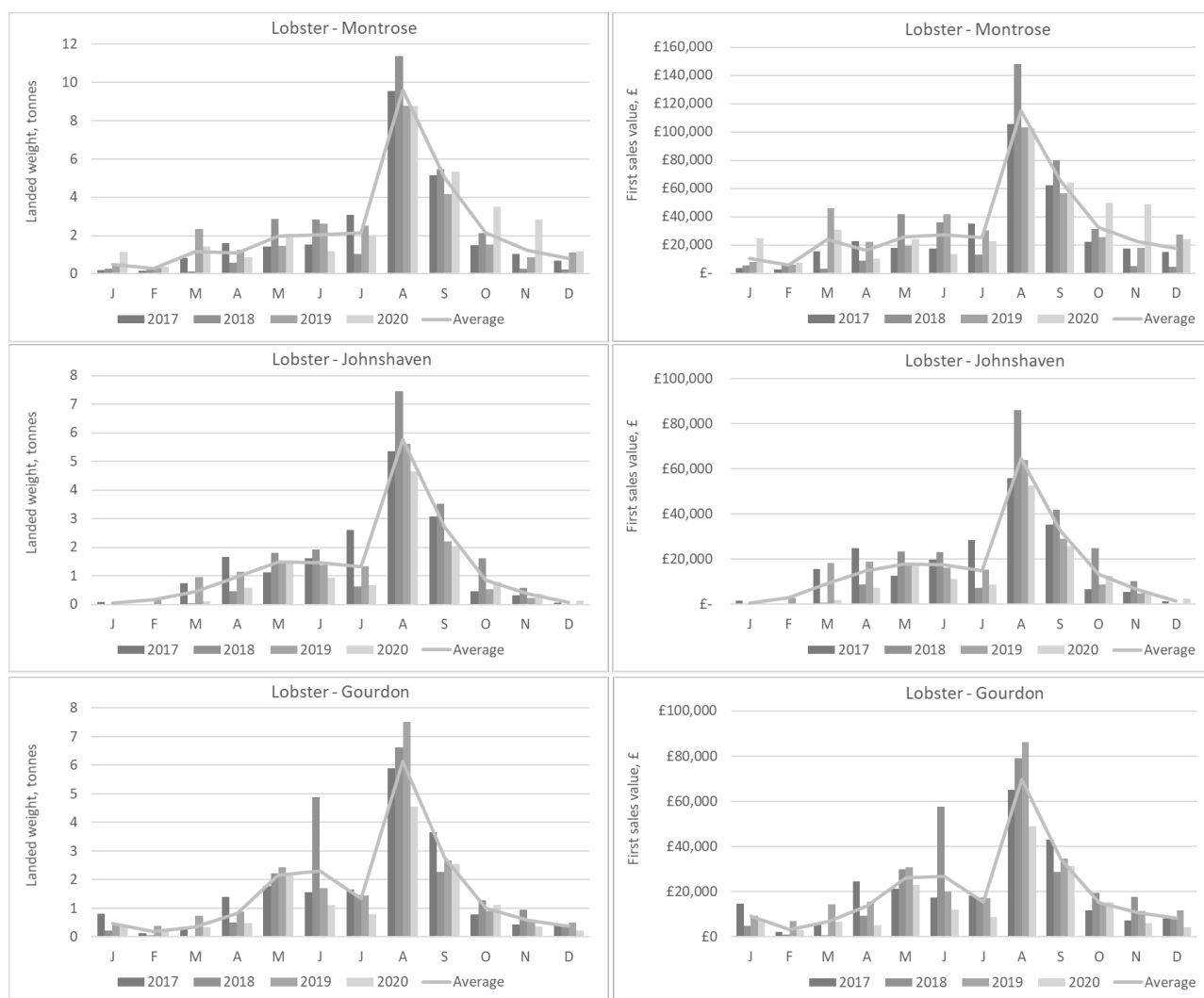


Figure 4.17. Seasonality of lobster landed into Montrose, Johnshaven and Gourdon by UK vessels (all lengths) from 2017-2020 (data source: MMO, 2021)



Figure 4.18. Seasonality of brown crab landed into Stonehaven by UK vessels (all lengths) from 2017-2020 (data source: MMO, 2021)

5 Activity mapping

63. Vessel Monitoring System (VMS) data and effort data are presented as follows:
 - VMS data for demersal trawl gear indicating value of catch from 2016 to 2019 (Figure 5.1);
 - VMS data for dredge gear indicating value of catch from 2016 to 2019 (Figure 5.2);
 - VMS data for potting vessels indicating value of catch from 2016 to 2019 (Figure 5.3);
 - Creel effort data for vessels deploying pots targeting lobster and crab indicating average number of pot hauls per day, based on surveys undertaken by Marine Scotland and presented in the National Marine Plan interactive (NMPI) for the period 2007 to 2011 [as presented in Report 1] (Figure 5.4).
64. The VMS data mapped in the figures within this section is for vessels 15 m and over and therefore represents activity for the proportion of vessels within this size category.
65. The activity mapping for mobile gear corroborates the landing statistics, indicating the importance of grounds targeted by demersal otter trawling vessels, with the most valuable fishing within ICES rectangle 41E7; mostly outside the NnG wind farm area boundaries. Significant activity by demersal otter trawling vessels occurs across the entire offshore export cable corridor (Figure 5.1) and this is consistent across all year analysed. Given the defined location of these nephrops grounds which are associated with burrowed mud, it is expected that this VMS data is also broadly representative of the locations fished by vessels under 15 m that are targeting nephrops.
66. Limited dredge activity is noted across the Project, with the majority of activity north and north-east of the NnG wind farm area (Figure 5.2).
67. No beam trawl or pelagic trawl activity is recorded across the Project.
68. Almost no VMS data is recorded for potting vessels (Figure 5.3), as these vessels are typically less than 15 m in length and therefore not represented within the data. Figure 5.3 does not represent the potting activity in the region, but is included in this report to ensure comprehensive consideration of all available data.
69. ScotMap data is presented in Figure 5.4, showing effort data for potting activity targeting lobster and crab. ScotMap data has been obtained from a Marine Scotland project which provided spatial information on the fishing activity of Scottish-registered commercial fishing vessels under 15 m in overall length for the period 2007 to 2011, based on interviews with fishermen. This creel effort data indicates potting activity across the Project including, up to three pot hauls per day across the NnG wind farm area and up to 142 pot hauls per day across the inshore area from 0 to 10 km from shore and overlapping the offshore export cable corridor. It is recognised that this dataset is from the period 2007 to 2011 and a range of changes will have occurred within the industry since that time e.g., new entrants and/or retirement from the industry. ScotMap data may therefore no longer be representative of the current potting areas. However, based on consultation during the compilation of the previous report, it was requested to present this information for completeness.

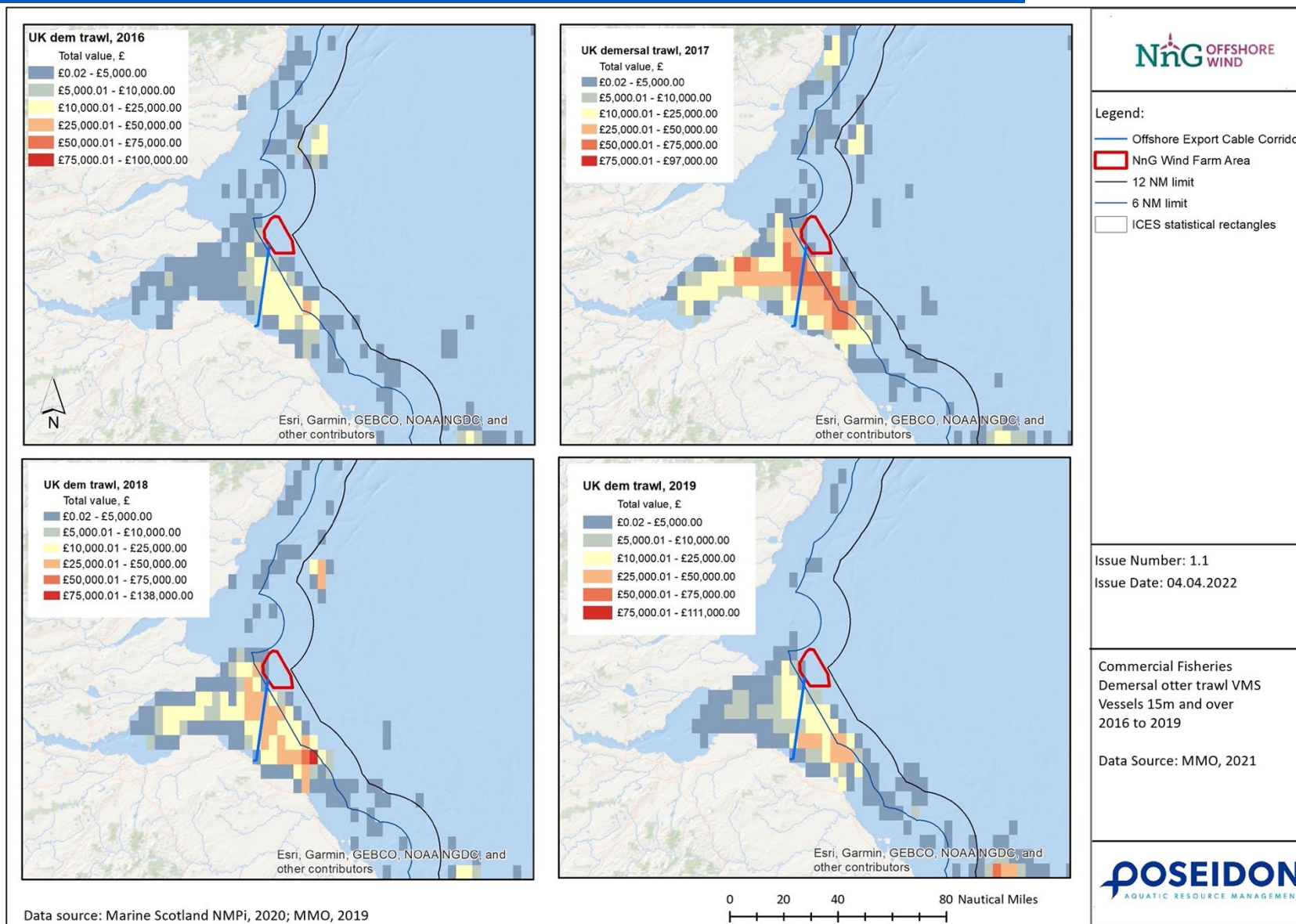


Figure 5.1. Vessel Monitoring System data for UK vessels 15 m and over deploying demersal otter trawl, indicating value of the catch 2016-2019 (data source: MMO, 2019)

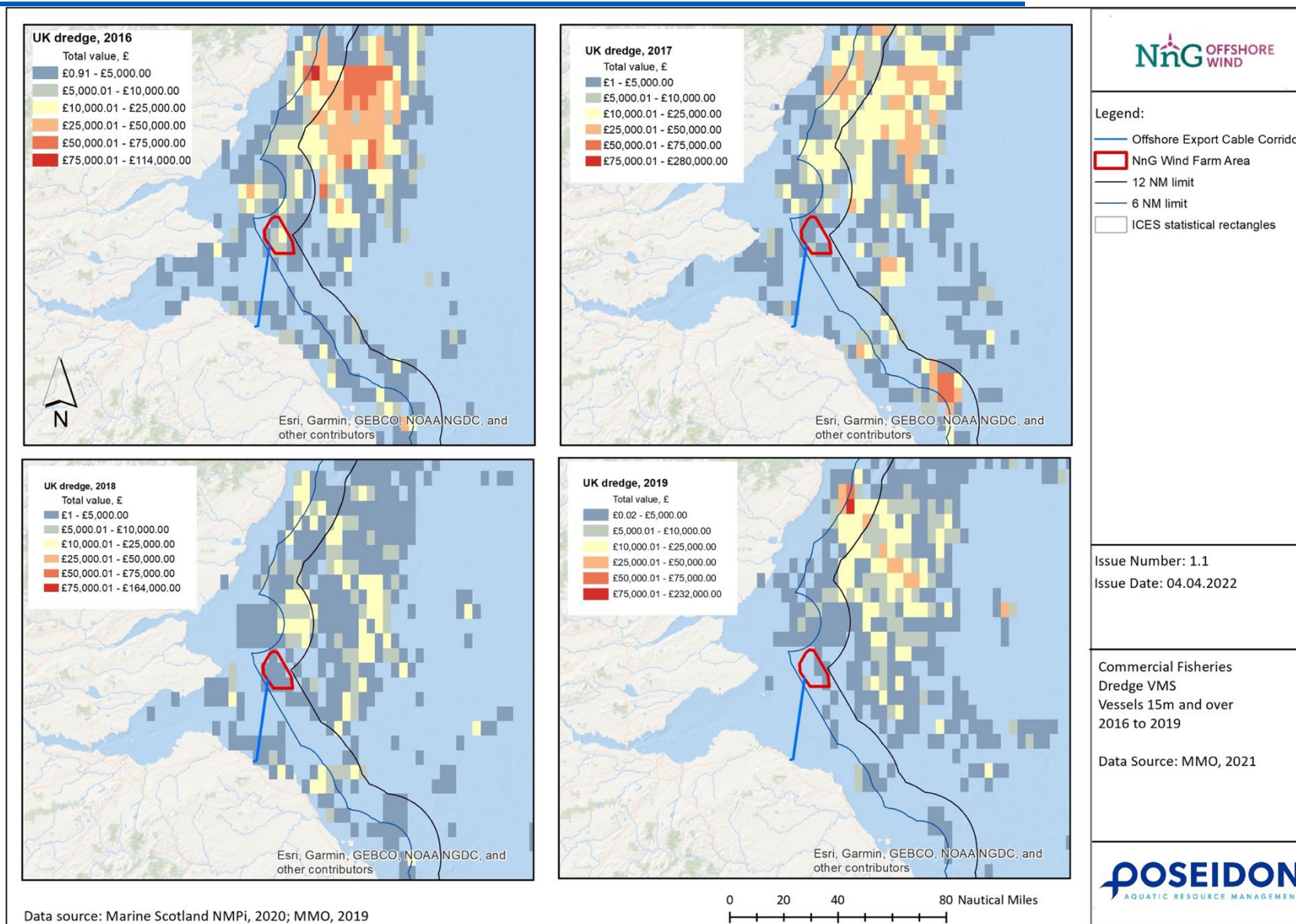


Figure 5.2. Vessel Monitoring System data for UK vessels 15 m and over deploying dredge, indicating value of the catch 2016-2019 (data source: MMO, 2019)

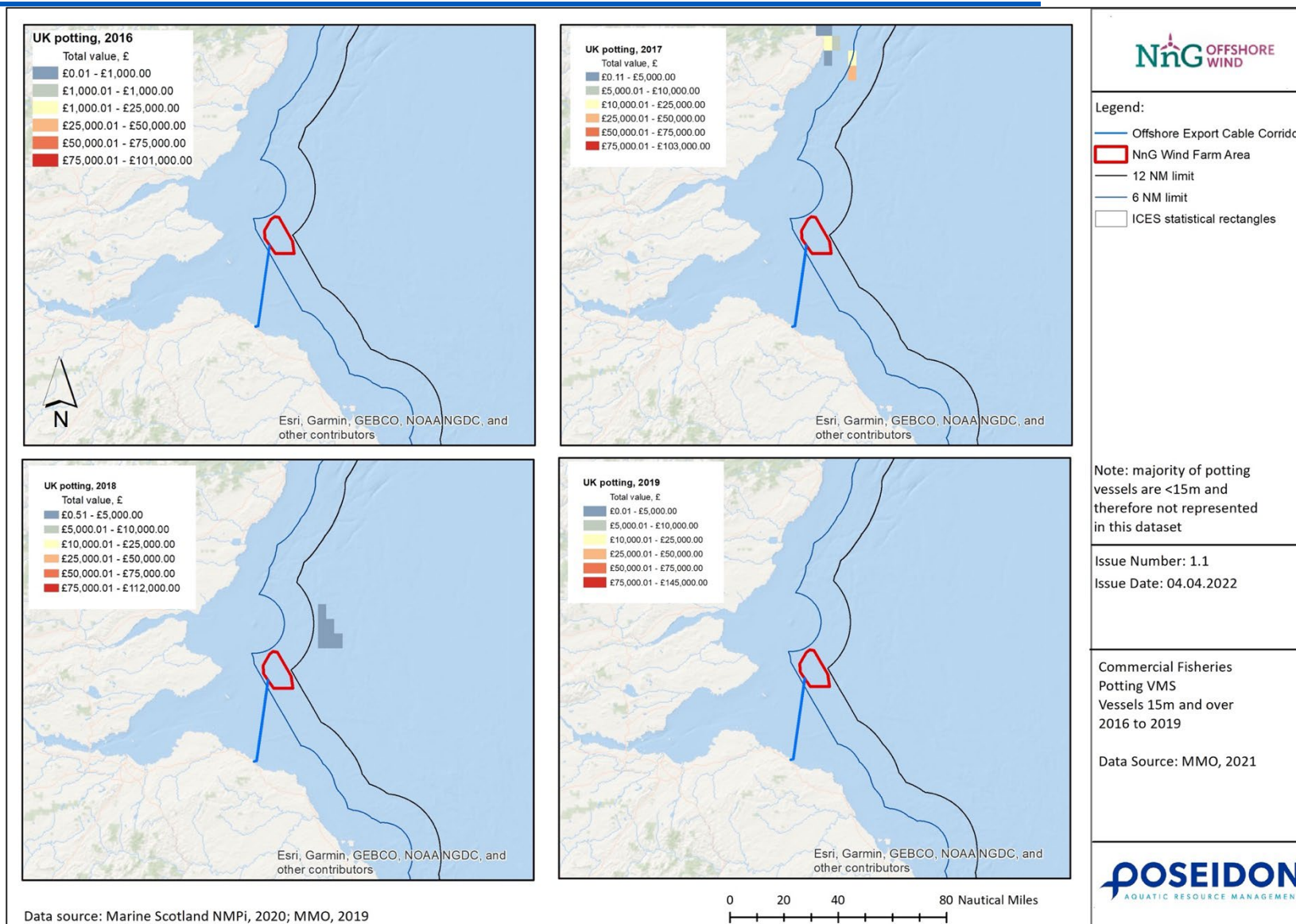


Figure 5.3. Vessel Monitoring System data for UK vessels 15 m and over deploying potting gear, indicating value of the catch 2016-2019 (data source: MMO, 2019)

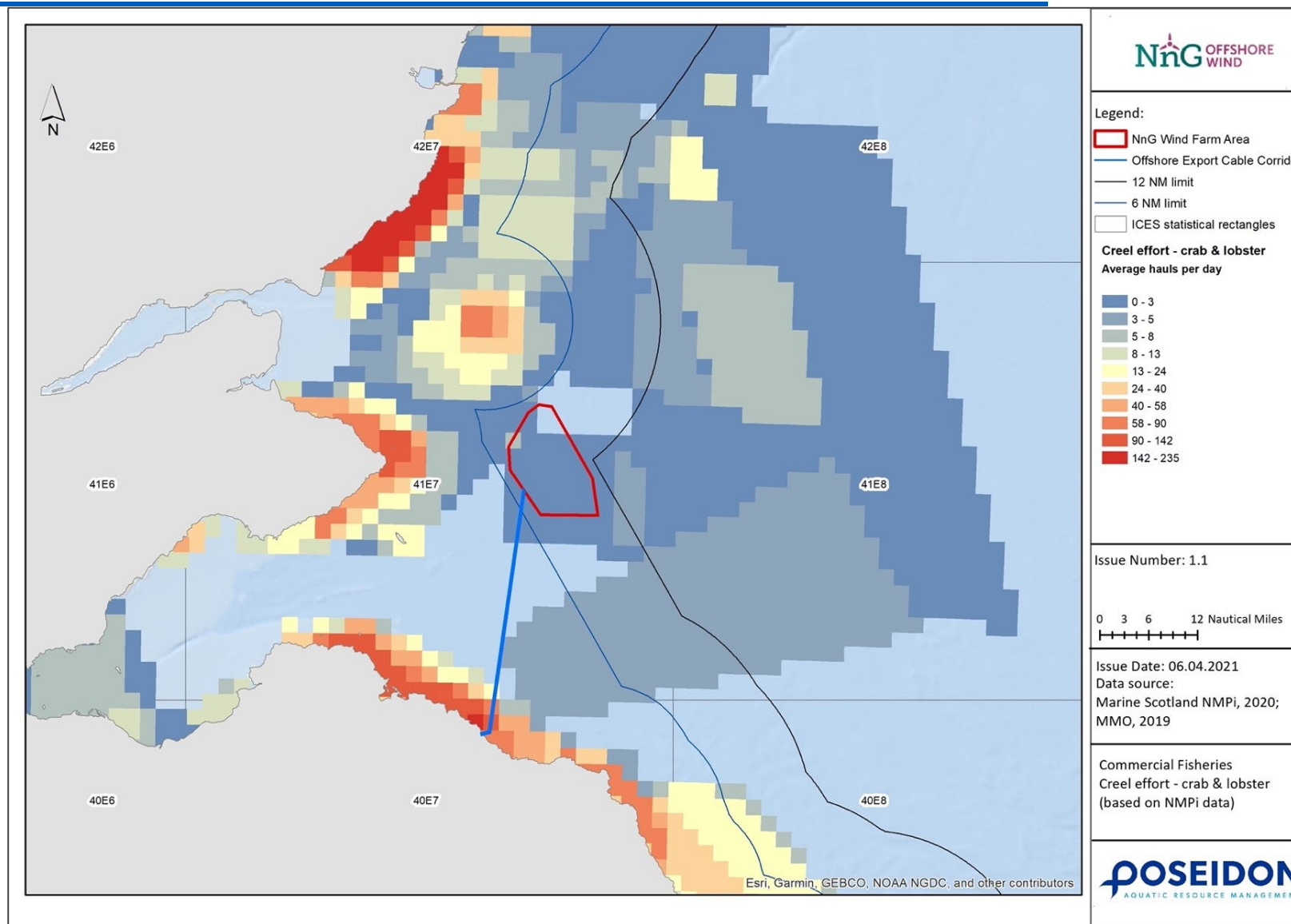


Figure 5.4. Effort data for crab and lobster potting indicating the average pot hauls per day (data source: Marine Scotland NMPI, 2020)

6 Other sources of data

6.1 ICES nephrops stock assessment

70. The Project overlaps the nephrops stock area in Functional Unit 8: Firth of Forth in the central North Sea. ICES undertake an annual stock assessment of nephrops Functional Units (FU), with the latest stock assessment published in 2021 (ICES, 2021).
71. The nephrops FU in the Firth of Forth is seen to be growing in abundance, with abundance levels peaking in 2020 before declining slightly in 2021 (Figure 6.1). The nephrops abundance is considered by ICES to be above the maximum sustainable yield (MSY) biomass trigger reference point, which indicates a good stock status for this Firth of Forth FU (Figure 6.2).
72. The abundance is measured through underwater TV surveys, which have been undertaken annually since 1998. Abundance data is reported specific to the FU as a whole, and specific locations of burrows are not determinable from the published stock assessment.
73. In relation to the harvest rate of the nephrops Firth of Forth FU, from 2005 to 2015 fishing pressure (F) has been above the level advised by ICES to deliver MSY (FMSY); since 2015 fishing pressure has fluctuated around this target reference point.



Figure 6.1. Norway lobster in Division 4.b, Functional Unit 8. Summary of the stock assessment. Long-term trends in catches, harvest rate, and underwater TV survey (UWTV) abundance (for animals greater than 17 mm carapace length) – used as fishing pressure (F) and spawning-stock biomass (SSB) proxies. Blue lines show proxies for MSY Btrigger and FMSY. Shaded areas for fishing pressure and abundance represent 95% confidence intervals. Harvest rates prior to 2006 may be unreliable because of the underreporting of landings. (data source: ICES, 2021)

		Fishing pressure				Stock size		
		2018	2019	2020		2019	2020	2021
Maximum sustainable yield	FMSY	✓	✗	✓ Below	MSY Btrigger	✓	✓	✓ Above trigger
Precautionary approach	Fpa, Flim	✓	?	✓ Above possible reference points	Bpa, Blim	✓	✓	✓ Above possible reference points
Management plan	FMGT	✓	✗	✓ Below	BMGT	✓	✓	✓ Above

Figure 6.2. Norway lobster in Division 4.b, Functional Unit 8. State of the stock and the fishery relative to reference points. (data source: ICES, 2021)

6.2 Guard vessel and FLO reporting

74. A range of surveys have been undertaken, with guard vessels support, across the period of January 2019 to August 2020 (i.e. the reporting period for this report), including geotechnical surveys, UXO identification, inspection and clearance, boulder clearance, HDD works, and casing installation across both the wind farm area and export cable corridor. Both the offshore FLO onboard the main construction vessels and the crew of the guard vessels record the presence of all types of vessels in vicinity of the survey works, contacting these vessels to communicate details pertaining to the works underway.
75. During the surveys in 2019 and 2020, a total of 65 unique commercial fishing vessels were identified by offshore FLO(s) and guard vessels accompanying survey works. In total, 284 individual sightings were logged of commercial fishing vessels; noting that this represents a snap-shot of the activity on any given day at the specific survey location. Of the 65 vessels, nine were logged between 10-16 times throughout the survey operations; eleven were logged 5-9 times, 23 were logged 2-4 times and 22 were logged in the area once (Figure 6.3). This demonstrates the number of fishing vessels active in the area, together with (some limited) insight into the specific vessels that routinely operate in the project area.

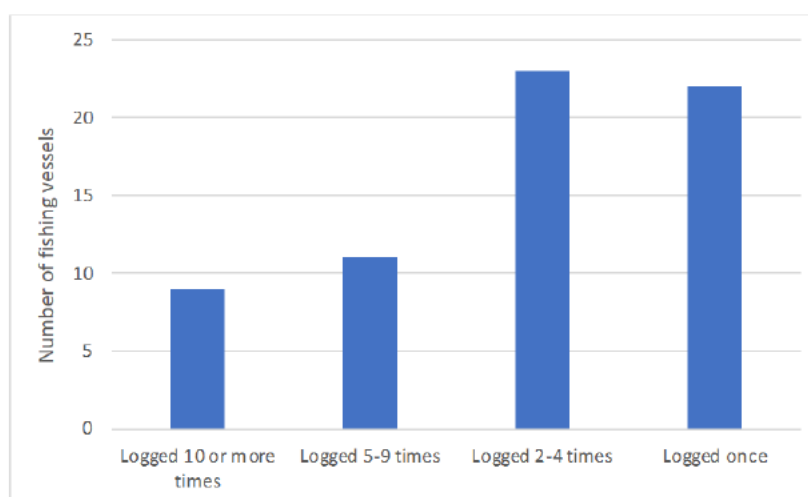


Figure 6.3: Frequency of fishing vessels logged in the vicinity of offshore guard vessels between January 2019 and August 2020.

6.3 On-going lessons

76. Issues that have occurred during the pre-construction phase have resulted in various resolutions and adapted procedures, as described in Table 6.1.

Table 6.1. Summary on-going lessons during the pre-construction phase

ISSUE	EFFECT	RESOLUTION
Geophysical vessel undertaking Digital Positioning (DP) trials in an area outside the wind farm boundary, without prior notice to the fishing industry	Premature haul of demersal otter trawl gear to avoid a geophysical vessel.	The vessel owner alerted the developer, and the loss was resolved. The developer has now allocated two areas within the wind farm for DP trials; one north and one south – all DP trials will be undertaken in these areas.
Damaged gear due to transit routes of project related vessels entangling gear in propeller.	Gear is dragged and lines cut to free propeller.	Fishing vessel owners complete a damage gear form including photographic evidence of damage, and the loss was resolved. Following standard Marine Scotland procedure. Available on MS website and within the NnG FMMS.
Boulder clearance	Concern regarding where boulders are moved to	Developer now provides locations and size of re-located boulders. This information is provided in weekly operations update and has been compiled into a format for entry into plotters. It is available on USB sticks.

6.4 Marine traffic survey – summer 2019

77. Anatec undertook a marine traffic survey in June and July 2019 for the NnG wind farm area and 5 nautical mile boundary. The data was collected via Automatic Identification System (AIS) and Radar equipment, and was supplemented with visual observation data recorded by the crew (Anatec, 2019). The most frequent vessel type recorded within the marine traffic survey study area was fishing (46%), with the majority of activity by demersal trawlers, with some potting activity also recorded. The tracks recorded from fishing vessels are shown in green in Figure 6.4, indicating that most of the activity is recorded in the south-west side of the marine traffic survey study area. Most of the vessels within the wind farm area boundary appeared to be in transit, although active fishing was recorded within the western extent of the site (Anatec, 2019).
78. The marine traffic survey corroborates that the main fishing activity by demersal trawling vessels occurs outside the wind farm area.

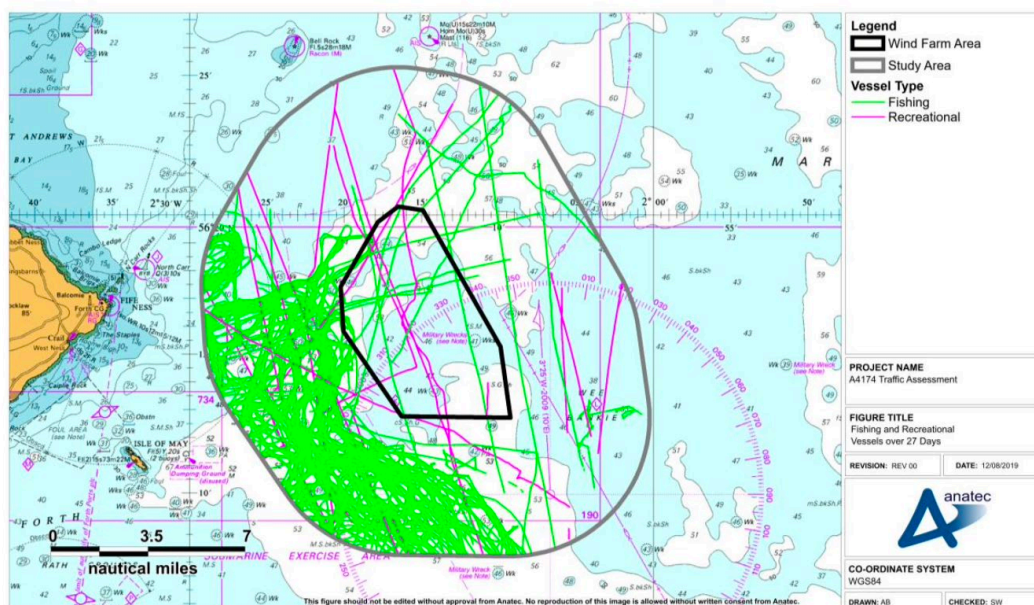


Figure 6.4. Fishing and recreational vessel tracks recorded over 27 days during the June-July 2019 marine traffic survey (Anatec, 2019)

6.5 UK Sea Fisheries Statistics

79. The MMO UK Sea Fisheries Statistics for 2020 (MMO, 2021) provides a summary of the UK fishing fleet and its activity at sea in terms of landings and effort, comparing trends from 2019 to 2020. The Covid-19 pandemic was cited as the biggest impact on sea fisheries, with effects felt from March 2020 onwards. The shellfish sector, targeting nephrops, crabs and scallops, was found to have been hit the hardest by the pandemic. In particular, landings of shellfish species decreased by 18% overall in 2020, compared to 2019. Landings of all three key species decreased from 2019 to 2020, with a severe 44% decrease in the value of nephrops landings (MMO, 2021).

6.6 Other reporting

80. The next commercial fisheries monitoring report for the construction stage will cover a six month period from September 2020 to February 2021, and is expected to be available by November 2022. This will be an interim report with a full annual report following in March 2023. As agreed through the Forth and Tay Commercial Fisheries Working Group, the interim report will be circulated to the working group and the full annual report will be presented and consulted on, as per the procedure for PEMP Reports 1 and 2.

81. Based on consultation with the Forth and Tay Commercial Fisheries Working Group, other sources of information continue to be explored to inform future PEMP reports including:
- Displacement tracking to better understand fishing vessel movements, through collation of data reporting on fishing start and stop locations, particularly for smaller vessels not represented in VMS data. To date this level of detail is not provided within publicly available datasets. The use of iVMS being implemented in 2022 may provide useful data for the spatial distribution of vessels under 12m in length, dependant on the data availability. It is recommended that iVMS data is incorporated into PEMP reporting when it becomes available.
 - VMS data for vessels 12-14.99m is not available within the MMO datasets analysed. A Freedom of Information request has been submitted to Marine Scotland and the MMO to obtain VMS data for vessels 12m and over.
 - Details on the number of vessels working across the Project area, including the number of creels used. To date, the guard vessel reporting has been useful to understand the vessels regularly in the area. This is however a snap-shot of the activity on any given day at the specific survey location. The majority of the activity is noted across the export cable corridor by the mobile demersal trawl fleet targeting nephrops.
 - Vessels that are 10 metres and under are required to complete a FISH1 form and submit this to Marine Scotland Compliance as part of the licence conditions. This includes details on number of creels, species and weight of catch. A Freedom of Information request has been submitted to Marine Scotland to obtain data from FISH1 forms to explore whether catch per unit effort analysis is possible.
 - Further consideration of boulder clearance has been requested, including a study into the ecosystem effects of boulder re-location. At a project level, details on the movement of boulders including positional data showing boulder presence before and after re-location will be explored.

7 Conclusion

82. This pre-construction commercial fisheries monitoring report presents comprehensive data available for the period 2017 to 2020 including landings statistics by ICES rectangle and port of landing. This report corroborates the finding of the Commercial Fisheries Technical Report and ES Chapter (NnG, 2018) and first commercial fisheries PEMP report (NnG, 2021).
83. The key fisheries in the region that operate across the NnG Project include demersal otter trawlers targeting nephrops and potting targeting lobster and crab. Detailed analysis of seasonality of landings by species by ICES rectangle and by port has been presented to allow comparison with future commercial fisheries monitoring reports.
84. Other fisheries documented within this report that operate across the wider region and may from time to time be active across the NnG Project include dredgers targeting scallop, divers targeting razor clam, potters catching velvet crab, porters targeting whelk, demersal trawlers targeting squid and handline fisheries targeting mackerel.
85. In general, a decrease in landings has been seen during 2020, compared to previous years. This trend has been noted across the UK (Section 6.4) and is considered to be associated with the Covid-19 pandemic, as well as potential trade issues associated with the UK-exit from the EU.

8 References

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MMO (2021). UK sea fisheries annual statistics report 2020. <https://www.gov.uk/government/statistics/uk-sea-fisheries-annual-statistics-report-2020> [including datasets for: 2016 to 2020 UK fleet landings and foreign fleet landings into the UK by port; and 2016 to 2012 UK fleet landings by ICES rectangle].

MMO (2021). Vessel Monitoring System data for UK vessels 15 m and over in overall length for the period 2016-2019 indicating value of catch by gear type.

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