



Marine
Management
Organisation

United Kingdom commercial sea fisheries landings by Exclusive Economic Zone of capture 2012-2019



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Key statistics

- In 2019, UK vessels landed 502,000 tonnes¹ live weight of fish from UK waters. This is below the 2012-19 average of 547,000 tonnes
- In 2019, UK vessels landed £851 million² worth of first-sale fish from UK waters. This is above the 2012-19 average of £728 million³
- 81 per cent of UK vessel live weight landings from North-East Atlantic waters came from UK waters (87% by value), with the Irish EEZ being the most important fishing ground outside UK waters for the UK fleet in terms of quantity landed, representing 11 per cent of live weight in 2019 (4% by value)
- UK vessels caught and landed 91,000 tonnes of fish with a first-sale value of £81 million from EU-27 waters in 2019. This equates to 15 per cent by weight and 8 per cent by value of the UK fleet's landings from North-East Atlantic waters
- The most valuable species for the UK fleet in each coastal state or bloc in 2019 were: mackerel, Nephrops and crab in the UK waters, scallops, anglerfish and blue whiting in EU-27 waters, cod, haddock and hake in third country waters and prawns, haddock and redfish in North East Atlantic international waters.
- For the period 2012-2016⁴, the UK fleet landed on average 546,000 tonnes from UK waters (80%), 94,000 tonnes from EU-27 waters (14%), 37,000 tonnes from third countries waters (5%) and 1,000 tonnes from International waters (0.2%).
- In comparison, during the same period, EU-27 vessels landed on average 706,000 tonnes from UK waters (27%), 1.8 million tonnes from EU-27 waters (68%), 128,000 tonnes from third countries waters (5%) and 26,000 tonnes from International waters (1%).

¹ Lower bound to upper bound range: 466,000 to 518,000 tonnes

² Lower bound to upper bound range: £776 to 879 million

³ Note that values given in this report are nominal. When adjusted for inflation the figure is £753mn

⁴ Latest comparable dataset available for EU-27 landings covers 2012-16 only

1. About this publication

This report uses the underlying data of UK Sea Fisheries Statistics 2019⁵ and other publicly available data sources to produce estimates of how much fish is captured in each countries waters. The estimates are broken down by:

- (1) Individual coastal state or bloc (e.g. EU); that is UK waters, EU-27 waters, third country waters and international waters
- (2) National waters (e.g. individual EU member states), with UK waters broken down further into devolved administrations

The report focuses on 2019 UK landings but EU-27 data is included for context. At the time of publication the latest comparable data available for EU-27 landings is 2016⁶ so where direct comparisons are required a five year average (2012-16) has been used.

This report provides the reader with greater knowledge and understanding of where fish are captured commercially through highlighting key findings focusing on the UK fleet's activity in the North East Atlantic and landings by UK and EU-27 vessels from UK waters.

This report covers where [landings](#) of fish are caught at sea as opposed to where they are landed into port⁷. Quantity figures are provided in landed [live weight](#) whereas value figures are [nominal landed value](#) in pound sterling⁸.

Accompanying this report is the full 2012-19 underlying UK dataset which includes estimates of UK vessel landings by EEZ of capture including information on year, quarter, vessel nationality, ICES division, length, gear group and species.

Alongside access to waters, [quota stocks](#) are another important component of commercial fishing. A stock table is provided with estimates of tonnage landed from UK waters for each quota stock relevant to the UK. A table covering UK in UK 2019 non-quota species landings has also been published this year.

The figures produced for this report represent our most up to date estimates and thus supersede those estimates produced for previous EEZ reports.

View the datasets accompanying this report here:

<https://www.gov.uk/government/statistics/uk-commercial-sea-fisheries-landings-by-exclusive-economic-zone-of-capture-report-2019>

⁵ <https://www.gov.uk/government/statistics/uk-sea-fisheries-annual-statistics-report-2019>

⁶ Data by Quarter-Rectangle, JRC Fisheries Dependent Information (2017 Edition).

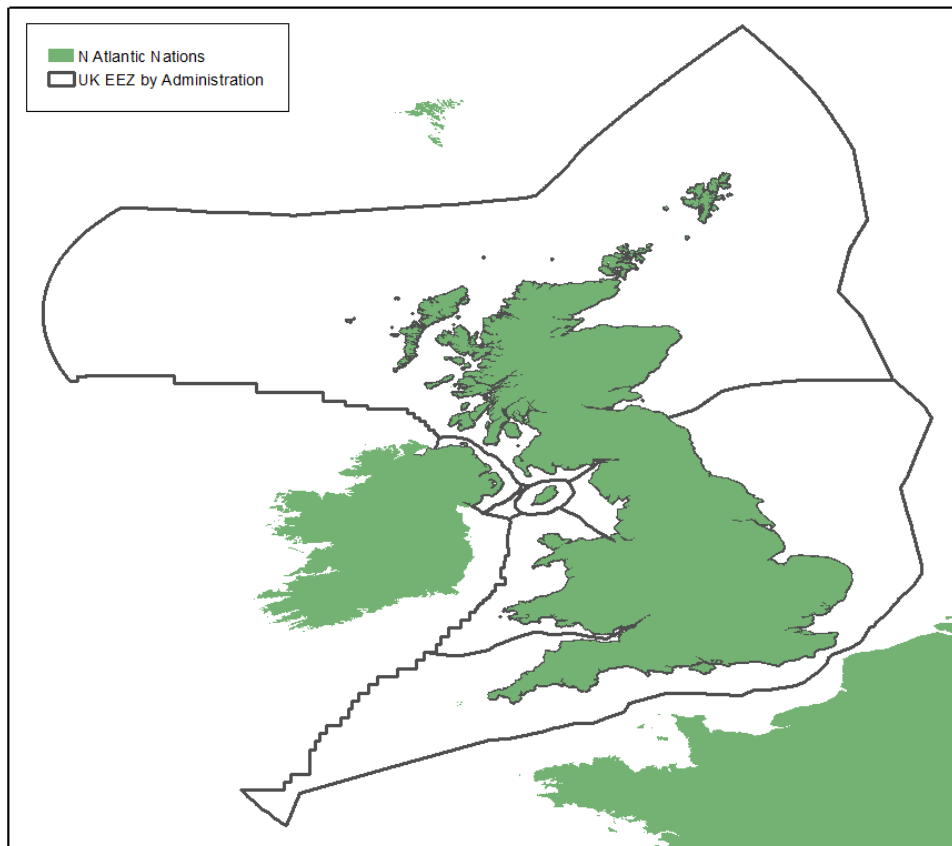
<https://stecf.jrc.ec.europa.eu/27/dd/effort/graphs-quarter>

⁷ This means figures do not include discards; where fish are captured at sea but thrown back overboard so cannot be seen as a full view of fish extracted from the sea historically

⁸ Value has not been adjusted for inflation over time. Where the data used had been published in euros annual exchange rates were used to convert to pound sterling

Figure 1 – The UK Exclusive Economic Zone (EEZ)⁹

The United Kingdom's Exclusive Economic Zone
(Boundary as per The Exclusive Economic Zone Order 2013 SI No. 3161 of 2013)
(Internal administrative divisions as per UKHO)



Exclusive Economic Zone (EEZ)

The term Exclusive Economic Zone is taken to mean the entire zone under the exclusive jurisdiction of a coastal state or international organisation. This will include the territorial seas which spans 0 – 12 nautical miles from the coast as well as the UNCLOS Exclusive Economic Zone from 12 up to 200 nautical miles (or roughly 22 to 370 kilometers) from the coast. Where EEZs would overlap a median line is used to delineate the sovereignty of waters.

⁹ A nautical mile is a unit used in measuring distances at sea, equal to 1,852 metres

2. Landings by Exclusive Economic Zone

In 2019 the UK fleet landed 618,000 tonnes of fish, valued at £979 million, from North East Atlantic waters¹⁰. This is down from 2018 both in terms of quantity (694,000 tonnes) and value (£989 million). The UK fishing fleet also operates outside these waters landing 4,100 tonnes (£8 million) fish from waters outside the North East Atlantic in 2019¹¹.

The focus of this report is on the UK fleet's most recent activity (2019), however, where appropriate, comparisons to EU-27 landings (which only cover until 2016) and matching UK historical landings are made to place the landings into context; in these cases, an average figure is provided.

Between 2012 and 2016 the UK landed an average of 678,000 tonnes of fish (£816 million) from the North East Atlantic. For comparison, EU-27 vessels landed 2,651,000 tonnes of fish (valued at £2.42 billion) from the same area (avg. 2012-16)¹².

Careful consideration should be made when interpreting the statistics presented in this release as it is important to understand the caveats that are inherent to the method used. Please refer to the data sources and methodology section for more information on how the estimates have been produced, particularly if not familiar with the previous EEZ reports.

Alongside our estimates, a range composed of upper and lower bounds is provided to show the potential minimum and maximum quantities of fish that could have been landed from each of the major areas based on reported landings. For further information on how the bounds are produced and how to interpret them please see the appendix.

Fisheries specific terms and concepts will be defined as they are introduced, however, if you wish to look up a particular term please refer to the appendix [glossary of terms](#).

Landings vs Catch

Landings mean fish that once taken from the sea are physically landed into a port. **Catches** mean all fish taken from the sea regardless of whether they are landed or discarded back into the sea. We do not set out catches here and so these statistics cannot be used to deduce overall historical extraction rates from the EEZs concerned.

¹⁰ Major fishing area 27: <http://www.fao.org/fishery/area/Area27/en>

¹¹ On average between 2012-19 UK vessels landed 5,800 tonnes (£9mn) from outside area 27

¹² 2012-16 is the latest comparable data available for EU-27 landings

2.1 UK vessel landings by Exclusive Economic Zone of capture¹³

This section provides an overview of the national waters that the UK fleet captured fish from in 2019. Note that the figures below are based on use of a spatial apportioning assumption so should be viewed as estimates rather than reported figures.

In 2019, UK vessels landed 502,000 tonnes¹⁴ live weight of fish from UK waters. This equates to 81 per cent of the UK fleet's total tonnage landed from North-East Atlantic waters (major fishing area 27). This is below the 2012-19 average for UK from UK waters of 547,000 tonnes.

In 2019 UK vessels landed

81% (tonnage)

of their fish from UK waters

This equates to 502,000t (range: 466-518kt)

In 2019 UK vessels landed

87% (value £)

of their first-sale fish value from UK waters

This equates to £851mn (range: £776-879mn)

In 2019, UK vessels landed £851 million¹⁵ worth of first-sale fish and shellfish from UK waters. This equates to 87 per cent of the UK fleet's value landed from North-East Atlantic waters. This is above the 2012-19 average of UK from UK waters of £728 million¹⁶.

Outside the UK's waters the most important coastal state or bloc was EU-27 waters where UK vessels caught and landed 91,000 tonnes of fish and shellfish to a total first-sale value of £81 million¹⁷ in 2019. This equates to 15 per cent by weight and 8 per cent by value of the UK fleet's landings from North-East Atlantic waters. This is slightly below the 2012-19 average of UK from EU-27 waters of 95,000 tonnes (£99 million).

The next most important coastal state or bloc is third country waters made up of waters of countries outside the UK and EU-27 member states (in this context primarily Norwegian and Svalbard waters). In 2019 UK vessels landed 24,000 tonnes with a first-sale value of £44 million¹⁸. This accounted for 4 per cent by weight and 5 per cent by value of UK's North East Atlantic landings. As with UK in EU-27 waters this is slightly below the 2012-19 average of 35,000 tonnes (£48 million).

Lastly, landings from international waters of the North East Atlantic accounted for 1,600 tonnes with a first sale value of £3 million.

¹³ See the appendix supplementary tables for additional breakdowns of UK landings by EEZ

¹⁴ Lower bound to upper bound range: 466,000 to 518,000 tonnes

¹⁵ Lower bound to upper bound range: £776 to 879 million

¹⁶ Note that when adjusted for inflation these average is £753mn; still lower than 2019

¹⁷ Lower bound to upper bound range: 74,000 to 126,000 tonnes, £53 to 156 million

¹⁸ No range is required for UK in third country or international waters as we can use the specific reported zone of capture information to allocate to an EEZ

The charts below summarise UK landings in coastal states or bloc in 2019. The error bars on UK and EU-27 waters show the upper and lower bounds for our estimates. We have confidence in the exact reported figure for 3rd country and international waters as UK vessels are required to report this. There are therefore no error bars for those figures.

Figure 2 - UK vessel landings in the NE Atlantic by coastal state or bloc waters, by tonnage (2019)

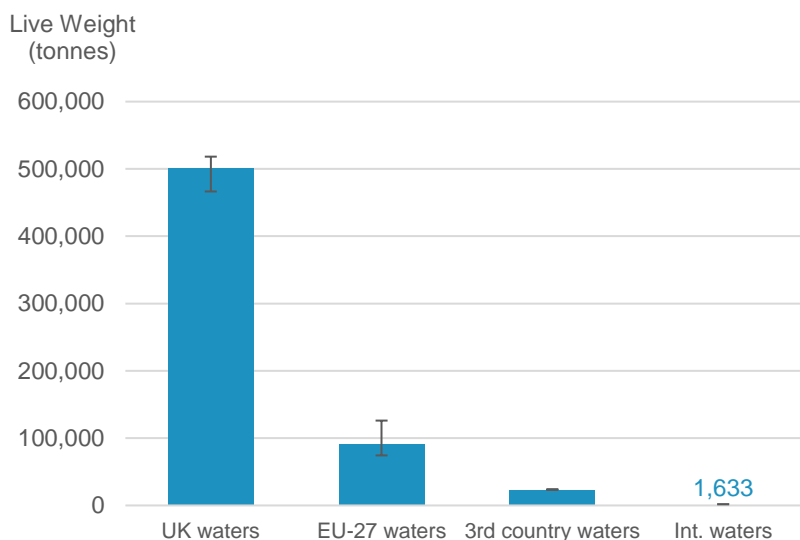
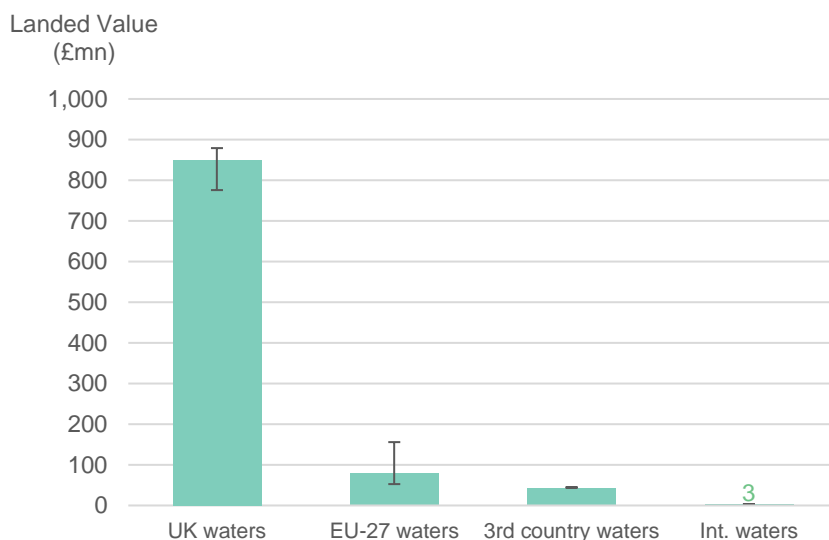


Figure 3 - UK vessel landings in the NE Atlantic coastal state or bloc waters, by landed value (2019)



Interpreting upper and lower bounds

To provide a view on certainty in our estimates we provide a range to show how much lower or higher the actual figures could theoretically be compared to our spatial estimates.

The **lower bound** only counts landings where we have absolute certainty the landings were made in that specific EEZ i.e. the ICES rectangle reported falls 100% within those waters or we have a specific zone of capture available.

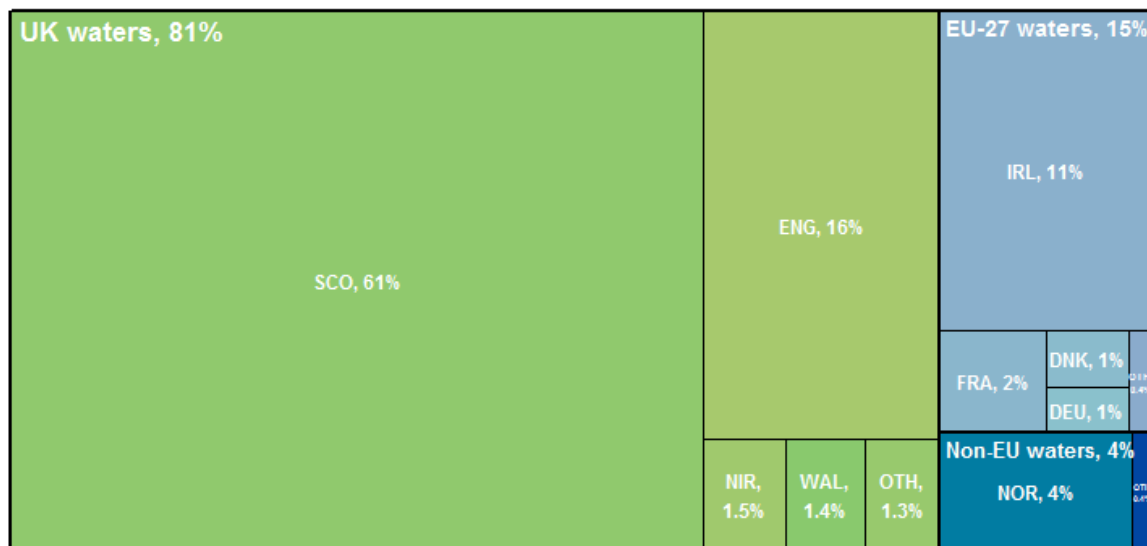
The **upper bound** includes all landings from ICES rectangles that are 100% within that EEZ and all landings from any ICES rectangle that borders that EEZ (even if only 1% of the surface area falls within that countries waters).

The narrower the range between lower and upper, the more certainty we have in that figure. Conversely a wide range suggests that a large amount of landings for that specific estimate required apportioning through our even spatial distribution assumption.

See the data sources and methodology appendix for more information.

The majority of UK landings occur in UK waters (81% in 2019). The majority of this is from Scottish waters and English waters (61% and 16% of UK NE Atlantic landings respectively). By tonnage, the Irish EEZ is by far the most important EEZ in EU-27 waters followed by France, Denmark and Germany. For third country waters, the vast majority of UK landings come from Norwegian waters (including Svalbard). By value, the main changes are that UK waters rise to 87 per cent (with English waters increasing to 23%) and EU-27 reduces to 8 per cent (with Irish waters dropping to just 4% by value). The differences in landed quantity and value are due to the different prices obtained by species; shellfish and demersal species tend to fetch a higher price than pelagic species.

Figure 4 - UK vessel North East Atlantic landings by Exclusive Economic Zone of capture, by percentage of live weight tonnage (2019)¹⁹



In 2019 the most important species for UK vessels outside UK waters (but still within the North East Atlantic) by tonnage were blue whiting (51,000 tonnes, £10 million), cod (13,000 tonnes, £29 million) and scallops (5,000 tonnes, £12 million). Anglerfish (4,000 tonnes, £11 million) comes into the top three when assessing in value terms with blue whiting dropping to fourth most important species.

The most important²⁰ species fished outside UK waters is blue whiting. In 2019, 51,000 tonnes out of 61,000 was landed from the Irish EEZ (84%) with the other 10,000 tonnes coming from Scottish waters.

The vast majority of cod landed by UK vessels outside UK waters comes from Norwegian and Svalbard waters. 43 per cent of all cod landed by UK vessels in 2019 came from Norway and Svalbard waters (the vast majority of the rest came from Scottish waters – 16,000 tonnes, 54%).

¹⁹ Only landings spatially apportioned and within major fishing area 27 are included. Third country and international waters have been grouped into 'Non-EU waters'. SCO refers to Scotland, ENG to England, NIR to Northern Ireland and WAL to Wales. UK waters 'OTH' includes Isle of Man, Guernsey and Jersey (1.3%). EU-27 waters 'OTH' includes Netherlands, Belgium and Spain (0.4%). Non-EU waters 'OTH' includes Faroe Islands, Greenland and international waters (0.4%). Norway includes Svalbard waters. The non-UK country codes follow alpha-3 ISO international format (https://www.nationsonline.org/oneworld/country_code_list.htm). Unapportioned landings in 2019 have been excluded (39 tonnes).

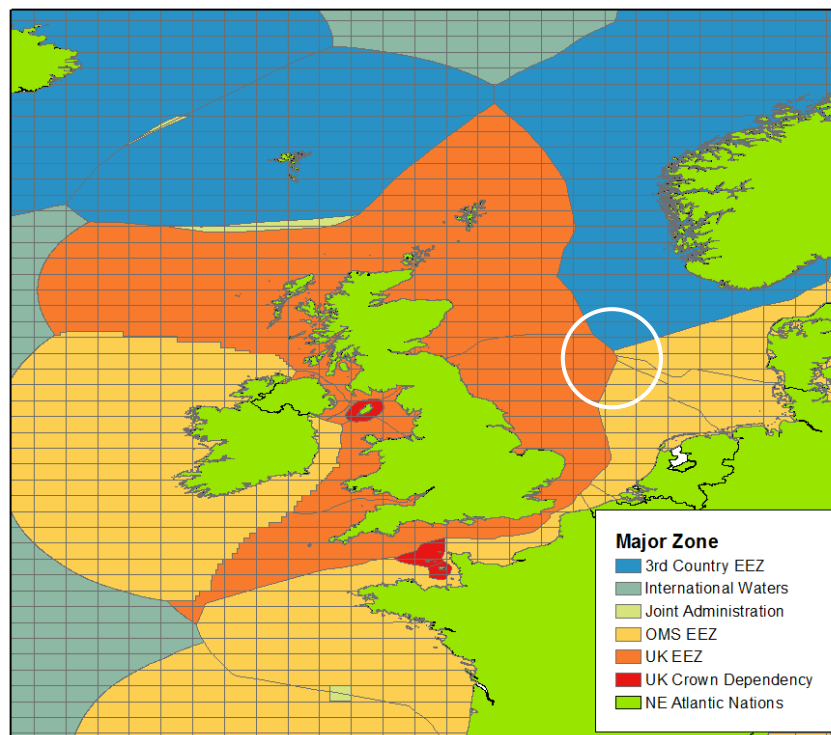
²⁰ By proportion of tonnage landed outside UK waters for a commercially important species.

Although UK vessels land the vast majority of their scallops from UK waters (20,000 tonnes or 80% by both tonnage and value in 2019), a sizeable portion comes from French waters (5,000 tonnes, £11 million); specifically sub area 27.7.d (Eastern Channel)²¹.

Irish waters are important for landings of anglerfish by English vessels. In 2019, it accounted for 34 per cent by tonnage and 38 percent by value for English vessels; this is consistent with the historical average of 33 per cent by tonnage and 39 per cent by value between 2012 and 2019.

Plaice is landed in high quantities by large trawlers operating in the eastern portion of the central North Sea (27.4.b) and is fished heavily by both UK and non-UK vessels in ICES rectangles bordering a number of national waters (Denmark, Netherlands, Germany, England and Norway – see white circle highlighting this area in the figure below). UK landings of plaice from UK waters in 2019 is estimated to be 5,000 tonnes (£9 million²²). This accounts for 48 per cent by tonnage and 51% by value of all plaice landings by UK vessels in 2019²³.

Figure 5 – ICES Rectangles versus coastal state or bloc waters



The majority of edible crab (also known as brown crab) is landed by UK vessels within UK waters (87% by tonnage and 89% by value in 2019), however, there is reasonable activity by UK vessels landing crab from German waters where 2,000 tonnes (7%²⁴) of the UK fleet's 32,000 tonnes of crab landings were captured.

²¹ Due to high amount of spatial apportioning required scallops have a large range. UK in UK EEZ range for scallops is 16,000 to 24,000 tonnes (£37 to £56 million).

²² Lower bound to upper bound range: 3,000 to 6,000 tonnes (£6 million to £10 million).

²³ It is estimated the rest comes from non-UK EEZs in the following quantities; Denmark 2,000 tonnes, Netherlands 1,400 tonnes, Germany 1,100 tonnes and Norway 400 tonnes.

²⁴ Note the vast majority of these landings were made in ICES rectangles such as 38F6 and 38F7 which are 100% within German waters so we can be confident on these estimates

2.2 UK and EU-27 vessel landings from the UK Exclusive Economic Zone

This section focuses on providing an overview of the historical landings activity of UK and EU-27 vessels in UK waters. The latest comparable data we have for EU-27 vessels is 2016 landings therefore most figures will be using a five year average (2012-16) to allow direct comparisons between UK and EU-27 activity in UK waters.

On average, between 2012 and 2016, UK vessels landed an estimated 546,000 tonnes of fish from UK waters with a value of £663 million²⁵. EU-27 vessels landed an estimated 706,000 tonnes of fish from UK waters with a value of £493 million.^{26 27}

Figure 6 – Estimated live weight landings from UK waters, by vessel nationality group (avg. 2012-16²⁸)

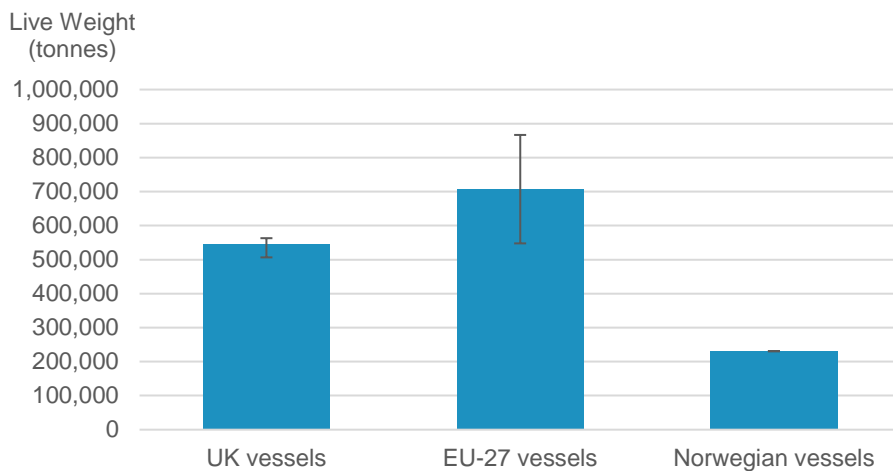
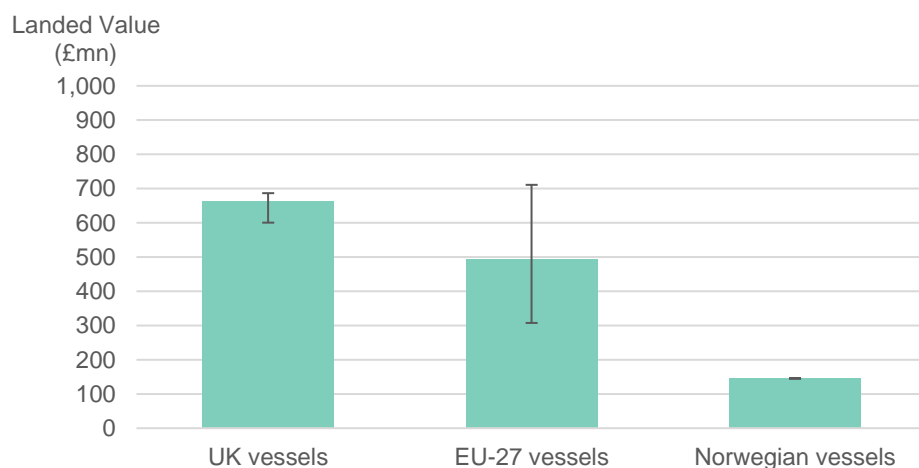


Figure 7 – Estimated landed value from UK waters, by vessel nationality group (avg. 2012-16)



²⁵ Lower bound to upper bound range: 507,000 to 563,000 tonnes, £600 to 687 million. 2019 figure is 502,000 tonnes valued at £851 million

²⁶ Lower bound to upper bound range: 548,000 to 867,000 tonnes, £307 to 711 million

²⁷ Landed value figures provided here are nominal and have not been adjusted for inflation

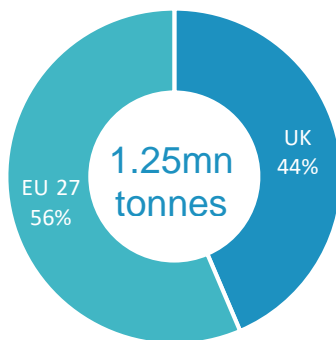
²⁸ Norwegian landings used are a four year 2013-16 average as 2012 data is not available. Note Faroese vessels also land fish from UK waters but in smaller volumes

Norwegian vessels land an average of 231,000 tonnes of fish valued at £145 million per annum from UK waters²⁹. The charts and tables that follow in this section focus on landings made by UK and EU-27 vessels within UK waters.

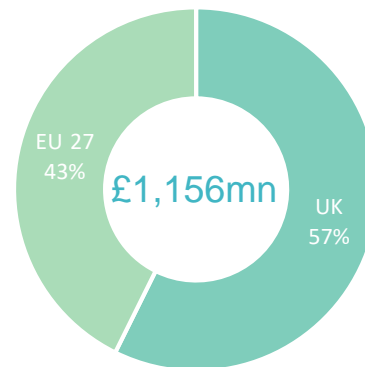
UK vessels land more by value from UK waters despite EU-27 vessels landing a greater quantity of fish. This is primarily driven by large pelagic trawler fleets such as those of Denmark and the Netherlands landing large quantities of lower value fish from UK waters such as herring, sandeels, blue whiting, horse mackerel and Norway pout. UK vessels also land considerably more from UK waters than EU-27 vessels for a number of important, high price per tonne species such as Nephrops, king scallops and anglerfish.

Figure 8 - UK and EU-27 vessel live weight and value balance from UK waters (avg. 2012-16)

Tonnage - EU-27 vessels land more fish from UK waters than UK vessels



Value - UK vessels land more value from UK waters than EU-27 vessels



Out of the average 546,000 tonnes UK vessels landed from UK waters between 2012 and 2016, Scottish vessels landed the majority, 356,000 tonnes. By quantity landed, England was the next most important (139,000 tonnes), then Northern Ireland (38,000 tonnes) and Wales (7,000 tonnes).

The EU member state fleets that landed the largest quantity of fish from UK waters were Denmark (235,000 tonnes), Netherlands (157,000 tonnes) and France (111,000 tonnes). Note overall the EU-27 fleet's activity in UK waters is far higher than UK activity in EU-27 waters.

Balance between the UK fleet and EU 27 fleet (12-16 avg.)

- Historically UK vessels have landed **94,000 tonnes** (£106mn) from EU 27 waters
- Historically EU 27 vessels have landed **706,000 tonnes** (£493mn) from UK waters

²⁹ Average used is 2013-16 as data is unavailable for 2012

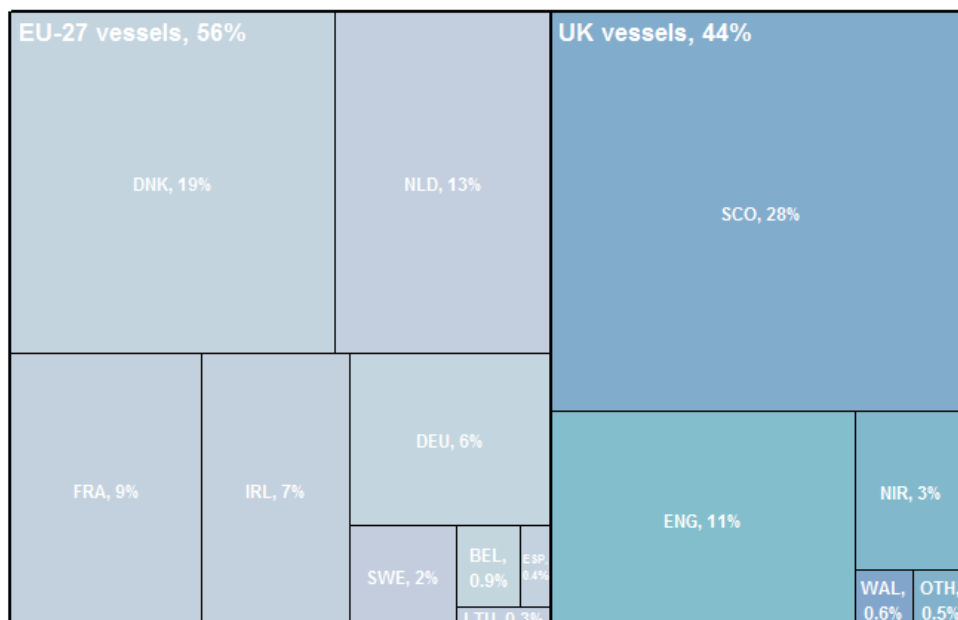
By value, the pattern is very similar with Scottish vessels being the largest beneficiaries of the UK EEZ in terms of landed value (£416 million per annum between 2012 and 2016). Proportionally English vessels account for a higher share of the total landed value from UK waters (28%) than tonnage for UK waters (26%).

For the EU-27, France is the most important national fleet in terms of landed value from UK waters (£156 million per annum³⁰) representing 32 per cent of EU-27 total value from UK waters despite only accounting for 16 per cent by tonnage (due to targeting higher value demersal species). Demark (£91 million) and the Netherlands (£86 million) are the next most important EU-27 national fleets in UK waters.

Danish and Dutch vessels (19% and 13% respectively) land a higher share of tonnage from UK waters than English vessels (11%) with Scottish vessels landing the largest share overall.

The charts below provide an overview of the shares of quantity and value from UK waters.

Figure 9 - UK and EU-27 landings share from UK waters, by percentage of live weight tonnage (avg. 2012-16)³¹

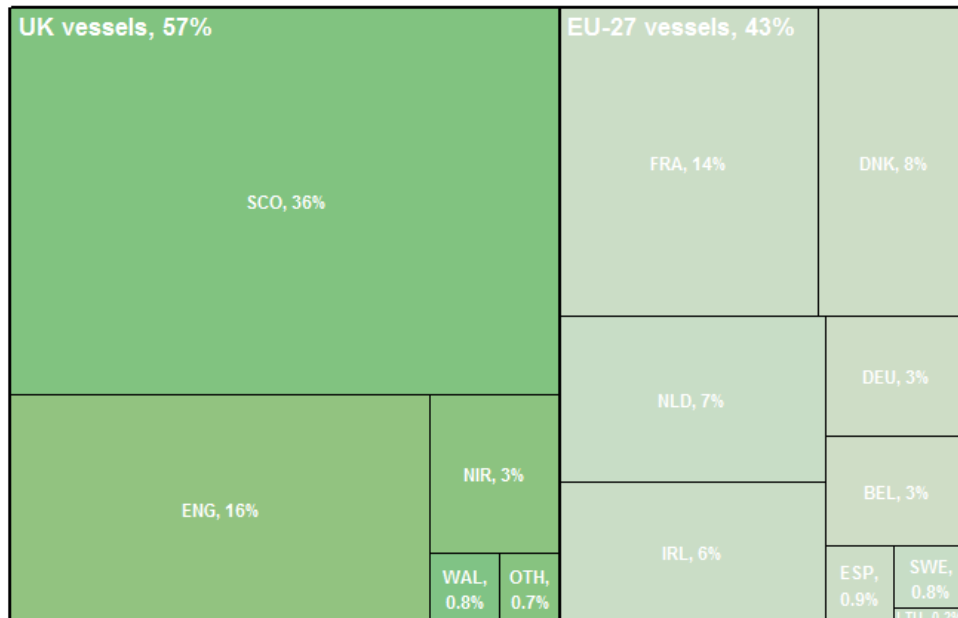


³⁰ Norwegian vessels are roughly equal to France in terms of value landed from UK waters (£145 million per annum)

³¹ SCO refers to Scotland, ENG to England, NIR to Northern Ireland and WAL to Wales. UK "OTH" includes the three crown dependencies; Guernsey, Jersey and Isle of Man. The non-UK country codes follow alpha-3 ISO international format (https://www.nationsonline.org/oneworld/country_code_list.htm). Excluding landings from UK vessels missing a devolved administration flag (17 tonnes, £47,000) and Polish fleet (0.3 tonnes, £734)

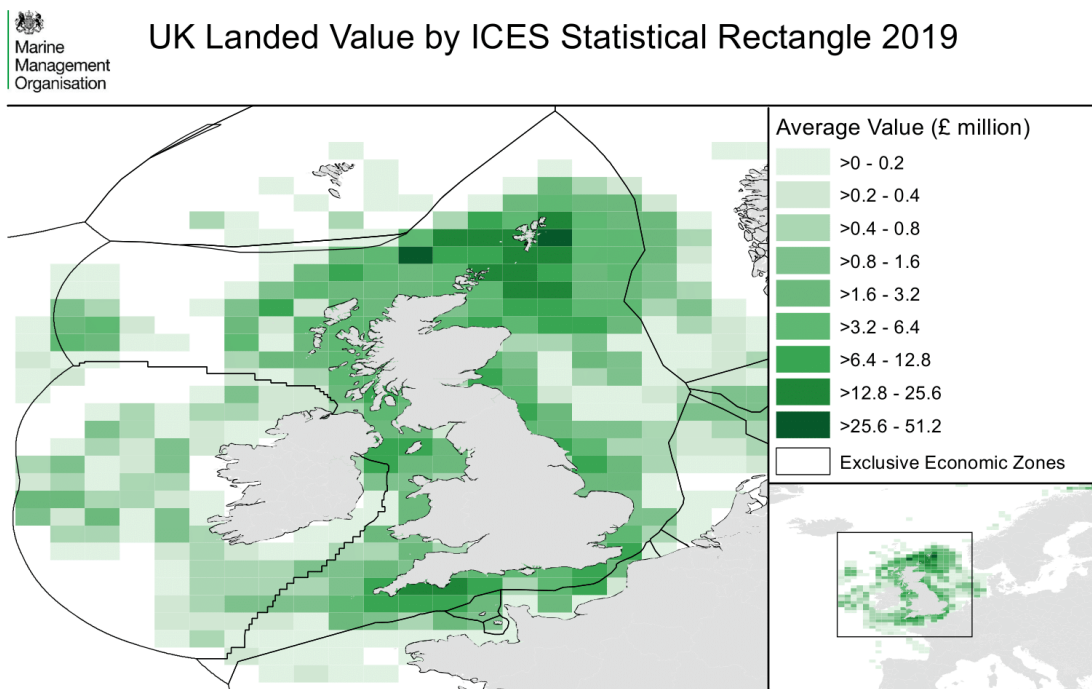
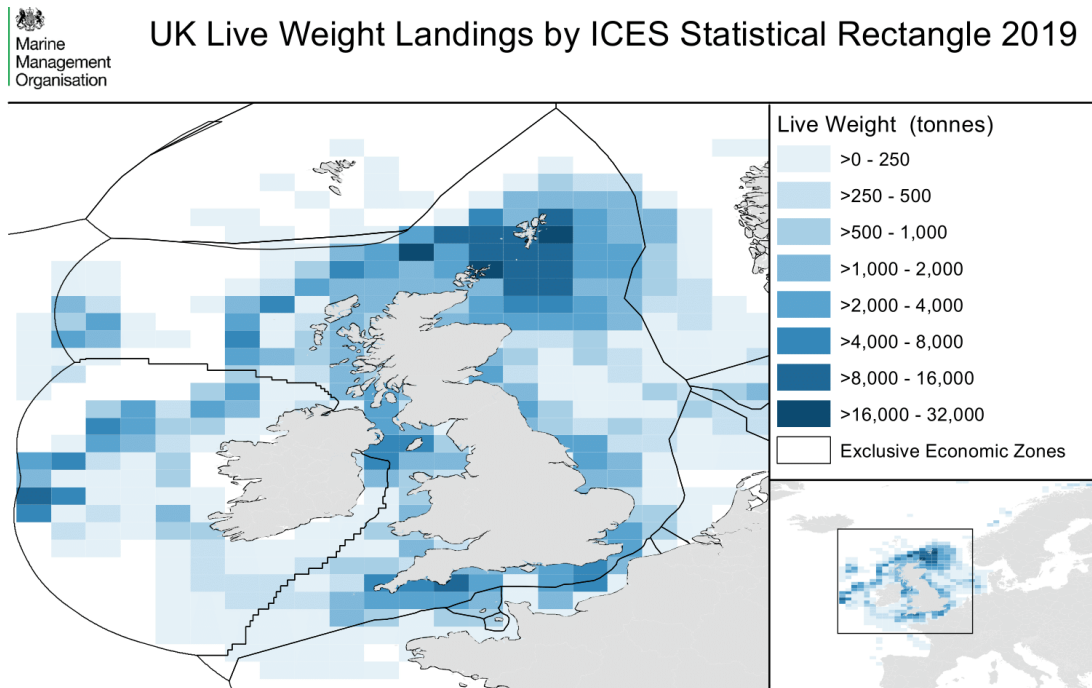
In value terms the Scottish fleet still holds the largest share for a devolved national fleet. UK vessels combined held a slightly higher share of value from UK waters than the EU-27 fleet between 2012 and 2016 (57% vs 43%). The French fleet accounted for 14 percent by value of the total landed value from UK waters between 2012 and 2016 compared to just 9 per cent by tonnage.

Figure 10 - UK and EU-27 landings share from UK waters, by percentage of landed value (avg. 2012-16)



The heat maps presented below show tonnage and value hotspots in the Northern North Sea, the Chanel and off the West coast of Scotland and Ireland during based on UK 2019 activity.

Figure 11 – Heat map of UK landings by ICES statistical rectangle (2019)

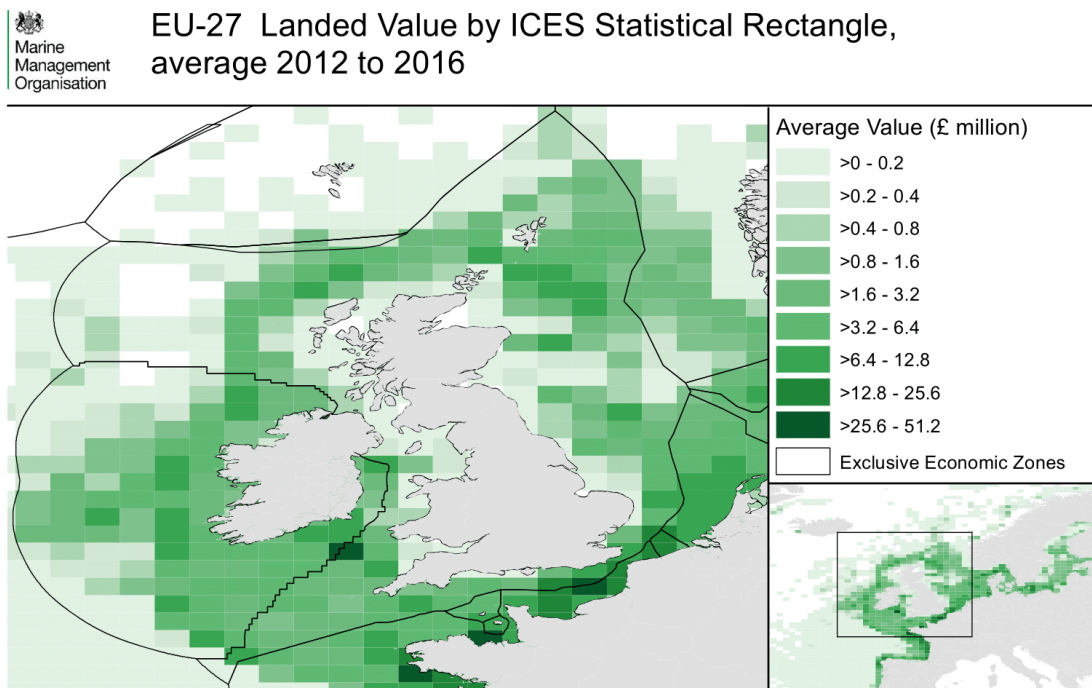
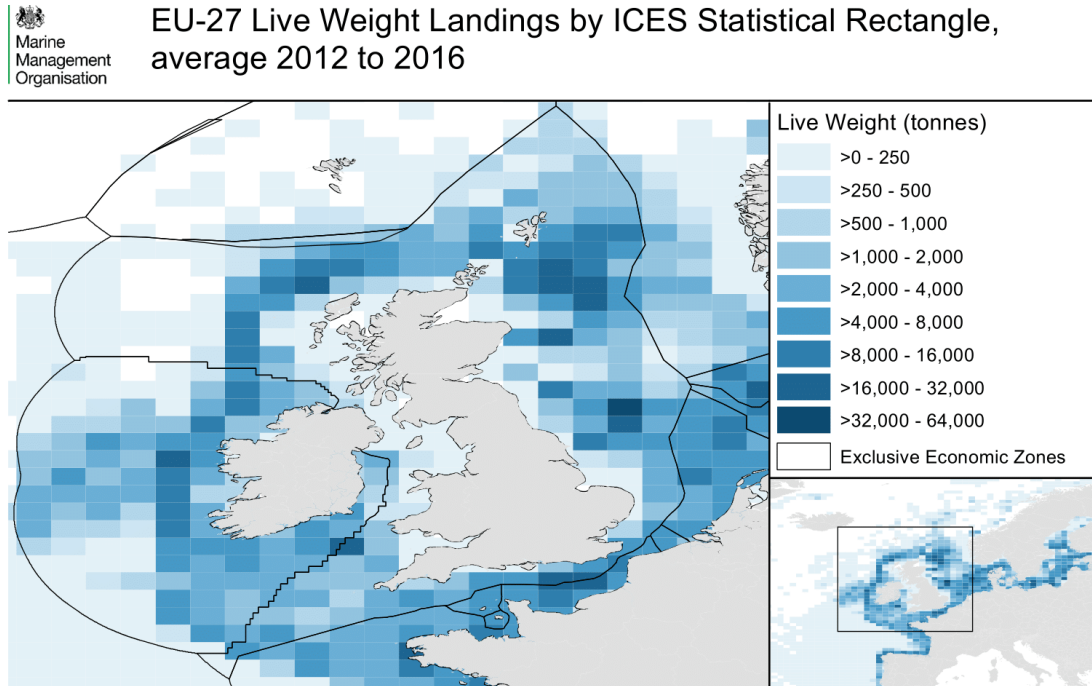


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CRS: GCS ETRS 1989
 Datum: ETRS 1989
 Units: Degree
 MMO Ref: EEZA19

The heat maps below show EU-27 vessel landings in UK waters between 2012 and 2016.

Figure 12 – Heat map of EU-27 landings by ICES statistical rectangle (avg. 2012-16)



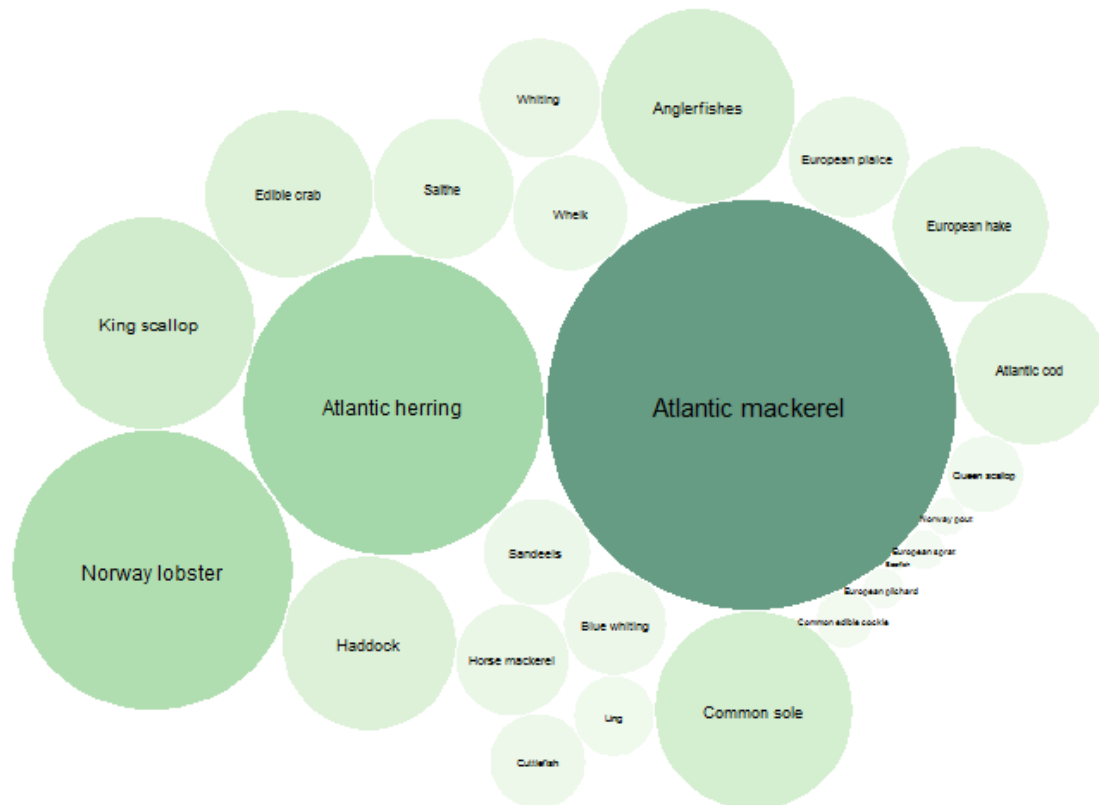
Not to be used for navigation
 Contains Collins Bartholomew and ICES data
 © Collins Bartholomew copyright and database right 2020 © ICES Statistical Rectangles dataset 2015, ICES, Copenhagen

CRS: GCS ETRS 1989
 Datum: ETRS 1989
 Units: Degree
 MMO Ref: EEZA19

2.2.1 UK and EU-27 most important species landed from UK waters

In 2019 the most important species for UK vessels from UK waters by tonnage were mackerel (149,000 tonnes), herring (71,000 tonnes) and Nephrops (33,000 tonnes). Combined these three species make up just over 50 per cent of UK total tonnage landed from UK waters in 2019 (38% by value).

Figure 13 - Proportional bubbles showing the top 25 species by total landed value captured in UK waters by UK and EU-27 vessels (avg. 2012-16)



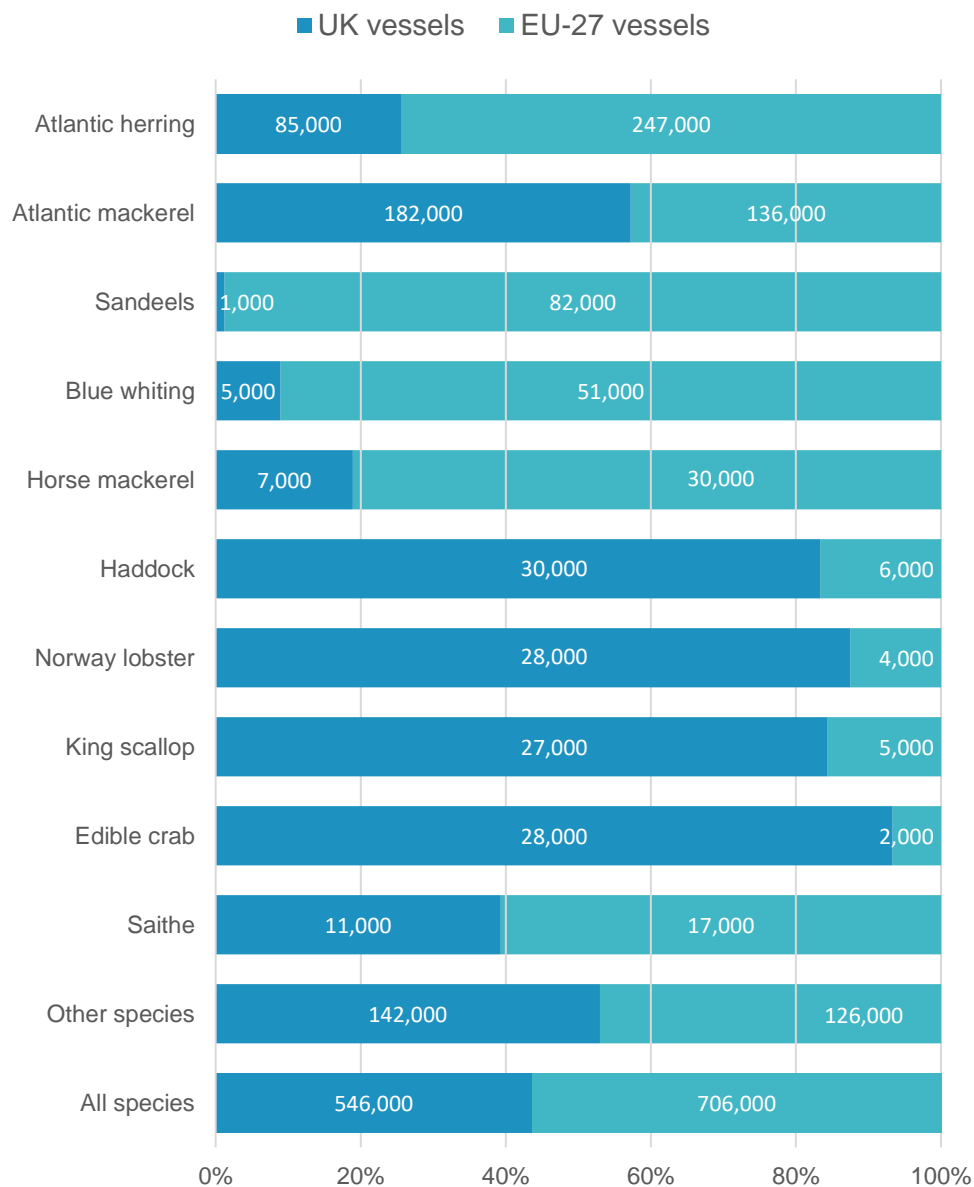
The most valuable species for UK vessels in UK waters in 2019 were mackerel (£180 million), Norway lobster (£109 million) and edible crab (£66 million). The majority of mackerel (83% by value) and Norway lobster (78% by value³²) were landed by Scottish vessels. Edible crab landings were more divided with English vessels accounting for a slight majority of landed value in 2019 at 55 per cent and Scottish vessels landings 35 per cent.

Historically (avg. 2012-16) the most important species for EU-27 vessels from UK waters by tonnage were herring (247,000 tonnes, £95 million), mackerel (136,000 tonnes, £91 million) and sandeels (82,000 tonnes, £16 million).

³² 73% by tonnage; Scottish vessels land proportionally higher amounts of value compared to tonnage due to west coast Nephrops creel fishery which land live Nephrops and sell for a high price

The chart below, using 2012-16 historical average data, shows how much of each of the top ten species from UK waters is landed by the UK fleet versus the EU-27 fleet. The top five species are pelagic finfish. The majority of the landings of these species from UK waters is by vessels from the EU-27 fleet with the exception of mackerel, where UK vessels land 57 per cent of the UK EEZ tonnage. Haddock is the only other finfish in the top ten where UK vessels land the majority (83%). The three shellfish species (Nephrops, scallops and crab) are all landed primarily by UK vessels in UK waters. Species outside the top ten (termed 'Other species' here) have a roughly even split in tonnage terms.

Figure 14 - Top ten species landed from UK waters split by UK and EU-27 fleet share of landings, by tonnage (avg. 2012-16)



2.2.2 UK and EU-27 quota stock landings from UK waters^{33 34}

The three tables below show the top quota stocks landed by: (1) UK from UK waters for 2019 (2) UK from UK waters average 2012-16 (3) EU-27 from UK waters average 2012-16.

See the accompanying datasets to this report for a full breakdown of UK 2019 quota stock estimates from UK waters.

For all five top stocks, over 88% of the UK fleets total NE Atlantic landings came from UK waters in 2019. Note the lower quantity of mackerel landed in 2019 compared to the historical 2012-16 average; this is primarily driven by recent cuts in [total allowable catch](#).

Table 1- Top five quota stocks landed from UK waters by UK vessels, by tonnage (2019)

Quota stock		From UK waters			
TAC code	Stock description	Lower	Estimate	Upper	% NE Atlantic total from UK waters
1	N/a	149,295	149,383	149,445	98%
2	HER/4AB.	63,359	63,359	63,359	100%
3	HAD/2AC4.	19,364	19,364	19,365	88%
4	NEP/2AC4-C	18,461	18,556	18,581	100%
5	COD/2A3AX4	14,320	14,327	14,330	92%

The historical quota estimates below provide additional context to the 2019 figures.

Table 2 - Top five quota stocks landed from UK waters by UK vessels, by tonnage (avg. 2012-16)

Quota stock		UK from UK waters			
TAC code	Stock description	Lower	Estimate	Upper	% NE Atlantic total from UK waters
1	N/a	180,697	182,001	183,702	84%
2	HER/4AB.	64,962	64,962	64,962	99%
3	HAD/2AC4.	23,746	23,747	23,748	83%
4	NEP/5BC6.	13,140	13,270	13,277	100%
5	HER/5B6ANB	12,730	12,730	12,730	100%

West coast herring and Nephrops are present in the top five by tonnage in the historical estimates both of which are landed exclusively from UK waters. The proportion of North Sea haddock landed from UK waters is higher in 2019 (88%) than the historical average (83%). North Sea herring landings by UK vessels from UK waters remain fairly consistent.

³³ For further estimates on quota stocks refer to the appendix 3 or the table accompanying this report. For information on the methodology used to assign stocks see appendix section A2.7

³⁴ All mackerel stocks (MAC/2CX14-, MAC/2A34. and MAC/8C3411) have been grouped at species rather than stock level due difficulties caused by temporal flexibility between the North Sea and west coast stocks

Between 2012 and 2016 North Sea herring was the most important quota species landed by EU-27 vessels from UK waters by tonnage with 90% of the EU-27 North East Atlantic total landings estimated to have been caught in UK waters.

Table 3 - Top five quota stocks landed from UK waters by EU-27 vessels, by tonnage (avg. 2012-16)

Quota stock		EU 27 from UK waters			
TAC code	Stock description	Lower	Estimate	Upper	% NE Atlantic total from UK waters
1 HER/4AB.	North Sea Herring	195,038	215,471	224,460	90%
2 N/a	Mackerel (all)	125,085	135,549	140,359	61%
3 SAN/2A3A4.	North Sea Sandeels	77,768	81,574	84,484	60%
4 WHB/1X14	Northern Blue Whiting	49,252	50,711	52,624	46%
5 JAX/2A-14	N. Horse Mackerel	17,077	23,756	30,692	23%

2.2.3 UK and EU-27 non-quota species landings from UK waters³⁵

Non-quota species are often targeted by smaller vessels who tend to have more limited available quota than larger vessels. Although overall landings of non-quota species are often smaller in terms of quantity compared to quota stocks they tend to hold a higher price per tonne and are essential for supporting fleet segments such as English crab/lobster potters and scallop dredgers.

All five top non-quota species for UK vessels in UK waters during 2019 were shellfish species. A high proportion of each of these non-quota species are landed from UK waters with a slightly lower proportion coming from UK waters for scallops (80% in 2019) due to UK dredging activity in French waters of the Eastern Channel.

See the accompanying datasets to this report for a full breakdown of UK 2019 non-quota species estimates from UK waters.

Table 4 - Top five non-quota species landed from UK waters by UK vessels, by tonnage (2019)³⁶

Non quota species		From UK waters			% NE Atlantic total from UK waters
Species name	Lower	Estimate	Upper		
1 Edible crab	24,587	27,800	28,582	87%	
2 Great Atlantic scallop	15,677	20,371	24,231	80%	
3 Whelk	15,128	19,484	20,293	96%	
4 Common edible cockle	7,629	9,226	9,550	97%	
5 European pilchard(=Sardine)	6,966	7,006	7,043	99%	

The historical non-quota species estimates below provide additional context to the 2019 figures.

Table 5 - Top five non-quota species landed from UK waters by UK vessels, by tonnage (avg. 2012-16)

Non quota species		UK from UK waters			% NE Atlantic total from UK waters
Species	Lower	Estimate	Upper		
1 Edible crab	24,812	27,924	29,089	90%	
2 Great Atlantic scallop	22,047	26,847	28,710	89%	
3 Whelk	16,169	19,677	20,083	98%	
4 Queen scallop	13,010	14,733	15,213	96%	
5 Common edible cockle	6,751	7,577	7,760	98%	

³⁵ For further estimates on non-quota species landings in UK waters refer to the appendix 3

³⁶ Note the proportionally larger lower and upper ranges required for non-species compared to quota species due to many landing taking place in rectangles that border both UK and EU-27 waters (e.g. English channel and NI/ROI sea border).

EU-27 landings of non-quota species in UK waters are much more limited than the equivalent top quota stock landings seen in section 2.2.2. This is likely primarily driven by the fact vessels targeting non-quota tend to be smaller in size and fish more within their own nation's inshore waters compared to larger, more nomadic pelagic quota boats. Additionally, for scallops the Baie de Seine area off the Northern French coast is highly productive so there is a lower need to fish for scallops in UK waters compared to highly migratory, pelagic species which are quota restricted for example. The Bay of Biscay, which lays outside UK waters, is also important for EU-27 vessels with large landings of pilchards; this explains the low (6%) proportion being landed from UK waters.

Table 6 - Top five non-quota species landed from UK waters by EU-27 vessels, by tonnage (avg. 2012-16) ³⁷

Non quota species		EU 27 from UK waters			
Species	Lower	Estimate	Upper	% NE Atlantic total from UK waters	
1 Great Atlantic scallop	1,043	5,129	15,177	17%	
2 European pilchard(=Sardine)	117	2,618	3,527	6%	
3 Whelk	36	2,267	9,020	17%	
4 Cuttlefish, bobtail squids nei	269	1,920	3,917	21%	
5 Edible crab	390	1,848	4,184	14%	

³⁷ Landings under the species code "OTH" (for other species), primarily occurring in 2013 in the raw FDI EU data, have been excluded (4,846 tonnes)

3. Further information

3.1 Version history

A version history table which shows a log of any changes to the report is provided below for transparency and so end users are aware of their version.

Version	Date	Comments
1.0	01/10/2020	Full release alongside accompanying annual UK-registered vessel landings by EEZ between 2012 and 2019, tables on 2019 quota and non-quota landing estimates from the UK EEZ and ICES statistical rectangle factors lookup table.

Official Statistics Designation

Section 6.1 of the 2007 Statistics and Registration Service Act defines official statistics as statistics produced by the UK Statistics Authority, government departments (including executive agencies), the Devolved Administrations in Scotland, Wales and Northern Ireland, any other person acting on behalf of the Crown or any other organisation named on an Official Statistics Order.

Under the Act, official statistics should comply with the Code of Practice for Statistics and fall within the scope of the Office for Statistics Regulation, which assesses their compliance against the Code of Practice.

Pre-release access to statistics

Some ministers and officials receive access to these statistics up to 24 hours before release. Details of the arrangements for doing this and a list of the ministers and officials that receive pre-release access to these statistics can be found in the DEFRA statement of compliance³⁸ with the Pre-Release Access to Official Statistics Order 2008

3.2 Contact us

- Statistics and Analysis Team, Marine Management Organisation
- Email: statistics@marinemanagement.org.uk
- Media enquiries: 0300 123 1032

³⁸ <https://www.gov.uk/government/publications/defra-group-pre-release-access-to-official-statistics-compliance-statement>

Appendix 1: Glossary of terms

Exclusive Economic Zone (EEZ) The term Exclusive Economic Zone, abbreviated to EEZ, is taken to mean the entire zone under the exclusive jurisdiction of a coastal state or international organisation. This will include the territorial seas which span 0 to 12 nautical miles from the coast as well as the UNCLOS Exclusive Economic Zone from 12 to 200 nautical miles (or 22 to 370 kilometres) from the coast. Where EEZs would overlap, a median line is used to delineate the sovereignty of waters.

ICES Statistical Rectangles The International Council for the Exploration of the Sea (ICES) has implemented spatial divisions of the sea for statistical analysis in major fishing area 27. ICES rectangles are the lowest broadly available unit of spatial reporting for this area. Each rectangle is 0.5 degrees latitude by 1 degree longitude.

Landings vs Catches Landings mean those fish that once taken from the sea are physically landed into a port or transhipped at sea to another vessel to be landed into a port at a later time. Catches mean all fish taken from the sea regardless of whether they are landed or discarded back into the sea. We do not set out catches here and so these statistics cannot be used to deduce overall extraction rates from the EEZs concerned.

Live weight and landed value Live weight is the primary unit use to measure the quantity of fish extracted from the sea and landed. In practice it involves multiplying landed weight (the weight fish is when landed in port) by a conversion factor to get an estimate of the weight of fish before any processing has occurred such as gutting. It is used as a measure of total weight of fish extracted from the sea for setting quota limits. Landed value is the nominal value of fish at first sale not adjusted for inflation over time.

Major Fishing Area 27 This area broadly covers the Northeast Atlantic Ocean and includes the following ICES subareas: Barents Sea (27.1), Norwegian Sea, Spitzbergen, and Bear Island (27.2), Norwegian Sea, Spitzbergen, and Bear Island (27.2), North Sea (27.4), Iceland and Faroes Grounds (27.5), Rockall, Northwest Coast of Scotland and North Ireland (27.6), Irish Sea, West of Ireland, Porcupine Bank, Eastern and Western English Channel (27.7), Bay of Biscay (27.8), Portuguese Waters (27.9), Azores Grounds and Northeast Atlantic South (27.10), Subarea XI, North of Azores (27.12), Subarea XIII, East Greenland (27.14).

Spatial apportioning	Spatial apportioning at ICES Rectangle level has been used to establish the correct proportion of landings that should be distributed to each EEZ, where a landing is reported from an ICES Rectangle that borders two or more EEZs and no specific zone of capture has been reported. The fundamental assumption is that there will be an even spatial distribution of landings of fish over the surface of a rectangle. For example, rectangle 37F5 in the southern North Sea is shared between the EEZs of Germany and the Netherlands. With 78 per cent of the waters being Dutch and 22 per cent of the waters being German. Following the even spatial distribution assumption described above if 257 tonnes is landed in total from rectangle 37F5 in a given year then 200 tonnes (78%) would be allocated to the Dutch EEZ, with the remainder 57 tonnes (22%) being allocated to the German EEZ.
Stock	A group of fish in a species occupying a well-defined spatial range independent of other stocks of the same species. Random dispersal and directed migrations due to seasonal or reproductive activity can occur (pelagic species). Stocks can be regarded as an entity for management or biological assessment purposes.
Third country	For the purposes of this report the term 'Third country' refers to countries that are neither part of the UK or the EU-27 bloc such as Norway and the Faroe Islands.
Total allowable catch	Total allowable catches (TACs) are catch limits (expressed in tonnes or numbers) that are set for most commercial fish stocks. These are proposed based on scientific advice from advisory bodies. Most stocks are set annually in December by the Council of Fisheries Ministers. TACs are shared between EU-27 countries in the form of quotas which are then distributed nationally to determine the quantity of a specific species or grouping of species that can be landed from a given area (called a TAC area) in the following year (for example North Sea cod).

Appendix 2: Data sources and methodology

The methodology and data sources of the Exclusive Economic Zone Analysis were laid out in the 2018 report³⁹. The fundamental methodology behind this analysis remains the same. This section presents the methodology in detail, highlighting and explaining key caveats with examples and providing sight of further improvements to the method since last year's report.

These statistics have been produced as in compliance with the UK Code of Practice for Official Statistics⁴⁰.

A2.1 Obtaining UK landings data by ICES rectangle

The primary input data for this analysis was UK landings data split by reported ICES statistical rectangle of capture. This is sourced from the data used in section two of the latest UK sea fisheries annual statistics report⁴¹. Specifically the data used to produce the accompanying spreadsheet '2015 to 2019 UK fleet landings by ICES rectangle' dataset^{42 43}. The underlying data for this dataset was retrieved to allow for further disaggregation by gear group and length group but also, most notably, to export zone of capture information which is essential for the EEZ analysis method – the importance of this is discussed in section A2.6.

Table 7 - UK landings data input, 2018 vs. 2019 report

Report	2012	2013	2014	2015	2016	2017	2018	2019
EEZA18	628,045	626,799	757,915	708,699	700,636	724,942	697,508	N/a
EEZA19	628,045	626,799	757,915	708,699	700,638	726,709	699,988	621,886
Difference	0	0	0	0	2	1,767	2,480	N/a

This is fundamentally the same input data as used in last year's report but fisheries data is dynamic in nature with amendments and additions as further reporting of catches is completed by fishers and processed. The table above shows that 2012-15 UK input data has not changed from last year's report, however, 2017 and 2018 in particular have seen additional logbook and/or sales note data incorporated.

What is an ICES Statistical Rectangle?

The International Council for the Exploration of the Sea (ICES) has implemented spatial divisions of the sea for statistical analysis in major fishing area 27. This area broadly covers the North East Atlantic Ocean as well as the adjacent North Sea and Baltic Sea. ICES rectangles are the lowest broadly available unit of spatial reporting for this area. Each rectangle is 0.5 degrees latitude by 1 degree longitude.

³⁹ United Kingdom commercial sea fisheries landings by Exclusive Economic Zone of capture: 2012 – 2018 (released 3rd October 2019) <https://www.gov.uk/government/statistics/uk-commercial-sea-fisheries-landings-by-exclusive-economic-zone-of-capture-report-2018>

⁴⁰ <https://www.statisticsauthority.gov.uk/osr/code-of-practice/>

⁴¹ <https://www.gov.uk/government/statistics/uk-sea-fisheries-annual-statistics-report-2019>

⁴² https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/920349/2015_to_2019_UK_fleet_landings_by_ICES_rectangle.ods

⁴³ As we required data back until 2012 in order for direct comparison with the available EU-27 landings data (2012-16) the underlying data from previous Sea Fisheries Statistics reports was also incorporated to produce an eight year (2012-19) dataset of UK landings

A2.2 Obtaining EU-27 landings data by ICES rectangle

EU-27 landings data is incorporated into this analysis to provide a more complete view of landings from the waters surrounding the UK. The primary input data for EU-27 landings by ICES rectangle is, as with last year's report, sourced from the publicly available STECF⁴⁴ Fisheries Dependent Information (FDI) deep sea and Baltic annex datasets from the 2017 data call⁴⁵. The data call covers up to and including 2016 so landings made by EU-27 vessels from a five year reference period (2012-16) were extracted for analysis.

Following further quality assurance work and crosschecking on the FDI 2017 data call all landings reported under the special condition 'DEEP' in the FDI data have been excluded from this analysis due to concern that duplicate landings were reported between this and special condition 'NONE'⁴⁶. The end result is 25,000 to 79,000 tonnes of landings being excluded per annum. This translates to between 0.9 and 2.9 percent of the landings data.

Due to differences in how landings are reported to the data call by each individual member state over time it is difficult to decipher where this exclusion rule may be dropping 'true' landings, however, this impacts a limited number of species and those that it does impact tend to be more closely aligned with what has been reported in other comparable data calls as shown below. Most species are unaffected by this change but a total of 74 species were impacted by these exclusions by more than one tonne per annum. The most impacted species were black scabbard fish (-47%), saithe (-14%), Norway pout (-13%), megrim (-10%), blue whiting (-9%), hake (-9%) and anglerfish (-8%). Examples of crosschecks on three of these species are provided below.

Table 8 - FDI input data deep sea crosschecking⁴⁷

Blue whiting					
Data call	2012	2013	2014	2015	2016
FDI 2017 (DS annex - raw)	55,518	124,971	185,151	199,177	218,166
FDI 2017 ('DEEP' removed)	50,967	103,802	151,929	171,472	187,091
FIDES	59,763	103,370	162,582	188,753	182,359
Eurostat	50,673	105,262	162,500	201,958	184,166

Hake					
Data call	2012	2013	2014	2015	2016
FDI 2017 (DS annex - raw)	72,272	91,772	80,634	91,820	111,650
FDI 2017 ('DEEP' removed)	61,117	79,545	77,728	83,303	93,418
FIDES	58,235	64,468	77,991	83,847	91,695
Eurostat	60,905	67,078	80,829	84,279	93,878

Saithe					
Data call	2012	2013	2014	2015	2016
FDI 2017 (DS annex - raw)	41,165	49,101	35,238	37,853	33,659
FDI 2017 ('DEEP' removed)	35,096	40,342	29,125	30,665	27,520
FIDES	35,235	34,231	28,962	31,915	28,260
Eurostat	30,186	34,410	29,052	31,934	28,290

⁴⁴ Scientific, Technical and Economic Committee for Fisheries

⁴⁵ Data by Quarter-Rectangle, JRC Fisheries Dependent Information (2017 Edition).

<https://stecf.jrc.ec.europa.eu/EU-27ropa/EU-27/dd/effort/graphs-quarter>. This dataset has coverage for the NE Atlantic area, including the UK EEZ, but does not include the Mediterranean or Black seas

⁴⁶ In last year's report some but not all 'DEEP' special condition landings were removed due to concerns with duplicates

⁴⁷ Eurostat data <http://appsso.eurostat.ec.europa.eu/nui/show.do>. FIDES stands for Fisheries Data Exchange System and is the official EU system for reporting quota stock uptake

Crosschecking has also identified concerns about inconsistencies in reported landings between data calls. See the example below of Norway pout seemingly missing landings from FDI 2017 data call (used as data source for this analysis) in 2012/13 and then FIDES in 2016. This is a more extreme example but emphasises the need to treat the data with caution. These disagreements in raw data were found to be the main cause of discrepancies between stock estimates made in this report versus those found on FIDES reported uptake.

Table 9 - Examples of FDI vs. other data call reporting inconsistencies

Norway pout⁴⁸					
Data call	2012	2013	2014	2015	2016
FDI 2017 (DS annex - raw)	4,095	1,496	48,623	23,918	45,060
FDI 2017 ('DEEP' removed)	2,137	1,493	25,457	13,814	23,491
FDI 2019	N/a	N/a	N/a	13,817	24,128
FDI economic 2019	22,494	35,203	25,533	13,806	24,189
FIDES	23,174	35,780	26,147	13,884	10,775
Eurostat	25,561	38,404	28,455	13,803	23,544

Note at the time of writing FDI 2017 data call is not the most up to date publicly available EU-27 rectangle level dataset following the release of the FDI 2019 data call (which covers EU landings 2015-18⁴⁹). The new data call is under internal review as we assess its viability to replace the FDI 2017 sourced data. Further crosschecking and quality assurance is required before a decision is made.

Although EU-27 landings are primarily included for context, using 2012-16 data should be seen as a limitation to the usefulness of the current method. Fisheries are highly changeable and the 2012-16 time period means we are lacking a view on how vessels may have reacted to important recent events such as the 2016 United Kingdom European Union membership referendum and more general changes in fisheries such as changes to TACs.

Producing comparable datasets

Before the next step, categories were standardised to ensure comparability between EU-27 and UK landings data. The regulated/unregulated gear categories used in the underlying data were aggregated to the gear group matching the UK data. Rectangles were used to assign ICES subdivisions. A species reporting look up was used to ensure consistency between datasets to standardise cases where UK and member states report the same species under different species codes. An example is the use of the species specific code HOM for Atlantic horse mackerel (*Trachurus trachurus*) and a grouped code JAX used for jack and horse mackerels nei (*Trachurus* spp.).

A2.3 Estimating EU-27 price per tonne

The STECF FDI data does not include the monetary values at first sale for the landings reported. As such this analysis used the JRC's Fleet Economic Performance dataset (2017 edition⁵⁰) to calculate average prices by year, member state, ICES division, gear category and species, which were converted to British Pound Sterling using the average annual exchange rate each year⁵¹ and applied directly to the landings using the most specific

⁴⁸ Live weight tonnage landings of Norway Pout by EU-27 vessels in major fishing area 27

⁴⁹ <https://stecf.jrc.ec.europa.eu/dd/fdi>

⁵⁰ <https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/2017-annual-economic-report-eu-fishing-fleet-stecf-17-12>

⁵¹ <https://www.ofx.com/en-gb/forex-news/historical-exchange-rates/yearly-average-rates/>

combination of matching criteria possible (i.e. if an estimated price per tonne matched that landings year, member state, ICES division, gear and species then it is applied otherwise criteria are eliminated stepwise until a matching price per tonne is found⁵²). These are nominal prices and are not adjusted for inflation.

A2.4 Obtaining Norwegian landings data

To our knowledge no publicly available dataset of landings by third countries (i.e. Norway, the Faeroe Isles or Iceland) are available at ICES rectangle level. Therefore we have not been able to reproduce this specific analysis for these nations. However, we have included the figures we do have available from the Electronic Recording and Reporting System (ERS) which covers Norwegian landings from UK waters between 2013 and 2016 (2012 data is unavailable) to provide a more complete picture of landings from UK waters where appropriate.

A2.5 Obtaining factors for ICES rectangle sea surface area by EEZ⁵³

The method for estimating landings by EEZ relies on knowing what fraction of the total sea water surface area of a rectangle each nation's EEZ occupies. To obtain this information spatial analysis was required. A spatial dataset containing the boundaries of all world EEZs was segmented by a spatial dataset containing the boundaries of the ICES rectangles. The spatial data were projected in ArcGIS (version 10.2.2) using an ETRS89 Lambert Azimuthal Equal-Area projection, centred on Western Europe. From this, the fraction of total sea surface area, excluding any land area, occupied by each national EEZ was calculated for each rectangle. In addition to giving the whole UK EEZ we have also disaggregated it, based on UK Hydrological Office (UKHO) data into the UK's devolved fisheries administration areas and Crown Dependencies (i.e. Isle of Man Guernsey and Jersey).

The rectangle spatial factors produced by this method are published alongside this report.

A2.6 Estimating landings by Exclusive Economic Zone

There are three primary steps when apportioning both UK and FDI (EU-27) landings data to Exclusive Economic Zones. Firstly, if a specific zone of capture is available in the underlying data then it is used to assign landings to a countries waters with confidence. This is the case for UK landings from third country (Norway, Faroes etc.) and international waters where vessels are required to report exactly which countries waters they fished in. However, for UK data in Union waters, historically vessels have had to report a zone of capture stating fishing in EU waters include UK meaning identifying how much is landed from each UK and member state national waters requires a method to apportion landings. The same is true for all EU-27 FDI data (including in third country waters and international waters) where no specific zone of capture information is available in the data.

If no specific zone of capture is available the second step is to assign landings where no specific zone information is available but non-specific zone information is in order to reduce the amount of assumptions required when apportioning. In these cases the reported rectangle spatial areas in each EEZ are modified to take into the zone information available.

⁵² To calculate an average price at least one tonne of fish had to be reported in a given combination. Records that were lacking data on tonnage and/or value were excluded when calculating the average prices. This issue was most prevalent in 2016, where the JRC noted in their commentary report that the data were in some cases "provisional, incomplete and/or subject to revision".

⁵³ See here for more information on ICES statistical rectangles:
<https://www.ices.dk/data/maps/Pages/ICES-statistical-rectangles.aspx>

For example an EU-27 FDI landing may be located in an ICES rectangle which sits partly in Norwegian waters and partly in Scottish waters – it may also state the landing was from non-EU waters; this non-specific zone information but is still useful. Rather than apportioning the landings based on the rectangle factors established in section A2.5 we can rule out the landings were from Scottish waters and assign 100% of these landings by this EU vessels to Norwegian waters (historically Scottish waters are counted as part of the Union waters).

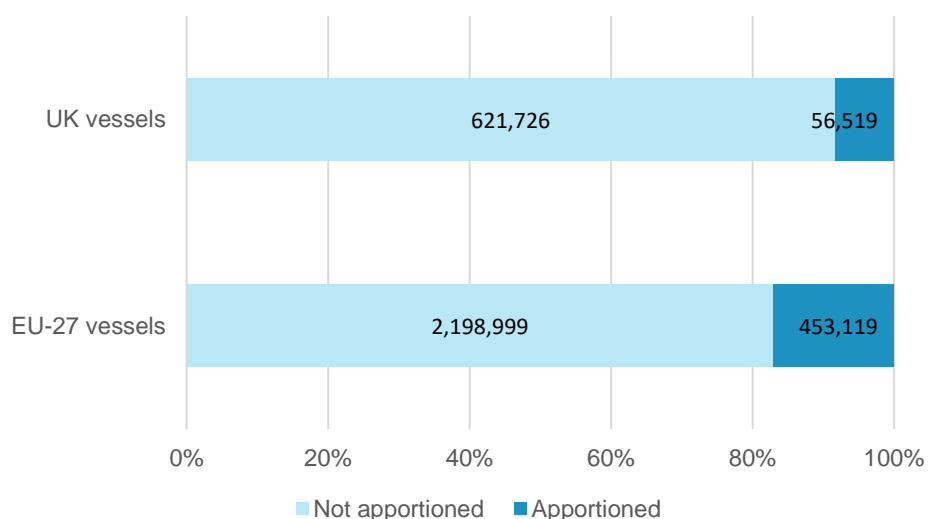
The third step is for cases where no specific zone of capture exists (e.g. Norwegian waters) and no non-specific zone information is available which could be used to modify/improve our apportioning (e.g. Non-EU). For these cases the landings are assigned purely based on the proportion of the sea surface area of the reported rectangle that falls within each countries waters. Estimates derived from this method are most impacted by our assumptions.

Rectangle apportioning example

Rectangle 37F5 in the southern North Sea is shared between the EEZs of Germany and the Netherlands. With 78% of the waters being Dutch and 22% of the waters being German. Following the apportioning method described above 200 tonnes (78%) of the 257 tonnes landed in total from the rectangle by UK vessels in 2017 were allocated to the Netherlands EEZ, with the remainder 57 tonnes (22%) being allocated to the German EEZ.

The charts below show the total tonnage and value that needed to be apportioned based on rectangle sea surface area for UK vessels and EU-27 vessels⁵⁴. The two salient points are (1) EU-27 landings require more apportioning than UK data due to the lack of specific zone of capture information (2) a higher proportion of value is apportioned compared to tonnage due to high value species such as scallops being more commonly fished on border rectangles than lower value pelagic species which are often caught out in open waters generally in rectangles that fall 100 per cent within one countries waters.

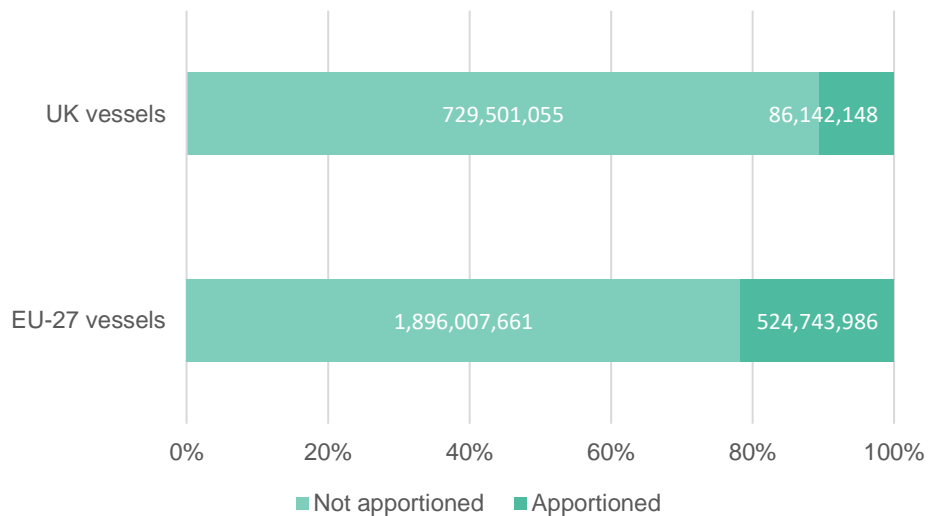
Figure 15 - Quantity and proportion of landings requiring spatial apportioning assumption, by tonnage (avg. 2012-16)⁵⁵



⁵⁴ A small amount of landings cannot be apportioned each year due to lack of rectangle information. This accounts of ~0.01% of landings and is excluded from this analysis

⁵⁵ Note these charts show the proportion apportioned at coastal state or bloc level, however, more apportioning is required for estimates at national waters level due to additional sea borders

Figure 16 - Quantity and proportion of landings requiring spatial apportioning assumption, by landed value (avg. 2012-16)



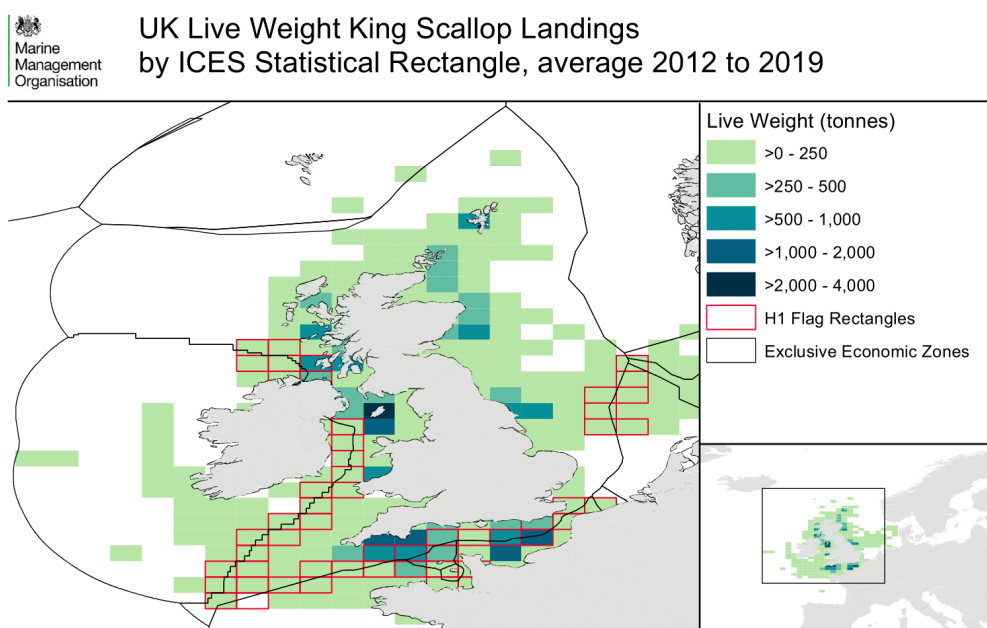
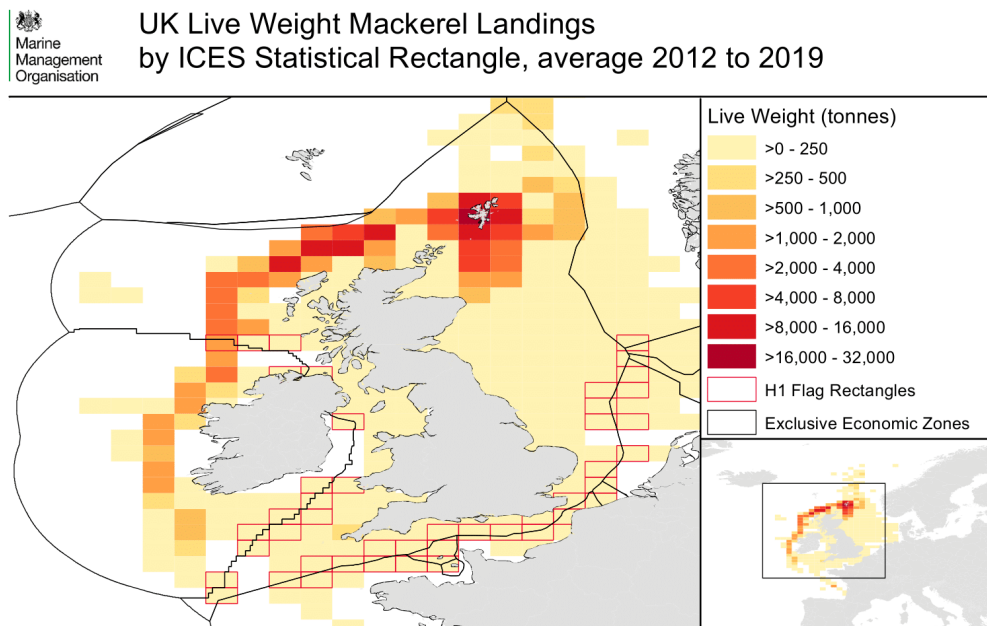
As seen in the charts above, the majority of landings assigned to EEZs do not have to be apportioned (either because the zone of capture is available or the landings are from a rectangle that fall 100% in one country's waters). In these cases we have confidence that the country allocated to is correct, however, landings that do need to be apportioned rely on the assumption that fish were caught evenly across the entire sea surface area of the rectangle in question. While necessary this assumption may not be valid in all circumstances. For example where the species concerned is relatively immobile and constrained by habitat to small areas; all catches will likely concentrate on that part of the rectangle that forms a suitable habitat for the species in question. This may thus lead to misattribution of landings for this species when apportioning between EEZs. A potential solution to this would be to introduce species level habitat mapping to improve confidence in apportioning for non-pelagic species where rectangles are split between two or more EEZs. As the coverage of such data is very limited (by species and spatially) at present this has not been possible.

Upper and lower bounds

Given the potential for error in the method, charts, tables and figures (where appropriate) in this report have been presented alongside upper and lower limits denoting the theoretical maximum and minimum value for the apportioned estimation in question. The lower limit is calculated by allocating landings to a given zone only where it occupies all of the sea water surface area of a given rectangle. This limit is almost certainly too low as it will discount all fish from rectangles less than 100 per cent inside a given EEZ even if the rectangle is almost entirely inside that EEZ. The upper limit assumes that all fish landed from rectangles even slightly inside an EEZ were caught in that EEZ. This limit is almost certainly too high as it will apportion landings from rectangles that are almost entirely outside the EEZ in question. These are extreme theoretical limits but their distance from each other and the apportioned estimate provides a sense of the precision of the spatial estimate. Where the range is relatively wide the apportioned value is relatively imprecise and where the range is relatively narrow the apportioned value is relatively precise.

The spatial patterns of landings can vary drastically depending on the species being targeted. The rectangle heat maps below present a prime example of this using UK landings of mackerel vs. king scallops. ICES rectangles that lie on the border of two or more EEZs are highlighted in red. Note mackerel landings largely occur outside these rectangles whereas the hotspots for scallop landings overlap with these border rectangles particularly in the Eastern Channel (meaning more apportioning is required for scallop estimates).

Figure 17 – UK vessel landings of mackerel and scallops in ICES statistical rectangles, by tonnage (avg. 2012-19)

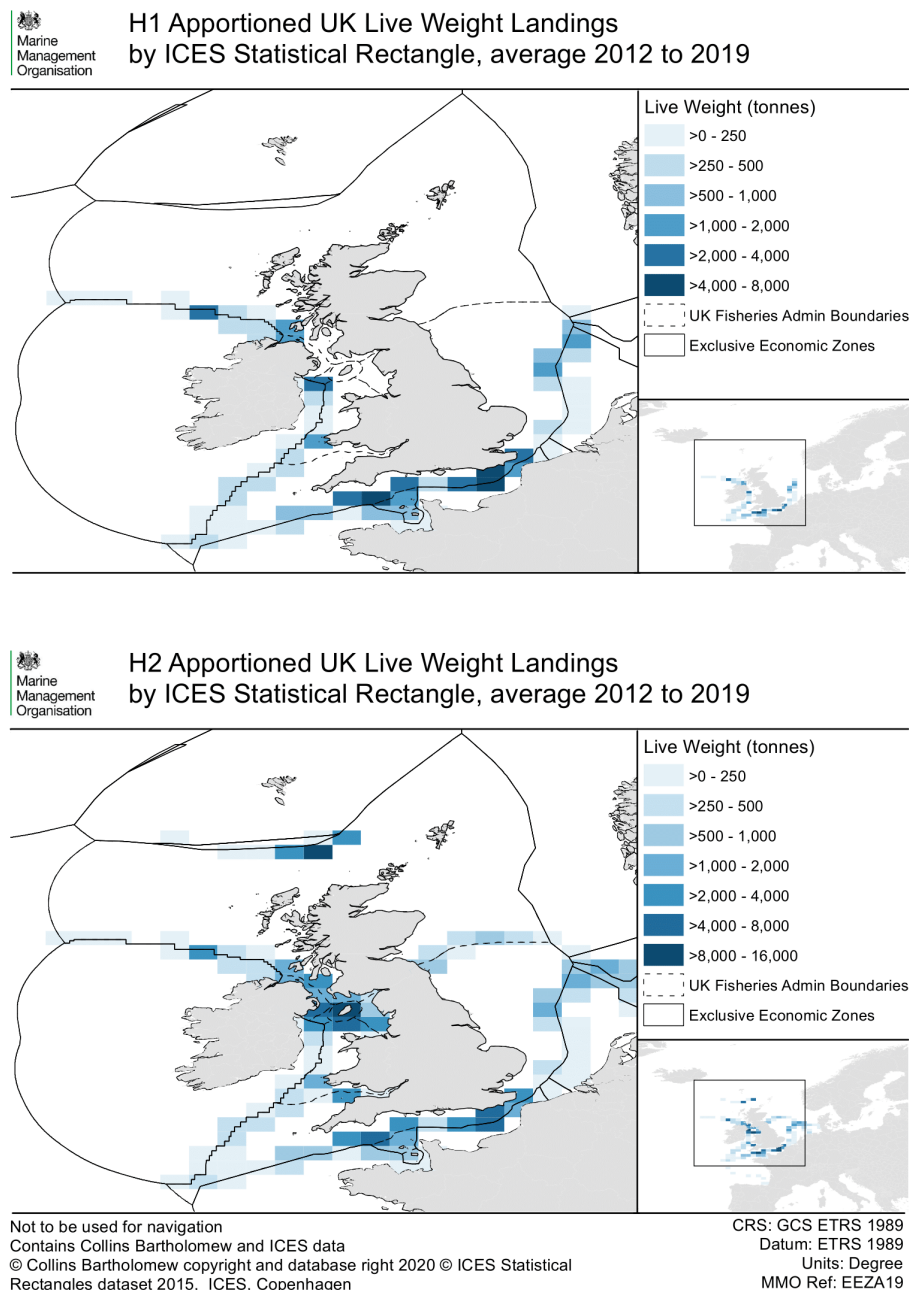


Not to be used for navigation
 Contains Collins Bartholomew and ICES data
 © Collins Bartholomew copyright and database right 2020 © ICES Statistical Rectangles dataset 2015, ICES, Copenhagen

CRS: GCS ETRS 1989
 Datum: ETRS 1989
 Units: Degree
 MMO Ref: EEZA19

Our estimates by EEZ are provided at two levels of detail; coastal state or bloc and national waters. The maps below provide a visual example of why the national water estimates require further apportioning assumptions over and above the higher level coastal state/bloc estimates. Note the line of blue rectangles in the central North Sea on the bottom map; these are landings that need to be apportioned between Scottish and English waters at national level but are 100 per cent within UK waters so require no apportioning at coastal state level.

Figure 18 – UK vessels apportioned rectangles at coastal state bloc and national waters hierarchy (avg. 2012-19)⁵⁶



⁵⁶ Out of the 617,000 tonne landed by UK vessels in North East Atlantic waters in 2019 a total of 8 per cent had to be apportioned at coastal states/bloc level and 15 per cent at national waters level. The equivalent in terms of value are 11 per cent and 18 per cent respectively

A2.7 Estimating quota stock landings from UK Exclusive Economic Zone⁵⁷

Determining quota stocks is an extension of the EEZ apportioning method (which is run at species level as the input data is by species rather than by stock). To allocate a landing to the appropriate quota stock a lookup that is designed to allocate logbook landings to quota stocks for UK official quota uptake reporting was compiled and edited to ensure it had coverage of quota stocks landed by UK or EU-27 member states in NE Atlantic waters. To be allocated to a quota stock a landing must match a combination of year, species, area and zone on the stock lookup. Failing to do so resulted in the landings being allocated to non-quota. For example landings of lemon sole in union waters area 27.4.b during 2019 would be allocated to the North Sea lemon sole quota stock (L/W/2AC4-C) whereas a landing in union waters of 27.7.d (Eastern Channel) would fail to find a match and be correctly allocated as a non-quota landing. Note zone code is required information for the stock lookup as certain quota stocks are split based on the nationality of waters (e.g. North Sea anglerfish vs. Norwegian waters North Sea anglerfish). The zone information is present in the UK underlying data but the EU FDI data requires the creation on a pseudo zone code through apportioning to an EEZ which again relies on the assumption of even spatial distribution of landings over the surface area of an ICES rectangle.

Note flexibility to land and report landings between stocks causes issue in assigning mackerel stocks robustly due to a large temporal flex allowance between the North Sea and West Coast stocks. As such all mackerel estimates are presented at species level. Stock flexibility issues are not restricted to mackerel. For example flexibility exists between West Coast and Bay of Biscay hake which causes a stock level mismatch in our quota stock estimates compared to EU-27 reported quota landings on FIDES despite the raw data matching closely at species level.

⁵⁷ Although Norwegian and Faroese vessels also land quota stocks in UK waters the lack of directly comparable data means the focus of quota estimates in this report is on just UK and EU-27 landings of North East Atlantic stocks.

Appendix 3: Landings of quota stocks from UK EEZ

This section provides apportioned estimates on the five most valuable quota stocks landed from the UK's EEZ in each major sea area, along with two important widely distributed pelagic stocks. The table displays our spatial estimate of the tonnage landed from the UK EEZ alongside the extreme upper and lower bounds and the total estimated stock landings.

The figures covered include landings made by UK and EU-27 vessels only. Landings of these stocks made by Norwegian and Faroese vessels are not included. All figures are using a 2012-16 average. The accompanying stock-level dataset to this report provides a full list of historical stock estimates in UK waters.

Table 10 - Quota landings by UK and EU-27 vessels from UK waters

North Sea Stocks

Species	Quota stock	Live weight tonnage				
		UK + EU 27 from UK waters			UK + EU 27 all areas	% from UK EEZ
		Lower	Estimate	Upper		
Haddock	HAD/2AC4.	24,025	24,131	24,196	30,692	79%
Atlantic herring	HER/4AB.	260,000	280,432	289,422	305,494	92%
Norway lobster	NEP/2AC4-C	9,049	9,701	9,982	12,055	80%
Saithe(=Pollock)	POK/2C3A4	19,345	20,939	21,544	35,842	58%
Common sole	SOL/24-C.	1,939	3,766	8,148	11,921	32%

West Coast Stocks

Species	Quota stock	Live weight tonnage				
		UK + EU 27 from UK waters			UK + EU 27 all areas	% from UK EEZ
		Lower	Estimate	Upper		
Anglerfishes nei	ANF/56-14	3,573	3,819	4,035	4,952	77%
European hake	HKE/571214	9,132	11,851	14,878	47,904	25%
Jack and horse mackerels	JAX/2A-14	19,934	28,081	35,307	109,910	26%
Norway lobster	NEP/5BC6.	13,152	13,313	13,328	13,333	100%
Saithe(=Pollock)	POK/56-14	6,770	6,810	6,862	7,059	96%

Area 7 Stocks (includes the Irish Sea, Celtic Sea and English Channel)

Species	Quota stock	Live weight tonnage				
		UK + EU 27 from UK waters			UK + EU 27 all areas	% from UK EEZ
		Lower	Estimate	Upper		
Anglerfishes nei	ANF/07.	3,132	8,310	12,451	28,557	29%
Megrims nei	LEZ/07.	1,166	3,563	5,393	13,439	27%
Norway lobster	NEP/07.	5,094	9,680	13,830	17,171	56%
Common sole	SOL/07D.	289	1,564	2,591	3,999	39%
Whiting	WHG/7X7A-C	2,498	8,268	11,529	17,036	49%

Widely Distributed Stocks

Species	Quota stock	Live weight tonnage				
		UK + EU 27 from UK waters			UK + EU 27 all areas	% from UK EEZ
		Lower	Estimate	Upper		
Blue whiting(=Poutassou)	WHB/1X14	54,491	56,030	58,478	133,579	42%
Atlantic mackerel	All stocks	305,782	317,549	324,061	440,730	72%

The table below shows the top 25 non-quota species by tonnage landed from UK waters by UK and EU-27 vessels including the upper and lower bound and the proportion of total landings that are estimated to be from UK waters. King scallops, crabs, whelks and queen scallops (all shellfish species) make up the top four and in tonnage terms are far ahead of the rest. Pilchards (also known as sardines) have a very small proportion of landings captured in UK waters as landings are primarily made up of French landings from the Bay of Biscay (27.8.a and 27.8.b)

Table 11 - Non-quota landings by UK and EU-27 vessels from UK waters

	Species	Live weight tonnage				% from UK EEZ
		UK + EU 27 from UK waters			UK + EU 27 all areas	
		Lower	Estimate	Upper		
1	Great Atlantic scallop	23,090	31,976	43,887	60,248	53%
2	Edible crab	25,202	29,772	33,273	44,078	68%
3	Whelk	16,205	21,943	29,103	33,297	66%
4	Queen scallop	13,010	15,723	16,411	16,641	94%
5	European pilchard	4,836	7,671	8,673	48,142	16%
6	Common edible cockle	6,752	7,594	7,867	11,193	68%
7	Cuttlefish, bobtail squids	2,306	6,332	8,540	13,911	46%
8	Other species	559	4,846	10,745	66,367	7%
9	European lobster	2,943	3,232	3,441	3,943	82%
10	Common squids nei	2,174	3,060	3,820	9,854	31%
11	Lemon sole	1,799	2,539	2,865	3,903	65%
12	Pouting(=Bib)	509	2,399	3,160	4,725	51%
13	Gurnards, searobins nei	655	1,997	2,471	3,456	58%
14	Velvet swimcrab	1,823	1,928	1,977	2,163	89%
15	Small-spotted catshark	951	1,888	2,546	3,566	53%
16	European seabass	618	1,576	2,035	5,351	29%
17	European sprat	1,506	1,529	1,581	14,085	11%
18	Spinous spider crab	435	1,474	3,374	5,738	26%
19	Tub gurnard	267	1,409	2,487	3,487	40%
20	Catsharks, etc. nei	315	1,141	1,692	2,669	43%
21	European anchovy	279	1,111	1,261	2,695	41%
22	Red gurnard	319	958	1,289	1,716	56%
23	Porgies, seabreams nei	121	942	1,383	2,955	32%
24	Smooth-hounds nei	350	935	1,346	2,627	36%
25	Common shrimp	742	849	1,379	33,459	3%

Appendix 4: Supplementary tables

The table below shows landings by UK vessels in every year covered in the report for all areas. These live weight tonnage figures are broken down by coastal state or bloc waters and then specific national waters. Figures are present in thousands ('000s) of tonnes.

Table 12 – UK vessel landings by EEZ of capture, by tonnage

Region of capture	EEZ of capture	Live weight tonnage ('000t) by year								Average	
		2012	2013	2014	2015	2016	2017	2018	2019	12 16	12 19
UK waters		482	513	602	556	574	582	560	502	546	547
	England	102	111	108	104	102	98	94	101	105	103
	Scotland	331	358	457	415	437	453	436	374	400	408
	Wales	18	16	13	14	14	12	10	9	15	13
	Northern Ireland	12	9	8	8	8	9	10	9	9	9
	Isle of Man	15	15	10	11	10	7	6	6	12	10
	Guernsey	4	3	2	2	3	2	2	2	3	3
	Jersey	-	-	-	-	-	-	-	-	-	-
	UK Faroe	-	-	2	1	-	1	1	-	1	1
EU-27 waters		94	73	116	108	80	94	103	91	94	95
	Belgium	-	-	-	-	-	-	-	-	-	-
	Denmark	6	7	7	6	7	6	3	5	7	6
	France	14	13	15	16	11	10	12	11	14	13
	Germany	4	4	4	4	4	4	5	4	4	4
	Ireland	65	45	86	79	53	70	80	69	65	68
	Netherlands	5	4	5	4	4	4	3	2	5	4
	Spain	-	-	-	-	-	-	-	-	-	-
	Spain France	-	-	-	-	-	-	-	-	-	-
3rd country waters		38	35	34	37	41	42	27	24	37	35
	Faroe Islands	-	-	1	1	2	1	1	1	1	1
	Greenland	1	1	-	-	-	2	1	-	1	1
	Iceland	-	-	-	-	-	-	-	-	-	-
	Norway	32	27	24	29	30	29	21	17	28	26
	Svalbard	5	7	9	7	9	10	5	5	8	7
	Russia	-	-	-	-	-	-	-	-	-	-
International waters		1	-	1	2	2	3	4	2	1	2
	Apportioning error	-	-	-	-	-	-	-	-	-	-
	Unapportioned	-	-	-	-	-	-	-	-	-	-
Total in Area 27		615	622	753	704	697	721	694	618	678	678
	Total outside Area 27	13	4	5	5	4	6	6	4	6	6
Total UK vessels landings in any area		628	627	758	709	701	727	700	622	684	684

The figures presented in the table below replicate those found in Table 12 but for nominal landed value. Figures are show in £ millions.

Table 13 – UK vessel landings by EEZ of capture, by landed value

Region of capture	EEZ of capture	Landed value (£mn) by year								Average	
		2012	2013	2014	2015	2016	2017	2018	2019	12 16	12 19
UK waters		613	612	695	614	779	819	844	851	663	728
	England	158	159	169	161	184	203	203	221	166	182
	Scotland	398	404	479	405	537	563	588	581	445	495
	Wales	21	17	16	16	21	20	20	16	18	18
	Northern Ireland	16	13	14	14	14	15	14	15	14	14
	Isle of Man	13	12	11	12	16	12	12	10	13	12
	Guernsey	6	6	4	5	6	6	6	6	5	6
	Jersey	..	..	..	..	..	..	..	..	..	..
	UK Faroe	..	..	2	..	..	..	..	..	..	..
EU-27 waters		120	84	120	109	97	88	91	81	106	99
	Belgium	-	-	..	..	..	..	..	..	..	..
	Denmark	9	9	10	9	12	8	7	5	10	9
	France	17	14	17	18	17	19	20	20	17	18
	Germany	7	5	6	6	8	8	9	8	6	7
	Ireland	78	49	81	69	52	46	49	43	66	58
	Netherlands	10	6	7	7	7	7	7	5	7	7
	Spain	-	-	-	-	-	-	-	-	-	-
	Spain France	-	-	-	-	-	-	-	-	-	-
3rd country waters		41	39	44	48	58	65	44	44	46	48
	Faroe Islands	-	-	2	2	4	2	2	1	3	2
	Greenland	2	1	-	-	..	3	1	..	1	1
	Iceland	-	-	-	-	-	-	-	-	-	-
	Norway	33	30	30	37	39	43	32	31	34	34
	Svalbard	6	8	12	10	15	17	9	12	10	11
	Russia	..	-	-	-	-	-	-	-	..	..
International waters		..	..	..	1	1	3	9	3	..	2
Apportioning error		-	-	-	-	-	-	-	-	-	-
Unapportioned		..	..	-	-	-	..	-	..	..	..
Total in Area 27		775	736	859	773	936	976	989	979	816	878
Total outside Area 27		13	5	5	4	11	12	14	8	8	9
Total UK vessels landings in any area		788	741	864	776	947	988	1,003	987	823	887

Table 14 - Landings broken down by vessel nationality within UK waters, by tonnage (avg. 2012-16)

Vessel nationality		Live weight tonnage ('000)			
		From UK waters			% from UK EEZ
		Lower	Estimate	Upper	
UK fleet		507	546	563	80%
1	Scotland	348	354	358	84%
2	England	112	139	149	71%
3	N. Ireland	35	38	42	82%
4	Wales	6	7	7	92%
5	Isle of Man	5	5	5	100%
6	Jersey	1	1	1	98%
7	Guernsey	..	..	..	78%
8	Unknown	..	..	..	82%
EU-27 fleet		548	706	867	30%
1	Denmark	205	235	264	37%
2	Netherlands	126	157	190	52%
3	France	61	111	168	29%
4	Ireland	62	86	108	34%
5	Germany	61	73	83	34%
6	Sweden	20	23	25	13%
7	Belgium	5	11	16	45%
8	Spain	3	5	8	2%
9	Lithuania	4	4	4	9%

Table 15 - Landings broken down by vessel nationality within UK waters, by landed value (avg. 2012-16)

Vessel nationality		Landed value (£mn)			
		From UK waters			% from UK EEZ
		Lower	Estimate	Upper	
UK fleet		600	663	687	81%
1	Scotland	407	416	421	87%
2	England	143	188	202	71%
3	N. Ireland	35	40	45	81%
4	Wales	8	10	10	85%
5	Isle of Man	6	6	6	100%
6	Jersey	..	1	1	96%
7	Guernsey	..	..	1	77%
8	Unknown	..	..	..	78%
EU-27 fleet		307	493	711	22%
1	France	71	156	259	22%
2	Denmark	79	91	100	30%
3	Netherlands	56	86	137	32%
4	Ireland	42	74	106	33%
5	Germany	28	34	40	20%
6	Belgium	16	31	42	47%
7	Spain	6	10	15	3%
8	Sweden	8	9	10	9%
9	Lithuania	2	2	2	8%

The table below provides further historical context on the scale of landing by UK and EU-27 vessels we have seen previously within the North East Atlantic EEZs.

Table 16 - UK and EU-27 vessel landings by coastal state or bloc waters, by tonnage (avg. 2012-16)⁵⁸

	Live weight tonnage (avg. 2012-2016)		
	UK vessels	EU 27 vessels	Total (excluding 3rd country vessels)
UK waters			
Lower	507,000	548,000	
Estimate	546,000	706,000	1,251,000
Upper	563,000	867,000	
EU-27 waters			
Lower	77,000	1,546,000	
Estimate	94,000	1,791,000	1,886,000
Upper	133,000	1,945,000	
3rd country waters			
Lower	37,000	77,000	
Estimate	37,000	128,000	165,000
Upper	37,000	274,000	
Int. waters			
Lower	1,000	20,000	
Estimate	1,000	26,000	27,000
Upper	1,000	30,000	
NE Atlantic total	678,000	2,651,000	3,330,000

Note: In the same period, UK vessels landed on average 6,174 tonnes of fish a year outside major fishing area 27 with a further 77t unable to be apportioned. EU 27 vessels landed on average 856 tonnes a year which could not be spatially assigned and an estimated 73t in this Swedish/Norwegian joint area. Landings have been rounded to the nearest '000t

⁵⁸ Comparable figures for third country vessels (Norwegian and Faroese) are not available so these are not included in the table. Norwegian vessels land an average of 231,000 tonnes of fish valued at £145 million per annum from UK waters (2013-16 average as 2012 data is not available)