Overview of the International Fishing Activities on Protected Areas in the Dutch part of the North Sea

Fishing activities of the Dutch, Danish, German, Belgian, Swedish and French fleet for the period 2014-2021

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Dit rapport geeft een overzicht van de sociaal-economische data van de gebieden waarvoor het ministerie van Landbouw, Natuur en Voedselkwaliteit een Joint Recommendation moet leveren onder Artikel 11 van Verordening (EU) nr. 1380/2013. Dit wordt niet alleen voor de Nederlandse vloot gedaan, maar ook voor de Belgische, Franse, Duitse, Zweedse en Deense.

This report provides an overview of socio-economic data of areas for which the Ministry of Agriculture, Nature and Food Quality has to provide a Joint Recommendation for fisheries management under Article 11 of Regulation (EU) No. 1380/2013. This not only for the Dutch fleet, but also for the Belgian, French, German, Swedish and Danish fleet.

Key words: North Sea, Fishing, Protected Areas, Natura 2000, Marine Strategy Framework Directive

Cover photo: Katell Hamon

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Preface

In 2020 the future agenda for the spatial management of the North Sea was laid down in the North Sea Agreement. In this agreement a number of area closures for the Dutch part of the North Sea have been proposed both within the international frameworks of Natura 2000 and the Marine Strategy Framework Directive.

For these areas the Ministry of Agriculture, Nature and Food Quality has to provide a Joint Recommendation for fisheries management under Article 11 of Regulation (EU) No 1380/2013 (the Basic Regulation) on behalf of the Netherlands and other Member States that have a direct management interest regarding fisheries management measures. The aim of the proposals is the recovery of substantial parts of the seabed ecosystem from a disrupted state towards a natural condition.

The Joint Recommendation contains the requests to the European Commission to regulate fisheries in the Natura 2000 areas Dogger Bank, Cleaver Bank and North Sea Coastal Zone, and the MSFD areas Central Oyster Grounds, Frisian Front and Borkum Reef Grounds. For each area, background documents are provided to substantiate these requests. Wageningen Economic Research and Wageningen Marine Research were asked to provide the ecological and socio-economic data for the background documents.

This report provides an overview of the socio-economic data of the proposed fisheries closures. We thank the research institutes from Sweden, Denmark, Germany, Belgium and France for their quick and accurate response to our data call.

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Summary

S.1   Main findings

For the Natura 2000 areas Dogger Bank, Cleaver Bank and North Sea Coastal Zone, and the Marine Strategy Framework Directive (MSFD) areas Central Oyster Grounds, Frisian Front, Brown Ridge and Borkum Reef Grounds historic economic data are provided in Table S.1 as an indication of the value of these proposed closures for the EU fisheries (UK not included) and the potential economic consequences of these closures. At the request of the Ministry of Nature, Agriculture and Food Quality data for both N2000 and VIBEG2 were given for the North Sea Coastal Zone. The data of the N2000 area of the North Sea Coastal Zone provides insight into the importance of this area for the fisheries. A closure of this area is not proposed in the North Sea Agreement.

Table S.1   *Summary of the main economic results. Main gears and countries are chosen as the gears and countries contributing to at least 15% of the total GVA over the period. Main species as the species contributing to at least 15% of the landings weight*

Area	Average GVA (1,000 euros/year)	Main gears	Main species	Main countries	Main trends (if any)
Borkum Reef Grounds	159	beam trawl, Scottish seine	shrimp, gurnard, sprat	DEU and NLD	Increasing for shrimp trawl and pots (2020-2021)
Brown Ridge	1,860	beam trawl	plaice, sole	NLD	Stable effort after initial increase (until 2017), decreasing landings and value
Central Oyster Grounds	1,881	bottom otter trawl and midwater otter trawl	sprat	DNK	No trend
Cleaver Bank	724	Scottish seine and beam trawl	mackerel, sprat, plaice,	NLD	Decreasing beam trawl, Scottish seine stable
Dogger Bank N2000	596	midwater otter trawl, bottom otter trawl and beam trawl	sprat, sandeel	DNK and NLD	Decreasing (NLD)/beam trawl (after 2015) and fluctuating (DNK)/bottom otter trawl-midwater otter trawl
Dogger Bank South	200	midwater otter trawl and bottom otter trawl	sprat	DNK and NLD	Volatile (DNK)/bottom otter trawl-midwater otter trawl
Frisian Front subarea 1	1,858	beam trawl, midwater otter trawl bottom otter trawl	sprat	NLD, DNK and DEU	No clear trend
Frisian Front subarea 2	192	midwater otter trawl and bottom otter trawl	sprat	DNK and NLD	Irregular (DNK) and No clear trend (NLD)
North Sea Coastal Zone (N2000)	12,834	beam trawl	shrimp, razor clam	NLD	Volatile – last years lower than average
North Sea Coastal Zone (VIBEG2)	296	beam trawl	shrimp, sprat	NLD	Volatile - decreasing

S.2   Methodology

In 2020, the future agenda for the spatial management of the North Sea was laid down in the North Sea Agreement. In this agreement a number of area closures have been included both within the international framework of the Natura 2000 network and the Marine Strategy Framework Directive (MSFD): Dogger Bank, Cleaver Bank, Central Oyster Grounds, Borkum Reef Grounds, Brown Ridge, Frisian Front subarea 1, Frisian Front subarea 2, and parts of the North Sea Coastal Zone. The objective of this study is to provide an overview of the historic economic value for EU fisheries of the areas to be closed. This not only for the Dutch fleet, but also for the Belgian, French, German, Swedish and Danish fleet. This information is needed for the application of the closed areas to the European Commission.

To provide the required information the following steps were taken:
1. Discussing the format for the required analysis with the Ministry of Agriculture, Nature and Food Quality. Our analysis results are directly used by the Ministry to write their joint recommendation of the management of the marine protected areas to the European Commission.
2. Data call to get the required information on fishing activities from Belgium, France, Germany, Sweden and Denmark.
3. Analysing the data and estimate the economic importance of the areas.

Several data sources are used in this study: Vessel Monitoring System (VMS) data, catch data from logbooks (Fish Registration and Information System), Fleet technical data from national fishing vessel registries, and Data on landings value and economic performance of all fleets that were obtained from the database of the Annual Economic Report of the EU fishing fleets.

An overview of fisheries effort data for the same time period is provided by Wageningen Marine Research (Jongbloed et al., 2023).

1 Introduction

In 2020, the future agenda for the spatial management of the Dutch part of the North Sea was laid down in the North Sea Agreement.[1] In this agreement a number of area closures have been included both within the international framework of the Natura 2000 network, the Bird Directive and the Marine Strategy Framework Directive (MSFD): Borkum Reef Grounds, Brown Ridge, Dogger Bank, Cleaver Bank, Central Oyster Grounds, Frisian Front, and the North Sea Coastal Zone (see Table 1.1 and Figure 1.1). In this study, the Frisian Front is subdivided in two subareas in which different fishing measures could be applied: Frisian Front subarea 1 and Frisian Front subarea 2. For the North Sea Coastal Zone, a distinction is made between the N2000 area and the partly overlapping VIBEG management zones. Finally, the Dogger Bank is subdivided between its Natura 2000 part and a strip attached at the south of the Natura 2000 area.

To inform the European Commission about the possible consequences of these management measures and to implement these closures, an assessment of both ecological and socio-economic consequences of these closures is needed. To achieve this the Dutch Ministry of Agriculture, Nature and Food Quality, has requested Wageningen University & Research to deliver an update on data and analysis on the economic value of the fishing activities of the Dutch, Danish, German, Belgian, Swedish and French fishing fleets on the proposed areas for closure of the for the years 2014 to 2021. The objective of this study is therefore to provide an overview of socio-economic value for fisheries for the areas to be closed. An overview of fisheries effort data for the same time period is provided by Wageningen Marine Research (Jongbloed et al., 2023).

Definition of spatial scope of the study and differences with previous studies
An overview of the areas is mapped in Figure 1.1 with the adjacent ICES rectangles. The areas and their corresponding surface area are shown in Table 1.1. This report is a follow-up on the previous analysis of fishing activity performed by Wageningen Economic Research (e.g. Jongbloed et al. 2019, Roskam et al. 2021). Differences with previous call include
- New definition of the Borkum Reef Grounds coordinates compared to Roskam et al. (2021)
- New definition of the Brown Ridge coordinates Compared to the scenarios in Jongbloed et al. (2019)
- Split of the Dogger Bank in two areas: the Natura 2000 site and a Southern strip under MSFD, while those were one area in Roskam et al. (2021)
- Explicit inclusion of the VIBEG management zones of the North Sea Coastal Zone, which were only estimated as shares of larger areas in Roskam et al. (2021).

Collaboration and data provision
This report with the historic fishing activities in the areas, is a first step in order to assess the effects of the closures on the fishing sector. This is important for the estimation of the costs of closures as historic data provide the basis for any analysis of effects of closures and the effect of closures depend on the extent of fishing activities, the type of fisheries in the area and the dependency of these fisheries on the area. Research institutes of Denmark (DTUAQUA), Germany (TI), Belgium (ILVO), Sweden (SLU) and France (IFREMER) agreed to provide aggregated data on the fishing activities of their countries in the proposed areas for closure, to obtain an overview of the international activities on these fishing grounds. Fishing activities in the areas were quantified in terms of effort, landings volume, landings value and contribution to the Gross Value Added (GVA). The GVA is especially important as this metric indicates the economic value of the fishing activities to society: the returns on the invested capital (fishing vessel) and labour by the crew.

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[1] https://www.rijksoverheid.nl/documenten/rapporten/2020/06/19/bijlage-ofl-rapport-het-akkoord-voor-de-noordzee

Table 1.1   *Overview of the proposed areas for closure and the corresponding surface in km²*

Name of the area	Surface in km2	Type of closure
Borkum Reef Grounds	684	MSFD
Brown Ridge	1367	N2000 bird directive
Dogger Bank	1,351	N2000
Dogger Bank South	528	MSFD
Cleaver Bank	1,241	N2000
Central Oyster Grounds	2,063	MSFD
Frisian Front subarea 1	1,650	MSFD
Frisian Front subarea 2	366	MSFD
North Sea Coastal Zone a)	1,445	N2000
North Sea Coastal Zone	158	VIBEG2

a) Note that the North Sea Coastal Zone is the entire N2000 area and not the VIBEG2 area.
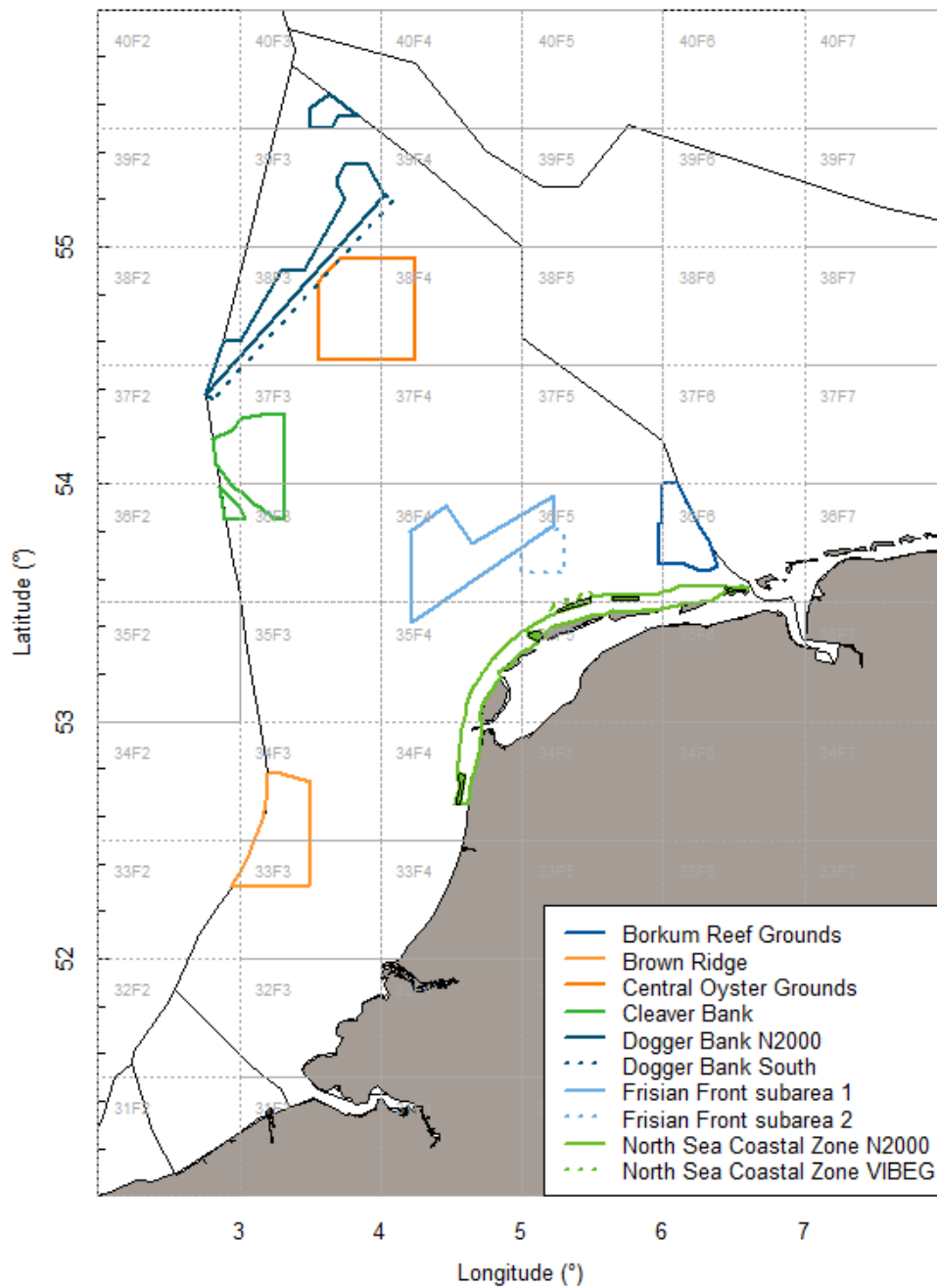
Figure 1.1   *Map of the proposed areas for closure with the ICES rectangles*

2   Methodology

2.1   Standardised processing fishing activity data

2.1.1   Data sources

Several data sources are used in this study: Vessel Monitoring System (VMS) data, catch data from logbooks (Fish Registration and Information System), technical fleet data from national Fishing Vessels registries, and Data on landings value and economic performance of all fleets that were obtained from the database of the Annual Economic Report of the EU fishing fleets (STECF, 2022).

2.1.2   Data preparation

Compared to previous calls, the pre-processing steps have been modified. Given that most countries now have their own combined datasets of logbook and VMS data, it is believed that the national labs each have the best knowledge to perform the following steps as described in Hintzen et al. (2013) and used in Hamon et al. (2013), Oostenbrugge et al. (2013), Oostenbrugge and Hamon et al. (2014), Oostenbrugge et al. (2015), Jongbloed et al. (2019), Hamon et al. (2020) and Roskam et al. (2021):
- Cleaning of the logbook and VMS data (see Appendix A.1 for the description of the data pre-processing)
- Linking VMS and logbook data
- Defining the speed at which fishing activity occurs depending on gears
- Assigning effort and landings to VMS pings.

A script with a common methodology to perform these steps used to be proposed to all countries in international data calls but this led to differences between data produced this way and data available nationally. To improve the quality of the data, it was decided to give the option to all countries to use their own combined VMS-logbook datasets for which 'fishing' pings can be defined using the most appropriate method.

2.1.3   Calculation of fishing activities

Define pings in the areas of interest for VMS vessels
The coordinates of each VMS ping are compared to the location of the area of interest. When a VMS ping is located inside any of the areas, it is selected and assigned to the area of interest. The effort, landings and value assigned to the ping are then assigned to the area of interest.

Estimate activity in the areas of interest for logbook data that are not linked to VMS vessels
Sometimes, activity in the logbook cannot be linked to VMS data. This can be because the vessels are not required to be equipped with VMS (for vessels smaller than 12m) or because of missing VMS data. The logbook records not linked to VMS data are also aggregated by year, ICES rectangle, gear type and vessel length category. The activity available in those logbooks record are assigned to area of interest proportionally to the surface overlap between the ICES rectangle and area of interest. For example, if there are 10 fishing days in ICES rectangle X non-linked to VMS data and 20% of the sea surface of the rectangle X is in the Dogger Bank, we assign 2 fishing days (and the landings and value of landings proportionally) to the Dogger Bank.

2.1.4   Data

After data processing, the following variables and values were used for further analyses:
- Year: 2014-2021
- Months: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12

- Countries: Netherlands (NLD), Germany (GER), France (FRA), Denmark (DNK), Belgium (BEL), Sweden (SWE). No UK data were used since they are not part of the EU anymore and therefore have no part in drafting Joint Recommendations according to the article 11 procedure of the Common Fisheries Policy
- Gear type: all gear types were selected in this study as it is still unclear which ones would be restricted in the different areas
- Geographical units:
  - Protected areas (Dogger Bank N2000, Dogger Bank South, Cleaver Bank, Central Oyster Grounds, Frisian Front subarea 1, Frisian Front subarea 2, North Sea Coastal Zone N2000, North Sea Coastal Zone VIBEG, Borkum Reef Grounds, Brown Ridge)
- Fisheries intensity (fishing days). One fishing day is 24 h of fishing
- Landings in kg
- Value of landings in euro (nominal value, not corrected for inflation).

2.1.5 Uncertainty in the analyses

In the analyses a number of assumptions have to be made related to fishing activity and linking catches to VMS pings. Each country participating to this study uses the assumptions that best fit their data based on their local expertise and international consultation. Although these assumptions have been tested thoroughly, consultations with fishers to verify our assumptions and international consultations on these methods have taken place, the final result remains an estimation and changes in assumptions will likely affect the numeric values presented in the results (Oostenbrugge et al. 2010). It is anticipated however that these differences do not alter the conclusions.

In addition, for the logbook data that could not be linked to VMS data, the spatial resolution is much lower. As in previous studies, the choice was made to include those in the analysis but as shown in the coverage of VMS data per country (Table 2.1), the logbook data that are not linked to VMS data represent only a minor part of the effort and landings in the Dutch EEZ.

Table 2.1 *Coverage of logbook data by VMS data in percentage for landings, effort and value of landings for all countries. Note, France only provided data from VMS and a coverage of 100% is assumed*

	Country	2014	2015	2016	2017	2018	2019	2020	2021
Landings	BEL	97	89	96	97	87	82	85	86
	DEU	98	98	99	99	100	100	100	100
	DNK	98	99	100	100	98	100	100	98
	NLD	96	94	95	90	99	99	99	99
	SWE	100	96	93	100	100	76	68	100
Effort	BEL	100	100	100	100	100	100	100	100
	DEU	100	100	100	100	100	100	100	100
	DNK	96	98	99	99	96	99	100	97
	NLD	100	100	100	100	100	100	100	100
	SWE	100	100	100	100	100	100	100	100
Value	BEL	97	92	95	97	87	85	85	89
	DEU	97	97	99	99	100	100	100	99
	DNK	99	99	100	99	98	100	100	97
	NLD	96	93	95	88	99	99	100	99
	SWE	100	96	96	100	100	69	69	100

2.2 Defining the socio-economic importance

2.2.1 Economic value

For each country, the data (effort, total landings, landings for the main species, value of landings and number of individual vessels active) at i) ping level for VMS vessels and ii) proportionally to the surface of

the ICES rectangle in the area of interest is hereafter aggregated by year, subarea, gear type and vessel length category.

Vessel length and gear used were used to link the data to STECF economic data and estimate the gross value added (GVA). The value of landings data was combined with economic information from the database of the Annual Economic Report of 2022 (STECF, 2022). In this database, revenue and costs are available per fleet. The gear used is approximated by the main 'Fishing_technique' used by the vessels per fleet segment. The details of the calculations are the same as in Roskam et al. (2021) and available in Appendix A.2.

2.2.2   Individual dependency of vessels on the areas

The same method was used in this report as in Roskam et al. (2021). For the reader's convenience, this method is also described in Appendix A.3. The method is applied to the different areas independently, as each area is currently assessed independently. In case a vessel fishes in several of the areas proposed for closure, the cumulative stress level due to the closure of all the areas would be higher than when looked at per area.

Three types of figures are made with the data:
- The number of Dutch vessels active in the area of interest per year and individual revenue dependency percentage category (>0-10%, >10-20%, >20-30%, >30-40%, >40-50%, >50-60%, >60-70%, >70-80%, >80-90% and >90-100%). This figure gives a good overview of the temporal development of the number of vessels dependent on the area of interest.
- The average number of vessels per region and revenue dependency level. This figure allows us to identify the region that are potentially affected by closure of the area of interest. The data in this figure is averaged over the whole time series and temporal development is therefore not analysed.
- The total average revenues per gear type with different dependencies on the area of interest. Some gears are more active than others and also may be more locally dependent on an area.

3 Results

In this chapter the outcomes of the analyses are described for each of the proposed areas separately. The description of the results per area starts with an explanation of the effort, landings, values and the contribution to the gross value added of the fishing activities of the different fleets followed by a description of the species caught by the different gears and ends with an individual dependency analysis for the Dutch fleet. The coverage of the VMS data is very high for all countries (see Table 2.1), the parts of landings and effort that were not covered by VMS data but for which we had ICES rectangle information from logbooks were allocated to the areas of interest using the proportion of the ICES rectangles overlapping with the areas. All gears are presented in the results hereafter.

Additional information on the characteristics of the fisheries in the areas are given in the appendices: For the Brown Ridge, where the potential management measures would mainly affect gillnets, the results are also shown specifically for the gillnet fishery in Appendix B. To allow comparison with the previous call the results for the total Dogger Bank are available in Appendix C. A table with historical trends in fishing activities per gear is available in Appendix D.

3.1 Borkum Reef Grounds

The spatial dimensions of the closed area of the Borkum Reef Grounds have been modified compared to the previous version (Roskam et al. 2021), the southern limit was moved further North while the area was broadened on the western side (see Figure 1.1 for the current area and Roskam et al. (2021) for the previous area definition). As a result of those spatial modifications, the results presented here cannot be compared to those of Roskam et al. (2021).

3.1.1 Economic value of the Borkum Reef Grounds

Over the 2024-2021 period, the Borkum Reef Grounds are mainly fished by the Dutch fleet and to a lesser extent the German fleet (Table 3.1). Belgian, Danish and Swedish fleets were virtually absent from the area and the French fleets did not report any fishing activity there. Between 2014 and 2019, the amount of fishing effort remained stable at a low level (between 10 and 30 fishing days per year). Then, in the last two years, the effort of the Dutch fleet abruptly increased up to 78 and 221 fishing days respectively in 2020 and 2021, resulting in a total effort more than tenfold the average effort of the 2014-2019 period. Over the 2014-2020 period, the gross added value oscillated between 40 thousand euros and 190 thousand euros, culminating to 500 thousand euros in 2021.

Table 3.1 *Effort, landings and values and gross value added of the fishing sector in the Borkum reef Grounds by country. France has declared no fishing activity in the area for the 2014-2021 period*

	Country	2014	2015	2016	2017	2018	2019	2020	2021	Average
Effort (fishing days)	BEL	0	0	1	0	0	0	0	1	0
	DEU	7	3	9	13	3	3	18	26	10
	DNK		0	1			0	0	1	0
	NLD	16	16	14	22	11	7	78	221	48
	SWE		0	0						0
	Total	23	20	25	34	15	10	95	249	59
Landings (tonnes)	BEL	2	2	13	2	3	2	3	5	4
	DEU	8	4	8	5	24	3	24	111	23
	DNK		3	4			3	7	385	50
	NLD	26	45	166	35	29	35	99	243	85
	SWE		22	21						5
	Total	36	77	211	42	56	43	133	744	168
Value (1,000 euros)	BEL	9	9	35	10	16	10	15	20	16
	DEU	23	17	34	35	18	10	72	139	43
	DNK		1	1			1	2	113	15
	NLD	71	133	221	178	136	67	255	592	207
	SWE		5	1						1
	Total	103	164	291	223	170	88	343	865	281
Gross Value Added (1,000 euros)	BEL	4	4	21	5	9	5	8	12	8
	DEU	13	10	23	22	11	5	46	88	27
	DNK		1	1			1	2	94	12
	NLD	38	67	125	104	79	29	135	308	111
	SWE		3	0						0
	Total	55	85	170	132	99	40	191	502	159

Source: Logbook data, VMS data and data from the Annual Economic report (STECF 2022), processed by WUR, DTUAQUA, TI, ILVO, SLU and IFREMER.

Beam trawl (TBB) fishery including the shrimp fishery represented the most important fishing activity in the area in terms of effort for both the Dutch and the German fleets (Figure 3.1). The Dutch fleet also used Scottish seines (SSC) on the Borkum reef grounds and in the last year also fishing pots (FPO). While they had no activity over the rest of the period, the Danish fleet caught 385 tonnes of fish with one day of fishing effort with midwater otter trawls (OTM) in 2021.
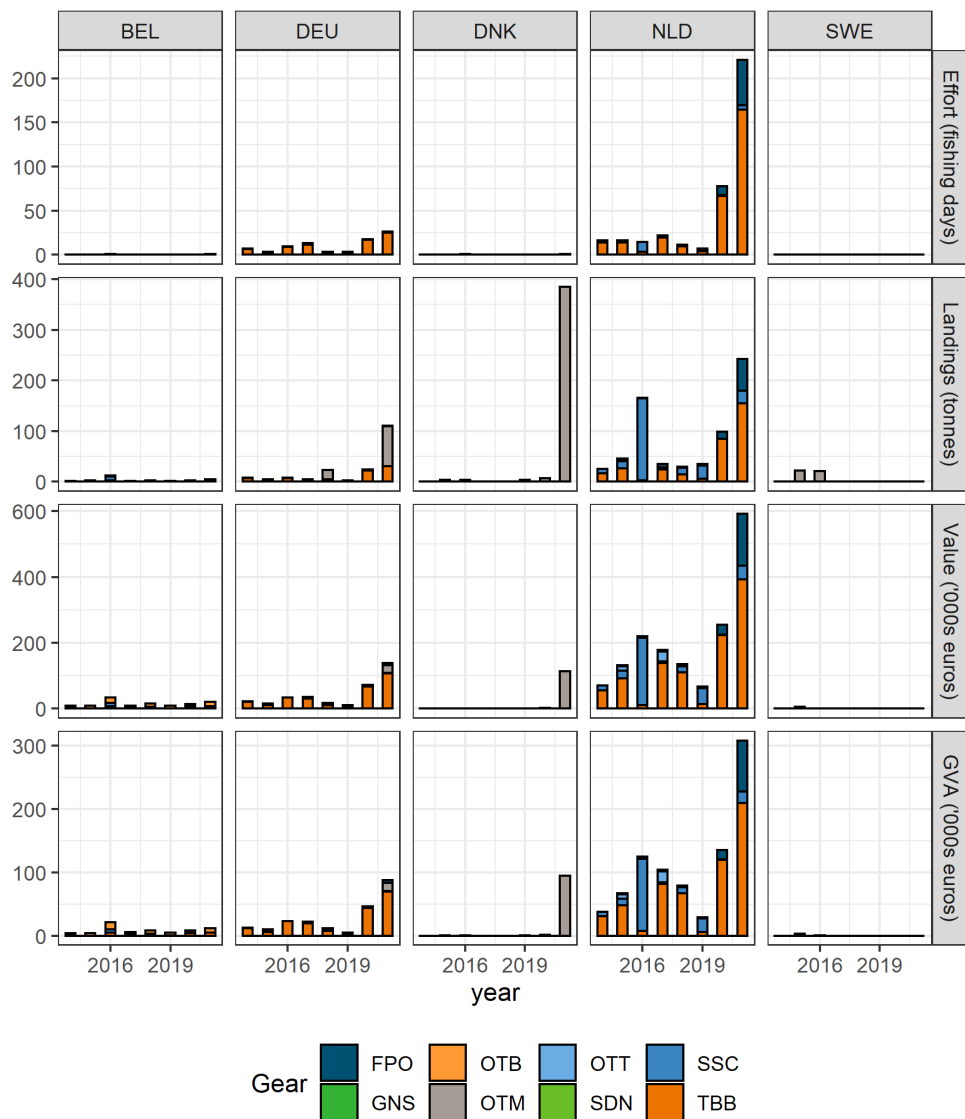
Figure 3.1 *Historical trend of the fishing activities in the Borkum Reef Ground with different gears (FPO: fishing pots; GNS: set gillnets (anchored); OTB: bottom otter trawls; OTM: otter trawls midwater; OTT: otter twin trawls; SDN: Danish seines; SSC: Scottish seines; TBB: beam trawls including shrimp trawls) in the proposed closure of the Borkum Reef Ground for the different countries. Effort, landings, value of landings and GVA are given by country*
Source: Logbook data and VMS data and data from the Annual Economic report (STECF 2022), processed by WUR, DTUAQUA, TI, ILVO, SLU and IFREMER.

3.1.2 Main species caught in the Borkum Reef Grounds

The main species caught in the Borkum Reef Grounds with bottom contacting gears are common shrimp (CSH: *Crangon crangon*) caught by beam trawls and tub gurnard (GUU: *Chelidonichtys lucerna*) caught by Scottish seines (Figure 3.2). In addition, the Danish and German pelagic trawlers also caught European sprat (SPR: *Sprattus sprattus*).
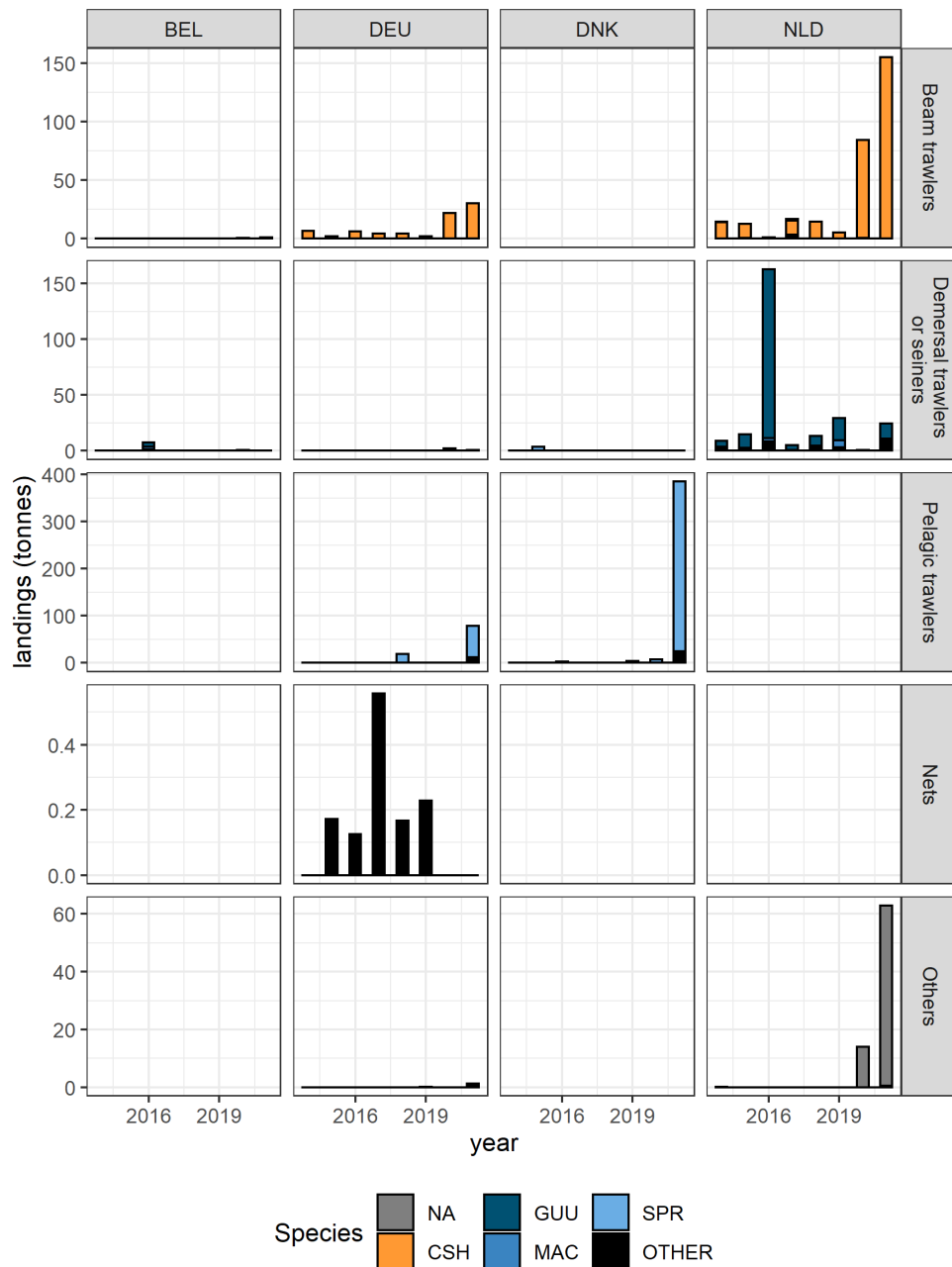
Figure 3.2 *Historical trend by gear type of the species caught in the Borkum Reef Grounds by the Belgian, German, Danish and Dutch fleet (CSH: common shrimp, DAB: dab; GUU: tub gurnard; SPR: European sprat; Other: other species). Note the scale difference for the landings by gear type*
Source: Logbook data and VMS data, processed by WUR, DTUAQUA, TI, ILVO, SLU and IFREMER.

3.1.3   Individual dependency of Dutch fishers on the Borkum Reef Grounds

Figure 3.3 shows that the number of Dutch vessel actively fishing on the Borkum Reef Grounds has increased in the last two years of the study period, going from 20 to 40 vessels during 2014-2019 up to 80 vessels in 2021. While the revenue dependency on the Borkum Reef Grounds was lower than 10% for all vessels until 2019, in 2021, five vessels had higher dependency on the area, one vessel even having more than 50% of their revenue from the Borkum Reef Grounds.
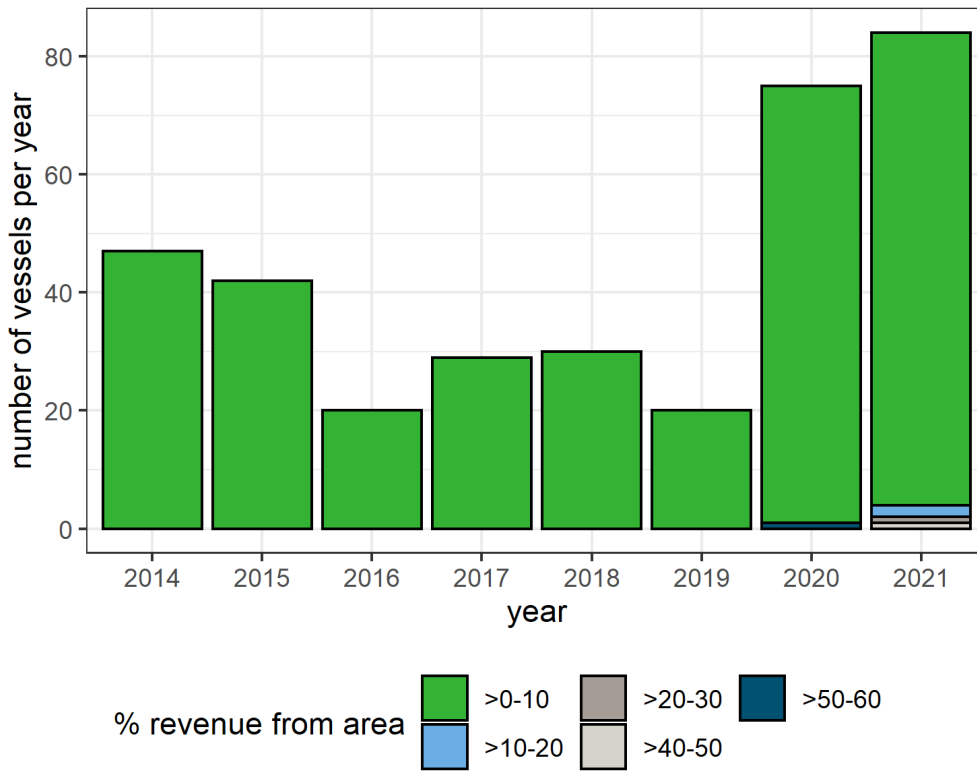
Figure 3.3 *Number of Dutch vessels per year and revenue dependency*

Over the 2014-2021 period, the average number of vessels with fishing activities on the Borkum Reef
Grounds was mainly coming from three regions, the North of the Netherlands (18 vessels), Urk (12 vessels)
and Holland (12 vessels)(Figure 3.4). Only a few vessels came from Zeeland. Of the 5 vessels that had once
a higher revenue dependency, one (dependency >10-20%) came from the Holland region and the other four
from Urk.
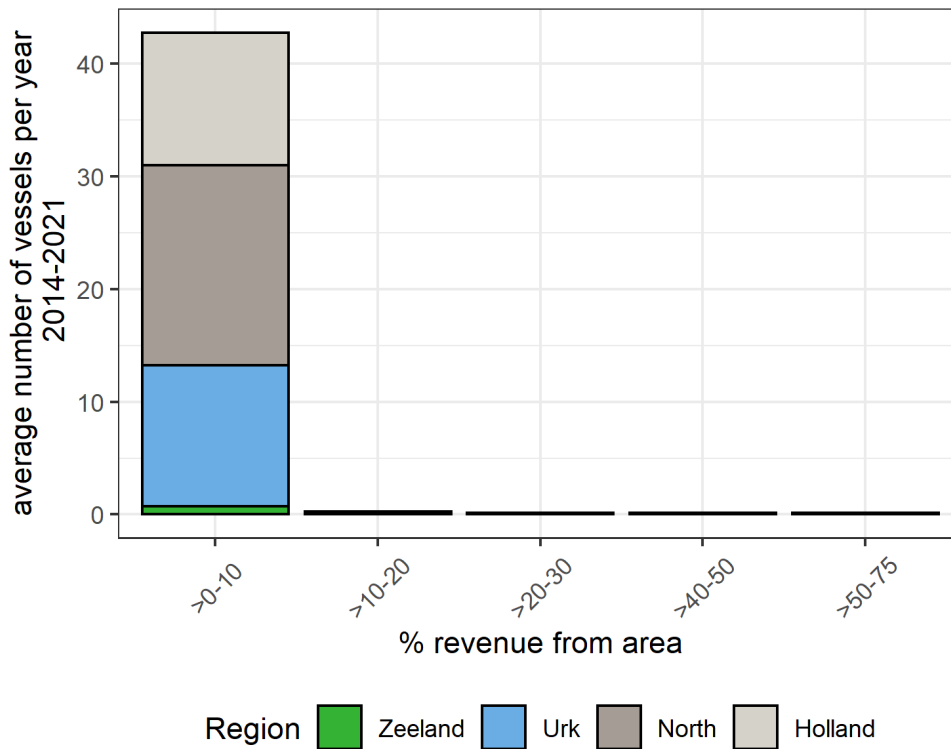
Figure 3.4 *Average number of vessels per region and revenue dependency*

The majority of the Dutch fishing revenue from the Borkum Reef Grounds, about 150 thousand euros per year was obtained with shrimp trawls (TBS, included with TBB in Figure 3.1). The second most important gear was Scottish seines (SSC) with an average annual revenue of about 60 thousand euros. The third most important gear is the fishing pots (FPO). While all Scottish seiners only have a dependency lower than 10%, some shrimp trawlers also have an annual dependency higher than 10% (up to 30%). All the potters operating in the area in 2021 highly dependent on the area, at least 40% of their revenue coming from the area.
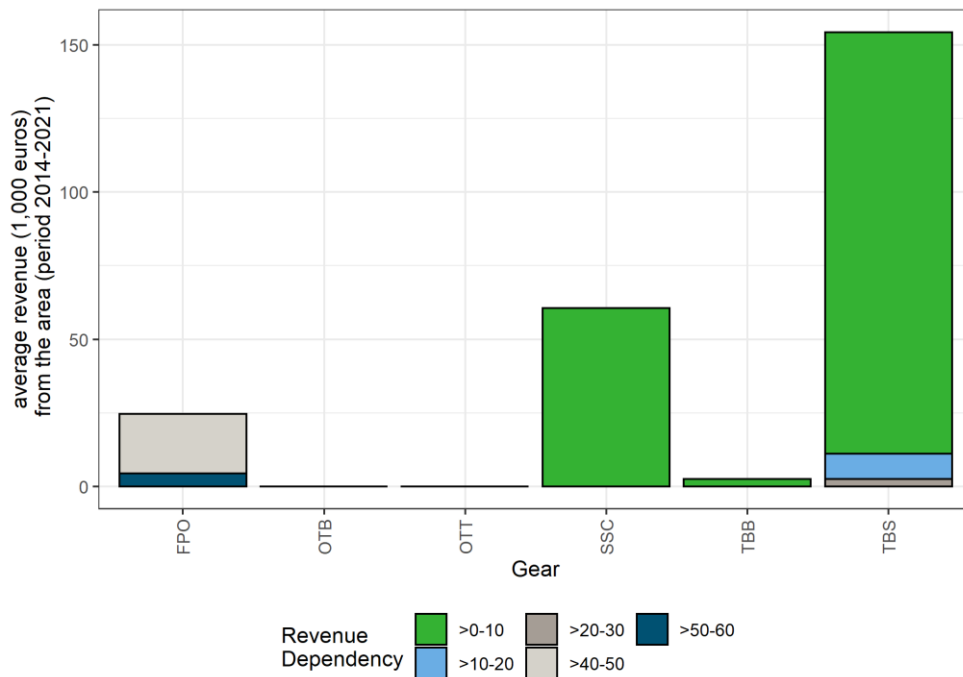
Figure 3.5   *Total of the average revenues (x 1,000 euros) of the vessels with different dependencies on the area per gear type*

3.2   Brown Ridge

The Brown Ridge falls under the Special Protection Area according to the Birds Directive because of its importance for the razorbill (*Alca torda*) and the common guillemot (*Uria aalge*). The area is also an important area for fisheries. However, gillnets and entangling nets fisheries can cause bird mortality. Here we describe the economic importance of the area for all fishing activities, among which the gillnet fisheries. Earlier description of the gillnet activity in the area can be found in Jongbloed et al. (2019), the results of the current study for the gillnet fishery only are shown in Appendix B.

3.2.1   Economic value of the Brown Ridge

Over the 2014-2021 period, the Brown Ridge is mainly fished by the Dutch fleet and to a lesser extend the German and Danish fleets (Table 3.2). Belgian, French and Swedish fleets were virtually absent from the area. Between 2014 and 2017, the amount of fishing effort increased from about 280 up to 410 fishing days. Since 2017 and until the end of the study period, the effort remained stable between 410 and 480 fishing days per year. The gross added value shows a different trend. At the beginning of the time series, GVA increased with effort from 1.3m euros in 2014 up to 2.4m euros in 2016 and 2017, then it decreased again down to 1.6m euros in 2021.

Table 3.2 *Effort, landings and values and gross value added of the fishing sector in the Brown Ridge by country*

	Country	2014	2015	2016	2017	2018	2019	2020	2021	Average
Effort (fishing days)	BEL	1	0	4	4	0	0	0	1	1
	DEU	16	18	8	22	44	58	46	49	33
	DNK	31	16	4		9	6	2		9
	FRA	0		3	2	3	1	3	1	2
	NLD	230	261	293	383	376	416	381	376	339
	SWE		0						0	0
	Total	277	296	313	410	432	481	432	427	384
Landings (tonnes)	BEL	7	1	20	13	3	0	3	7	7
	DEU	13	18	31	44	63	86	64	57	47
	DNK	29	536	2		6	4	1		72
	FRA	0		7	6	25	24	8	4	9
	NLD	721	880	1,006	1,011	762	754	744	583	808
	SWE		16						2	2
	Total	770	1,452	1,066	1,074	858	869	819	653	945
Value (1,000 euros)	BEL	13	3	48	33	5	0	6	16	15
	DEU	74	127	80	201	357	469	338	323	246
	DNK	169	254	16		63	37	8		68
	FRA	0		45	22	141	31	14	6	33
	NLD	2,467	3,223	4,071	4,335	3,580	3,521	3,112	3,057	3,421
	SWE		4						1	1
	Total	2,722	3,610	4,261	4,591	4,146	4,058	3,478	3,402	3,784
Gross Value Added (1,000 euros)	BEL	6	2	28	19	2	0	3	9	9
	DEU	44	78	49	105	215	242	185	175	137
	DNK	104	200	11		41	22	5		48
	FRA	0		23	11	62	10	5	2	14
	NLD	1,142	1,514	2,284	2,260	1,732	1,515	1,401	1,374	1,653
	SWE		2						0	0
	Total	1,296	1,796	2,394	2,394	2,052	1,789	1,599	1,560	1,860

Source: Logbook data and VMS data and data from the Annual Economic report (STECF 2022), processed by WUR, DTUAQUA, TI, ILVO, SLU and IFREMER.

The main activity of the Dutch fleet is done with beam trawls (TBB) and Scottish seines (SSC) (see Figure 3.6) with a bit of gillnet fishery at the beginning of the time series. The German and Danish fleets also fish with gillnets at the beginning of the study period and the German fleet increasingly used beam trawls from 2017 onward.
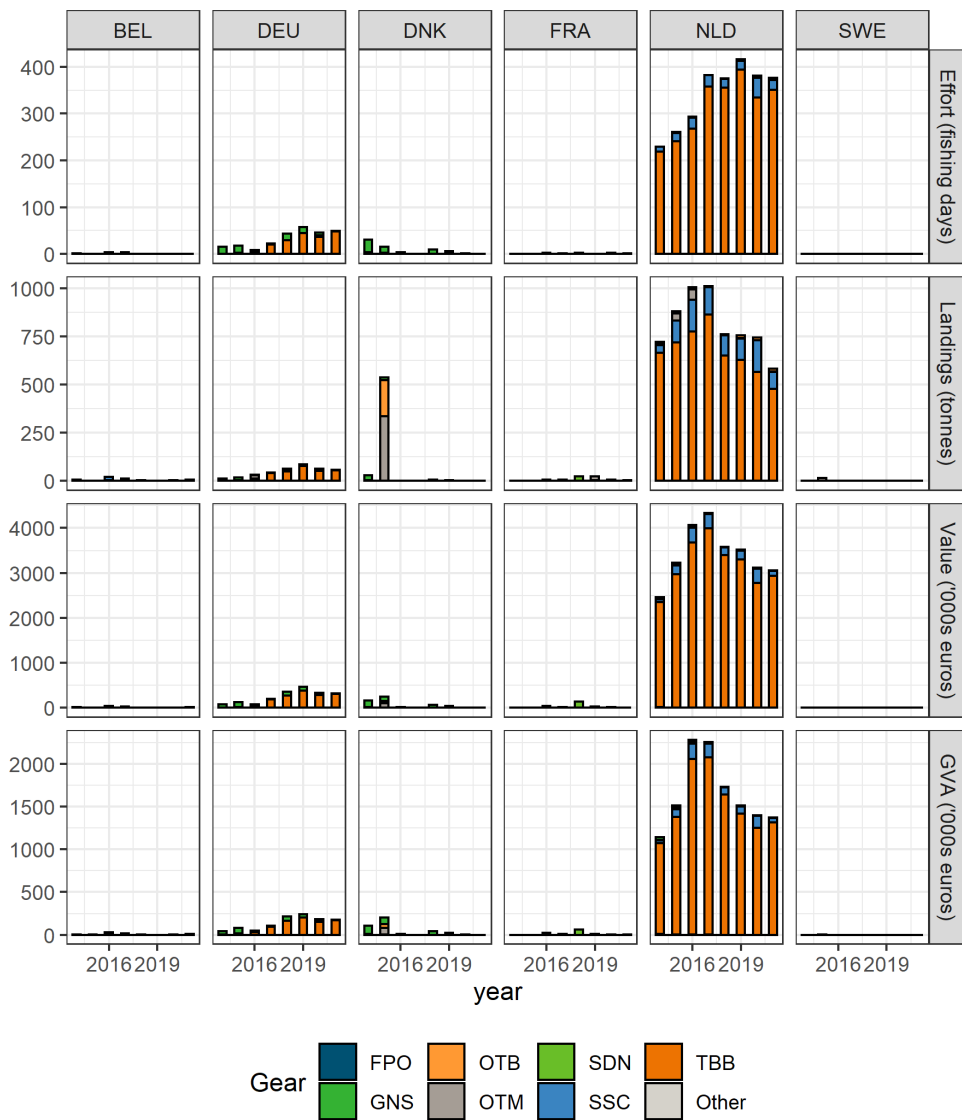
Figure 3.6 *Historical trend of the fishing activities in the Brown Ridge with different gears (GNS: set gillnets (anchored); OTB: bottom otter trawls; OTM: otter trawls midwater; OTT: otter twin trawls; SDN: Danish seines; SSC: Scottish seines; TBB: beam trawls; Other: other gears) in the proposed closure of the Brown Ridge for the different countries. Effort, landings, value of landings and GVA are given by country Source: Logbook data and VMS data and data from the Annual Economic report (STECF 2022), processed by WUR, DTUAQUA, TI, ILVO, SLU and IFREMER.*

3.2.2   Main species caught in the Brown Ridge

The main species caught in the Brown Ridge with bottom contacting gears are European plaice (PLE: *Pleuronectes platessa*) and common sole (SOL: *Solea solea*) caught by beam trawls and tub gurnard (GUU: *Chelidonichtys lucerna*) caught by Scottish seines (Figure 3.7). In addition, the Danish trawlers (pelagic and demersal) also incidentally caught European sprat (SPR: *Sprattus sprattus*). The German and Danish Netters also catch mainly sole.
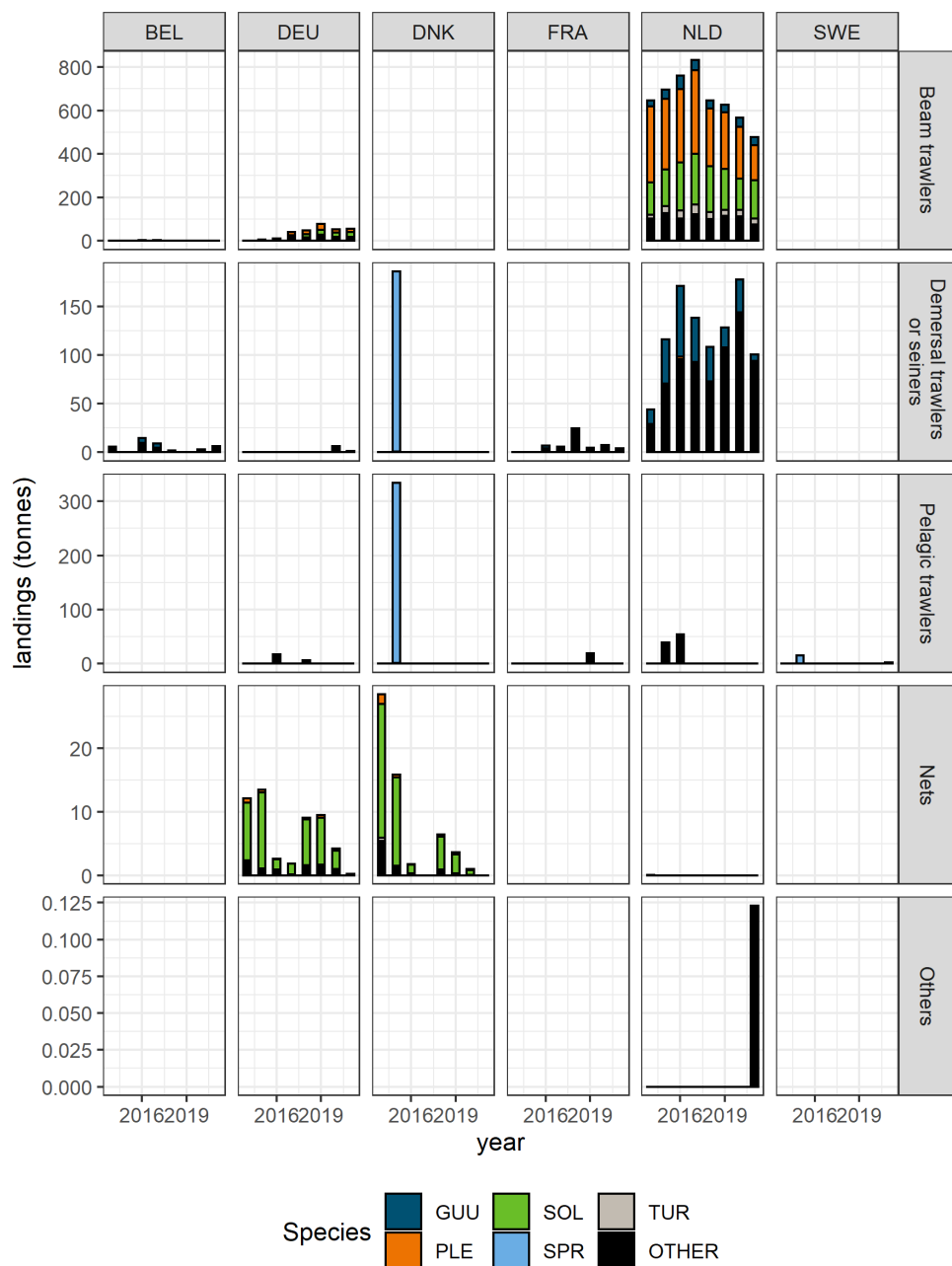
Figure 3.7 *Historical trend by gear type of the species caught in the Brown Ridge by the Belgian, German, Danish, French, Dutch and Swedish fleets (GUU: tub gurnard; PLE: European plaice; SOL: common sole; SPR: European sprat; TUR: turbot; Other: other species). Note the scale difference for the landings by gear type*
Source: Logbook data and VMS data, processed by WUR, DTUAQUA, TI, ILVO, SLU and IFREMER.

3.2.3 Individual dependency of Dutch fishers on the Brown Ridge

Figure 3.8 shows that the number of Dutch vessel actively fishing on the Brown Ridge increased over the study period, going from about 50 vessels during 2014-2016 up to 70 vessels in 2020. While the revenue dependency on the Brown Ridge of most vessels was lower than 10%, every year between five and seven vessels had higher dependency on the area. In 2017, 2019, 2020 and 2021, a couple of vessels had a dependency between 20 and 30%, and in 2020, one vessel even had between 30 and 40% of its revenue from the Brown Ridge.
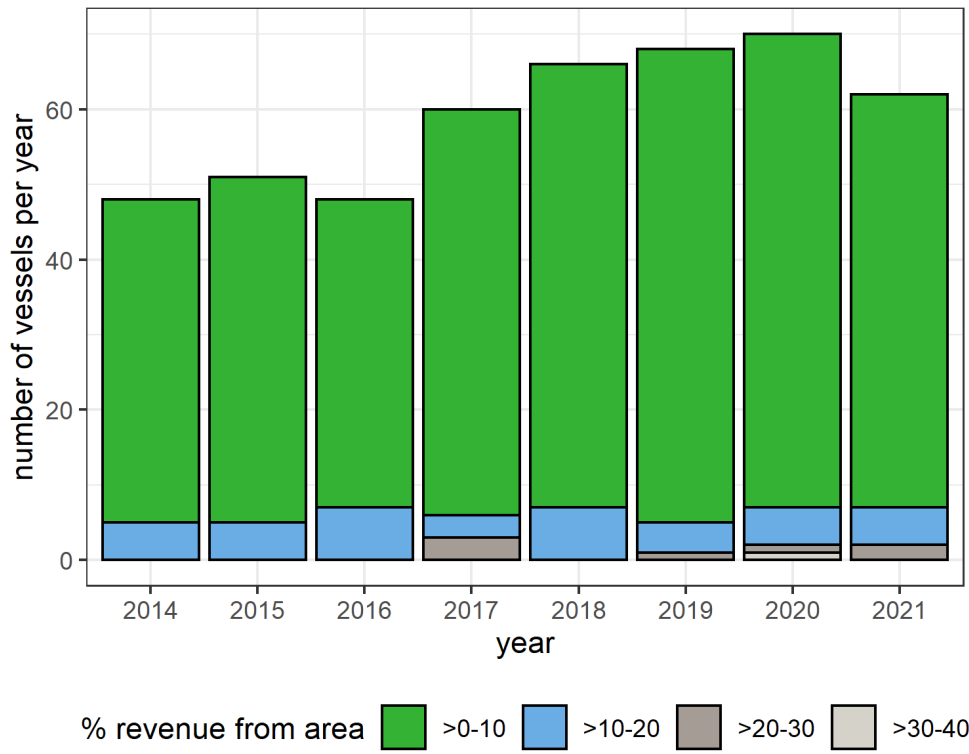
Figure 3.8 *Number of Dutch vessels per year and revenue dependency*

Over the 2014-2021 period, the majority of the vessels with fishing activities on the Brown Ridge had a moderate dependency on the area (less than 10% of their revenue) and they came mainly from Holland (about 30 vessels) followed by Urk (20 vessels) and the North of the Netherlands (8 vessels) (Figure 3.9). Only a few vessels came from Zeeland. Most of the vessels that had a higher revenue dependency came from the Holland region.
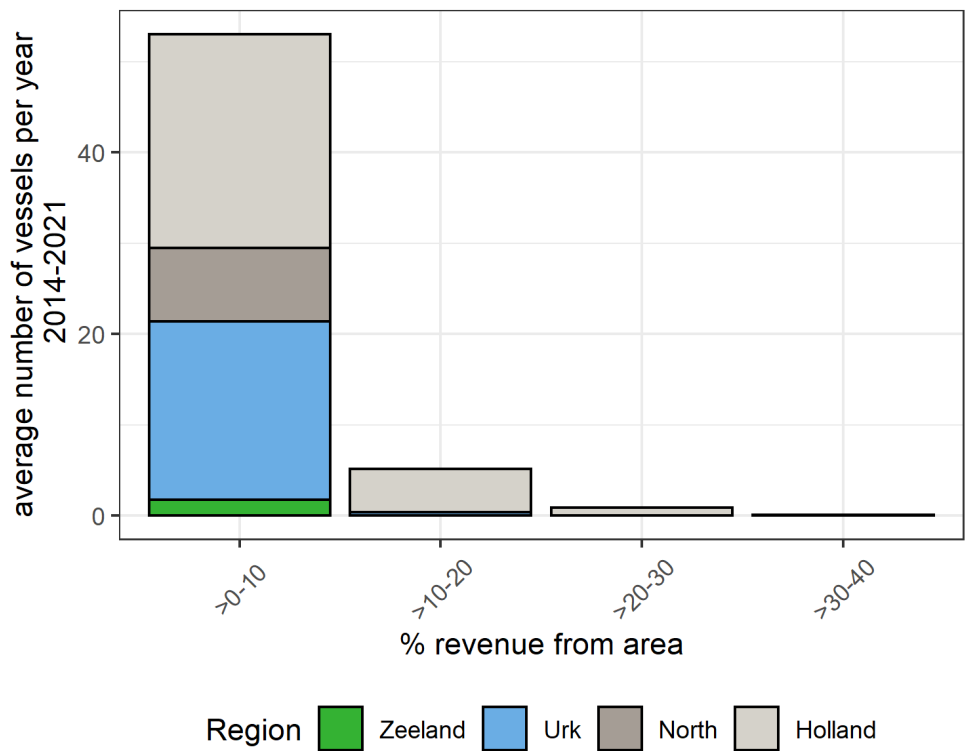
Figure 3.9 *Average number of vessels per region and revenue dependency*

The majority of the fishing revenue from the Brown Ridge, about 3.1m euros per year was obtained with beam trawls targeting flatfish (TBB) (Figure 3.10). The second most important gear was Scottish seines (SSC) with an average annual revenue of about 300 thousand euros. While Scottish seiners mostly have a dependency lower than 10%, about half of the revenue by beam trawlers came from vessels with an annual dependency higher than 10% (up to 30%).
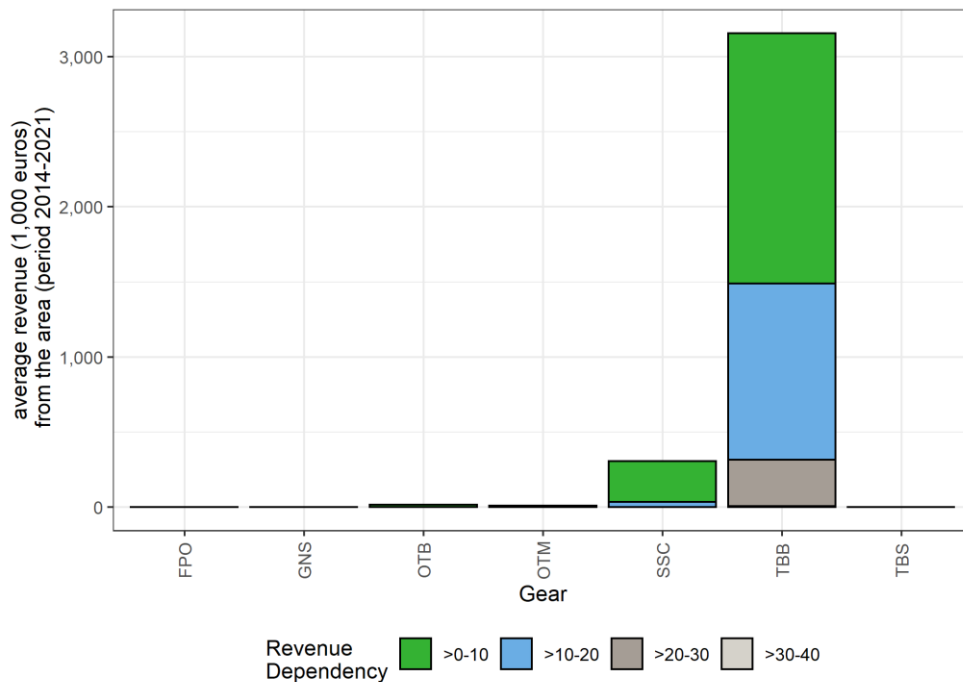
Figure 3.10 *Total of the average revenues (x 1,000 euros) of the vessels with different dependencies on the area per gear type*

3.3 Central Oyster Grounds

3.3.1 Economic value of the Central Oyster Grounds

Over the 2014-2021 period the amount of fishing activities has varied significantly from year to year in the Central Oyster Grounds and all countries were active in this area for at least one year during the period (Table 3.3). Total effort in the Central Oyster Grounds was between 90 and 210 fishing days (average of 159 days) and the added value varied between 1.0 and 3.5m euros (average of 1.8m euros). The Danish fleet was (by far) the most important fleet in this area in economic terms: the GVA of this fleet contributed to more than 70% of the total GVA from this area. However, the Danish activity decreased between the highest point in 2015 with 78 fishing days to its lowest in 2020 with only 5 fishing days. The German and Dutch fleet showed considerable levels of fishing activities in the area at a varying level but without showing any clear trends. The economic importance of the German and Dutch fleets was much lower than the one of Denmark.

Table 3.3 *Effort, landings and values and gross value added of the fishing sector in the Central Oyster Grounds by country*

	Country	2014	2015	2016	2017	2018	2019	2020	2021	Average
Effort (fishing days)	BEL	5	3	4	27	16	28	22	16	15
	DEU	22	29	31	59	25	60	24	26	34
	DNK	22	78	42	19	16	10	5	18	26
	FRA				1					-
	NLD	40	33	38	82	29	109	43	37	52
	SWE	-	1	2	4	1	-	1	4	2
	Total	89	144	116	193	88	208	95	102	129
Landings (tonnes)	BEL	28	42	9	91	39	47	101	41	50
	DEU	201	250	362	319	57	501	276	1,198	396
	DNK	5,431	15,042	8,063	5,373	5,804	5,953	2,203	4,818	6,586
	FRA				1					-
	NLD	160	376	168	281	68	177	89	50	171
	SWE	33	529	360	1,152	693	293	355	1,065	560
	Total	5,854	16,239	8,962	7,217	6,661	6,972	3,025	7,172	7,763
Value (1,000 euros)	BEL	41	74	28	313	150	182	297	147	154
	DEU	174	220	335	548	202	533	179	430	328
	DNK	1,282	3,818	2,142	931	1,398	1,688	598	1,442	1,662
	FRA				4					-
	NLD	250	286	383	732	177	696	300	185	376
	SWE	7	120	114	251	152	68	89	337	142
	Total	1,754	4,518	3,002	2,779	2,079	3,167	1,463	2,541	2,663
Gross Value Added (1,000 euros)	BEL	18	40	16	171	76	85	168	84	82
	DEU	97	125	218	322	129	281	104	238	189
	DNK	922	3,165	1,762	725	1,143	1,293	500	1,202	1,339
	FRA				2					-
	NLD	134	143	228	403	93	283	149	89	190
	SWE	3	70	63	150	77	35	50	190	80
	Total	1,174	3,544	2,287	1,773	1,518	1,977	971	1,802	1,881

Source: Logbook data and VMS data and data from the Annual Economic report (STECF 2022), processed by WUR, DTUAQUA, TI, ILVO, SLU and IFREMER.

The Danish fleet mainly operated midwater otter trawls (OTM) and bottom otter trawls (OTB) and showed decreasing effort, but stable landings and economic indicators after 2016 (Figure 3.11). The Dutch fleet in the area mainly used OTB and otter twin trawls (OTT), just as most other fleets. The economic importance for the Danish fleet, and particularly the GVA, was first decreasing (2015-2016) and then remained stable (2017-2021).
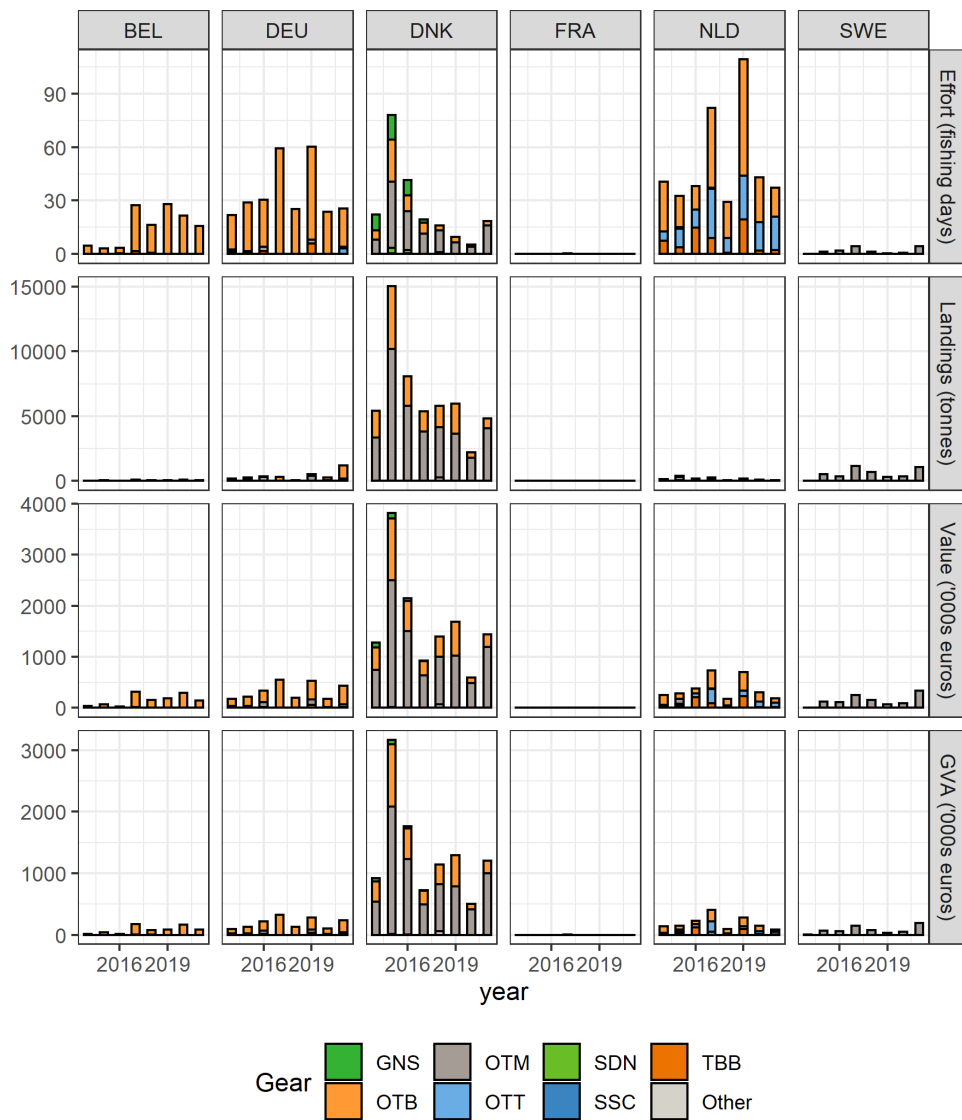
Figure 3.11 *Historical trend of the fishing activities in the Central Oyster Ground with different gears (GNS: set gillnets (anchored); OTB: bottom otter trawls; OTM: otter trawls midwater; OTT: otter twin trawls; SDN: Danish seines; SSC: Scottish seines; TBB: beam trawls; Other: other gears) in the proposed closure of the Central Oyster Grounds for the different countries. Effort, landings, value of landings and GVA are given by country*
Source: Logbook data and VMS data and data from the Annual Economic report (STECF 2022), processed by WUR, DTUAQUA, TI, ILVO, SLU and IFREMER.

3.3.2   Main species caught in the Central Oyster Grounds

The main species caught on the Central Oyster Grounds are the European sprat (*Sprattus sprattus*; SPR) and the Atlantic herring (*Clupea harengus*; HER). Figure 3.12 shows the species that are caught in the Central Oyster Grounds by the Belgian, German, Danish, French, Dutch and Swedish fleets. European sprat are mostly caught in the Central Oyster Grounds by the Danish fleet with demersal trawlers or seiners and pelagic trawlers. In addition, they also catch Atlantic herring in the Central Oyster Grounds. Dutch and German beam trawlers catch European plaice (*Pleuronectes platessa*; PLE). Other species are also caught by the other fleets, but to a lesser extent.
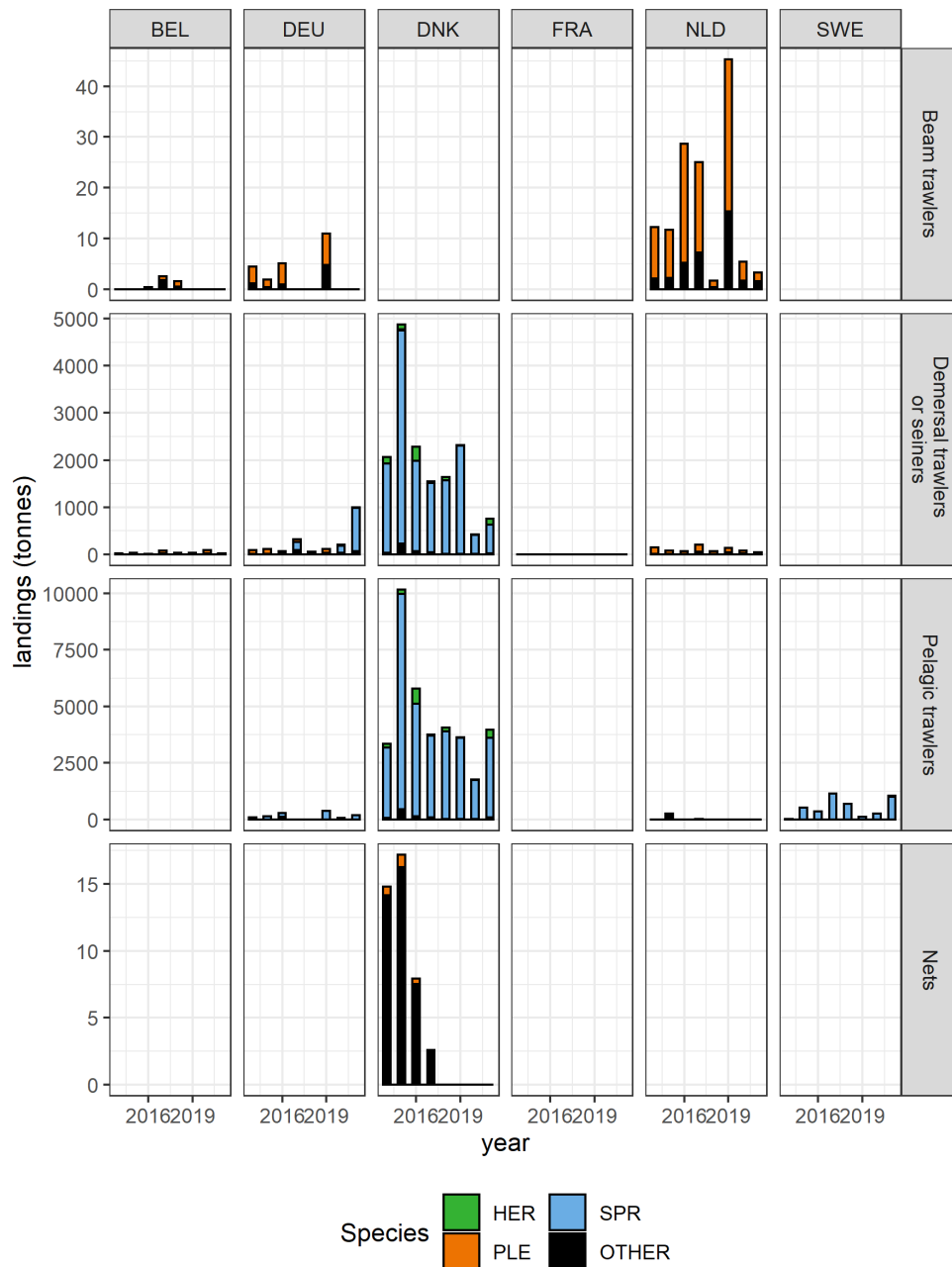
Figure 3.12 *Historical trend by gear type of the species caught in the Central Oyster Grounds by the Belgian, German, Danish, French, Dutch and Swedish fleets (HER: Atlantic herring; PLE: European plaice; SPR: European sprat; Other: other species). Note the scale difference for the landings by gear type Source: Logbook data and VMS data, processed by WUR, DTUAQUA, TI, ILVO, SLU and IFREMER.*

3.3.3 Individual dependency of Dutch fishers on the Central Oyster Grounds

Figure 3.13 shows that the number of Dutch vessels actively fishing on the Central Oyster Grounds varied over the study period between 14 and 37 vessels without clear trend. The revenue dependency on the Central Oyster Grounds was lower than 10% for all vessels except in 2014, 2017 and 2019 when one to two vessels concentrated more of their activity on the Central Oyster Grounds.
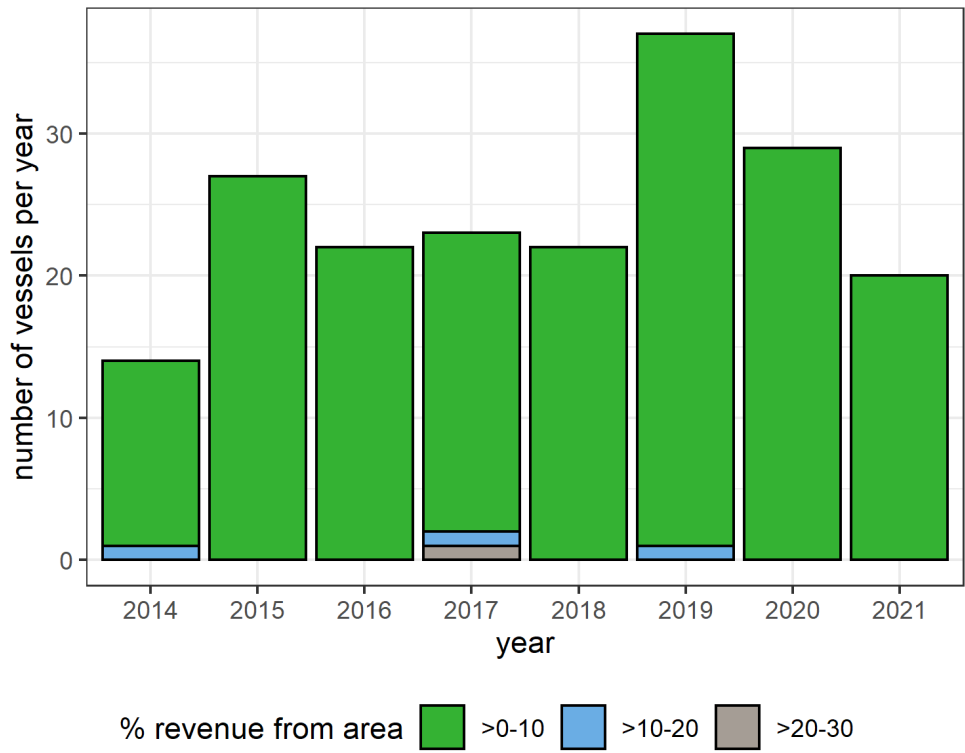
Figure 3.13 *Number of Dutch vessels per year and revenue dependency*

Over the 2014-2021 period, the majority of the vessels with fishing activities on the Central Oyster Grounds had a moderate dependency on the area (less than 10% of their revenue) and they came mainly from Urk (13 vessels) followed by Holland (8 vessels, Figure 3.14). Only one vessel came from Zeeland and another one from the North of the Netherlands. Most of the vessels that had a higher revenue dependency came from Urk.
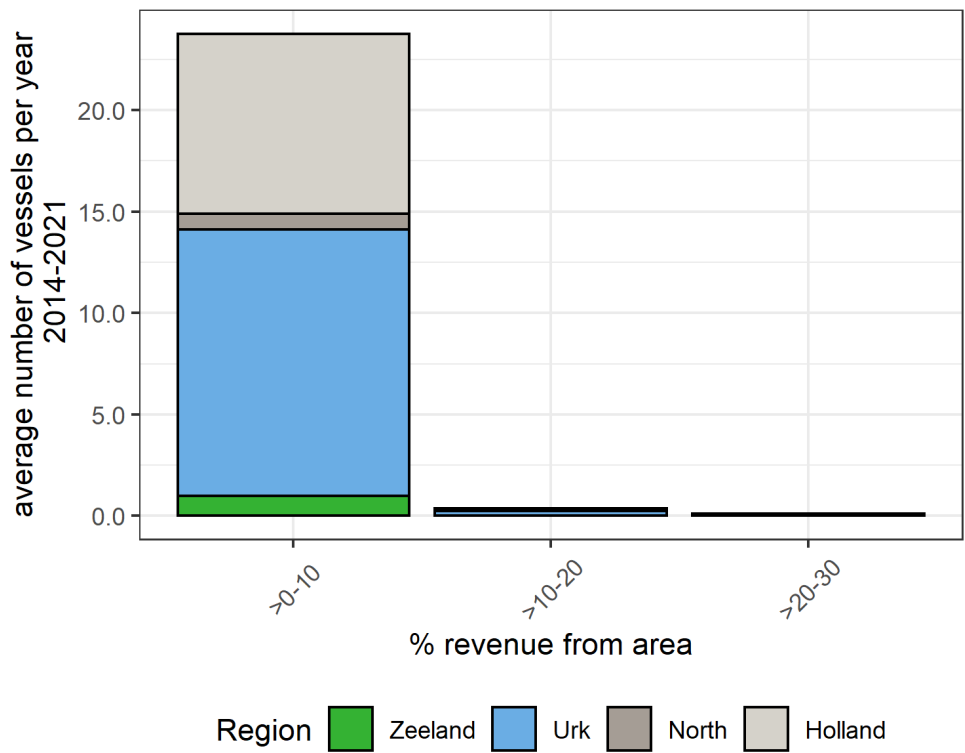
Figure 3.14 *Average number of vessels per region and revenue dependency*

The majority of the fishing revenue from the Central Oyster Grounds, about 190 thousand euros per year was obtained with bottom otter trawls (OTB) (Figure 3.15). The second most important gear was otter twin trawls (OTT) with an average annual revenue of about 100 thousand euro followed by the beam trawls fishing for flatfish (TBB) with a revenue of about 60 thousand euro. About a third of the revenue from the Central Oyster Grounds of the bottom otter trawlers and of the otter twin trawlers came from vessels with an annual dependency higher than 10% (up to 30%).
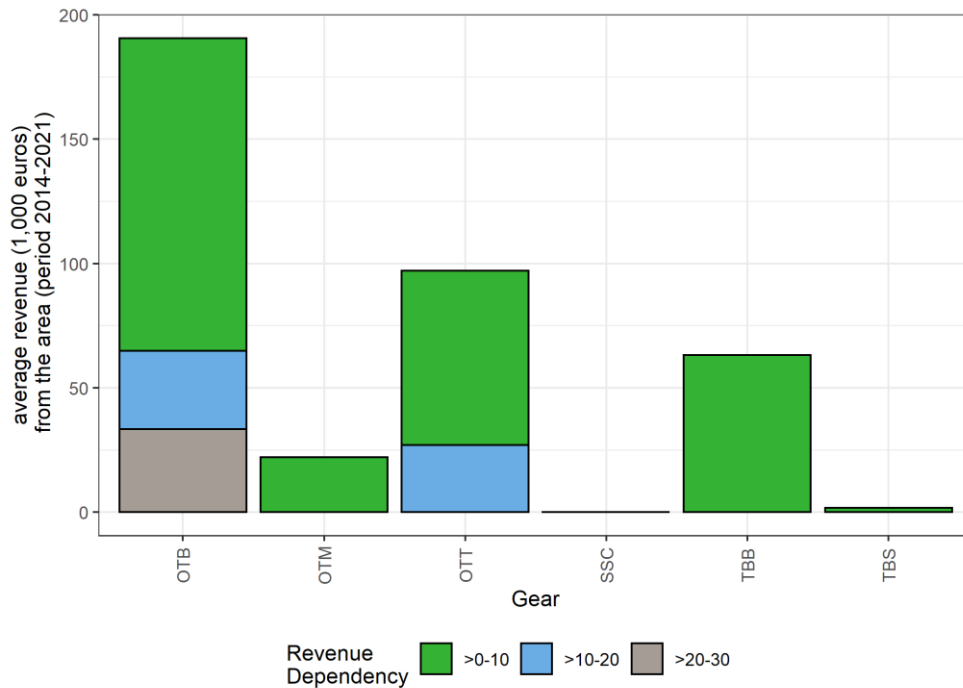
Figure 3.15 *Total of the average revenues (x 1,000 euros) of the vessels with different dependencies on the area per gear type*

3.4 Cleaver Bank

3.4.1 Economic value of the Cleaver Bank

Over the 2014-2021 period the amount of fishing activities has varied significantly from year to year in the Cleaver Bank and all countries were represented in this area (Table 3.4). Total effort in the Cleaver Bank decreased from 160 fishing days in 2014 down to 53 fishing days in 2021 (average of 112 days) and the added value varied between 0.3 and 1.1m euros (average of 0.7m euros). Danish and Swedish fleets are virtually absent in this area in terms of effort but the Danish fleet caught about 30% of the landings in weight. The area was dominated by the Dutch fleet, contributing to about 70% of the total GVA for this area. However, the level of fishing activities by the Dutch fishing fleet decreased considerably over the time period, from a GVA of more than 0.7m euros in 2014 down to about 0.3m euros in 2021. The French, Belgian and German fleets were less active, each representing less than 10% of the effort and about 5% of the landings in the area.

Table 3.4 *Effort, landings and values and gross value added of the fishing sector in the Cleaver Bank by country*

	Country	2014	2015	2016	2017	2018	2019	2020	2021	Average
Effort (fishing days)	BEL	24	12	15	5	8	1	3	5	9
	DEU	3	8	8	8	11	9	4	1	7
	DNK	1	3	-	2	2	-	1	-	1
	FRA	1	3	13	8	17	7	22	7	10
	NLD	131	121	94	51	65	44	86	47	80
	SWE	-		-			-	-	-	-
	Total	161	146	130	73	103	62	116	59	106
Landings (tonnes)	BEL	90	36	94	41	27	5	73	57	53
	DEU	17	24	27	30	168	14	94	56	54
	DNK	105	546	156	35	822	1	595	44	288
	FRA	3	0	51	47	94	41	84	60	47
	NLD	775	761	709	399	340	256	447	197	485
	SWE	1		7			4	164	28	26
	Total	991	1,367	1,044	552	1,450	320	1,456	444	953
Value (1,000 euros)	BEL	187	97	196	80	79	19	152	108	115
	DEU	38	67	76	109	146	70	55	27	74
	DNK	24	139	43	12	220	1	166	14	77
	FRA	3	1	170	207	347	85	129	99	130
	NLD	1,627	1,751	1,429	710	703	501	1,034	394	1,019
	SWE	-		1			1	43	10	7
	Total	1,879	2,055	1,914	1,119	1,495	678	1,579	653	1,421
Gross Value Added (1,000 euros)	BEL	84	53	115	45	39	9	85	60	61
	DEU	19	39	51	56	86	37	30	15	42
	DNK	17	116	36	9	181	-	139	12	64
	FRA	1	1	85	102	153	29	54	39	58
	NLD	737	812	802	374	341	223	470	193	494
	SWE	-		1			1	24	5	4
	Total	858	1,021	1,089	587	800	299	801	324	722

Source: Logbook data and VMS data and data from the Annual Economic report (STECF 2022), processed by WUR, DTUAQUA, TI, ILVO, SLU and IFREMER.

The Dutch fleet mainly operated beam trawls (TBB) and Scottish seines (SSC) in the Cleaver Bank (Figure 3.16). The share of the beam trawl has decreased between 2014 and 2017 and remained stable afterwards. The Belgian fleet shows a similar development in the gear composition over time but at lower overall effort levels. The Danish fleet was irregularly active with midwater otter trawls (OTM) and bottom otter trawls (OTB). The German and French fleets showed low levels of activity using beam trawls (TBB) and midwater otter trawls (OTM) (German fleet) and Danish seines (SDN) (French fleet).
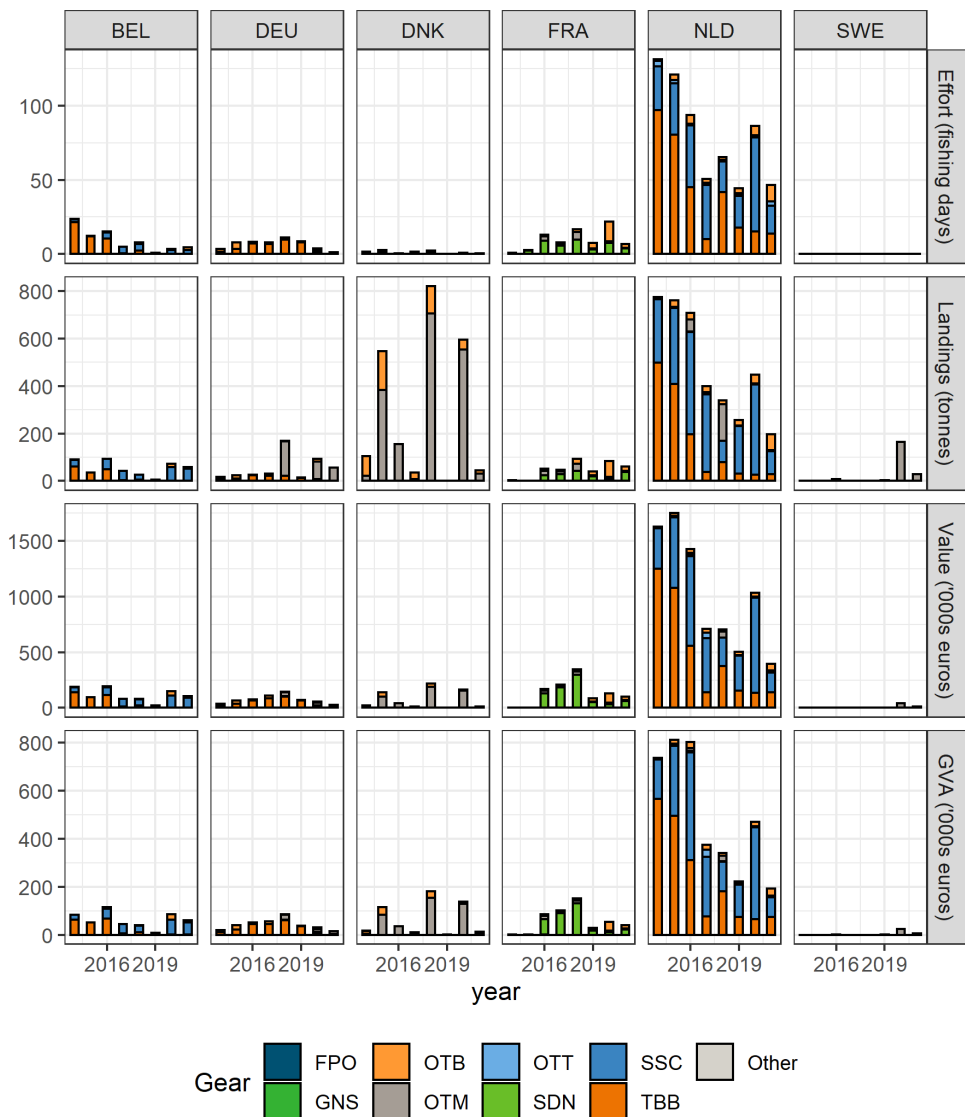
Figure 3.16 *Historical trend of the fishing activities in the Cleaver Bank with different gears (FPO: fishing pots; GNS: set gillnets (anchored); OTB: bottom otter trawls; OTM: otter trawls midwater; OTT: otter twin trawls; SDN: Danish seines; SSC: Scottish seines; TBB: beam trawls; Other: other gears) in the proposed closure of the Cleaver Bank for the different countries. Effort, landings, value of landings and GVA are given by country*

Source: Logbook data and VMS data and data from the Annual Economic report (STECF 2022), processed by WUR, DTUAQUA, TI, ILVO, SLU and IFREMER.

3.4.2 Main species caught in the Cleaver Bank

The main species caught on the Cleaver Bank are the European sprat (*Sprattus sprattus*; SPR), Atlantic mackerel (*Scomber scombrus*; MAC), and the European plaice (*Pleuronectes platessa*; PLE). Figure 3.17 shows the species that are caught in the Central Oyster Grounds by the Belgian, German, Danish, French, Dutch and Swedish fleets. The Dutch beam trawlers mostly caught plaice, while the demersal trawls and seines caught mainly mackerel and the Danish pelagic trawlers caught sprat. Other species are also caught by the other fleets, but to a lesser extent.
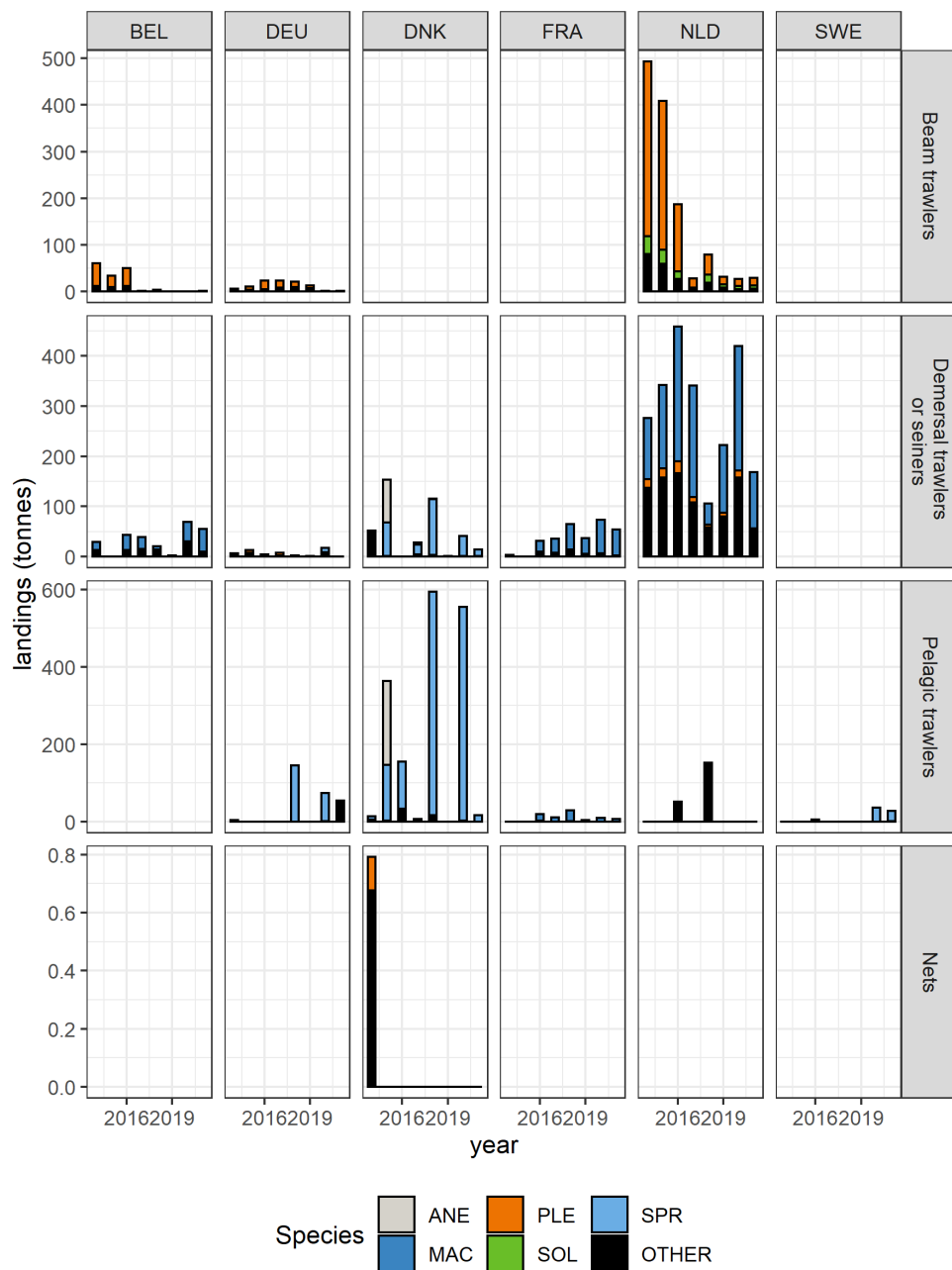
Figure 3.17 *Historical trend by gear type of the main species caught in the Cleaver Bank by the Belgian, German, Danish, French, Dutch and Swedish fleets (ANE: European anchovy; MAC: Atlantic mackerel; PLE: European plaice; SOL: common sole; SPR: European sprat; Other: other species). Note the scale difference for the landings by gear type*
Source: Logbook data and VMS data, processed by WUR, DTUAQUA, TI, ILVO, SLU and IFREMER.

3.4.3 Individual dependency of Dutch fishers on the Cleaver Bank

Figure 3.18 shows that the number of Dutch vessels actively fishing on the Cleaver Bank varied over the study period between 33 and 41 vessels. The revenue dependency on the Cleaver Bank was lower than 10% for all vessels except for a small number of vessels in 2014, 2015, 2016, 2019 and 2020 when one to two vessels concentrated up to 30% of their activity on the Cleaver Bank.
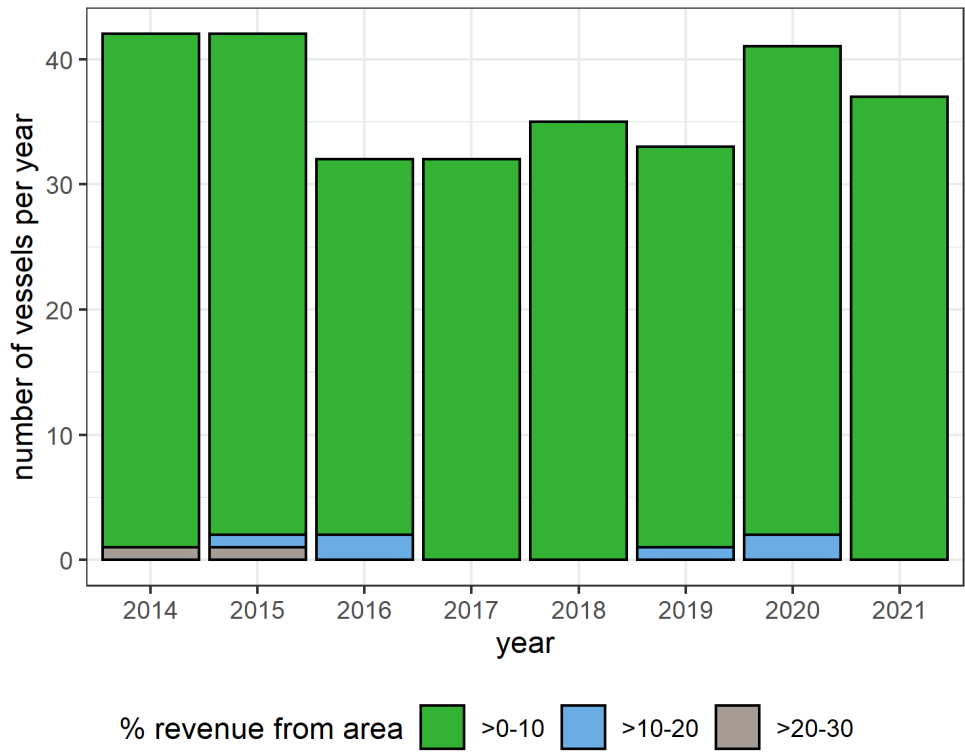
Figure 3.18 *Number of Dutch vessels per year and revenue dependency*

Over the 2014-2021 period, the majority of the vessels with fishing activities on the Cleaver Bank had a low dependency on the area (less than 10% of their revenue) and they came mainly from Holland or Urk (about 15 vessels from each region, see Figure 3.19). Only one vessel came from Zeeland and about four from the North of the Netherlands. Of the four vessels that ever had a higher revenue dependency than 10%, three came from Urk, the last one from Holland.
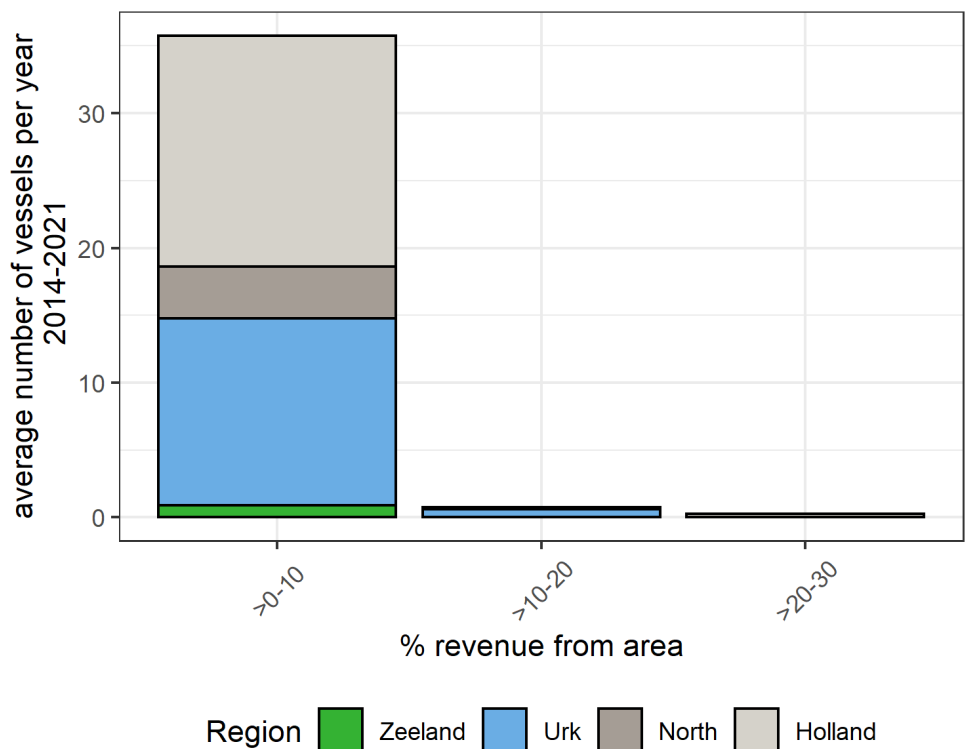
Figure 3.19 *Average number of vessels per region and revenue dependency*

The majority of the fishing revenue from the Cleaver Bank, about 650 thousand euros per year was obtained with Scottish seines (SSC) (Figure 3.20). The second most important gear was the beam trawl fishing for flatfish (TBB) with a revenue of about 260 thousand euro. Only about 15% of the Scottish seine revenue came from vessels with an annual dependency higher than 10%, while about 75% of the beam trawl revenue on the Cleaver Bank came from vessels with an annual dependency between 10% and 30%.
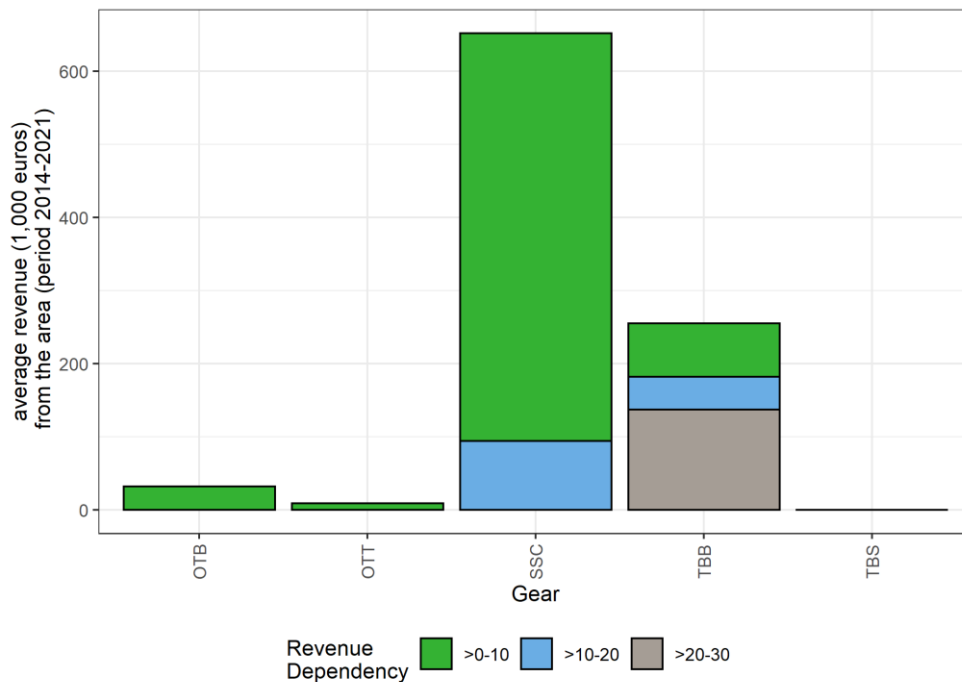
Figure 3.20 *Total of the average revenues (x 1,000 euros) of the vessels with different dependencies on the area per gear type*

3.5 Dogger Bank

For this call the Dogger Bank was split in two distinct areas (Figure 1.1): the designated Natura 2000 area and the strip added on the South of the Dogger Bank. Economic and species information are given for both areas separately and the cumulative individual dependency analysis is shown for the combined area. The economic and species information for the combined area is shown in Appendix C.

3.5.1 Economic value of the Dogger Bank (Natura 2000)

Over the 2014-2021 period the amount of fishing activities has decreased significantly in the Dogger Bank (Natura 2000) and most countries except for France were represented in this area (Table 3.5). Total effort in the Dogger Bank (Natura 2000) decreased from 83 fishing days in 2015 to 29 fishing days in 2021 (average of 53 days) and the added value decreased from 1.0 to 0.2m euros (average of 0.6m euros). In economic terms, the Danish fleet was the most important in the area representing about 60% of the GVA, while the effort of the Dutch fleet was higher each year. The landings decreased from a record 6,400 tonnes in 2014 to 500 tonnes in 2021.

Table 3.5 *Effort, landings and values and gross value added of the fishing sector in the Dogger Bank (N2000) by country*

	Country	2014	2015	2016	2017	2018	2019	2020	2021	Average
Effort (fishing days)	BEL	1	5	3	8	8	6	3	4	5
	DEU	6	8	3	4	4	4	4	5	5
	DNK	17	12	8	6	6	18	4	3	9
	NLD	21	58	54	33	42	25	22	16	34
	SWE	1	-	-	-	-	1	-	-	-
	Total	46	83	68	51	60	54	32	29	53
Landings (tonnes)	BEL	9	42	30	48	25	29	13	30	28
	DEU	361	63	88	16	38	68	134	10	97
	DNK	5,274	1,330	1,857	999	1,361	3,227	1,469	292	1,976
	NLD	104	390	288	225	143	106	52	30	167
	SWE	651	69	7	80	75	283	32	140	167
	Total	6,399	1,893	2,271	1,368	1,643	3,714	1,700	501	2,436
Value (1,000 euros)	BEL	16	74	54	106	70	79	34	68	63
	DEU	86	58	35	31	31	37	52	26	45
	DNK	1,156	268	481	157	345	881	392	92	472
	NLD	145	595	511	354	274	279	134	76	296
	SWE	139	14	2	17	17	71	8	42	39
	Total	1,542	1,009	1,083	665	737	1,347	620	303	913
Gross Value Added (1,000 euros)	BEL	7	40	32	59	36	39	19	38	34
	DEU	43	33	21	18	20	20	28	15	25
	DNK	841	220	401	122	279	675	328	77	368
	NLD	73	290	291	186	140	119	62	35	149
	SWE	69	8	1	10	9	36	5	23	20
	Total	1,033	591	745	396	483	889	441	188	596

Source: Logbook data and VMS data and data from the Annual Economic report (STECF 2022), processed by WUR, DTUAQUA, TI, ILVO, SLU and IFREMER.

All fleets operating on the Dogger Bank (N2000) used some bottom otter trawls (OTB) (Figure 3.21). OTB represented most activity of the Belgian and German fleets. The Danish fleets also operated midwater otter trawls (OTM) and the Dutch fleet used beam trawls (TBB) and otter twin trawls (OTT). While TBB used to be the most used gear in the area (operated by the Dutch) in 2015 and 2016, its use decreased steadily in the years thereafter while other gears show no clear trends.
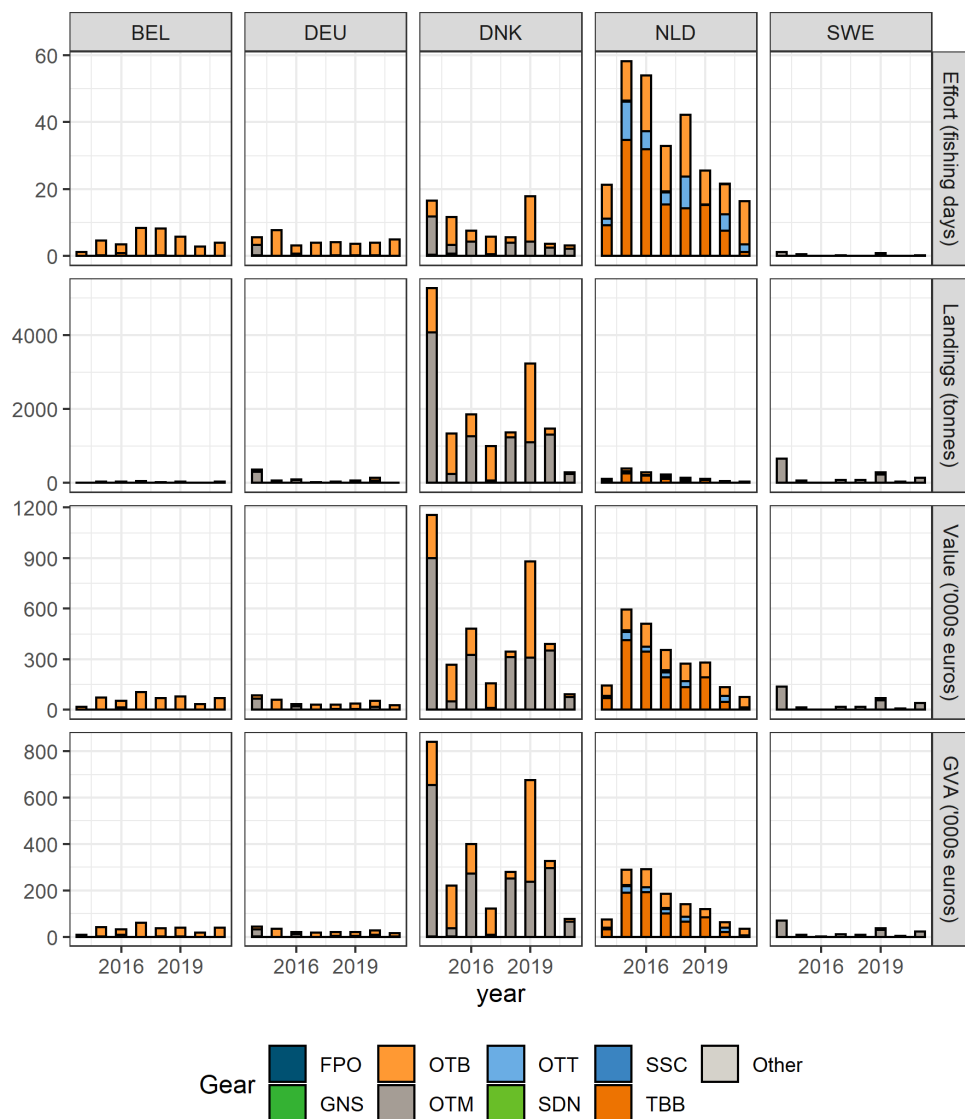
Figure 3.21 *Historical trend of the fishing activities in the Dogger Bank (N2000) with different gears (FPO: fishing pots; GNS: set gillnets (anchored); OTB: bottom otter trawls; OTM: otter trawls midwater; OTT: otter twin trawls; SDN: Danish seines; SSC: Scottish seines; TBB: beam trawls; Other: other gears) in the proposed closure of the Dogger Bank (N2000) for the different countries. Effort, landings, value of landings and GVA are given by country*
Source: Logbook data and VMS data and data from the Annual Economic report (STECF 2022), processed by WUR, DTUAQUA, TI, ILVO, SLU and IFREMER.

3.5.2   Main species caught in the Dogger Bank (Natura 2000)

The main species caught in this area are Sandeel (*Ammodytes* sp.; SAN), European sprat (*Sprattus sprattus*; SPR), Atlantic herring (*Clupea harengus*; HER) and European plaice (*Pleuronectes platessa*; PLE). Figure 3.22 shows that most species in the Dogger Bank (N2000) are caught by the Danish fleet. Sandeel were mainly caught with Danish demersal trawlers or seiners in the Dogger Bank (N2000), and European sprat are caught both by the Danish demersal trawlers or seiners and the pelagic trawlers. In addition, Dutch beam trawlers and Dutch demersal trawlers or seiners mainly caught European plaice in the Dogger Bank (N2000). However, the landings of the Dutch fleet were much lower compared to the landings of the Danish fleet caught in the Dogger Bank. Danish netters also caught European plaice in 2020.
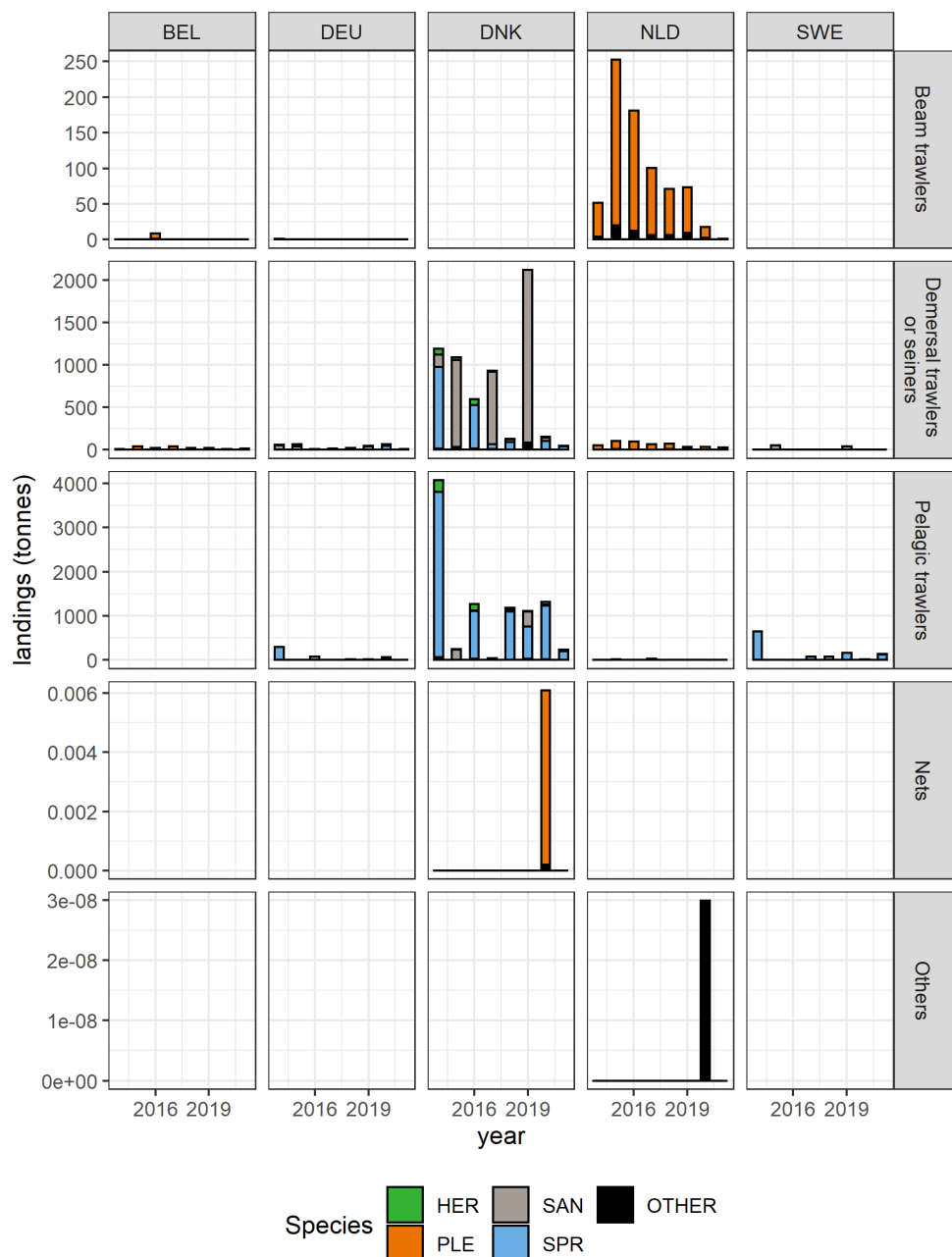
Figure 3.22 *Historical trend by gear type of the species caught in the Dogger Bank (N2000) by the Belgian, German, Danish, Dutch and Swedish fleets (HER: Atlantic herring; PLE: European plaice; SAN: sandeel; SPR: European sprat; Other: other species). Note the scale difference for the landings by gear type*
Source: Logbook data and VMS data, processed by WUR, DTUAQUA, TI, ILVO, SLU and IFREMER.

3.5.3 Economic value of the Dogger Bank (South)

The southern part of the Dogger Bank showed similar trends as the Natura 2000 part. Over the 2014-2021 period the amount of fishing activities has decreased significantly in the Dogger Bank (South) and most countries except for France were represented in this area (Table 3.6). Total effort in the Dogger Bank (South) decreased from 19 fishing days in 2015 down to 8 fishing days in 2021 (average of 14 days) and the added value decreased from 400 down to 90 thousand euros (average of 200 thousand euros). In economic terms, the Danish fleet was the most important in the area representing about 65% of the GVA, while the effort of the Dutch fleet was higher each year.

Table 3.6 _Effort, landings and values and gross value added of the fishing sector in the Dogger Bank (South) by country_

	Country	2014	2015	2016	2017	2018	2019	2020	2021	Average
Effort (fishing days)	BEL	1	3	2	1	4	3	1	-	2
	DEU	2	3	2	1	2	1	1	1	2
	DNK	6	1	5	1	2	1	1	2	2
	NLD	8	12	11	8	9	6	5	4	8
	SWE	-	-	-	-	-	1	-	-	-
	Total	17	19	19	12	17	11	8	8	14
Landings (tonnes)	BEL	8	23	12	11	10	13	5	7	11
	DEU	73	14	119	10	6	3	9	2	29
	DNK	2,059	211	1,021	207	883	416	587	170	694
	NLD	37	58	51	41	28	16	13	9	32
	SWE	134	2	74	124	21	208	24	95	85
	Total	2,312	308	1,277	392	948	656	638	283	852
Value (1,000 euros)	BEL	13	42	22	26	31	36	13	18	25
	DEU	22	23	38	8	15	8	9	5	16
	DNK	453	55	265	38	225	116	156	55	170
	NLD	57	95	95	81	55	45	36	22	60
	SWE	28	-	19	27	5	54	6	31	21
	Total	573	215	439	180	331	259	220	130	293
Gross Value Added (1,000 euros)	BEL	6	23	13	15	16	18	7	10	13
	DEU	12	13	22	4	10	4	5	3	9
	DNK	330	46	222	29	183	89	130	46	134
	NLD	30	49	56	43	30	19	16	10	32
	SWE	14	-	11	16	2	28	4	17	11
	Total	392	131	324	107	240	157	162	86	200

Source: Logbook data and VMS data and data from the Annual Economic report (STECF 2022), processed by WUR, DTUAQUA, TI, ILVO, SLU and IFREMER.

All fleets operating on the Dogger Bank (South) used some bottom otter trawls (OTB). OTB represented most activity of the Belgian and German fleets (Figure 3.23). The Danish fleets also operated midwater otter trawls (OTM) and the Dutch fleet used beam trawls (TBB) and otter twin trawls (OTT). While TBB used to be the most used gear in the area in 2015 and 2016, its use decreased steadily years thereafter while other gears show no clear trends.
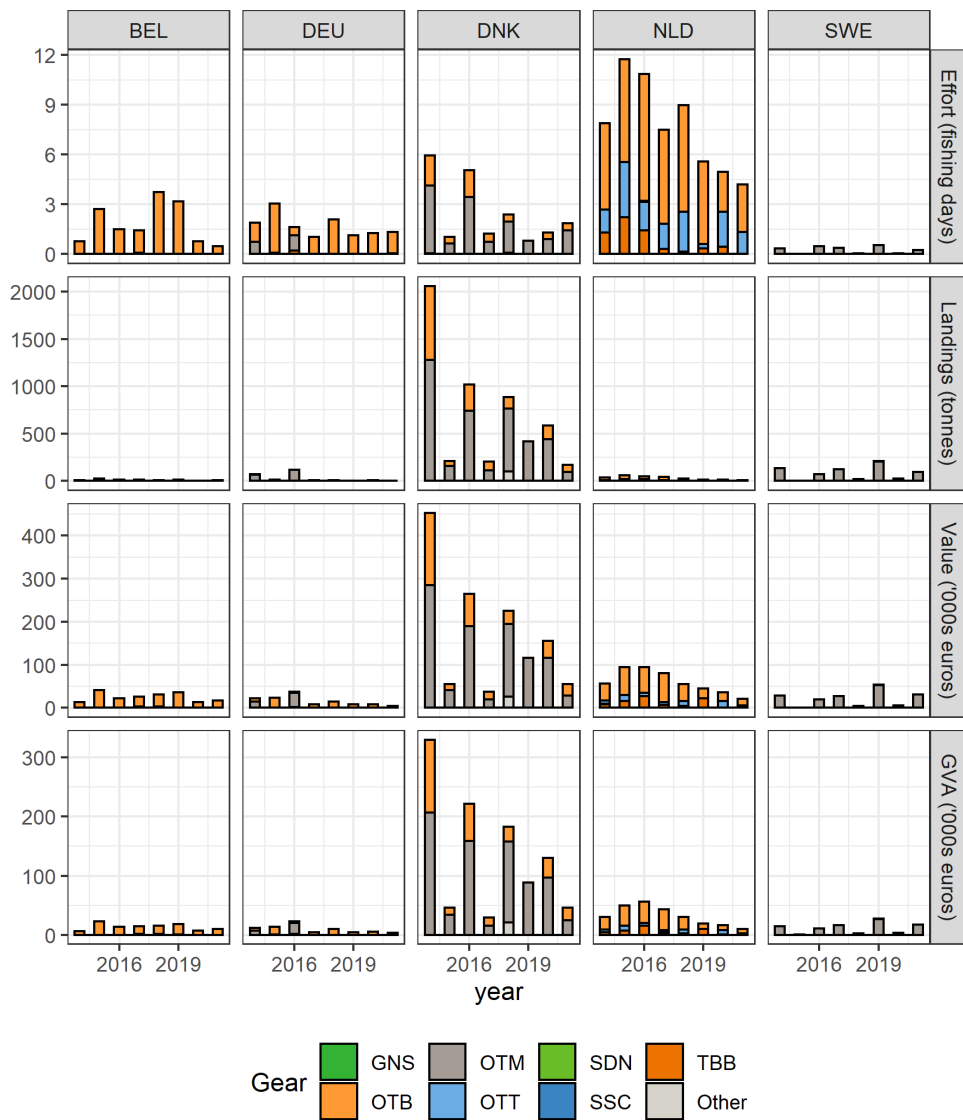
Figure 3.23 *Historical trend of the fishing activities in the Dogger Bank (South) with different gears (FPO: fishing pots; GNS: set gillnets (anchored); OTB: bottom otter trawls; OTM: otter trawls midwater; OTT: otter twin trawls; SDN: Danish seines; SSC: Scottish seines; TBB: beam trawls; Other: other gears) in the proposed closure of the Dogger Bank (South) for the different countries. Effort, landings, value of landings and GVA are given by country*
Source: Logbook data and VMS data and data from the Annual Economic report (STECF 2022), processed by WUR, DTUAQUA, TI, ILVO, SLU and IFREMER.

3.5.4 Main species caught in the Dogger Bank (South)

The main species caught in this area are European sprat (*Sprattus sprattus*; SPR), Atlantic herring (*Clupea harengus*; HER), European plaice (*Pleuronectes platessa*; PLE) and anchovy (*Engraulis encrasicolus*; ANE). Figure 3.24 shows that most landings in the Dogger Bank (South) consist of European sprat caught by the Danish fleet. European sprat are caught both by the Danish demersal trawlers or seiners and the Danish, Swedish and German pelagic trawlers. The Danish fleets also catch Atlantic herring. In addition, Dutch beam trawlers and Dutch demersal trawlers or seiners mainly caught European plaice in the Dogger Bank (South). However, the landings of the Dutch fleet were much lower compared to the landings of the Danish fleet caught in the Dogger Bank (South).
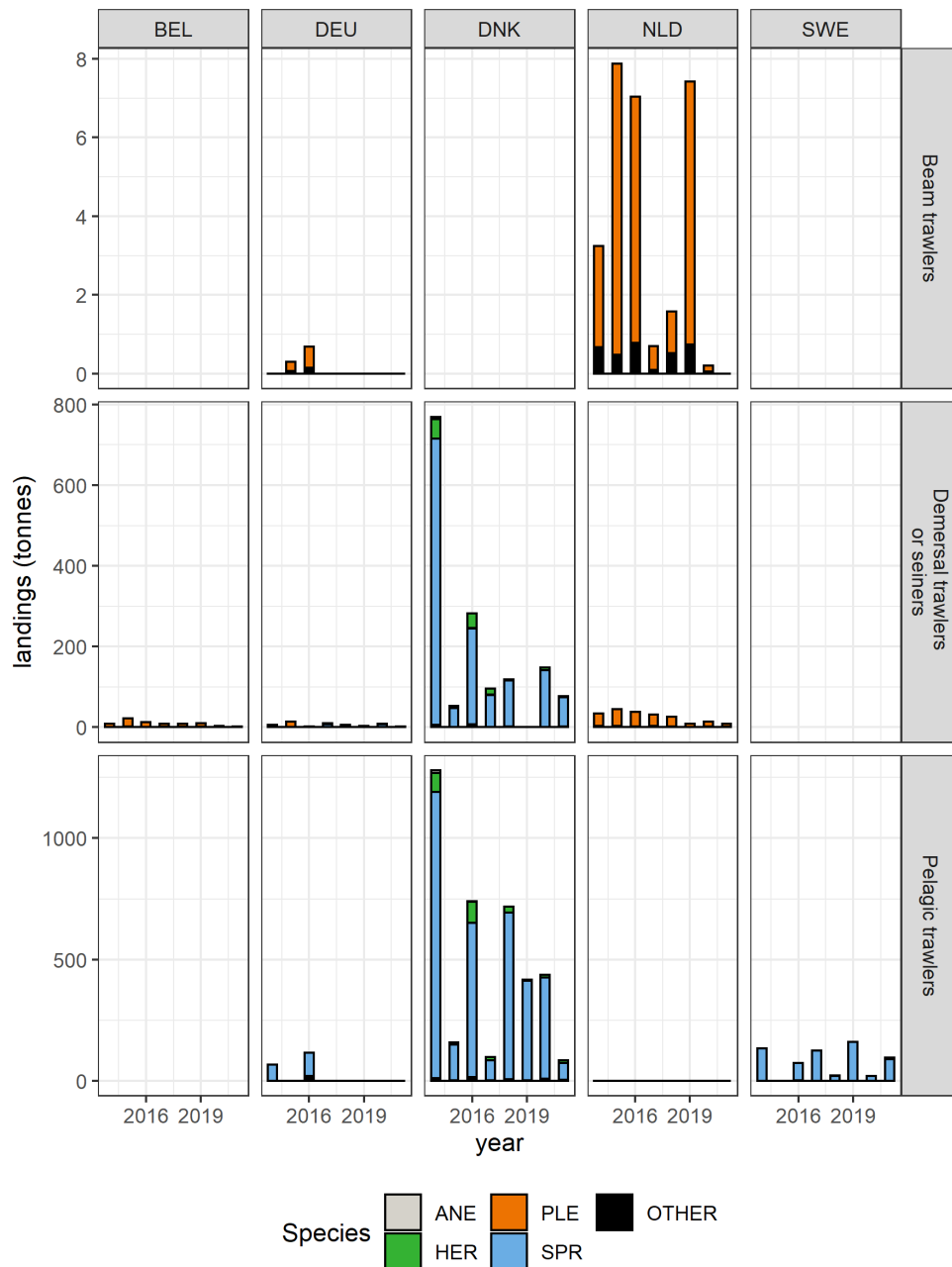
Figure 3.24 *Historical trend by gear type of the species caught in the Dogger Bank (South) by the Belgian, German, Danish, Dutch and Swedish fleets (ANE: European anchovy; HER: Atlantic herring; PLE: European plaice; SPR: European sprat; Other: other species). Note the scale difference for the landings by gear type Source: Logbook data and VMS data, processed by WUR, DTUAQUA, TI, ILVO, SLU and IFREMER.*

3.5.5 Individual dependency of Dutch fishers on the Dogger Bank (combined N2000 and South)

Figure 3.25 shows that the number of Dutch vessels actively fishing on the Dogger Bank varied over the study period between 16 and 39 vessels. The revenue dependency on the Dogger Bank was lower than 10% for all vessels except for a one vessel a year in 2015 and 2016 that obtained up to 20% of their revenue on the Dogger Bank.
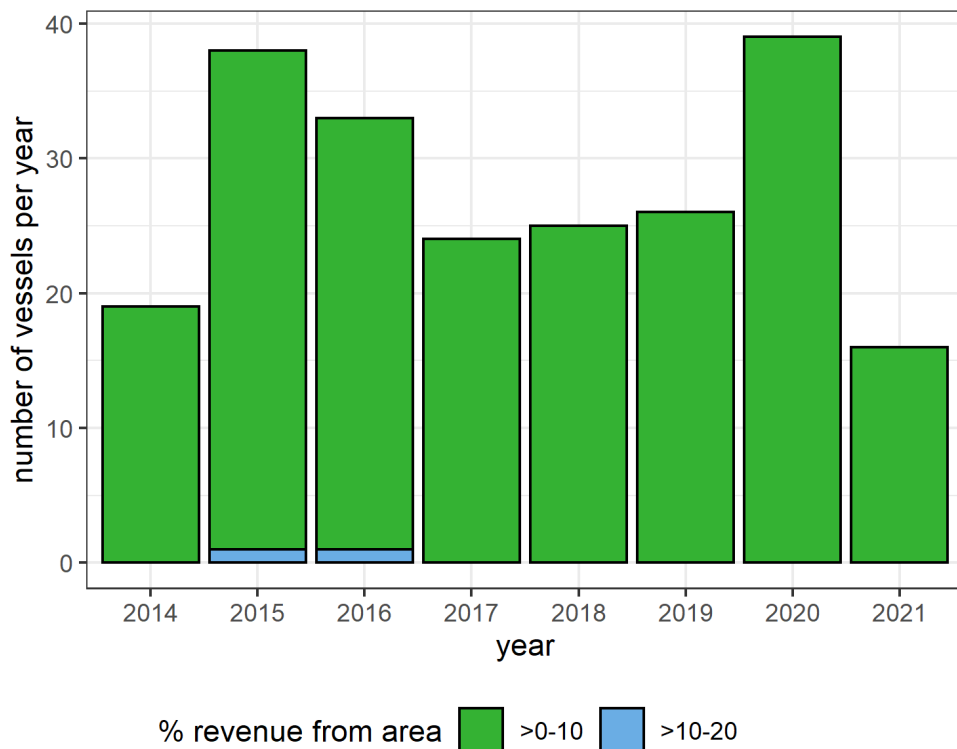
Figure 3.25 *The number of Dutch vessels per year and the revenue dependency*

Over the 2014-2021 period, the majority of the vessels with fishing activities on the Dogger Bank had a moderate dependency on the area (less than 10% of their revenue) and they came mainly from Urk (14 vessels) or Holland (about 10 vessels)(Figure 3.26). Only one vessel came from Zeeland and about two from the North of the Netherlands. Vessels with a higher revenue dependency came from Urk.
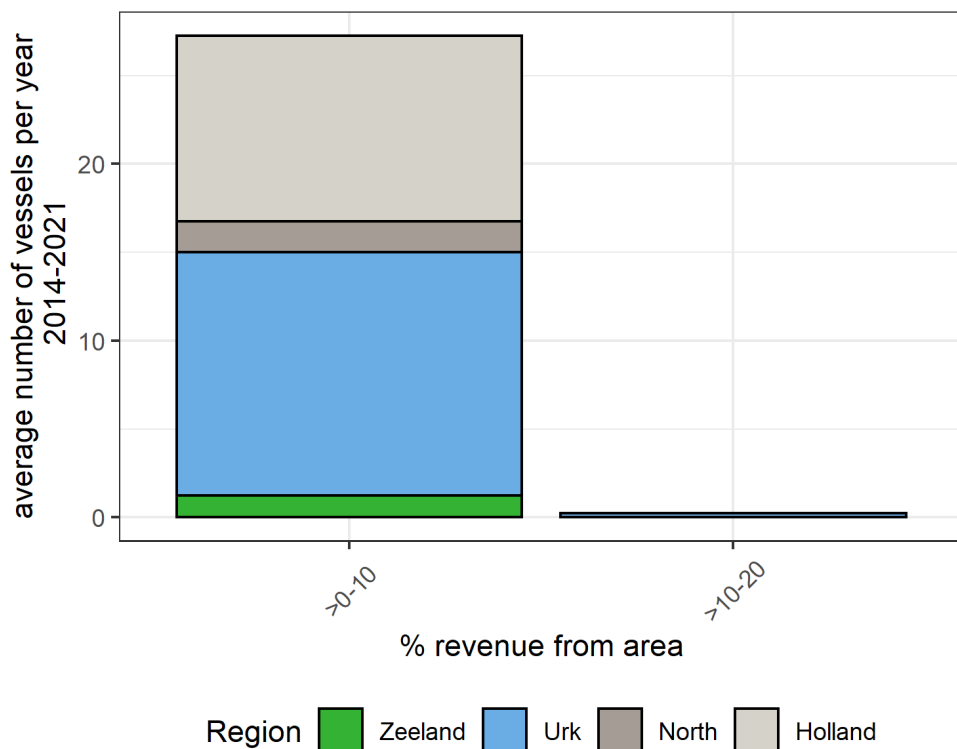
Figure 3.26 *Average number of vessels per region and revenue dependency*

The majority of the fishing revenue from the Dogger Bank, about 190 thousand euros per year was obtained with beam trawls fishing for flatfish (TBB) (Figure 3.27). The second most important gear was the bottom otter trawls (OTB) with a revenue of about 140 thousand euros. For all gears, most revenue came from vessels with an annual dependency lower than 10% although for the bottom otter trawl, more than 20 thousand euros were fished by vessels with a dependency between 10 and 20%.
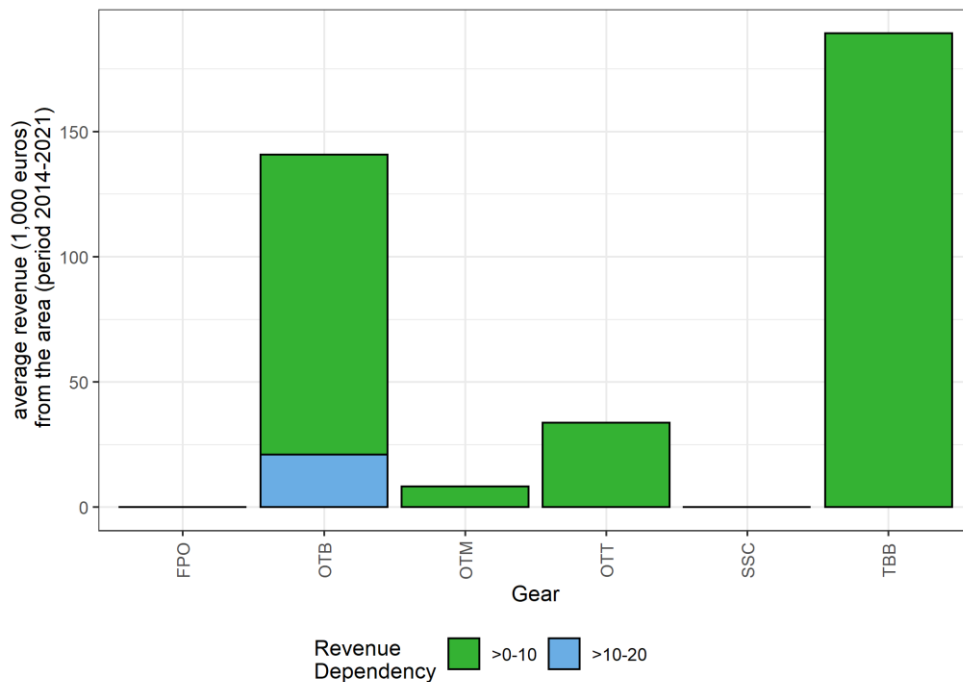
Figure 3.27 *Total of the average revenues (x 1,000 euros) of the vessels with different dependencies on the area per gear type*

3.6   Frisian Front subarea 1

3.6.1   Economic value of the Frisian Front subarea 1

Over the 2014-2021 period the amount of fishing activities has varied significantly from year to year in the Frisian Front subarea 1 and all countries were represented in this area although France and Sweden have extremely low activity (Table 3.7). The total effort in the Frisian Front subarea 1 varied between 196 and 441 fishing days (average of 299 days) and the added value varied between 0.6 and 4m euros (average of 1.8m euros). The Dutch fleet was the most important in the area (65% of effort and 50% of GVA), followed by the German fleet (about 25% of effort and 20% of GVA). The Danish fleet was also quite important in economic terms (about 30% of GVA) despite the high interannual variability of its activity in the area.

Table 3.7 *Effort, landings and values and gross value added of the fishing sector in the Frisian Front subarea 1 by country*

	Country	2014	2015	2016	2017	2018	2019	2020	2021	Average
Effort (fishing days)	BEL	6	9	19	37	25	6	4	5	14
	DEU	53	50	112	73	43	58	121	99	76
	DNK	7	26	18	1	7		9	3	9
	FRA					5	6	-	-	1
	NLD	130	204	290	263	160	157	191	199	199
	SWE		1	3			-			-
	Total	196	289	441	374	239	227	325	307	300
Landings (tonnes)	BEL	17	27	45	57	59	13	22	13	31
	DEU	136	313	426	155	71	75	175	132	185
	DNK	331	7,499	5,611	31	898		3,736	255	2,295
	FRA					7	13	-	1	3
	NLD	331	633	815	610	324	254	321	337	453
	SWE		222	382			19			78
	Total	815	8,693	7,279	853	1,359	374	4,254	738	3,046
Value (1,000 euros)	BEL	43	104	223	278	244	65	108	64	141
	DEU	473	534	1,288	597	398	369	905	764	666
	DNK	97	1,776	1,464	9	170		1,068	84	584
	FRA					32	47	-	3	10
	NLD	968	1,825	3,022	2,330	1,223	926	1,969	1,908	1,771
	SWE		54	91			-			18
	Total	1,581	4,293	6,088	3,214	2,067	1,407	4,051	2,824	3,190
Gross Value Added (1,000 euros)	BEL	19	56	136	145	127	30	61	36	76
	DEU	238	313	772	306	239	193	513	421	374
	DNK	70	1,474	1,217	7	140		894	71	484
	FRA					14	18	-	1	4
	NLD	468	907	1,848	1,279	612	384	898	870	908
	SWE		32	50			-			10
	Total	795	2,782	4,024	1,736	1,133	626	2,366	1,399	1,858

Source: Logbook data and VMS data and data from the Annual Economic report (STECF 2022), processed by WUR, DTUAQUA, TI, ILVO, SLU and IFREMER.

The Dutch and German fleets used mainly beam trawls (TBB) and to a lesser extent bottom otter trawls (OTB) in the Frisian Front subarea 1 (Figure 3.28). In addition the Dutch fleet also used substantially otter twin trawls (OTT) in 2016 and 2017. The Danish fleet was active in the area with midwater otter trawls (OTM) and bottom otter trawls (OTB) and the Belgian fleet with bottom otter trawls (OTB).
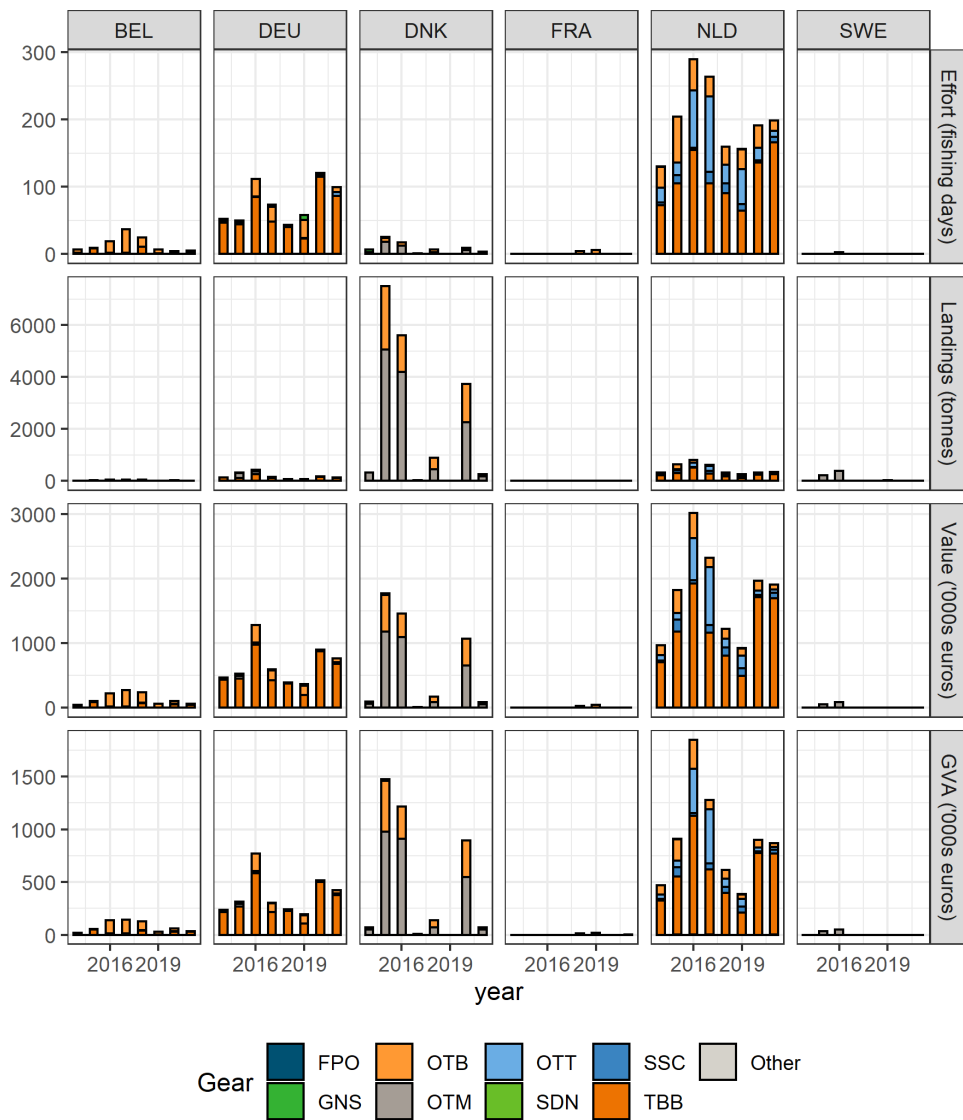
Figure 3.28 *Historical trend of the fishing activities in the Frisian Front subarea 1 with different gears (FPO: fishing pots; GNS: set gillnets (anchored); OTB: bottom otter trawls; OTM: otter trawls midwater; OTT: otter twin trawls; SDN: Danish seines; SSC: Scottish seines; TBB: beam trawls; Other: other gears) in the proposed closure of the Frisian Front subarea 1 for the different countries. Effort, landings, value of landings and GVA are given by country*
Source: Logbook data and VMS data and data from the Annual Economic report (STECF 2022), processed by WUR, DTUAQUA, TI, ILVO, SLU and IFREMER.

3.6.2 Main species caught in the Frisian Front subarea 1

The main species caught in this area are European sprat (*Sprattus sprattus*; SPR), European plaice (*Pleuronectes platessa*; PLE), Norway lobster (*Nephrops norvegicus*, NEP), common sole (*Solea solea*; SOL) and tub gurnard (*Chelidonichthys lucerna*; GUU). Figure 3.29 shows that shows that most landings in the Frisian Front subarea 1 consist of European sprat caught by the Danish fleet. European sprat are caught both by the Danish demersal trawlers or seiners and the Danish, Swedish and German pelagic trawlers. In addition, Dutch beam trawlers and Dutch demersal trawlers or seiners mainly caught European plaice, common sole, nephrops and tub gurnard in the Frisian Front subarea 1. However, the landings of the Dutch fleet were much lower compared to the landings of the Danish fleet caught in the Frisian Front subarea 1. German and Danish netters also caught common sole in limited quantities.
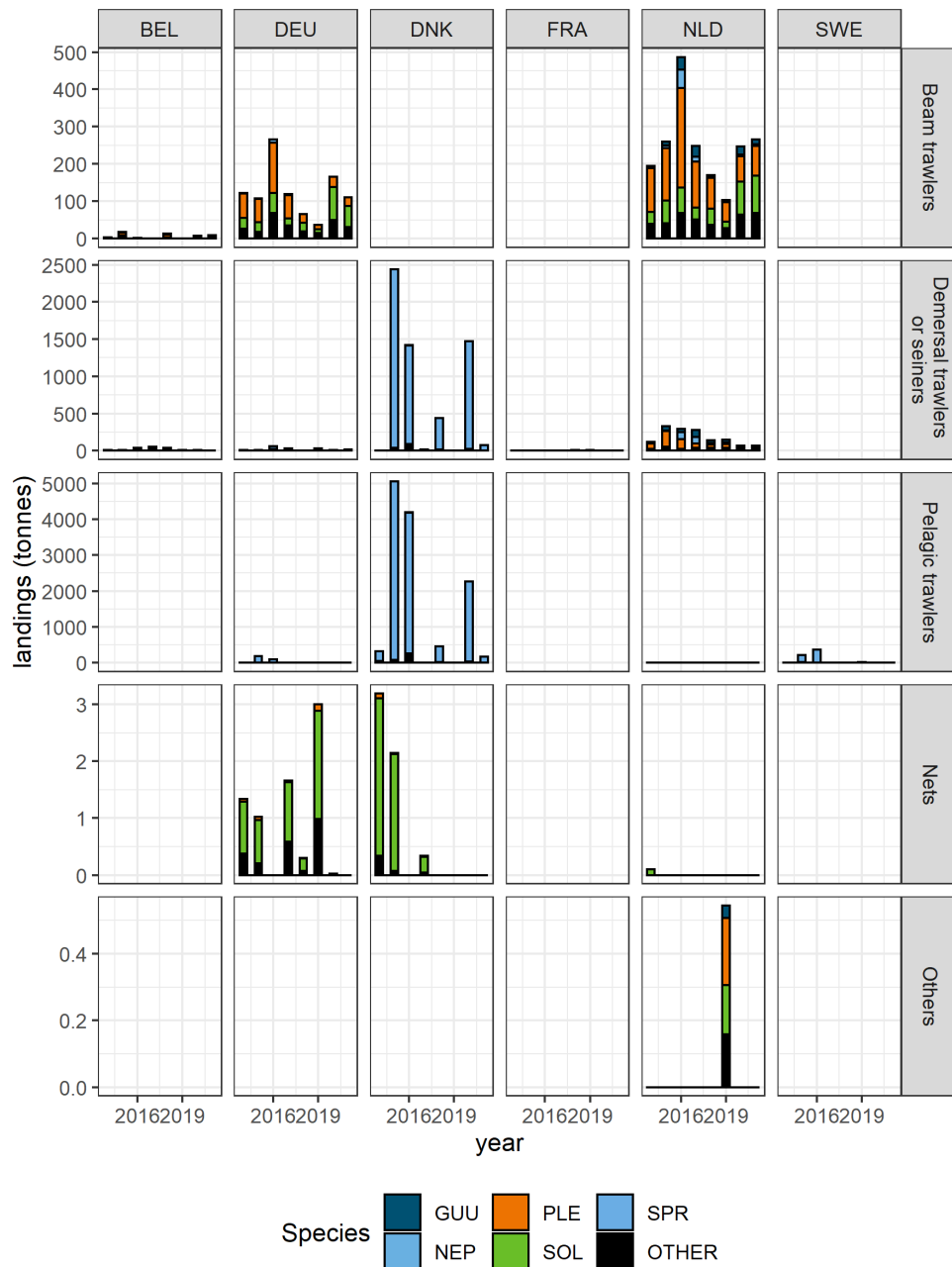
Figure 3.29 *Historical trend by gear type of the species caught in the Frisian Front subarea 1 by the Belgian, German, Danish, French, Dutch and Swedish fleets (GUU: tub gurnard; NEP: Norway lobster; PLE: European plaice; SOL: common sole; SPR: European sprat; Other: other species). Note the scale difference for the landings by gear type*
Source: Logbook data and VMS data, processed by WUR, DTUAQUA, TI, ILVO, SLU and IFREMER.

3.6.3   Individual dependency of Dutch fishers on the Frisian Front subarea 1

Figure 3.30 shows that the number of Dutch vessels actively fishing on the Frisian Front subarea 1 increased over the study period from 50 to 75 vessels. The revenue dependency on the Frisian Front subarea 1 was lower than 10% for most vessels but every year, a couple of vessels (up to ten in 2017) obtained more than 10% of their revenue on the Frisian Front subarea 1, up to 40% in 2016 and 2017.
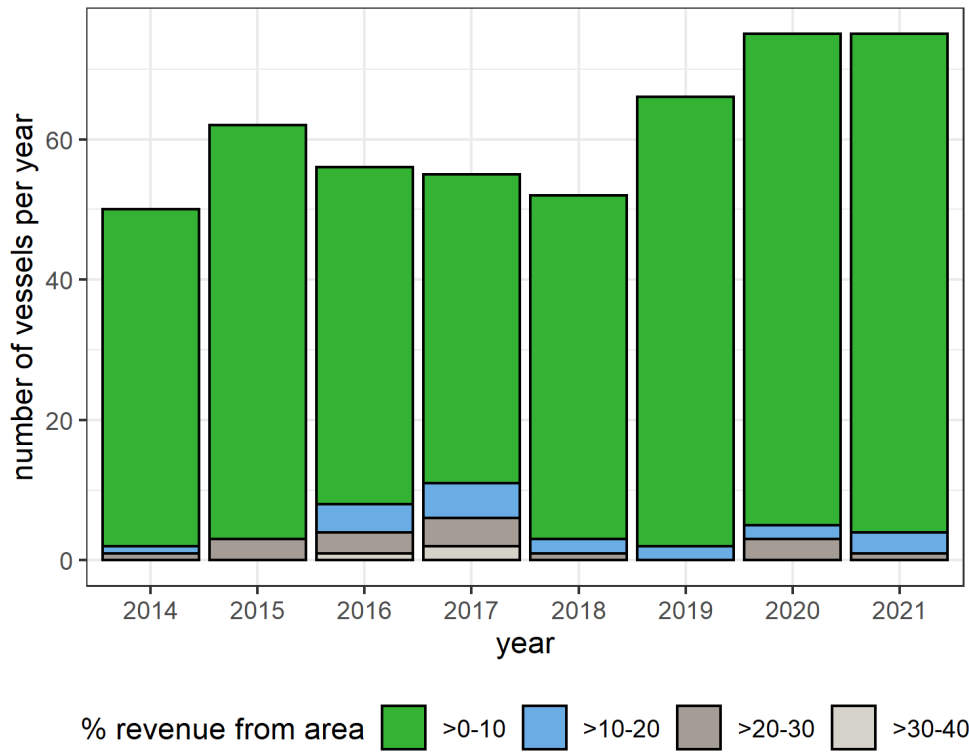
Figure 3.30 *Number of Dutch vessels per year and revenue dependency*

Over the 2014-2021 period, the majority of the vessels with fishing activities on the Frisian Front subarea 1 had a low dependency on the area (less than 10% of their revenue) and they came mainly from Urk (about 25 vessels) or Holland (about 21 vessels, see Figure 3.31). About three vessels came from Zeeland and about six from the North of the Netherlands. Most of the vessels that had a higher revenue dependency came from Urk and the others from Holland.
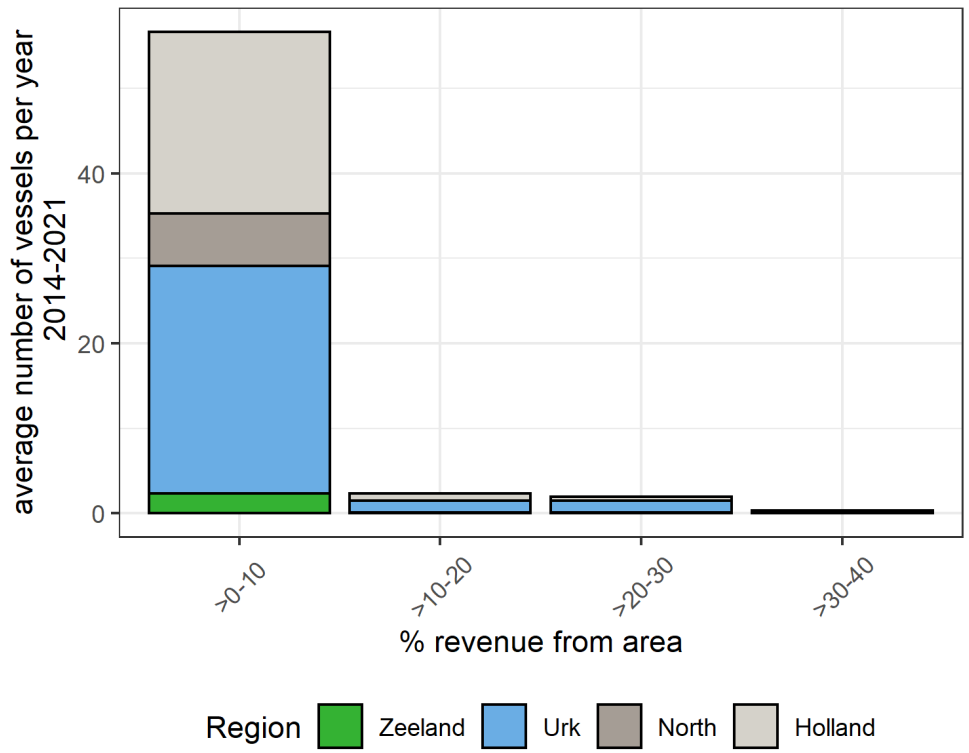
Figure 3.31 *Average number of vessels per region and revenue dependency*

The majority of the fishing revenue from the Frisian Front subarea 1, about 1.2m euros per year was obtained with beam trawls targeting flatfish (TBB) (Figure 3.32). The second most important gear was the otter twin trawls (OTT) with a revenue of about 300 thousand euros per year and then the bottom otter trawls (OTB) with an annual revenue of about 200 thousand euros. About half of the shrimp trawlers, otter twin trawlers and bottom otter trawlers revenue came from vessels with an annual dependency higher than 10%, and about a third from a dependency higher than 20%. The Scottish seiners amounted to an annual revenue of more than 100 thousand euros, mainly caught by vessels with a dependency lower than 10%.
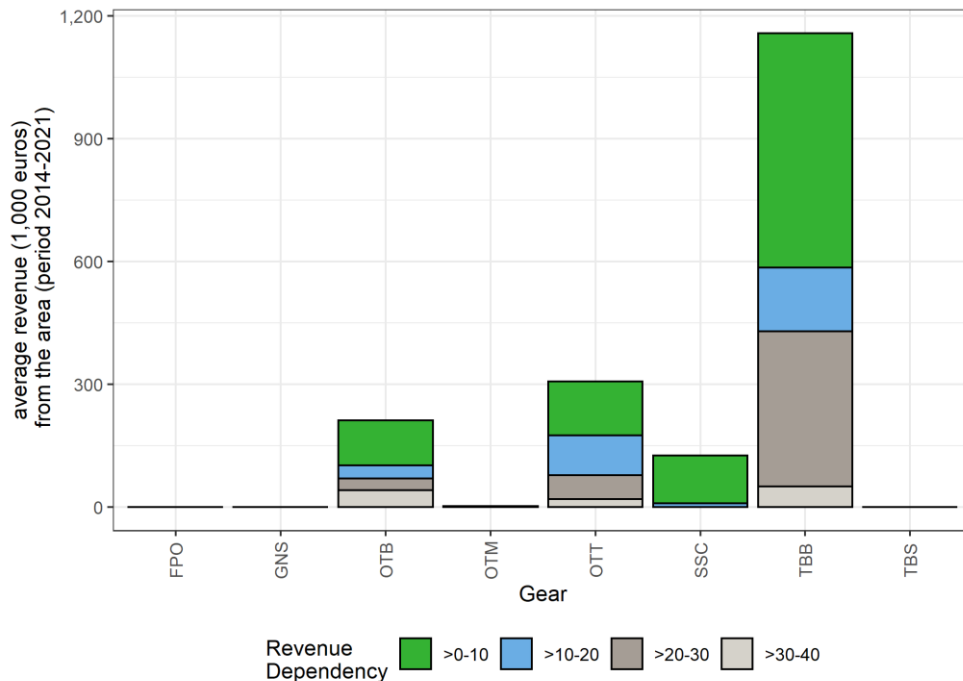
Figure 3.32 *Total of the average revenues (x 1,000 euros) of the vessels with different dependencies on the area per gear type*

3.7 Frisian Front subarea 2

3.7.1 Economic value of the Frisian Front subarea 2

Over the 2014-2021 period the amount of fishing activities varied significantly from year to year in the Frisian Front subarea 2 and all countries were represented in this area although Belgium, France and Sweden have extremely low activity (Table 3.8). The total effort in the Frisian Front subarea 2 varied between 5 and 24 fishing days (average of 13 days) and the added value varied between 36 and 725 thousand euros (average of about 200 thousand euros). The overall time trend in this area was driven by the activities of the Danish fleet, which was dominant in 2015, 2016 and 2020, and almost absent in the other years contributing to about 70% of the total GVA of the area over the period. The Dutch fleet was on average the most active in the area (on average 60% of the effort).

Table 3.8 *Effort, landings and values and gross value added of the fishing sector in the Frisian Front subarea 2 by country*

	Country	2014	2015	2016	2017	2018	2019	2020	2021	Average
Effort (fishing days)	BEL	1	0	0	0	0	0	0	1	0
	DEU	1	2	3	7	3	3	1	0	3
	DNK	0	8	4	0			1	1	2
	FRA			0	0				0	0
	NLD	22	8	8	7	6	6	3	8	8
	SWE		0	0						0
	Total	24	19	15	14	10	9	5	10	13
Landings (tonnes)	BEL	7	0	5	0	3	0	2	1	2
	DEU	6	287	15	4	2	2	3	16	42
	DNK	4	3,239	999	0			636	199	635
	FRA			0	0				0	0
	NLD	58	47	54	43	20	31	8	37	37
	SWE		81	49						16
	Total	75	3,655	1,122	47	25	32	648	254	732
Value (1,000 euros)	BEL	9	2	11	0	19	1	5	3	6
	DEU	19	67	29	34	17	13	6	8	24
	DNK	1	742	266	2			178	65	157
	FRA			1	0				1	0
	NLD	122	102	103	113	35	69	19	74	80
	SWE		20	9						4
	Total	152	933	418	149	70	83	208	152	271
Gross Value Added (1,000 euros)	BEL	4	1	6	0	10	0	3	2	3
	DEU	11	40	18	18	10	6	3	4	14
	DNK	1	621	222	1			149	54	131
	FRA			0	0				0	0
	NLD	61	52	60	67	17	30	9	34	41
	SWE		12	5						2
	Total	77	725	312	87	37	36	163	95	192

Source: Logbook data and VMS data and data from the Annual Economic report (STECF 2022), processed by WUR, DTUAQUA, TI, ILVO, SLU and IFREMER.

The Dutch fleet is mainly active with Scottish seines (SSC) in the Frisian Front subarea 2 (Figure 3.33). The German fleets used gillnets (GNS) between 2016 and 2019. The Danish fleet is active in the area with midwater otter trawls (OTM) and bottom otter trawls (OTB).
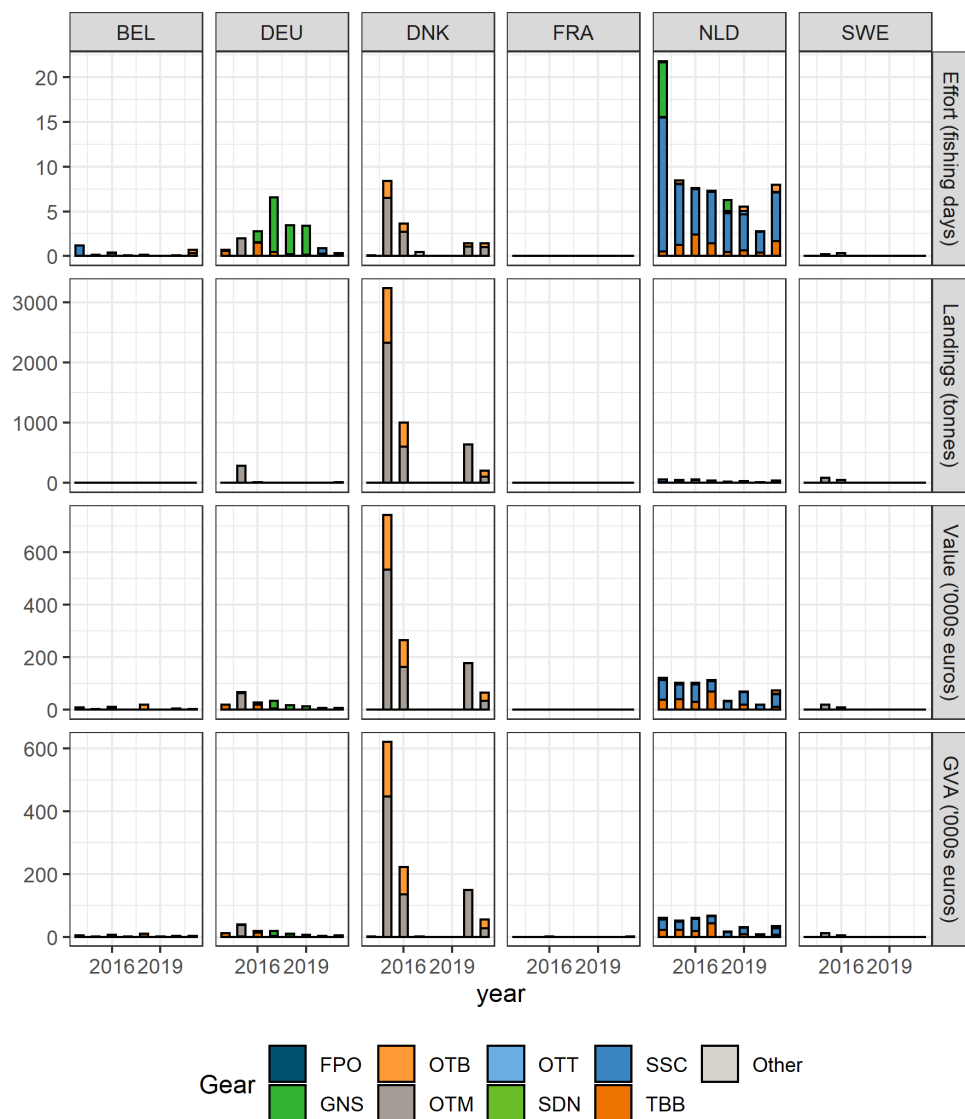
Figure 3.33 *Historical trend of the fishing activities in the Frisian Front subarea 2 with different gears (FPO: fishing pots; GNS: set gillnets (anchored); OTB: bottom otter trawls; OTM: otter trawls midwater; OTT: otter twin trawls; SDN: Danish seines; SSC: Scottish seines; TBB: beam trawls; Other: other gears) in the proposed closure of the Frisian Front subarea 2 for the different countries. Effort, landings, value of landings and GVA are given by country*
Source: Logbook data and VMS data and data from the Annual Economic report (STECF 2022), processed by WUR, DTUAQUA, TI, ILVO, SLU and IFREMER.

3.7.2 Main species caught in the Frisian Front subarea 2

The main species caught in this area are European sprat (*Sprattus sprattus*; SPR), European plaice (Pleuronectes platessa; PLE) and tub gurnard (*Chelidonichthys lucerna*; GUU). Figure 3.34 shows that most landings in the Frisian Front subarea 2 consist of European sprat caught by the Danish fleet. European sprat are caught both by the Danish demersal trawlers or seiners and the Danish, Swedish and German pelagic trawlers. In addition, Dutch demersal trawlers or seiners mainly caught tub gurnard in the Frisian Front subarea 2 and beam trawlers mainly caught plaice. However, the landings of those fleets were much lower compared to the landings of the Danish fleet caught in the Frisian Front subarea 2.
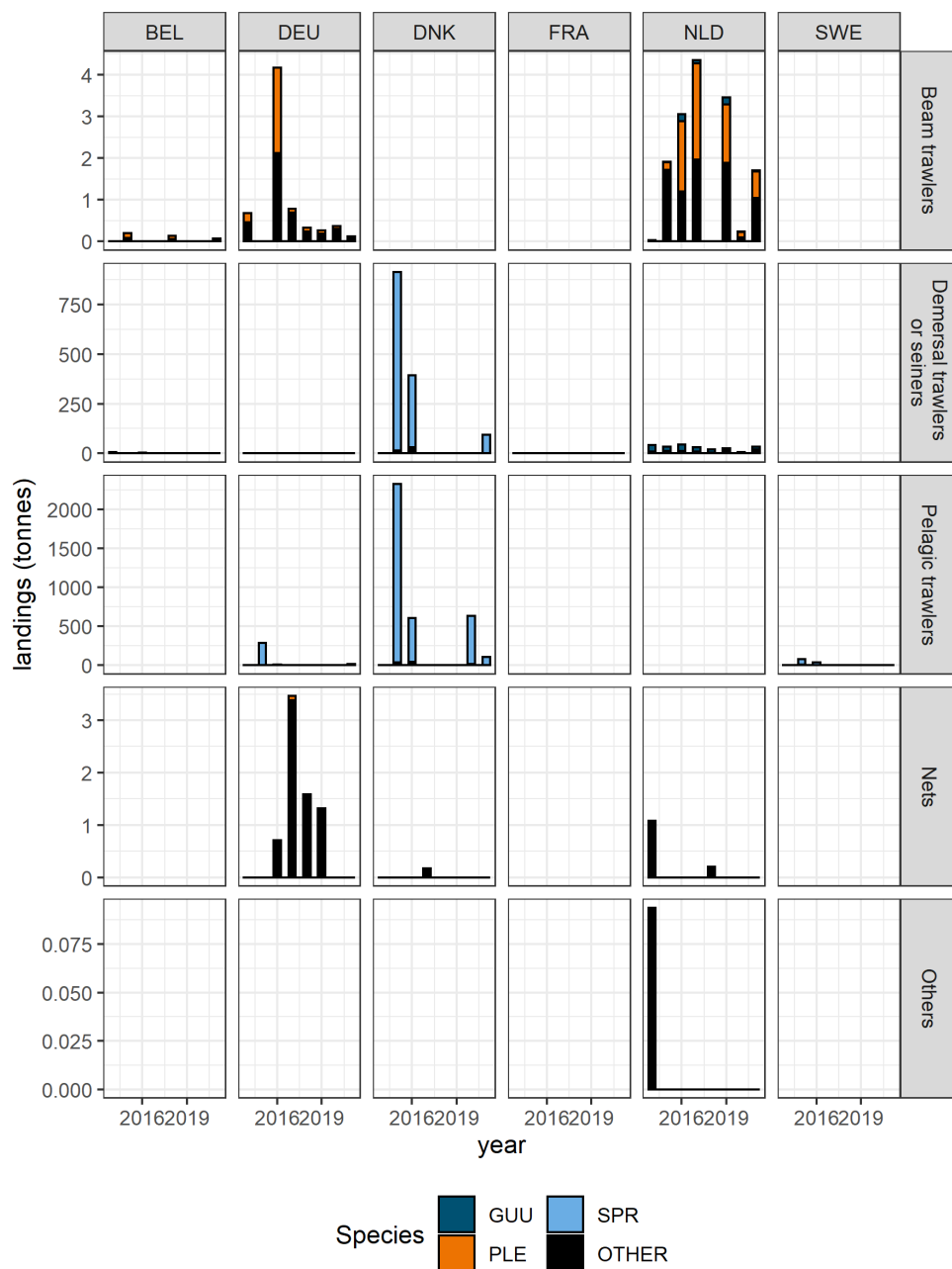
Figure 3.34 *Historical trend by gear type of the species caught in the Frisian Front subarea 2 by the Belgian, German, Danish, French, Dutch and Swedish fleets (GUU: tub gurnard; PLE: European plaice; SPR: European sprat; Other: other species). Note the scale difference for the landings by gear type Source: Logbook data and VMS data, processed by WUR, DTUAQUA, TI, ILVO, SLU and IFREMER.*

3.7.3   Individual dependency of Dutch fishers on the Frisian Front subarea 2

Figure 3.35 shows that the number of Dutch vessels actively fishing on the Frisian Front subarea 2 varied from year to year over the study period between 8 and 19 vessels. The revenue dependency on the Frisian Front subarea 2 was lower than 10% for all vessels except one vessel[2] in 2018 that obtained up to 60% of their revenue on the Frisian Front subarea 2.

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[2]   That vessel fished most of its revenue in the Frisian Front subarea 2, although the vessel was hardly active that year and the total annual revenue was low, about 3,300 euros for the year.
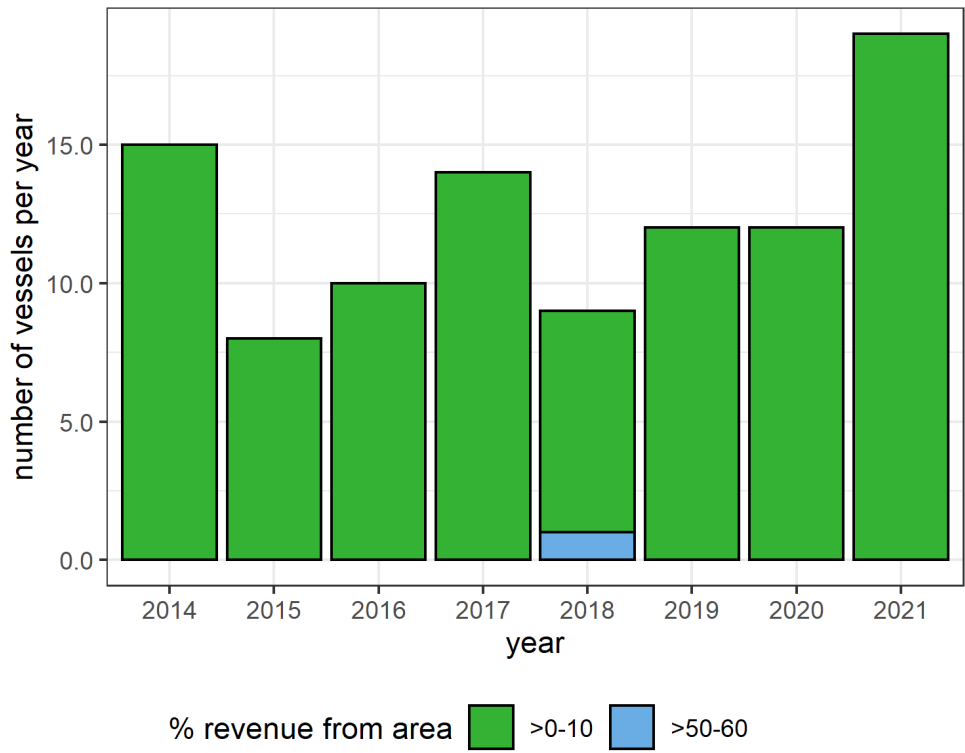
Figure 3.35 *Number of Dutch vessels per year and revenue dependency*

Over the 2014-2021 period, the majority of the vessels with fishing activities on the Frisian Front subarea 2 had a low dependency on the area (less than 10% of their revenue) and they came mainly from Urk (about 9 vessels per year, see Figure 3.36). About one vessel came from the North of the Netherlands per year and two from Holland. The vessel with the higher revenue dependency came from the North of the Netherlands.
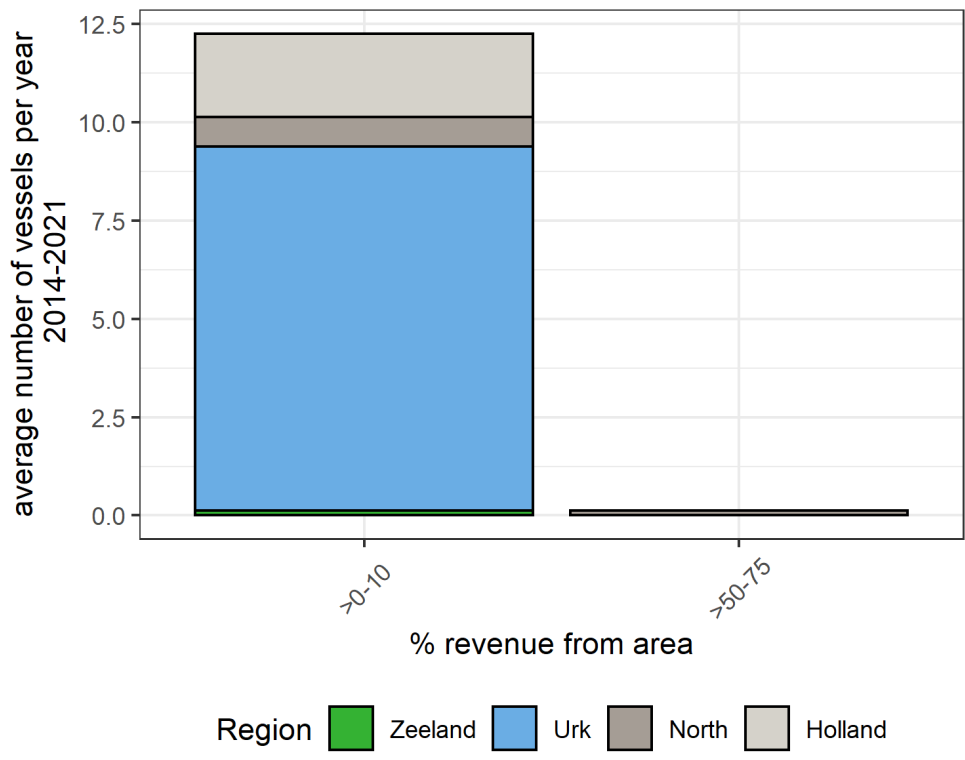
Figure 3.36 *Average number of vessels per region and revenue dependency*

The majority of the fishing revenue from the Frisian Front subarea 2, about 60 thousand euros per year, was obtained with Scottish seines (SSC) (Figure 3.37). The second most important gear was the beam trawls fishing for flatfish (TBB) with a revenue of about 10 thousand euros. Most of the revenue came from vessels with an annual dependency lower than 10%.
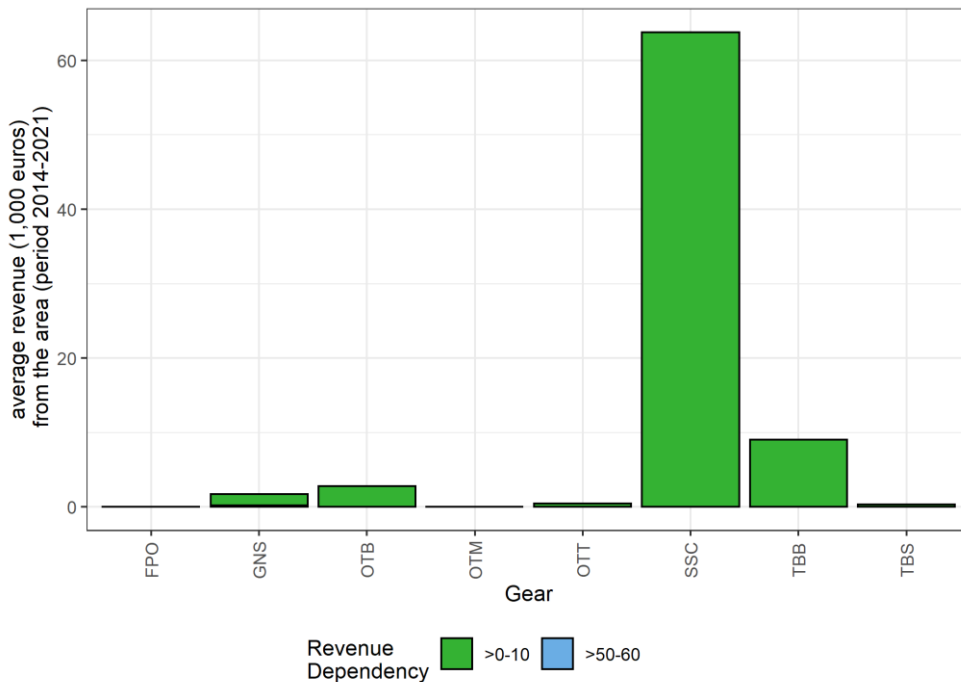
Figure 3.37 *Total of the average revenues (x 1,000 euros) of the vessels with different dependencies on the area per gear type*

3.8   North Sea Coastal Zone

The North Sea Coastal Zone is also split in two types of areas, the larger one designated Natura 2000 area and small VIBEG management zones (Figure 1.1). The VIBEG management zones overlap partially with the Natura 2000 area. In this report, the economic and species results are given separately for both types of areas, the overlapping parts are accounted for in both Natura 2000 and VIBEG sections. The individual dependency analysis is shown for the combined area where the overlapping parts are accounted for once.

While the previous study (Roskam et al. 2021) included the North Sea Coastal Zone VIBEG management zones, those were estimated based on the activity in the areas around them. In this call, the management zones were explicitly asked as separate areas leading to much more precise estimates that can deviate from previous estimates.

3.8.1   Economic value of the North Sea Coastal Zone (N2000)

Over the 2014-2021 period the amount of fishing activities remained stable in the North Sea Coastal Zone (N2000) and fishing fleets from the Netherlands, Germany, Belgium were active in this area. Fleets from Denmark and Sweden[3] only had limited activity in the area (Table 3.9). The total effort in the North Sea Coastal Zone (N2000) varied between 3,800 and 6,700 fishing days (average of 5,000 days) and the added value varied between 5.3 and 28m euros (average of about 13m euros). The North Sea Coastal Zone

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[3] Based on the Common Fisheries Policy, Sweden is not allowed to fish in the 6 nautical miles zone of the Dutch EEZ and should therefore not be active in the Dutch North Sea Coastal Zone Area. The activity reported here for Sweden, is fully due to logbook data at the ICES rectangle level proportionally allocated to the area. No VMS activity was reported here.

(N2000) was dominated by the Dutch fleet contributing more than 97% of to the total effort and GVA from the area.

Table 3.9 *Effort, landings and values and gross value added of the fishing sector in the North Sea Coastal Zone (N2000) by country*

	Country	2014	2015	2016	2017	2018	2019	2020	2021	Average
Effort (fishing days)	BEL	23	33	78	98	73	11	29	26	46
	DEU	64	64	313	53	50	37	62	20	83
	DNK	1	-		3	-	-		2	1
	NLD	6,229	5,134	6,313	3,683	4,676	3,989	4,944	4,237	4,901
	SWE			-						-
	Total	6,317	5,232	6,704	3,837	4,799	4,037	5,035	4,285	5,031
Landings (tonnes)	BEL	31	27	63	33	111	15	29	17	41
	DEU	74	78	270	37	77	44	69	22	84
	DNK	-	7		44	4	57		817	116
	NLD	7,640	6,793	7,003	2,629	8,945	5,691	5,642	6,177	6,315
	SWE			6						1
	Total	7,747	6,905	7,342	2,744	9,138	5,807	5,739	7,033	6,557
Value (1,000 euros)	BEL	110	104	414	223	409	45	120	85	189
	DEU	207	236	1,614	282	254	123	223	92	379
	DNK	3	2		12	1	15		240	34
	NLD	21,623	17,116	34,380	14,234	49,865	12,835	12,474	11,972	21,812
	SWE			2						-
	Total	21,943	17,458	36,410	14,752	50,529	13,018	12,818	12,389	22,415
Gross Value Added (1,000 euros)	BEL	48	46	256	112	221	20	70	49	103
	DEU	118	136	1,120	172	169	64	146	60	248
	DNK	2	2		9	1	12		200	28
	NLD	11,891	9,568	23,637	8,510	28,395	5,200	6,437	6,004	12,455
	SWE			1						-
	Total	12,059	9,752	25,014	8,803	28,786	5,296	6,653	6,313	12,834

Source: Logbook data and VMS data and data from the Annual Economic report (STECF 2022), processed by WUR, DTUAQUA, TI, ILVO, SLU and IFREMER.

The North Sea Coastal Zone (N2000) is mainly operated by the Dutch fleet using beam trawls (TBB) and other gears (here mechanised dredges) (Figure 3.38). The activity seems a bit volatile but was lower than average for the last three years of the study period.
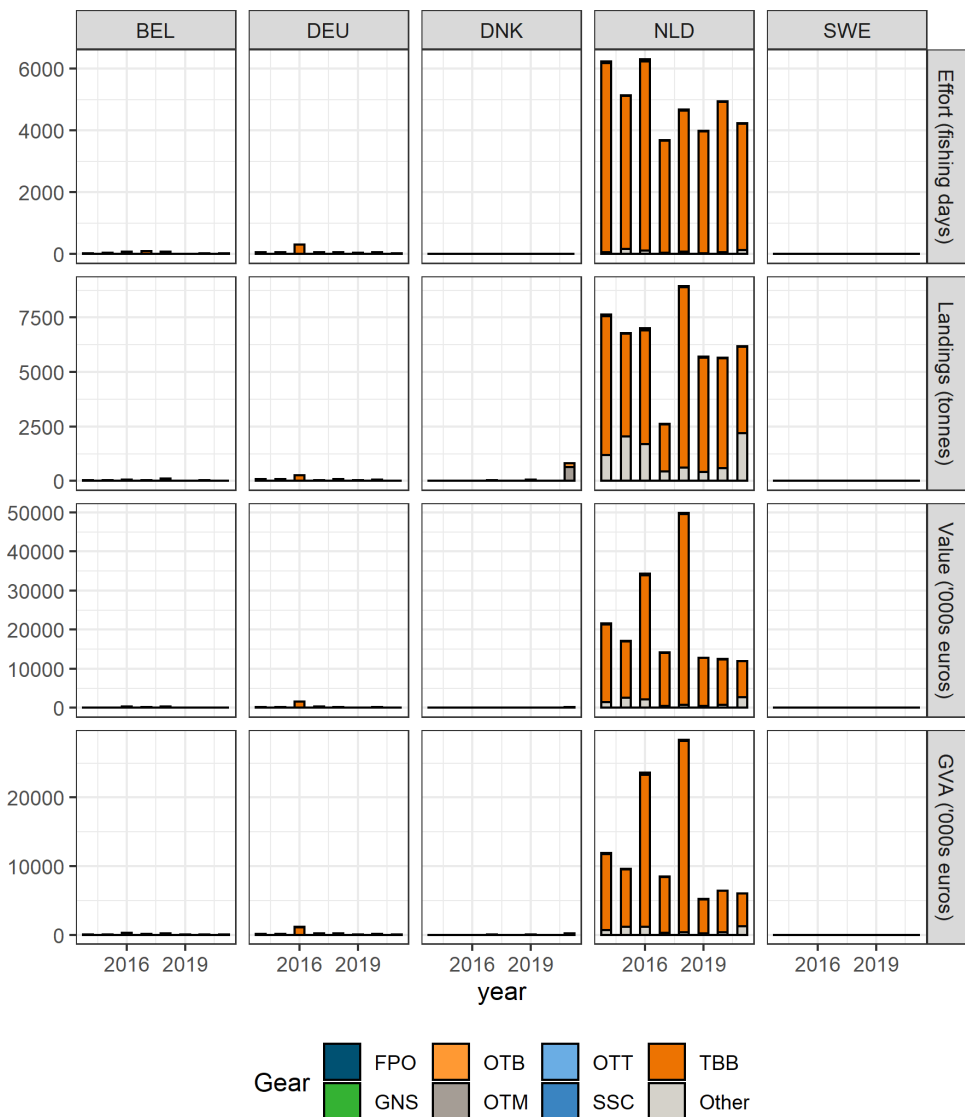
Figure 3.38 *Historical trend of the fishing activities in the North Sea Coastal Zone (N2000) with different gears (FPO: fishing pots; GNS: set gillnets (anchored); OTB: bottom otter trawls; OTM: otter trawls midwater; OTT: otter twin trawls; SSC: Scottish seines; TBB: beam trawls; Other: other gears) in the proposed closure of the North Sea Coastal Zone (N2000) for the different countries. Effort, landings, value of landings and GVA are given by country*
Source: Logbook data and VMS data and data from the Annual Economic report (STECF 2022), processed by WUR, DTUAQUA, TI, ILVO, SLU and IFREMER.

3.8.2 Main species caught in the North Sea Coastal Zone (N2000)

The main species caught in this area are common shrimp (*Crangon crangon*; CSH), razor shell (*Ensis ensis*; EQE) and European sprat (*Sprattus sprattus*; SPR). Figure 3.39 shows that Common shrimp are mainly caught in the North Sea Coastal Zone (N2000) by the Dutch fleet with beam trawlers while razor shells are caught by other gears, namely the mechanised dredge. The Danish pelagic trawlers also caught some sprat in the area. However, the landings of the Danish fleet were much lower compared to the landings of the Dutch fleet caught in the North Sea Coastal Zone (N2000).
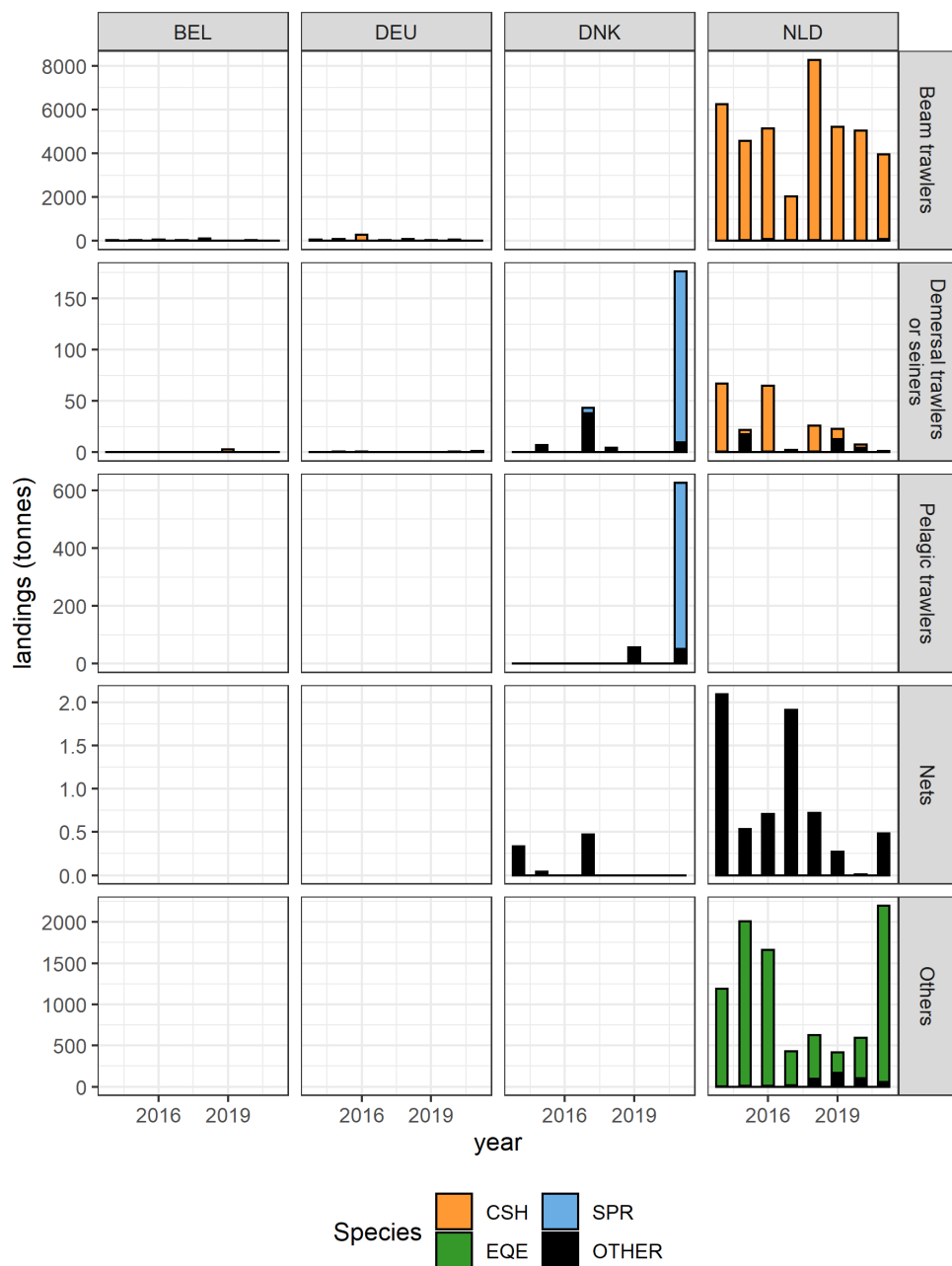
Figure 3.39 *Historical trend by gear type of the species caught in the North Sea Coastal Zone (N2000) by the Belgian, German, Danish and Dutch fleet (CSH: common shrimp; EQE: razor shell; SPR: European sprat; Other: other species). Note the scale difference for the landings by gear type*
Source: Logbook data and VMS data, processed by WUR, DTUAQUA, TI, ILVO, SLU and IFREMER.

3.8.3 Economic value of the North Sea Coastal Zone (VIBEG)

Over the 2014-2021 period the amount of fishing activity in the North Sea Coastal Zone (VIBEG) varied significantly from year to year and fishing fleets from the Netherlands, Germany, Denmark, Belgium and Sweden[4] were active in the area (Table 3.10). Total effort in the North Sea Coastal Zone (VIBEG) fluctuated from 345 fishing days in 2014, down to 23 fishing days in 2017 and up again to 106 fishing days in 2020 (average of 108 fishing days per year) and gross value added varied from 55 thousand euros up to 700 thousand euros (average about 300 thousand euros per year). The North Sea Coastal Zone (VIBEG) was dominated by the Dutch fleet (about 85% of effort and 80% of GVA). While the German fleet was active the all period, the Danish fleet only contributed substantially in 2021 with 80% of the catch that year and almost 50% of the GVA.

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[4] See previous footnote.

Table 3.10 *Effort, landings and values and gross value added of the fishing sector in the North Sea Coastal Zone (VIBEG) by country*

	Country	2014	2015	2016	2017	2018	2019	2020	2021	Average
Effort (fishing days)	BEL	3	1	3	-	-	-	-	1	1
	DEU	24	9	62	6	6	6	17	2	17
	DNK	-	-		1				1	-
	NLD	318	104	52	15	43	33	88	64	90
	SWE			-						-
	Total	345	115	117	23	49	39	106	68	108
Landings (tonnes)	BEL	4	1	2	-	1	1	-	-	1
	DEU	31	11	50	5	9	6	15	24	19
	DNK	-	-		13				443	57
	NLD	389	151	76	24	66	47	131	93	122
	SWE			2						-
	Total	425	164	130	42	76	54	147	560	200
Value (1,000 euros)	BEL	16	3	10	-	4	2	2	1	5
	DEU	78	34	316	40	30	18	47	14	72
	DNK	1	-		6				139	18
	NLD	1,179	468	427	150	402	113	303	229	409
	SWE			1						-
	Total	1,274	505	754	197	435	133	351	383	504
Gross Value Added (1,000 euros)	BEL	7	1	6	-	2	1	1	1	2
	DEU	44	19	220	25	20	9	31	9	47
	DNK	1	-		4				116	15
	NLD	650	263	296	91	229	45	158	120	231
	SWE			-						-
	Total	701	284	523	120	250	55	190	245	296

Source: Logbook data and VMS data and data from the Annual Economic report (STECF 2022), processed by WUR, DTUAQUA, TI, ILVO, SLU and IFREMER.

The North Sea Coastal Zone (N2000) is mainly operated by the Dutch fleet using beam trawls (TBB) and other gears (here mechanised dredges) (Figure 3.40). The activity seems a bit volatile without a clear trend over the study period. The German fleet is also fishing there with beam trawls. In 2021 the Danish fleet had also been active with midwater otter trawls (OTM) and bottom otter trawls (OTB).
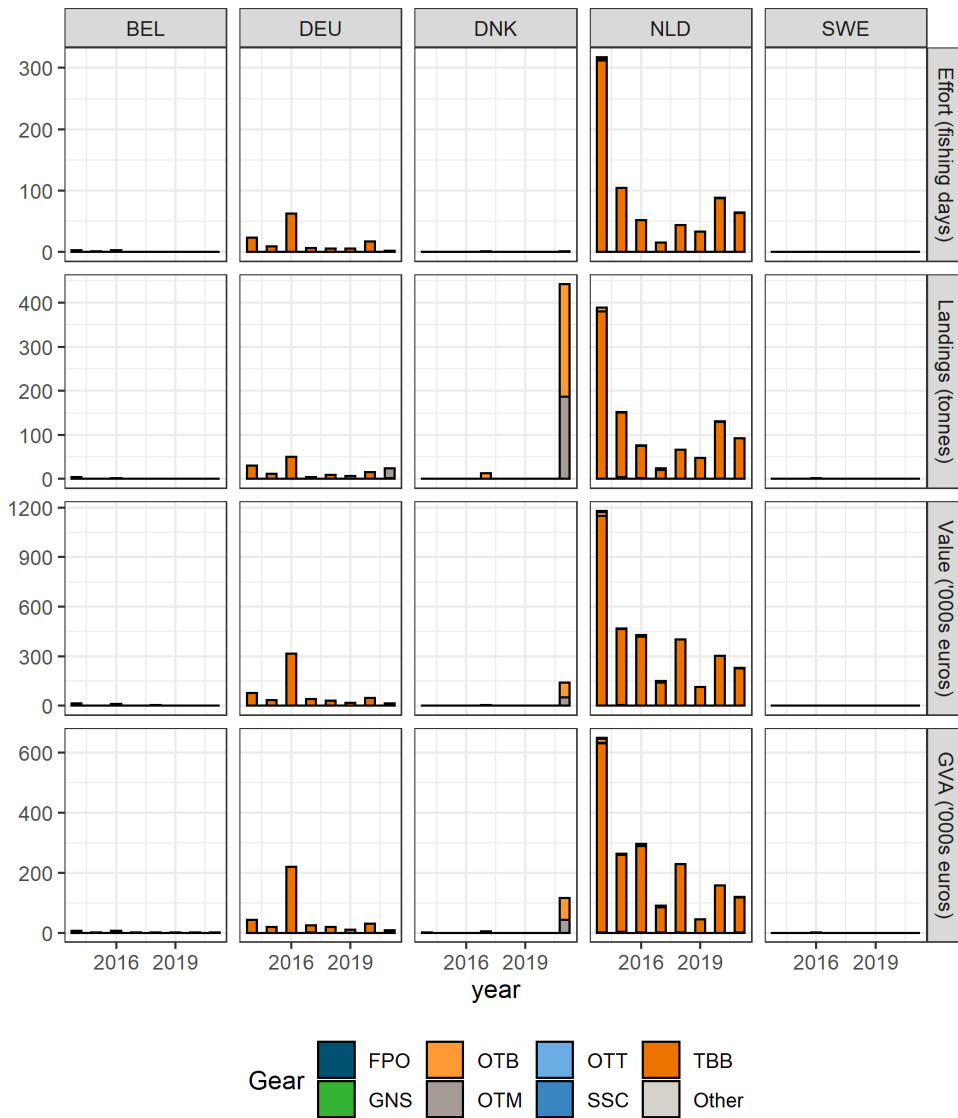
Figure 3.40 *Historical trend of the fishing activities in the North Sea Coastal Zone (VIBEG) with different gears (FPO: pots; GNS: set gillnets (anchored); OTB: bottom otter trawls; OTM: otter trawls midwater; OTT: otter twin trawls; SDN: Danish seines; SSC: Scottish seines; TBB: beam trawls; Other: other gears) in the proposed closure of the North Sea Coastal Zone (VIBEG) for the different countries. Effort, landings, value of landings and GVA are given by country*
Source: Logbook data and VMS data and data from the Annual Economic report (STECF 2022), processed by WUR, DTUAQUA, TI, ILVO, SLU and IFREMER.

3.8.4 Main species caught in the North Sea Coastal Zone (VIBEG)

The main species caught in this area are common shrimp (*Crangon crangon*; CSH), common sole (*Solea solea;* SOL) and European sprat (*Sprattus sprattus*; SPR). Figure 3.41 shows that the most common species landed is the Common shrimp, mainly caught in the North Sea Coastal Zone (VIBEG) by the Dutch beam trawler fleet and also by the German beam trawlers. The Dutch beam trawlers also land a limited amount of common sole. The Danish demersal trawlers or seiners and Danish pelagic trawlers also caught some sprat in the area in 2021. and some netters also caught a limited amount of sole.
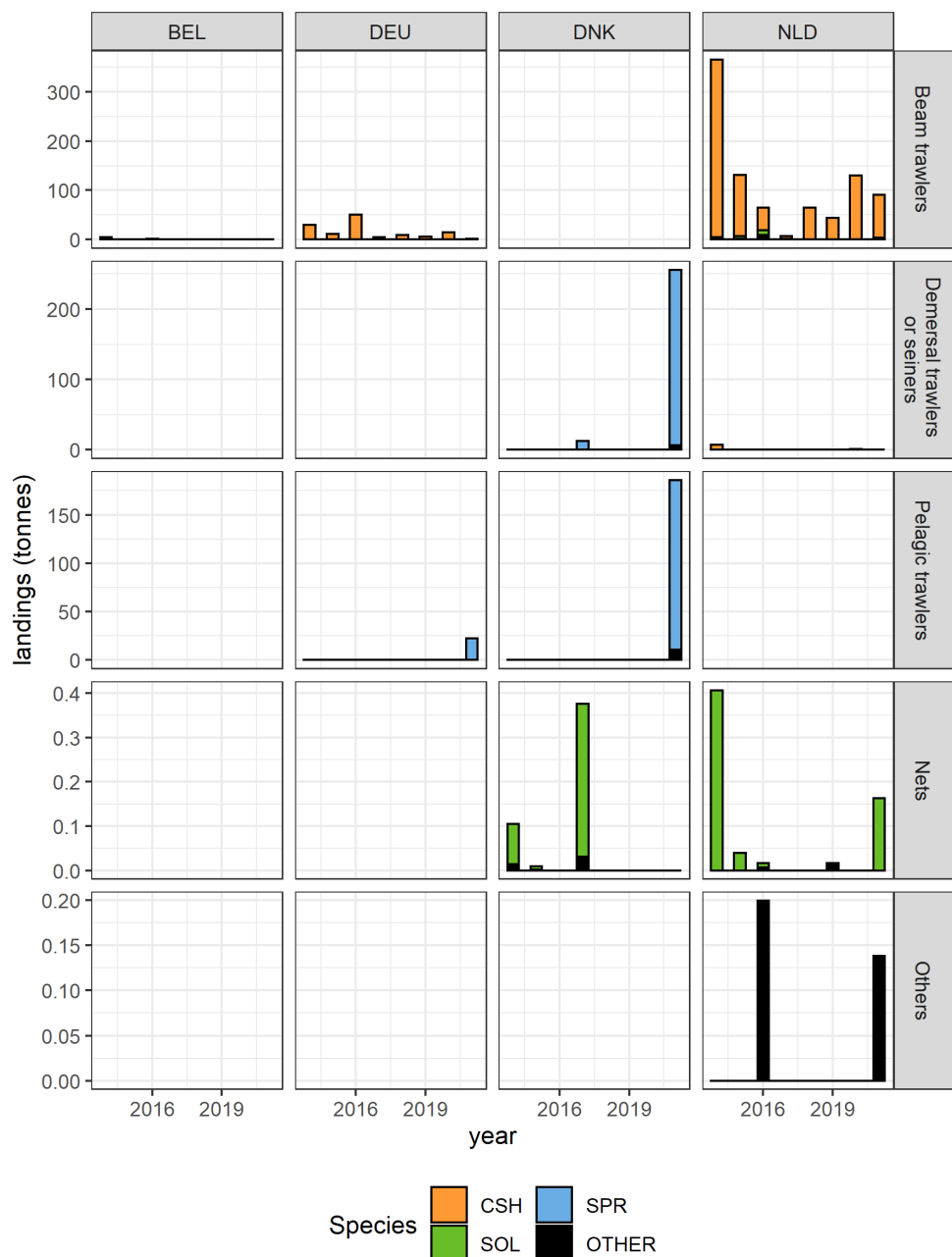
Figure 3.41 *Historical trend by gear type of the species caught in the North Sea Coastal Zone (VIBEG) by the Belgian, German, Danish and Dutch fleet (CSH: common shrimp; SOL: common sole; SPR: European sprat; Other: other species). Note the scale difference for the landings by gear type*
Source: Logbook data and VMS data, processed by WUR, DTUAQUA, TI, ILVO, SLU and IFREMER.

3.8.5 Individual dependency of Dutch fishers on the North Sea Coastal Zone (N2000 and VIBEG combined)

Figure 3.42 shows that the number of Dutch vessels actively fishing on the North Sea Coastal Zone remained stable over the study period between 183 and 213 vessels. The revenue dependency on the North Sea Coastal Zone was on average 30%, with each year 30 to 50 vessels with a revenue dependency higher that 50% and a few vessels each year with a full dependency on the area.
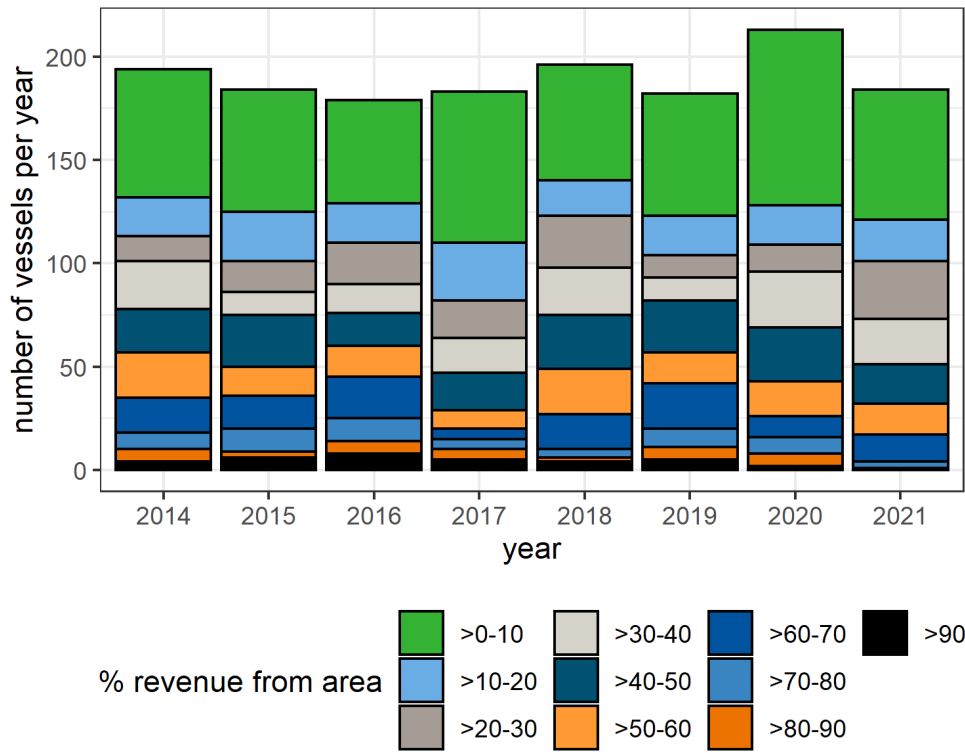
Figure 3.42 *Number of Dutch vessels per year and revenue dependency*

Over the 2014-2021 period, the majority of the vessels with fishing activities on the North Sea Coastal Zone came mainly from the Northern region (about 80 vessels a year) or Holland (about 70 vessels each year, see Figure 3.43). Every year, about 30 vessels came from Urk and nine from Zeeland. The vessels from Zeeland were on average significantly less dependent on the North Sea Coastal Zone and the vessels from the North of the Netherlands the most dependent.
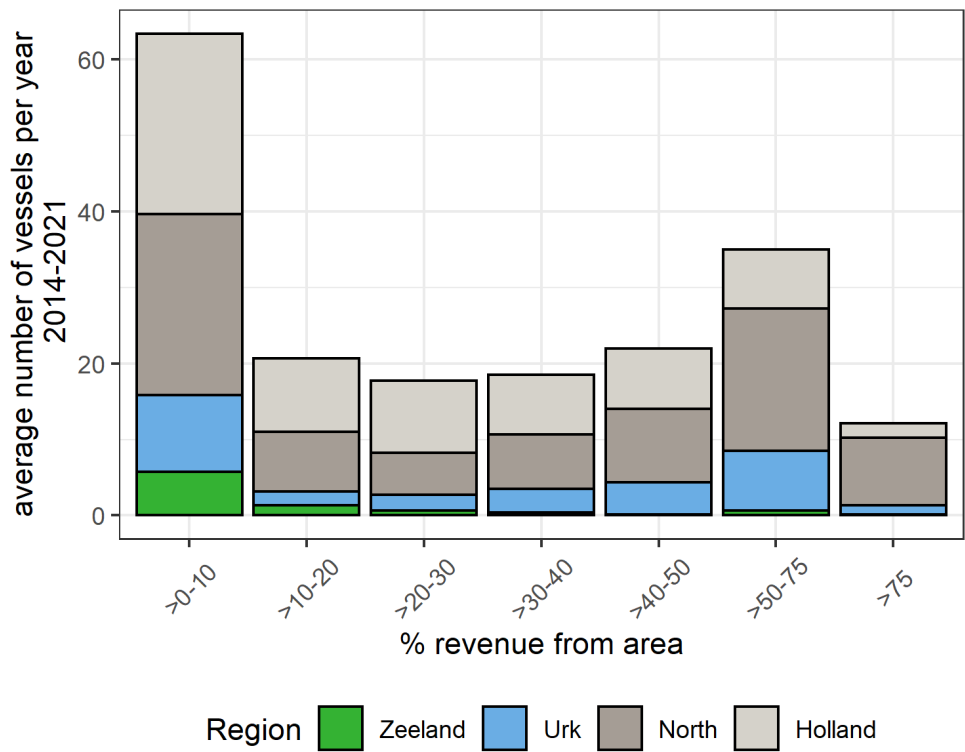
Figure 3.43 *Average number of vessels per region and revenue dependency*

The majority of the fishing revenue from the North Sea Coastal Zone, more than 20 million euros per year was obtained with shrimp beam trawls (TBS) (Figure 3.44). The second most important gear was the mechanised dredge (HMD) with an average annual revenue of about 900 thousand euros. More than 50% of the shrimp trawl and dredge revenue came from vessels with an annual dependency higher than 50% on the North Sea Coastal Zone.
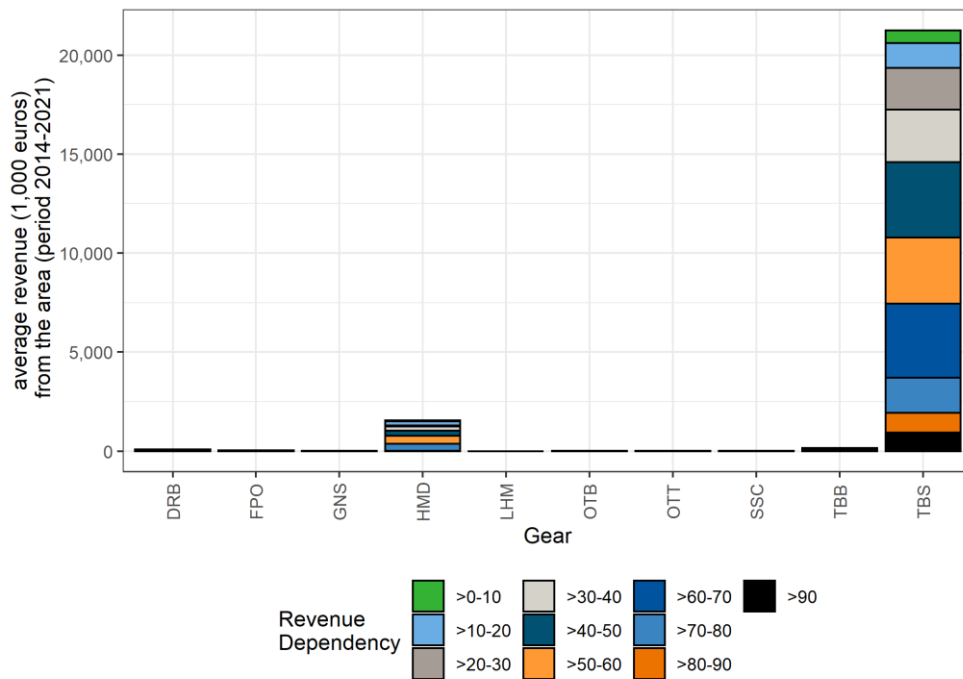
Figure 3.44 *Total of the average revenues (x 1,000 euros) of the vessels with different dependencies on the area per gear type*

4   Discussion

This report presents the effort, value and landings by the Dutch, Danish, German, Belgian, Swedish and French fishing fleets on the proposed closed areas for a period 2014-2021. The analysis of this historic information is the first step to assess the future costs of the closures on the fishing sector. However, the reported values of the areas of interest do not necessarily reflect the value of these areas for the fishing fleets in future.

Uncertainties of the method and differences with previous reports
This report is an update of previous reports (Roskam et al. 2021 and Jongbloed et al. 2019), to use the best available information, it was decided that the linkage between VMS and logbook data done by national labs should be used instead of a standard, less precise method. Particularly, the speed at which 'fishing' is defined per gear is now fully determined by the national labs, allowing a more flexible approach and for speed intervals to be potentially changed periodically in case of a change in behaviour (e.g. when fuel price increases as shown in Poos et al. 2013). Those changes make the comparison of the current results with the previous versions more difficult but it is believed that the quality of the data has been improved.

Differences with previous call also came from the new definition of several areas, for example, the Borkum Reef Grounds, the Brown Ridge, the split of the Dogger Bank in two areas, and the explicit inclusion of the VIBEG management zones of the North Sea Coastal Zone.

Limited predictive capacity of historical activity as economic consequences of closures depend on available alternative fishing grounds and fleet redistribution
The predictive capacity of the historic results for future economic effects of these closures is limited due to future changes in the fishing patterns. Changes in fish distribution, fisheries legislation, economic context and gear innovations will affect the fishing behaviour and therefore might change the fishing activities in the various areas. These changes could be of greater impact than the closures itself (Oostenbrugge et al. 2016). In addition, the cumulative restrictions of access in Dutch waters and waters of other Member States due to (additional) areas reserved for offshore wind farms, nature and mariculture will have a large impact on the fishing patterns. These (possible) limitations make it unpredictable how much space will be left for fishing, as a result of which it is impossible to predict future values of the remaining fishing grounds without a proper analysis of cumulative effects. It is also not possible to estimate whether the areas that remain accessible for fishing will meet the fishing pressure, as it is expected that the pressure in these areas will increase (Deetman et al. 2020).

The economic consequences of the closures will ultimately depend on the alternative fishing opportunities that will be available after closure. The effects of displacement on the overall fishing pressure in the remaining areas and the consequences for the economics of the fisheries is complex and has not been assessed so far. In this dynamic interaction between nature and fisheries, also other fleets that were not taken into account here will play a role; British flag vessels also fish in the proposed closed areas. These vessels have not been included in the analysis and as the UK fleet also will be displaced to other areas, this will lead to even more increased fishing pressure in available fishing grounds. Wageningen Research and the Dutch government are currently working on a research programme on this topic which will start in 2023 and will result in estimations of the effects of closures in the years thereafter.

Closures of fishing grounds will also have ecological and socio-cultural impacts
The closures might also cause ecological effects. Because fishers will need to move their activities to other areas, these remaining areas may therefore face increased fishing pressure, that may negatively impact the benthic communities in or near the seabed as well as vulnerable species that get bycaught at higher rates in the areas open to fisheries than they were before. In addition, vessels may need more effort to catch their quota or to take a detour steaming towards their new fishing grounds, leading to increased CO_2 emission and costs. In addition to the individual value of the areas for the various fisheries as estimated in this study, the

fishing grounds also often have a historic, cultural value as well. Fishing practices and family businesses are often passed on to the next generation. These values add to non-monetary value of the areas for the fishers and the resistance against this loss of fishing grounds due to closures.

Direct economic impacts on the fishing fleets will also impact local economies and communities
Besides direct and indirect effects on the fishing sector itself, the changes in the fisheries will also need to take into account the effects on the local communities and economic activities onshore. So far, these are hampered by the lack of available and harmonised socio-economic data. Therefore, a targeted socio-economic assessment on an EU scale that takes into account the entire value chain (landings, jobs, market, etc.) and loss & benefits balance should be conducted. An uncertain factor in this process is predicting fishing behaviour (displacement) (Stelzenmüller et al. 2020).

5 Conclusion

A summary of the main results is presented in Table 5.1. An explanation is given per area.

Table 5.1 *Summary of the main economic results. Main gears and countries are chosen as the gears and countries contributing to at least 15% of the total GVA over the period. Main species as the species contributing to at least 15% of the landings weight*

Area	Average GVA (1,000 euros/year)	Main gears	Main species	Main countries	Main trends (if any)
Borkum Reef Grounds	159	beam trawl, Scottish seine	shrimp, gurnard, sprat	DEU and NLD	Increasing for shrimp trawl and pots (2020-2021)
Brown Ridge	1,860	beam trawl	plaice, sole	NLD	Stable effort after initial increase (until 2017), decreasing landings and value
Central Oyster Grounds	1,881	bottom otter trawl and midwater otter trawl	sprat	DNK	No trend
Cleaver Bank	724	Scottish seine and beam trawl	mackerel, sprat, plaice,	NLD	Decreasing beam trawl, Scottish seine stable
Dogger Bank N2000	596	midwater otter trawl, bottom otter trawl and beam trawl	sprat, sandeel	DNK and NLD	Decreasing (NLD)/beam trawl (after 2015) and fluctuating (DNK) /bottom otter trawl-midwater otter trawl
Dogger Bank South	200	midwater otter trawl and bottom otter trawl	sprat	DNK and NLD	Volatile (DNK) /bottom otter trawl-midwater otter trawl
Frisian Front subarea 1	1,858	beam trawl, midwater otter trawl bottom otter trawl	sprat	NLD, DNK and DEU	No clear trend
Frisian Front subarea 2	192	midwater otter trawl and bottom otter trawl	sprat	DNK and NLD	Irregular (DNK) and No clear trend (NLD)
North Sea Coastal Zone (N2000)	12,834	beam trawl	shrimp, razor clam	NLD	Volatile – last years lower than average
North Sea Coastal Zone (VIBEG2)	296	beam trawl	shrimp, sprat	NLD	Volatile - decreasing

5.1 Borkum Reef Grounds

Mainly German and Dutch shrimp trawlers
The geographical limits of the Borkum Reef Grounds have been redefined following stakeholder consultation. Compared to the previous limits, the newly defined area is a less important historical fishing ground for Dutch and German shrimp fishers (Roskam et al. 2021) but is more used by Scottish seiners. The average total contribution to GVA was approximately 160 thousand euros. The historical trend of the fishing activities in the proposed closure area of the Borkum Reef Grounds indicated an increase in shrimp trawls and pots and showed that the fishing activities were dominated by shrimp trawls from the Netherlands and Germany.

Low individual dependency of the Dutch fishers
The approximatively 50 Dutch fishers active in the Borkum Reef Grounds are only moderately dependent on the area for their revenue (less than 10%) except for the one potter active since 2020 which showed a dependency between 40 and 60%.

5.2   Brown Ridge

Importance of gillnets decreasing, beam trawlers targeting flatfish remain active
While all gears are presented in the current study, protecting the birds would mean a (seasonal) closure of the gillnet fishery only. The area is mainly used for beam trawling and the use by gillnet fishers from Germany, Denmark and The Netherlands was limited over the study period. The area is more and more fished by beam trawlers targeting flatfish contributing to most of the 1.9m euros GVA, while the importance of gillnets has decreased to almost zero in 2021.

Flatfish beamtrawlers from Holland and Urk dependent on the area
About 60 Dutch vessels are active on the Brown Ridge, and half of the revenue from the area comes from fishers with a dependency on the area of at least 10%. Most of those fish with beam trawls targeting flatfish and come from Holland and Urk.

5.3   Central Oyster Grounds

Important for Danish sprat fisheries
The average total contribution to GVA for this area was approximately 1.9m euros. The historical fishing activities in the proposed closure area of the Central Oyster Grounds were dominated by bottom- and midwater otter trawls (OTB and OTM). The fishing activities in the proposed closure area of the Central Oyster Grounds were dominated by the Danish fleet. The Danish contribution to GVA fluctuated over the period.

Limited importance for Dutch otter trawlers
About 30 Dutch fishers fish annually the Central Oyster grounds with bottom otter trawls or otter twin trawls. Most of them come from Urk or Holland and have only a low dependency on the area (less than 10%).

5.4   Cleaver Bank

Limited dependency for Dutch Scottish seiners
The average total contribution to GVA for this area was approximately 0.7m euros. The historical trend of the fishing activities in the proposed closure area of the Cleaver Bank were quite diverse. The area was mainly dominated by the Dutch fleet (based on the economic importance) using Scottish seines (SSC) and beam trawls (TBB). The Dutch contribution to GVA was decreasing as the TBB activity decreased but the number of vessels active in the area remained stable around 35 vessels (mainly from Holland and Urk). The overall dependency of these vessels was low with a few vessels with a moderate dependency (10 to 30%).

5.5   Dogger Bank (N2000)

Stable importance for Danish bottom and midwater otter trawlers and decreasing for Dutch beam trawlers
The average total contribution to GVA for this area was approximately 0.6m euros. The historical fishing activities in the proposed closure area of the Dogger Bank N2000 were dominated by the Danish and Dutch fleet using bottom otter trawls (OTB), beam trawls (TBB) and midwater otter trawls (OTM). The economic importance was fluctuating for the Danish fleet targeting sandeel and sprat and decreasing for the Dutch fleet targeting plaice after an initial increase in 2015.

5.6   Dogger Bank (South)

Stable importance for Danish bottom and midwater otter trawlers and decreasing for Dutch beam trawlers
The average total contribution to GVA for this area was approximately 0.2m euros. The historical fishing activities in the proposed closure area of the Dogger Bank South were dominated by the Danish and Dutch fleet using bottom otter trawls (OTB), beam trawls (TBB) and midwater otter trawls (OTM). The economic importance was volatile for the Danish fleet targeting sprat and decreasing for the Dutch fleet targeting plaice after an initial increase in 2015.

Limited dependency of Dutch fishers on the combined Dogger Bank
About 25 Dutch vessels were annually active on the Dogger Bank targeting plaice with beam trawls and bottom otter trawls. Almost all of those vessels coming from Urk and Holland had a dependency lower than 10%.

5.7   Frisian Front subarea 1

A mix of active gears operated by the Dutch, German and Danish fleets
The average total contribution to GVA for this area was approximately 1.9m euros. The historical fishing activities in the proposed closure area of the Frisian Front subarea 1 were dominated by the Dutch and German fleets which mainly used beam trawls (TBB) and otter twin trawls (OTT) and the Danish fleet which mainly used midwater otter trawls (OTM) to fish sprat. No clear trend could be found.

Important dependency of Dutch beam trawlers
About 60 Dutch vessels were active in the area annually. Of those only a handful had dependencies higher than 10% (but usually lower than 30%) most of them were from Urk.

5.8   Frisian Front subarea 2

Dutch Scottish seiners and irregular Danish sprat fishery
The average total contribution to GVA for this area was approximately 0.2m euros. The historical fishing activities in the proposed closure area of the Frisian Front subarea 2 were dominated by the Danish fleet which mainly used midwater otter trawls (OTM) which stopped their activities in this area between 2017 and 2019. The Dutch fleet active in the area mainly used Scottish seines (SSC) and shrimp trawls (TBS).

Low dependency for Dutch Scottish seiners
The area was used annually by 10 to 15 vessels most of them from Urk and using Scottish seines. However almost all the vessels had an annual dependency lower than 10%.

5.9   North Sea Coastal Zone (N2000)

Area for Dutch shrimpers and razor shells dredgers
The average total contribution to GVA was approximately 12.8m euros. The historical trend of the fishing activities in the Natura 2000 site North Sea Coastal zone were largely dominated by the Dutch fleet using shrimp trawls (TBS) and dredges to catch razor shells. The economic importance of the Natura 2000 site of the North Sea Coastal zone was quite volatile and the last years of the study period showed lower activity than average.

High dependency of more than 100 Dutch shrimp fishers on the combined North Sea Coastal Zone
Almost 200 Dutch vessels are actively catching shrimps in the North Sea Coastal Zone, with dependency going up to 100%. About a 100 vessels have a dependency on the area of more than 30% of their revenues. Those vessels come principally from the North of the Netherlands and from Holland.

5.10 North Sea Coastal Zone (VIBEG2)

Area for Dutch shrimpers
The average total contribution to GVA was approximately 0.3m euros. The historical trend of the fishing activities in the VIBEG2 management zones of the North Sea Coastal zone were dominated by shrimp trawls (TBS) used by the Dutch fleet. The economic importance of the VIBEG2 management zones of the North Sea Coastal zone were quite volatile with a decreasing trend. The North Sea Coastal zone is an important area for Dutch shrimp fishers. Some of them being fully dependent on the area (see section above).

5.11 Cumulative impact

In this study, we look at all the areas independently from each other. However, management plans include the simultaneous closure of most of these areas which would lead to a higher cumulative impact and particularly a higher individual dependency. To assess the economic effects of simultaneous closure of several of the areas, scenarios should be identified in which the effects of displacement and crowding of the fleet in the remaining fishing grounds should be taken into account.

Acknowledgements

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Appendix A Method

A.1 Pre-processing of data

The VMS and logbook data are analysed in a standardised manner, where a script is developed that describes the processing and analysis of the data sets and can be applied by any nation that has similar VMS and logbook data in a standardised format. Wageningen Research provided a script to collect data from the different countries. Unlike previous reports when the same standardised script was applied to Dutch, Danish, German, Belgian and Swedish data, this time, the pre-processing could be done following the national preferences. France already used their own software to process the data but follows similar steps as outlined by Wageningen University & Research. The pre-processing of the dataset for the data follows the approach developed in Hintzen et al. (2013).

VMS records are removed when they are:
- Duplicates or pseudo-duplicates
- Not positioned on the globe
- Located in a harbour
- Located on land
- Associated with vessel speeds >20 knots.

Logbook records are removed when they:
- Are duplicates
- Have arrival times before departure times
- Start before the 1st of January of the year considered (despite the fact that the end of the trip falls within the considered year)
- Overlap with other trips.

A.2 Economic value

The description of the calculation of the gross value added (GVA) is extracted from Roskam et al. (2021): The GVA generated in the different areas by each gear (g), vessel length category (l), country (c) and year (y) ($GVA_{g,l,c,y}$) was estimated using the value of landings in the area of interest for the gear, vessel length category, country and year, $value_{g,l,c,y}$, obtained from the VMS and logbook analyses and the GVA per euro landed for each fleet of the same vessel length category using the gear:

$$GVA_{g,l,c,y} = value_{g,l,c,y} \cdot \frac{\sum_f GVA_{f,c,y} \sum_f GVA_{f,c,y}}{\sum_f value_{f,c,y} \sum_f value_{f,c,y}} \; \forall \text{ fleets } f \text{ with vessel length } l \text{ using gear } g$$

The GVA calculation is done as follow:

$$GVA_{f,c,y} = \left(value_{f,c,y} + rightIncome_{f,c,y} + otherIncome_{f,c,y}\right) \\ - \left(EnergyCost_{f,c,y} + rightCost_{f,c,y} + VariableCost_{f,c,y} + RepairCost_{f,c,y} + FixedCost_{f,c,y}\right)$$

Where *rightIncome* and *rightCost* represent the income and costs to lease quota out or in, *otherIncome* are all the other income sources apart from value of landings and right income. In addition to right costs, energy costs (*EnergyCost*), repair costs (*RepairCost*), other variable costs (*VariableCost*) and fixed costs (*FixedCost*) are also considered in the calculation of the GVA.

A.3   Individual dependency of vessels on the areas

The description of the individual dependency analysis is extracted from Roskam et al. (2021):
It is possible to go beyond the fleet indicators and to look at the dependency of vessels on areas. This analysis can be useful for areas that are not so important at the fleet level but where a couple of fishers fish intensively. Reallocation of effort to new fishing grounds becomes more complicated when a large part of the known fishing grounds of a fisher is closed. It is therefore important to identify whether an area closure will potentially substantially impact individuals. At the vessel level[5] we look at the estimated proportion of revenue coming from the area of interest. The ratio of the value of landings from the area of interest over the total value of landings for fisher i is called 'individual stress-level' and is calculated per year, y.

$$ISL_{i,y} = \frac{value_{i,y}}{Totvalue_{i,y}}$$

To calculate the average number of vessels $\overline{Ves_c}$ per dependency category c over the years, we therefore sum the number of vessels $Ves_{y,c}$ in the category each year divided by the number of years taken into account.

$$\overline{Ves_c} = \frac{\sum_{y0}^{yk} Ves_{y,c}}{yk - y0 + 1}$$

Because this analysis requires access to individual vessel data, it was only performed for the Dutch fishery. As for the other countries, owing to confidentiality issues, only fleet-aggregated data were made available. The individual stress analysis of the Dutch fleet is only performed with data from vessels with VMS data. Within the analysis, distinction is made between four different regions: Zeeland, Urk, North and Holland. An overview of the harbours that are attributed to these regions are presented Table A.2.

Table A.2   *Overview of the regions and corresponding harbours*

Region	Harbour
Zeeland	"ARM", "BR", "BRU", "BZ", "GOE", "HON", "KG", "KL", "MS", "NZ", "TH", "VL", "VLI", "WSW", "YE", "ZL", and "ZZ"
Urk	'UK'
North	"DZ", "FL","GM", "HA", "HI", "HL", "LE", "LO", "OL", "ST", "TM", "TS", "TX", "UQ", "VLL", "WK", "WL", "WON", and "ZK"
Holland	"BIW", "BU", "DM", "EH", "GO", "HD", "HK", "HN", "IJM", "KW", "ME", "MO", "NB", "OD", "OH", "SCH", "SL", "VD", "WR"

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[5] Given the data availability we make the assumption that a vessel represents one skipper.

Appendix B Historical trend of the fishing activities for the gillnet fishery on the Brown Ridge

The gillnet fishery on the Brown Ridge has steadily decreased over the study period from 46 fishing days down to less than one in 2021 (Table B.3). While Dutch activity with nets seems to have stopped since 2018, Danish fishery was still active in 2020 and the German fleet still had some extremely limited activity in 2021.

Table B.3 *Effort, landings and values and gross value added of the fishing sector in the Dogger Bank (N2000+south) by country*

	Country	2014	2015	2016	2017	2018	2019	2020	2021	Average
Effort (fishing days)	DEU	15	16	3	2	14	13	6	0	9
	DNK	31	15	4	-	9	6	2	-	8
	NLD	0	0	0	0	-	-	-	-	0
	Total	46	30	7	2	23	19	8	0	17
Landings (tonnes)	DEU	12	13	3	2	9	9	4	0	7
	DNK	29	16	2	-	6	4	1	-	7
	NLD	8	4	3	3	-	-	-	-	2
	Total	49	33	8	5	15	13	5	0	16
Value (1,000 euros)	DEU	71	104	20	16	83	86	36	2	52
	DNK	169	114	16	-	63	37	8	-	51
	NLD	43	33	27	23	-	-	-	-	16
	Total	282	251	63	39	146	124	43	2	119
Gross Value Added (1,000 euros)	DEU	43	65	13	11	53	41	21	1	31
	DNK	104	82	11		41	22	5		33
	NLD	34	28	20	19		-			13
	Total	180	175	44	29	93	62	26	1	76

Source: Logbook data and VMS data and data from the Annual Economic report (STECF 2022), processed by WUR, DTUAQUA, TI, ILVO, SLU and IFREMER.
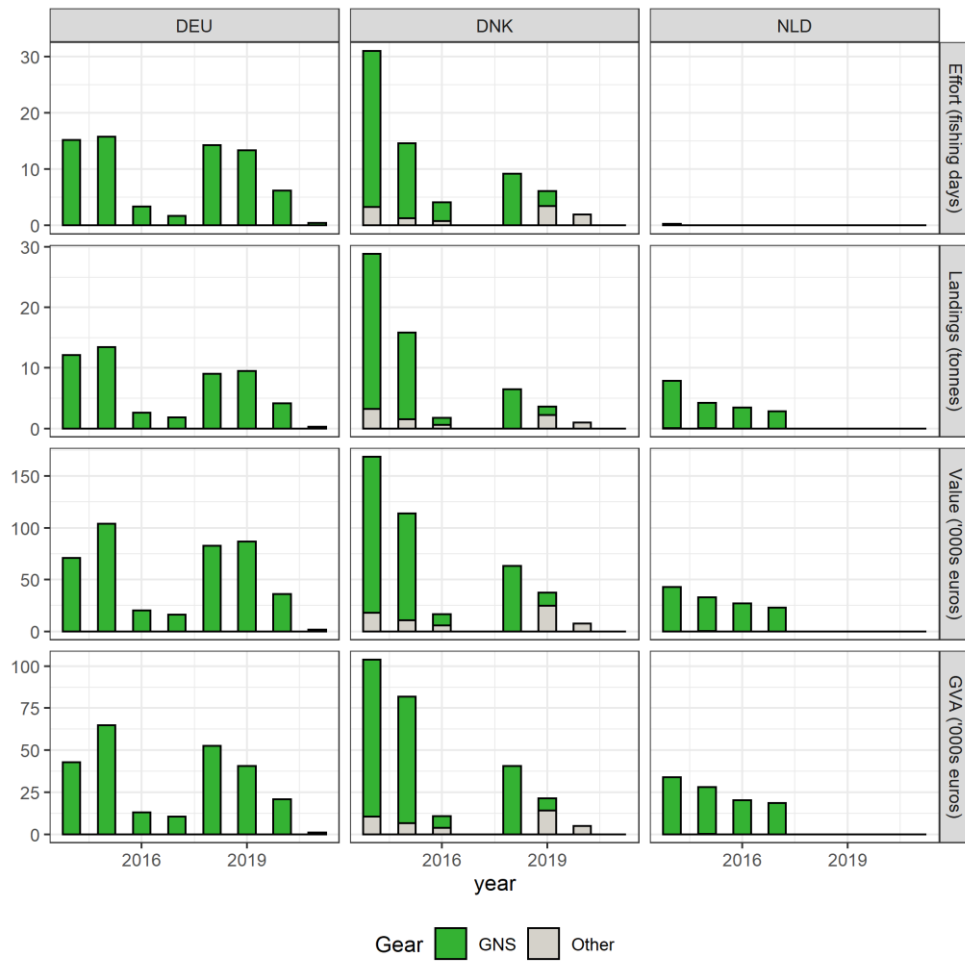
Figure B.1 *Historical trend of the fishing activities in the Brown Ridge with for the gillnet fishery (GNS: set gillnets (anchored); Other: other nets) in the proposed closure of the Brown Ridge for the different countries. Effort, landings, value of landings and GVA are given by country*
Source: Logbook data and VMS data and data from the Annual Economic report (STECF 2022), processed by WUR, DTUAQUA, TI, ILVO, SLU and IFREMER.
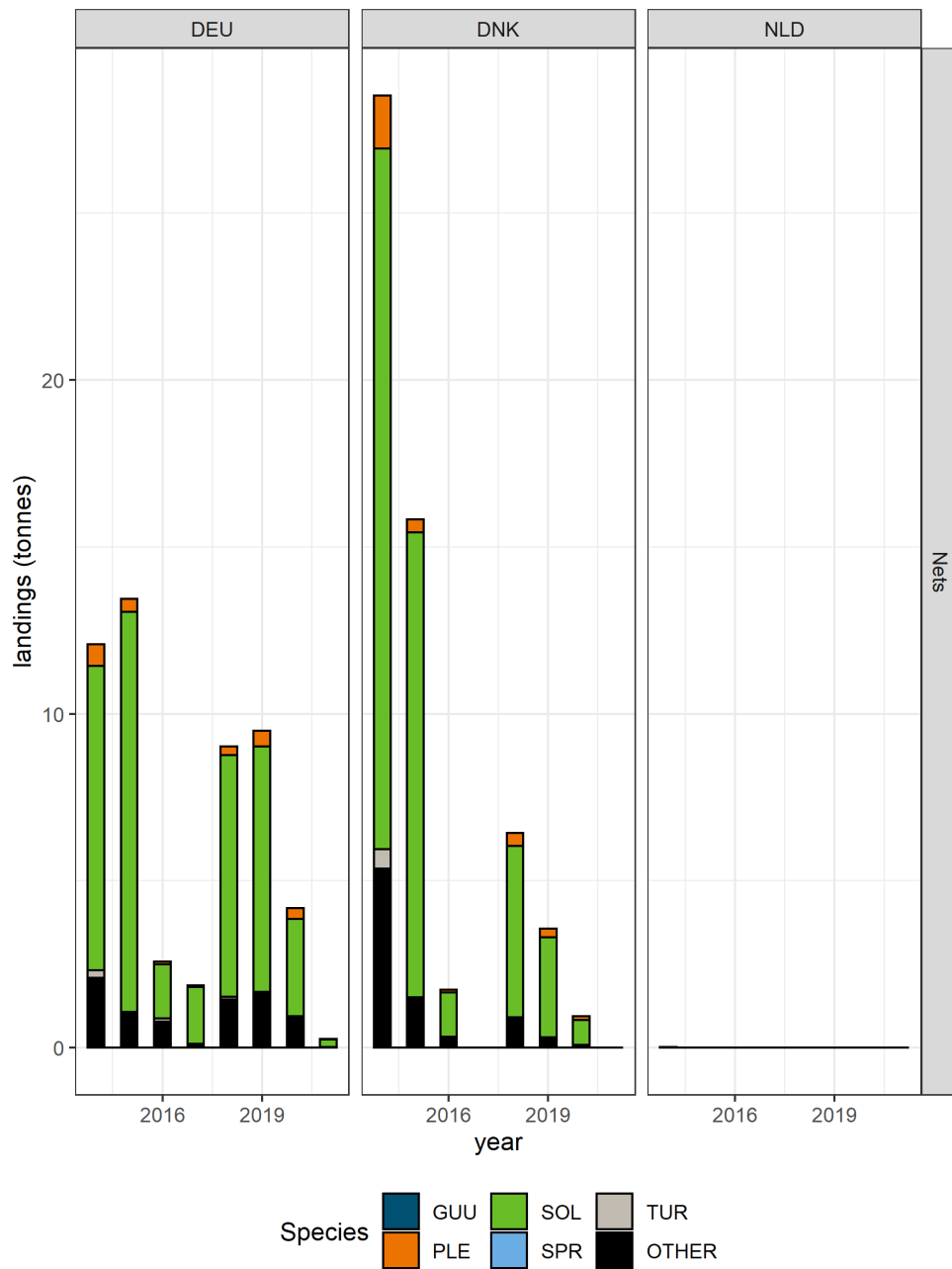
Figure B.2 *Historical trend by gear type of the species caught in the Brown Ridge by the German, Danish and Dutch gillnet fleets (GUU: Tub Gurnard; PLE: European plaice; SOL: common sole; SPR: European sprat; TUR: turbot Other: other species)*
Source: Logbook data and VMS data, processed by WUR, DTUAQUA, TI, ILVO, SLU and IFREMER.

Appendix C Historical trend of the fishing activities for the combined Dogger Bank N2000 and South

Table C   *Effort, landings and values and gross value added of the fishing sector in the Dogger Bank (N2000+south) by country*

	Country	2014	2015	2016	2017	2018	2019	2020	2021	Average
Effort (fishing days)	BEL	2	7	5	10	12	9	4	4	7
	DEU	7	11	5	5	6	5	5	6	6
	DNK	22	13	13	7	8	19	5	5	11
	NLD	29	70	65	40	51	31	26	21	42
	SWE	2	0	1	1	0	1	0	1	1
	Total	63	101	88	63	77	65	40	37	67
Landings (tonnes)	BEL	18	65	43	59	35	42	18	37	39
	DEU	433	77	207	25	44	71	143	12	126
	DNK	7,333	1,541	2,878	1,206	2,245	3,643	2,056	462	2,670
	NLD	142	447	339	266	171	122	65	39	199
	SWE	785	72	81	204	96	492	56	235	253
	Total	8,711	2,202	3,548	1,760	2,591	4,369	2,338	784	3,288
Value (1,000 euros)	BEL	30	116	76	133	101	116	47	86	88
	DEU	108	82	72	38	46	45	61	31	60
	DNK	1,609	323	746	194	570	997	548	147	642
	NLD	202	689	606	435	328	324	169	97	356
	SWE	167	14	21	44	22	125	15	72	60
	Total	2,115	1,224	1,522	844	1,068	1,606	840	433	1,207
Gross Value Added (1,000 euros)	BEL	13	63	45	74	51	57	26	48	47
	DEU	55	47	43	22	30	24	33	18	34
	DNK	1,171	266	623	152	462	764	458	123	502
	NLD	103	339	347	229	169	139	78	45	181
	SWE	83	8	12	26	11	64	8	41	32
	Total	1,425	723	1,069	503	724	1,047	604	274	796

Source: Logbook data and VMS data and data from the Annual Economic report (STECF 2022), processed by WUR, DTUAQUA, TI, ILVO, SLU and IFREMER.
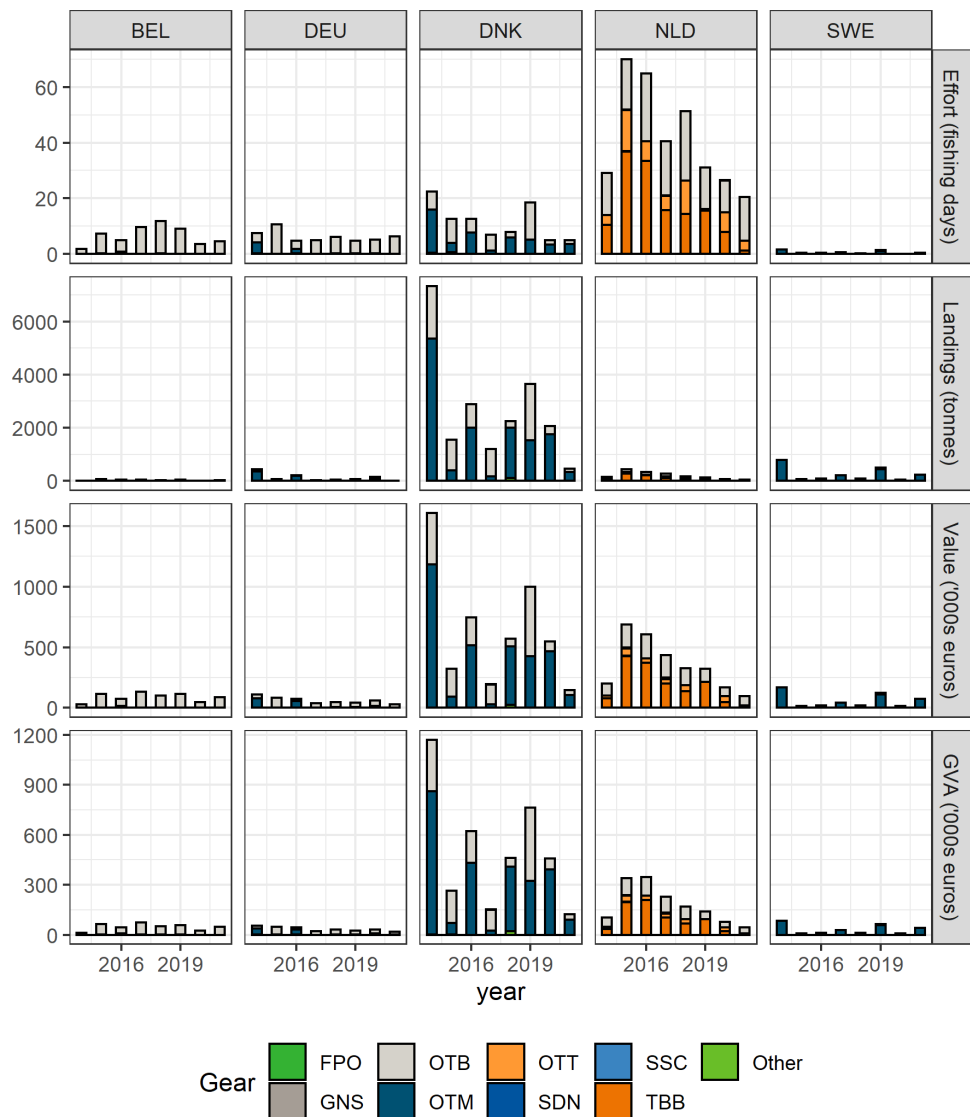
Figure C.1 *Historical trend of the fishing activities in the Dogger Bank (N2000+South) with different gears (GNS: set gillnets (anchored); OTB: bottom otter trawls; OTM: otter trawls midwater; OTT: otter twin trawls; SDN: Danish seines; SSC: Scottish seines; TBB: beam trawls; Other: other gears) in the proposed closure of the Cleaver Bank for the different countries. Effort, landings, value of landings and GVA are given per country*
Source: Logbook data and VMS data and data from the Annual Economic report (STECF 2022), processed by WUR, DTUAQUA, TI, ILVO, SLU and IFREMER.

Appendix D Historical trends of fishing activities per gear

Table D.1 *Effort, landings and values and gross value added of the fishing sector in the areas of interest by area, country and by gear a)*
a) Only the gears with a minimum cumulated of 1 fishing day of effort, 1 tonne of landings or 1,000 euros of landings value over the period are shown here. FPO: pots; GNS: set gillnets (anchored); OTB: bottom otter trawls; OTM: otter trawls midwater; OTT: otter twin trawls; SDN: Danish seines; SSC: Scottish seines; TBB: beam trawls; Other: other gears. Source: Logbook data and VMS data and data from the Annual Economic report (STECF 2022), processed by WUR, DTUAQUA, TI, ILVO, SLU and IFREMER.

Area	variable	Country	Gear	2014	2015	2016	2017	2018	2019	2020	2021	mean
Borkum Reef	Effort (fishing days)	BEL	OTB	0	0	0	0	0	0	0	0	0
Borkum Reef	Effort (fishing days)	BEL	SSC			0				0		0
Borkum Reef	Effort (fishing days)	BEL	TBB	0		0	0	0	0	0	1	0
Borkum Reef	Effort (fishing days)	DEU	FPO	0					0		0	0
Borkum Reef	Effort (fishing days)	DEU	GNS		1	0	1	0	1			0
Borkum Reef	Effort (fishing days)	DEU	OTB		0			0	0	0		0
Borkum Reef	Effort (fishing days)	DEU	OTM					0			0	0
Borkum Reef	Effort (fishing days)	DEU	OTT	0						0	1	0
Borkum Reef	Effort (fishing days)	DEU	SSC							0		0
Borkum Reef	Effort (fishing days)	DEU	TBB	6	2	9	11	3	2	17	25	9
Borkum Reef	Effort (fishing days)	DNK	OTB		0					0	0	0
Borkum Reef	Effort (fishing days)	DNK	OTM			1			0	0	1	0
Borkum Reef	Effort (fishing days)	NLD	FPO	1						10	51	8
Borkum Reef	Effort (fishing days)	NLD	OTB		0		0	0	0	0	0	0
Borkum Reef	Effort (fishing days)	NLD	OTT		0	0	0			0		0
Borkum Reef	Effort (fishing days)	NLD	SDN						1			0
Borkum Reef	Effort (fishing days)	NLD	SSC	1	3	11	2	2	2	1	5	3
Borkum Reef	Effort (fishing days)	NLD	TBB	14	14	3	19	10	4	66	164	37
Borkum Reef	Effort (fishing days)	SWE	OTM		0	0						0
Borkum Reef	Effort (fishing days)	total	total	23	20	25	34	15	10	95	249	59
Borkum Reef	Landings (tonnes)	BEL	OTB	1	2	3	1	2	2	1	3	2
Borkum Reef	Landings (tonnes)	BEL	SSC			7				1		1
Borkum Reef	Landings (tonnes)	BEL	TBB	1		2	1	1	0	1	2	1
Borkum Reef	Landings (tonnes)	DEU	FPO	1					0		1	0
Borkum Reef	Landings (tonnes)	DEU	GNS		0	0	1	0	0			0
Borkum Reef	Landings (tonnes)	DEU	OTB		1			0	0	0		0
Borkum Reef	Landings (tonnes)	DEU	OTM					19			79	12
Borkum Reef	Landings (tonnes)	DEU	OTT	0						0	1	0
Borkum Reef	Landings (tonnes)	DEU	SSC							2		0
Borkum Reef	Landings (tonnes)	DEU	TBB	7	3	7	4	4	2	22	30	10
Borkum Reef	Landings (tonnes)	DNK	OTB		3						0	0
Borkum Reef	Landings (tonnes)	DNK	OTM			4			3	7	385	50
Borkum Reef	Landings (tonnes)	NLD	FPO	0						14	63	10
Borkum Reef	Landings (tonnes)	NLD	OTB		2		1	1	0	0	0	1
Borkum Reef	Landings (tonnes)	NLD	OTT		3	1	5			0		1
Borkum Reef	Landings (tonnes)	NLD	SDN						4			0
Borkum Reef	Landings (tonnes)	NLD	SSC	9	15	163	5	13	26	0	25	32
Borkum Reef	Landings (tonnes)	NLD	TBB	16	26	2	24	15	5	84	155	41
Borkum Reef	Landings (tonnes)	SWE	OTM		22	21						5
Borkum Reef	Landings (tonnes)	total	total	36	77	211	42	56	43	133	744	168
Borkum Reef	Value ('000s euros)	BEL	OTB	3	9	17	4	11	9	6	13	9
Borkum Reef	Value ('000s euros)	BEL	SSC			9				1		1
Borkum Reef	Value ('000s euros)	BEL	TBB	6		8	6	6	0	8	8	5
Borkum Reef	Value ('000s euros)	DEU	FPO	1					1		7	1

Area	variable	Country	Gear	2014	2015	2016	2017	2018	2019	2020	2021	mean
Borkum Reef	Value ('000s euros)	DEU	GNS		2	1	4	2	2			1
Borkum Reef	Value ('000s euros)	DEU	OTB		4			1	2	0		1
Borkum Reef	Value ('000s euros)	DEU	OTM					4			24	3
Borkum Reef	Value ('000s euros)	DEU	OTT	1						1	2	0
Borkum Reef	Value ('000s euros)	DEU	SSC							4		0
Borkum Reef	Value ('000s euros)	DEU	TBB	21	10	33	31	11	6	67	107	36
Borkum Reef	Value ('000s euros)	DNK	OTB		1					0		0
Borkum Reef	Value ('000s euros)	DNK	OTM			1			1	2	113	15
Borkum Reef	Value ('000s euros)	NLD	FPO	0						30	158	24
Borkum Reef	Value ('000s euros)	NLD	OTB		4		5	7	0	0	0	2
Borkum Reef	Value ('000s euros)	NLD	OTT		14	6	29			0		6
Borkum Reef	Value ('000s euros)	NLD	SDN						5			1
Borkum Reef	Value ('000s euros)	NLD	SSC	16	23	204	6	20	48	1	41	45
Borkum Reef	Value ('000s euros)	NLD	TBB	55	92	11	138	110	15	224	393	130
Borkum Reef	Value ('000s euros)	SWE	OTM		5	1						1
Borkum Reef	Value ('000s euros)	total	total	103	164	291	223	170	88	343	865	281
Borkum Reef	GVA ('000s euros)	BEL	OTB	1	4	11	2	6	4	4	7	5
Borkum Reef	GVA ('000s euros)	BEL	SSC				6			0		1
Borkum Reef	GVA ('000s euros)	BEL	TBB	3		5	3	3	0	4	4	3
Borkum Reef	GVA ('000s euros)	DEU	FPO	1					0		4	1
Borkum Reef	GVA ('000s euros)	DEU	GNS		1	0	3	1	1			1
Borkum Reef	GVA ('000s euros)	DEU	OTB		3			1	1	0		1
Borkum Reef	GVA ('000s euros)	DEU	OTM					2			13	2
Borkum Reef	GVA ('000s euros)	DEU	OTT	0						1	1	0
Borkum Reef	GVA ('000s euros)	DEU	SSC							2		0
Borkum Reef	GVA ('000s euros)	DEU	TBB	12	6	23	19	7	3	43	69	23
Borkum Reef	GVA ('000s euros)	DNK	OTB		1					0		0
Borkum Reef	GVA ('000s euros)	DNK	OTM			1			1	2	94	12
Borkum Reef	GVA ('000s euros)	NLD	FPO	0						15	80	12
Borkum Reef	GVA ('000s euros)	NLD	OTB		2		3	3	0	0	0	1
Borkum Reef	GVA ('000s euros)	NLD	OTT		7	4	17			0		4
Borkum Reef	GVA ('000s euros)	NLD	SDN						2			0
Borkum Reef	GVA ('000s euros)	NLD	SSC	7	11	114	3	9	22	0	18	23
Borkum Reef	GVA ('000s euros)	NLD	TBB	31	48	7	81	67	5	119	209	71
Borkum Reef	GVA ('000s euros)	SWE	OTM		3	0						0
Borkum Reef	GVA ('000s euros)	total	total	55	85	170	132	99	40	191	502	159
Brown Ridge	Effort (fishing days)	BEL	SSC	1	0	3	2	0	0	0	1	1
Brown Ridge	Effort (fishing days)	BEL	TBB	0	0	1	2		0	0	0	0
Brown Ridge	Effort (fishing days)	DEU	GNS	15	16	3	2	14	13	6	0	9
Brown Ridge	Effort (fishing days)	DEU	OTB							0		0
Brown Ridge	Effort (fishing days)	DEU	OTM			0		0				0
Brown Ridge	Effort (fishing days)	DEU	SSC							2	1	0
Brown Ridge	Effort (fishing days)	DEU	TBB	0	3	5	21	29	45	37	48	23
Brown Ridge	Effort (fishing days)	DNK	GN	3	1	1			3	2		1
Brown Ridge	Effort (fishing days)	DNK	GNS	28	13	3		9	3			7
Brown Ridge	Effort (fishing days)	DNK	OTB		0							0
Brown Ridge	Effort (fishing days)	DNK	OTM		1							0
Brown Ridge	Effort (fishing days)	FRA	OTM			0			0		0	0
Brown Ridge	Effort (fishing days)	FRA	SDN			3	2	3	1	3	1	2
Brown Ridge	Effort (fishing days)	NLD	FPO	0	0	0			0	1	0	0
Brown Ridge	Effort (fishing days)	NLD	GNS	0	0	0	0		0			0
Brown Ridge	Effort (fishing days)	NLD	LHP	0	0	0	0		0		0	0
Brown Ridge	Effort (fishing days)	NLD	OTB	0	2	2	1	2	3	4	3	2
Brown Ridge	Effort (fishing days)	NLD	OTM		0	0						0
Brown Ridge	Effort (fishing days)	NLD	SDN						1		1	0
Brown Ridge	Effort (fishing days)	NLD	SSC	10	18	23	24	19	19	42	21	22
Brown Ridge	Effort (fishing days)	NLD	TBB	219	240	268	357	355	394	335	351	315
Brown Ridge	Effort (fishing days)	SWE	OTM		0						0	0

Area	variable	Country	Gear	2014	2015	2016	2017	2018	2019	2020	2021	mean
Brown Ridge	Effort (fishing days)	total	total	277	296	313	410	432	481	432	427	384
Brown Ridge	Landings (tonnes)	BEL	SSC	6	1	16	9	3	0	3	6	6
Brown Ridge	Landings (tonnes)	BEL	TBB	1	1	4	4		0	0	0	1
Brown Ridge	Landings (tonnes)	DEU	GNS	12	13	3	2	9	9	4	0	7
Brown Ridge	Landings (tonnes)	DEU	OTB							0		0
Brown Ridge	Landings (tonnes)	DEU	OTM			17		6				3
Brown Ridge	Landings (tonnes)	DEU	SSC							6	2	1
Brown Ridge	Landings (tonnes)	DEU	TBB	1	5	12	42	48	77	53	55	37
Brown Ridge	Landings (tonnes)	DNK	GN	3	2	1			2	1		1
Brown Ridge	Landings (tonnes)	DNK	GNS	26	14	1		6	1			6
Brown Ridge	Landings (tonnes)	DNK	OTB		186							23
Brown Ridge	Landings (tonnes)	DNK	OTM		334							42
Brown Ridge	Landings (tonnes)	FRA	OTM			0			20		0	2
Brown Ridge	Landings (tonnes)	FRA	SDN			7	6	25	4	8	4	7
Brown Ridge	Landings (tonnes)	NLD	FPO		0	0	0		0	0	0	0
Brown Ridge	Landings (tonnes)	NLD	GNS	8	4	3	3		0			2
Brown Ridge	Landings (tonnes)	NLD	LHP	1	1	0	0		0		0	0
Brown Ridge	Landings (tonnes)	NLD	OTB	8	6	10	4	7	14	14	16	10
Brown Ridge	Landings (tonnes)	NLD	OTM		39	54						12
Brown Ridge	Landings (tonnes)	NLD	SDN						4		1	1
Brown Ridge	Landings (tonnes)	NLD	SSC	41	111	163	142	103	111	164	88	115
Brown Ridge	Landings (tonnes)	NLD	TBB	662	718	775	862	651	626	566	478	667
Brown Ridge	Landings (tonnes)	SWE	OTM		16						2	2
Brown Ridge	Landings (tonnes)	total	total	770	1452	1066	1074	858	869	819	653	945
Brown Ridge	Value ('000s euros)	BEL	SSC	9	1	26	16	5	0	6	15	10
Brown Ridge	Value ('000s euros)	BEL	TBB	4	2	23	18		0	0	1	6
Brown Ridge	Value ('000s euros)	DEU	GNS	71	104	20	16	83	86	36	2	52
Brown Ridge	Value ('000s euros)	DEU	OTB							1		0
Brown Ridge	Value ('000s euros)	DEU	OTM			9		2				1
Brown Ridge	Value ('000s euros)	DEU	SSC							19	7	3
Brown Ridge	Value ('000s euros)	DEU	TBB	3	23	52	185	272	383	282	314	189
Brown Ridge	Value ('000s euros)	DNK	GN	18	11	6			25	8		8
Brown Ridge	Value ('000s euros)	DNK	GNS	151	103	11		63	13			43
Brown Ridge	Value ('000s euros)	DNK	OTB		50							6
Brown Ridge	Value ('000s euros)	DNK	OTM		91							11
Brown Ridge	Value ('000s euros)	FRA	OTM			0			20		0	2
Brown Ridge	Value ('000s euros)	FRA	SDN			45	22	141	11	14	6	30
Brown Ridge	Value ('000s euros)	NLD	FPO		0	0	0		0	0	0	0
Brown Ridge	Value ('000s euros)	NLD	GNS	43	33	27	23		0			16
Brown Ridge	Value ('000s euros)	NLD	LHP	15	5	5	3		0		0	4
Brown Ridge	Value ('000s euros)	NLD	OTB	7	11	20	4	7	19	15	13	12
Brown Ridge	Value ('000s euros)	NLD	OTM		16	19						4
Brown Ridge	Value ('000s euros)	NLD	SDN						8		3	1
Brown Ridge	Value ('000s euros)	NLD	SSC	67	192	322	317	180	197	318	111	213
Brown Ridge	Value ('000s euros)	NLD	TBB	2335	2965	3678	3988	3393	3296	2779	2930	3170
Brown Ridge	Value ('000s euros)	SWE	OTM		4						1	1
Brown Ridge	Value ('000s euros)	total	total	2722	3610	4261	4591	4146	4058	3478	3402	3784
Brown Ridge	GVA ('000s euros)	BEL	SSC	4	1	15	9	2	0	3	8	5
Brown Ridge	GVA ('000s euros)	BEL	TBB	2	1	13	10		0	0	1	3
Brown Ridge	GVA ('000s euros)	DEU	GNS	43	65	13	11	53	41	21	1	31
Brown Ridge	GVA ('000s euros)	DEU	OTB							0		0
Brown Ridge	GVA ('000s euros)	DEU	OTM			5		1				1
Brown Ridge	GVA ('000s euros)	DEU	SSC							10	4	2
Brown Ridge	GVA ('000s euros)	DEU	TBB	2	13	31	94	161	202	153	170	103
Brown Ridge	GVA ('000s euros)	DNK	GN	11	7	4			14	5		5
Brown Ridge	GVA ('000s euros)	DNK	GNS	93	75	7		41	7			28
Brown Ridge	GVA ('000s euros)	DNK	OTB		42							5
Brown Ridge	GVA ('000s euros)	DNK	OTM		76							10

Area	variable	Country	Gear	2014	2015	2016	2017	2018	2019	2020	2021	mean
Brown Ridge	GVA ('000s euros)	FRA	OTM			0			6		0	1
Brown Ridge	GVA ('000s euros)	FRA	SDN			23	11	62	4	5	2	13
Brown Ridge	GVA ('000s euros)	NLD	FPO		0	0	0		0	0	0	0
Brown Ridge	GVA ('000s euros)	NLD	GNS	34	28	20	19		0			13
Brown Ridge	GVA ('000s euros)	NLD	LHP	11	4	4	2		0		0	3
Brown Ridge	GVA ('000s euros)	NLD	OTB	5	7	14	2	4	7	7	6	7
Brown Ridge	GVA ('000s euros)	NLD	OTM		8	10						2
Brown Ridge	GVA ('000s euros)	NLD	SDN						4		1	1
Brown Ridge	GVA ('000s euros)	NLD	SSC	30	88	179	164	87	85	143	50	103
Brown Ridge	GVA ('000s euros)	NLD	TBB	1061	1379	2055	2073	1641	1419	1250	1316	1524
Brown Ridge	GVA ('000s euros)	SWE	OTM		2						0	0
Brown Ridge	GVA ('000s euros)	total	total	1296	1796	2394	2394	2052	1789	1599	1560	1860
Doggerbank South	Effort (fishing days)	BEL	OTB	1	3	2	1	4	3	1	0	2
Doggerbank South	Effort (fishing days)	BEL	SSC					0				0
Doggerbank South	Effort (fishing days)	BEL	TBB		0		0	0	0	0		0
Doggerbank South	Effort (fishing days)	DEU	OTB	1	3	0	1	2	1	1	1	1
Doggerbank South	Effort (fishing days)	DEU	OTM	1			1					0
Doggerbank South	Effort (fishing days)	DEU	TBB		0	0						0
Doggerbank South	Effort (fishing days)	DNK	OTB	2	0	2	0	0		0	0	1
Doggerbank South	Effort (fishing days)	DNK	OTM	4	1	3	1	2	1	1	1	2
Doggerbank South	Effort (fishing days)	DNK	PTM					0				0
Doggerbank South	Effort (fishing days)	NLD	OTB	5	6	8	6	6	5	2	3	5
Doggerbank South	Effort (fishing days)	NLD	OTT	1	3	2	2	2	0	2	1	2
Doggerbank South	Effort (fishing days)	NLD	SSC	0	0		0	0	0			0
Doggerbank South	Effort (fishing days)	NLD	TBB	1	2	1	0	0	0	0	0	1
Doggerbank South	Effort (fishing days)	SWE	OTB	0	0				0	0		0
Doggerbank South	Effort (fishing days)	SWE	OTM	0		0	0	0	1	0	0	0
Doggerbank South	Effort (fishing days)	total	total	17	19	19	12	17	11	8	8	14
Doggerbank South	Landings (tonnes)	BEL	OTB	8	23	12	10	10	13	5	7	11
Doggerbank South	Landings (tonnes)	BEL	SSC					1				0
Doggerbank South	Landings (tonnes)	BEL	TBB		0		0	1	0	0		0
Doggerbank South	Landings (tonnes)	DEU	OTB	5	13	2	10	6	3	9	2	6
Doggerbank South	Landings (tonnes)	DEU	OTM	67		116						23
Doggerbank South	Landings (tonnes)	DEU	TBB		0	1						0
Doggerbank South	Landings (tonnes)	DNK	OTB	780	52	282	96	119		148	77	194
Doggerbank South	Landings (tonnes)	DNK	OTM	1279	159	739	110	664	416	439	93	487
Doggerbank South	Landings (tonnes)	DNK	PTM					101				13
Doggerbank South	Landings (tonnes)	NLD	OTB	28	40	34	35	20	8	7	6	22
Doggerbank South	Landings (tonnes)	NLD	OTT	6	8	4	2	6	0	6	2	4
Doggerbank South	Landings (tonnes)	NLD	SSC	0	0		1	0	0			0
Doggerbank South	Landings (tonnes)	NLD	TBB	4	9	14	3	2	7	0	0	5
Doggerbank South	Landings (tonnes)	SWE	OTB	0	2				5	3		1
Doggerbank South	Landings (tonnes)	SWE	OTM	134		74	124	21	203	21	95	84
Doggerbank South	Landings (tonnes)	total	total	2312	308	1277	392	948	656	638	283	852
Doggerbank South	Value ('000s euros)	BEL	OTB	13	42	22	24	28	36	13	18	24
Doggerbank South	Value ('000s euros)	BEL	SSC					2				0
Doggerbank South	Value ('000s euros)	BEL	TBB		0		0	3	1	0		0
Doggerbank South	Value ('000s euros)	DEU	OTB	8	22	3	8	15	8	9	5	10
Doggerbank South	Value ('000s euros)	DEU	OTM	14		32						6
Doggerbank South	Value ('000s euros)	DEU	TBB		1	2						0
Doggerbank South	Value ('000s euros)	DNK	OTB	168	14	75	18	30		40	26	47
Doggerbank South	Value ('000s euros)	DNK	OTM	284	41	190	19	169	116	116	29	120
Doggerbank South	Value ('000s euros)	DNK	PTM					26				3
Doggerbank South	Value ('000s euros)	NLD	OTB	39	65	61	67	38	22	19	16	41
Doggerbank South	Value ('000s euros)	NLD	OTT	8	14	7	6	12	0	15	6	9
Doggerbank South	Value ('000s euros)	NLD	SSC	0	1		1	0	0			0
Doggerbank South	Value ('000s euros)	NLD	TBB	9	15	28	6	4	22	1	0	11
Doggerbank South	Value ('000s euros)	SWE	OTB	0	0				1	1		0

Area	variable	Country	Gear	2014	2015	2016	2017	2018	2019	2020	2021	mean
Doggerbank South	Value ('000s euros)	SWE	OTM	28		19	27	5	53	5	31	21
Doggerbank South	Value ('000s euros)	total	total	573	215	439	180	331	259	220	130	293
Doggerbank South	GVA ('000s euros)	BEL	OTB	6	23	13	13	14	17	7	10	13
Doggerbank South	GVA ('000s euros)	BEL	SSC					1				0
Doggerbank South	GVA ('000s euros)	BEL	TBB		0		0	1	0	0		0
Doggerbank South	GVA ('000s euros)	DEU	OTB	4	13	2	4	10	4	5	3	6
Doggerbank South	GVA ('000s euros)	DEU	OTM	7		19						3
Doggerbank South	GVA ('000s euros)	DEU	TBB		1	1						0
Doggerbank South	GVA ('000s euros)	DNK	OTB	123	12	63	14	25		33	22	37
Doggerbank South	GVA ('000s euros)	DNK	OTM	207	34	159	15	137	89	97	24	95
Doggerbank South	GVA ('000s euros)	DNK	PTM						21			3
Doggerbank South	GVA ('000s euros)	NLD	OTB	21	34	36	35	21	10	9	7	22
Doggerbank South	GVA ('000s euros)	NLD	OTT	5	8	5	4	7	0	7	3	5
Doggerbank South	GVA ('000s euros)	NLD	SSC	0	0		1	0	0			0
Doggerbank South	GVA ('000s euros)	NLD	TBB	4	7	15	3	2	10	1	0	5
Doggerbank South	GVA ('000s euros)	SWE	OTB	0	0				1	0		0
Doggerbank South	GVA ('000s euros)	SWE	OTM	14		11	16	2	27	3	17	11
Doggerbank South	GVA ('000s euros)	total	total	392	131	324	107	240	157	162	86	200
Doggerbank_N2000	Effort (fishing days)	BEL	OTB	1	4	3	8	8	6	3	4	5
Doggerbank_N2000	Effort (fishing days)	BEL	SSC		0			0				0
Doggerbank_N2000	Effort (fishing days)	BEL	TBB		0	1	0	0	0	0		0
Doggerbank_N2000	Effort (fishing days)	DEU	OTB	2	8	3	4	4	3	4	5	4
Doggerbank_N2000	Effort (fishing days)	DEU	OTM	3		1		0	0	0		1
Doggerbank_N2000	Effort (fishing days)	DEU	TBB	0								0
Doggerbank_N2000	Effort (fishing days)	DNK	GNS					0				0
Doggerbank_N2000	Effort (fishing days)	DNK	OTB	5	8	3	5	2	13	1	1	5
Doggerbank_N2000	Effort (fishing days)	DNK	OTM	12	3	4	0	4	4	2	2	4
Doggerbank_N2000	Effort (fishing days)	DNK	SDN	0	1			0				0
Doggerbank_N2000	Effort (fishing days)	NLD	OTB	10	12	17	14	18	10	9	13	13
Doggerbank_N2000	Effort (fishing days)	NLD	OTM		0		0					0
Doggerbank_N2000	Effort (fishing days)	NLD	OTT	2	11	5	4	10	0	5	2	5
Doggerbank_N2000	Effort (fishing days)	NLD	SSC	0	0		0		0			0
Doggerbank_N2000	Effort (fishing days)	NLD	TBB	9	35	32	15	14	15	7	1	16
Doggerbank_N2000	Effort (fishing days)	SWE	OTB	0	0				0	0		0
Doggerbank_N2000	Effort (fishing days)	SWE	OTM	1		0	0	0	1	0	0	0
Doggerbank_N2000	Effort (fishing days)	total	total	46	83	68	51	60	54	32	29	53
Doggerbank_N2000	Landings (tonnes)	BEL	OTB	9	41	22	48	25	29	13	30	27
Doggerbank_N2000	Landings (tonnes)	BEL	SSC		0			0				0
Doggerbank_N2000	Landings (tonnes)	BEL	TBB		0	8	0	0	0	0		1
Doggerbank_N2000	Landings (tonnes)	DEU	OTB	61	63	7	16	21	47	65	10	36
Doggerbank_N2000	Landings (tonnes)	DEU	OTM	299		81		17	21	69		61
Doggerbank_N2000	Landings (tonnes)	DEU	TBB	1								0
Doggerbank_N2000	Landings (tonnes)	DNK	GNS					0				0
Doggerbank_N2000	Landings (tonnes)	DNK	OTB	1201	1086	594	934	126	2121	155	46	783
Doggerbank_N2000	Landings (tonnes)	DNK	OTM	4073	243	1263	65	1235	1106	1314	246	1193
Doggerbank_N2000	Landings (tonnes)	DNK	SDN	1	1			0				0
Doggerbank_N2000	Landings (tonnes)	NLD	OTB	44	77	79	63	54	33	20	25	49
Doggerbank_N2000	Landings (tonnes)	NLD	OTM		24		35					7
Doggerbank_N2000	Landings (tonnes)	NLD	OTT	8	31	18	15	18	0	14	4	13
Doggerbank_N2000	Landings (tonnes)	NLD	SSC	0	0		1		0			0
Doggerbank_N2000	Landings (tonnes)	NLD	TBB	52	258	191	112	71	73	18	1	97
Doggerbank_N2000	Landings (tonnes)	SWE	OTB	0	69					52	1	15
Doggerbank_N2000	Landings (tonnes)	SWE	OTM	651		7	80	75	231	31	140	152
Doggerbank_N2000	Landings (tonnes)	total	total	6399	1893	2271	1368	1643	3714	1700	501	2436
Doggerbank_N2000	Value ('000s euros)	BEL	OTB	16	72	39	106	68	79	34	68	60
Doggerbank_N2000	Value ('000s euros)	BEL	SSC		1			0				0
Doggerbank_N2000	Value ('000s euros)	BEL	TBB		1	15	0	2	0	0		2
Doggerbank_N2000	Value ('000s euros)	DEU	OTB	21	58	14	31	27	32	35	26	31

Area	variable	Country	Gear	2014	2015	2016	2017	2018	2019	2020	2021	mean
Doggerbank_N2000	Value ('000s euros)	DEU	OTM	64		20		4	5	17		14
Doggerbank_N2000	Value ('000s euros)	DEU	TBB	1								0
Doggerbank_N2000	Value ('000s euros)	DNK	GNS					1				0
Doggerbank_N2000	Value ('000s euros)	DNK	OTB	255	218	154	144	33	573	39	14	179
Doggerbank_N2000	Value ('000s euros)	DNK	OTM	900	49	327	11	313	308	353	77	292
Doggerbank_N2000	Value ('000s euros)	DNK	SDN	1	1			0				0
Doggerbank_N2000	Value ('000s euros)	NLD	OTB	62	124	135	118	103	85	51	62	93
Doggerbank_N2000	Value ('000s euros)	NLD	OTM		9		13					3
Doggerbank_N2000	Value ('000s euros)	NLD	OTT	12	49	31	30	36	0	37	10	26
Doggerbank_N2000	Value ('000s euros)	NLD	SSC	0	1		1		0			0
Doggerbank_N2000	Value ('000s euros)	NLD	TBB	71	412	345	192	134	194	46	3	175
Doggerbank_N2000	Value ('000s euros)	SWE	OTB	0	14				13	0		3
Doggerbank_N2000	Value ('000s euros)	SWE	OTM	139		2	17	17	58	8	42	35
Doggerbank_N2000	Value ('000s euros)	total	total	1542	1009	1083	665	737	1347	620	303	913
Doggerbank_N2000	GVA ('000s euros)	BEL	OTB	7	39	23	59	35	39	19	38	32
Doggerbank_N2000	GVA ('000s euros)	BEL	SSC		0			0				0
Doggerbank_N2000	GVA ('000s euros)	BEL	TBB		1	9	0	1	0	0		1
Doggerbank_N2000	GVA ('000s euros)	DEU	OTB	11	33	9	18	18	17	19	15	18
Doggerbank_N2000	GVA ('000s euros)	DEU	OTM	32		12		3	3	9		7
Doggerbank_N2000	GVA ('000s euros)	DEU	TBB	1								0
Doggerbank_N2000	GVA ('000s euros)	DNK	GNS					1				0
Doggerbank_N2000	GVA ('000s euros)	DNK	OTB	187	182	129	113	27	439	33	12	140
Doggerbank_N2000	GVA ('000s euros)	DNK	OTM	654	37	271	9	252	236	295	64	227
Doggerbank_N2000	GVA ('000s euros)	DNK	SDN	0	1			0				0
Doggerbank_N2000	GVA ('000s euros)	NLD	OTB	34	67	77	61	55	35	24	28	48
Doggerbank_N2000	GVA ('000s euros)	NLD	OTM		4		6					1
Doggerbank_N2000	GVA ('000s euros)	NLD	OTT	7	29	22	18	20	0	17	5	15
Doggerbank_N2000	GVA ('000s euros)	NLD	SSC	0	0		1		0			0
Doggerbank_N2000	GVA ('000s euros)	NLD	TBB	32	190	192	100	65	84	21	2	86
Doggerbank_N2000	GVA ('000s euros)	SWE	OTB	0	8				7	0		2
Doggerbank_N2000	GVA ('000s euros)	SWE	OTM	69		1	10	9	30	5	23	18
Doggerbank_N2000	GVA ('000s euros)	total	total	1033	591	745	396	483	889	441	188	596
Friese Front part 1	Effort (fishing days)	BEL	OTB	5	1	17	35	14	5	2	2	10
Friese Front part 1	Effort (fishing days)	BEL	SSC	0	0	0	1	0		1		0
Friese Front part 1	Effort (fishing days)	BEL	TBB	1	8	1	1	11	1	1	3	4
Friese Front part 1	Effort (fishing days)	DEU	GNS	2	2		3	1	7	0		2
Friese Front part 1	Effort (fishing days)	DEU	OTB	3	2	26	22	2	27	3	7	12
Friese Front part 1	Effort (fishing days)	DEU	OTM		1	1						0
Friese Front part 1	Effort (fishing days)	DEU	OTT	0	0	0		1	0	3	6	1
Friese Front part 1	Effort (fishing days)	DEU	TBB	47	44	85	48	40	23	115	86	61
Friese Front part 1	Effort (fishing days)	DNK	GN				0					0
Friese Front part 1	Effort (fishing days)	DNK	GNS	4	2		0					1
Friese Front part 1	Effort (fishing days)	DNK	OTB	2	6	5	0	4		4	2	3
Friese Front part 1	Effort (fishing days)	DNK	OTM	1	18	12	0	3		6	2	5
Friese Front part 1	Effort (fishing days)	FRA	OTB					5	5	0		1
Friese Front part 1	Effort (fishing days)	FRA	SDN						1		0	0
Friese Front part 1	Effort (fishing days)	NLD	FPO	0	0	0	0	0	1	0	0	0
Friese Front part 1	Effort (fishing days)	NLD	GN	0	0	0	0					0
Friese Front part 1	Effort (fishing days)	NLD	GNS	1	0	0	0				0	0
Friese Front part 1	Effort (fishing days)	NLD	HMD		0	0	0					0
Friese Front part 1	Effort (fishing days)	NLD	LHP	0	0	0	0		0	0		0
Friese Front part 1	Effort (fishing days)	NLD	OTB	31	68	46	29	27	30	33	16	35
Friese Front part 1	Effort (fishing days)	NLD	OTT	22	19	86	112	28	52	19	9	43
Friese Front part 1	Effort (fishing days)	NLD	SSC	4	11	3	17	14	10	3	8	9
Friese Front part 1	Effort (fishing days)	NLD	TBB	73	105	154	105	91	65	136	166	112
Friese Front part 1	Effort (fishing days)	SWE	OTM		1	3			0			0
Friese Front part 1	Effort (fishing days)	total	total	196	289	441	374	239	227	325	307	300
Friese Front part 1	Landings (tonnes)	BEL	OTB	7	2	34	48	38	12	11	4	19

Area	variable	Country	Gear	2014	2015	2016	2017	2018	2019	2020	2021	mean
Friese Front part 1	Landings (tonnes)	BEL	SSC	7	7	8	8	5		3		5
Friese Front part 1	Landings (tonnes)	BEL	TBB	3	18	2	1	16	1	8	9	7
Friese Front part 1	Landings (tonnes)	DEU	GNS	1	1		2	0	3	0		1
Friese Front part 1	Landings (tonnes)	DEU	OTB	8	9	60	34	3	35	5	13	21
Friese Front part 1	Landings (tonnes)	DEU	OTM		189	100						36
Friese Front part 1	Landings (tonnes)	DEU	OTT	0	0	0		2	0	5	7	2
Friese Front part 1	Landings (tonnes)	DEU	TBB	127	114	266	119	66	37	165	112	126
Friese Front part 1	Landings (tonnes)	DNK	GN				0					0
Friese Front part 1	Landings (tonnes)	DNK	GNS	3	2		0					1
Friese Front part 1	Landings (tonnes)	DNK	OTB	5	2441	1419	20	439		1472	76	734
Friese Front part 1	Landings (tonnes)	DNK	OTM	323	5056	4192	11	458		2264	180	1561
Friese Front part 1	Landings (tonnes)	FRA	OTB					7	8	0		2
Friese Front part 1	Landings (tonnes)	FRA	SDN						4		1	1
Friese Front part 1	Landings (tonnes)	NLD	FPO	0	0	0	0	0	1	0	0	0
Friese Front part 1	Landings (tonnes)	NLD	GN	0	0	0	0					0
Friese Front part 1	Landings (tonnes)	NLD	GNS	0	0	0	0			0		0
Friese Front part 1	Landings (tonnes)	NLD	HMD		0	6	0					1
Friese Front part 1	Landings (tonnes)	NLD	LHP	0	0	0	0		0	0		0
Friese Front part 1	Landings (tonnes)	NLD	OTB	71	186	109	39	45	34	40	21	68
Friese Front part 1	Landings (tonnes)	NLD	OTT	29	41	162	190	36	48	16	12	67
Friese Front part 1	Landings (tonnes)	NLD	SSC	17	114	35	95	70	66	16	38	57
Friese Front part 1	Landings (tonnes)	NLD	TBB	214	292	502	286	173	105	249	266	261
Friese Front part 1	Landings (tonnes)	SWE	OTM		222	382			19			78
Friese Front part 1	Landings (tonnes)	total	total	815	8693	7279	853	1359	374	4254	738	3046
Friese Front part 1	Value ('000s euros)	BEL	OTB	24	8	203	257	164	59	48	17	97
Friese Front part 1	Value ('000s euros)	BEL	SSC	8	10	10	15	9		5		7
Friese Front part 1	Value ('000s euros)	BEL	TBB	10	87	10	6	71	6	56	48	37
Friese Front part 1	Value ('000s euros)	DEU	GNS	9	9		12	3	24	0		7
Friese Front part 1	Value ('000s euros)	DEU	OTB	24	29	277	152	14	143	15	53	88
Friese Front part 1	Value ('000s euros)	DEU	OTM		42	28						9
Friese Front part 1	Value ('000s euros)	DEU	OTT	1	0	0		7	1	13	27	6
Friese Front part 1	Value ('000s euros)	DEU	TBB	438	454	982	432	374	201	878	684	555
Friese Front part 1	Value ('000s euros)	DNK	GN				1					0
Friese Front part 1	Value ('000s euros)	DNK	GNS	18	24		2					6
Friese Front part 1	Value ('000s euros)	DNK	OTB	14	571	367	4	83		415	27	185
Friese Front part 1	Value ('000s euros)	DNK	OTM	64	1180	1097	2	87		654	58	393
Friese Front part 1	Value ('000s euros)	FRA	OTB					32	41	0		9
Friese Front part 1	Value ('000s euros)	FRA	SDN						6		3	1
Friese Front part 1	Value ('000s euros)	NLD	FPO	0	0	1	0	0	3	0	0	1
Friese Front part 1	Value ('000s euros)	NLD	GN	0	0	0	0					0
Friese Front part 1	Value ('000s euros)	NLD	GNS	1	0	0	0			0		0
Friese Front part 1	Value ('000s euros)	NLD	HMD		0	7	0					1
Friese Front part 1	Value ('000s euros)	NLD	LHP	0	0	1	1		0	0		0
Friese Front part 1	Value ('000s euros)	NLD	OTB	149	351	392	150	147	116	150	75	191
Friese Front part 1	Value ('000s euros)	NLD	OTT	82	108	653	898	140	193	67	51	274
Friese Front part 1	Value ('000s euros)	NLD	SSC	25	186	45	115	125	124	35	85	92
Friese Front part 1	Value ('000s euros)	NLD	TBB	711	1179	1924	1166	810	491	1716	1696	1212
Friese Front part 1	Value ('000s euros)	SWE	OTM		54	91			0			18
Friese Front part 1	Value ('000s euros)	total	total	1581	4293	6088	3214	2066	1407	4051	2824	3190
Friese Front part 1	GVA ('000s euros)	BEL	OTB	10	4	124	133	85	27	27	10	53
Friese Front part 1	GVA ('000s euros)	BEL	SSC	4	5	6	8	4		3		4
Friese Front part 1	GVA ('000s euros)	BEL	TBB	5	47	6	3	38	3	31	27	20
Friese Front part 1	GVA ('000s euros)	DEU	GNS	6	5		8	2	12	0		4
Friese Front part 1	GVA ('000s euros)	DEU	OTB	14	17	169	84	9	75	8	28	51
Friese Front part 1	GVA ('000s euros)	DEU	OTM		25	17						5
Friese Front part 1	GVA ('000s euros)	DEU	OTT	0	0	0		4	1	7	14	3
Friese Front part 1	GVA ('000s euros)	DEU	TBB	218	266	586	214	224	106	499	378	311
Friese Front part 1	GVA ('000s euros)	DNK	GN				1					0

Area	variable	Country	Gear	2014	2015	2016	2017	2018	2019	2020	2021	mean
Friese Front part 1	GVA ('000s euros)	DNK	GNS	13	16		2					4
Friese Front part 1	GVA ('000s euros)	DNK	OTB	10	478	308	3	68		347	22	155
Friese Front part 1	GVA ('000s euros)	DNK	OTM	47	980	910	1	71		547	48	326
Friese Front part 1	GVA ('000s euros)	FRA	OTB					14	16	0		4
Friese Front part 1	GVA ('000s euros)	FRA	SDN						2		1	0
Friese Front part 1	GVA ('000s euros)	NLD	FPO	0	0	0	0	0	1	0	0	0
Friese Front part 1	GVA ('000s euros)	NLD	GN	0	0	0	0					0
Friese Front part 1	GVA ('000s euros)	NLD	GNS	1	0	0	0				0	0
Friese Front part 1	GVA ('000s euros)	NLD	HMD		0	4	0					1
Friese Front part 1	GVA ('000s euros)	NLD	LHP	0	0	0	0		0	0		0
Friese Front part 1	GVA ('000s euros)	NLD	OTB	84	206	274	88	81	44	73	37	111
Friese Front part 1	GVA ('000s euros)	NLD	OTT	45	62	423	511	75	73	32	25	156
Friese Front part 1	GVA ('000s euros)	NLD	SSC	11	86	25	59	60	55	16	38	44
Friese Front part 1	GVA ('000s euros)	NLD	TBB	326	552	1122	619	396	210	777	770	596
Friese Front part 1	GVA ('000s euros)	SWE	OTM		32	50			0			10
Friese Front part 1	GVA ('000s euros)	total	total	795	2782	4024	1736	1132	626	2366	1399	1858
Friese Front scholbox	Effort (fishing days)	BEL	OTB	0	0	0	0	0	0	0	0	0
Friese Front scholbox	Effort (fishing days)	BEL	SSC	1		0				0		0
Friese Front scholbox	Effort (fishing days)	BEL	TBB		0			0		0	0	0
Friese Front scholbox	Effort (fishing days)	DEU	GNS			1	6	3	3			2
Friese Front scholbox	Effort (fishing days)	DEU	OTB	0	0				0			0
Friese Front scholbox	Effort (fishing days)	DEU	OTM		2	0					0	0
Friese Front scholbox	Effort (fishing days)	DEU	SSC							1		0
Friese Front scholbox	Effort (fishing days)	DEU	TBB	1	0	1	0	0	0	0	0	0
Friese Front scholbox	Effort (fishing days)	DNK	GN				0					0
Friese Front scholbox	Effort (fishing days)	DNK	OTB		2	1				0	0	0
Friese Front scholbox	Effort (fishing days)	DNK	OTM	0	7	3				1	1	1
Friese Front scholbox	Effort (fishing days)	FRA	SDN			0	0				0	0
Friese Front scholbox	Effort (fishing days)	NLD	FPO	0						0	0	0
Friese Front scholbox	Effort (fishing days)	NLD	GNS	6			0	1				1
Friese Front scholbox	Effort (fishing days)	NLD	OTB		0	0	0	0	0	0	1	0
Friese Front scholbox	Effort (fishing days)	NLD	OTT	0	0	0	0		0		0	0
Friese Front scholbox	Effort (fishing days)	NLD	SSC	15	7	5	6	4	4	2	5	6
Friese Front scholbox	Effort (fishing days)	NLD	TBB	1	1	2	1	0	1	0	2	1
Friese Front scholbox	Effort (fishing days)	SWE	OTM		0	0						0
Friese Front scholbox	Effort (fishing days)	total	total	24	19	15	15	10	9	5	11	13
Friese Front scholbox	Landings (tonnes)	BEL	OTB	0	0	2	0	3	0	1	1	1
Friese Front scholbox	Landings (tonnes)	BEL	SSC	7		3				1		1
Friese Front scholbox	Landings (tonnes)	BEL	TBB		0			0		0	0	0
Friese Front scholbox	Landings (tonnes)	DEU	GNS			1	3	2	1			1
Friese Front scholbox	Landings (tonnes)	DEU	OTB	0	1				0			0
Friese Front scholbox	Landings (tonnes)	DEU	OTM		286	9					16	39
Friese Front scholbox	Landings (tonnes)	DEU	SSC							2		0
Friese Front scholbox	Landings (tonnes)	DEU	TBB	6	0	5	1	0	0	0	0	2
Friese Front scholbox	Landings (tonnes)	DNK	GN				0					0
Friese Front scholbox	Landings (tonnes)	DNK	OTB		913	393				0	95	175
Friese Front scholbox	Landings (tonnes)	DNK	OTM	4	2326	606				636	105	459
Friese Front scholbox	Landings (tonnes)	FRA	SDN			0	0				0	0
Friese Front scholbox	Landings (tonnes)	NLD	FPO	0						0	0	0
Friese Front scholbox	Landings (tonnes)	NLD	GNS	1			0	0				0
Friese Front scholbox	Landings (tonnes)	NLD	OTB		1	0	0	0	1	0	6	1
Friese Front scholbox	Landings (tonnes)	NLD	OTT	0	1	1	1		0		0	0
Friese Front scholbox	Landings (tonnes)	NLD	SSC	43	34	46	31	19	26	8	28	29
Friese Front scholbox	Landings (tonnes)	NLD	TBB	14	12	7	11	0	4	0	2	6
Friese Front scholbox	Landings (tonnes)	SWE	OTM		81	49						16
Friese Front scholbox	Landings (tonnes)	total	total	75	3655	1122	47	25	32	648	254	732
Friese Front scholbox	Value ('000s euros)	BEL	OTB	1	1	7	0	18	1	3	3	4
Friese Front scholbox	Value ('000s euros)	BEL	SSC	8		4				2		2

Area	variable	Country	Gear	2014	2015	2016	2017	2018	2019	2020	2021	mean
Friese Front scholbox	Value ('000s euros)	BEL	TBB		1			1		0	0	0
Friese Front scholbox	Value ('000s euros)	DEU	GNS			6	30	15	11			8
Friese Front scholbox	Value ('000s euros)	DEU	OTB	0	3				0			0
Friese Front scholbox	Value ('000s euros)	DEU	OTM		64	3					6	9
Friese Front scholbox	Value ('000s euros)	DEU	SSC							5		1
Friese Front scholbox	Value ('000s euros)	DEU	TBB	19	0	20	4	2	1	2	2	6
Friese Front scholbox	Value ('000s euros)	DNK	GN					2				0
Friese Front scholbox	Value ('000s euros)	DNK	OTB		208	103				0	32	43
Friese Front scholbox	Value ('000s euros)	DNK	OTM	1	533	163				178	33	114
Friese Front scholbox	Value ('000s euros)	FRA	SDN			1	0				1	0
Friese Front scholbox	Value ('000s euros)	NLD	FPO	0						1	1	0
Friese Front scholbox	Value ('000s euros)	NLD	GNS	10			0	2				1
Friese Front scholbox	Value ('000s euros)	NLD	OTB		2	0	0	1	2	0	13	2
Friese Front scholbox	Value ('000s euros)	NLD	OTT	0	3	5	3		0		0	1
Friese Front scholbox	Value ('000s euros)	NLD	SSC	74	57	67	41	32	47	17	49	48
Friese Front scholbox	Value ('000s euros)	NLD	TBB	38	40	30	69	0	20	2	11	26
Friese Front scholbox	Value ('000s euros)	SWE	OTM		20	9						4
Friese Front scholbox	Value ('000s euros)	total	total	152	933	418	149	70	83	208	152	271
Friese Front scholbox	GVA ('000s euros)	BEL	OTB	1	1	4	0	9	0	2	2	2
Friese Front scholbox	GVA ('000s euros)	BEL	SSC	3		2				1		1
Friese Front scholbox	GVA ('000s euros)	BEL	TBB		0			0		0	0	0
Friese Front scholbox	GVA ('000s euros)	DEU	GNS			4	16	9	5			4
Friese Front scholbox	GVA ('000s euros)	DEU	OTB	0	2				0			0
Friese Front scholbox	GVA ('000s euros)	DEU	OTM		38	2					3	5
Friese Front scholbox	GVA ('000s euros)	DEU	SSC							2		0
Friese Front scholbox	GVA ('000s euros)	DEU	TBB	11	0	12	2	1	1	1	1	4
Friese Front scholbox	GVA ('000s euros)	DNK	GN					1				0
Friese Front scholbox	GVA ('000s euros)	DNK	OTB		174	87				0	27	36
Friese Front scholbox	GVA ('000s euros)	DNK	OTM	1	447	135				149	28	95
Friese Front scholbox	GVA ('000s euros)	FRA	SDN			0	0				0	0
Friese Front scholbox	GVA ('000s euros)	NLD	FPO	0						0	0	0
Friese Front scholbox	GVA ('000s euros)	NLD	GNS	5			0	1				1
Friese Front scholbox	GVA ('000s euros)	NLD	OTB		1	0	0	1	1	0	6	1
Friese Front scholbox	GVA ('000s euros)	NLD	OTT	0	2	3	2		0		0	1
Friese Front scholbox	GVA ('000s euros)	NLD	SSC	34	26	37	21	15	21	8	22	23
Friese Front scholbox	GVA ('000s euros)	NLD	TBB	21	23	19	44	0	9	1	6	15
Friese Front scholbox	GVA ('000s euros)	SWE	OTM		12	5						2
Friese Front scholbox	GVA ('000s euros)	total	total	77	725	312	87	37	36	163	95	192
Klaverbank	Effort (fishing days)	BEL	OTB	0	0	1		1	0	1	2	1
Klaverbank	Effort (fishing days)	BEL	SSC	2		4	4	4	1	3	3	3
Klaverbank	Effort (fishing days)	BEL	TBB	21	12	10	0	2	0	0	0	6
Klaverbank	Effort (fishing days)	DEU	OTB	2	5	1	1	1	1	2	0	1
Klaverbank	Effort (fishing days)	DEU	OTM	0				0		0	0	0
Klaverbank	Effort (fishing days)	DEU	OTT					0	0			0
Klaverbank	Effort (fishing days)	DEU	SSC							1		0
Klaverbank	Effort (fishing days)	DEU	TBB	1	3	7	7	10	8	1	1	5
Klaverbank	Effort (fishing days)	DNK	GNS	0								0
Klaverbank	Effort (fishing days)	DNK	OTB	1	1	0	1	1	0	0	0	1
Klaverbank	Effort (fishing days)	DNK	OTM	0	2	0	0	2		1	0	1
Klaverbank	Effort (fishing days)	FRA	OTB	1	0	1	1	2	4	13	3	3
Klaverbank	Effort (fishing days)	FRA	OTM				3	1	5	1	1	0	1
Klaverbank	Effort (fishing days)	FRA	PTM				0					0
Klaverbank	Effort (fishing days)	FRA	SDN	0	2	9	6	10	3	7	4	5
Klaverbank	Effort (fishing days)	NLD	OTB	1	4	6	3	2	3	6	11	5
Klaverbank	Effort (fishing days)	NLD	OTM			0	0	1				0
Klaverbank	Effort (fishing days)	NLD	OTT	4	2	1	1	0	1	1	3	2
Klaverbank	Effort (fishing days)	NLD	SDN							1		0
Klaverbank	Effort (fishing days)	NLD	SSC	29	35	42	36	21	21	64	19	33

Area	variable	Country	Gear	2014	2015	2016	2017	2018	2019	2020	2021	mean
Klaverbank	Effort (fishing days)	NLD	TBB	97	80	45	10	42	18	15	14	40
Klaverbank	Effort (fishing days)	SWE	OTB	0					0			0
Klaverbank	Effort (fishing days)	SWE	OTM			0			0	0	0	0
Klaverbank	Effort (fishing days)	total	total	161	146	130	73	103	62	116	59	106
Klaverbank	Landings (tonnes)	BEL	OTB	1	1	2		1	2	14	5	3
Klaverbank	Landings (tonnes)	BEL	SSC	28		42	38	20	2	59	52	30
Klaverbank	Landings (tonnes)	BEL	TBB	61	35	50	3	6	1	0	1	20
Klaverbank	Landings (tonnes)	DEU	OTB	6	13	4	8	1	1	12	0	6
Klaverbank	Landings (tonnes)	DEU	OTM	4				145		74	55	35
Klaverbank	Landings (tonnes)	DEU	OTT					1	0			0
Klaverbank	Landings (tonnes)	DEU	SSC							6		1
Klaverbank	Landings (tonnes)	DEU	TBB	7	11	23	23	21	13	2	2	12
Klaverbank	Landings (tonnes)	DNK	GNS	1								0
Klaverbank	Landings (tonnes)	DNK	OTB	83	162	1	27	115	1	41	14	56
Klaverbank	Landings (tonnes)	DNK	OTM	21	384	155	7	707		554	30	232
Klaverbank	Landings (tonnes)	FRA	OTB	2	0	8	6	22	17	66	17	17
Klaverbank	Landings (tonnes)	FRA	OTM			19	11	29	5	10	6	10
Klaverbank	Landings (tonnes)	FRA	PTM			0						0
Klaverbank	Landings (tonnes)	FRA	SDN	1	0	23	29	43	19	7	37	20
Klaverbank	Landings (tonnes)	NLD	OTB	6	28	28	24	17	22	37	68	29
Klaverbank	Landings (tonnes)	NLD	OTM			52	0	153				26
Klaverbank	Landings (tonnes)	NLD	OTT	4	5	2	10	0	2	3	4	4
Klaverbank	Landings (tonnes)	NLD	SDN						0			0
Klaverbank	Landings (tonnes)	NLD	SSC	268	319	431	327	90	200	380	97	264
Klaverbank	Landings (tonnes)	NLD	TBB	498	409	196	38	79	32	27	29	164
Klaverbank	Landings (tonnes)	SWE	OTB	1					2			0
Klaverbank	Landings (tonnes)	SWE	OTM			7			2	164	28	25
Klaverbank	Landings (tonnes)	total	total	991	1367	1044	552	1450	320	1456	444	953
Klaverbank	Value ('000s euros)	BEL	OTB	4	3	10		4	9	41	16	11
Klaverbank	Value ('000s euros)	BEL	SSC	43		72	69	52	6	111	88	55
Klaverbank	Value ('000s euros)	BEL	TBB	139	94	114	12	23	5	0	3	49
Klaverbank	Value ('000s euros)	DEU	OTB	18	29	11	22	4	4	10	1	12
Klaverbank	Value ('000s euros)	DEU	OTM	1					36		22	18	10
Klaverbank	Value ('000s euros)	DEU	OTT					3	1			0
Klaverbank	Value ('000s euros)	DEU	SSC							16		2
Klaverbank	Value ('000s euros)	DEU	TBB	20	37	66	88	103	66	8	8	49
Klaverbank	Value ('000s euros)	DNK	GNS	3								0
Klaverbank	Value ('000s euros)	DNK	OTB	16	38	0	10	32	1	11	5	14
Klaverbank	Value ('000s euros)	DNK	OTM	4	100	43	1	188		155	9	63
Klaverbank	Value ('000s euros)	FRA	OTB	2	0	13	10	22	26	81	29	23
Klaverbank	Value ('000s euros)	FRA	OTM			28	13	29	7	16	11	13
Klaverbank	Value ('000s euros)	FRA	PTM			1						0
Klaverbank	Value ('000s euros)	FRA	SDN	1	1	128	184	296	52	32	60	94
Klaverbank	Value ('000s euros)	NLD	OTB	4	28	35	37	20	27	35	59	31
Klaverbank	Value ('000s euros)	NLD	OTM			18	0	49				8
Klaverbank	Value ('000s euros)	NLD	OTT	10	15	12	48	2	7	10	16	15
Klaverbank	Value ('000s euros)	NLD	SDN						1			0
Klaverbank	Value ('000s euros)	NLD	SSC	361	633	807	483	255	313	852	180	485
Klaverbank	Value ('000s euros)	NLD	TBB	1252	1076	557	142	376	154	137	139	479
Klaverbank	Value ('000s euros)	SWE	OTB	0					1			0
Klaverbank	Value ('000s euros)	SWE	OTM			1			1	43	10	7
Klaverbank	Value ('000s euros)	total	total	1879	2055	1914	1119	1495	678	1579	653	1421
Klaverbank	GVA ('000s euros)	BEL	OTB	2	1	6		2	4	23	9	6
Klaverbank	GVA ('000s euros)	BEL	SSC	20		42	38	26	3	62	49	30
Klaverbank	GVA ('000s euros)	BEL	TBB	63	51	67	6	11	3	0	2	25
Klaverbank	GVA ('000s euros)	DEU	OTB	9	17	7	13	2	2	6	0	7
Klaverbank	GVA ('000s euros)	DEU	OTM	0					22		12	10	5
Klaverbank	GVA ('000s euros)	DEU	OTT					2	1			0

Area	variable	Country	Gear	2014	2015	2016	2017	2018	2019	2020	2021	mean
Klaverbank	GVA ('000s euros)	DEU	SSC							8		1
Klaverbank	GVA ('000s euros)	DEU	TBB	10	22	44	43	61	35	4	4	28
Klaverbank	GVA ('000s euros)	DNK	GNS	2								0
Klaverbank	GVA ('000s euros)	DNK	OTB	11	32	0	8	26	0	9	4	11
Klaverbank	GVA ('000s euros)	DNK	OTM	3	84	36	1	155		129	8	52
Klaverbank	GVA ('000s euros)	FRA	OTB	1	0	7	5	10	9	36	13	10
Klaverbank	GVA ('000s euros)	FRA	OTM			14	7	13	3	6	5	6
Klaverbank	GVA ('000s euros)	FRA	PTM			0						0
Klaverbank	GVA ('000s euros)	FRA	SDN	0	1	64	90	130	17	11	21	42
Klaverbank	GVA ('000s euros)	NLD	OTB	3	16	24	21	11	11	17	29	16
Klaverbank	GVA ('000s euros)	NLD	OTM			10	0	24				4
Klaverbank	GVA ('000s euros)	NLD	OTT	5	8	7	28	1	3	5	8	8
Klaverbank	GVA ('000s euros)	NLD	SDN							1		0
Klaverbank	GVA ('000s euros)	NLD	SSC	163	292	450	250	123	136	384	81	235
Klaverbank	GVA ('000s euros)	NLD	TBB	566	496	311	76	182	73	65	75	231
Klaverbank	GVA ('000s euros)	SWE	OTB	0						0		0
Klaverbank	GVA ('000s euros)	SWE	OTM			1			0	24	5	4
Klaverbank	GVA ('000s euros)	total	total	858	1021	1089	587	800	299	801	324	722
Noordzeekustzone_N2000_clipped	Effort (fishing days)	BEL	OTB	0		0	0	0	2	0	0	0
Noordzeekustzone_N2000_clipped	Effort (fishing days)	BEL	SSC		0		0	0				0
Noordzeekustzone_N2000_clipped	Effort (fishing days)	BEL	TBB	21	32	76	98	73	8	28	25	45
Noordzeekustzone_N2000_clipped	Effort (fishing days)	DEU	DRB				0	0				0
Noordzeekustzone_N2000_clipped	Effort (fishing days)	DEU	OTB	0	0	0	0	0	0	0	0	0
Noordzeekustzone_N2000_clipped	Effort (fishing days)	DEU	OTT	0						0	0	0
Noordzeekustzone_N2000_clipped	Effort (fishing days)	DEU	SSC								0	0
Noordzeekustzone_N2000_clipped	Effort (fishing days)	DEU	TBB	52	60	282	47	44	31	51	17	73
Noordzeekustzone_N2000_clipped	Effort (fishing days)	DNK	GNS	1	0		2					0
Noordzeekustzone_N2000_clipped	Effort (fishing days)	DNK	OTB		0		0	0			1	0
Noordzeekustzone_N2000_clipped	Effort (fishing days)	DNK	OTM		0				0		1	0
Noordzeekustzone_N2000_clipped	Effort (fishing days)	NLD	DRB		5	3						1
Noordzeekustzone_N2000_clipped	Effort (fishing days)	NLD	DRH				0	0	0			0
Noordzeekustzone_N2000_clipped	Effort (fishing days)	NLD	FPO	4	8	15	10	12	9	9	11	10
Noordzeekustzone_N2000_clipped	Effort (fishing days)	NLD	FYK	0	0	0	0			0	0	0
Noordzeekustzone_N2000_clipped	Effort (fishing days)	NLD	GN	0	0	0	0					0
Noordzeekustzone_N2000_clipped	Effort (fishing days)	NLD	GNS	9	2	3	2	2	2	0	2	3
Noordzeekustzone_N2000_clipped	Effort (fishing days)	NLD	HMD	57	168	107	36	76	25	53	123	81
Noordzeekustzone_N2000_clipped	Effort (fishing days)	NLD	LHP	0	0	0	0		0	0		0
Noordzeekustzone_N2000_clipped	Effort (fishing days)	NLD	LLS			0	0	0				0

Area	variable	Country	Gear	2014	2015	2016	2017	2018	2019	2020	2021	mean
Noordzeekustzone_N2000_clipped	Effort (fishing days)	NLD	NVT								0	0
Noordzeekustzone_N2000_clipped	Effort (fishing days)	NLD	OTB	32	8	62	3	2	11	2	1	15
Noordzeekustzone_N2000_clipped	Effort (fishing days)	NLD	OTM	0	0	0	0	0	0			0
Noordzeekustzone_N2000_clipped	Effort (fishing days)	NLD	OTT	0	0	1	0	10	0	4	1	2
Noordzeekustzone_N2000_clipped	Effort (fishing days)	NLD	PS	0	0	0	0					0
Noordzeekustzone_N2000_clipped	Effort (fishing days)	NLD	SSC	0	0	0	0	0	0	0	0	0
Noordzeekustzone_N2000_clipped	Effort (fishing days)	NLD	TBB	5920	4891	6078	3622	4541	3913	4804	4058	4728
Noordzeekustzone_N2000_clipped	Effort (fishing days)	SWE	OTM				0					0
Noordzeekustzone_N2000_clipped	Effort (fishing days)	total	total	6097	5175	6627	3821	4760	4002	4952	4241	4959
Noordzeekustzone_N2000_clipped	Landings (tonnes)	BEL	OTB	0		0	0	1	3	1	0	1
Noordzeekustzone_N2000_clipped	Landings (tonnes)	BEL	SSC		4		0	1				1
Noordzeekustzone_N2000_clipped	Landings (tonnes)	BEL	TBB	30	22	62	33	108	11	28	16	39
Noordzeekustzone_N2000_clipped	Landings (tonnes)	DEU	DRB				1	0				0
Noordzeekustzone_N2000_clipped	Landings (tonnes)	DEU	OTB	0	1	1	0	0	0	0	0	0
Noordzeekustzone_N2000_clipped	Landings (tonnes)	DEU	OTT	0						0	0	0
Noordzeekustzone_N2000_clipped	Landings (tonnes)	DEU	SSC								0	0
Noordzeekustzone_N2000_clipped	Landings (tonnes)	DEU	TBB	62	72	239	31	68	38	58	19	73
Noordzeekustzone_N2000_clipped	Landings (tonnes)	DNK	GNS	0	0		0					0
Noordzeekustzone_N2000_clipped	Landings (tonnes)	DNK	OTB		7		43	4			97	19
Noordzeekustzone_N2000_clipped	Landings (tonnes)	DNK	OTM		0				57		502	70
Noordzeekustzone_N2000_clipped	Landings (tonnes)	NLD	DRB		322	217						67
Noordzeekustzone_N2000_clipped	Landings (tonnes)	NLD	DRH				0	1	0			0
Noordzeekustzone_N2000_clipped	Landings (tonnes)	NLD	FPO	5	12	13	13	18	11	10	9	11
Noordzeekustzone_N2000_clipped	Landings (tonnes)	NLD	FYK	0	0	0	0			0	2	0
Noordzeekustzone_N2000_clipped	Landings (tonnes)	NLD	GN	0	0	0	0					0
Noordzeekustzone_N2000_clipped	Landings (tonnes)	NLD	GNS	6	5	6	6	1	0	0	0	3
Noordzeekustzone_N2000_clipped	Landings (tonnes)	NLD	HMD	1187	1720	1473	423	607	411	583	2190	1074
Noordzeekustzone_N2000_clipped	Landings (tonnes)	NLD	LHP	0	0	0	0		0	0		0
Noordzeekustzone_N2000_clipped	Landings (tonnes)	NLD	LLS				0	0	0			0

Area	variable	Country	Gear	2014	2015	2016	2017	2018	2019	2020	2021	mean
Noordzeekustzone_N2000_clipped	Landings (tonnes)	NLD	NVT								5	1
Noordzeekustzone_N2000_clipped	Landings (tonnes)	NLD	OTB	62	22	67	5	3	23	3	1	23
Noordzeekustzone_N2000_clipped	Landings (tonnes)	NLD	OTM	1	0	4	10	1	0			2
Noordzeekustzone_N2000_clipped	Landings (tonnes)	NLD	OTT	0	0	0	1	22	0	3	0	3
Noordzeekustzone_N2000_clipped	Landings (tonnes)	NLD	PS	0	0	0	0					0
Noordzeekustzone_N2000_clipped	Landings (tonnes)	NLD	SSC	1	1	1	2	4	0	1	1	1
Noordzeekustzone_N2000_clipped	Landings (tonnes)	NLD	TBB	6159	4626	5154	2150	8232	5204	4931	3906	5045
Noordzeekustzone_N2000_clipped	Landings (tonnes)	SWE	OTM			5						1
Noordzeekustzone_N2000_clipped	Landings (tonnes)	total	total	7515	6815	7241	2721	9071	5759	5619	6751	6437
Noordzeekustzone_N2000_clipped	Value ('000s euros)	BEL	OTB	0		2	0	6	10	3	1	3
Noordzeekustzone_N2000_clipped	Value ('000s euros)	BEL	SSC		5		0	2				1
Noordzeekustzone_N2000_clipped	Value ('000s euros)	BEL	TBB	105	97	405	223	399	34	117	83	183
Noordzeekustzone_N2000_clipped	Value ('000s euros)	DEU	DRB				3	1				0
Noordzeekustzone_N2000_clipped	Value ('000s euros)	DEU	OTB	0	2	2	0	0	2	1	2	1
Noordzeekustzone_N2000_clipped	Value ('000s euros)	DEU	OTT	0						1	1	0
Noordzeekustzone_N2000_clipped	Value ('000s euros)	DEU	SSC								1	0
Noordzeekustzone_N2000_clipped	Value ('000s euros)	DEU	TBB	170	221	1421	240	223	104	187	81	331
Noordzeekustzone_N2000_clipped	Value ('000s euros)	DNK	GNS	2	0		4					1
Noordzeekustzone_N2000_clipped	Value ('000s euros)	DNK	OTB		2		7	1			33	5
Noordzeekustzone_N2000_clipped	Value ('000s euros)	DNK	OTM		0				15		140	19
Noordzeekustzone_N2000_clipped	Value ('000s euros)	NLD	DRB		402	271						84
Noordzeekustzone_N2000_clipped	Value ('000s euros)	NLD	DRH				0	2	1			0
Noordzeekustzone_N2000_clipped	Value ('000s euros)	NLD	FPO	7	26	37	35	44	28	26	23	28
Noordzeekustzone_N2000_clipped	Value ('000s euros)	NLD	FYK	0	0	0	0			0	2	0
Noordzeekustzone_N2000_clipped	Value ('000s euros)	NLD	GN	0	3	0	0					0
Noordzeekustzone_N2000_clipped	Value ('000s euros)	NLD	GNS	40	38	49	51	7	3	0	6	24
Noordzeekustzone_N2000_clipped	Value ('000s euros)	NLD	HMD	1484	2150	1842	523	759	522	728	2738	1343
Noordzeekustzone_N2000_clipped	Value ('000s euros)	NLD	LHP	2	4	5	5			0	0	2
Noordzeekustzone_N2000_clipped	Value ('000s euros)	NLD	LLS				0	0	0			0

Area	variable	Country	Gear	2014	2015	2016	2017	2018	2019	2020	2021	mean
Noordzeekustzone_N2000_clipped	Value ('000s euros)	NLD	NVT								15	2
Noordzeekustzone_N2000_clipped	Value ('000s euros)	NLD	OTB	168	29	393	23	31	30	3	2	85
Noordzeekustzone_N2000_clipped	Value ('000s euros)	NLD	OTM	6	2	10	11	1	0			4
Noordzeekustzone_N2000_clipped	Value ('000s euros)	NLD	OTT	1	1	2	5	143	0	8	0	20
Noordzeekustzone_N2000_clipped	Value ('000s euros)	NLD	PS	1	1	0	1					0
Noordzeekustzone_N2000_clipped	Value ('000s euros)	NLD	SSC	2	2	2	3	8	1	1	2	3
Noordzeekustzone_N2000_clipped	Value ('000s euros)	NLD	TBB	19223	14182	31387	13465	48540	12149	11456	9032	19929
Noordzeekustzone_N2000_clipped	Value ('000s euros)	SWE	OTM				1					0
Noordzeekustzone_N2000_clipped	Value ('000s euros)	total	total	21212	17167	35830	14600	50169	12899	12531	12161	22071
Noordzeekustzone_N2000_clipped	GVA ('000s euros)	BEL	OTB	0		1	0	3	4	1	1	1
Noordzeekustzone_N2000_clipped	GVA ('000s euros)	BEL	SSC		3		0	1				0
Noordzeekustzone_N2000_clipped	GVA ('000s euros)	BEL	TBB	45	42	250	112	216	15	67	48	99
Noordzeekustzone_N2000_clipped	GVA ('000s euros)	DEU	DRB				2	0				0
Noordzeekustzone_N2000_clipped	GVA ('000s euros)	DEU	OTB	0	1	1	0	0	1	1	1	1
Noordzeekustzone_N2000_clipped	GVA ('000s euros)	DEU	OTT	0						1	1	0
Noordzeekustzone_N2000_clipped	GVA ('000s euros)	DEU	SSC								0	0
Noordzeekustzone_N2000_clipped	GVA ('000s euros)	DEU	TBB	97	127	985	146	149	55	123	53	217
Noordzeekustzone_N2000_clipped	GVA ('000s euros)	DNK	GNS	1	0		3					1
Noordzeekustzone_N2000_clipped	GVA ('000s euros)	DNK	OTB		1		5	1			28	4
Noordzeekustzone_N2000_clipped	GVA ('000s euros)	DNK	OTM		0				12		117	16
Noordzeekustzone_N2000_clipped	GVA ('000s euros)	NLD	DRB		185	151						42
Noordzeekustzone_N2000_clipped	GVA ('000s euros)	NLD	DRH				0	1	0			0
Noordzeekustzone_N2000_clipped	GVA ('000s euros)	NLD	FPO	3	14	25	24	30	18	19	15	19
Noordzeekustzone_N2000_clipped	GVA ('000s euros)	NLD	FYK	0	0	0	0			0	2	0
Noordzeekustzone_N2000_clipped	GVA ('000s euros)	NLD	GN	0	2	0	0					0
Noordzeekustzone_N2000_clipped	GVA ('000s euros)	NLD	GNS	28	31	36	39	5	2	0	4	18
Noordzeekustzone_N2000_clipped	GVA ('000s euros)	NLD	HMD	671	991	1026	271	366	226	327	1229	638
Noordzeekustzone_N2000_clipped	GVA ('000s euros)	NLD	LHP	2	3	4	4			0	0	2
Noordzeekustzone_N2000_clipped	GVA ('000s euros)	NLD	LLS				0	0	0			0

Area	variable	Country	Gear	2014	2015	2016	2017	2018	2019	2020	2021	mean
Noordzeekustzone_N2000_clipped	GVA ('000s euros)	NLD	NVT								8	1
Noordzeekustzone_N2000_clipped	GVA ('000s euros)	NLD	OTB	96	17	281	14	18	13	1	1	55
Noordzeekustzone_N2000_clipped	GVA ('000s euros)	NLD	OTM	3	1	7	7	1	0			2
Noordzeekustzone_N2000_clipped	GVA ('000s euros)	NLD	OTT	0	0	2	3	102	0	4	0	14
Noordzeekustzone_N2000_clipped	GVA ('000s euros)	NLD	PS	0	1	0	1					0
Noordzeekustzone_N2000_clipped	GVA ('000s euros)	NLD	SSC	1	1	1	2	4	0	1	1	1
Noordzeekustzone_N2000_clipped	GVA ('000s euros)	NLD	TBB	10702	8166	21838	8077	27681	4900	5954	4664	11498
Noordzeekustzone_N2000_clipped	GVA ('000s euros)	SWE	OTM				1					0
Noordzeekustzone_N2000_clipped	GVA ('000s euros)	total	total	11651	9588	24611	8710	28578	5246	6499	6172	12632
Noordzeekustzone_VIBEG_clipped	Effort (fishing days)	BEL	OTB	0		0		0	0	0	0	0
Noordzeekustzone_VIBEG_clipped	Effort (fishing days)	BEL	TBB	2	0	1	0	0		0	0	0
Noordzeekustzone_VIBEG_clipped	Effort (fishing days)	DEU	OTM								0	0
Noordzeekustzone_VIBEG_clipped	Effort (fishing days)	DEU	TBB	12	6	32	1	0	0	7	0	7
Noordzeekustzone_VIBEG_clipped	Effort (fishing days)	DNK	GN				0					0
Noordzeekustzone_VIBEG_clipped	Effort (fishing days)	DNK	OTB				0				1	0
Noordzeekustzone_VIBEG_clipped	Effort (fishing days)	DNK	OTM		0					0	0	0
Noordzeekustzone_VIBEG_clipped	Effort (fishing days)	NLD	FPO	0	0	0	0	0	0	0	1	0
Noordzeekustzone_VIBEG_clipped	Effort (fishing days)	NLD	NVT								0	0
Noordzeekustzone_VIBEG_clipped	Effort (fishing days)	NLD	OTB	1	0	0	0	0	0			0
Noordzeekustzone_VIBEG_clipped	Effort (fishing days)	NLD	OTT		0	0	0					0
Noordzeekustzone_VIBEG_clipped	Effort (fishing days)	NLD	TBB	110	53	8	6	10	4	16	23	28
Noordzeekustzone_VIBEG_clipped	Effort (fishing days)	SWE	OTM				0					0
Noordzeekustzone_VIBEG_clipped	Effort (fishing days)	total	total	124	58	40	7	10	4	23	24	36
Noordzeekustzone_VIBEG_clipped	Landings (tonnes)	BEL	OTB	0		0		0	0	0	0	0
Noordzeekustzone_VIBEG_clipped	Landings (tonnes)	BEL	TBB	3	0	0	0	0		0	0	1
Noordzeekustzone_VIBEG_clipped	Landings (tonnes)	DEU	OTM								23	3
Noordzeekustzone_VIBEG_clipped	Landings (tonnes)	DEU	TBB	18	7	19	0	0	0	5	0	6
Noordzeekustzone_VIBEG_clipped	Landings (tonnes)	DNK	GN				0					0
Noordzeekustzone_VIBEG_clipped	Landings (tonnes)	DNK	OTB				13				177	24

Area	variable	Country	Gear	2014	2015	2016	2017	2018	2019	2020	2021	mean
Noordzeekustzone_VIBEG_clipped	Landings (tonnes)	DNK	OTM		0						48	6
Noordzeekustzone_VIBEG_clipped	Landings (tonnes)	NLD	FPO	0	0	0	0	0	0	0	0	0
Noordzeekustzone_VIBEG_clipped	Landings (tonnes)	NLD	NVT								0	0
Noordzeekustzone_VIBEG_clipped	Landings (tonnes)	NLD	OTB	3	0	0	0	0	0			0
Noordzeekustzone_VIBEG_clipped	Landings (tonnes)	NLD	OTT		0	0	0					0
Noordzeekustzone_VIBEG_clipped	Landings (tonnes)	NLD	TBB	169	67	9	5	9	6	21	30	39
Noordzeekustzone_VIBEG_clipped	Landings (tonnes)	SWE	OTM				1					0
Noordzeekustzone_VIBEG_clipped	Landings (tonnes)	total	total	193	74	30	19	10	6	26	277	79
Noordzeekustzone_VIBEG_clipped	Value ('000s euros)	BEL	OTB	0		0		1	0	0	0	0
Noordzeekustzone_VIBEG_clipped	Value ('000s euros)	BEL	TBB	11	1	3	0	0		0	0	2
Noordzeekustzone_VIBEG_clipped	Value ('000s euros)	DEU	OTM								6	1
Noordzeekustzone_VIBEG_clipped	Value ('000s euros)	DEU	TBB	42	20	124	1	0	1	13	0	25
Noordzeekustzone_VIBEG_clipped	Value ('000s euros)	DNK	GN				3					0
Noordzeekustzone_VIBEG_clipped	Value ('000s euros)	DNK	OTB				2				60	8
Noordzeekustzone_VIBEG_clipped	Value ('000s euros)	DNK	OTM		0						13	2
Noordzeekustzone_VIBEG_clipped	Value ('000s euros)	NLD	FPO	0	0	0	0	0	0	0	0	0
Noordzeekustzone_VIBEG_clipped	Value ('000s euros)	NLD	NVT								1	0
Noordzeekustzone_VIBEG_clipped	Value ('000s euros)	NLD	OTB	9	0	0	0	0	0			1
Noordzeekustzone_VIBEG_clipped	Value ('000s euros)	NLD	OTT		0	0	0					0
Noordzeekustzone_VIBEG_clipped	Value ('000s euros)	NLD	TBB	480	193	46	38	73	13	51	74	121
Noordzeekustzone_VIBEG_clipped	Value ('000s euros)	SWE	OTM				0					0
Noordzeekustzone_VIBEG_clipped	Value ('000s euros)	total	total	543	214	174	45	75	14	65	156	161
Noordzeekustzone_VIBEG_clipped	GVA ('000s euros)	BEL	OTB	0		0		1	0	0	0	0
Noordzeekustzone_VIBEG_clipped	GVA ('000s euros)	BEL	TBB	5	0	2	0	0		0	0	1
Noordzeekustzone_VIBEG_clipped	GVA ('000s euros)	DEU	OTM								3	0
Noordzeekustzone_VIBEG_clipped	GVA ('000s euros)	DEU	TBB	23	11	86	1	0	0	9	0	16
Noordzeekustzone_VIBEG_clipped	GVA ('000s euros)	DNK	GN				2					0
Noordzeekustzone_VIBEG_clipped	GVA ('000s euros)	DNK	OTB				1				50	6
Noordzeekustzone_VIBEG_clipped	GVA ('000s euros)	DNK	OTM		0						11	1

Area	variable	Country	Gear	2014	2015	2016	2017	2018	2019	2020	2021	mean
Noordzeekustzone_VIBEG_clipped	GVA ('000s euros)	NLD	FPO	0	0	0	0	0	0	0	0	0
Noordzeekustzone_VIBEG_clipped	GVA ('000s euros)	NLD	NVT							0		0
Noordzeekustzone_VIBEG_clipped	GVA ('000s euros)	NLD	OTB	5	0	0	0	0	0			1
Noordzeekustzone_VIBEG_clipped	GVA ('000s euros)	NLD	OTT		0	0	0					0
Noordzeekustzone_VIBEG_clipped	GVA ('000s euros)	NLD	TBB	261	108	31	23	41	5	27	38	67
Noordzeekustzone_VIBEG_clipped	GVA ('000s euros)	SWE	OTM				0					0
Noordzeekustzone_VIBEG_clipped	GVA ('000s euros)	total	total	294	120	120	28	42	6	36	104	94
Noordzeekustzone_VIBEG_N2000_overlap	Effort (fishing days)	BEL	OTB	0		0		0	0	0	0	0
Noordzeekustzone_VIBEG_N2000_overlap	Effort (fishing days)	BEL	SSC		0			0				0
Noordzeekustzone_VIBEG_N2000_overlap	Effort (fishing days)	BEL	TBB	2	1	2	0	0	0	0	0	1
Noordzeekustzone_VIBEG_N2000_overlap	Effort (fishing days)	DEU	TBB	12	4	31	6	6	6	11	2	9
Noordzeekustzone_VIBEG_N2000_overlap	Effort (fishing days)	DNK	GNS	0	0		1					0
Noordzeekustzone_VIBEG_N2000_overlap	Effort (fishing days)	DNK	OTB							0		0
Noordzeekustzone_VIBEG_N2000_overlap	Effort (fishing days)	DNK	OTM		0					0		0
Noordzeekustzone_VIBEG_N2000_overlap	Effort (fishing days)	NLD	FPO	0	0	0	0	0	0	0	0	0
Noordzeekustzone_VIBEG_N2000_overlap	Effort (fishing days)	NLD	GNS	3	0	0	0	0	0	0	0	0
Noordzeekustzone_VIBEG_N2000_overlap	Effort (fishing days)	NLD	HMD	0	0	0			0		0	0
Noordzeekustzone_VIBEG_N2000_overlap	Effort (fishing days)	NLD	LHP	0	0	0	0		0			0
Noordzeekustzone_VIBEG_N2000_overlap	Effort (fishing days)	NLD	NVT							0		0
Noordzeekustzone_VIBEG_N2000_overlap	Effort (fishing days)	NLD	OTB	2	0	0	0	0	0	0		0
Noordzeekustzone_VIBEG_N2000_overlap	Effort (fishing days)	NLD	OTM	0	0	0	0	0	0			0
Noordzeekustzone_VIBEG_N2000_overlap	Effort (fishing days)	NLD	OTT		0	0	0			0		0
Noordzeekustzone_VIBEG_N2000_overlap	Effort (fishing days)	NLD	SSC	0	0		0	0	0	0	0	0
Noordzeekustzone_VIBEG_N2000_overlap	Effort (fishing days)	NLD	TBB	202	52	44	10	34	29	72	41	60
Noordzeekustzone_VIBEG_N2000_overlap	Effort (fishing days)	SWE	OTM				0					0
Noordzeekustzone_VIBEG_N2000_overlap	Effort (fishing days)	total	total	221	56	77	16	39	35	83	44	71
Noordzeekustzone_VIBEG_N2000_overlap	Landings (tonnes)	BEL	OTB	0		0		0	0	0	0	0
Noordzeekustzone_VIBEG_N2000_overlap	Landings (tonnes)	BEL	SSC		0			0				0
Noordzeekustzone_VIBEG_N2000_overlap	Landings (tonnes)	BEL	TBB	1	0	1	0	0	0	0	0	0

Area	variable	Country	Gear	2014	2015	2016	2017	2018	2019	2020	2021	mean
Noordzeekustzone_VIBEG_N2000_overlap	Landings (tonnes)	DEU	TBB	13	5	31	4	9	6	10	2	10
Noordzeekustzone_VIBEG_N2000_overlap	Landings (tonnes)	DNK	GNS	0	0		0					0
Noordzeekustzone_VIBEG_N2000_overlap	Landings (tonnes)	DNK	OTB								79	10
Noordzeekustzone_VIBEG_N2000_overlap	Landings (tonnes)	DNK	OTM		0						139	17
Noordzeekustzone_VIBEG_N2000_overlap	Landings (tonnes)	NLD	FPO	0	0	0	0	0	0	0	0	0
Noordzeekustzone_VIBEG_N2000_overlap	Landings (tonnes)	NLD	GNS	1	0	1	0	0	0	0	0	0
Noordzeekustzone_VIBEG_N2000_overlap	Landings (tonnes)	NLD	HMD	0	5	1			0		0	1
Noordzeekustzone_VIBEG_N2000_overlap	Landings (tonnes)	NLD	LHP	0	0	0	0		0			0
Noordzeekustzone_VIBEG_N2000_overlap	Landings (tonnes)	NLD	NVT								0	0
Noordzeekustzone_VIBEG_N2000_overlap	Landings (tonnes)	NLD	OTB	5	0	0	0	0	0	1		1
Noordzeekustzone_VIBEG_N2000_overlap	Landings (tonnes)	NLD	OTM	0	0	0	1	0	0			0
Noordzeekustzone_VIBEG_N2000_overlap	Landings (tonnes)	NLD	OTT		0	0	0			0		0
Noordzeekustzone_VIBEG_N2000_overlap	Landings (tonnes)	NLD	SSC	0	0		0	0	0	0	0	0
Noordzeekustzone_VIBEG_N2000_overlap	Landings (tonnes)	NLD	TBB	212	78	65	15	57	41	109	62	80
Noordzeekustzone_VIBEG_N2000_overlap	Landings (tonnes)	SWE	OTM				1					0
Noordzeekustzone_VIBEG_N2000_overlap	Landings (tonnes)	total	total	232	90	100	23	67	48	121	282	120
Noordzeekustzone_VIBEG_N2000_overlap	Value ('000s euros)	BEL	OTB	0		0		1	0	0	0	0
Noordzeekustzone_VIBEG_N2000_overlap	Value ('000s euros)	BEL	SSC		0			0				0
Noordzeekustzone_VIBEG_N2000_overlap	Value ('000s euros)	BEL	TBB	4	2	7	0	1	2	1	1	2
Noordzeekustzone_VIBEG_N2000_overlap	Value ('000s euros)	DEU	TBB	36	14	191	39	30	17	34	8	46
Noordzeekustzone_VIBEG_N2000_overlap	Value ('000s euros)	DNK	GNS	1	0		1					0
Noordzeekustzone_VIBEG_N2000_overlap	Value ('000s euros)	DNK	OTB								27	3
Noordzeekustzone_VIBEG_N2000_overlap	Value ('000s euros)	DNK	OTM		0						39	5
Noordzeekustzone_VIBEG_N2000_overlap	Value ('000s euros)	NLD	FPO	0	0	0	0	0	0	0	0	0
Noordzeekustzone_VIBEG_N2000_overlap	Value ('000s euros)	NLD	GNS	6	4	5	4	0	0	0	2	3
Noordzeekustzone_VIBEG_N2000_overlap	Value ('000s euros)	NLD	HMD	0	6	1			0		0	1
Noordzeekustzone_VIBEG_N2000_overlap	Value ('000s euros)	NLD	LHP	0	0	0	0		0			0
Noordzeekustzone_VIBEG_N2000_overlap	Value ('000s euros)	NLD	NVT							1		0
Noordzeekustzone_VIBEG_N2000_overlap	Value ('000s euros)	NLD	OTB	13	0	1	1	0	0	1		2

Area	variable	Country	Gear	2014	2015	2016	2017	2018	2019	2020	2021	mean
Noordzeekustzone_VIBEG_N2000_overlap	Value ('000s euros)	NLD	OTM	1	0	1	1	0	0			0
Noordzeekustzone_VIBEG_N2000_overlap	Value ('000s euros)	NLD	OTT		0	0	0			0		0
Noordzeekustzone_VIBEG_N2000_overlap	Value ('000s euros)	NLD	SSC	0	0		1	0	0	0	0	0
Noordzeekustzone_VIBEG_N2000_overlap	Value ('000s euros)	NLD	TBB	669	264	371	103	328	99	250	150	279
Noordzeekustzone_VIBEG_N2000_overlap	Value ('000s euros)	SWE	OTM			0						0
Noordzeekustzone_VIBEG_N2000_overlap	Value ('000s euros)	total	total	731	291	580	152	361	119	286	228	343
Noordzeekustzone_VIBEG_N2000_overlap	GVA ('000s euros)	BEL	OTB	0		0		1	0	0	0	0
Noordzeekustzone_VIBEG_N2000_overlap	GVA ('000s euros)	BEL	SSC		0			0				0
Noordzeekustzone_VIBEG_N2000_overlap	GVA ('000s euros)	BEL	TBB	2	1	4	0	0	1	1	0	1
Noordzeekustzone_VIBEG_N2000_overlap	GVA ('000s euros)	DEU	TBB	20	8	134	24	20	9	22	5	30
Noordzeekustzone_VIBEG_N2000_overlap	GVA ('000s euros)	DNK	GNS	1	0		1					0
Noordzeekustzone_VIBEG_N2000_overlap	GVA ('000s euros)	DNK	OTB								23	3
Noordzeekustzone_VIBEG_N2000_overlap	GVA ('000s euros)	DNK	OTM		0						32	4
Noordzeekustzone_VIBEG_N2000_overlap	GVA ('000s euros)	NLD	FPO	0	0	0	0	0	0	0	0	0
Noordzeekustzone_VIBEG_N2000_overlap	GVA ('000s euros)	NLD	GNS	4	3	4	3	0	0	0	1	2
Noordzeekustzone_VIBEG_N2000_overlap	GVA ('000s euros)	NLD	HMD	0	3	1			0		0	0
Noordzeekustzone_VIBEG_N2000_overlap	GVA ('000s euros)	NLD	LHP	0	0	0	0		0			0
Noordzeekustzone_VIBEG_N2000_overlap	GVA ('000s euros)	NLD	NVT								1	0
Noordzeekustzone_VIBEG_N2000_overlap	GVA ('000s euros)	NLD	OTB	7	0	1	1	0	0	0		1
Noordzeekustzone_VIBEG_N2000_overlap	GVA ('000s euros)	NLD	OTM	0	0	1	1	0	0			0
Noordzeekustzone_VIBEG_N2000_overlap	GVA ('000s euros)	NLD	OTT		0	0	0			0		0
Noordzeekustzone_VIBEG_N2000_overlap	GVA ('000s euros)	NLD	SSC	0	0		0	0	0	0	0	0
Noordzeekustzone_VIBEG_N2000_overlap	GVA ('000s euros)	NLD	TBB	372	149	257	62	187	39	130	78	159
Noordzeekustzone_VIBEG_N2000_overlap	GVA ('000s euros)	SWE	OTM			0						0
Noordzeekustzone_VIBEG_N2000_overlap	GVA ('000s euros)	total	total	407	164	402	92	209	50	154	141	202
Oestergronden	Effort (fishing days)	BEL	OTB	5	3	3	26	15	28	22	16	15
Oestergronden	Effort (fishing days)	BEL	TBB			0	2	0				0
Oestergronden	Effort (fishing days)	DEU	OTB	19	27	26	59	25	52	23	22	32
Oestergronden	Effort (fishing days)	DEU	OTM	1	1	2			2	0	1	1
Oestergronden	Effort (fishing days)	DEU	OTT		0	0					3	0
Oestergronden	Effort (fishing days)	DEU	TBB	1	1	1			6			1
Oestergronden	Effort (fishing days)	DNK	GN		0	0						0
Oestergronden	Effort (fishing days)	DNK	GNS	9	14	9	2					4
Oestergronden	Effort (fishing days)	DNK	OTB	5	23	9	6	3	3	1	3	7

Area	variable	Country	Gear	2014	2015	2016	2017	2018	2019	2020	2021	mean
Oestergronden	Effort (fishing days)	DNK	OTM	8	37	22	12	12	6	4	16	15
Oestergronden	Effort (fishing days)	DNK	PTM					1				0
Oestergronden	Effort (fishing days)	DNK	SDN		3	2						1
Oestergronden	Effort (fishing days)	FRA	OTB				1					0
Oestergronden	Effort (fishing days)	NLD	OTB	28	18	13	45	20	65	25	16	29
Oestergronden	Effort (fishing days)	NLD	OTM		1		0					0
Oestergronden	Effort (fishing days)	NLD	OTT	5	10	10	28	8	25	16	19	15
Oestergronden	Effort (fishing days)	NLD	TBB	8	4	15	9	1	19	2	2	7
Oestergronden	Effort (fishing days)	SWE	OTM	0	1	2	4	1	0	1	4	2
Oestergronden	Effort (fishing days)	total	total	89	144	116	193	88	208	95	102	129
Oestergronden	Landings (tonnes)	BEL	OTB	28	42	9	88	37	47	101	41	49
Oestergronden	Landings (tonnes)	BEL	TBB			0	3	2				1
Oestergronden	Landings (tonnes)	DEU	OTB	88	109	68	319	57	112	209	993	244
Oestergronden	Landings (tonnes)	DEU	OTM	108	138	289			378	68	202	148
Oestergronden	Landings (tonnes)	DEU	OTT		1	0					4	1
Oestergronden	Landings (tonnes)	DEU	TBB	5	2	5			11			3
Oestergronden	Landings (tonnes)	DNK	GN		1	0						0
Oestergronden	Landings (tonnes)	DNK	GNS	15	17	8	3					5
Oestergronden	Landings (tonnes)	DNK	OTB	2067	4858	2277	1551	1637	2320	419	754	1985
Oestergronden	Landings (tonnes)	DNK	OTM	3350	10155	5775	3819	3882	3634	1784	4064	4558
Oestergronden	Landings (tonnes)	DNK	PTM					285				36
Oestergronden	Landings (tonnes)	DNK	SDN		12	3						2
Oestergronden	Landings (tonnes)	FRA	OTB				1					0
Oestergronden	Landings (tonnes)	NLD	OTB	130	65	53	165	55	103	55	22	81
Oestergronden	Landings (tonnes)	NLD	OTM		266		25					36
Oestergronden	Landings (tonnes)	NLD	OTT	16	33	21	66	10	29	29	24	29
Oestergronden	Landings (tonnes)	NLD	TBB	14	12	94	26	2	45	5	3	25
Oestergronden	Landings (tonnes)	SWE	OTM	33	529	360	1152	693	293	355	1065	560
Oestergronden	Landings (tonnes)	total	total	5854	16239	8962	7217	6661	6972	3025	7172	7763
Oestergronden	Value ('000s euros)	BEL	OTB	41	74	26	298	142	182	297	147	151
Oestergronden	Value ('000s euros)	BEL	TBB			1	15	8				3
Oestergronden	Value ('000s euros)	DEU	OTB	136	179	225	548	202	370	161	360	273
Oestergronden	Value ('000s euros)	DEU	OTM	23	32	92			103	19	55	41
Oestergronden	Value ('000s euros)	DEU	OTT		1	1					14	2
Oestergronden	Value ('000s euros)	DEU	TBB	15	7	17			60			12
Oestergronden	Value ('000s euros)	DNK	GN		2	1						0
Oestergronden	Value ('000s euros)	DNK	GNS	96	108	53	15					34
Oestergronden	Value ('000s euros)	DNK	OTB	446	1210	590	279	394	663	108	247	492
Oestergronden	Value ('000s euros)	DNK	OTM	739	2480	1494	637	931	1026	489	1194	1124
Oestergronden	Value ('000s euros)	DNK	PTM					74				9
Oestergronden	Value ('000s euros)	DNK	SDN		18	4						3
Oestergronden	Value ('000s euros)	FRA	OTB				4					0
Oestergronden	Value ('000s euros)	NLD	OTB	190	110	97	355	132	355	178	80	187
Oestergronden	Value ('000s euros)	NLD	OTM		91		9					13
Oestergronden	Value ('000s euros)	NLD	OTT	24	50	73	281	39	115	102	91	97
Oestergronden	Value ('000s euros)	NLD	TBB	36	35	213	87	6	226	20	13	80
Oestergronden	Value ('000s euros)	SWE	OTM	7	120	114	251	152	68	89	337	142
Oestergronden	Value ('000s euros)	total	total	1754	4518	3002	2779	2079	3167	1463	2541	2663
Oestergronden	GVA ('000s euros)	BEL	OTB	18	40	16	163	72	85	168	84	81
Oestergronden	GVA ('000s euros)	BEL	TBB			1	8	4				2
Oestergronden	GVA ('000s euros)	DEU	OTB	78	102	154	322	129	195	94	200	159
Oestergronden	GVA ('000s euros)	DEU	OTM	11	19	54			54	10	30	22
Oestergronden	GVA ('000s euros)	DEU	OTT		1	0					8	1
Oestergronden	GVA ('000s euros)	DEU	TBB	7	4	10			32			7
Oestergronden	GVA ('000s euros)	DNK	GN		2	0						0
Oestergronden	GVA ('000s euros)	DNK	GNS	56	69	35	11					21
Oestergronden	GVA ('000s euros)	DNK	OTB	327	1013	495	218	323	508	91	207	398
Oestergronden	GVA ('000s euros)	DNK	OTM	539	2070	1229	497	760	786	409	995	910

Area	variable	Country	Gear	2014	2015	2016	2017	2018	2019	2020	2021	mean
Oestergronden	GVA ('000s euros)	DNK	PTM					60				8
Oestergronden	GVA ('000s euros)	DNK	SDN		12	3						2
Oestergronden	GVA ('000s euros)	FRA	OTB				2					0
Oestergronden	GVA ('000s euros)	NLD	OTB	104	56	54	184	68	142	90	39	92
Oestergronden	GVA ('000s euros)	NLD	OTM		42		5					6
Oestergronden	GVA ('000s euros)	NLD	OTT	14	29	52	168	21	43	50	44	53
Oestergronden	GVA ('000s euros)	NLD	TBB	16	16	122	46	3	98	10	6	40
Oestergronden	GVA ('000s euros)	SWE	OTM	3	70	63	150	77	35	50	190	80
Oestergronden	GVA ('000s euros)	total	total	1174	3544	2287	1773	1518	1977	971	1802	1881

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