

Fishing activities on the Frisian Front and the Cleaver Bank

Historic developments and effects of management



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1 Introduction

1.1 Motivation

In 2008, the Minister of Agriculture, Nature and Food Quality notified four proposed Sites of Community Interest (pSCIs) to the European Commission (for protection as Special Conservation Areas (SCAs) under the Habitats Directive). These areas are the Dogger Bank, Cleaver Bank, the Coastal Zone and the Vlakte van de Raan. The areas have been chosen for their specific habitats and ecological values (Bos et al., 2008). In addition, the Frisian Front will be designated as SPA (Special Protection Area) under the Bird Directive. Based on this decision a process has been executed during the last four years for the development of the provisions of this Directive in Dutch legislation and policy, namely the North Sea Natura 2000 project.

LEI facilitated this process by making an initial inventory of the fishing activities of both Dutch and foreign fleets in these areas (Van Oostenbrugge et al., 2010). The current status is that for the areas in the coastal zone, management measures have been finalised and implemented. In the Dutch exclusive economic zone the state of play is that for the Dogger Bank, Cleaver Bank and the Frisian Front management proposals are being prepared for decision making in the Common Fisheries Policy (CFP) context.

Designating these areas under national law requires the Nature Protection Act to enter into force in the Dutch EEZ. This has been discussed in parliament (on 13 June 2012). Some questions remain on the importance of these areas for the Dutch fisheries and the economic consequences of management measures. The consequences of the management regime for the Dogger Bank are estimated by the ICES in the international process of the Dogger Bank Steering Group. The ministry of Economic Affairs has asked LEI to update the report from 2010 for the Frisian Front and the Cleaver Bank. Because a large part of the Belgian, UK and German flagged vessels are owned by Dutch companies, those fishing fleets are also taken into account in the current study.

1.2 Objectives

The objective of the current project is twofold:

1. To show the trends of the fishing activities of the Dutch and important foreign fleets (Belgian, German and UK) in the areas Frisian Front and Cleaver Bank in the period 2006-2011. In the analyses attention is given to developments in effort, landings and economic value of the landings.
2. To give insight into the possible economic consequences of N2000 spatial management measures restricting the fisheries in the N2000 areas Frisian Front and Cleaver Bank as developed in the FIMPAS process for the Dutch fishing fleet. The measures are (1) a seasonal ban on gillnetters between 1/06 and 30/11 in the Frisian Front, and (2) a ban of bottom contact gears in parts of the Cleaver Bank.

1.3 Results

This resulting report describes the developments of Dutch and foreign fleets in the Frisian Front and the Cleaver Bank. The developments are presented for different vessels sizes, based on their engine power (0-300 hp, 301-1,500 hp and > 1,500 hp) and registered gear type in the logbook. As innovative gears with far lower bottom impact (pulse trawls) have recently been increasingly used by vessels and are treated differently in spatial management measures, these vessels are also distinguished. For each of the fisheries (combination of hp-class, gear type and country) an analysis of the coverage of the data is provided.

1.4 Contents

This report describes the time trends in the fishing activities in the N2000 areas and the possible economic effects of the restrictive management measures. Chapter 2 contains an explanation of the various sources of the data and the manner in which the data was processed. Chapters 3 and 4 review the historic trends in fishing activities in the areas and the effects of restrictive management measures for Dutch and non-Dutch fisheries. Chapter 5 discusses the methods and results, and is completed with the conclusions and recommendations.

2 Methods

The methods applied and the data used were similar to those used for the previous study (Van Oostenbrugge et al., 2010). In addition some extra data checks were included and another data processing platform was used for part of the analysis. Because of the large similarity in the method, this report contains a limited description focusing on small adjustments that have been made. A complete description can be found in Van Oostenbrugge et al., 2010.

2.1 Data sources

Several data sources were used in the evaluation. The data sources used were Vessel Monitoring System (VMS) data, catch data from VIRIS (Fish Registration and Information System), Fleet data from the NRV (Netherlands Register of Fishing Vessels), average monthly price data per species collected by the Productschap Vis (Netherlands Fish Product Board) and economic data (the LEI panel). The datasets used and the data coverage are described in more detail in Appendix 1 and Appendix 2.

2.2 Processing of data for Dutch vessels

Several steps were needed to process the Dutch data for the analysis. First of all, the VMS data were processed and the patterns in fishing efforts were determined. To clean up the VMS data set, the R package VMStools was used (Hinzen et al., 2011). Duplicated points, points in harbour, points on land and points with impossible speed/location were removed.

Next, the fishing efforts were used to distribute the catches between the various points. The method used is illustrated by the example included in Table 2.1. First, the sailing speed was used to determine whether the vessel was fishing or sailing at each VMS point based on fixed speed thresholds derived from South et al. (2009).

DH1	Time	Speed	Duration	Catch
21-aug	14:00	0.2		
21-aug	15:00	5.6	1:00	0
21-aug	17:00	3.4	2:00	1,200
21-aug	18:00	3.2	1:00	600
21-aug	19:00	0	1:00	0
Total catch				1,800

Table 2.2 shows the thresholds per gear determining fishing and steaming activities. Any gears missing in this table were assigned the activity 'Unknown'.

In table 2.1 the speed of the VMS point at time 14:00 is too low to be fishing. At the second VMS point (15:00) the speed is too high to be fishing. Therefore neither of these points gets catch attributed. The next two VMS points (17:00 and 18:00) have a speed that falls within the fishing speed range. These points get catch assigned. Next, the duration was determined for each position (the time interval between the current and previous position). The catch (kg) was distributed on the basis of the duration at the various positions at which the vessel was fishing.

Gear	Fishing	Steaming
Gill nets, Danish seines	speed<0.3	speed>=0.3
Scottish seine	speed<7	speed>=7
Beam trawl, shrimp trawl	Speed within 3 to 6	Speed<3 or speed>6
Otter board trawl 0-300hp	Speed within 3 to 5	Speed<3 or speed>5
Otter board trawl >300hp	Speed within 3 to 4	Speed<3 or speed>4
Twin trawl 0-300hp	Speed within 3 to 5	Speed<3 or speed>5
Twin trawl >300hp	Speed within 3 to 4	Speed<3 or speed>4

Source: South et al. (2009).

The example in Table 2.1 discusses the ideal situation where a trip is comprised of a number of fishing and/or sailing VMS points and the day catch is available. This was not always the case. Several factors could complicate the distribution of catch over the VMS points. For example, in a number of cases a vessel was sailing at all the available VMS positions on a day or data was lacking, for example on the fishing gear, HP and speed, which made it not possible to allocate an activity to a VMS point. To still be able to allocate catch to VMS locations a number of assumptions needed to be made in the case of missing data. The distribution methods used in these cases are summarised in Table 2.3.

Day catch recorded for trip	Day catch recorded on day	Type of Activity	Distribution
Yes	Yes	Fishing and other	Fishing time/fishing time on fishing day
Yes	Yes	Only steaming	Catch not distributed
Yes	Yes	Only unknown	Time unknown/time on fishing day unknown
Yes	Yes	Steaming and Unknown	Catch not distributed
Yes	No	All combinations	Catch not distributed
No	No	Fishing and other	Fishing time/fishing time on fishing day
No	No	Only steaming	Catch not distributed
No	No	Only unknown	Time unknown/time on trip unknown
No	No	Steaming an unknown	Catch not distributed

The VMS data do not provide full coverage. This is, in particular, due to vessels with a length less than 15 meters and which consequently do not have on-board VMS as well as an inability to fully distribute all the catches between VMS points. This was corrected by increasing the catches by a factor based on coverage percentages (see Appendix 2 for coverage in VMS data per gear). So for example if for a certain gear type the coverage was 90%, the total catches with this gear type were multiplied by a factor (1/0.9). This approach provided for the distribution of all catches as found in the VIRIS logbook data.

The catches and average auction prices were used to determine the value of the catches at the various VMS points. Finally, the contribution to the gross value added was calculated on the basis of the average percentage of the gross value added's (GVA) contribution to the production value as known in LEI's Farm Accountancy Network.

This described method is in agreement with the methods used in earlier LEI reports on the determination of the value of fishing areas (such as Van Oostenbrugge et al., 2010).

2.3 Processing of data for foreign vessels

The foreign data were processed in a similar way to the data from the Dutch vessels. However there was one fundamental difference in the data that meant that the data needed to be processed slightly different-

ly. Namely the VMS data for the foreign vessels only covered the Dutch section of the continental shelf. The difference in attributing catches to VMS points for the foreign vessels is illustrated by an example in table 2.4.

First, similar as for the Dutch vessels the sailing speed was used to determine whether the vessel was fishing or sailing at each VMS point. Next, the duration was determined for each position (the time interval between the current and previous position). It was checked whether the time interval did not exceed 2 hours. In the example in table 2.4 at time 14:00 previous VMS points were clearly lacking. Therefore the time interval at this point is corrected to 2 hours instead of the calculated 12 hours.

Since the VMS points only cover the Dutch part of the continental shelf it is very likely that the VMS points do not cover the complete trip of a foreign vessel. Therefore a distribution of the total catch over the available VMS points will most likely lead to an overestimation of the catch at each of the VMS positions. Therefore the catch to be distributed between the VMS positions was calculated from the total catch on the basis of the share of the duration that was allocated to the VMS positions and the total duration of the trip. In the example 30% of the trip was covered by the VMS positions. Therefore, only 30% of the total catch is attributed to the VMS positions. The resultant catch (kg) at the VMS positions was distributed on the basis of the duration during which the vessel fished at the various positions.

Table 2.4		Example of a calculation of the catch at the VMS positions during one trip for a foreign vessel of 300 hp using otter board trawl			
DH1	Time	Speed	Duration	Catch	
21-aug, leaves port	02:00				
21-aug	14:00	0.2	12:00 2:00*		
21-aug	15:00	5.6	1:00	0	
21-aug	17:00	3.4	2:00	360	
21-aug	18:00	3.2	1:00	180	
21-aug arrives at port	22:00	0	1:00	0	
Total duration of trip			20:00		
Total duration of VMS			6:00		
VMS share of total duration in trip (%)			30%		
Non-allocated catch				1,260	
Total catch				1,800	

* Duration of period before first ping has been adjusted to two hours, assuming it has been out of the Dutch part of the North Sea.

The VIRIS data does not provide full-coverage for foreign vessels. Foreign vessels are only included in the VIRIS dataset if they actually land their fish in a Dutch harbour. Therefore catches were scaled up to the total quantity of VMS positions. If catches were not available for a VMS position, catches were estimated on the basis of Catch per Unit of Effort (CPUE) estimates. These CPUE estimates were calculated for each country, HP category and type of fishing gear on the basis of catches at VMS positions for which catch data was available.

The catches and average auction prices were used to determine the value of the catches at the various VMS points similar to the Dutch vessels. No gross value added was calculated for the foreign vessels.

2.4 Historical fishing trends in areas of interest

For the Frisian Front and the Cleaver Bank the calculation of effort, landed catches value of landed catches and GVA (for Dutch fleet only) were done for the Dutch and the foreign fleets separately. For the years 2006 to 2011, the effort, landed catch, value of landed catch in the areas were computed as the sum of the effort (landed catch/value of landed catch) of all pings of which the coordinates were in the areas. For

the Dutch fleet, the data were then scaled up to account for missing VMS data and the contribution to the production value was calculated.

2.5 Calculation of stress levels

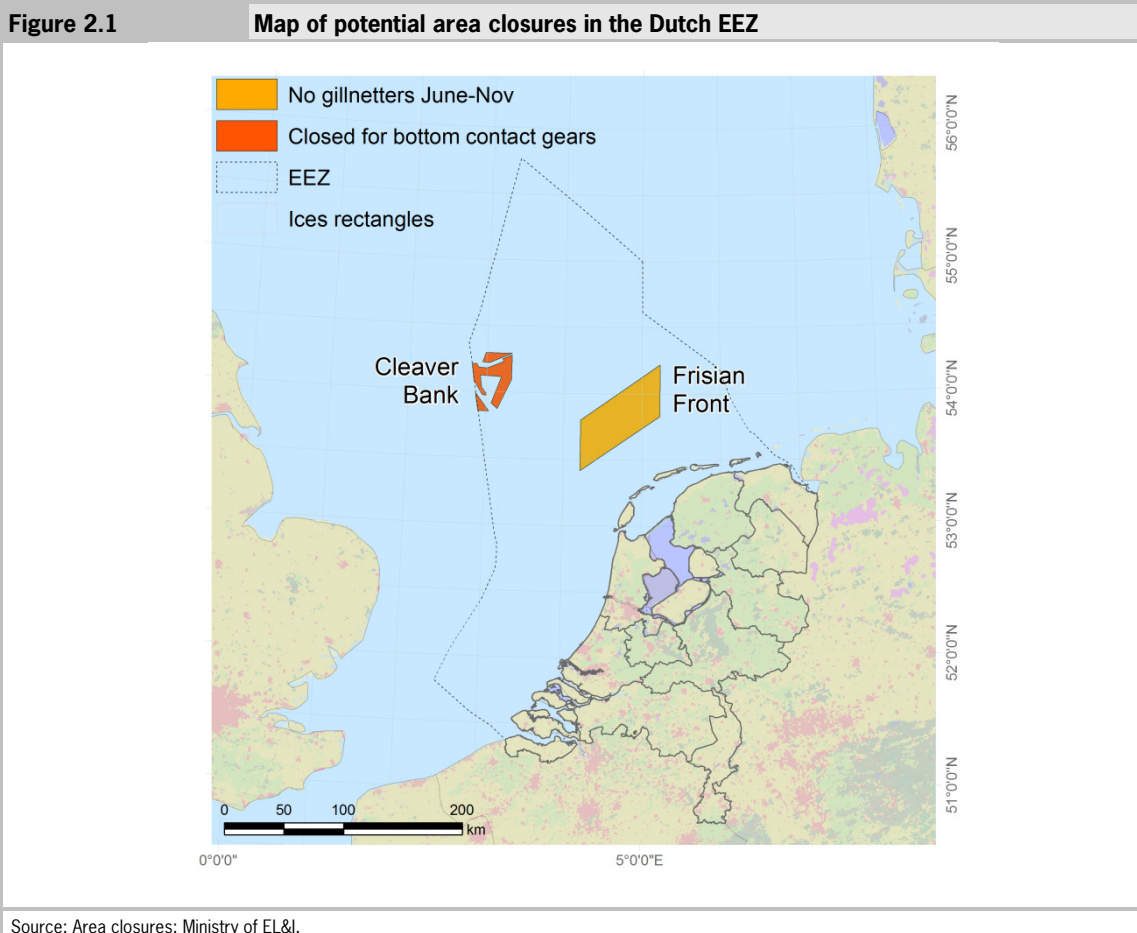
To assess the potential effect of area closures on the fishing fleets, the 'stress levels' method was used (Schulze et al., 2012). In this approach, the 'stress level' is defined as a percentage of revenue of a vessel coming from an area or a season that will be closed for the gear he used. So the stress level reflects the maximum negative effect on a vessel, since displacement of fishing effort is not considered.

The individual stress levels were calculated as the ratio of revenues (=value of landed catch) allocated to pings within the area/season to be closed and the total revenues of the vessel for the year. In this study the following closures were considered (see also Figure 2.1):

- In the Frisian Front, a ban on gillnetters (gillnets and set gillnets) between 1/06 and 30/11
- In the Cleaver Bank, a ban on bottom contact gears (beam trawl, shrimp trawl, pulse trawl, otter board trawl, twin trawl and pair trawl bottom) in the closed areas (orange areas in Figure 2.1)

The individual stress levels were aggregated by fleet to build a stress profile of the fleet. Individual stress levels are categorised into classes (0%, >0 to 10%, >10 to 20%; ...) used to visualise the stress profile of a fleet. The stress profile allows seeing the potential impact of a closure on the concerned fleet and its evolution over the years.

Because the total revenue of a vessel and the full VMS coverage of its activity are needed to calculate a stress level, the analysis could only be done for the Dutch fleet above 15m. These vessels, however, cover the major part of the fishing activities in the areas.



3 Historic trends in fishing activities

Over the last six years the fishing activities in the Frisian Front and the Cleaver Bank has changed considerably (Table 3.1). In the Frisian Front, fishing intensity decreased and fishing techniques used in the area changed as well. This caused a decrease in landings value from this area of almost 40%. The value of landings from the Cleaver Bank, however, shows a significant increase (approximately 200%). Because of this, the relative value of the Cleaver Bank (value per km²) has increased considerably and was 80% higher than the relative value of the Frisian front in 2011. These changes also affect the contributions to the total Gross value added of the sectors.

Table 3.1		Overview fishing activities in the Frisian Front and the Cleaver Bank area of the Dutch fleet				
Areas	2006	2007	2008	2009	2010	2011
Landings (tonnes)						
Frisian Front	1,326	1,231	1,001	1,228	1,273	1,091
Cleaver Bank	335	589	434	849	943	1,157
Landings value (kEur)						
Frisian Front	4,993	5,199	4,036	4,305	4,183	3,204
Cleaver Bank	1,098	1,944	1,477	2,325	2,642	3,002
Gross value added (kEur)						
Frisian Front	1,375	1,656	1,227	1,673	1,444	1,227a)
Cleaver Bank	310	755	545	899	982	1,106a)
Landings value per km ² (euro per km ²)						
Frisian Front	1,734	1,805	1,401	1,495	1,452	1,112
Cleaver Bank	714	1,263	960	1,511	1,717	1,950
A): Preliminary estimates.						
Source: Logbook data, VMS data and price data processed by LEI.						

Landings from foreign fleets have been lower than from the Dutch fleet, especially for the Frisian front (Table 3.2). The Dutch landings from the Frisian front have been more or less stable over the period, despite considerable annual fluctuations. Landings from the Cleaver Bank have shown a drop in 2008, after which they have been increasing and have exceeded the 2006 levels in the last two years. In 2011, the value of landings from the Cleaver Bank was also higher than the value of landings from the Frisian Front. The Cleaver Bank is therefore also of higher importance per unit of surface than the Frisian Front. More detailed information on the trends in the areas is given in the following sections.

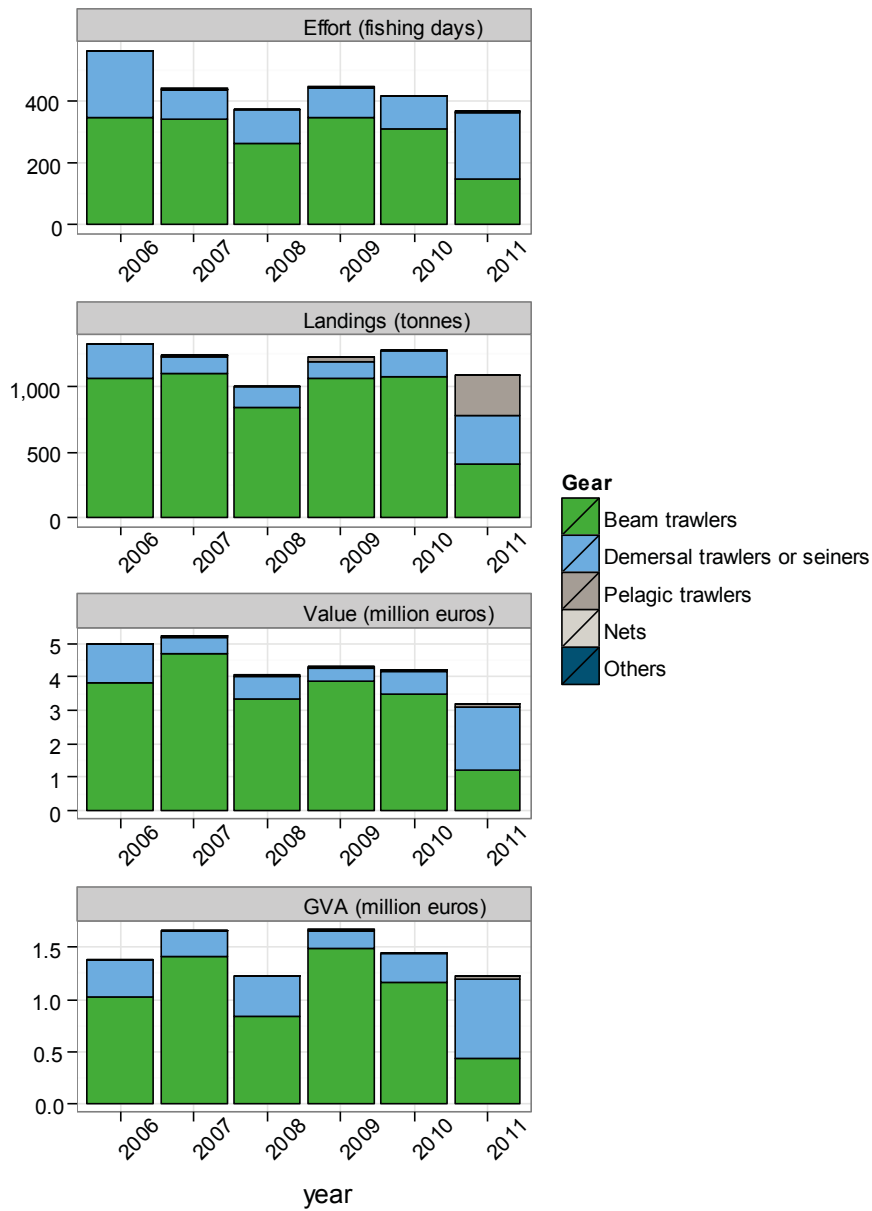
Table 3.2		Overview fishing foreign fleet				
Areas	2006	2007	2008	2009	2010	2011
Landings (tonnes)						
Frisian Front	364	447	383	438	667	384
Cleaver Bank	380	406	202	422	503	643
Landings value (kEur)						
Frisian Front	1,192	1,587	1,311	1,372	1,763	1,259
Cleaver Bank	1,043	1,181	500	978	1,491	1,512
Landings value per km ² (euro per km ²)						
Frisian Front	414	551	455	476	612	437
Cleaver Bank	678	767	325	635	969	982
Source: Logbook data, VMS data and price data processed by LEI.						

3.1 Frisian Front

3.1.1 Dutch Fleet

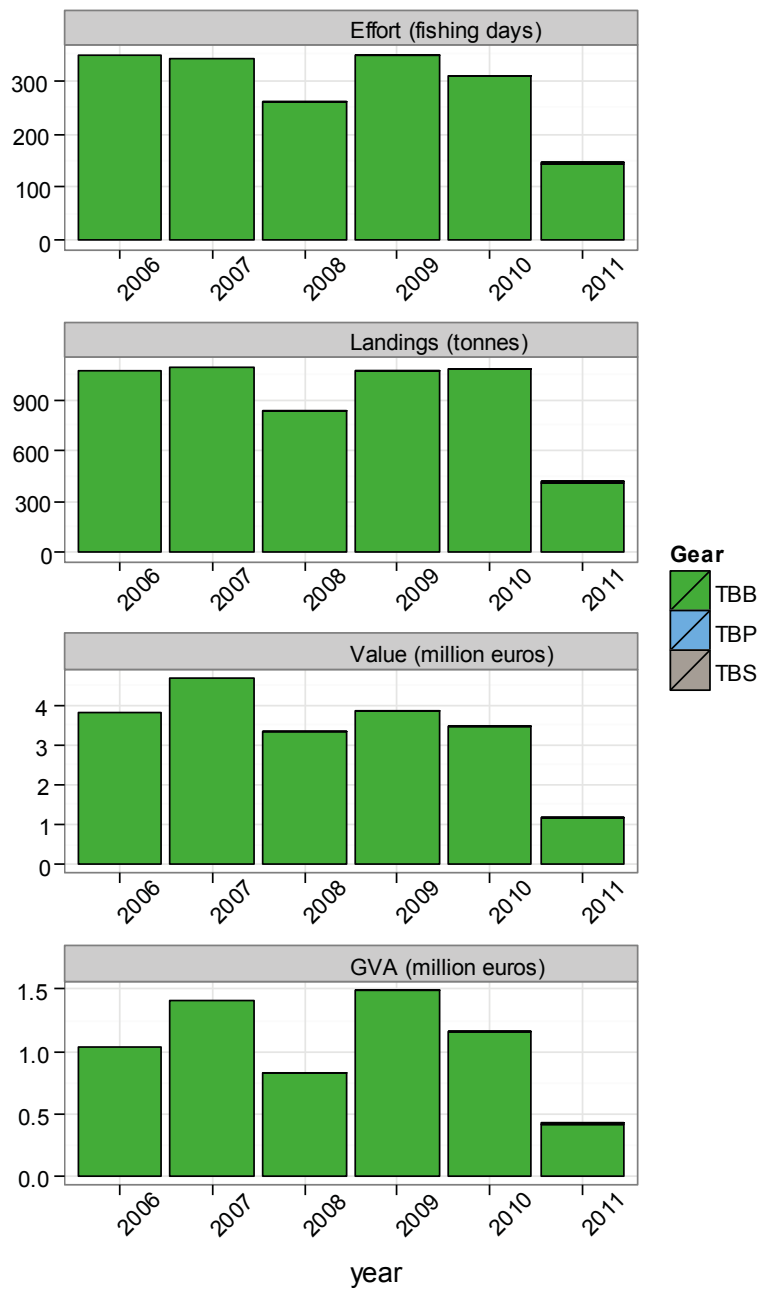
The effort of the Dutch fleet in the Frisian Front seems to have slightly decreased between 2006 and 2011 (from 550 down to 360 fishing days per year, Figure 3.3). This is particularly true for the beam trawlers who were the most important fleet operating in the area in terms of effort, landings, value and GVA until 2010. In 2011, the fishing effort of beam trawlers in the area decreased dramatically (from about 300 down to 150 fishing days per year, Figure 3.3) but the demersal trawlers allocated twice as much fishing effort in the area (from about 100 fishing days up to the 2006 level at more than 200 fishing days per year, Figure 3.3). The increase in effort, landings, value and GVA of the demersal trawlers in the area in 2011 is mainly due to a massive increase of otter board trawlers. Pelagic effort in the Frisian front is marginal but the total annual landings in 2011 are estimated to be as high as the demersal trawlers at around 300 tonnes (Figure 3.3). Netters are a minor fleet in the area, in terms of effort, landings, value and GVA (Figure 3.1).

Figure 3.1 Historical trends of the fishing activities in the Frisian Front by the Dutch fleet. Effort, landings, value of landings and GVA are given by gears aggregated at the level of European codes (see Appendix 3)



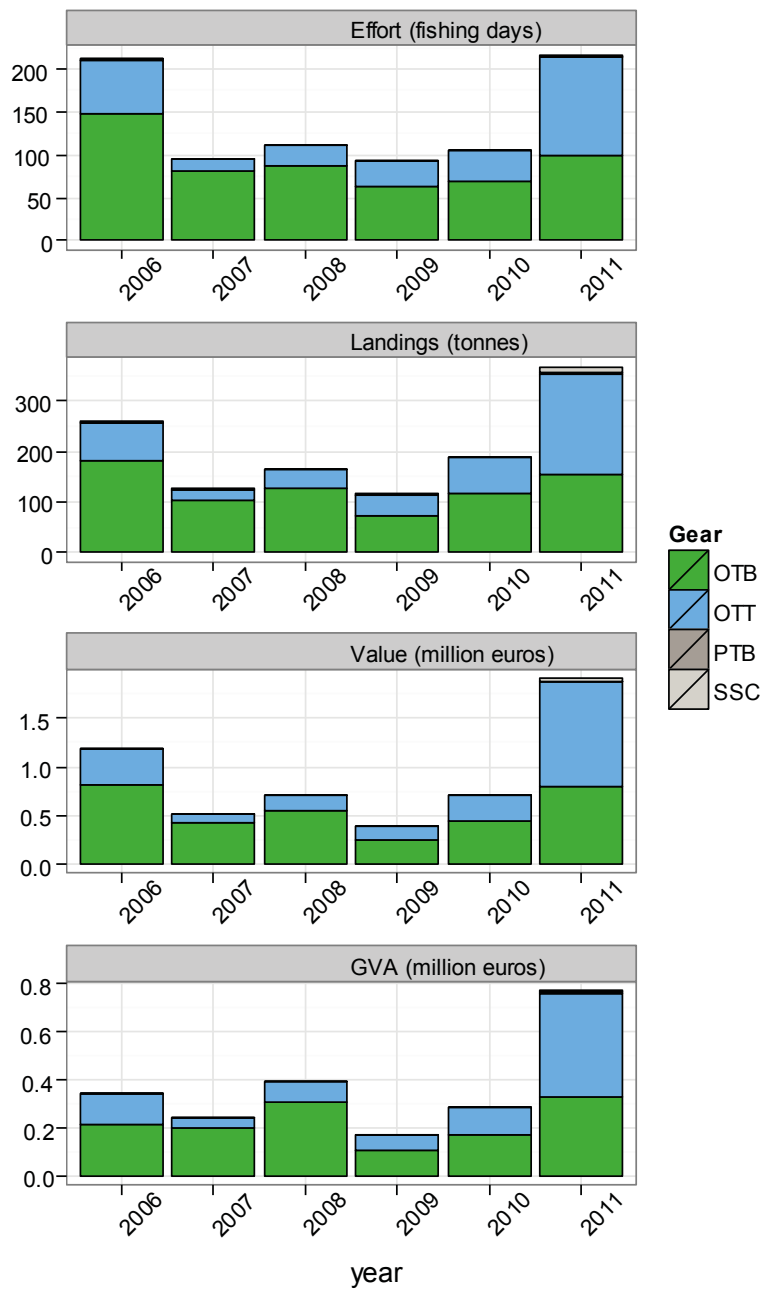
Source: Logbook data and VMS data, processed by LEI.

Figure 3.2 Historical trends of the fishing activities in the Frisian Front by the Dutch beam trawlers. Effort, landings, value of landings and GVA are given for flatfish beam trawlers (TBB), shrimpers (TBS) and pulse trawlers (TBP)



Source: Logbook data and VMS data, processed by LEI.

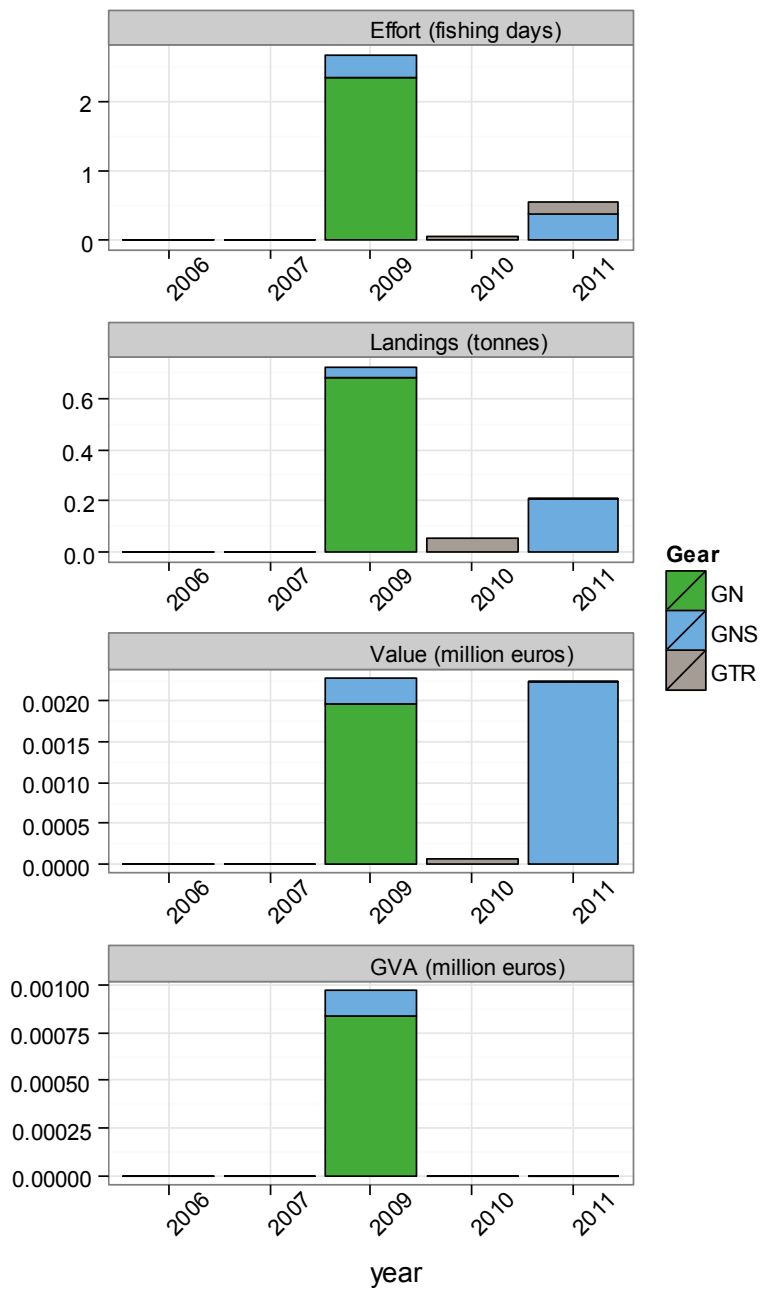
Figure 3.3 Historical trends of the fishing activities in the Frisian Front by the Dutch demersal trawlers. Effort, landings, value of landings and GVA are given for otter board trawls (OTB) twin trawls (OTT) bottom pair trails (PTB) and Scottish seines (SSC)



Source: Logbook data and VMS data, processed by LEI.

Figure 3.4

Historical trends of the fishing activities in the Frisian Front by the Dutch netters. Effort, landings, value of landings and GVA are given for gillnetters (GN and GNS) and trammel nets (GTR)



Source: Logbook data and VMS data, processed by LEI.

3.1.2 Foreign Fleets

The Frisian Front is mostly used by German fishing vessels (Figure 3.5) and predominantly by the German beam trawlers (Figure 3.7). These vessels land around 250 tonnes annually of predominantly plaice and sole from the area, representing a value of around €0.8m. Also for the Belgian and UK fishing fleets, the area is mostly used by beam trawlers, although the effort and landings are much lower (figure 3.6 and 3.8). Overall, estimated landings and value seem to be constant over time ranging between €1.2m and €1.6m per year, although for specific fisheries large changes occur (e.g. Belgian landings and effort). Because of the quality of the data and the coverage, one should note that for the foreign fleets, these results can only be seen as indicative. The background of this is discussed in Chapter 5.

Figure 3.5 Historical trends of the fishing activities in the Frisian Front by the foreign fleets. Effort, landings and value of landings are given by country

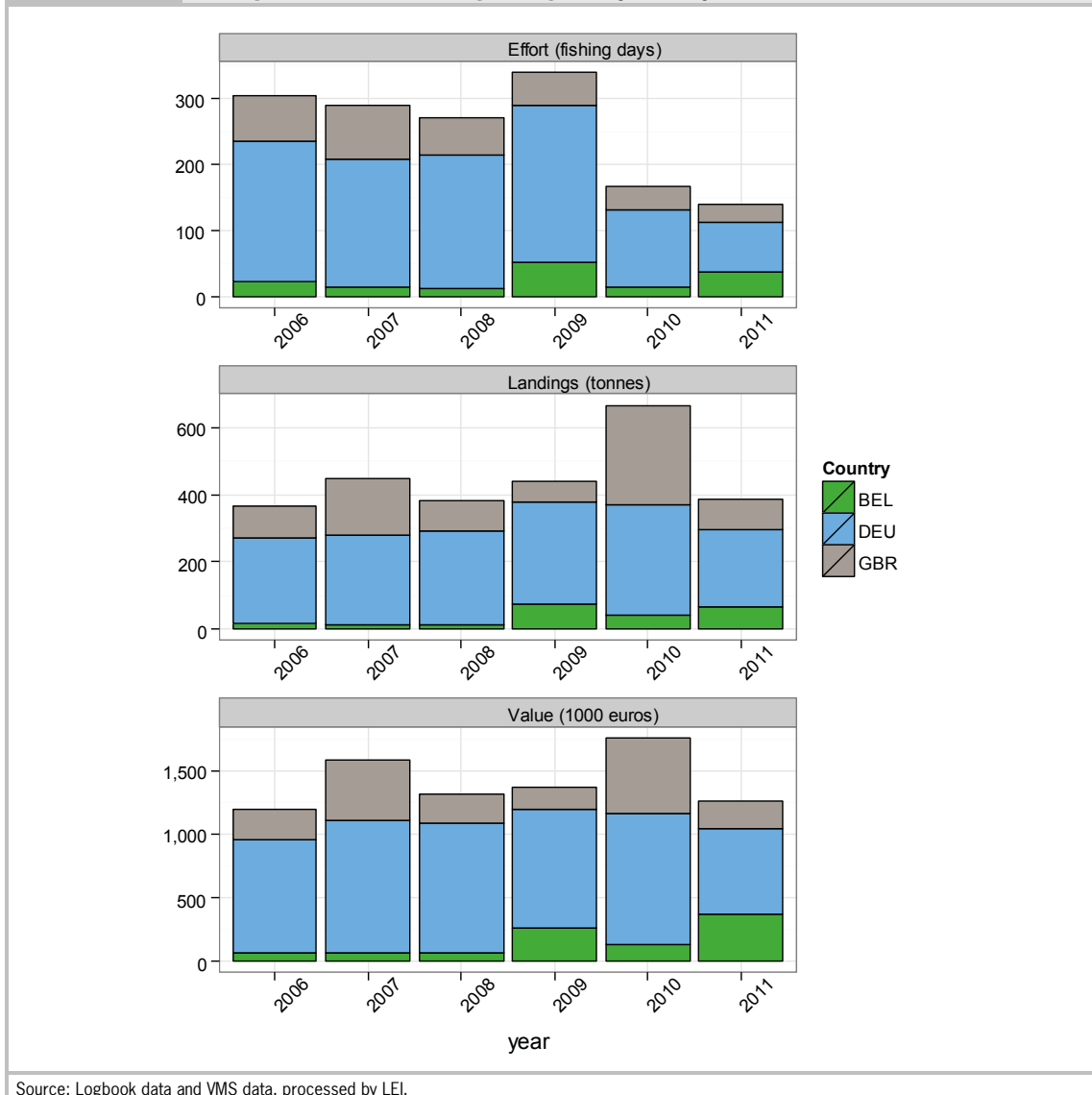
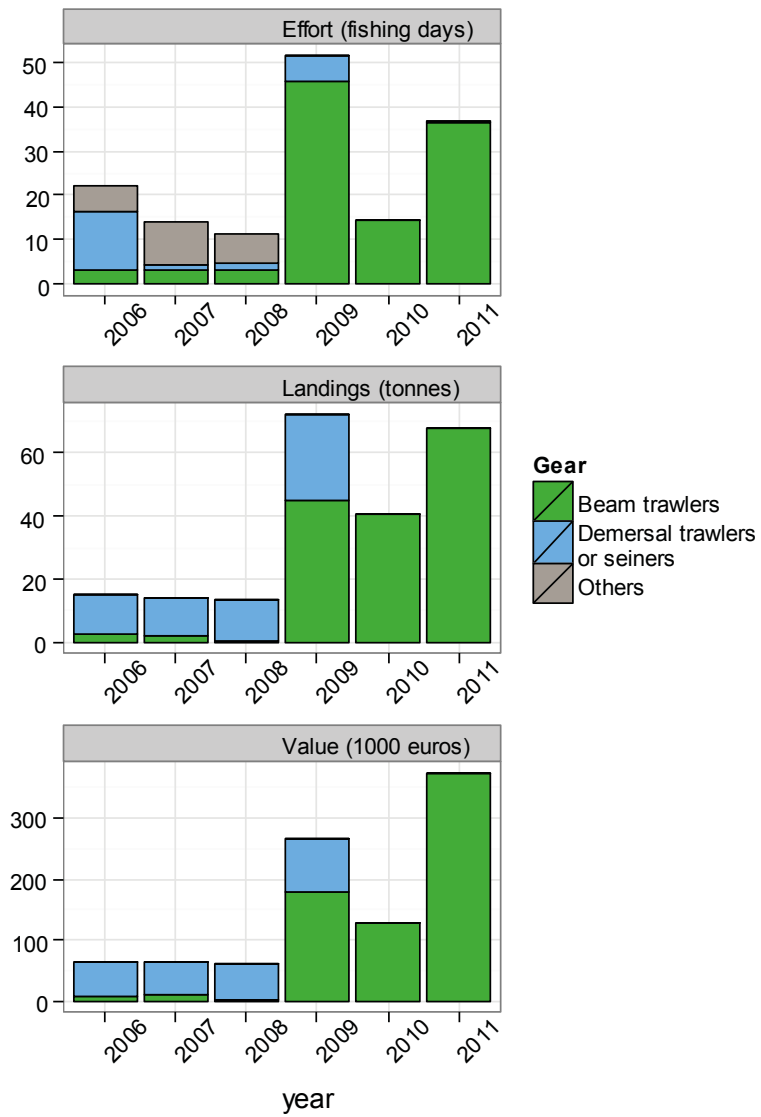
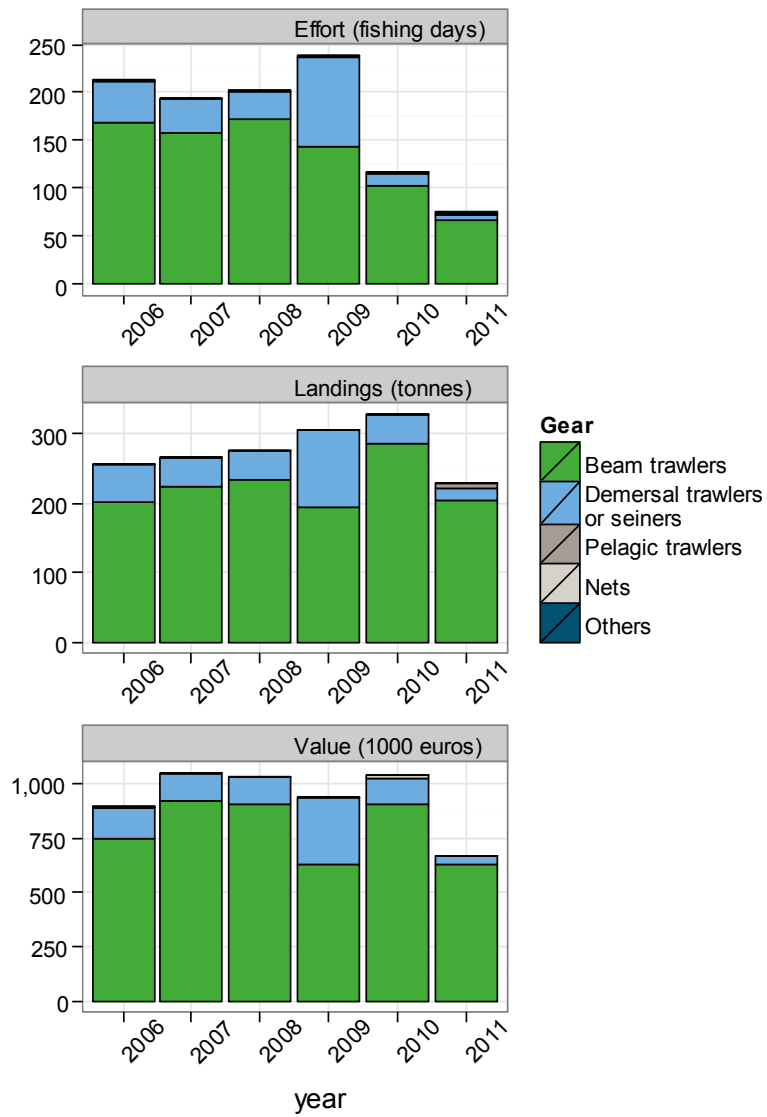


Figure 3.6 Historical trends of the fishing activities in the Frisian Front by the Belgian fleets. Effort, landings and value of landings are given by gear



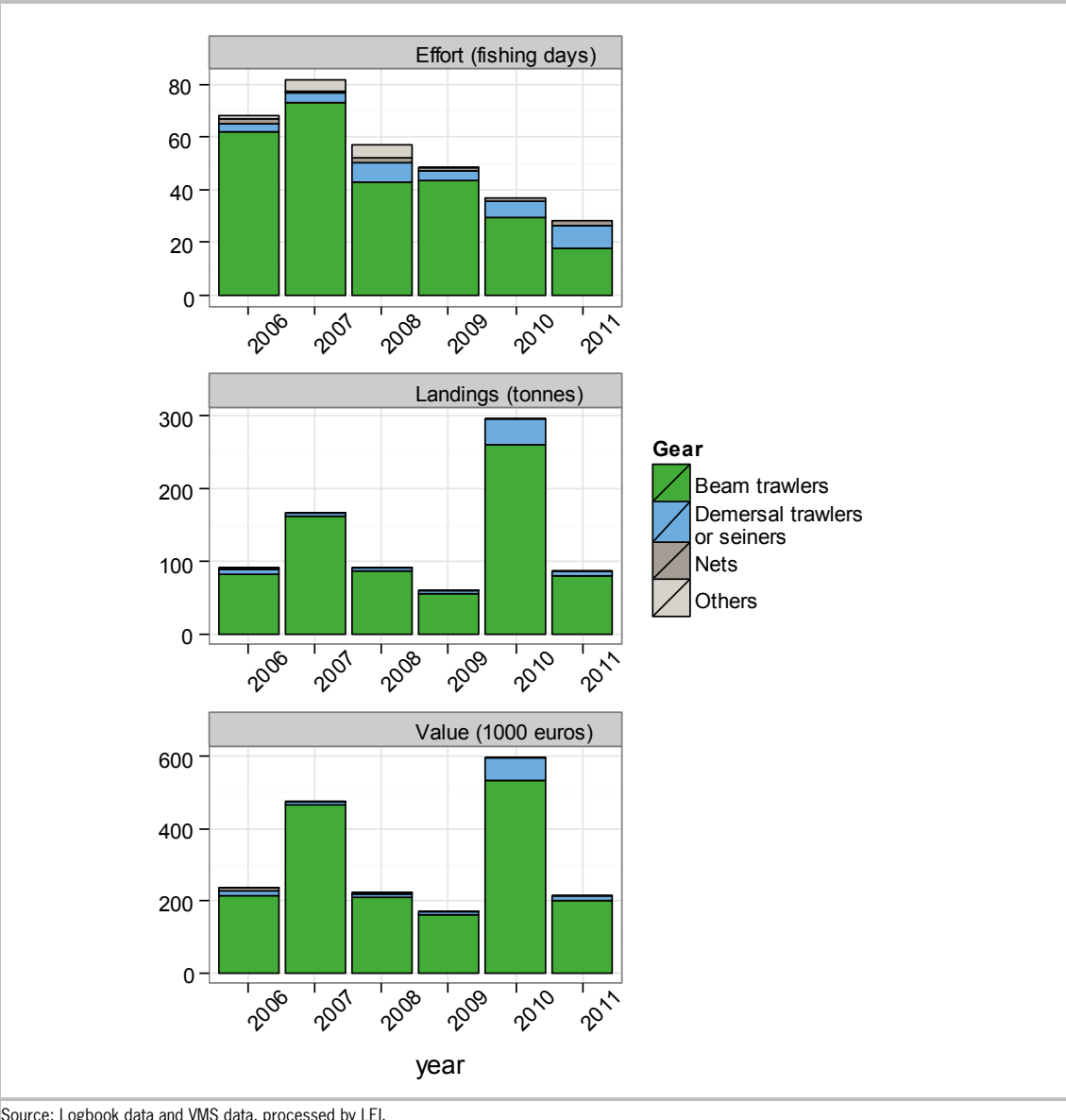
Source: Logbook data and VMS data, processed by LEI.

Figure 3.7 Historical trends of the fishing activities in the Frisian Front by the German fleets. Effort, landings and value of landings are given by gear



Source: Logbook data and VMS data, processed by LEI.

Figure 3.8 Historical trends of the fishing activities in the Frisian Front by the British fleets. Effort, landings and value of landings are given by gear



Source: Logbook data and VMS data, processed by LEI.

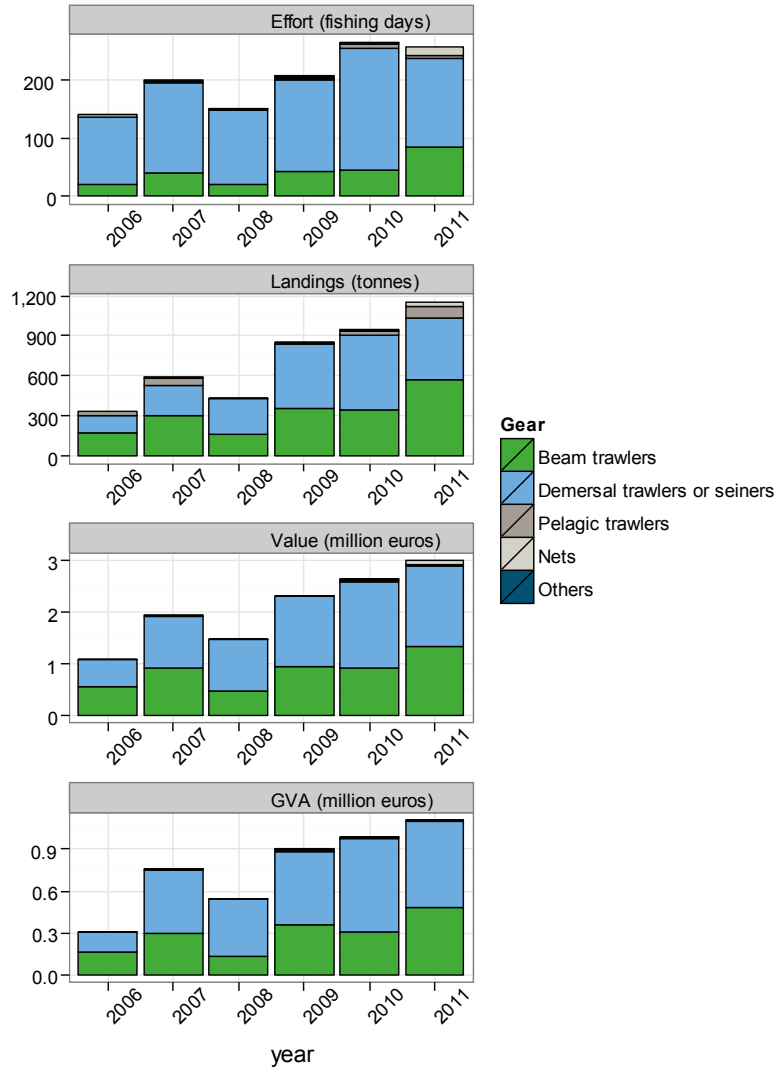
3.2 Cleaver Bank

3.2.1 Dutch fleet

In the Cleaver Bank, the effort, landings value and GVA of the Dutch fleet are increasing steadily from 2006 to 2011 (Figure 3.9). This is mainly due to the tripling of the effort of beam trawlers in the area from 20 fishing days in 2006 and 2008 to more than 60 fishing days in 2011. It should also be noted that the effort of the pulse trawls has increased from 0 in 2009 to about 20% of the total beam trawl effort 2011 (Figure 3.10). This increase in effort has resulted in an increase of the annual value of landings from the areas from €1m to €3m in 2011. The most important fleet in the Cleaver Bank is the demersal trawler fleet with around 70-80% of the effort and 50 to 60% of the landings in the area. Within the demersal trawlers and seiners there has been a shift from mainly otter trawl (2006-2008) to more twin trawl and

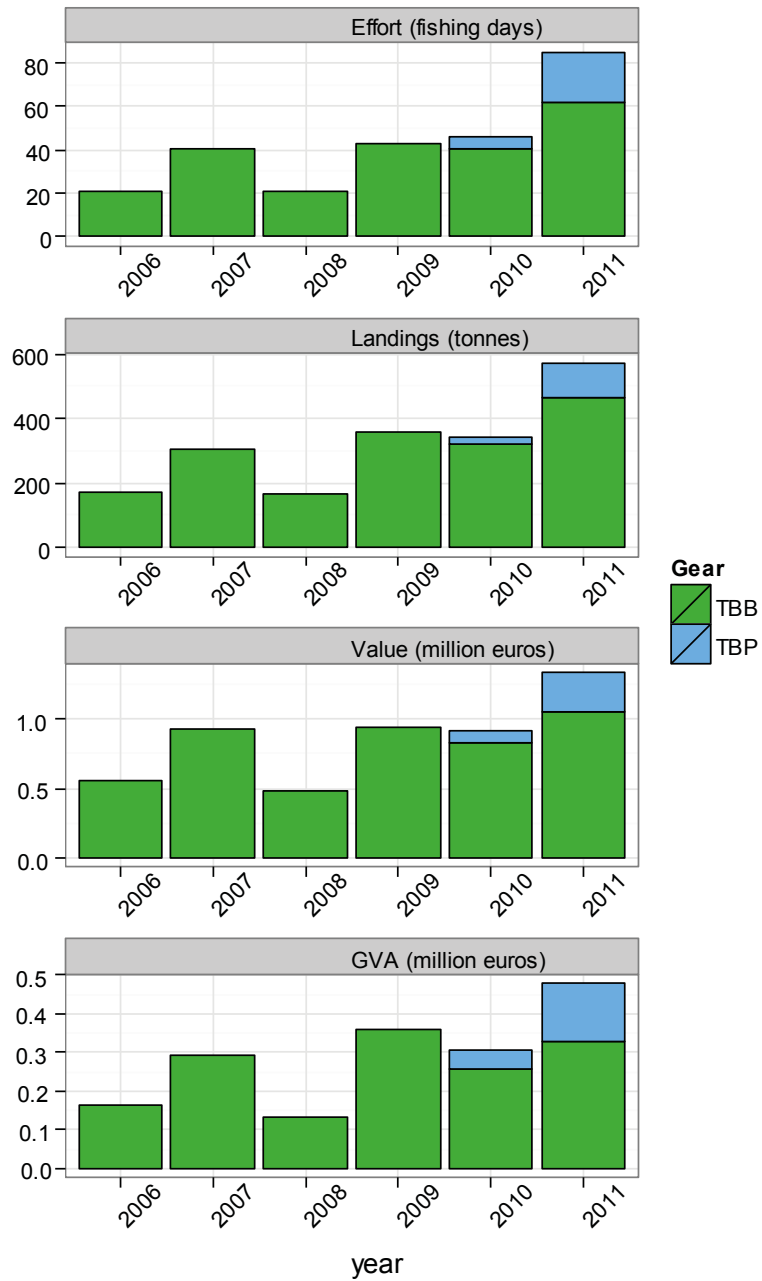
Scottish seine (representing 50 to 70% of the demersal trawlers and seiners in 2009-2011). Pelagic trawlers and netters are hardly present in the area (Figure 3.9).

Figure 3.9 Historical trends of the fishing activities in the Cleaver Bank by the Dutch fleet. Effort, landings, value of landings and GVA are given by gears aggregated at the level of European codes (see appendix 3)



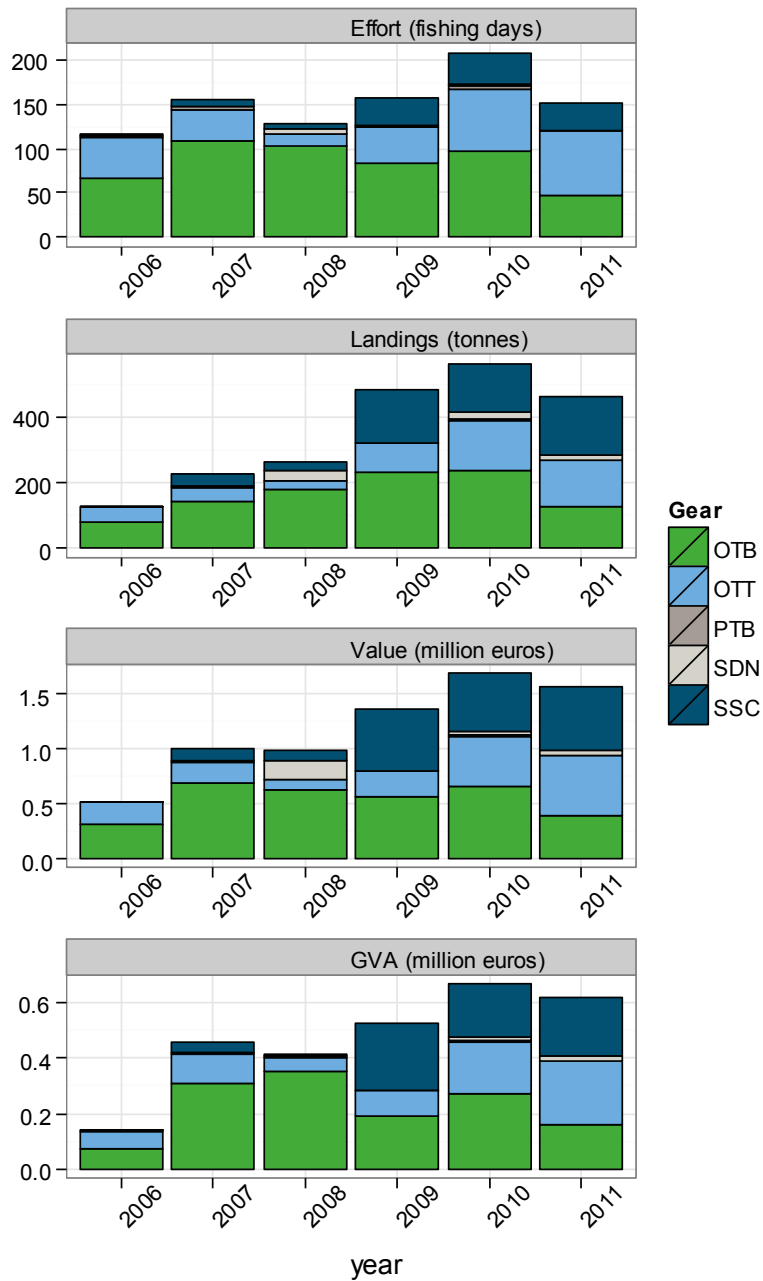
Source: Logbook data and VMS data, processed by LEI.

Figure 3.10 Historical trends of the fishing activities in the Cleaver Bank by the Dutch Beam trawlers. Effort, landings, value of landings and GVA are given for flatfish beam trawlers (TBB) and pulse trawlers (TBP)



Source: Logbook data and VMS data, processed by LEI.

Figure 3.11 Historical trends of the fishing activities in the Cleaver Bank by the Dutch Demersal trawlers. Effort, landings, value of landings and GVA are given for otter board trawls (OTB) twin trawls (OTT) bottom pair trawls (PTB) Danish seines (SDN) and Scottish seines (SSC)



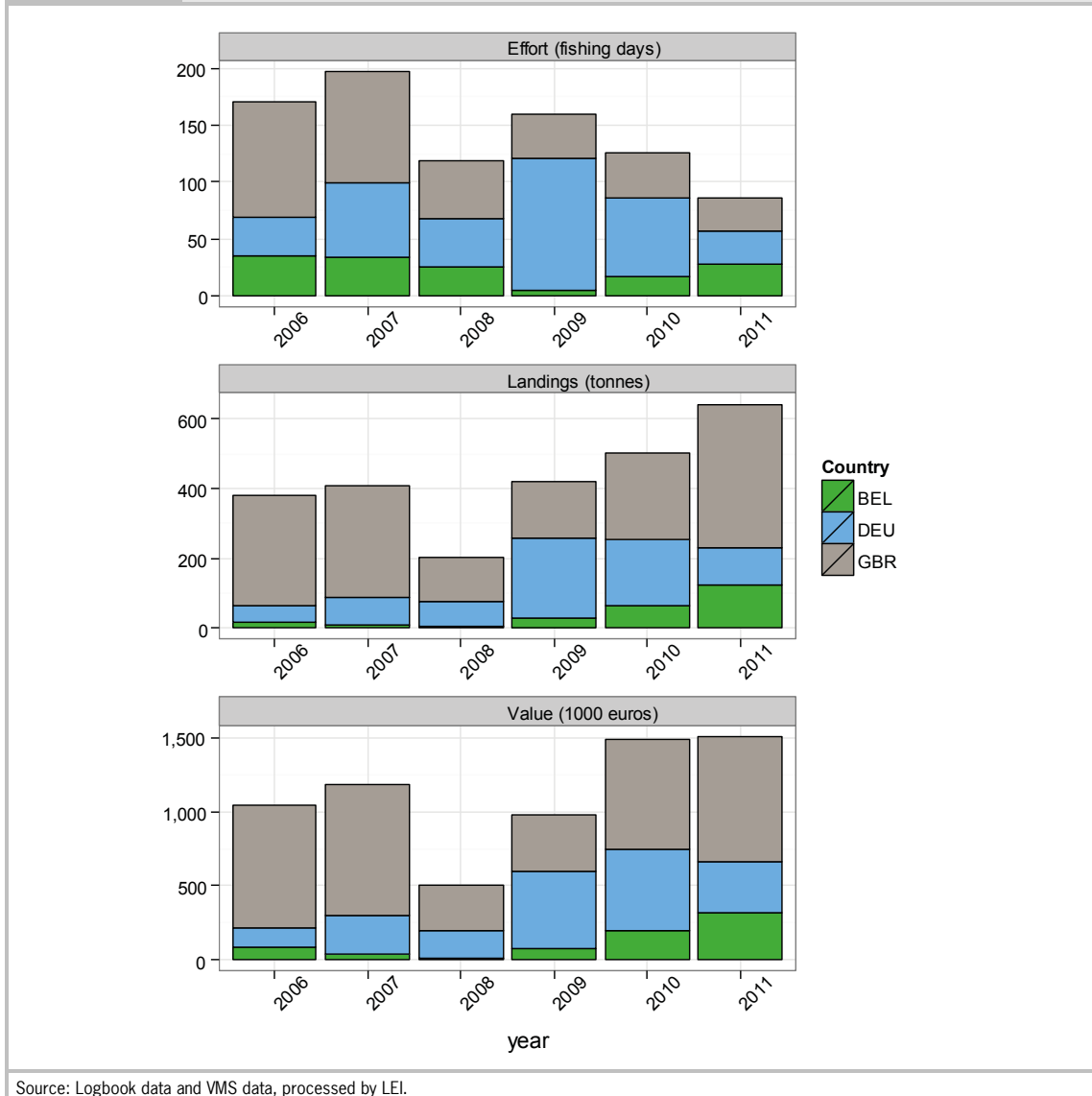
Source: Logbook data and VMS data, processed by LEI.

3.2.2 Foreign fleets

The Cleaver Bank has recently been mostly used by UK beam trawlers (Figure 3.12 and Figure 3.15). These vessels' landings from the area have increased from 2008 to 2011 and represent a value of around €0.8m per year. The majority of landings from the Belgian and German fleets are taken by beam trawlers as well, although in some years it seems that other gears also contribute considerably to the total landings (Figure 3.13 and Figure 3.14). The total annual landings and landings value seem to have increased from

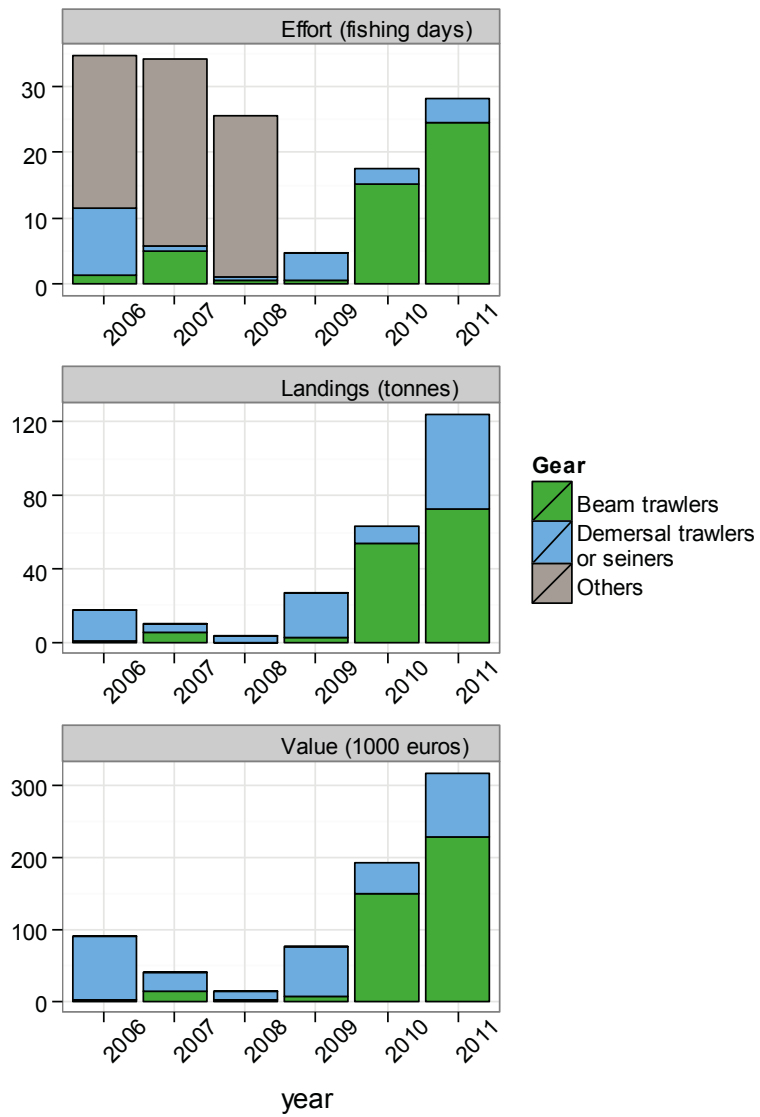
2008 onwards, reaching around €1.5m in 2010 and 2011. Because of the quality of the data and the coverage, one should note that for the foreign fleets, these results can only be as indicative. The background of this is discussed in Chapter 5.

Figure 3.12 Historical trends of the fishing activities in the Cleaver Bank by the foreign fleets. Effort, landings and value of landings are given by country



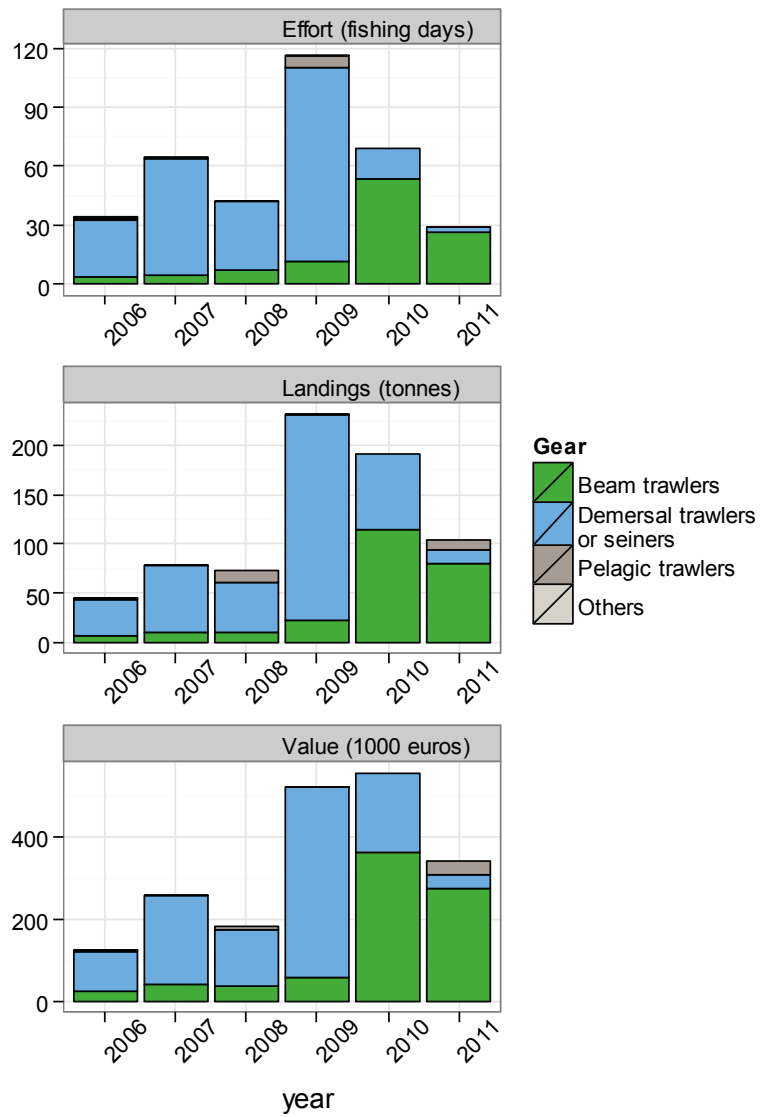
Source: Logbook data and VMS data, processed by LEI.

Figure 3.13 Historical trends of the fishing activities in the Cleaver Bank by the Belgian fleets. Effort, landings and value of landings are given by gear



Source: Logbook data and VMS data, processed by LEI.

Figure 3.14 Historical trends of the fishing activities in the Cleaver Bank by the German fleets. Effort, landings and value of landings are given by gear



Source: Logbook data and VMS data, processed by LEI.

Figure 3.15 Historical trends of the fishing activities in the Cleaver Bank by the British fleets. Effort, landings and value of landings are given by gear



Source: Logbook data and VMS data, processed by LEI.

4 Effect of proposed management measures

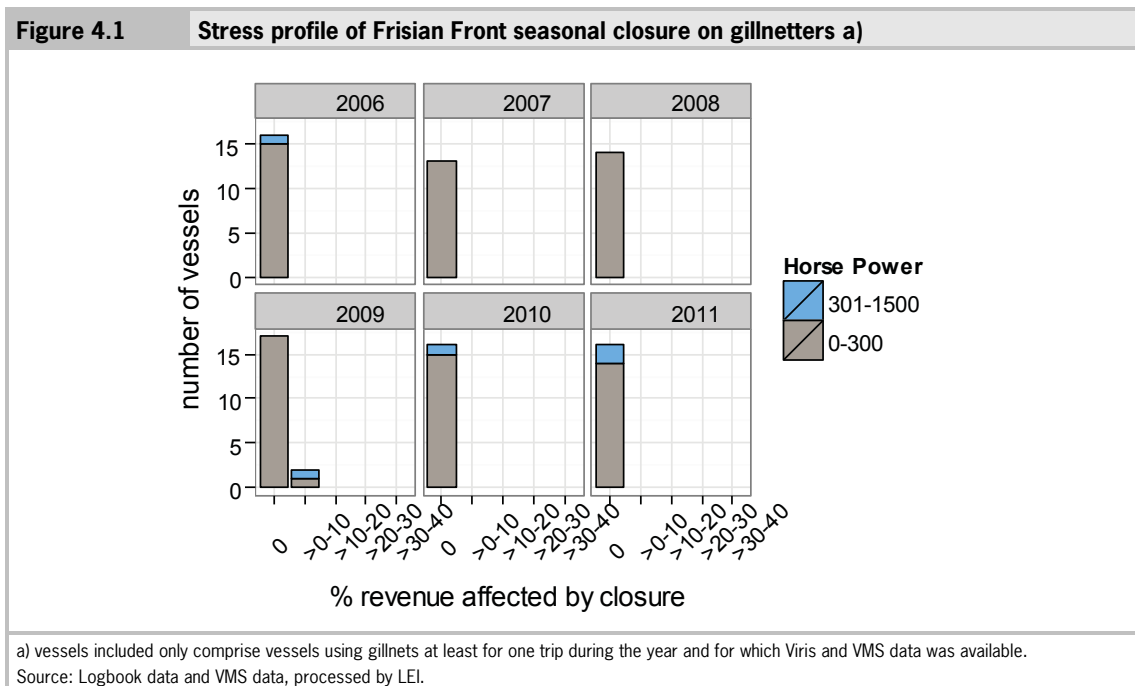
In this Chapter we describe the potential economic consequences of the proposed closures for the areas:

- In the Frisian Front, a ban on gillnetters (gillnets and set gillnets) between 1/06 and 30/11
- In the Cleaver Bank, a ban on bottom contact gears (beam trawl, shrimp trawl, pulse trawl, otter board trawl, twin trawl and pair trawl bottom) in the closed areas (red areas on figure 2.1)

This analysis is twofold: an analysis of the potential impact on individual vessels and an analysis of the overall aggregated impact on the Dutch fleet.

4.1 Frisian Front

The Frisian Front has been of little importance to the Dutch gillnetters over the last years. This can be seen from the overall historical trends (Figure 3.4) and is confirmed by the analyses of the stress levels of individual vessels. The stress levels are calculated as the percentage of the annual revenue coming from the Frisian Front for vessels using nets. The individual stress levels are then aggregated in the profile shown in Figure 4.1



Over the years it seems that only between 13 and 19 Dutch vessels larger than 15m use gillnets in a year. Among those vessels none was active in the Frisian Front between June and November from 2006 to 2011 except in 2009, when two vessels had revenues coming from the area during the June-November period (both vessels had less than 10% of their revenues coming from the potential closure area/season). The cumulative stress level of those two vessels represent less than 0.001% of the total revenue of the Dutch cutter fleet in 2009 and of the total GVA (see Table 4.1).

The vessels included in the analysis correspond to an average of 13% coverage of the total number of Dutch vessels using gillnets during the period. The low coverage is explained by the fact that most gillnetters are small vessels (less than 15m) and could therefore not be included in the analysis.

It should be noted that the spatial distribution of fishing effort is particularly complicated for passive gears as the speed of the vessel is not very well related to the fishing activity (compared to trawlers).

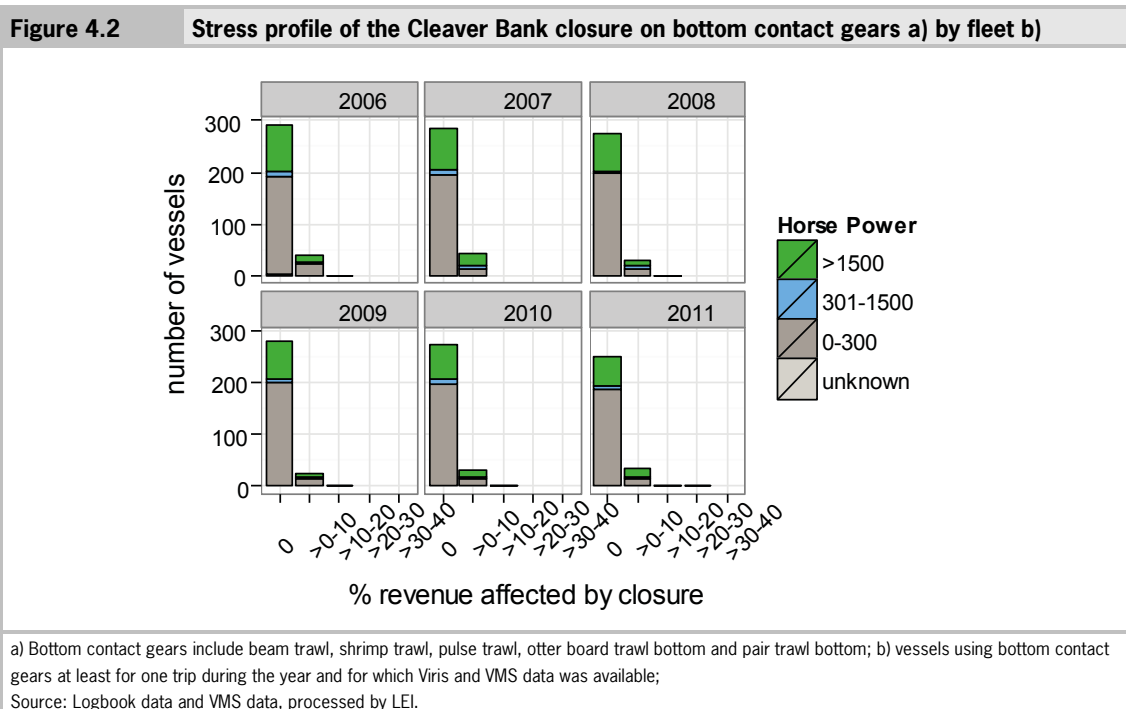
	2006	2007	2008	2009	2010	2011
Number of vessels in analysis	16	13	14	19	16	16
Number of vessels using gillnets	110	109	119	142	139	124
% coverage	15	12	12	13	12	13
Landings value impacted by closure (k€)	0	0	0	1	0	0
% total Dutch fleet landings value a)	0	0	0	0	0	0
GVA impacted by closure (k€)	0	0	0	0	0	0
% total Dutch fleet GVA	0	0	0	0	0	0

a) Total Dutch fleet revenue taken from Taal et al., 2013.
Source: Logbook data and VMS data, processed by LEI.

4.2 Cleaver Bank

The Cleaver Bank is widely used by Dutch fishermen using bottom contact gears and total value of landings from the area was over €2.7m in 2011(Figure 3.9). As only part of the area is closed a more detailed analysis has been done.

A ban of all bottom contact gears in part of the Cleaver Bank is investigated (as shown on the map, Figure 2.1). These gears include: beam trawl, shrimp trawl, pulse trawl, bottom otter board trawl and bottom pair trawl. The stress levels are calculated as the percentage of the annual revenue coming from the selected area for vessels using bottom contact gears. The individual stress levels are then aggregated in the profile shown in Figure 4.2.



Between 286 and 330 Dutch vessels using bottom contact gears were included in the analysis per year. The coverage of this part of the fleet is quite good with more than 80% of the vessels using bottom

contact gears at least for one trip included in the analysis. Our analysis suggests that most of the vessels included did not obtain any revenues from the selected area and between 25 and 42 vessels have been active in the selected area per year. For most of the impacted vessels, less than 10% of the revenue came from the selected area. One or two vessels had between 10 and 20% of their revenue coming from the area each year (except in 2007) and in 2011 one vessel made 23% of his annual fishing revenue in the area. The annual cumulative revenue of the impacted vessels amounts to up to 914 k€ in 2011, representing less than 0.5% of the total revenue of the Dutch fleet in average (see table 4.2). The revenues obtained in the area, contribute to up to 0.77 % of the total GVA. Over the years, however, one can observe an increasing trend in the importance of the area selected for the Dutch fleet of on average around 90 k€ per year.

	2006	2007	2008	2009	2010	2011
Number of vessels in analysis	330	326	303	303	304	286
Number of vessels using bottom contact gears	381	366	355	368	353	338
% coverage of stress profiles	87	89	85	82	86	85
Landings value impacted by closure (k€)	376	609	371	630	616	914
% total Dutch fleet landings value a)	0.15	0.23	0.15	0.30	0.28	0.45
GVA impacted by closure (k€)	113	245	213	418	392	544
% total Dutch fleet GVA	0.13	0.22	0.23	0.46	0.46	0.77

a) Total Dutch fleet revenue taken from Taal et al., 2013.
Source: Logbook data and VMS data, processed by LEI.

5 Discussion and conclusions

5.1 Discussion

Over the last years, the Dutch fishery has increasingly been in transition from the traditional fishery focussed on the beam trawl and plaice and sole fishery to a more diverse and innovative sector (Taal et al., 2010). These dynamics are also resembled in the results of this study.

The relative importance of the beam trawl fishery has decreased in both areas. In the Frisian Front the beam trawl has been replaced by other demersal trawlers (mainly twinrig). On the Cleaver Bank the fishing intensity has been increased, but the increase is mainly due to an increase in twinrig fishing and Scottish seines. The increase in beam trawl fishing in this area is caused by the introduction of the pulse trawl in the area, an innovative gear that makes much less bottom contact and needs significantly lower propulsion power. The increase in fishing effort and landings has been similar inside and outside the area for which restrictions has been proposed.

The overall trend in the effort and landings in the Frisian Front resembles the general trend in Dutch fishery in the past years, namely a decrease in both effort and landings. Contrastingly, the activity levels in the Cleaver Bank area have been increasing in the same period. Considering the overall reduction in fishing activity and landings, the relative importance of this area for the Dutch fishing sector has increased considerably (3 times more important in 2011 than in 2006). Consequently, the productivity level (landings value/km²) of the area (Table 5.1) was around the same as the average for the Dutch Continental shelf.

The reason for the increase in effort and landings from the Cleaver bank is not known, but several factors may play a role in this development. Over the last years, fishing opportunities for plaice have been increasing because of higher TACs. At the same time fuel costs have been increasing, lowering the profitability of the fuel intensive beam trawl fishery. Alternative fishing techniques, such as twinrig and the Scottish seine fishery have used increasingly to target plaice, which is caught generally at higher quantities in the Northern part of the North Sea, but traveling there takes valuable fishing time and fuel. The area of the Cleaver Bank may well represent a good fishing area, with enough fishing opportunities which is not too far away.

Areas	2006	2007	2008	2009	2010	2011
Value of landings per km ² (€ per km ²)						
Frisian Front	1,734	1,805	1,401	1,495	1,452	1,112
Cleaver Bank	714	1,263	960	1,511	1,717	1,950

a) Preliminary estimates.
Source: Logbook data, VMS data and price data processed by LEI.

The historic trends in the foreign fleets tend to resemble the patterns for the Dutch sector: on the Frisian Front, fishing activities of foreign fleets seem to stay on the same level. The landings from the Cleaver Bank also show an increase for the foreign fleets, although this only seems to start after a minimum in 2008. As many of the vessels from foreign fleets are owned by Dutch companies it would be logical to see the same patterns in case the fishing opportunities would be the main reason for the change in effort allocation.

Several factors affect the reliability of the results. First, the fishing effort, landings and value of individual pings are estimated based on assumptions about the speed at which fishing occurs and the equal allocation of landings to the fishing pings. Those values usually relate to pings that are emitted every two hours during which the vessels can sail more than 15 nm but the values are allocated to a single point. Fixed speed thresholds were used to decide whether a vessel was fishing or not. Recently, the method to make that distinction has been refined by basing the thresholds on actual speed frequency distributions of

individual vessels for individual years. In this way individual preferences for fishing speeds and possible changes in fishing speeds caused by e.g. high fuel prices can be taken into account and the nature of the operation at every ping can be determined with a smaller uncertainty. In order to be consistent with the previous study these new techniques were not applied here, but this increases the statistical uncertainty of the outcome. Secondly, the method of effort allocation based on vessel speed is less appropriate for static gears such as nets. The coverage of those vessels is already lower than for active gears primarily due to the size of the vessels (see Appendix 2). In addition, as the amount of vessels using this gear is low, the uncertainty of the estimate is large. Therefore any conclusion on the activity of the netters will be highly uncertain. Thirdly, there is no speed thresholds agreed for the pelagic trawlers while they are by definition very mobile. This means that every ping collected for these large trawlers will be assigned part of the large landings volume which can result in artificially landings for these vessels in an area. As these vessels catch relatively large amounts of low-value fish, compared to other fishing fleets, this only comes up in the landings figures. The high landings of pelagic fish from the Frisian Front in 2011 are probably such an artefact. Currently, LEI and IMARES, together with the industry are working on an improved method to estimate the value of fishing grounds. This method will probably become available early 2013 and will take care of some of the concerns mentioned above.

For the foreign data there is an additional problem influencing the quality of the results: the quality of the foreign data. To estimate the value of the areas three data sets need to be combined: logbook data, fleet data and VMS data. To combine the datasets the vessel name is used. However the vessel name is in many cases not consistent between data sets. E.g. until 2011 the logbook data has vessel names with 6 positions, however the fleet registry shows that in many countries vessel names have more than 6 positions, which makes it difficult to match logbook data and fleet data. Another complicating factor is that in many cases the vessel name in the VMS data set does not match vessel names in either the fleet registry or the logbook data. The vessel name in the VMS data set in some cases seems to be the radio name but in other cases could not be matched at all. These data errors are complicating the data processing for the foreign fleets and the results for those fleets would be far more reliable if the datasets were checked and made more consistent by the ministry. Until these problems have been solved, data processing is very time consuming and the results of the analyses can only be regarded as indicative.

Given these restrictions it is hard to draw firm conclusions about the possible effects of the management measures for the Frisian Front for the static gears. From the analysis it seems that almost no vessel using gillnets is affected by the closure of the area, but the coverage of this fishery is low and the results are highly uncertain. However, representatives of the Dutch fishing sector confirm that Dutch small gillnet vessels generally haven't utilised these fishing grounds during recent years. Danish fishermen are known to be active in the selected areas, but this fleet has not been taken into consideration in this study, because of the absence of a link with Dutch economic interests.

The possible effects of the closure for the Cleaver Bank are much clearer. Especially in recent years, the number of impacted vessels and total revenue from the area is considerable (around 40 vessels and up to almost €1m. As the coverage of these fleet segments is good (over 80%), this estimate can be considered to be reasonably accurate. However, giving a quantitative indication of the statistical reliance of these results remains difficult.

Foreign fleets were not included in the analysis of the effects of management as the total activity of those vessels is unknown and therefore the impact of the management measures on the vessels is largely unknown.

The results from this study give rise to a logical question: do the estimated values of the landings from the selected areas give an indication of the costs of the possible partial or full closure of these areas? This question cannot be answered from these results.

First of all, the results of this report refer to those in the period 2006 to 2011. Therefore, the outcomes are the result of the combination of biological, economic and social circumstances during that period. Even during this limited period changes in the context (e.g. fuel prices, TAC, effort restrictions, certification) and on-going developments have resulted in changes in fishing behaviour and gear shifts. Examples of these are the introduction of the pulse trawl and the shift from beam trawl to twin trawls. These

changes will continue, altering the fishing practices and with that the potential value of these areas. One possible development is the expansion of the gillnet fisheries. Therefore, it is not possible to forecast the potential value of these areas for the fishing industry in the future.

Second, the costs incurred on the partial or full closure of areas are not determined so much by the value of the catches in the area but rather by the feasibility of relocating the fisheries operations. An extensive discussion on this issue can be found in van Oostenbrugge et al. (2010).

5.2 Conclusions

From this study the following can be concluded:

- Both the area of the Frisian Front and the Cleaver Bank are valuable fishing grounds for the Dutch and foreign fishing fleets, representing total revenues of €5.5m and €2.7m per year over the period 2006-2011.
- Whereas the fishing activities on the Frisian Front have been decreased over the period of 2006-2011, the fishing activities on the Cleaver Bank have been intensified by both the Dutch and foreign fleets.
- Within the national fleets considerable changes occurred over time in gear allocation and the introduction of innovative gears.
- The analysis shows that the proposed closure of the Frisian Front would have a negligible impact on the fishing activities of the Dutch gillnet vessels above 15 meter, assuming fishing patterns from 2006 to 2011. Based on this study the conclusion cannot be extended to the total Dutch gillnet fishery, but industry representatives confirm that smaller vessels have not utilised the Frisian Front during the last years.
- Assuming fishing patterns from 2006 to 2011, the closure of part of the Cleaver Bank would impact between 25 to 50 fishing vessels catching around €0.5m of landings in the area. These landings have increased over the last years. The number of vessels for which the closure would impact more than 10% of their landings was less than 4 for all years.
- The effects of management measures in the areas can be determined only by mapping the dependencies of individual entrepreneurs on these areas and the feasibility of the relocation of their operations. This needs to be reviewed from an international perspective.
- Results for analysis for foreign fleets could be enhanced considerably in case consistency and quality of the basic data (logbook, VMS, fleet) for these fleets would be increased.

Literature

South, A., J. Lee, C. Darby, N. Hintzen, E. LeBlonde, M. Laurans and N. Campbell, 2009. *Spatial and temporal analysis of VMS data to provide standardised estimates of fishing effort in consultation with the fishing industry*. Developing standard European protocol for estimating fishing effort from VMS data. Report from EU Lot7 workshop. Cefas Lowestoft 6-7 April.

Van Oostenbrugge, J.A.E., H. Bartelings and F.C. Buisman, 2010. *Distribution maps for the North Sea fisheries. Methods and application in Natura 2000 areas*. LEI report 2010-067. The Hague, The Netherlands.

Taal et al., 2013 in prep. *Visserij in cijfers 2012*. Report. The Hague, The Netherlands.

Appendix 1

Data sources

VIRIS data

The catch data originate from the VIRIS (Fish Registration and Information System) database that contains records of all landings by vessels sailing under the Dutch flag and all landings by vessels sailing under a non-Dutch flag landing fish at ports in the Netherlands. These records are based on the logbooks kept by the fishers. The catches of each species controlled by quotas must be entered in this logbook per sailing day and ICES quadrant. Records of the catches of species not controlled by quotas are kept per trip.

Fleet data

The catch data for the various types of fisheries were calculated using the technical data listed in the NRV (Netherlands Register of Fishing Vessels). The combination of NRV data and VIRIS data yielded information about the technical specifications of the vessel on each trip. Not all the technical specifications of non-Dutch vessels are known.

VMS data

Since 1 January 2000, an increasingly large proportion of fishing vessels are under the obligation to operate an on board VMS system (Vessel Monitoring System) within the context of the European inspection policy. This VMS system transmits the position of the vessel, vessel identification code and the vessel's sailing speed to a central computer about once every two hours. The computer stores this data (EU Regulation 2244/2003). The vessel's sailing speed can be used to make a distinction between the various activities (fishing, sailing and at anchor). Although this distinction cannot be made completely, the potential error is small relative to the total number of records. Information about the presence of non-Dutch vessels in the Dutch section of the North Sea is also available.

Price data

The value of the catches was determined using the average monthly price data per species collected by the Productschap Vis (Netherlands Fish Product Board). Price data are not collected for all the species listed in VIRIS. When specific price data was not available for fish species then the value of the catches was determined using the average price of less specific market categories (for example, 'other seafood'). Appendix 2 lists the classification of fish species. In addition, prices from other sources were used for a number of fish species (in particular, sprat and herring, grey mullet and smelt) (requested from fishers and collected from the accounts of the high-sea fisheries) since these species are rarely traded on the fish auctions and the auction prices are not representative of the actual prices paid for the fish. The average auction price of catches by vessels with fixed fishing gear were increased by 15%: an analysis of a limited dataset with price data for the fisheries with fixed fishing gear and discussions with fishers revealed that these fisheries' catches are, in general, traded at higher auction prices due to a different market grading (in general, larger sole) and quality (fresh fish with less damage as compared to fish caught with beam trawls).

Economic data

The LEI panel has economic data for the various fisheries over the entire period of the study. The data contains the total annual proceeds of the Dutch cutter fisheries in the various fisheries and the relationships between the total proceeds and the gross value added. However, this data is not classified by fishing area. Consequently, the economic data needs to be combined with catch data to arrive at an estimate of the contribution each fishing area makes to the economy.

Appendix 2

Quality of the data

This Section begins with a discussion of the quality of the data from each source and continues with a presentation of an analysis of the effects on the quality of the estimates.

Data used for Dutch vessels

VIRIS data

The VIRIS data covers the entire Dutch fleet. It is possible that some of the catches are not recorded in the VIRIS database since vessels with a length of more than 10 metres do not need to keep records of catches of less than 50 kg per species. This was examined for a number of vessels: this revealed that the differences between actual and registered landings are small. However, it is possible that these differences are of relevance for some other vessels. Nevertheless, it may be assumed that this underestimation is negligible. A small fraction of the catches were allocated retrospectively to the trip catch on the basis of the auction data and then distributed between the fishing days. Although this distribution results in additional uncertainty this error, in view of the small quantities involved, will also be very small.

VMS data

Table A2.1 lists the coverage percentages of the VMS data on the basis of the total distributed catches. The coverage is good for most types of fishing gear used by the cutter fleet. The VMS coverage is high for the most common forms of fishing gear such as beam trawl. The coverage is low to very low for a number of types of fishing gear that are not used frequently, such as angling lines. However, the catches made with these types of fishing gear are also limited.

Fleet	Gear a)	HP category	2006	2007	2008	2009	2010	2011	Mean total catch 2006-2011 (* 1000 kg)
cutter	AG	301-1,500					100	100	9
cutter	BTF	>1,500					100		10
cutter	DRB	301-1,500	97	92	91	99	96	91	1,869
cutter	FPO	0-300	1	0	0	0	0	40	41
cutter	FPO	unknown					0		7
cutter	FYK	0-300						0	1
cutter	GN	0-300	65	53	65	29	61	0	6
cutter	GND	0-300	0				0		2
cutter	GNS	0-300	31	34	24	39	36	38	341
cutter	GNS	301-1,500	7	0	0	59	55	75	37
cutter	GNS	unknown	0	0	0	0	0		3
cutter	GTR	0-300	0	0	0	6	4	15	41
cutter	GTR	301-1,500				100	100	77	28
cutter	HMD	301-1,500				87	80	78	864
cutter	LHM	0-300					100	58	2
cutter	LHM	301-1,500			100	100			12
cutter	LHP	0-300	0	0	0	0	0	0	96
cutter	LHP	301-1,500	0	0	0	0	0	0	28

cutter	LHP	unknown					0	0		4
cutter	MIS	0-300	7	26	4	2	0	0		119
cutter	MIS	301-1,500	99	99	98	99	100			508
cutter	MIS	>1,500	100	100						181
cutter	NK	0-300					0			24
cutter	NKN	0-300					100			4
cutter	OFG	0-300					39			4
cutter	OTB	0-300	97	97	93	94	94	95		2,554
cutter	OTB	301-1,500	100	98	99	100	84	98		955
cutter	OTB	>1,500	77	99	98	100	95	98		1,025
cutter	OTG	0-300			100					2
cutter	OTM	0-300	28	71	21	16	9	30		192
cutter	OTM	301-1,500	100	100	100					796
cutter	OTM	>1,500	98	88		59	100	100		2,249
cutter	OTM	unknown		100						12,830
cutter	OTT	0-300	95	98	100	98	100	99		614
cutter	OTT	301-1,500			86	99	99	96		177
cutter	OTT	>1,500	100	100	100	100				122
cutter	PS	0-300	34	51	23	6	2	1		47
cutter	PTB	0-300	94	100		93	100	93		22
cutter	PTB	301-1,500		86						10
cutter	PTM	0-300	0	0	0	0	0			3
cutter	PTM	>1,500				0				144
cutter	SDN	301-1,500		100	99		96	100		308
cutter	SSC	0-300	0			100	96	100		190
cutter	SSC	301-1,500	97	97	96	98	98	99		3,489
cutter	TBB	0-300	97	97	97	97	94	96		4,069
cutter	TBB	301-1,500	100	100	95	100	99	98		864
cutter	TBB	>1,500	98	99	99	99	97	98		38,292
cutter	TBB	unknown	89				0			1
cutter	TBP	0-300						96		794
cutter	TBP	301-1,500					92	100		200
cutter	TBP	>1,500					97	98		2,514
cutter	TBS	0-300	93	92	90	94	89	90		16,708
cutter	TBS	301-1,500	100	95		100	100			46
cutter	TGB	>1,500			100					11
cutter	UKN	0-300	8	68	13	88	79			64
cutter	UKN	301-1,500	97	100	92	100	92			389
cutter	UKN	>1,500	0	100	100	100	100			7,376
cutter	UKN	unknown	0	31						14,658
highseas	OTB	>1,500				100		100		1672
highseas	OTM	>1,500	100	100	99	100	99	99		242,807
highseas	OTM	unknown			100	100	95	100		24,744
highseas	PTM	>1,500	100	100	100	98	100	100		17,540
highseas	UKN	>1,500		100	100	100	100			5,805
highseas	UKN	unknown			11	100				32,562
a) Fishing gear codes are included in Appendix 4.										
Source: Logbook data and VMS data, processed by LEI.										

Tables A2.2 to A2.7 for 2006 to 2011 show how the VMS catches were distributed between the three categories, whereby a distinction was made in terms of the availability of day catch figures (see also Table 2.2). It was readily feasible to determine the VMS points where vessels fitted with the most important types of fishing gear, such as beam trawl (TBB) and bottom otter trawl (OTB) fishing gear had fished. Shrimp vessels (shrimp trawl [TBS], <300HP) are not under the obligation to report day catches: consequently, trip catches were used for these vessels instead of day catches. However, it was possible to allocate catches to the VMS points in practically all instances.

Table A2.2 Share of the VMS catches distributed in the various manners (see also Table 2.2) per HP category and type of fishing gear in 2006						
Gear a)	HP category	VMS catch (tonnes)	With catch day		Without catch day	
			Normal day	Only unknown	Normal trip	Only unknown
<i>Cutter fleet</i>						
DRB	301-1,500	1379	0	100	0	0
FPO	0-300	0	0	100	0	0
GN	0-300	1	94	0	6	0
GNS	0-300	99	99	0	2	0
GNS	301-1,500	1	100	0	0	0
MIS	0-300	11	0	100	0	0
MIS	301-1,500	646	0	100	0	0
MIS	>1,500	255	0	100	0	0
OTB	0-300	1979	99	0	1	0
OTB	301-1,500	688	99	0	1	0
OTB	>1,500	142	100	0	0	0
OTM	0-300	52	0	100	0	0
OTM	301-1,500	1344	0	100	0	0
OTM	>1,500	5268	0	96	0	4
OTT	0-300	672	99	0	1	0
OTT	>1,500	49	100	0	0	0
PS	0-300	8	0	98	0	2
PTB	0-300	72	0	98	0	2
SSC	301-1,500	1659	99	0	0	0
TBB	0-300	4076	100	0	1	0
TBB	301-1,500	1071	100	0	0	0
TBB	>1,500	41241	100	0	0	0
TBB	unknown	1	0	100	0	0
TBS	0-300	14676	0	0	100	0
TBS	301-1,500	10	0	0	100	0
UKN	0-300	3	0	0	0	100
UKN	301-1,500	606	0	0	0	100
UKN	>1,500	53	0	0	0	100
<i>High Seas fleet</i>						
OTM	>1,500	318459	0	99	0	1
PTM	>1,500	22213	0	100	0	0
a) Fishing gear codes are included in Appendix 4. Source: Logbook data and VMS data, processed by LEI.						

Table A2.3 Share of the VMS catches distributed in the various manners (see also Table 2.2) per HP category and type of fishing gear in 2007

Gear a)	HP category	VMS catch (tonnes)	With catch day		Without catch day	
			Normal day	Only unknown	Normal trip	Only unknown
<i>Cutter fleet</i>						
DRB	301-1,500	1726	0	100	0	0
GN	0-300	3	100	0	0	0
GNS	0-300	101	100	0	0	0
MIS	0-300	59	0	100	0	0
MIS	301-1,500	714	0	100	0	0
MIS	>1,500	107	0	100	0	0
OTB	0-300	2,396	100	0	1	0
OTB	301-1,500	934	100	0	1	0
OTB	>1,500	460	99	0	0	0
OTM	0-300	56	0	100	0	0
OTM	301-1,500	1,035	0	100	0	0
OTM	>1,500	1,360	0	100	0	0
OTM	unknown	12,830	0	10	0	90
OTT	0-300	449	99	0	1	0
OTT	>1,500	16	99	0	1	0
PS	0-300	11	0	100	0	0
PTB	0-300	6	0	100	0	0
PTB	301-1,500	8	0	100	0	0
SDN	301-1,500	104	99	0	1	0
SSC	301-1,500	2,546	99	0	1	0
TBB	0-300	3,587	98	0	2	0
TBB	301-1,500	858	100	0	0	0
TBB	>1,500	43,527	99	0	0	0
TBS	0-300	14,945	0	0	100	0
TBS	301-1,500	113	0	0	100	0
UKN	0-300	16	0	0	0	100
UKN	301-1,500	485	0	0	0	100
UKN	>1,500	45	0	0	0	100
UKN	unknown	9,094	0	0	0	100
<i>High Seas fleet</i>						
OTM	>1,500	319,014	0	100	0	0
PTM	>1,500	18,404	0	100	0	0
UKN	>1,500	4,518	0	0	0	100

a) Fishing gear codes are included in Appendix 4.
Source: Logbook data and VMS data, processed by LEI.

Table A2.4 Share of the VMS catches distributed in the various manners (see also Table 2.2) per HP category and type of fishing gear in 2008

Gear a)	HP category	VMS catch (tonnes)	With catch day		Without catch day	
			Normal day	Only unknown	Normal trip	Only unknown
<i>Cutter fleet</i>						
DRB	301-1,500	1,637	0	100	0	0
GN	0-300	3	100	0	0	0
GNS	0-300	88	99	0	1	0
LHM	301-1,500	4	0	100	0	0
MIS	0-300	7	0	100	0	0
MIS	301-1,500	665	0	100	0	0
OTB	0-300	2,603	99	0	1	0
OTB	301-1,500	1,009	99	0	1	0
OTB	>1,500	1,759	100	0	0	0
OTG	0-300	2	0	100	0	0
OTM	0-300	32	0	100	0	0
OTM	301-1,500	10	0	98	0	2
OTT	0-300	409	100	0	0	0
OTT	301-1,500	58	99	0	1	0
OTT	>1,500	109	100	0	0	0
PS	0-300	15	0	100	0	0
SDN	301-1,500	569	100	0	0	0
SSC	301-1,500	2,613	100	0	0	0
TBB	0-300	3,994	99	0	1	0
TBB	301-1,500	877	100	0	0	0
TBB	>1,500	33,641	100	0	0	0
TBS	0-300	14,028	0	0	100	0
TGB	>1,500	11	0	97	0	3
UKN	0-300	2	0	0	0	100
UKN	301-1,500	496	0	0	0	100
UKN	>1,500	79	0	0	0	100
<i>High Seas fleet</i>						
OTM	>1,500	256,274	0	98	0	2
OTM	unknown	12,084	0	94	0	6
PTM	>1,500	15,131	0	100	0	0
UKN	>1,500	4,047	0	0	0	100
UKN	unknown	3,500	0	0	0	100

a) Fishing gear codes are included in Appendix 4.

Source: Logbook data and VMS data, processed by LEI.

Table A2.5 Share of the VMS catches distributed in the various manners (see also Table 2.2) per HP category and type of fishing gear in 2009

Gear a)	HP category	VMS catch (tonnes)	With catch day		Without catch day	
			Normal day	Only unknown	Normal trip	Only unknown
<i>Cutter fleet</i>						
DRB	301-1,500	1,148	0	100	0	0
FPO	0-300	0	0	100	0	0
GN	0-300	2	100	0	0	0
GNS	0-300	163	100	0	0	0
GNS	301-1,500	34	100	0	0	0
GTR	0-300	7	0	99	0	1
GTR	301-1,500	13	0	100	0	0
HMD	301-1,500	945	0	100	0	0
LHM	301-1,500	19	0	100	0	0
MIS	0-300	3	0	100	0	0
MIS	301-1,500	480	0	100	0	0
OTB	0-300	2,332	97	0	4	0
OTB	301-1,500	975	100	0	1	0
OTB	>1,500	783	100	0	0	0
OTM	0-300	44	0	93	0	7
OTM	>1,500	855	0	100	0	0
OTT	0-300	528	99	0	1	0
OTT	301-1,500	207	94	0	6	0
OTT	>1,500	313	100	0	0	0
PS	0-300	3	0	100	0	0
PTB	0-300	6	0	100	0	0
SSC	0-300	0	100	0	0	0
SSC	301-1,500	3,611	94	0	5	0
TBB	0-300	4,311	98	0	2	0
TBB	301-1,500	983	98	0	2	0
TBB	>1,500	36,089	97	0	3	0
TBS	0-300	18,047	0	0	100	0
TBS	301-1,500	52	0	0	100	0
UKN	0-300	193	0	0	0	100
UKN	301-1,500	283	0	0	0	100
UKN	>1,500	178	0	0	0	100
<i>High Seas fleet</i>						
OTB	>1,500	1,424	100	0	0	0
OTM	>1,500	189,699	0	100	0	0
OTM	unknown	12,211	0	97	0	3
PTM	>1,500	15,603	0	96	0	4
UKN	>1,500	9,913	0	0	0	100
UKN	unknown	34,307	0	0	0	100

a) Fishing gear codes are included in Appendix 4.
Source: Logbook data and VMS data, processed by LEI.

Table A2.6 Share of the VMS catches distributed in the various manners (see also Table 2.2) per HP category and type of fishing gear in 2010

Gear a)	HP category	VMS catch (tonnes)	With catch day		Without catch day	
			Normal day	Only unknown	Normal trip	Only unknown
<i>Cutter fleet</i>						
AG	301-1,500	5	0	100	0	0
BTF	>1,500	10	0	100	0	0
DRB	301-1,500	2,360	0	100	0	0
GN	0-300	8	98	0	2	0
GNS	0-300	128	100	0	1	0
GNS	301-1,500	28	92	0	9	0
GTR	0-300	4	0	99	0	1
GTR	301-1,500	32	0	99	0	1
HMD	301-1,500	354	0	100	0	0
LHM	0-300	0	0	100	0	0
MIS	301-1,500	6	0	100	0	0
OFG	0-300	3	0	100	0	0
OTB	0-300	2,924	98	0	2	0
OTB	301-1,500	783	99	0	1	0
OTB	>1,500	1,622	100	0	0	0
OTM	0-300	52	0	100	0	0
OTM	>1,500	1,362	0	100	0	0
OTT	0-300	610	99	0	0	0
OTT	301-1,500	239	98	0	2	0
PS	0-300	2	0	100	0	0
PTB	0-300	4	0	96	0	4
SDN	301-1,500	191	100	0	0	0
SSC	0-300	383	99	0	1	0
SSC	301-1,500	4,655	100	0	1	0
TBB	0-300	3,855	92	0	9	0
TBB	301-1,500	784	100	0	1	0
TBB	>1,500	38,354	100	0	1	0
TBP	301-1,500	182	100	0	0	0
TBP	>1,500	1,195	99	0	0	0
TBS	0-300	15,748	0	0	100	0
TBS	301-1,500	3	0	0	100	0
UKN	0-300	27	0	0	0	100
UKN	301-1,500	11	0	0	0	100
UKN	>1,500	22	0	0	0	100
<i>High Seas fleet</i>						
OTM	>1,500	224,514	0	100	0	0
OTM	unknown	49,007	0	100	0	0
PTM	>1,500	17,823	0	100	0	0
UKN	>1,500	4,742	0	0	0	100

a) Fishing gear codes are included in Appendix 4.
Source: Logbook data and VMS data, processed by LEI.

Table A2.7 Share of the VMS catches distributed in the various manners (see also Table 2.2) per HP category and type of fishing gear in 2011

Gear a)	HP category	VMS catch (tonnes)	With catch day		Without catch day	
			Normal day	Only unknown	Normal trip	Only unknown
<i>Cutter fleet</i>						
AG	301-1,500	13	0	100	0	0
DRB	301-1,500	2,270	0	100	0	0
FPO	0-300	48	0	100	0	0
GNS	0-300	112	100	0	0	0
GNS	301-1,500	45	100	0	0	0
GTR	0-300	5	0	100	0	0
GTR	301-1,500	30	0	100	0	0
HMD	301-1,500	825	0	100	0	0
LHM	0-300	3	0	100	0	0
LHP	0-300	0	0	100	0	0
OTB	0-300	2,295	100	0	0	0
OTB	301-1,500	1,129	100	0	0	0
OTB	>1,500	1,201	100	0	0	0
OTM	0-300	31	0	100	0	0
OTM	>1,500	1,524	0	100	0	0
OTT	0-300	951	82	0	18	0
OTT	301-1,500	183	100	0	0	0
PS	0-300	0	0	100	0	0
PTB	0-300	15	0	100	0	0
SDN	301-1,500	356	100	0	0	0
SSC	0-300	358	100	0	0	0
SSC	301-1,500	5,381	100	0	0	0
TBB	0-300	3,722	96	0	4	0
TBB	301-1,500	538	100	0	0	0
TBB	>1,500	33,044	100	0	0	0
TBP	0-300	759	90	0	11	0
TBP	301-1,500	202	100	0	0	0
TBP	>1,500	3,713	100	0	0	0
TBS	0-300	14,214	0	0	100	0
<i>High Seas fleet</i>						
OTB	>1,500	1,921	100	0	0	0
OTM	>1,500	143,650	0	100	0	0
OTM	unknown	22,821	0	100	0	0
PTM	>1,500	15,613	0	100	0	0
a) Fishing gear codes are included in Appendix 4. Source: Logbook data and VMS data, processed by LEI.						

Price data

The price data covers all landings of species controlled by quotas in the Netherlands. Landings outside the Netherlands are not included in this data. However, the quantities of most species are relatively small. The coverage for the catches of shrimps is somewhat lower since much of the catch is sold directly to the processing industry. However, it is assumed that the prices are indicative.

Economic data

The economic data covers the major segments and types of fishing gear. The average ratio of the landing value to the gross value added for various types of fishing gear is used for the other types of fishing gear.

Data used for non-Dutch vessels

VIRIS data

The VIRIS data covers trips of non-Dutch vessels that land in the Netherlands. Consequently, no catch data is available for some VMS points. Non-Dutch vessels, in analogy with Dutch vessels, with a length of more than 10 metres do not need to keep records of catches of less than 50 kg per species. As indicated earlier, this can be of relevance to specific vessels. However, it is safe to assume that this underestimation is relatively small. Table 3.5 lists the coverage percentages of the VIRIS data on the basis of the duration at the VMS points. The coverage is reasonably good for most types of fishing gear, although much lower than for the Dutch segments.

Table A2.8 Fishing effort in VMS data for foreign fleets, VIRIS catch allocated to VMS pings and coverage percentages of VMS effort in VIRIS for 2006

Fleet	Gear a)	HP category	Fishing effort in VMS (fishing days)	Viris catch allocated to VMS pings (tonnes)	Percentage of VMS effort linked to Viris
BEL	OTB	0-300	57	87	94
BEL	OTB	301-1,500	2	10	44
BEL	TBB	0-300	109	41	88
BEL	TBB	301-1,500	14	32	38
BEL	TBS	0-300	153	144	96
BEL	UKN	unknown	7	0	0
BEL	UKN	0-300	117	0	0
BEL	UKN	301-1,500	127	0	1
DEU	GN	0-300	3	17	39
DEU	GNS	0-300	10	17	58
DEU	OTB	0-300	302	410	93
DEU	OTB	301-1,500	81	125	98
DEU	OTM	>1,500	13	202	12
DEU	OTT	0-300	0	2	100
DEU	PTB	0-300	29	21	68
DEU	PTB	301-1,500	3	0	46
DEU	SPR	0-300	13	4	39
DEU	TBB	0-300	383	259	87
DEU	TBB	301-1,500	637	1035	94
DEU	TBS	0-300	81	38	52
DEU	UKN	unknown	10	0	0
DEU	UKN	0-300	131	0	1
DEU	UKN	301-1,500	45	0	0
DEU	UKN	>1,500	4	0	0
GBR	FPO	301-1,500	40	1	1
GBR	GN	0-300	31	122	5
GBR	OTB	301-1,500	12	49	100
GBR	OTM	>1,500	16	870	31
GBR	OTT	301-1,500	53	135	87
GBR	PTM	>1,500	21	760	32
GBR	SSC	301-1,500	10	1	10
GBR	TBB	unknown	26	47	78
GBR	TBB	0-300	3	1	88
GBR	TBB	301-1,500	893	1,996	79
GBR	TBB	>1,500	141	390	79
GBR	UKN	unknown	140	0	0
GBR	UKN	0-300	573	0	0
GBR	UKN	301-1,500	350	0	0
GBR	UKN	>1,500	5	0	0

a) Fishing gear codes are included in Appendix 4.

Source: Logbook data and VMS data, processed by LEI.

Table A2.9 Fishing effort in VMS data for foreign fleets, VIRIS catch allocated to VMS pings and coverage percentages of VMS effort in VIRIS for 2007

Fleet	Gear a)	HP category	Fishing effort in VMS (fishing days)	Viris catch allocated to VMS pings (tonnes)	Percentage of VMS effort linked to Viris
BEL	OTB	0-300	8	161	100
BEL	OTB	301-1,500	8	43	41
BEL	TBB	0-300	273	254	88
BEL	TBB	301-1,500	89	370	81
BEL	TBS	0-300	177	117	97
BEL	UKN	unknown	34	0	0
BEL	UKN	0-300	313	0	0
BEL	UKN	301-1,500	1,257	0	0
DEU	GN	unknown	5	4	10
DEU	GN	0-300	2	5	52
DEU	GNS	0-300	13	6	11
DEU	MIS	0-300	5	1	44
DEU	OTB	unknown	5	2	70
DEU	OTB	0-300	273	417	99
DEU	OTB	301-1,500	84	136	88
DEU	OTM	>1,500	13	91	1
DEU	PTB	0-300	9	6	89
DEU	TBB	unknown	62	41	90
DEU	TBB	0-300	120	96	100
DEU	TBB	301-1,500	615	1,048	95
DEU	TBS	0-300	111	26	26
DEU	UKN	unknown	112	0	0
DEU	UKN	0-300	4,619	0	0
DEU	UKN	301-1,500	664	0	0
DEU	UKN	>1,500	83	0	0
GBR	FPO	0-300	2	5	80
GBR	FPO	301-1,500	79	324	100
GBR	GN	0-300	16	62	12
GBR	OTB	301-1,500	30	156	100
GBR	OTM	>1,500	8	8	1
GBR	OTT	301-1,500	52	172	91
GBR	OTT	>1,500	7	40	100
GBR	PTM	>1,500	18	471	24
GBR	SSC	301-1,500	25	19	30
GBR	SSC	>1,500	1	0	0
GBR	TBB	0-300	12	159	75
GBR	TBB	301-1,500	1,116	3,188	90
GBR	TBB	>1,500	218	719	89
GBR	TBS	301-1,500	12	1	1
GBR	UKN	unknown	3,042	0	0
GBR	UKN	0-300	4,305	0	0
GBR	UKN	301-1,500	6,435	0	0
GBR	UKN	>1,500	300	36	1

a) Fishing gear codes are included in Appendix 4.

Source: Logbook data and VMS data, processed by LEI.

Table A2.10 Fishing effort in VMS data for foreign fleets, VIRIS catch allocated to VMS pings and coverage percentages of VMS effort in VIRIS for 2008

Fleet	Gear a)	HP category	Fishing effort in VMS (fishing days)	Viris catch allocated to VMS pings (tonnes)	Percentage of VMS effort linked to Viris
BEL	OTB	0-300	8	34	100
BEL	OTB	301-1,500	3	47	10
BEL	TBB	0-300	183	159	97
BEL	TBB	301-1,500	39	45	66
BEL	TBS	0-300	209	227	98
BEL	UKN	unknown	28	0	0
BEL	UKN	0-300	441	0	0
BEL	UKN	301-1,500	1,441	0	0
DEU	GN	0-300	13	22	43
DEU	GNS	0-300	30	24	21
DEU	OTB	0-300	214	364	88
DEU	OTB	301-1,500	72	183	92
DEU	OTM	>1,500	23	1,964	47
DEU	TBB	unknown	6	4	100
DEU	TBB	0-300	109	69	88
DEU	TBB	301-1,500	550	955	92
DEU	TBS	unknown	7	6	100
DEU	TBS	0-300	84	64	56
DEU	UKN	unknown	42	0	0
DEU	UKN	0-300	4,181	0	0
DEU	UKN	301-1,500	769	0	0
DEU	UKN	>1,500	69	0	0
GBR	FPO	301-1,500	248	558	90
GBR	GN	0-300	45	158	2
GBR	OTB	301-1,500	195	654	87
GBR	OTB	>1,500	47	153	100
GBR	OTM	>1,500	23	841	27
GBR	OTT	301-1,500	140	571	98
GBR	OTT	>1,500	14	56	96
GBR	PTB	301-1,500	5	13	100
GBR	PTM	>1,500	27	393	13
GBR	SSC	301-1,500	22	46	62
GBR	TBB	unknown	28	141	97
GBR	TBB	0-300	8	46	96
GBR	TBB	301-1,500	1,196	4,711	91
GBR	TBB	>1,500	213	823	86
GBR	UKN	unknown	1,083	0	0
GBR	UKN	0-300	8,787	0	0
GBR	UKN	301-1,500	8,434	0	0
GBR	UKN	>1,500	932	0	0
GBR	SDN	0-300	3	5	50

a) Fishing gear codes are included in Appendix 4.

Source: Logbook data and VMS data, processed by LEI.

Table A2.11 Fishing effort in VMS data for foreign fleets, VIRIS catch allocated to VMS pings and coverage percentages of VMS effort in VIRIS for 2009

Fleet	Gear a)	HP category	Fishing effort in VMS (fishing days)	Viris catch allocated to VMS pings (tonnes)	Percentage of VMS effort linked to Viris
BEL	OTB	0-300	49	63	100
BEL	OTB	301-1,500	7	14	91
BEL	OTT	0-300	0	1	-
BEL	TBB	unknown	0	23	-
BEL	TBB	0-300	277	80	95
BEL	TBB	301-1,500	234	114	73
BEL	TBS	0-300	244	318	99
DEU	GN	0-300	4	4	100
DEU	GNS	0-300	172	25	48
DEU	GTR	0-300	47	10	79
DEU	OTB	0-300	483	187	95
DEU	OTB	301-1,500	147	141	94
DEU	OTM	>1,500	723	86	11
DEU	OTT	0-300	51	0	2
DEU	PTB	0-300	44	8	71
DEU	TBB	0-300	201	60	86
DEU	TBB	301-1,500	570	771	93
DEU	TBS	0-300	91	54	60
GBR	FPO	0-300	7	7	99
GBR	FPO	301-1,500	192	387	88
GBR	GN	0-300	20	100	62
GBR	GNS	0-300	21	12	3
GBR	MIS	0-300	3	3	100
GBR	OTB	0-300	40	114	100
GBR	OTB	301-1,500	320	1436	95
GBR	OTB	>1,500	0	1	100
GBR	OTM	>1,500	255	28,029	77
GBR	OTT	>1,500	24	129	81
GBR	PTM	>1,500	124	4,770	61
GBR	SDN	0-300	6	13	68
GBR	SSC	301-1,500	59	101	75
GBR	TBB	0-300	160	6	70
GBR	TBB	301-1,500	1,115	5,224	88

a) Fishing gear codes are included in Appendix 4.

Source: Logbook data and VMS data, processed by LEI.

Table A2.12 Fishing effort in VMS data for foreign fleets, VIRIS catch allocated to VMS pings and coverage percentages of VMS effort in VIRIS for 2010

Fleet	Gear a)	HP category	Fishing effort in VMS (fishing days)	Viris catch allocated to VMS pings (tonnes)	Percentage of VMS effort linked to Viris
BEL	GNS	0-300	0	0	0
BEL	GNS	301-1,500	3	0	0
BEL	OTB	301-1,500	34	27	35
BEL	TBB	0-300	532	305	44
BEL	TBB	301-1,500	444	206	11
DEU	DRB	0-300	2	0	0
DEU	DRB	301-1,500	63	0	0
DEU	GNS	0-300	155	111	83
DEU	OTB	0-300	67	0	0
DEU	OTB	301-1,500	207	514	61
DEU	OTB	>1,500	32	0	0
DEU	OTM	301-1,500	24	0	0
DEU	OTM	>1,500	12	0	0
DEU	SDN	0-300	5	0	0
DEU	TBB	0-300	972	593	34
DEU	TBB	301-1,500	377	1,093	96
GBR	DRB	0-300	278	0	0
GBR	DRB	301-1,500	494	0	0
GBR	FPO	0-300	249	0	0
GBR	FPO	301-1,500	202	205	67
GBR	GNS	0-300	176	0	0
GBR	GNS	301-1,500	4	0	0
GBR	HMD	0-300	69	0	0
GBR	HMD	301-1,500	643	0	0
GBR	LLD	301-1,500	0	0	0
GBR	LLS	301-1,500	39	0	0
GBR	OTB	0-300	556	0	0
GBR	OTB	301-1,500	1,437	633	8
GBR	OTB	>1,500	180	0	0
GBR	OTM	0-300	8	0	0
GBR	OTM	301-1,500	34	0	0
GBR	OTM	>1,500	357	17,876	48
GBR	OTT	0-300	111	31	23
GBR	OTT	301-1,500	255	0	0
GBR	OTT	>1,500	90	220	22
GBR	PTB	301-1,500	581	0	0
GBR	PTM	301-1,500	41	0	0
GBR	PTM	>1,500	390	0	0
GBR	SDN	0-300	58	0	0
GBR	SSC	0-300	12	0	0
GBR	SSC	301-1,500	183	0	0
GBR	TBB	0-300	101	224	45
GBR	TBB	301-1,500	664	3,548	49

a) Fishing gear codes are included in Appendix 4.

Source: Logbook data and VMS data, processed by LEI.

Table A2.13 Fishing effort in VMS data for foreign fleets, VIRIS catch allocated to VMS pings and coverage percentages of VMS effort in VIRIS for 2011

Fleet	Gear a)	HP category	Fishing effort in VMS (fishing days)	Viris catch allocated to VMS pings (tonnes)	Percentage of VMS effort linked to Viris
BEL	GNS	301-1,500	14	0	0
BEL	OTB	301-1,500	72	57	23
BEL	SSC	301-1,500	86	116	37
BEL	TBB	0-300	1,876	648	24
BEL	TBB	301-1,500	1,348	487	8
DEU	DRB	0-300	35	0	0
DEU	DRB	301-1,500	280	0	0
DEU	FPO	301-1,500	3	0	0
DEU	GNS	0-300	171	45	44
DEU	GNS	301-1,500	2	0	0
DEU	LLS	301-1,500	14	0	0
DEU	OTB	0-300	102	0	0
DEU	OTB	301-1,500	533	613	24
DEU	OTB	>1,500	98	2,091	13
DEU	OTM	301-1,500	67	0	0
DEU	OTM	>1,500	109	8,368	58
DEU	TBB	0-300	2,777	1,180	14
DEU	TBB	301-1,500	237	1,031	96
GBR	DRB	0-300	115	0	0
GBR	DRB	301-1,500	545	0	0
GBR	FPO	0-300	482	0	0
GBR	FPO	301-1,500	403	460	47
GBR	GNS	0-300	388	130	29
GBR	GNS	301-1,500	91	0	0
GBR	HMD	0-300	35	0	0
GBR	HMD	301-1,500	1,148	0	0
GBR	LLS	301-1,500	3	0	0
GBR	OTB	0-300	788	0	0
GBR	OTB	301-1,500	1,903	232	2
GBR	OTB	>1,500	333	22,691	29
GBR	OTM	0-300	56	0	0
GBR	OTM	301-1,500	48	0	0
GBR	OTM	>1,500	343	861	2
GBR	OTT	0-300	199	239	19
GBR	OTT	301-1,500	421	0	0
GBR	OTT	>1,500	94	423	41
GBR	PTB	0-300	116	0	0
GBR	PTB	301-1,500	933	0	0
GBR	PTM	301-1,500	28	0	0
GBR	PTM	>1,500	346	3,270	27
GBR	SDN	0-300	243	0	0
GBR	SSC	0-300	111	0	0
GBR	SSC	301-1,500	770	1,753	38
GBR	TBB	0-300	119	0	0
GBR	TBB	301-1,500	610	6,693	80

a) Fishing gear codes are included in Appendix 4.

Source: Logbook data and VMS data, processed by LEI.

VMS data

The Netherlands is responsible for the control of fishing vessels in the Dutch section of the continental shelf and, consequently, has all VMS data relating to the area at its disposal. However, this is often only part of the VMS information about the trip since these vessels spend only part of the time of their trip in the Dutch section of the continental shelf. Vessels with a length of 15 metres are not governed by the VMS obligation. It is assumed that the number of non-Dutch vessels of a length of less than 15 metres that fish in the Dutch section of the continental shelf is negligible.

Price data

The price data covers all landings of species controlled by quotas in the Netherlands. Since the large majority of the catches are landed in the Netherlands, it has been decided that these prices will also be used for non-Dutch vessels.

Appendix 3

Fishing trends in the areas

This section contains the historical trends of fishing activities of the Dutch and foreign Fleets in the Frisian Front and Cleaver Bank. The data is aggregated by Fleet, horsepower categories and gear type. Years covered are 2006 to 2011.

Frison Front

Dutch Fleet

Table A3.1		Effort of each fleet segment in the Frisian Front area (days at sea) and the proportion of the time spent fishing							
Fleet	HP category	Gear a)	Effort (days at sea)						Time spent fishing
			2006	2007	2008	2009	2010	2011	
cutter	0-300	GN				5			0.50
cutter	0-300	GNS	0	0				1	0.29
cutter	0-300	OTB	175	88	126	86	119	139	0.52
cutter	0-300	OTM	1						1.00
cutter	0-300	OTT	94	29	37	50	51	174	0.50
cutter	0-300	PTB	1					0	1.00
cutter	0-300	TBB	49	30	24	41	66	13	0.57
cutter	0-300	TBP						1	0.75
cutter	0-300	UKN		1		0	0		0.78
cutter	301-1,500	GNS				1			0.36
cutter	301-1,500	OTB	55	37	33	17	8	23	0.46
cutter	301-1,500	OTT			6	10	22	33	0.37
cutter	301-1,500	SSC	2	3	2	1	1	4	0.44
cutter	301-1,500	TBB	153	118	90	128	111	92	0.70
cutter	>1,500	OTB	3	12	15	11	2	11	0.40
cutter	>1,500	OTT	3		2	0			0.31
cutter	>1,500	TBB	439	538	355	460	389	166	0.35
cutter	>1,500	TBP					0	3	0.54
cutter	>1,500	UKN	0	1	0	1			1.00
highseas	>1,500	OTM		0	0	0	0	1	0.93
highseas	>1,500	PTM				0		2	1.00

a) Fishing gear codes are included in Appendix 4.
Source: Logbook data and VMS data, processed by LEI.

Table A3.2 Landings of each fleet segment in the Frisian Front area (tonnes)

Fleet	HP category	Gear a)	Landings (tonnes)					
			2006	2007	2008	2009	2010	2011
cutter	0-300	GN				1		
cutter	0-300	GNS	0	0				0
cutter	0-300	OTB	135	72	96	52	114	116
cutter	0-300	OTM	0					
cutter	0-300	OTT	75	18	32	37	49	171
cutter	0-300	PTB	1					3
cutter	0-300	TBB	39	28	17	24	48	8
cutter	0-300	TBP						1
cutter	0-300	UKN		0		0	1	
cutter	301-1,500	GNS				0		
cutter	301-1,500	OTB	45	25	24	10	5	29
cutter	301-1,500	OTT			6	6	20	29
cutter	301-1,500	SSC	2	5	0	2	0	12
cutter	301-1,500	TBB	188	133	119	172	183	134
cutter	>1,500	OTB	0	7	5	9	0	9
cutter	>1,500	OTT	2		1	0		
cutter	>1,500	TBB	839	932	701	870	847	269
cutter	>1,500	TBP					0	2
cutter	>1,500	UKN	0	1	1	1		
highseas	>1,500	OTM		9	0	42	8	282
highseas	>1,500	PTM				1		28

a) Fishing gear codes are included in Appendix 4.

Source: Logbook data and VMS data, processed by LEI.

Table 3.3a		Value of landed catches of each fleet segment in the Frisian Front area (€1000)						
Fleet	HP category	Gear a)	Value (€1000)					
			2006	2007	2008	2009	2010	2011
cutter	0-300	GN				2		
cutter	0-300	GNS	0	0				2
cutter	0-300	OTB	595	291	426	186	424	625
cutter	0-300	OTM	0					
cutter	0-300	OTT	357	80	130	127	187	918
cutter	0-300	PTB	2					8
cutter	0-300	TBB	137	145	79	90	145	36
cutter	0-300	TBP						5
cutter	0-300	UKN		0		0	1	
cutter	301-1,500	GNS				0		
cutter	301-1,500	OTB	226	116	109	35	18	136
cutter	301-1,500	OTT			26	22	77	158
cutter	301-1,500	SSC	7	8	1	3	0	20
cutter	301-1,500	TBB	695	537	463	575	534	357
cutter	>1,500	OTB	1	24	14	22	0	38
cutter	>1,500	OTT	6		2	0		
cutter	>1,500	TBB	2,968	3,988	2,782	3,215	2,793	786
cutter	>1,500	TBP					0	10
cutter	>1,500	UKN	0	5	2	4		
highseas	>1,500	OTM		4	0	22	3	94
highseas	>1,500	PTM				0		9

a) Fishing gear codes are included in Appendix 4.
Source: Logbook data and VMS data, processed by LEI.

Table 3.3b		Value of landed catches of each fleet segment in the Frisian Front area (€1000) aggregated by fleet and gear						
Fleet	Gear a)	Value (€1000)						
		2006	2007	2008	2009	2010	2011	
cutter	GNS	0	0		0		2	
cutter	GTR				1			
cutter	OTB	1,017	884	864	516	997	1,067	
cutter	OTM	0						
cutter	OTT	363	80	158	149	264	1,076	
cutter	PTB	2					8	
cutter	SSC	7	8	1	3	0	20	
cutter	TBB	3,800	4,670	3,324	3,880	3,472	1,179	
cutter	TBP					0	15	
cutter	UKN	0	5	2	4	1		
cutter	GN				2			
highseas	OTM		4	0	22	3	94	
highseas	PTM				0		9	

a) Fishing gear codes are included in Appendix 4.
Source: Logbook data and VMS data, processed by LEI.

Table 3.4a Gross value added of landed catches of each fleet segment in the Frisian Front area (€1000)

Fleet	HP category	Gear a)	GVA (€1000)					2011 b)
			2006	2007	2008	2009	2010	
cutter	0-300	GN				1		
cutter	0-300	GNS	0	0				
cutter	0-300	OTB	210	156	238	92	166	244
cutter	0-300	OTM	0					
cutter	0-300	OTT	126	43	73	62	73	358
cutter	0-300	PTB	1					3
cutter	0-300	TBB	35	62	29	37	47	12
cutter	0-300	TBP						3
cutter	0-300	UKN				0		
cutter	301-1,500	GNS				0		
cutter	301-1,500	OTB	3	32	61	6	9	66
cutter	301-1,500	OTT			14	4	37	76
cutter	301-1,500	SSC	4	3	0	1	0	7
cutter	301-1,500	TBB	113	90	46	222	241	161
cutter	>1,500	OTB	0	10	8	7	0	18
cutter	>1,500	OTT	1		1	0		
cutter	>1,500	TBB	881	1259	757	1230	871	245
cutter	>1,500	TBP					0	5
cutter	>1,500	UKN				1		
highseas	>1,500	OTM		1	0	5	1	26
highseas	>1,500	PTM				0		2

a) Fishing gear codes are included in Appendix 4.

Source: Logbook data and VMS data, processed by LEI.

Table 3.4b Gross value added of landed catches of each fleet segment in the Frisian Front area (€1000) aggregated by fleet and gear

Fleet	Gear a)	GVA (€1000)					2011 b)
		2006	2007	2008	2009	2010	
cutter	GNS	0	0		0		1
cutter	OTB	213	198	307	105	175	328
cutter	OTM	0					
cutter	OTT	127	43	88	66	110	434
cutter	PTB	1					3
cutter	SSC	4	3	0	1	0	7
cutter	TBB	1,029	1,411	832	1,489	1,159	418
cutter	TBP					0	8
cutter	UKN				1		
cutter	GN				1		
highseas	OTM		1	0	5	1	26
highseas	PTM				0		2

a) Fishing gear codes are included in Appendix 4.

Source: Logbook data and VMS data, processed by LEI.

Foreign Fleet

Table 3.5 Effort of each foreign fleet segment in the Frisian Front area (days at sea) and the proportion of the time spent fishing

Fleet	HP category	Gear a)	Effort (days at sea)						Time spent fishing
			2006	2007	2008	2009	2010	2011	
BEL	unknown	UKN	0			0			1
BEL	0-300	OTB	24	14	21	28			0.23
BEL	0-300	TBB	1	0	1	1	20	49	0.64
BEL	0-300	TBS	0		0	0			1
BEL	301-1,500	OTB	1	2	2	14	0	0	0.08
BEL	301-1,500	SSC						1	0.25
BEL	301-1,500	TBB	3	6	3	57	5	4	0.76
BEL	301-1,500	UKN	6	10	7	0			1
DEU	unknown	GN		0					0.25
DEU	unknown	OTB		0					1
DEU	unknown	TBB		13					1
DEU	unknown	UKN		0					1
DEU	0-300	GN			0				0
DEU	0-300	GNS			2	1	1	1	0.85
DEU	0-300	GTR				0			1
DEU	0-300	OTB	59	43	57	126			0.52
DEU	0-300	OTT				8			0.5
DEU	0-300	PTB	1			1			1
DEU	0-300	SPR	1						1
DEU	0-300	TBB	74	4	35	29	52	38	0.76
DEU	0-300	TBS	4	4	6	3			1
DEU	0-300	UKN	0	0					1
DEU	301-1,500	DRB					0	2	1
DEU	301-1,500	OTB	7	11	4	43	19	9	0.71
DEU	301-1,500	TBB	114	159	154	132	117	81	0.8
DEU	301-1,500	UKN	0			0			1
DEU	>1,500	OTM	0	0				0	1
GBR	unknown	TBB	1		2				1
GBR	unknown	UKN		4	0	0			1
GBR	0-300	GN	7	2	3	1			0.29
GBR	0-300	GNS				1	1	2	1
GBR	0-300	OTB				2			0
GBR	0-300	OTT					0	3	0.33
GBR	0-300	SDN			0				1
GBR	0-300	TBB		5	3	2	2		0.33
GBR	0-300	UKN	1	0	1	0			1
GBR	301-1,500	FPO				0			1
GBR	301-1,500	OTB	2	3	13	11	12	2	0.3
GBR	301-1,500	OTT	6	4	6				0.18
GBR	301-1,500	SSC	2	3	2	2	2	12	0.59
GBR	301-1,500	TBB	81	92	54	60	62	42	0.63
GBR	301-1,500	UKN	0	0	4				1
GBR	>1,500	OTB			4		1	1	0.23
GBR	>1,500	OTT		0	0	0	1	2	0.43
GBR	>1,500	SSC		0					1
GBR	>1,500	TBB	10	9	10				0.59
GBR	>1,500	UKN	0	0	0	0			1

a) Fishing gear codes are included in Appendix 4.

Source: Logbook data and VMS data, processed by LEI.

Table A3.6 Landings of each foreign fleet segment in the Frisian Front area (tonnes)

Fleet	HP category	Gear a)	Landings (tonnes)					
			2006	2007	2008	2009	2010	2011
BEL	unknown	TBB				0		
BEL	unknown	UKN	0			0		
BEL	0-300	OTB	11	9	12	17		
BEL	0-300	TBB	0	0	0	0	22	59
BEL	0-300	TBS	0		0	0		
BEL	301-1,500	OTB	1	2	2	10	0	0
BEL	301-1,500	SSC						0
BEL	301-1,500	TBB	3	2	0	45	19	9
BEL	301-1,500	UKN	0	0	0	0		
DEU	unknown	GN		0				
DEU	unknown	OTB		0				
DEU	unknown	TBB		0				
DEU	unknown	UKN		0				
DEU	0-300	GN			0			
DEU	0-300	GNS			0	0	2	0
DEU	0-300	GTR				0		
DEU	0-300	OTB	48	33	39	59		
DEU	0-300	OTT				3		
DEU	0-300	PTB	0			0		
DEU	0-300	SPR	1					
DEU	0-300	TBB	41	0	2	15	51	40
DEU	0-300	TBS	0	0	0	0		
DEU	0-300	UKN	0	0				
DEU	301-1,500	DRB					0	0
DEU	301-1,500	OTB	6	8	4	48	40	17
DEU	301-1,500	TBB	160	224	232	181	237	165
DEU	301-1,500	UKN	0			0		
DEU	>1,500	OTM	1	0				6
GBR	unknown	TBB	0		0			
GBR	unknown	UKN		0	0	0		
GBR	0-300	GN	4	0	1	1		
GBR	0-300	GNS				0	0	1
GBR	0-300	OTB				0		
GBR	0-300	OTT					0	0
GBR	0-300	SDN			0			
GBR	0-300	TBB		4	4	0	0	
GBR	0-300	UKN	0	0	0	0		
GBR	301-1,500	FPO				0		
GBR	301-1,500	OTB	2	1	2	4	27	3
GBR	301-1,500	OTT	3	1	1			
GBR	301-1,500	SSC	0	0	0	0	3	0
GBR	301-1,500	TBB	80	147	72	55	262	80
GBR	301-1,500	UKN	0	0	0			
GBR	>1,500	OTB			1		3	0
GBR	>1,500	OTT		0	0	0	2	3
GBR	>1,500	SSC		0				
GBR	>1,500	TBB	3	12	12			
GBR	>1,500	UKN	0	0	0	0		

a) Fishing gear codes are included in Appendix 4.

Source: Logbook data and VMS data, processed by LEI.

Table A3.7 Value of landed catches of each foreign fleet segment in the Frisian Front area (€1000)

Fleet	HP category	Gear a)	Value (€1000)					
			2006	2007	2008	2009	2010	2011
BEL	unknown	TBB				0		
BEL	unknown	UKN	0			0		
BEL	0-300	OTB	53	46	56	66		
BEL	0-300	TBB	0	0	1	0	80	348
BEL	0-300	TBS	0		0	0		
BEL	301-1,500	OTB	3	6	3	22	0	0
BEL	301-1,500	SSC						0
BEL	301-1,500	TBB	7	11	1	179	48	26
BEL	301-1,500	UKN	0	0	0	0		
DEU	unknown	GN		0				
DEU	unknown	OTB		0				
DEU	unknown	TBB		0				
DEU	unknown	UKN		0				
DEU	0-300	GN			0			
DEU	0-300	GNS			0	0	16	3
DEU	0-300	GTR				0		
DEU	0-300	OTB	128	110	111	190		
DEU	0-300	OTT				11		
DEU	0-300	PTB	1			0		
DEU	0-300	SPR	2					
DEU	0-300	TBB	141	1	10	51	170	222
DEU	0-300	TBS	0	0	0	0		
DEU	0-300	UKN	0	0				
DEU	301-1,500	DRB					0	0
DEU	301-1,500	OTB	16	23	11	105	120	34
DEU	301-1,500	TBB	605	915	895	577	731	408
DEU	301-1,500	UKN	0			0		
DEU	>1,500	OTM	1	0				0
GBR	unknown	TBB	0		0			
GBR	unknown	UKN		0	0	0		
GBR	0-300	GN	9	1	2	1		
GBR	0-300	GNS				0	0	3
GBR	0-300	OTB				0		
GBR	0-300	OTT					0	0
GBR	0-300	SDN			0			
GBR	0-300	TBB		17	11	0	0	
GBR	0-300	UKN	0	0	0	0		
GBR	301-1,500	FPO				0		
GBR	301-1,500	OTB	5	3	4	7	45	5
GBR	301-1,500	OTT	6	3	3			
GBR	301-1,500	SSC	0	0	1	1	7	0
GBR	301-1,500	TBB	208	418	170	162	534	202
GBR	301-1,500	UKN	0	0	0			
GBR	>1,500	OTB			3		7	0
GBR	>1,500	OTT		1	0	0	4	6
GBR	>1,500	SSC		0				
GBR	>1,500	TBB	7	32	28			
GBR	>1,500	UKN	0	0	0	0		

a) Fishing gear codes are included in Appendix 4.

Source: Logbook data and VMS data, processed by LEI.

Cleaver Bank

Dutch Fleet

Table A3.8 Effort of each fleet segment in the Cleaver Bank area (days at sea) and the proportion of the time spent fishing

Fleet	HP category	Gear a)	Effort (days at sea)						Time spent fishing
			2006	2007	2008	2009	2010	2011	
cutter	0-300	OTB	49	76	57	47	84	37	0.73
cutter	0-300	OTM	2				6		1.00
cutter	0-300	OTT	43	34	10	27	45	57	0.71
cutter	0-300	PTB	3	3		0	3		1.00
cutter	0-300	SSC					5	6	0.55
cutter	0-300	TBB	2	0	1		0	7	0.72
cutter	0-300	UKN				1			1.00
cutter	301-1,500	GNS				0		1	0.26
cutter	301-1,500	GTR				3	3	15	1.00
cutter	301-1,500	OTB	18	33	39	36	10	9	0.59
cutter	301-1,500	OTT			3	15	24	16	0.64
cutter	301-1,500	SDN			7		3	2	0.52
cutter	301-1,500	SSC	0	8	6	32	31	26	0.66
cutter	301-1,500	TBB	1	1		1	1		0.73
cutter	>1,500	OTB		0	7	0	4	1	0.08
cutter	>1,500	TBB	18	39	20	43	39	55	0.46
cutter	>1,500	TBP					5	23	0.78
highseas	>1,500	OTM	2	2	1	1	0	3	1.00
highseas	>1,500	PTM	1	1	1	1	1	1	1.00

a) Fishing gear codes are included in Appendix 4.

Source: Logbook data and VMS data, processed by LEI.

Table A3.9 Landings of each fleet segment in the Cleaver Bank area (tonnes)

Fleet	HP category	Gear a)	Landings (tonnes)					
			2006	2007	2008	2009	2010	2011
cutter	0-300	OTB	54	95	77	97	178	78
cutter	0-300	OTM	3				20	
cutter	0-300	OTT	41	41	13	59	105	108
cutter	0-300	PTB	3	3		1	3	
cutter	0-300	SSC					18	31
cutter	0-300	TBB	3	1	1		0	5
cutter	0-300	UKN				1		
cutter	301-1,500	GNS				0		9
cutter	301-1,500	GTR				5	4	26
cutter	301-1,500	OTB	28	49	68	134	30	45
cutter	301-1,500	OTT			9	32	51	36
cutter	301-1,500	SDN			34		20	14
cutter	301-1,500	SSC	1	40	28	160	133	150
cutter	301-1,500	TBB	2	1		2	3	
cutter	>1,500	OTB		0	35	1	27	3
cutter	>1,500	TBB	168	302	167	356	316	460
cutter	>1,500	TBP					26	108
highseas	>1,500	OTM	31	55	1	0	9	76
highseas	>1,500	PTM	0	0	0	0	0	8

a) Fishing gear codes are included in Appendix 4.

Source: Logbook data and VMS data, processed by LEI.

Table A3.10a Value of landed catches of each fleet segment in the Cleaver Bank area (€1000)

Fleet	HP category	Gear a)	Value (€1000)					
			2006	2007	2008	2009	2010	2011
cutter	0-300	OTB	195	453	315	273	555	268
cutter	0-300	OTM	7				29	
cutter	0-300	OTT	186	193	59	157	331	433
cutter	0-300	PTB	7	18		1	7	
cutter	0-300	SSC					42	81
cutter	0-300	TBB	13	2	6		0	17
cutter	0-300	UKN				3		
cutter	301-1,500	GNS				0		27
cutter	301-1,500	GTR				7	6	41
cutter	301-1,500	OTB	123	232	239	284	69	111
cutter	301-1,500	OTT			26	82	121	124
cutter	301-1,500	SDN			183		36	40
cutter	301-1,500	SSC	2	100	91	567	485	511
cutter	301-1,500	TBB	7	6		4	9	
cutter	>1,500	OTB		0	79	1	44	8
cutter	>1,500	TBB	540	919	478	941	818	1,039
cutter	>1,500	TBP					84	274
highseas	>1,500	OTM	8	14	0	0	3	25
highseas	>1,500	PTM	0	0	0	0	0	3

a) Fishing gear codes are included in Appendix 4.

Source: Logbook data and VMS data, processed by LEI.

Table A3.10b Value of landed catches of each fleet segment in the Cleaver Bank area (€1000) aggregated by fleet and gear

Fleet	Gear a)	Value (€1000)					
		2006	2007	2008	2009	2010	2011
cutter	GNS				0		27
cutter	GTR				8	6	41
cutter	MIS		0				
cutter	OTB	318	685	633	558	668	387
cutter	OTM	7				29	
cutter	OTT	195	193	85	239	452	557
cutter	PTB	7	18		1	7	
cutter	SDN			183		36	40
cutter	SSC	2	100	91	567	527	592
cutter	TBB	560	927	484	945	827	1056
cutter	TBP					84	274
cutter	UKN		6	1	5	4	
highseas	OTM	8	14	0	0	3	25
highseas	PTM	0	0	0	0	0	3

a) Fishing gear codes are included in Appendix 4.

Source: Logbook data and VMS data, processed by LEI.

Table A3.11a Gross value added (GVA) of landed catches of each fleet segment in the Cleaver Bank area (€1000)

Fleet	HP category	Gear a)	GVA (€1000)					
			2006	2007	2008	2009	2010	2011 b)
cutter	0-300	OTB	69	243	175	135	217	104
cutter	0-300	OTM	3				10	
cutter	0-300	OTT	66	103	33	77	129	169
cutter	0-300	PTB	3	8		1	3	
cutter	0-300	SSC					15	32
cutter	0-300	TBB	3	1	2		0	6
cutter	0-300	UKN				2		
cutter	301-1,500	GNS						12
cutter	301-1,500	GTR				3	3	18
cutter	301-1,500	OTB	2	64	133	53	34	53
cutter	301-1,500	OTT			15	15	59	60
cutter	301-1,500	SDN			66		13	15
cutter	301-1,500	SSC	2	39	35	244	176	186
cutter	301-1,500	TBB	1	1		2	4	
cutter	>1,500	OTB		0	49		0	
cutter	>1,500	TBB	161	290	131	361	255	323
cutter	>1,500	TBP					47	149
highseas	>1,500	OTM	1	4	0	0	1	7
highseas	>1,500	PTM	0	0	0	0	0	1

a) Fishing gear codes are included in Appendix 4.

Source: Logbook data and VMS data, processed by LEI.

Table A3.11b Gross value added (GVA) of landed catches of each fleet segment in the Cleaver Bank area (€1000) aggregated by fleet and gear

Fleet	Gear a)	GVA (€1000)					
		2006	2007	2008	2009	2010	2011 b)
cutter	GNS						12
cutter	GTR				3	3	18
cutter	MIS		0				
cutter	OTB	71	308	358	188	250	157
cutter	OTM	3				10	
cutter	OTT	70	103	48	92	188	229
cutter	PTB	3	8		1	3	
cutter	SDN			66		13	15
cutter	SSC	2	39	35	244	191	218
cutter	TBB	165	292	133	363	259	329
cutter	TBP					47	149
cutter	UKN		2	0	3	2	
highseas	OTM	1	4	0	0	1	7
highseas	PTM	0	0	0	0	0	1

a) Fishing gear codes are included in Appendix 4.

Source: Logbook data and VMS data, processed by LEI.

Foreign Fleet

Table A3.12 Effort of each foreign fleet segment in the Cleaver Bank area (days at sea) and the proportion of the time spent fishing

Fleet	HP category	Gear a)	Effort (days at sea)						Time spent fishing
			2006	2007	2008	2009	2010	2011	
BEL	unknown	UKN			6	0			1
BEL	0-300	OTB	17	9	5	39			0.21
BEL	0-300	OTT				2			0
BEL	0-300	TBB	0	1			8	17	0.73
BEL	301-1,500	OTB		0	0	2	2	6	0.59
BEL	301-1,500	SSC						0	0
BEL	301-1,500	TBB	2	6	1	1	10	16	0.78
BEL	301-1,500	UKN	23	29	18	0			1
DEU	0-300	OTB	24	52	27	82			0.79
DEU	0-300	PTB	1	4		15			1
DEU	0-300	TBB	0		1	1	66	34	0.74
DEU	0-300	TBS	0	0	1	1			1
DEU	0-300	UKN	0						1
DEU	301-1,500	OTB	9	14	16	31	19	3	0.76
DEU	301-1,500	OTM						0	1
DEU	301-1,500	PTB	1						1
DEU	301-1,500	TBB	5	5	6	12	4	9	0.72
DEU	301-1,500	UKN	1						1
DEU	>1,500	OTB					0	0	1
DEU	>1,500	OTM	1	1	0	6		0	1
GBR	unknown	UKN	0	8	0	0			1
GBR	0-300	GN	2	1	3	6			0.13
GBR	0-300	GNS				1	3	2	0.77
GBR	0-300	OTB				1	1	0	0.2
GBR	0-300	OTT					0	0	0.24
GBR	0-300	SDN				0	0		0.16
GBR	0-300	TBB					0		0.33
GBR	0-300	UKN	7	5	12	0			1
GBR	301-1,500	FPO	2			0			1
GBR	301-1,500	OTB		1	4	5	26	3	0.52
GBR	301-1,500	OTM					1		1
GBR	301-1,500	OTT	1	0	1				0.38
GBR	301-1,500	SSC				2	2	1	0.51
GBR	301-1,500	TBB	64	40	18	47	37	44	0.68
GBR	301-1,500	TBS		0					1
GBR	301-1,500	UKN	8	8	10	0			1
GBR	>1,500	OTB			2				0.51
GBR	>1,500	OTM						1	1
GBR	>1,500	OTT		1	0		0	1	0.34
GBR	>1,500	PTM	1	1	1	0	1	0	1
GBR	>1,500	TBB	42	57	11				0.79
GBR	>1,500	UKN	0	0		0			1

a) Fishing gear codes are included in Appendix 4.

Source: Logbook data and VMS data, processed by LEI.

Table A3.13 Landings of each foreign fleet segment in the Cleaver Bank area (tonnes)

Fleet	HP category	Gear a)	Landings (tonnes)					
			2006	2007	2008	2009	2010	2011
BEL	unknown	UKN			0	0		
BEL	0-300	OTB	17	5	3	22		
BEL	0-300	OTT				2		
BEL	0-300	TBB	0	0			7	16
BEL	301-1,500	OTB		0	0	2	9	52
BEL	301-1,500	SSC						0
BEL	301-1,500	TBB	1	5	0	3	47	57
BEL	301-1,500	UKN	0	0	0	0		
DEU	0-300	OTB	24	52	33	99		
DEU	0-300	PTB	0	3		32		
DEU	0-300	TBB	0		0	0	102	54
DEU	0-300	TBS	0	0	0	0		
DEU	0-300	UKN	0					
DEU	301-1,500	OTB	13	13	19	79	77	13
DEU	301-1,500	OTM						0
DEU	301-1,500	PTB	0					
DEU	301-1,500	TBB	6	10	9	22	13	26
DEU	301-1,500	UKN	0					
DEU	>1,500	OTB					0	0
DEU	>1,500	OTM	2	0	11	0		10
GBR	unknown	UKN	0	0	0	0		
GBR	0-300	GN	1	1	2	4		
GBR	0-300	GNS				0	0	1
GBR	0-300	OTB				0	3	0
GBR	0-300	OTT					0	1
GBR	0-300	SDN				0	0	
GBR	0-300	UKN	0	0	0	0		
GBR	301-1,500	FPO	0			0		
GBR	301-1,500	OTB		2	1	3	84	3
GBR	301-1,500	OTM					0	
GBR	301-1,500	OTT	1	0	1			
GBR	301-1,500	SSC				7	4	0
GBR	301-1,500	TBB	172	122	75	148	156	293
GBR	301-1,500	TBS		0				
GBR	301-1,500	UKN	0	0	0	0		
GBR	>1,500	OTB			2			
GBR	>1,500	OTM						101
GBR	>1,500	OTT		3	0		1	4
GBR	>1,500	PTM	3	0	0	0	0	12
GBR	>1,500	TBB	141	190	46			
GBR	>1,500	UKN	0	0		0		

a) Fishing gear codes are included in Appendix 4.

Source: Logbook data and VMS data, processed by LEI.

Table A3.14 Value of landed catches of each foreign fleet segment in Cleaver Bank area (€1000)

Fleet	HP category	Gear a)	Value (€1000)					
			2006	2007	2008	2009	2010	2011
BEL	unknown	UKN			0	0		
BEL	0-300	OTB	87	26	14	62		
BEL	0-300	OTT				4		
BEL	0-300	TBB	0	0			27	69
BEL	301-1,500	OTB		0	0	2	42	90
BEL	301-1,500	SSC						0
BEL	301-1,500	TBB	2	14	0	6	124	159
BEL	301-1,500	UKN	0	0	0	0		
DEU	0-300	OTB	63	175	90	231		
DEU	0-300	OTM	0					
DEU	0-300	PTB	1	8		77		
DEU	0-300	TBB	0		0	0	321	206
DEU	0-300	TBS	0	0	0	0		
DEU	0-300	UKN	0					
DEU	301-1,500	OTB	32	35	47	156	195	33
DEU	301-1,500	OTM						0
DEU	301-1,500	PTB	0					
DEU	301-1,500	TBB	25	39	37	56	39	69
DEU	301-1,500	UKN	0					
DEU	>1,500	OTB					0	0
DEU	>1,500	OTM	2	0	9	0		33
GBR	unknown	UKN	0	0	0	0		
GBR	0-300	GN	2	4	5	9		
GBR	0-300	GNS				1	0	2
GBR	0-300	OTB				1	5	0
GBR	0-300	OTT					2	1
GBR	0-300	SDN				0	0	
GBR	0-300	UKN	0	0	0	0		
GBR	301-1,500	FPO	0			0		
GBR	301-1,500	OTB		5	2	5	299	4
GBR	301-1,500	OTM					0	
GBR	301-1,500	OTT	2	0	1			
GBR	301-1,500	SSC				11	9	0
GBR	301-1,500	TBB	450	347	178	357	427	637
GBR	301-1,500	TBS		0				
GBR	301-1,500	UKN	0	0	0	0		
GBR	>1,500	OTB			4			
GBR	>1,500	OTM						202
GBR	>1,500	OTT		7	1		2	6
GBR	>1,500	PTM	2	0	0	0	0	1
GBR	>1,500	TBB	375	520	112			
GBR	>1,500	UKN	0	0		0		

a) Fishing gear codes are included in Appendix 4.

Source: Logbook data and VMS data, processed by LEI.

Appendix 4

Gear codes

Table A4.1 Gear codes used in the report and the gears	
Gear code	Gear type
FPO	Pots
GN	Gillnets (notspecified)
GNC	Encircling gillnets
GND	Drift nets
GNS	Set gillnets (anchored)
GTN	Combined gillnets-Trammel nets
GTR	Trammel nets
LHP	Hand-lines and pole-lines (hand operated)
LL	Longlines (not specified)
LLD	Driftinglonglines
LLS	Set lines (longlines set)
LN	Lift nets (notspecified)
MIS	MISCELLANEOUS GEAR
OTB	Otter trawls bottom
OTM	Otter trawls midwater
OTT	Otter twin trawls
PTB	Pair trawls bottom
PTM	Pair trawls mid-water
SDN	Danish seines
SSC	Scottish seines
TBB	Beam trawls
TBS	Shrimp trawls

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