Economic value of Marine Protected Areas in British waters for Dutch fisheries

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Wageningen University &

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Summary

A portion of the British Exclusive Economic Zone (EEZ) has been designated as a Marine Protected Area (MPA). For some of these MPAs, research is being conducted to determine which types of fishing may pose a threat to vulnerable species, potentially leading to area closures or fishing restrictions. This concerns the so-called Stage 4 MPAs. For other MPAs, known as Byelaw MPAs, closures to bottom-contacting fishing have already been implemented.

The purpose of this research was to determine the annual economic value of landings for the key segments of the Dutch fleet in the 18 British MPAs that are either being considered for closure or have already been closed, during the period 2014-2023. Additionally, the average value of the landings over the 2014-2023 period was determined. Moreover, the share of landings in these MPAs was calculated in comparison to the total landings of the Dutch fleet segments in British waters, and in comparison to overall landings.

To determine the value of these MPAs for Dutch fisheries, location data from the Vessel Monitoring System (VMS) and logbook data, where landings are recorded per day or fishing trip, were used. By linking these two data types, it was possible to determine at a fine spatial scale which portion of the landings was caught within the MPAs and what their value was. For the Stage 4 MPAs, this was done for beam trawl, otter trawl, flyshoot, and pelagic fisheries. For the Byelaw MPAs, pelagic fishing was not included as there is a ban on bottom-towed gears in these areas. In addition to the economic value per fleet segment, the economic value per fishery region was also determined based on the port where the catch was landed. Due to the size and proximity of the MPA Southern North Sea, maps were created showing the spatial distribution of the average value for the four fleet segments in this MPA.

The economic value of the MPA Southern North Sea is by far the largest, peaking in 2018 at over 45 million euros and fluctuating around 22 million euros since 2020. The vast majority of this was landed by the beam trawl fleet, for which the MPA Southern North Sea represented 80.2% of landings in UK waters and 22.5% of overall landings. The other Stage 4 MPAs are of lesser economic importance. Among the Byelaw MPAs, North Norfolk Sandbanks and Saturn Reef, and Haisborough, Hammond and Winterton are the most significant areas, where beam trawl fishing is by far the most important, though they still represent less than 1% of the total landings value of The other Byelaw MPAs are of little or no importance to the Dutch bottom-trawling fleet.

The fishery region Zuidwest-Nederland had the largest share of landings from the MPA Southern North Sea, by far the most important MPA, followed by IJmuiden. Kop van Noord-Holland was the next most important fishery region, although in recent years, more landings have been made in the Scheveningen-Katwijk region. Belgian ports are becoming increasingly important. Catches from the MPA Outer Thames were primarily landed in the Southwest Netherlands and Kop van Noord-Holland regions. Catches from the two most important Byelaw MPAs, Haisborough, Hammond and Winterton, and North Norfolk Sandbanks and Saturn Reef, were mainly landed in the 'Kop van Noord-Holland' region, although this region's share has significantly decreased in recent years. The beam trawl fleet, the most important segment in the MPA Southern North Sea, primarily fishes in the central part of the area.

For all MPAs where significant Dutch catches are reported, their importance to the Dutch fishing sector has decreased since 2014, with a particularly sharp decline since 2020. The linking of VMS data and logbooks introduces uncertainties that can result in differing estimates of total landings per area. The allocation of logbook data for which no VMS data is available is also based on assumptions about fishing activity within MPAs. Therefore, the results should be interpreted with some caution.

1 Introduction

The British Exclusive Economic Zone (EEZ) is of economic importance to the Dutch fishing sector. A portion of the British EEZ has been designated as a Marine Protected Area (MPA) with the aim of protecting, among other things, seabirds, marine mammals, and vulnerable marine habitats. For some of these MPAs, research is being conducted to determine which types of fishing may pose a threat to vulnerable species, which could lead to area closures or fishing restrictions. For certain MPAs, closures to bottom-towed gears have already been implemented based on research. Given the economic significance of the British zone for the Dutch fleet, these area closures also have implications for the Dutch fishing sector.

Research is currently being conducted on whether five MPAs should be closed to certain types of fishing (Stage 4), and as of March 22, 2024, (parts of) 13 MPAs have been closed to bottom-towed fishing (Marine Protected Areas Bottom Towed Fishing Gear Byelaw, 2023). These two groups are referred to in this report as Stage 4 MPAs and Byelaw MPAs, respectively.

Table 1: *Marine Protected Areas (MPAs) studied in this research, including the type of protection, fishing gears to which (possible) closures apply, and timeframe of closures.*

MPA	Source/Protection type	Relevant fishing gears	Timeframe
Greater Wash MPA	Marine Birds (stage 4)	bottom towed gear, midwater gear, anchored nets and lines, traps	Investigation pending
Liverpool Bay MPA	Marine Birds (stage 4)	bottom towed gear, midwater gear, anchored nets and lines, traps	Investigation pending
Outer Thames Estuary MPA	Marine Birds (stage 4)	bottom towed gear, midwater gear, anchored nets and lines, traps	Investigation pending
Bristol Channel Approaches MPA	Porpoises (stage 4)	bottom towed gear, lines, midwater gear, nets (gillnets), traps	Investigation pending
Southern North Sea MPA	Porpoises (stage 4)	bottom towed gear, lines, midwater gear, nets (gillnets), traps	Investigation pending
Cape Bank Marine Conservation Zone	MPA stage 2 bye-law	bottom towed gear	Closed since 22 March 2024
Land's End and Cape Bank Special Area of Conservation	MPA stage 2 bye-law	bottom towed gear	Closed since 22 March 2024
East of Haig Fras Marine Conservation Zone	MPA stage 2 bye-law	bottom towed gear	Closed since 22 March 2024
Farnes East Marine Conservation Zone	MPA stage 2 bye-law	bottom towed gear	Closed since 22 March 2024
Foreland Marine Conservation Zone	MPA stage 2 bye-law	bottom towed gear	Closed since 22 March 2024
Goodwin Sands Marine Conservation Zone	MPA stage 2 bye-law	bottom towed gear	Closed since 22 March 2024
Haig Fras Special Area of Conservation	MPA stage 2 bye-law	bottom towed gear	Closed since 22 March 2024
Haisborough, Hammond and Winterton Special Area of Conservation	MPA stage 2 bye-law	bottom towed gear	Closed since 22 March 2024
Hartland Point to Tintagel Marine Conservation Zone	MPA stage 2 bye-law	bottom towed gear	Closed since 22 March 2024
North Norfolk Sandbanks and Saturn Reef Special Area of Conservation	MPA stage 2 bye-law	bottom towed gear	Closed since 22 March 2024
Offshore Brighton Marine Conservation Zone	MPA stage 2 bye-law	bottom towed gear	Closed since 22 March 2024
South of Celtic Deep Marine Conservation Zone	MPA stage 2 bye-law	bottom towed gear	Closed since 22 March 2024
Wight-Barfleur Reef Special Area of Conservation	MPA stage 2 bye-law	bottom towed gear	Closed since 22 March 2024

2 Assignment

The aims of this study were to:

1. Determine the annual economic value of landings for the key segments of the Dutch fleet in the 18 British MPAs that are either being considered for closure or have already been closed during the period 2014-2023. Additionally, the average value of the landings over the 2014-2023 period was calculated.
2. Calculate the share of these landings within the MPAs in relation to the total landings of the Dutch fleet segments in British waters and the total overall landings of the fleet segments.

3 Materials and Methods

3.1 VMS and logbook data

The Dutch "Vessel Monitoring System" (VMS) has been in use since January 1, 2000, and is managed by the Netherlands Food and Consumer Product Safety Authority (NVWA). The data collected are used for monitoring, detection, and enforcement, but can also be employed to analyse the spatial dynamics of fishing fleets. Since 2005, vessels longer than 15 meters have been subject to VMS, while before that, only vessels longer than 24 meters were required to be equipped with VMS. Since 2012, all vessels longer than 12 meters have been included in the group of vessels that must carry VMS. At regular intervals, a VMS signal (ping) is sent to a satellite and recorded by the coast guard, storing the vessel's ID, time, geographic position, speed, and course.

Based on the ID, time, and position, VMS data can be linked to fishery logbook data. Logbooks record daily what fishers have caught during a fishing trip. In addition to the catch quantities per species, the logbooks also contain information about the type of gear used, the vessel's dimensions and mesh size, the vessel's engine power, and the ICES quadrant where most of the catch was made. By linking VMS pings and logbook data, it is possible to more accurately investigate the fishing intensity and value for a specific segment of the Dutch fleet. An estimate is made of whether a vessel is fishing based on the recorded speed and known fishing behaviour per fleet segment. Only the VMS pings where fishing activities are assumed to take place are included in further analysis. Catches, as recorded in the logbooks, are assigned to the fishing VMS pings according to a specific method, allowing the study of fishing intensity on a higher spatial scale. A detailed description of the method used can be found in Hintzen et al. (2013).

3.2 MPAs and fleet segments

Figure 1 displays the MPAs that were examined in this study. The shapefiles of the MPAs investigated were obtained from JNCC (2024), with a distinction made between Byelaw MPAs and Stage 4 MPAs. For the Byelaw MPAs Celtic Deep, Farnes East, Foreland, Goodwin Sands, Haig Fras, Haisborough, Hammond and Winterton, Hartland Point to Tintagel, North Norfolk Sandbanks and Saturn Reef, and Offshore Brighton, only a portion of the area is closed to bottom-towed gears. The coordinates of the closed areas were obtained from the Marine Protected Areas Bottom Towed Fishing Gear Byelaw (2023) and converted into shapefiles using the R-package sf. Land’s End and Cape Bank lies entirely within Cape Bank and was therefore not included in the analysis (and is not shown in Figure 1).

For the Stage 4 MPAs Greater Wash, Liverpool Bay, Outer Thames Estuary, Bristol Channel Approaches, and Southern North Sea, the analysis was conducted for the fleet segments beam trawlers (TBB, PUL, SUM), flyshooters (SSC), bottom otter trawlers (OTB, QUA, OTT), and pelagic trawlers (OTM, PTM). These segments were selected because they may no longer be allowed to fish in the British MPAs and because they are known to operate in the British EEZ. For the other MPAs, pelagic trawlers were not included, as the closures there only apply to bottom-towed gears. Fishing with gillnets, handlines, and pots was not included, as VMS and logbook data indicate that these mostly small-scale fleets do not fish extensively in British waters.

Since some MPAs partially overlap (for example, the Greater Wash MPA and the Southern North Sea MPA), conclusions about cumulative value must be drawn with caution: part of the landings might be double-counted, making it impossible to sum up the value across the different areas.

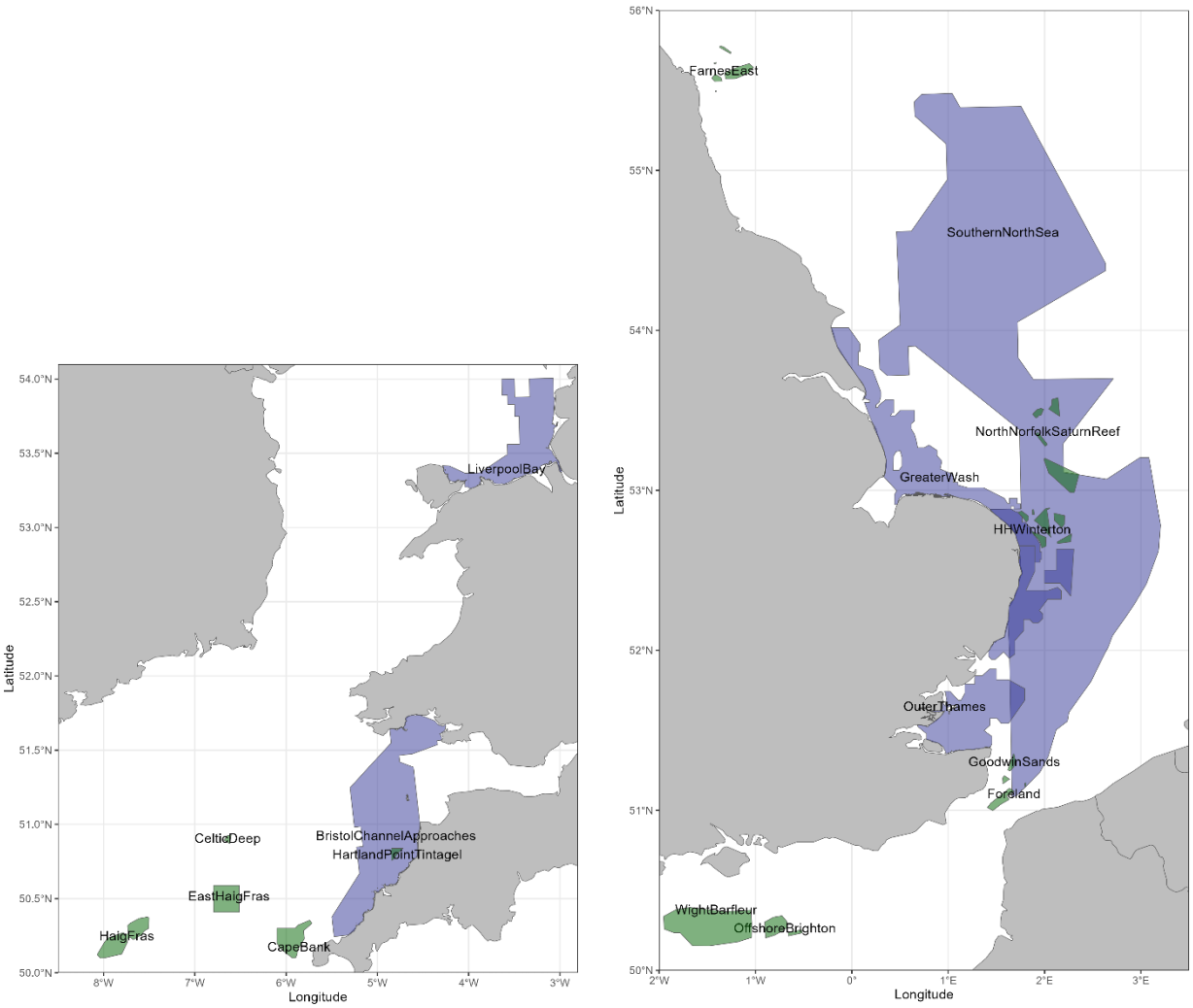


Figure 1: *Marine Protected Areas (MPAs) for which Dutch fishing activity is studied. In blue, MPAs where area closures are under investigation (Stage 4), in green (parts of) Byelaw MPAs that are already closed to bottom-contacting gears. The names of some MPAs have been abbreviated.*

3.3 Analysis

To determine the value of the British MPAs in recent years, VMS and logbook data from 2014-2023 were analyzed. The logbook data were linked to the VMS data, and it was determined for each VMS ping whether it fell within one of the MPAs. The total value of the landings recorded in the logbooks was summed and aggregated across the MPAs and for the relevant métiers and fishery regions.

The analysis was conducted for all fishing trips where VMS data were available. For a small portion of the logbook data, no VMS data were available, and for these trips, landings were only known per ICES rectangle. To still assign these landings to MPAs, the ratio of landings inside and outside the MPAs for trips with VMS data in the same fleet segment was used. From this dataset, the fraction caught within the MPA was determined per year and per ICES rectangle that overlaps with an MPA. The economic value per ICES rectangle from the logbooks without VMS data was then multiplied by that fraction and added to the total value of the MPA based on trips with VMS data. This is based on the assumption that the fishing behaviour on trips without VMS data does not differ from the fishing behaviour of trips with VMS data. This accounted for a small portion of the total value, as VMS data are available for most trips of vessels larger than 12 meters. At the beginning of the study period, there were more trips without VMS data, ranging from 16 to 19 percent for the years 2014-2017. From 2018 onwards, this was a maximum of 1 percent.

The economic value is presented per year, broken down by fleet segment and by the fishery region (Zuidwest-Nederland, Scheveningen-Katwijk, IJmuiden, Kop van Noord-Holland, Waddenkust, Urk) where the home port of the vessels is located.

Furthermore, the percentage of the catch in the British EEZ caught within the MPA was determined, averaged over the period 2014-2023. The values of the catch in each MPA were also expressed as percentages of the overall total value of the catches of each fleet segment and fishery region.

The MPA Southern North Sea covers a large area that borders the Dutch EEZ. Due to the economic importance given the size and proximity of this area, maps were created showing the spatial distribution of the average value for the four fleet segments per 1/16th ICES rectangle (0.25 x 0.125 degrees) over the period 2014-2023. Fishing trips without VMS data were not included in these maps.

4 Results

4.1 Economic value per fleet segment

Figure 2 shows the annual economic value of the Stage 4 MPAs. The economic value of the MPA Southern North Sea is by far the largest. It peaked in 2018 at over 45 million euros and has fluctuated around 22 million euros since 2020. The vast majority of this was landed by the beam trawl fleet. Since 2014, there have been annual landings by flyshooters in this area. In 2023, this share increased, with landings by bottom otter trawls and pelagic fishing also reported. The other Stage 4 MPAs are of lesser economic importance. From the MPA Outer Thames, around 700,000 euros are landed annually, almost exclusively by the beam trawl fleet. The MPA Bristol Channel Approaches is of limited importance to the pelagic fleet: on average, over the period 2014-2023, market-value landings there amounted to around 70,000 euros per year.

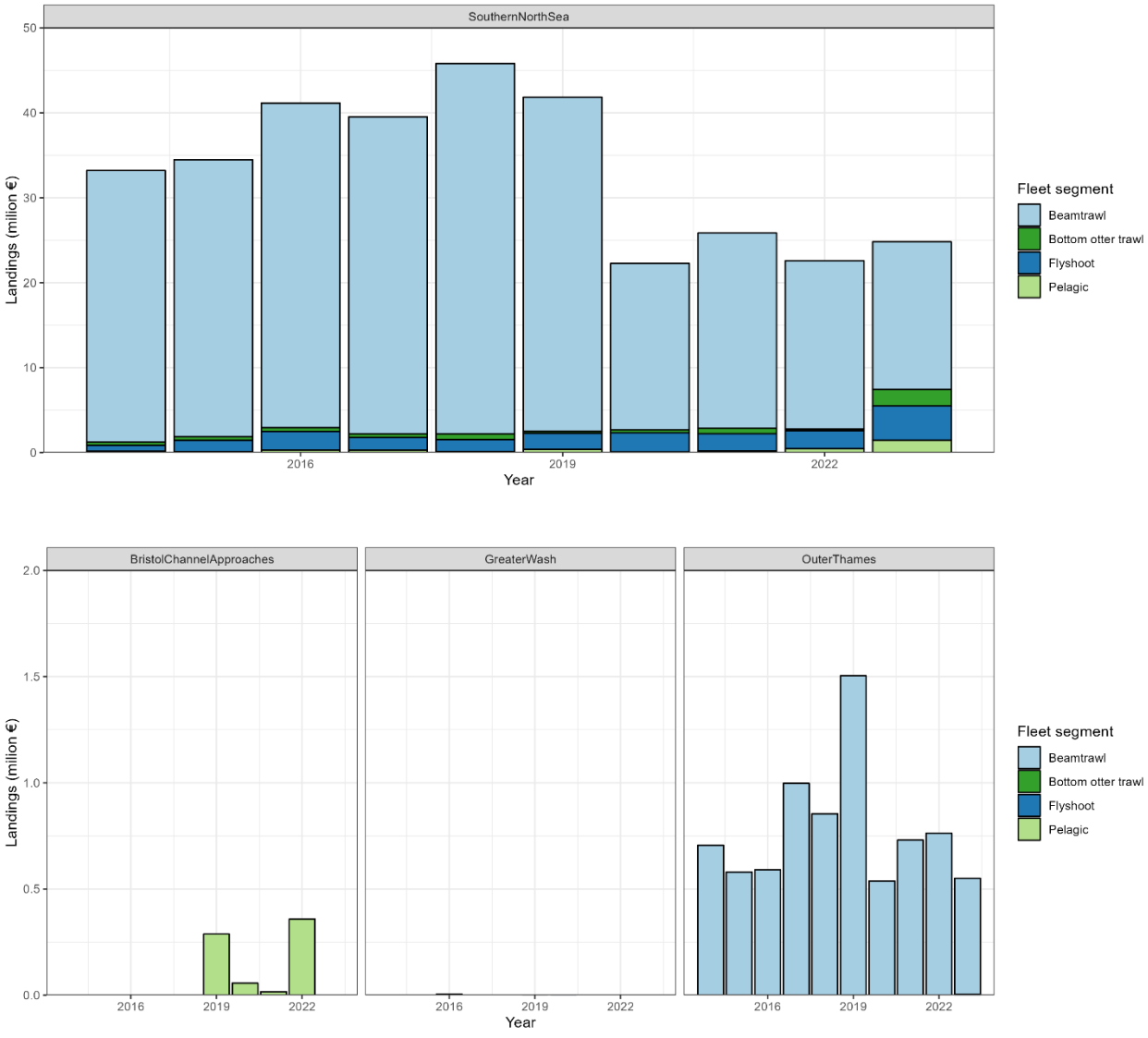


Figure 2: *Annual economic value per fleet segment of the Stage 4 MPAs Bristol Channel Approaches, Greater Wash, Outer Thames and Southern North Sea. In the Stage 4 MPA Liverpool Bay no landings were reported. The y-axis differs for the MPA Southern North Sea compared to the other MPAs.*

Figure 3 shows the annual economic value of (parts of) the Byelaw MPAs that are already closed to bottom-contacting gears. The main areas are North Norfolk Sandbanks and Saturn Reef and Haisborough, Hammond and Winterton. Between 2013 and 2018, the economic value of the former ranged from 350,000 to 500,000 euros; since 2020, the value has been less than 100,000 euros. The MPA Haisborough, Hammond and Winterton has decreased in value from 300,000 to approximately 60,000 euros between 2013 and 2023. For both MPAs, beam trawling is by far the most important activity. The other Byelaw MPAs are of no or minor importance to the Dutch bottom-contacting fleet.

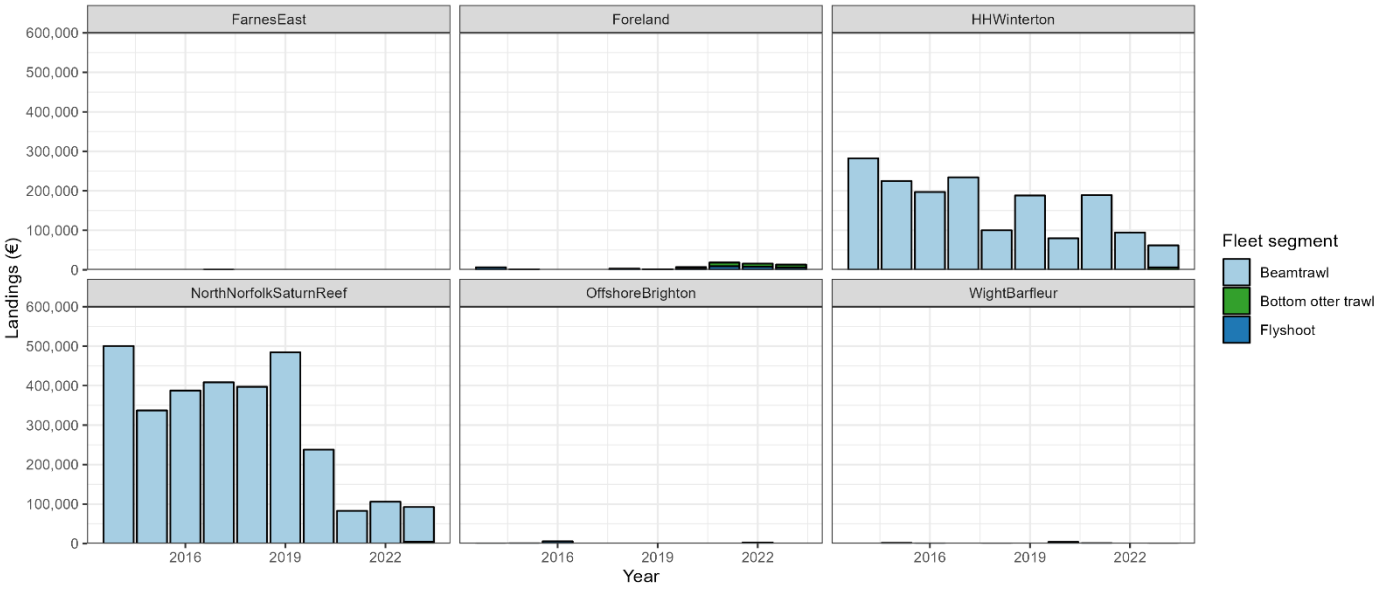


Figure 3: *Annual economic value per fleet segment of the Byelaw MPAs Farnes East, Foreland, Haisborough, Hammond and Winterton, North Nortfolk Sandbanks and Saturn Reef, Offshore Brighton en Wight Barfleur. In the other Byelaw MPA's, no landings were reported.*

Table 2 shows the average economic value over the period 2014-2023 for the examined MPAs and fleet segments, as well as the total economic value of the British EEZ and the whole fleet segment. In most MPAs, no landings were reported. When comparing the values of the MPAs to the value of total British EEZ. Table 3 shows the percentage that the value of the MPAs represents of the total annual value of the British EEZ as well as of the overall total landings, averaged over the period 2014-2023. It is evident that the MPA Southern North Sea represents a significant percentage of the landings in British waters, namely 80.2% for the beam trawl fleet, 27.6% for the bottom otter trawl fleet, 25.8% for the flyshooters, and 2% for the pelagic fleet. The Outer Thames represents 2.1% of the economic value of British waters for the beam trawl fleet. The other MPAs represent less than 1% of the value of British waters for the selected fleet segments. The Southern North Sea represents a significant share of total landings of beam trawlers (22.5%), flyshooters (8.7%) and bottom otter trawlers (3.2%). Outer Thames MPA represents 0.6% of total landings of beam trawlers. The other MPAs represent less than 0.5% of the landings of the studied fleet segments.

Table 2: *Annual economic value of the examined MPAs for the fleet segments beam trawl, flyshooters, pelagic, and bottom otter trawl, averaged over the period 2014-2023, as well as the total value of the British EEZ and overall total landings value of each fleet segment. The value for the Byelaw MPAs is not provided for pelagic fishing because they are only closed to bottom-contacting gears.*

MPA	Source	Beam trawl (€)	Flyshoot (€)	Pelagic (€)	Bottom otter trawl (€)
SouthernNorthSea	Stage 4	30,836,378	1,955,594	350,288	574,376
OuterThames	Stage 4	792,312	135	0	316
GreaterWash	Stage 4	505	53	0	0
BristolChannelApproaches	Stage 4	0	0	72,033	0
LiverpoolBay	Stage 4	0	0	0	0
NorthNorfolkSaturnReef	Byelaw	309,100	7	-	454
HHWinterton	Byelaw	164,620	0	-	582
Foreland	Byelaw	11	3,785	-	2,712
CapeBank	Byelaw	0	0	-	0
CelticDeep	Byelaw	0	0	-	0
EastHaigFras	Byelaw	0	0	-	0

FarnesEast	Byelaw	0	0	-	2
GoodwinSands	Byelaw	0	0	-	0
HaigFras	Byelaw	0	0	-	0
HartlandPointTintagel	Byelaw	0	0	-	0
OffshoreBrighton	Byelaw	0	936	-	0
WightBarfleur	Byelaw	0	696	-	0
British EEZ		37,735,592	8,404,023	59,620,622	2,536,143
Total fleet segment		134,471,240	22,479,946	103,807,630	17,923,714

Table 3: *Percentage of the total annual value of landings in the British EEZ caught and of total landings in the examined MPAs, averaged over the period 2014-2023. The percentages for the Byelaw MPAs are not provided for pelagic fishing because they are only closed to bottom-contacting gears. Since some MPAs (partially) overlap, the percentages cannot be summed together.*

MPA	**Source**	**Beam trawl (%)**		**Flyshoot (%)**		**Pelagic (%)**		**Bottom otter trawl (%)**	
		UK MPA	**Total**	**UK MPA**	**Total**	**UK MPA**	**Total**	**UK MPA**	**Total**
SouthernNorthSea	Stage 4	**80.2**	**22.5**	**23.3**	**8.7**	**0.6**	**0.3**	**22.6**	**3.2**
OuterThames	Stage 4	**2.1**	**0.6**	0	0	0	0	0	0
BristolChannelApproaches	Stage 4	0	**0.1**	0	0	**0.1**	**0.1**	0	0
GreaterWash	Stage 4	0	0	0	0	0	0	0	0
LiverpoolBay	Stage 4	0	0	0	0	0	0	0	0
NorthNorfolkSaturnReef	Byelaw	**0.8**	**0.2**	0	0	-	-	0	0
HHWinterton	Byelaw	**0.4**	0	0	0	-	-	0	0
CapeBank	Byelaw	0	0	0	0	-	-	0	0
CelticDeep	Byelaw	0	0	0	0	-	-	0	0
EastHaigFras	Byelaw	0	0	0	0	-	-	0	0
FarnesEast	Byelaw	0	0	0	0	-	-	0	0
Foreland	Byelaw	0	0	0	0	-	-	0	0
GoodwinSands	Byelaw	0	0	0	0	-	-	0	0
HaigFras	Byelaw	0	0	0	0	-	-	0	0
HartlandPointTintagel	Byelaw	0	0	0	0	-	-	0	0
OffshoreBrighton	Byelaw	0	0	0	0	-	-	0	0
WightBarfleur	Byelaw	0	0	0	0	-	-	0	0

4.2 Economic value per fishery region

Figure 4 shows the annual economic value of the Stage 4 MPAs by the fishery region where the home port of the vessels is located. It is evident that Zuidwest-Nederland has the largest share of landings for the MPA Southern North Sea, by far the most significant MPA, followed by Kop van Noord-Holland. A consistent share of the value from this MPA comes from vessels from Scheveningen-Katwijk and Urk. In the MPA Outer Thames, landings came primarily from vessels from Kop van Noord-Holland, and in recent years mainly from Zuidwest-Nederland. All landings in the MPA Bristol Channel came from vessels from Scheveningen-Katwijk.

Figure 5 shows the annual economic value of the Byelaw MPAs by the fishery regions. It shows that landings from the two main Byelaw MPAs, Haisborough, Hammond and Winterton and North Norfolk Sandbanks and Saturn Reef, were primarily made by vessels from Kop van Noord-Holland, although the share of this region has significantly decreased in recent years. Additionally, landings came from the regions Zuidwest-Nederland, Urk and Scheveningen-Katwijk.

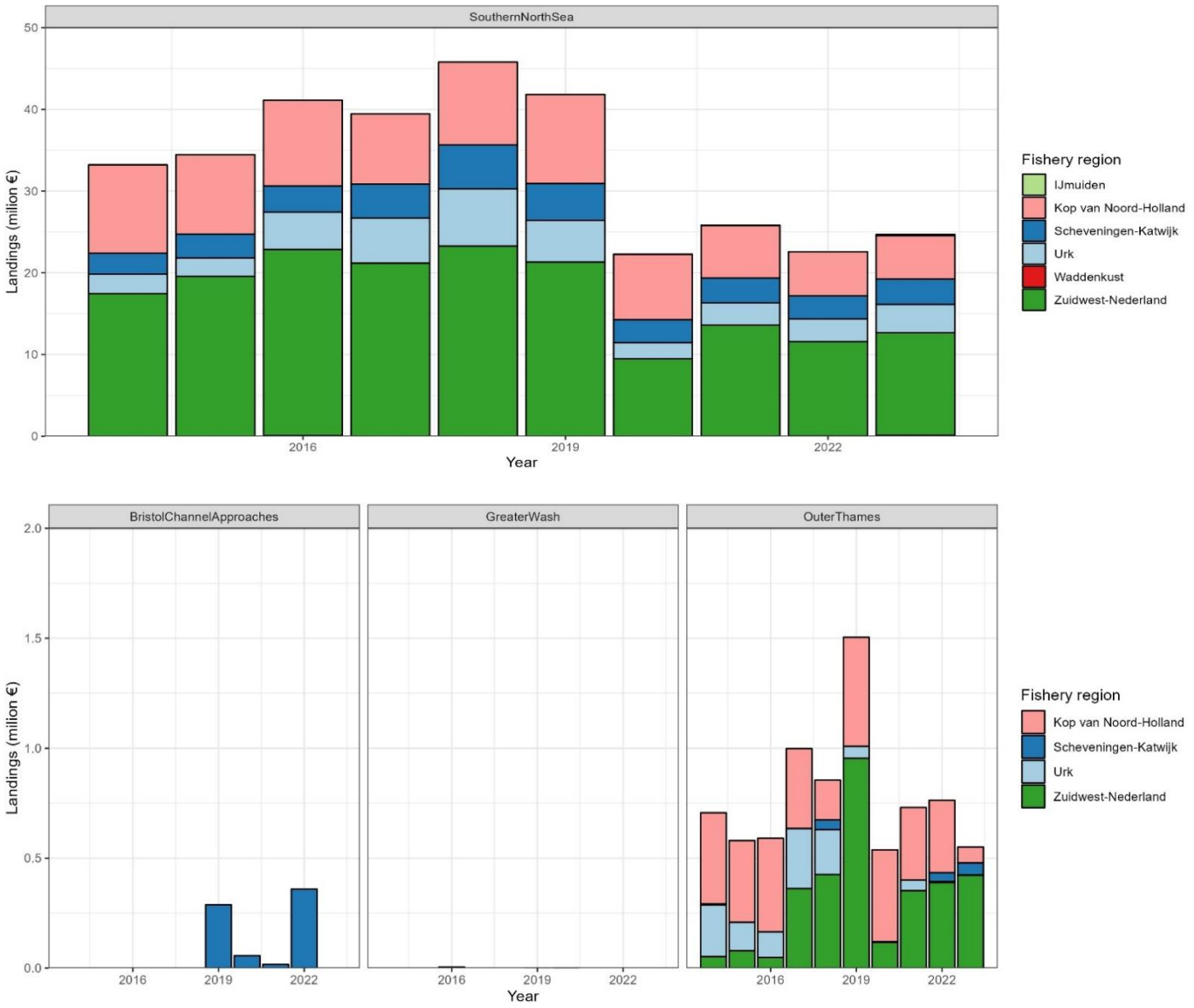


Figure 4: *Annual economic value per fishery region of the Stage 4 MPAs Bristol Channel Approaches, Greater Wash, Outer Thames and Southern North Sea. No landings were reported in the Stage 4 MPA Liverpool Bay. Fishery regions were assigned based on the home port of the vessels. The y-axis differs for the MPA Southern North compared to the other MPAs.*

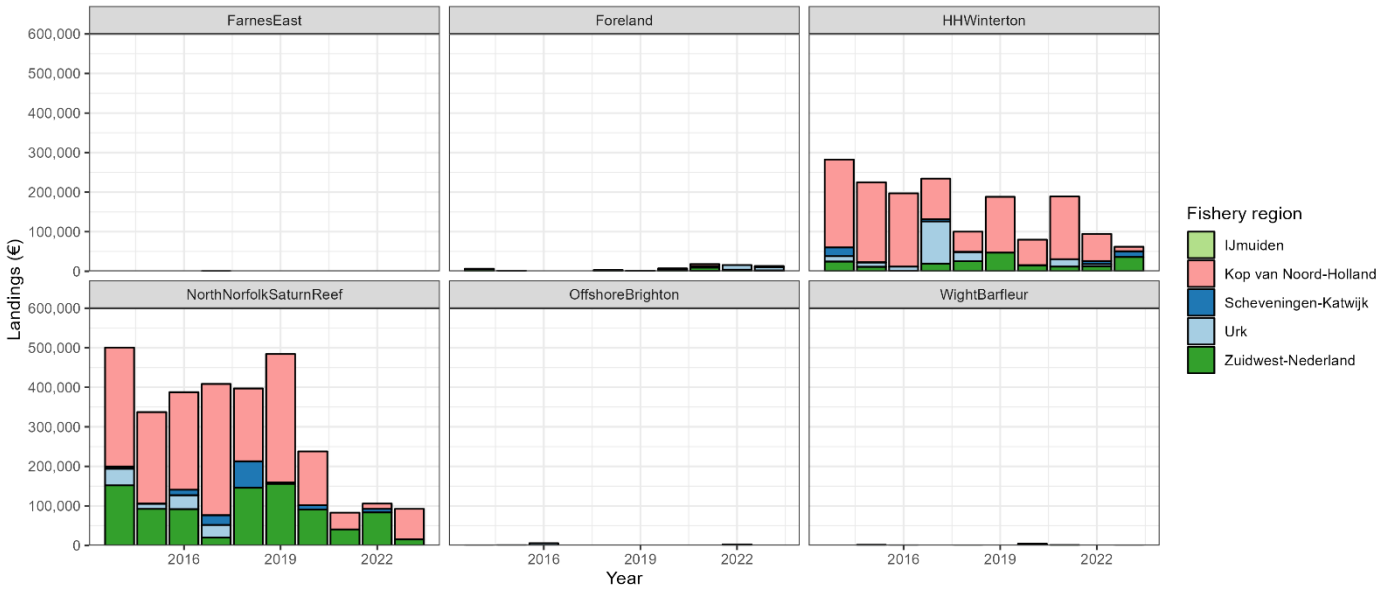


Figure 5: *Annual economic value per fishery region of the Byelaw MPAs Farnes East, Foreland, Haisborough, Hammond and Winterton, North Nortfolk Sandbanks and Saturn Reef, Offshore Brighton and Wight Barfleur. No landings were reported in the other Byelaw MPAs. Fishery regions were assigned based on the home port of the vessels.*

Table 4 presents the annual value of the MPAs by the fishery region in which the home port of the vessels is located. For the Byelaw MPAs, the value of the landings from the pelagic fleet is also not included, as these areas are only closed to bottom-contacting gears.

The data shows that the MPA Southern North Sea represents the highest value, with an average annual value of over 17.2 million euros for vessels from Zuidwest-Nederland, 8.6 million euros for vessels from Kop van Noord-Holland, 3.8 million euros for vessels from Urk, and 3.5 million euros for vessels from Scheveningen-Katwijk. Among the other MPAs, the Outer Thames annually represents 340,000 euros for Kop van Noord-Holland, 320,000 euros for Zuidwest-Nederland and 107,000 euros for Urk. The Byelaw MPA North Norfolk and Saturn reef represents 189,000 euros for Kop van Noord-Holland, and Haisborough, Hammond and Winterton represents 121,000 euros for Kop van Noord-Holland. The remaining MPAs each represent less than 100,000 euros per year per fishery region.

Table 4: *Mean annual economic value of the studied MPAs for Dutch fishery regions averaged over the period 2014-2023. Only landings of the fleet segments under study are shown. For the Byelaw MPAs the value of landings of the pelagic fleet is not shown, because these areas are only closed to bottom-contacting gears.*

MPA	IJmuiden	Kop van Noord-Holland	Scheveningen-Katwijk	Urk	Waddenkust	Zuidwest-Nederland
SouthernNorthSea	30,097	8,575,097	3,454,436	3,775,745	789	17,272,758
OuterThames	0	340,238	14,842	106,629	0	319,845
NorthNorfolkSaturnReef	0	188,966	13,527	12,153	0	88,778
HHWinterton	0	120,895	5,191	18,973	0	20,141
Foreland	241	668	110	2,860	0	2,540
GreaterWash	0	505	0	44	0	8
BristolChannelApproaches	0	0	72,033	0	0	0
CapeBank	0	0	0	0	0	0
CelticDeep	0	0	0	0	0	0
EastHaigFras	0	0	0	0	0	0
FarnesEast	0	0	0	2	0	0
GoodwinSands	0	0	0	0	0	0
HaigFras	0	0	0	0	0	0
HartlandPointTintagel	0	0	0	0	0	0
LiverpoolBay	0	0	0	0	0	0
OffshoreBrighton	0	0	192	744	0	0
WightBarfleur	0	0	85	532	0	80
UK EEZ	41,685	12,186,659	65,677,203	10,523,737	10,590	19,724,783
Total	1,148,983	56,780,608	121,136,171	74,470,829	22,003,814	78,849,955

Table 5 shows the value of landings in each MPA as a percentage of landings in the British EEZ, per fishery region. For the fishery regions Kop van Noord-Holland, Scheveningen-Katwijk, and Zuidwest-Nederland, more than 50% of landings value from the British EEZ came from the MPA Southern North Sea. This was 35.9% for Urk, 7.5% for Waddenkust and 5.3% for Scheveningen-Katwijk. The other MPAs represent a smaller share of landings in British waters, with the MPA Outer Thames representing 2.8% for Kop van Noord-Holland and 1.6% for Zuidwest-Nederland. The MPA North Norfolk and Saturn Reef represents 1.6% of the landings value in British waters for Kop van Noord-Holland fishery region. The other MPAs represent less than 1% of the value of landings in the British EEZ.

In table 6, landings value in each MPA is expressed as a percentage of the total value of vessels from each fishery region. The MPA Southern North Sea is most important for fishery regions Zuidwest-Nederland (21.9%), Kop van Noord-Holland (15.1%) and Urk (5.1%). It represents 2.6% of the total value landed in IJmuiden and 2.9% for Scheveningen-Katwijk. The other MPAs represent less than 1% of the total value for each of the fishery regions.

Table 5: *Percentage of mean annual economic value of the studied MPAs for Dutch fishery regions averaged over the period 2014-2023, of all landings in the British EEZ. For the Byelaw MPAs the value of landings of the pelagic fleet are not used in the calculation, because these areas are only closed to bottom-contacting gears.*

MPA	IJmuiden (%)	Kop van Noord-Holland (%)	Scheveningen-Katwijk (%)	Urk (%)	Waddenkust (%)	Zuidwest-Nederland (%)
SouthernNorthSea	72.2	70.4	5.3	35.9	7.5	87.6
OuterThames	0	2.8	0	1	0	1.6
NorthNorfolkSaturnReef	0	1.6	0	0.1	0	0.5
HHWinterton	0	1	0	0.2	0	0.1
BristolChannelApproaches	0	0	0.1	0	0	0
CapeBank	0	0	0	0	0	0
CelticDeep	0	0	0	0	0	0
EastHaigFras	0	0	0	0	0	0
FarnesEast	0	0	0	0	0	0
Foreland	0.6	0	0	0	0	0
GoodwinSands	0	0	0	0	0	0
GreaterWash	0	0	0	0	0	0
HaigFras	0	0	0	0	0	0
HartlandPointTintagel	0	0	0	0	0	0
LiverpoolBay	0	0	0	0	0	0
OffshoreBrighton	0	0	0	0	0	0
WightBarfleur	0	0	0	0	0	0

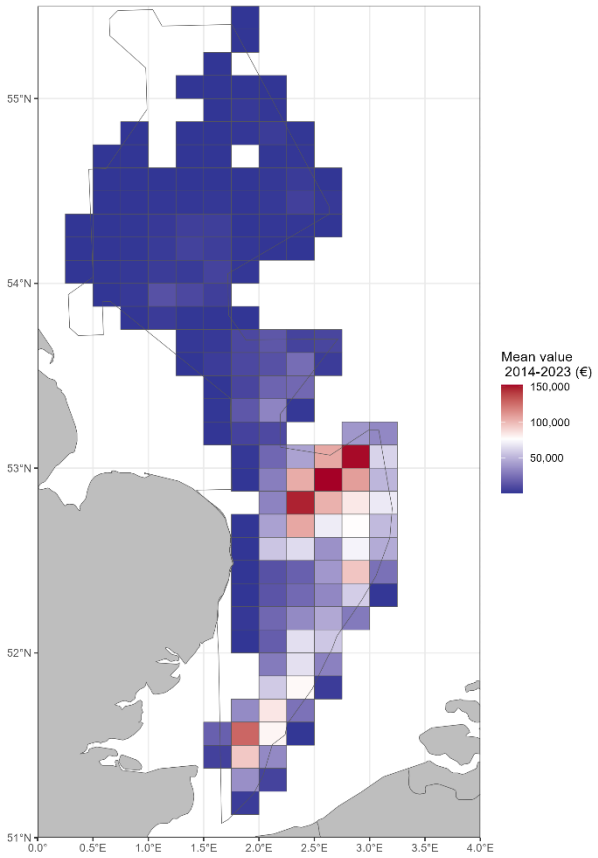
Table 6: *Percentage of mean annual economic value of the studied MPAs for Dutch fishery regions averaged over the period 2014-2023, of all landings in that fishery region. For the Byelaw MPAs the value of landings of the pelagic fleet are not used in the calculation, because these areas are only closed to bottom-contacting gears.*

MPA	IJmuiden (%)	Kop van Noord-Holland (%)	Scheveningen-Katwijk (%)	Urk (%)	Waddenkust (%)	Zuidwest-Nederland (%)
SouthernNorthSea	2.6	15.1	2.9	5.1	0	21.9
OuterThames	0	0.6	0	0.1	0	0.4
NorthNorfolkSaturnReef	0	0.3	0	0	0	0.1
HHWinterton	0	0.2	0	0	0	0
BristolChannelApproaches	0	0	0.1	0	0	0
CapeBank	0	0	0	0	0	0
CelticDeep	0	0	0	0	0	0
EastHaigFras	0	0	0	0	0	0
FarnesEast	0	0	0	0	0	0
Foreland	0	0	0	0	0	0
GoodwinSands	0	0	0	0	0	0
GreaterWash	0	0	0	0	0	0
HaigFras	0	0	0	0	0	0
HartlandPointTintagel	0	0	0	0	0	0
LiverpoolBay	0	0	0	0	0	0
OffshoreBrighton	0	0	0	0	0	0
WightBarfleur	0	0	0	0	0	0

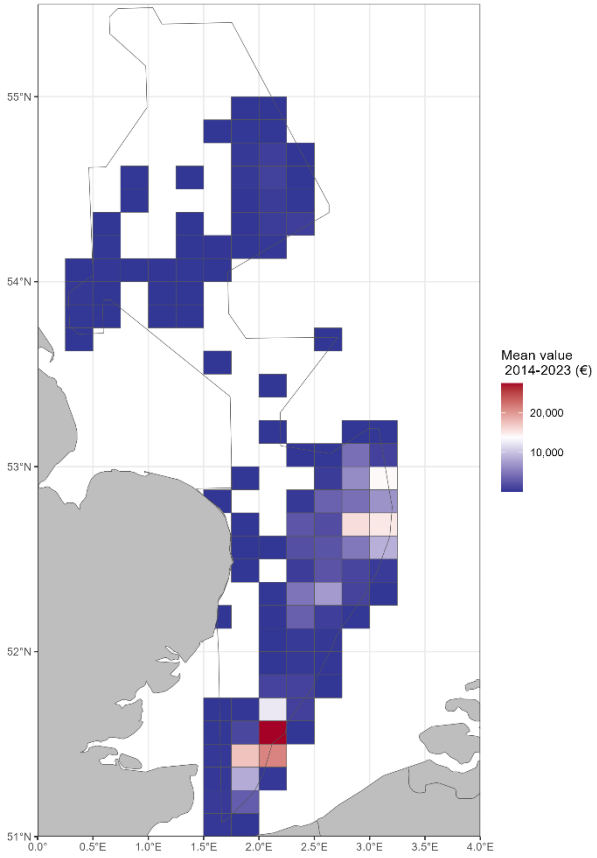
4.3 Southern North Sea

Due to the relative importance of the MPA Southern North Sea for the Dutch fishery sector (as shown in Table 4), and the size of the area, a closer look is taken at the distribution of the Dutch fleet within this MPA. Figure 6 illustrates the average economic value over the period 2014-2023 for the four fleet segments, aggregated by 1/16th ICES rectangle. It is evident that the central part of the area is particularly economically important for the bottom-contacting fleet, while the flyshoot fleet, pelagic fleet, and bottom otter trawl fleet primarily fish in the southernmost part of the MPA.

a



b



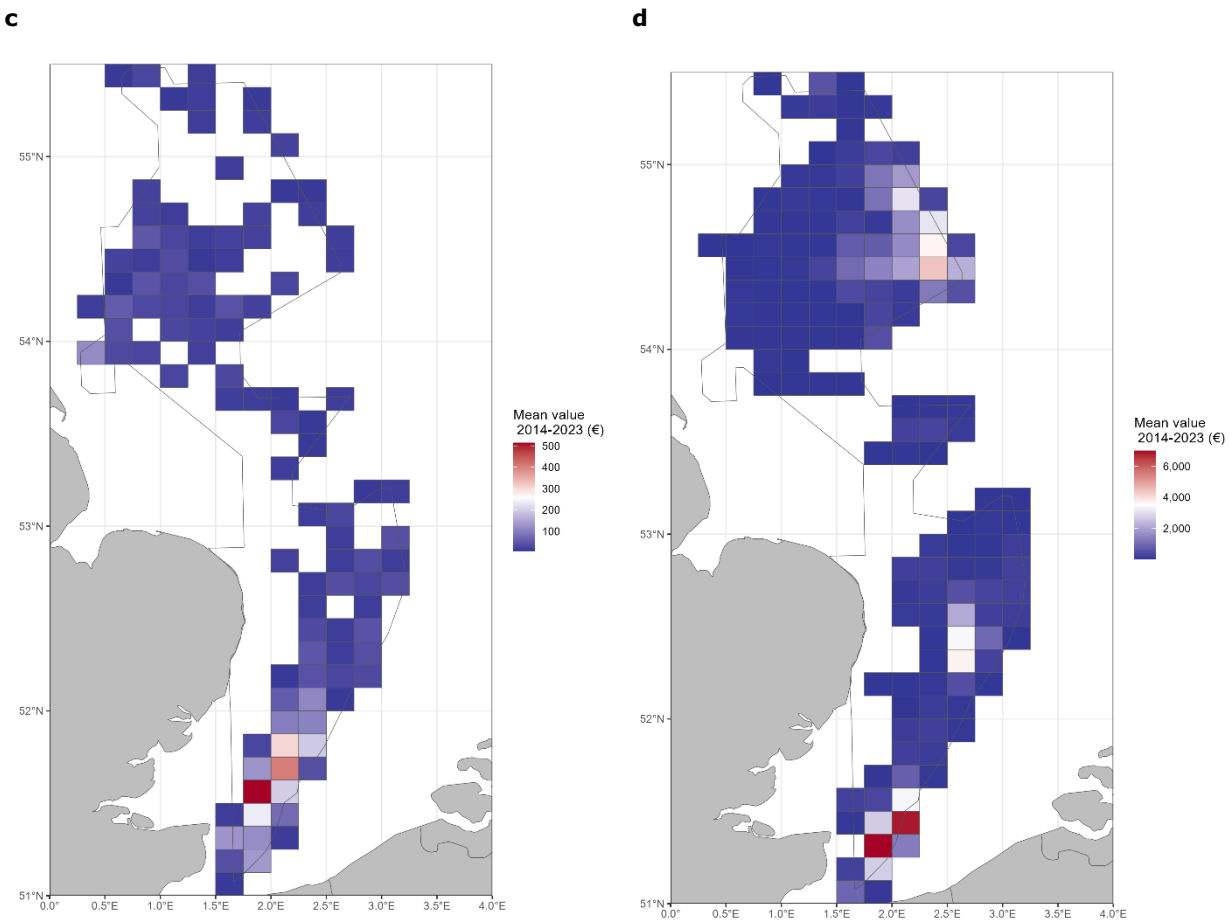


Figure 6: *Average Annual value in the MPA Southern North Sea for the period 2014-2023, for the four fleet segments a) beam trawls, b) flyshoot, c) pelagic vessels and d) bottom otter trawls. In empty cells overlapping the MPA, no landings were reported. The scale differs per figure.*

5 Conclusions

In this report, the economic value of various British MPAs for the main Dutch fleet segment was quantified for the period 2014-2023. By far the most important and largest MPA is the Southern North Sea, where the bottom-contacting fleet is particularly active. The majority of the catch from this area is landed in the fishery regions of Zuidwest-Nederland and IJmuiden. For the bottom-contacting fleet, the central part of this MPA is especially important, while the other fleet segments primarily fish in the southern part of the area. For all MPAs where significant Dutch catches have been reported, the importance of these areas to the Dutch fishery sector has decreased since 2014, with a notable decline starting in 2020.

Linking VMS data with logbooks introduces uncertainties that can result in varying estimates of total landings per area. Additionally, the allocation of logbook data for which no VMS data are available is based on assumptions about fishing activity within MPAs (though this constitutes a small share of the total logbook data). Therefore, the results are indicative but should not be viewed as absolute representations of the economic value of these MPAs.

A clear decrease in the value of UK MPAs for Dutch fisheries over time is visible. This could be attributed to several factors, such as the reduction of EU quota as part of the post-Brexit Trade and Cooperation Agreement. Furthermore, part of the reduction is likely due to the ban on pulse beam trawling that went into effect 30 June, 2021. In the period leading up to the ban, many beam trawlers switched from pulse beam trawling, which centred in the Southwestern North Sea targeting sole, to conventional beam trawling, which often targets plaice in different areas. Furthermore, there has been a decreasing trend in effort for beam trawlers due to high fuel prices and a cessation program.

It is important to apply caution when interpreting landing values by fisheries region, as this was assigned based on the home port of the vessels. However, this does not necessarily mean that landings were sold and processed at auctions in that harbour and fishery region.

6 Quality Assurance

Wageningen Marine Research utilises an ISO 9001:2015 certified quality management system. The organisation has been certified since 27 February 2001. The certification was issued by DNV.

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Justification

Report C050/24
Project Number: 4318100491

The scientific quality of this report has been peer reviewed by a colleague scientist and a member of the Management Team of Wageningen Marine Research

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