
DG MARE

Lot 2: Retrospective and prospective evaluation on the common fisheries policy, excluding its international dimension

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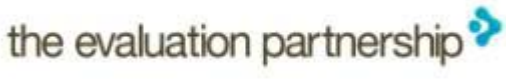
STUDY IN SUPPORT OF THE REVIEW OF THE EU REGIME ON THE SMALL-SCALE DRIFTNET FISHERIES

Appendix 4.10: United Kingdom Case Study Report



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Prepared by:	*LN, WM, TP*
Checked/Approved by:	*RM*

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Acronyms

AIS	Automatic Identification Systems
CEFAS	Centre for Environment, Fisheries and Aquaculture Science
DCF	Data Collection Framework
IFCA	Inshore Fisheries Conservation Authority
EMA	Eastern Marine Area
EC	European Commission
EU	European Union
FAD	Fishing Activity Database
FTE	Full Time Employment
MMO	Marine Management Organisation
MSC	Marine Stewardship Council
NUTS	Nomenclature of Territorial Units for Statistics
SEMA	South Eastern Marine Area
SMRU	Sea Mammal Research Unit
SSB	Spawning Stock Biomass
SWMA	South Western Marine Area
TAC	Total Allowable Catch

0 Introduction

The main data sources for driftnet fisheries in the UK are landings and effort data held by the Marine Management Organisation (MMO), for marine driftnet fisheries, and the Environment Agency, for river driftnet fisheries. It is important to note that MMO landings data cover marine fisheries only, and therefore do not cover estuarine and river driftnet fisheries. Data on estuarine and river fisheries are held by the Environment Agency. Observer data are also available for a limited number of driftnet vessels, sampled by the Centre for Environment, Fisheries and Aquaculture Science (CEFAS) observers and submitted to the Fishing Activity Database (FAD) from which data may be submitted for the Data Collection Framework (DCF).

MMO and Inshore Fishery Conservation Authorities (IFCAs) are both responsible for Monitoring, Control and Surveillance (MCS) activities in areas where driftnet fisheries operate, and consequently both hold data on MCS activities and their cost, as well as infringement statistics.

UK marine driftnet landings data is held in MMO's Fishing Activity Database (FAD). The majority of driftnet vessels are under 10 m in length and consequently are not required to complete logbooks. UK driftnet catch and effort data is therefore based on sales notes. Data were provided for the years 2000 to 2012. The introduction of the Fish Buyers and Sellers Act (Statutory Instruments 2005 No. 1605) in 2005 is likely to have increased the coverage of these landings statistics derived from sales notes. Due to the lack of data from other sources, these landings data were used to identify the key driftnet fisheries in the UK.

Data on UK driftnets tend to be collected at a segment level and do not allow separation of drift and fixed net fishing operations. Consequently data held by the MMO were the main source of quantitative information for the Case Study.

Two additional fisheries take place in ICES Subarea IVc: drifting trammel netting for cod and skate. However, existence of these fisheries came to light very late in the study so it was not possible to collect data for them. There is also a driftnet fishery operating out of Northern Ireland (the Mourne herring), which closed then was reopened by fishers using trammel nets. Information for this came to light late in the study. This fishery is discussed in sections 1.2.1.2 and 2.1.4.

0.1 Case Study consultations

An initial review of published journal papers, EU and other management body reports was carried out to explore current driftnet fisheries in the UK. Little detailed information was available, so contacts with various key stakeholders were made through email circulation of the fact-finding online questionnaire. Early on in this process, the MMO Statistics and Analysis Team were contacted and a meeting set up to facilitate requests for data from the Fishing Activity Database (FAD) relevant to the study. Concurrently, contact with CEFAS was made to explore the availability of observer data. Exploration of the data enabled determination of areas around the UK with the highest levels of fishing with driftnets. During initial contact and meetings with key research and management stakeholders, additional contacts were sourced, particularly those engaged in current fisheries. From the responses received from initial contacts we were able to pinpoint individuals and management authorities that we wanted to speak to in particular and set up meetings with as many as were available, often with many stakeholders present in one meeting, for example, we met with IFCAs and MMO offices working in the same area. All consultations took the form of semi-structured interviews using templates previously reviewed by DG-MARE. The Tables in Annexes 1 and 2 show which stakeholders were consulted and Table 1 summarises the number of stakeholders consulted with by stakeholder type.

Table 1: Breakdown of Stakeholder Consultations

Case Study/Type of Organisation	Research	Control & Management	Producer Organisation/ Fisher Association	Fisher/Ex-fisher	NGO/Other	Total
No of Organisations Consulted	1	9	5	6	2	23
No. of Consultations with Individuals	0	15	4	5	2	24
No. of Focus Group Consultations	1(2)	2(2,5)	1(2)	1(2)	0	5(13)
(Nos. involved in each)						

1 Previous driftnet fleets

1.1 Fleet trends

The number of vessels registered as using driftnets as the primary or secondary gear type by NUTS 1 region in the UK, using the EU Fleet Register (2013) Table 2. Approximately 50 vessels recorded driftnets as their primary gear type from 1991 onwards, with between 5 and 20 vessels recording driftnets as their secondary gear type. The NUTS-1 regions with the highest numbers of driftnets registered are the South East, South West and East of England.

According to the EU Fleet Register (2013), from 1991 to 2007 there was a gradual increase in the number of vessels registered with driftnets as their primary gear type (Figure 1). The number of vessels registered with driftnets as their secondary gear has been gradually increasing from 27 in 1991 up to 47 in 2012.

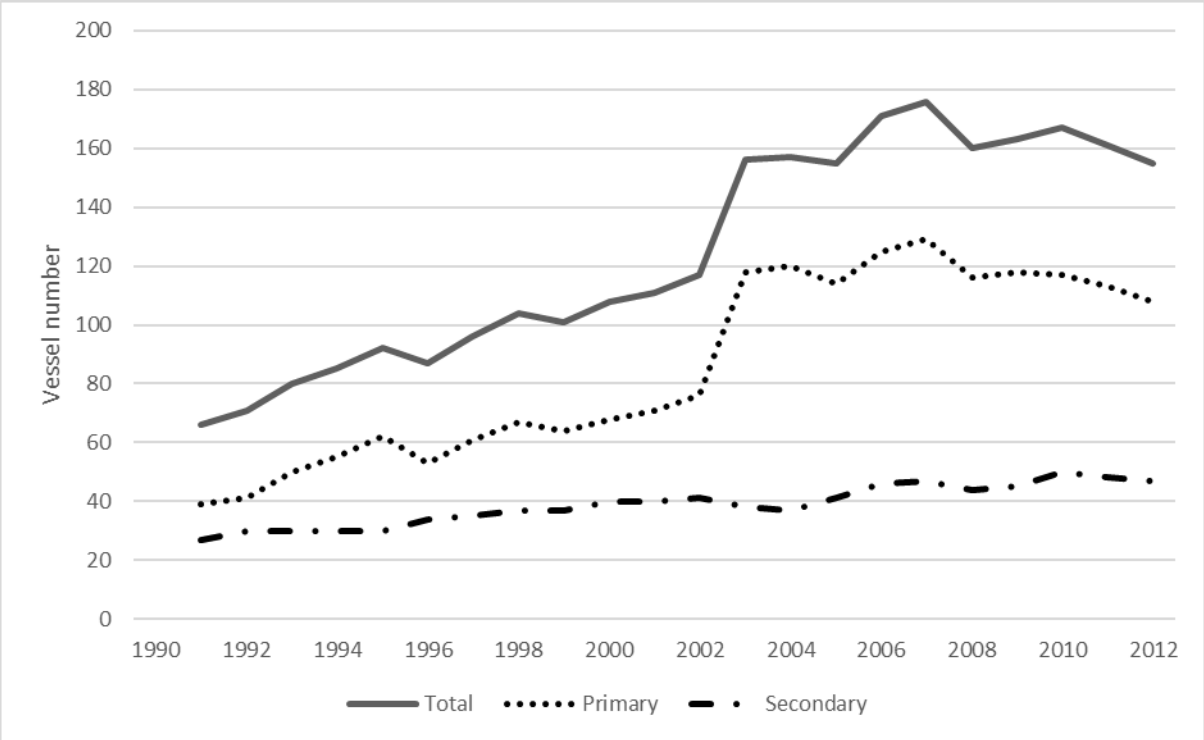

Figure 1: Trends in number of vessels registered with driftnets as primary or secondary gears (1990-1999).

Source: EU Fleet Register

However there are limitations with these data, including *inter alia*: vessels only register the gears that they are planning on using at the time of registration, which is not updated with subsequent changes to gear; and, vessels operating in inshore areas tend to use multiple gear types, but the Vessel Registry only includes primary and secondary gear types. Consequently the number of driftnet vessels as taken from the EU Fleet Register is unlikely to give accurate estimates of the number of vessels using driftnets in the UK.

MMO's FAD data are expected to provide a more reliable estimate of vessels using driftnets, though are only available from 2000 onwards so are discussed in section 2.1, current fleets and illustrated in Figure 2.

Table 2: Evolution of vessel registered in the UK with GND as a gear

NUTS 1 Area	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
East of England	26	30	36	39	41	39	42	44	44	46	49	50	60	68	64	66	69	66	69	66	66	65
Guernsey																	1	1				
London			1	1	1	1	1	1	1	1	1	1	1		4	5	6	5	5	2	1	3
North East	7	7	7	7	7	7	9	9	7	7	7	8	7	8	8	10	10	10	6	7	5	4
North West	1	1	1	1	2	2	2	2	2	2	3	5	5	4	4	7	6	5	6	6	5	4
Northern Ireland																						1
Scotland	1	1	1	2	2	2	2	2	2	3	3	3	4	3	3	4	5	3	5	3	2	1
South East	15	16	17	17	18	16	18	17	16	19	19	20	41	39	41	47	44	36	33	34	31	28
South West	15	16	16	17	18	20	20	23	23	24	24	25	36	32	28	28	31	30	34	38	37	42
Wales	2	2	3	3	4	1	4	5	5	5	4	4	2	3	2	2	2	2	5	9	11	4
Yorkshire and the Humber	2	2	2	2	3	2	2	1	1	1	1	1	1	1	1	2	2	2	2	3	3	3
Total	69	75	84	89	96	90	100	104	101	108	111	117	157	158	155	171	176	160	165	168	161	155

Source: EU Fleet Register 2013.

Historic UK driftnet fisheries were primarily identified using reported landings data held by MMO and consultations with relevant stakeholders. The most important historic UK driftnet fishery was that targeting the Northern Atlantic albacore stock in ICES Subareas VII and VIII (MMO 2013). There are also a number of continuing driftnet fisheries in the UK that have been in operation over the last 15 years or more, targeting small pelagic fish, including herring (*Clupea harengus*), European pilchard (*Sardina pilchardus)* and mackerel *(Scomber scombrus)*, and, demersal fish including sole *(Solea solea)*, sea bass *(Dicentrarchus labrax)* and cod *(Gadus morhua)*. These ongoing driftnet fisheries are discussed further in Section 2 (Current Driftnet Fisheries).

1.1.1 Fishery characteristics

1.1.1.1 Albacore fishery

The driftnet fishery targeting Albacore tuna *(Thunnus alalunga)* operated around the Bay of Biscay and the South Western Waters, with UK vessels operating in ICES divisions VIIIa, VIIId, VIIIe, VIIj, VIIk and Subarea X. The majority of reported landings by UK driftnets were in ICES divisions VIIj and VIIk and this fishery took place between mid-June/July and the end of September (Bord Iascaigh Mhara 1999). A summary of landings from the fishery is presented here based of landings data reported to ICCAT which were analysed by Rogan & Mackey (2007). It is important to note that the ICCAT figures do not match landing data provided by the MMO (see Table 3). This could be due to differences in interpretation of which reported gear codes constitute driftnets. For example UK albacore landings are reported for gillnets and unspecified gillnets, both of which are likely to actually be driftnets, as well as for driftnets specifically. Despite the disagreement in landings volumes, both datasets had higher landings volumes pre-1997.

The dataset presented by Rogan & Mackey (2007) indicate that the vast majority of landings by surface driftnets were by Irish and French flagged vessels, with UK vessels accounting for an average of only 2.3 % of total surface driftnet landings from 1990 to 2000, *i.e.* 136 tonnes, with maximum annual landings of 567 tonnes in 1994. This compares to average annual landings of 2,970 and 1,840 tonnes for France and Ireland respectively.

Due to the relatively small size of the UK albacore fishery, more detail on the albacore fishery can be found in Appendix 4.3 and 4.4, the French and Irish case study reports.

1.1.1.2 Mourne herring fishery

In the 1960s and 1970s, around sixty under ~10 m vessels or skiffs are thought to have participated in the seasonal autumn Mourne herring fishery off the Northern Irish coastline from Newcastle to Greencastle on the northern shore of Carlingford Lough[1]. The fishery died off in the 1990s for a combination of reasons including low financial reward, an increasing availability of refrigerated sea-water (RSW) herring from pelagic vessels, and a shortage of herring numbers along the Mourne shore[1].

The fishery resumed in 2007 and is discussed further in section 2.1.4.

1.1.1.3 River and Estuarine Driftnet Fisheries

Driftnet fishing for Atlantic salmon *(Salmo salar)* developed in Scotland in the early 1960s, with the landings estimated to have peaked in 1962 at 110,000 fish (Northridge 1991). The Scottish office recognised that allowing indiscriminate netting was poor management, making it impossible to manage salmon on a stock by stock basis. Driftnetting was consequently banned in Scottish waters in 1962; a ban that remains in force today (Fisheries Act 1962). Illegal drift netting in Scottish waters was thought to be a problem in the 1970s, and it is estimated that 300 tonnes of salmon may have

[1] Fishing News, 2013, November 15th issue, Unique Mourne herring skiff fishery,

been taken in driftnets off the Scottish east coast in 1977 (Anon, 1977). Salmon and sea trout are still exploited commercially by fishers in Scottish rivers today, however, only fixed engine nets are used to catch and exploit these species commercially.

The use of driftnets to catch Atlantic salmon and sea trout *(Salmon trutta)* in the Northeast has a long history, with reference to their use dating back over 140 years (Anon, 1868). This fishery has historically been considered the largest salmon driftnet fishery in the UK; and between the years 1970 and 1976, over 55,000 salmon were caught and declared in the Northeast. At this time 90% of the salmon were caught using driftnets, up to six miles from the shore.

1.1.2 Social and economic characteristics

1.1.2.1 Albacore fishery

As described above, UK landings from the albacore fishery were low in comparison to other Member States. UK landings (volume) also displayed significant inter-annual variation, in both the ICCAT and MMO derived datasets. Landings values (£ GBP) were also recorded in the MMO's dataset. These are converted in to Euros (€ EUR) or the European Currency Unit (ECU) as appropriate (see Table 3).

The volume of landings appears to have varied strongly from year to year with estimates of landings value ranging from EUR 0 to in excess of EUR 1 million. The main ports of landing were in North West France (Douarnenez in Brittany), Ireland (Castletown Bearhaven and unspecified Irish Ports) and South West England (4 ports in Cornwall). The highest average landings came into Mevagissey in Cornwall (see Table 3).

In 1992, Regulation (EC) No 345/92 introduced a limit on the maximum length of driftnets of 2.5 km. For UK vessels operating in this fishery, it was unviable to use nets of lengths less than 2.5 km and there is evidence that vessels did use longer nets (EU Commission 1994[2]) until the fishery was eventually closed in 2002 by Regulation (EC) No 1239/98 which banned the use of driftnets to target annex VIII species including albacore tuna. After the introduction of Regulation (EC) No 894/97, 2 vessels are thought to have remained in the albacore fishery, but using pole and line[3] and MMO landings data shows that albacore tuna was also landed by hand lines and pair trawls after 2002 (MMO 2013). Landings from this fishery have been considerably lower since the ban. The remaining vessels moved to other fisheries, namely monkfish and hake[3].

[2] EU Commission 1994. Communication from the Commission: The use of large driftnets under the Common Fisheries Policy.
[3] Marine Officer, South West MMO, pers. Comm., 2013.

Table 3: Summary of UK driftnet landings volume and value in the Albacore tuna driftnet fishery.

Year	MMO landings (tonnes)	MMO landings (€ or ECU)	ICCAT landings (tonnes)	ICCAT landings* (€ or ECU)
1992	51	128123	59	149688
1993	160	290258	499	908023
1994	15	35462	567	1331590
1995	172	354162	196	402597
1996	0	0	49	NA
1997	2	7768	33	105054
1998	18	37404	36	75226
1999	42	104769	41	101911
2000	14	29646	14	29004
2001	2	6833	NA	NA

Sources: MMO landings data - MMO FAD data; ICCAT landings volume - Rogan & Mackey (2007).
* ICCAT landings value estimated using € or ECU per tonne calculated from MMO FAD data.

There are little other data available on the UK's albacore driftnet fishery at the national level. However consultations with stakeholders including the South West MMO yielded information for the South West of England where a large proportion of landings occurred. 9 vessels from Newlyn and Mevagissey operated in the fishery before the introduction of Regulation (EC) No.894/1997, with 8 vessels between 12 and 18 metres in length and one vessel between 18 and 24 metres[4]. There were an average of 5 fishers per vessel in this fishery. There was no economic assistance given to these vessels, (EU or National) after the introduction of Regulation (EC) No. 345/92 (or 1239/98).

1.1.3 Sustainability of fisheries

1.1.3.1 Albacore fishery

The status of the Northern Atlantic albacore stock declined slightly from the 1990s to the 2000s. In the 1990s, the stock was overfished and undergoing overfishing and in the 2000s the spawning stock biomass of the stock had decreased further (ICCAT 2010[5]). However, as discussed in Section 1.2, UK driftnetters accounted for only a small proportion of total landings from the fishery. Total Allowable Catch (TAC) for this stock (North Atlantic Albacore) was first introduced in 2001 as the fishery was closing. The UK receives around 1% of the quota allocated for the stock and in 2001 driftnets landed less than 1% of their allocated quota (Marine Institute Ireland 2006, MMO 2013).

There is little data available specific to the UK albacore fishery related to bycatch and discards but it is likely that species encountered would have been similar to those encountered by the Irish fleet in this fishery. A study based on an observer programme run in 1995 in the fishery by The Sea Mammal Research Unit (SMRU) on vessels operating out of Irish ports (unpublished, from Rogan and Mackey 2007) estimated landings of 37,000 albacore tuna and bycatch of 46 cetaceans, 4,139 blue sharks, 104 striped dolphins and 61 common dolphins. There was a 28% observer coverage of the tuna effort in 1995, but the amount of effort observed was not reported.

[4] Marine Officer, MMO Penzance, Pers. Comms. 2013
[5] ICCAT 2010. Report of the 2009 ICCAT albacore stock assessment session, Collect. Vol. Sci. Pap., 65(4): 1113-1253

2 Current driftnet fleets

2.1 Fleet structure

MMO's FAD data are likely to provide a more reliable estimate of vessels using driftnets than data from the EU Fleet registry (Figure 2), though are only available from 2000 onwards. Based on these data the number of vessels reporting driftnet fishing increased steadily from 47 in 2000 to 251 in 2012. Initially over 40 % of these vessels were over 10 m in length. By 2012, less than 3 % of these vessels were over 10 m in length. However it is important to note that the introduction of the Fish Buyers and Sellers Act (UK Statutory Instruments 2005 No. 1605) in 2005 may have resulted in more accurate estimates of driftnet fishing activity. Consequently it is not clear if the observed increase in vessels recording fishing with driftnets in 2005 reflects reality. Nevertheless, the introduction of Regulation (EC) No. 809/2007 clarifying the definition of 'driftnet' did not appear to have a noticeable effect on the number of vessels reporting driftnet fishing in the UK either. It is also important to note that in determining effort and landings resulting from driftnetting, MMO data used are to a large extent reliant on the accurate completion of gear type fields in sales notes.

Trends in the EU Fleet Register derived estimates of vessels registered as using driftnets are reasonably consistent with MMO FAD derived estimates for driftnet vessel numbers (Figure 1) although the EU fleet register gives a higher estimate of the number of vessels than the FAD data until 2009 when the fleet register estimates that the number of vessels started to decrease while the FAD data estimated that the number increased. However, estimates of UK vessels from MMO's FAD data are likely to be more accurate (see Section 1.1). These are described in more detail here, focusing on the East Marine Area (EMA - predominantly ICES Divisions IV b & c), the South Eastern Marine Area (SEMA – predominantly ICES Divisions IVc and VIId & e) and the South Western Marine Area (SWMA - ICES Divisions VIIe & f) which combined account for over 95 % of UK vessels using driftnets in marine fisheries. It is important to note that these estimates of vessel numbers only account for vessels operating in marine fisheries as data for river and estuarine fisheries are held by the Environment Agency.

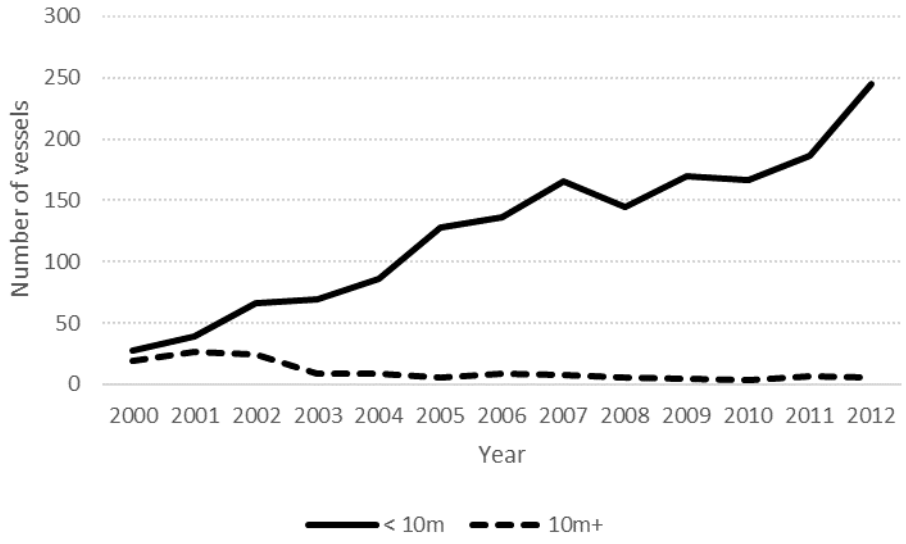

Figure 2: The number of UK vessels greater than (broken line), and less than (solid line), 10 m in length that reported driftnet fishing activities by year, for 2000 to 2012.

Source: MMO Fishing Activity Database (FAD) data.

Table 4: Numbers of vessels (registered or estimated) currently using driftnets (average for the last 5 years)

	All gears	Driftnet gear		Other main gears used by these vessels
		1st	2nd	
Total	6,478	188		Trammel nets, handlines and pole lines, otter bottom trawls, set gillnets, set longlines, otter bottom trawls, otter twin trawls and unknown/unspecified
<10 (<6)*	5,001	183		
10-12m (6-12m)*	413	5		
12-18m	517	0		
18-24m	281	0		
24-40m	207	0		
>40m	59	0		

Source: Driftnet vessels - MMO FAD data. Total vessel numbers – 2012 AER data (STECF 2012)

The number of vessels using driftnets has increased steadily from 2000 to 2012 (Figure 2), primarily due to the increase in driftnet vessels operating in the Eastern Marine Area and the South West Marine Area. The number of driftnet vessels operating in the South East Marine Area remained reasonably constant over the same time frame. Despite the increase in the number of vessels using driftnets, the total effort remained reasonably constant at approximately 2,000 days at sea per year, though with some inter-annual variation (Figure 3), primarily due to the decline in the number of days per sea per vessel (Figure 5). In recent years, UK vessels using driftnets have reported an average of approximately 10 days at sea per year, irrespective of the area of operation. Compared with the number of days spent at sea in 2011 by the UK fishing fleet (408,000 days), the days spent at sea by registered driftnetting vessels was low (2,034 days) and accounted for just 0.5% of the proportion of total fishing days (STECF, 2012).

According to MMO FAD data (2013), a total of 251 vessels in the UK fleet were registered using driftnets across all areas. These data do not consider whether driftnets are the primary or secondary gear type for each vessel. Vessels employing driftnets constituted 5.5 % of the total number of active vessels in the UK (4,565)[6] in 2012. For the UK as a whole, the vast majority (~ 97 %) of UK vessels using driftnets in the last 5 years have been less than 10 m in length (Figure 2). Re-examining the fleet structure, focusing primarily on vessels under 10 m in length, indicates that registered driftnetters make up 7 % of the UK under 10 m fleet. However, this figure may not reflect the actual driftnet capacity as multiple gears can be used by one vessels without being listed under their licence. These vessels recorded total landings of 914 tonnes (97 % by vessels under 10 m) with a value of £824,000 (€101,000) (81 % by vessels under 10 m).

[6] STECF, 2013. The 2013 Annual Economic Report on the EU Fishing Fleet (STECF 13-15).

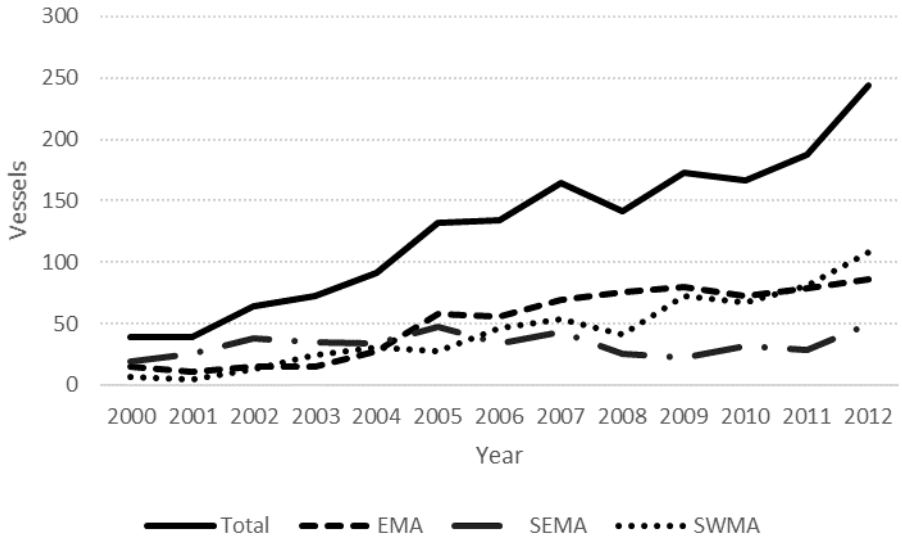

Figure 3: The number of UK vessels per year that used driftnets in the MMO's Marine Regions.

Source: MMO Fishing Activity Database (FAD) data

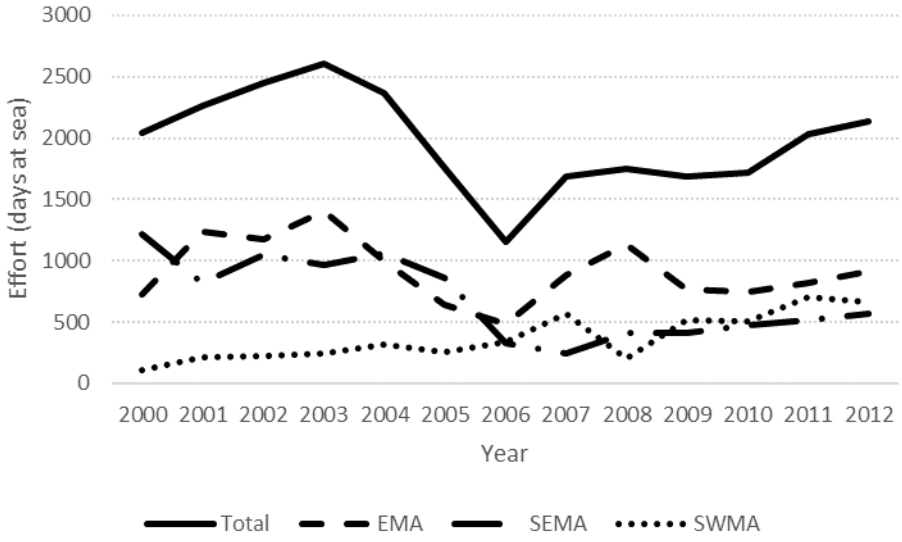

Figure 4: The number of days at sea per year for all UK vessels whilst using driftnets in the MMO's Marine Regions.

Source: MMO Fishing Activity Database (FAD) data

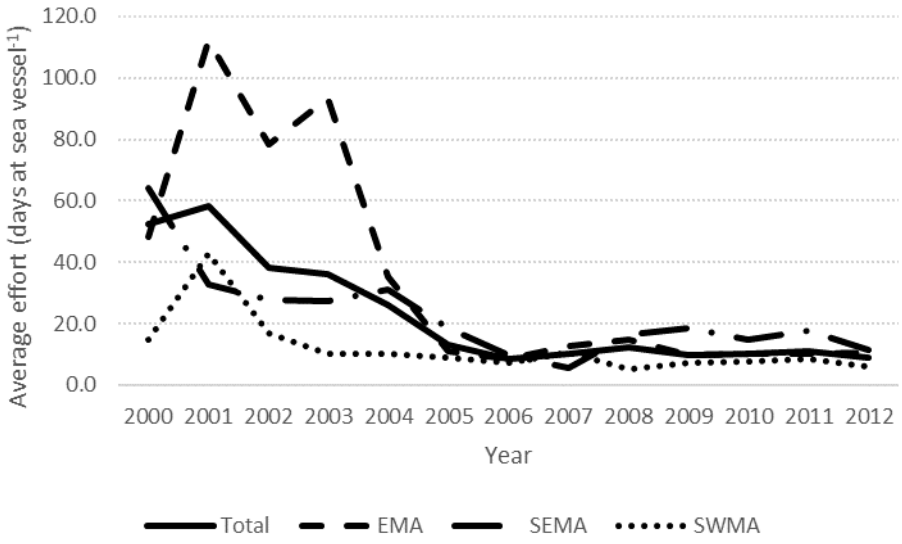

Figure 5: The average number of days at sea per vessel for UK vessels using driftnets in the MMO's marine region

Source: MMO Fishing Activity Database (FAD) data

Table 5 summarises currently active driftnet fisheries operating from the UK. In total there are 13 fisheries targeting a range of species including: Atlantic herring (*Clupea harengus*), Atlantic salmon (*Salmo salar*), sea trout (*Salmo trutta*), European sea bass (*Dicentrarchus labrax*), Common sole (*Solea solea*), European pilchard (*Sardina pilchardus*), and Atlantic cod (*Gadus morhua*). The number of vessels participating in each fishery ranges from 6 to 70.

Two additional fisheries take place in ICES Subarea IVc: drifting trammel netting for cod and skate. However, existence of these fisheries came to light very late in the study so it was not possible to collect data for them.

Table 5: Summary of Active Driftnet Fisheries in the UK

#	Species (common name)	Species (binomial)	Fishery Area	Stock	Gear	Net length m	Mesh size mm	No. of vessels	MS	Region	Marine	Estuarine	River
2	Atlantic herring/mackerel	*Clupea harengus, Scomber scombrus*	ICES VIId, e & f	Herring - North Sea Autumn spawning Mackerel - Western component of NE Atlantic	Driftnet	350-450	55-65	< 30	UK	NE Atlantic	X		
3	Atlantic herring	*Clupea harengus*	ICES IVc	North Sea Autumn spawning	Driftnet	Unknown	55-65	< 50	UK	N Sea	X		
10	Salmon/ sea trout	*Salmo salar*	ICES IVb	Multi-stock fishery	Driftnet	<550	100-120	14+	UK	N Sea	X	X	
12	Sea trout	*Salmo trutta*	ICES IVc	Unknown	Driftnet	<550	100-120	27	UK	N Sea	X	X	
14	Salmon/ sea trout	*Salmo salar/Salmo trutta*	ICES VIIa	Lune and Ribble River	Driftnet	< 300	NA	11	UK	NE Atlantic	X	X	
19	European sea bass	*Dicentrarchus labrax*	ICES VIId	English Channel	Driftnet	< 2,300	150	~ 6	UK	NE Atlantic	X[7]		
20	European sea bass/mullet	*Dicentrarchus labrax*/ Mugilidae	ICES VIId,e & f	English Channel & West coast of UK	Driftnet	400	90, 112-127	< 70	UK	NE Atlantic	X[8]		
21	European sea bass/mullet	*Dicentrarchus labrax*/ Mugilidae	ICES VIId & e	English Channel	Driftnet	Unknown	112	< 6	UK	NE Atlantic	X	X	
22	European sea bass	*Dicentrarchus labrax*	ICES IVc	North Sea (IVb & c)	Driftnet	Unknown	90-220	< 40	UK	N Sea	X		
24	Common sole	*Solea*	ICES IVc	North Sea (IV)	Drifting trammel	400	100 (1200)	~10	UK	N Sea	X		
25	Common sole	*Solea*	ICES VIId	Eastern channel (VIId)	Drifting trammel/ driftnet?	Unknown	100-120	< 30	UK	NE Atlantic	X		
26	European pilchard	*Sardina pilchardus*	ICES VIIe & f	Not known (perhaps migrating part of Bay of Biscay stock)	Driftnet	450	45	~ 30	UK	NE Atlantic	X		
28	Atlantic cod	*Gadus morhua*	ICES IVc	IV, VIId & IIIa	Driftnet	Unknown	120-220	< 20	UK	N Sea	X		

[7] Offshore fishery occurring 12 nautical miles from the coast
8 Inshore fishery occurring within 6 nautical miles from the coast

Around the UK, landings by driftnets have been reported in 8 different ICES Divisions: IVa, b & c; and, VIIa, d, e, f and g. However, since 2000 the majority of landings have been taken in IVc (Southern North Sea), VIId (Eastern Channel), VIIe (Western Channel) and VIIf.

For ICES Divisions IVc and VIId, e and f, species specific and total landing volumes from driftnetting were compared to total UK landings in the Subarea, in order to determine the relative importance of driftnetting at a finer spatial scale (Table 6).

In ICES Division IVc, landings from driftnets did not represent a significant proportion of total UK landings between 2008 and 2011. However, during this period, driftnet landings represented significant but declining, proportions of total landings of sea bass and conversely significant, and increasing proportions of total herring landings (Table 6).

In ICES Division VIId landings from driftnets did not represent a significant proportion of either species specific or total UK landings between 2008 and 2011; however, total sea bass landings during this period consistently comprised between 1.6 and 6.5 % landings from driftnets (Table 6).

In ICES Division VIIe landings from driftnets did not represent a significant proportion of total UK landings between 2008 and 2011. However driftnet landings represented a significant, and increasing proportion of total herring and European pilchards (sardines) landings during this period, and have infrequently represented high proportions of total anchovy landings (Table 6).

In ICES Division VIIf driftnet landings did not represent significant proportions of total UK landings between 2008 and 2011. However, driftnet landings did represent large proportions of total landings of herring and pilchards in years when landings by driftnets were high, *i.e.* 2009 and 2011 for herring, and 2008 for pilchards (Table 6).

Pilchards, herring, sea bass, common sole, cod and mackerel have accounted for the majority of UK landings by driftnets in the last 5 years, both in terms of volume and value (Figure 6). Over the last 5 years, reported landings by driftnets have increased, but with significant variation in species specific contributions to landings volume and value.

Table 6: The percentage of total UK landings from driftnets, by species and ICES Division for (a) IVc, (b) VIId, (c) VIIe and (d) VIIf.

a)

Species	2008	2009	2010	2011
BSS	23.6	11.2	10.2	8.5
COD	2.1	2.6	2.5	4.2
HER	12.4	21.2	38.6	61.3
RJC	4.4	1.2	3.3	2.5
SOL	5.4	4.2	3.5	2.5
Total	**1.5**	**1.6**	**1.5**	**1.4**

b)

Species	2008	2009	2010	2011
BSS	1.6	3.8	6.5	2.4
HER	0.0	0.0	0.0	0.0
MAC	1.1	0.4	2.1	1.6
PLE	0.0	0.0	0.2	0.5
SOL	0.4	0.4	0.8	0.2
Total	**0.1**	**0.1**	**0.1**	**0.1**

c)

Species	2008	2009	2010	2011
ANE	11.0	0.0	5.3	3.9
HER	5.5	22.4	35.6	51.3
MAC	1.1	0.7	0.4	3.5
PIL	1.0	5.4	4.7	21.9
Total	**0.1**	**0.4**	**0.4**	**1.3**

d)

Species	2008	2009	2010	2011
HER	6.5	35.1	6.7	36.7
MAC	0.2	0.0	0.0	0.2
PIL	21.1	0.0	0.0	3.0
Total	**4.2**	**0.0**	**0.0**	**0.7**

Source: Total UK landings data – landings data appendix of 2012 AER (STECF 2012). UK Driftnet landings – MMO FAD data.

Note: Species codes are: ANE – European anchovy (Engraulis encrasicolus); BSS – European sea bass; COD – Atlantic cod; HER – Atlantic herring; MAC – Atlantic mackerel; PIL – European pilchard;PLE – European plaice (Pleuronectes platessa); RJC – thornback ray Raja clavata); SOL – common sole.

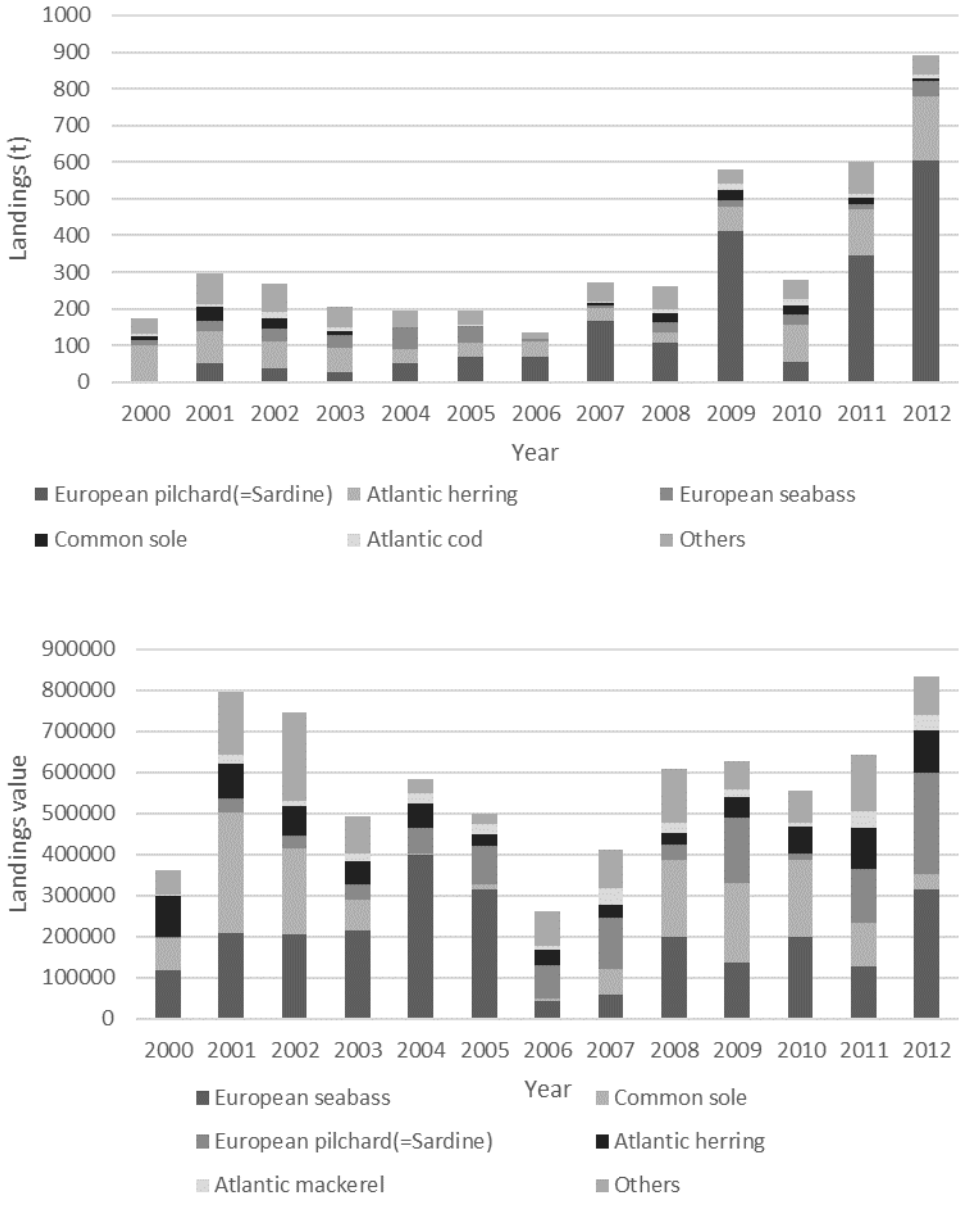

Figure 6: Landings volumes (tonnes – top) and value (€ - bottom) by species for UK vessels using driftnets, 2000-2012

Source: MMO FAD data.

Table 7: Summary of landings by ICES subarea for all gears and for driftnets

ICES subdivision		Landings (tonnes) 2008	2009	2010	2011	Landings (EUR) 2008	2009	2010	2011
	Total all gears	7,609	6,156	6,619	6,793	14,984,549	17,454,542	14,972,339	11,979,641
27.IV.c	Total driftnets	112	101	96	92	433,487	328,988	320,063	249,141
	% driftnets	1.48	1.64	1.45	1.35	2.89	1.88	2.14	2.08
	Total all gears	17,353	21,795	23,565	21,392	29,251,845	33,579,995	41,868,235	42,280,811
27.VII.d	Total driftnets	10	18	34	25	56,017	94,349	165,456	103,036
	% driftnets	0.06	0.08	0.15	0.12	0.19	0.28	0.40	0.24
	Total all gears	34,406	32,568	37,601	36,656	57,858,513	51,144,642	65,765,912	72,662,756
27.VII.e	Total driftnets	47	117	143	478	77,141	71,728	62,778	274,197
	% driftnets	0.14	0.36	0.38	1.31	0.13	0.14	0.10	0.38
	Total all gears	8,058	6,697	8,111	9,885	16,402,507	11,634,593	14,046,291	16,697,151
27.VII.f	Total driftnets	90	337	3	2	35,994	142,335	1,831	926
	% driftnets	1.11	5.03	0.03	0.02	0.22	1.22	0.01	0.01

Source: MMO FAD data, STECF 2013.

2.1.1 Southern North Sea (ICES Division IVc)

In ICES Division IVc, total landings from driftnets of all species ranged from 92 to 163 tonnes between 2008 and 2012 with the highest landings volume in 2012 (Figure 7). However total landings value over this period declined strongly, with the landings value of €435,000 in 2008 down to €211,000 in 2012. These landings represented an average proportion of 1.48 % of the total landings volume and 2.25 % of the value of landings in this area of vessels using all gear types in the period 2008 to 2011. During this period, in MMO EMA (which includes ICES division IVc), there were an average of 78 vessels per year.

Herring, sole, cod and sea bass accounted for the majority of the landings volume, with three of these species, sole, sea bass and herring, accounting for the majority of landings value. Driftnet landings of high value species, *e.g.* sole and sea bass, in subarea IVc were far higher in comparison to driftnet landings in the other regions of the UK, particularly the Western Channel and the South West.

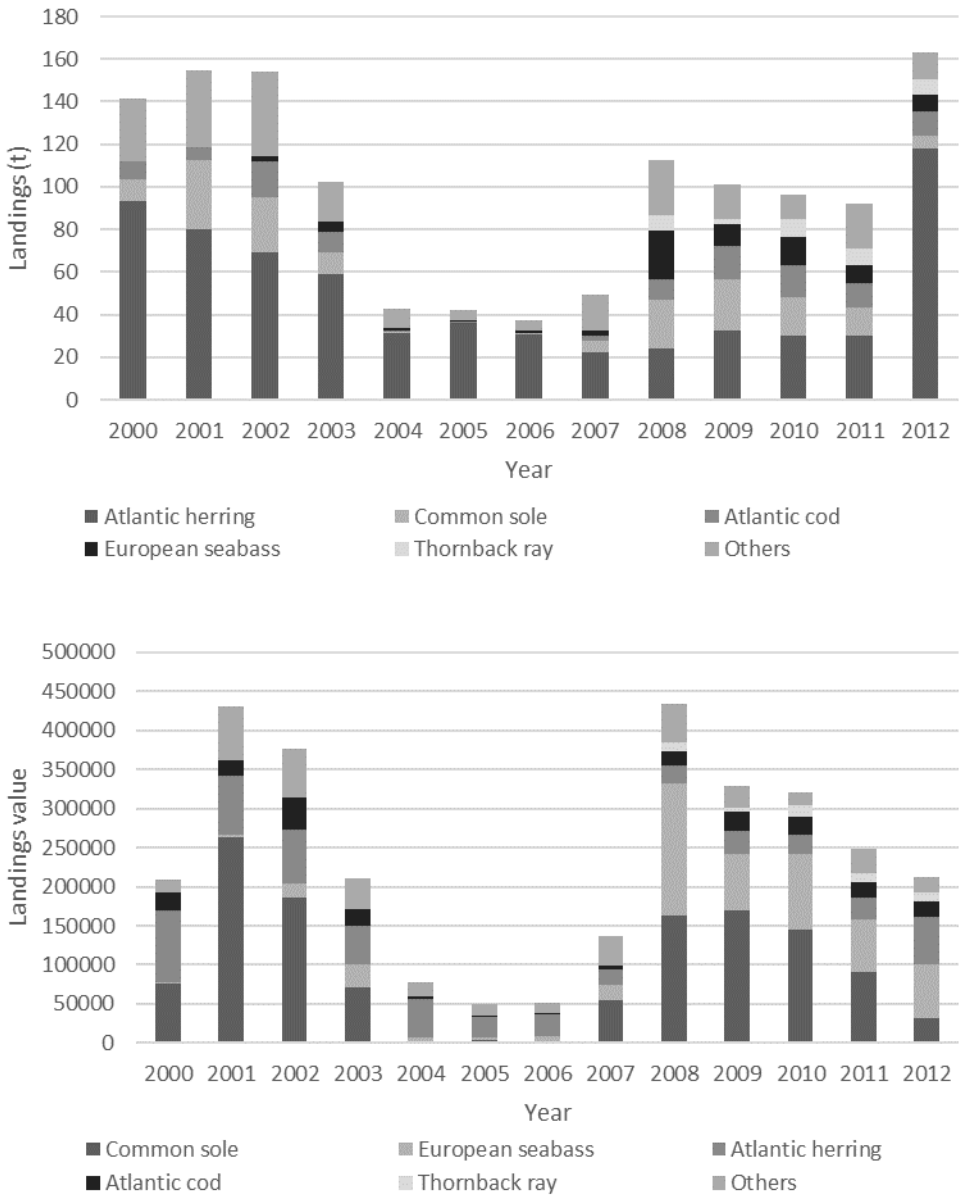

Figure 7: Landings volume (tonnes – top) and value (€ - bottom) by driftnets in ICES Division IVc, 2000-2012

Source: MMO 2013

2.1.2 Eastern Channel (ICES Division VIId)

There are thought to be approximately 40 vessels actively driftnetting in the Eastern Channel: the majority of which are under 10 m in length. There are 6-8 vessels operating from Selsey, 10 from Hastings, 6 from Eastbourne, and approximately 2 or 3 vessels fishing from many of the smaller ports in this region[9]. There have been an average of 32 vessels registered as using driftnets in the MMO SEMA between 2008 and 2012 (MMO 2013). Driftnets are used to target a number of species in this region, including sea bass, sole, mackerel and herring[8].

Total landings in this area (ICES Division VIId) ranged from 10 and 49 tonnes between 2008 and 2012; total landings in 2012 were 49 tonnes (Figure 8). Landings values during this time period ranged between €56,000 and €275,000 (MMO 2013).

Since 2000, landings in ICES Division VIId have been dominated by sea bass, with sole and mackerel as the next most important species (Figure 8).

[9] Deputy Chief Fisheries and conservation officer, Sussex IFCA, pers. Comms. 2013.

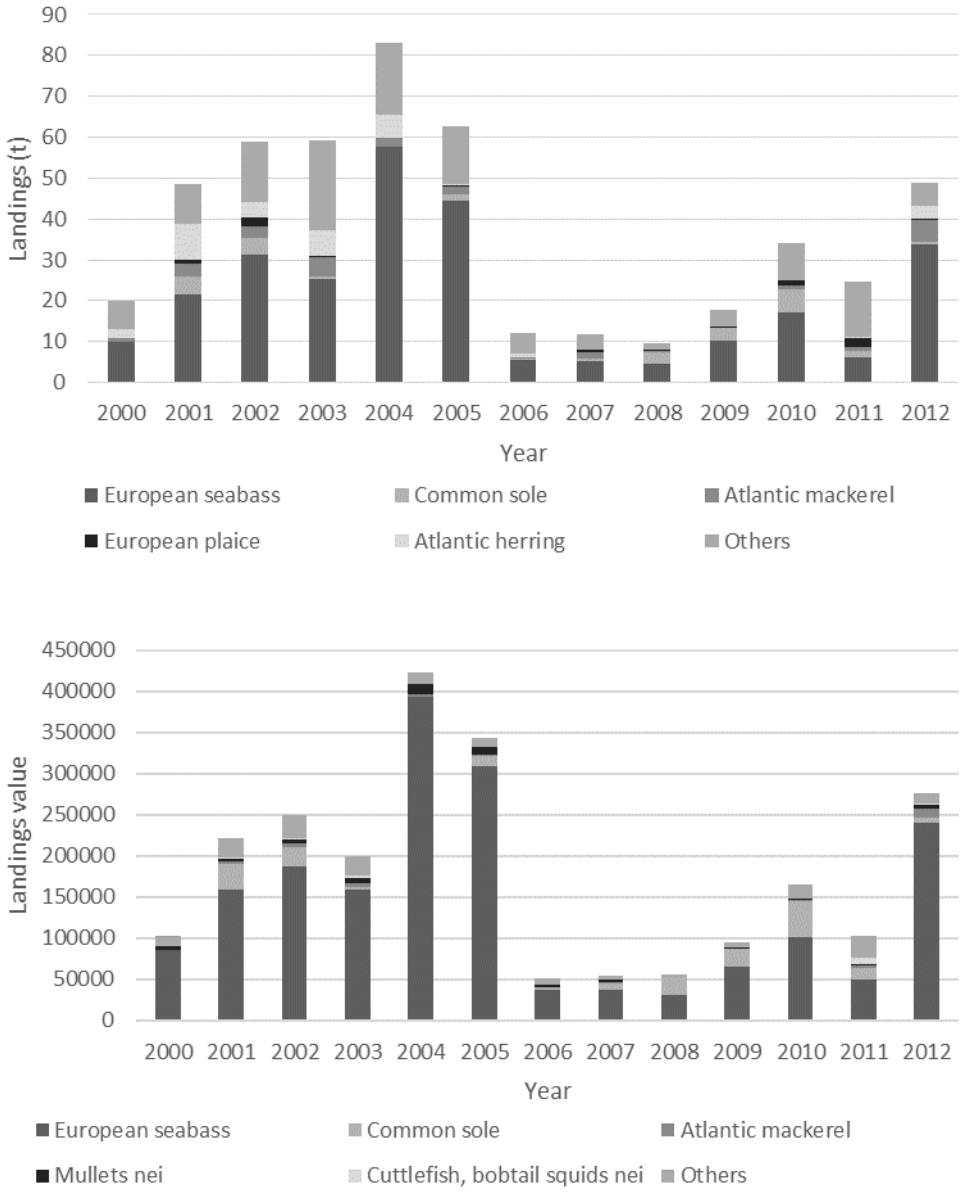

Figure 8: Landings volume (tonnes – top) and value (€ - bottom) by driftnets in ICES Division VIId, 2000 - 2012.

Source: MMO FAD data, 2013

2.1.3 Western Channel (ICES Division VIIe) South West (VIIf)

MMO FAD data (2013) estimated the number of vessels using driftnets to have varied between 41 and 110 between 2008 and 2012 for the SWMA (Figure 9 and Figure 10). Much like in the rest of the UK, the driftnet fishery in the South West can almost exclusively be described as artisanal and only practiced by a minority of the under 10 m fleet[10].

The volume of landings taken in the Western Channel (ICES Division VIIe) were far higher in 2011 and 2012 (> 450 tonnes) than in previous years (<150 tonnes) due to increased landings of European

[10] MMO Representative, South Western MMO, pers. Comms. 2013

pilchards (Figure 9). The value of landings over this period showed a similar trend, reaching €300,000 in 2012 (Figure 9).

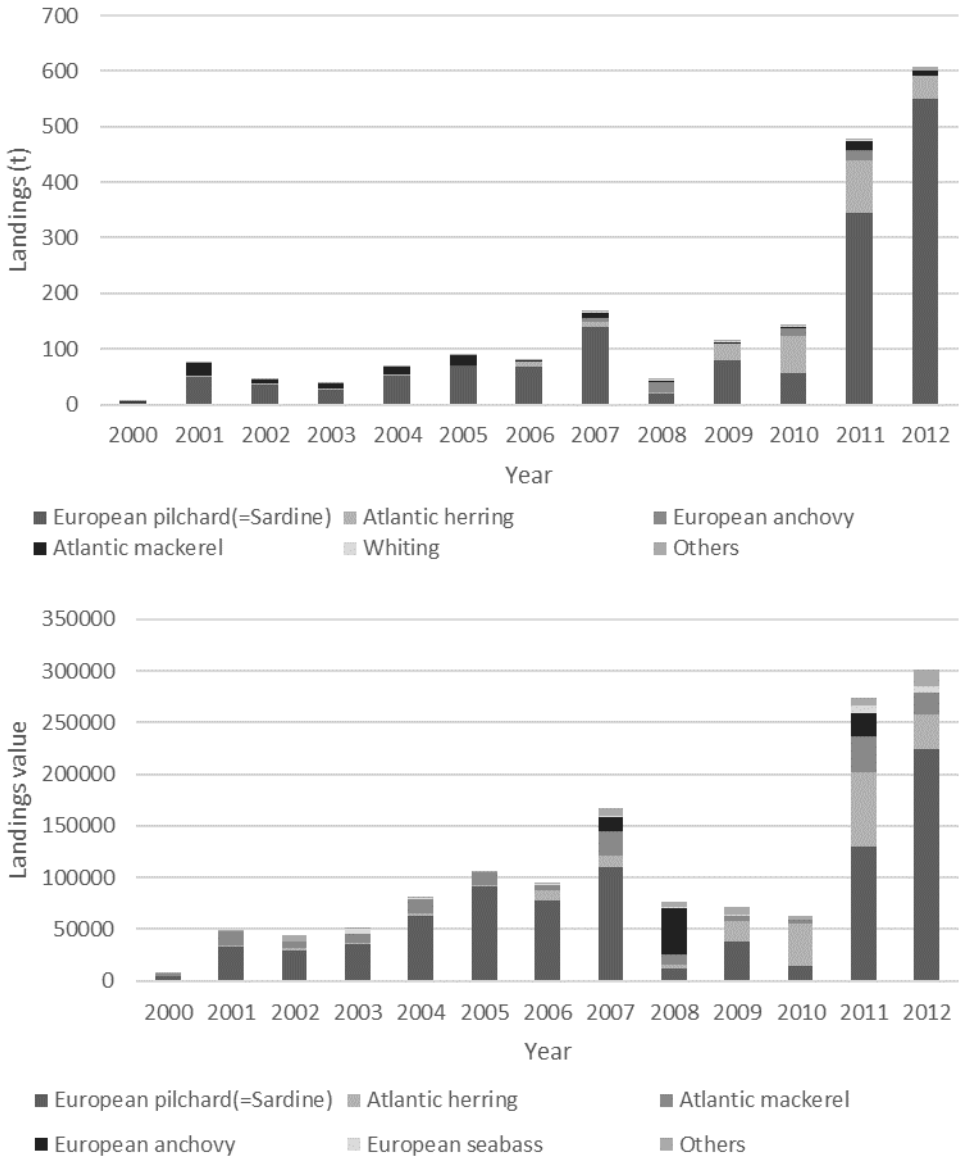

Figure 9: Landings volume (tonnes – top) and value (€ - bottom) by driftnets in ICES Division VIIe, 2000 – 2012.

Source; MMO FAD data (2013).

Driftnet landings in ICES Division VIIf have been variable during the period 2008 to 2012 (Figure 10). In some years there was very little (less than 2 tonnes) landed by driftnet vessels but in other years (i.e. 2009) there were landings as high as 337 tonnes. This pattern was driven by high variability in landings of pilchards, which have dominated landings during this period. Landing values followed the same trends as the landing volumes and ranged from €900 and €140,000 (Figure 10).

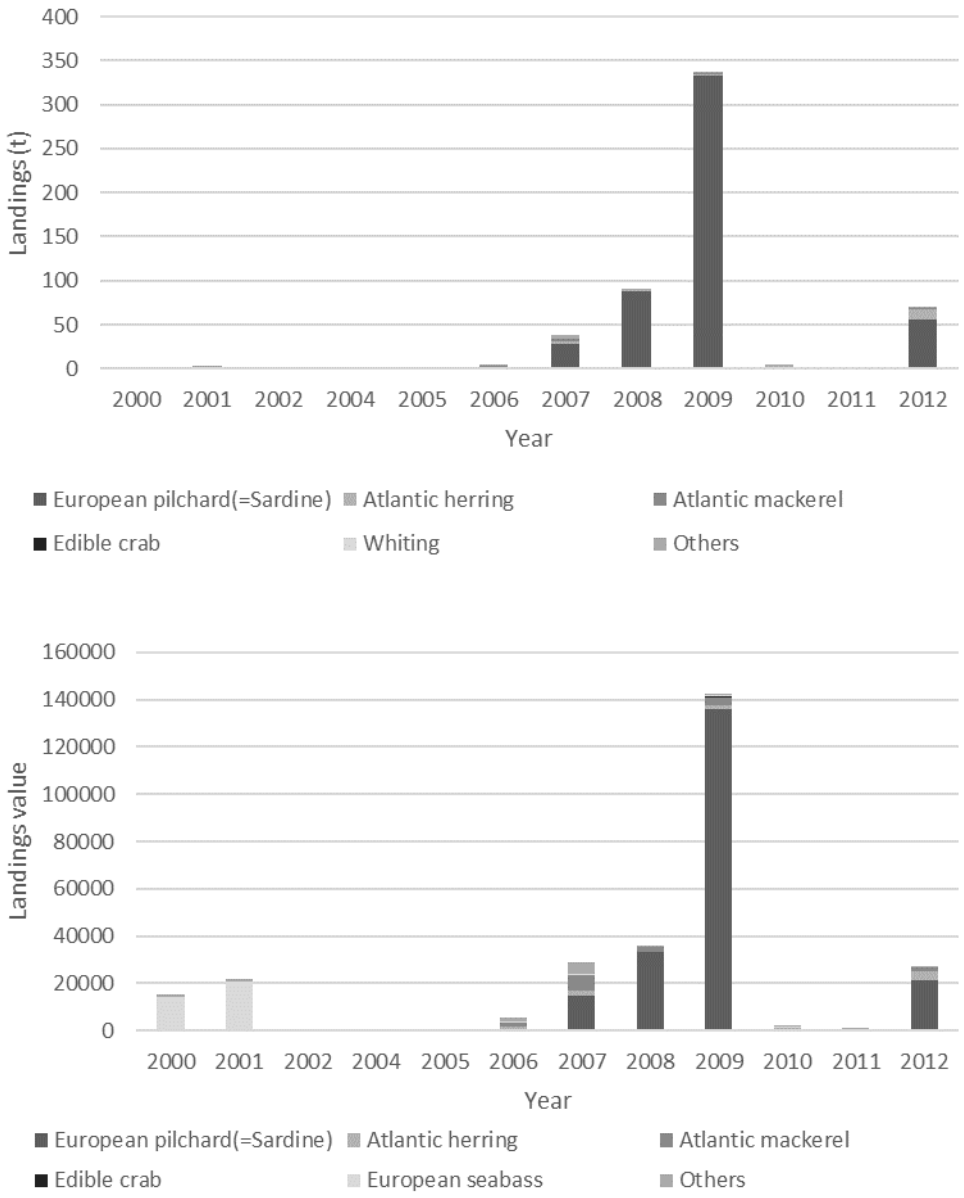

Figure 10: Landings volume (tonnes – top) and value (€ - bottom) by driftnets in ICES Division VIIf, 2000 – 2012.

Source: MMO FAD data, 2013.

2.1.4 Northern Ireland

Fishing for herring in the Mourne area in Northern Ireland recently resumed in 2007 after the fishery regained the interest of local inshore fishers after the fishery was closed in the 1990s (Fishing News, 2013). The fishery operates from the towns of Kilkeel and Annalong and there are between 12 and 15 vessels operating in the fishery.

2.1.5 River and Estuarine Driftnet Fisheries

Salmon Driftnet Fisheries in England and Wales

The use of driftnets to catch Atlantic salmon and sea trout *(Salmon trutta)* in the Northeast has a long history, with reference to their use dating back over 140 years (Anon, 1868). Due to contention over the fishery targeting the Atlantic salmon stock, phase-out incentives have been implemented in the last 20 years (including the recent North East coast net limitation order) and the scale of the fishery has been dramatically reduced (Environment Agency, 2012). The number of licenses has fallen from 142 to 14 since 1993, and the British Government is further committed to completely closing the Northeast salmon driftnet fishery by 2022 (Environment Agency, 2012[11]).

A second driftnet fishery operates in the northeast with sea trout as the primary target species, although salmon are also caught as bycatch. There are 27 vessels, all below 10 m in length, involved in the fishery[12].

The third most significant driftnet fishery for salmon and sea trout operates in northwest England in the estuaries of the rivers Ribble and Lune. There are 11 vessels and fishers involved in the fishery[11].

In salmon driftnet fisheries, boats operate, on average, 6.44 km (4 miles) from shore using 400 m or 600 m long nets. Mesh sizes vary, with the minimum permitted mesh size set at 100 mm[13]. In practice, mesh sizes used are around 120-130 mm (STECF, 1995) - the optimal size required to catch migrating salmon.

2.2 Fishery characteristics

Data from the MMO fishing activity database was used to identify the species with the highest landings by driftnets to determine the key driftnet fisheries in the UK. These are summarised in Table 7. The species with the highest landings by driftnets between 2000 and 2012 were pilchards, followed by herring and sea bass.

[11] Environment Agency, 2012. Environment Agency – North East coast (limitation of net licences) order 2012.
[12] Environment Agency Fisheries Advisor, pers. comm., 2013
[13] Project manager, Environment Agency, pers. Comms. 2013

Table 8: Summary of the key driftnet fisheries in the UK

ICES Division	Species	Effort in days (annual average 2008-2012)*	Key landing ports
27.4.c	Herring	287	Colchester, Hastings, Lowestoft, Portsmouth
	Sea bass	483	Colchester, Hastings, Lowestoft
	Sole	441	Colchester, Hastings, Lowestoft
	Cod	234	Colchester, Hastings, Lowestoft
	Sprat	35	Colchester, Lowestoft
	Mullet	183	Colchester, Hastings, Lowestoft
	Mackerel	92	Colchester, Hastings, Lowestoft
27.7.d	Sea bass	167	Hastings, Newhaven, Poole, Portsmouth
	Mackerel	99	Hastings, Newhaven, Poole, Portsmouth
	Herring	55	Hastings, Newhaven, Portsmouth
	Sole	96	Hastings, Portsmouth
27.7.e	Herring	301	Brixham, Newlyn, Plymouth
	Pilchard	144	Brixham, Newlyn, Plymouth
	Mackerel	111	Brixham, Newlyn, Plymouth
	Anchovy	4	Newlyn
	Whiting	51	Brixham, Newlyn, Plymouth
27.7.f	Pilchard	37	Newlyn
	Herring	23	Newlyn
	Mackerel	15	Newlyn

Source: MMO FAD data (2013).

* Effort days with reported landings of the species. It is not possible to provide days fished whilst targeting different species.

2.2.1 Southern North Sea

Landings from driftnet vessels in the Southern section of the North Sea (ICES Division IVc) ranged from 92 to 163 tonnes from 2008-2012, with many different species landed (Figure 7). Although there were variations in the annual landings levels, these did not appear to coincide with changes to European regulations, for example the introduction of the definition of driftnet in Regulation (EC) 809/2007.

In this area, there are a variety of active driftnet fisheries, including those targeting herring and demersal fisheries targeting sea bass and cod. These all occur within ICES Division IVc. The demersal sea bass fishery may sometimes also operate in area IVb but there are very low levels of landings of sea bass here. The sea bass fishery operates between April and October and the herring fishery operates between October and March.

Other species being targeted by driftnets in this area include sole, sprat *(Sprattus sprattus)*, mullet (*Mugil cephalus*) and mackerel (Table 7). The Thames Blackwater herring fishery which was previously certified by the Marine Stewardship Council (MSC) is also located in ICES division IVc (see Figure 11). This fishery has now left the certification program due to lack of funding but there are still low levels of fishing taking place[14].

[14] Representative, Eastern MMO, pers. Comms. 2013.

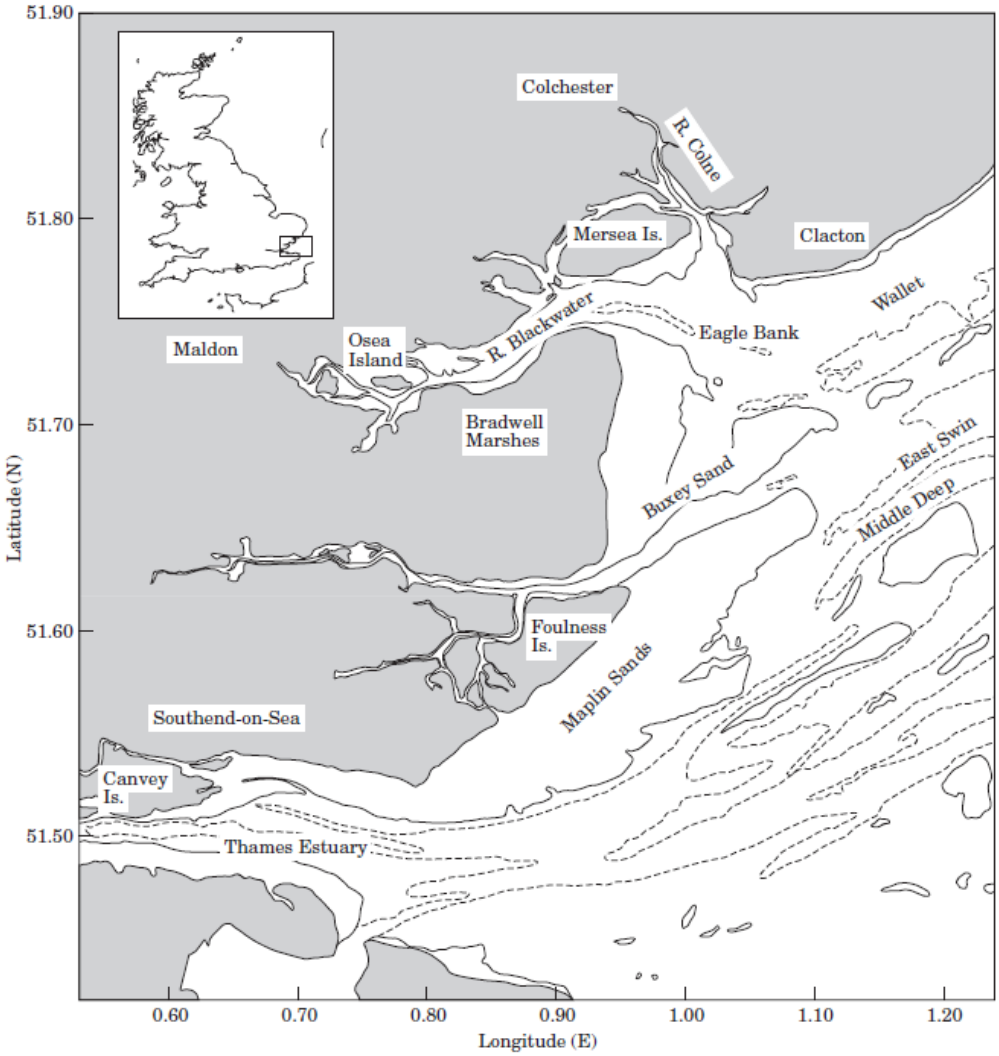

Figure 11: Location of the Thames estuary and Black water estuary previously certified by the Marine Stewardship Council (MSC).

Source: Fox 2001

When targeting herring, fishers around Norfolk and Suffolk use between 2 and 4 nets of 300-400 m in length with a mesh size of up to 100 mm. Vessels around Essex use nets of up to 1,830 m (2000 yards) when targeting sea bass, cod, skate *(Dipturus batis)* and sole, the mesh size of these nets was not available[15].

There is also a fishery in this area operating with drifting trammel nets as a form of derivative driftnet mainly targeting sole.

There have been low levels of driftnet fishing occurring in the central section of the North Sea (ICES Division IVb) with vessels landing between 0.2 and 10.3 tonnes annually of thirteen different fish species during this time.

[15] Representative, Eastern MMO, pers. comm., 2013

2.2.1.1 Derivative Gears: Drifting Trammel Nets

Stakeholder consultations with management institutions including regional offices of the MMO and driftnet fishers in the UK have revealed that trammel nets are also deployed as drifting gears in certain regions of the UK[16].

Trammel nets consist of two/three layers of netting with a slack, small mesh inner netting between two layers of large mesh netting within which fish will entangle. These nets are strings of single, double or triple netting walls kept more or less vertical by floats on the headrope and mostly by weights on the groundrope. These are occasionally set in strings (FAO 2013). Trammel nets are used in the same method as standard drifting gillnets: the nets are suspended in the water column hanging vertically without being anchored to the bottom and are carried along with the current or tide (FAO 2013).

The use of drifting trammel nets primarily occurs between Lowestoft and Ramsgate in ICES division IVc[15]. This fishery targets Dover sole, and it is estimated by fishers that approximately 10 vessels are involved in the fishery[17]. The fishery is active for 12 months a year, and fishing effort of an individual fisher is estimated to be between 120-140 days per year. Fishing occurs up to 32.2 km (20 miles) offshore. Vessels are all reported to be below 12 m in length and have a crew of one or two fishers[15]. A full summary of gear characteristics are presented in Table 8. Landings are estimated at approximately 8,500 kg per year for an individual fisher[15].

Table 9: Gear description North Sea Sole trammel net fishery

		Dover Sole (ICES Area IVc)
Total net length (m) :		1,800 m
Net height (m) :		2 m
Length of individual net panels		400 m
Number of panels:		3
Configuration of panels: parallel/continuous		Parallel and continuous
Type, number, and colour of floats used:		
Type and number of weights used:		Leadline
Depth of net top:		Varies: surface to 16m
Gear markers used:		Marker Buoys
Net panels	Mesh size (mm) :	100 mm
	Twine thickness (mm):	0.35 mm
	Net material: PA/ PES/ PE/ PP/ PVA/ UNK	Monofilament
Acoustic deterrents used:		No
Maximum operational distance from coast (km):		32.2 km (20 miles)
Maximum depth of operation (m):		22 m
Time of day nets set		Any time – fishery is tide dependent
Approximate time taken to set nets (hh:mm):		00:15
Approximate soak time (hh:mm):		01:30
No. of nets set at the same time:		1 (3 fleets)

[16] Eastern district Marine Officer, MMO, pers. comm., 2013
[17] Trammel net fisher, Essex, pers. Comms. 2013

2.2.2 Eastern Channel

Along the South coast of the UK (ICES division VIId) there has been significant driftnet fishing activity for a number of species since 2000.

In this area, landings have ranged from 10 to 49 tonnes from 2008 to 2012 but trends in landings in this area do not appear to coincide with changes to national or EU regulations.

On the South Eastern coast, the largest driftnet fishery targets sea bass: this fishery can be separated into a traditional inshore fishery, operating within 3.7 km (2 miles) from the coast, and an offshore fishery, operating out to 22.2 km (12 miles)[18]. A pelagic driftnet fishery targeting mackerel and herring also operates in this area: the main landing ports for this fishery are Hastings, Eastbourne, Shoreham, and Brighton[17]. The main fishing seasons are October to December for sea bass; May and August for mackerel; and June, July, and November for herring. Sole is also targeted by driftnets and drifting trammel nets in this area[17].

Fishing occurs all year round in the inshore, traditional sea bass fishery, although the main season spans from July to September. Total fishing effort for individual fishermen is thought to consist of approximately 45 days. The fishery is weather dependent and only operates following rough weather when sea bass form aggregations. There are approximately 2-3 fishers per vessel in this fishery[17]. Nets used in this fishery are shorter than 2.5 km with a mesh size of 90 mm and are 50 meshes deep. Normally 2 nets are used at the same time and they are soaked for 2 hours. Fishing occurs overnight within 1.6-6.4 km (1-4 miles) of the shore and landings can range from 2-1000 kg per day[19].

In recent years (since 2010) a fishery has developed targeting sea bass further offshore – up to 22.2 km (12 miles) from the coast. This fishery developed due to the implementation of low cod quotas, and the consequential pursuit of alternatives by fishers[20]. Fishing for sea bass offshore occurs between October-January and the main landing port is Eastborne. All vessels involved are under 10 m in length and carry a crew of 2-3 fishers. The nets used have a stretched mesh size of 150 mm, are designed to target mature sea bass and currently active vessels use net lengths of approximately 2.3 km. The fishery occurs primarily at night and nets have a soak time of approximately 2 - 3 hours[21].

Stakeholder consultations reveal that driftnet fishers were not aware of the net length regulations imposed by the EU until recent inspections were made by Sussex IFCA[20] but these inspections revealed that vessels were already carrying nets of length less than 2.5 km. Local byelaws require nets to be attended at all times (Sussex IFCA 1996); fishing occurs mostly at night and the majority of nets are illuminated to make them easier to observe[20.]

In the Hastings area there are 2-3 vessels inshore drift netting for sea bass. A local byelaw limits the maximum number of nets used to 24, with the total length of these nets approximately 800 m. The nets are floated on the surface and are 50 meshes deep. The stretched mesh size in this fishery is 90 mm, but this is currently being negotiated and could potentially be increased to 100mm in an attempt to avoid quota restrictions[22].

The mackerel, herring, and sole fishery operating from Hastings is MSC certified (Moody Marine Ltd 2012) and fishing occurs between Dungeness and Beachy Head (see Figure 12). However, due to the low demand for herring and mackerel in this area, the fishers themselves claim to receive few benefits from this certification. No more than 2-3 boats can utilise this fishery without considerable decreases in value due to excessive supply, making it economical unviable for many fishers in this area. Driftnet

[18] Deputy Chief Fisheries & Conservation Officer, Sussex IFCA, pers. Comms., 2013
[19] Chairman, Sussex IFCA. Sea bass fisher, pers. Comms. 2013.
[20] Sea bass Driftnet Fisher, Eastbourne, pers. comm., 2013
[21] Sussex IFCA Representative, pers comm., 2013
[22] Chairman, Hastings Fishermen's Protection Society, pers. Comms. 2013.

fishing for mackerel and herring has declined considerably in recent history. This is partially due to the low quota allocation and variable demand[23].

The mackerel and herring fisheries use the same gear setups and the two species are frequently caught simultaneously. Normally, 12 nets are used at once with a total combined length of 350-450 m; the standard mackerel mesh size of 55 mm is used. The nets are designed to sink, allowing the nets to position at the appropriate level in the water column. Sole fishing takes place at night as sole are more active during this time[22].

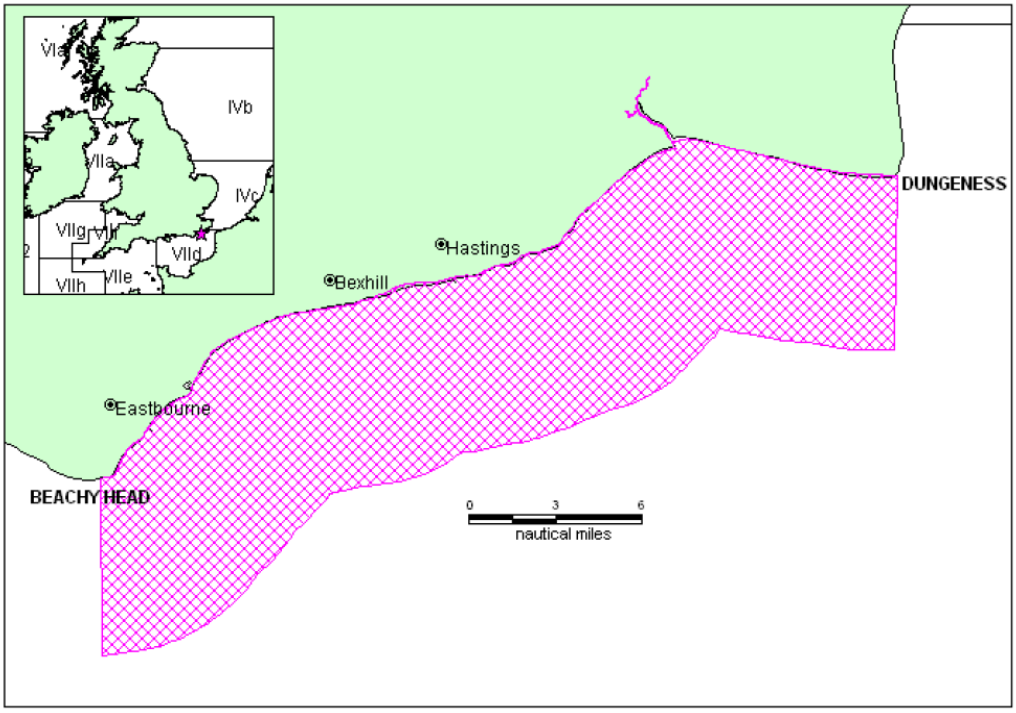

Figure 12: The location of the Hastings driftnet fishery certified by the MSC.

Source: Moody Marine 2012.

Table 10: Gear description of Eastern Channel fisheries

Fishery		**Mackerel (Brighton)**	**Herring (Brighton)**
Total net length (m) :		500 m	1,000 m
Net height (m) :			3.5 m
Length of individual net panels			500 m
Number of panels:		2	2
Net panels	Mesh size (mm) :	58 mm	
	Net material: PA/ PES/ PE/ PP/ PVA/ UNK	Monofilament	

There is also a small fishery targeting sprats (*Sprattus sprattus*) with driftnets. There are 2 vessels which are both thought to be manpowered and so they are not required to have licences[24] so landings from these are not subject to landing restrictions.

[23] Chairman, Hastings Fishermen's Protection Society, pers. Comms. 2013.

There is a cross-tide (drifting trammel nets) fishery targeting sole during spring tides operating out of Ramsgate. This is a lucrative fishery which has in some years exceeded its quota[25].

In Chichester harbour there is a small estuarine driftnet fishery targeting mullet in the summer months. There are 2-3 vessels fishing in this fishery. Outside the mullet season, these vessels fish with fixed gear and whelk pots and they may join the autumn sea bass fishery[24].

Table 11: Gear Description Eastern Channel Fisheries

Fishery		**Hastings Mackerel and Herring**	**Offshore Sea bass**
Total net length (m) :		350 - 450 m	2,300 m
Net height (m) :		5 m	3.65 m
Length of individual net panels		35 m	350 m
Number of panels:		10-12	50
Configuration of panels: parallel/continuous		Individual nets set in parallel	Parallel or Continuous
Type, number, and colour of floats used:		Headline floats	Headline floats
Type and number of weights used:		Leadline foot rope	Leadline foot rope
Depth of net top:		0 m Surface	0 m Surface
Hanging ratio:		1/2	
Gear markers used:		Buoy	Light between every panel
Net panels	Mesh size (mm) :	55 mm – 65 mm	150 mm
	Twine thickness (mm):		
	Net material: PA/ PES/ PE/ PP/ PVA/ UNK		6 ply multi monofilament
Acoustic deterrents used:		None	None
Maximum operational distance from coast (km):		<11.1 km	<22.2 km Average = 9.7 km
Maximum depth of operation (m):			Approx. 4 m
Time of day nets set			6pm – 6am
Approximate time taken to set nets (hh:mm):			1 hour
Approximate soak time (hh:mm):		1-2 hours	3 hours
No. of nets set at the same time:		10-12	1 (sometimes split in to 2)

2.2.3 Western Channel

In the Western Channel (ICES Division VIIe) landings varied from 45 to 608 tonnes. Landings in ICES Division VIIf were variable during the period 2000 to 2012 and were under 100 tonnes every year except in 2009, when 337 tonnes of fish were landed using driftnets (Figure 9).

In this area there are one or more pelagic fisheries targeting pilchards, sea bass, herring, and mackerel. Vessels target pilchards during different months depending on their location: pilchards are targeted between August to February around Newlyn and June to September around Mevagissey. The herring fishery operates primarily between November and February, while the sea bass fishery

[24] MMO 2013. Fishing vessel licensing: an introduction. Available: http://www.marinemanagement.org.uk/fisheries/management/documents/licences/fvl-intro.pdf

[25] Sussex IFCA Representative, pers comm., 2013

operates between September and January. Other species targeted by driftnets in Division VIIe include anchovy *(Engraulis encrasicolus)* and whiting *(Merlangius merlangus)*[26].

The South West driftnet fleet has a distinct division in fishing practice with the majority of the fleet fishing at sea, often within only a few kilometres from their home port, whilst a minority, (estimated between 4 and 6 vessels) transport their vessels by road and working within estuaries at night. This occurs anywhere from the western ends of Cornwall to the east of Devon and even as far as Hampshire; the vessels are said to come exclusively from Plymouth[25]. No fishermen practicing this method made themselves available for interview.

Of the vessels fishing at sea there are two areas of concentrated driftnet fishing, Clovelly in North Devon (VIIf) targeting herring (September – January), and Mevagissey, south Cornwall (VIIe) targeting Pilchard (June - September), both these fisheries have a significant historical and cultural significance to their ports[25].

The fishery operating out of Clovelly targets herring and sea bass from September to January. There are 4 vessels operating in this fishery. The total length of nets used to target herring is 360 m which is made up of 4 panels of 90 m in length configured continuously. The nets are 6 m in height and have a hanging ratio of 2:1 with a mesh size of 55 mm. Nets are marked with a buoy at one end and are set so that the top of them floats at the surface. Fishing occurs less than 1 km from the shore in water with a maximum depth of 16 m. Nets are set by state of tide and are set to fish from half flood to half ebb (a period of around 1.5 hours)[27]. The total length of nets used to target sea bass is 400 m which is made up of 4 panels of 100m in length configured continuously. The nets are 6m in height and have a handing ratio of 2:1 with a mesh size of 112 mm. Nets are marked with a buoy at one end and are set so that the top of them floats at the surface. Fishing occurs less than 3km from the shore in water with a maximum depth of 16 m. Nets in this fishery are also set by state of tide and are set to fish from half flood to half ebb (around 1.5 hours)[26].

The fishery operating out of Mevagissey targets pilchards from July to October. There are 6 vessels operating in this fishery. The total length of nets used to target pilchards is 450 m, which is made up of 5 panels of 90 m in length configured in parallel to each other. The nets are 16 m in height and have a hanging ratio of 8:10 with a mesh size of 45 mm. Nets are set so that the top of them sits at 6 m from the surface. Fishing occurs less than 4 km from the shore, in water with a maximum depth of 40 m. Nets are set at dusk and are left to soak for approximately 1 hour[28]. The MSC has certified this pilchard fishery operating out of both Mevagissey and Newlyn (Figure 13) (MRAG Americas 2010).

[26] MMO representative, South Western MMO, pers. Comms. 2013
[27] Driftnet fisher, Clovelly, pers. Comms. 2013.
[28] Driftnet fisher, Mevagissey, pers. Comms. 2013.

Figure 13: Map showing the main locations of the Cornwall pilchard fishery certified by the MSC.

Source: Cornish Sardine Management Association 2013

Table 12: Gear Description: Western Channel fisheries

Fishery		**Herring**	**Sea bass**	**Pilchard**
Total net length (m) :		360 m	400 m	450 m
Net height (m) :		6 m	6 m	16 m
Length of individual net panels		90 m	100 m	90 m
Number of panels:		4	4	5
Configuration of panels: parallel/continuous		continuous	continuous	Individual nets set in parallel
Type, number, and colour of floats used:		Headline floats	Headline floats	7 per panel
Type and number of weights used:		Leadline foot rope	Leadline foot rope	Lead line
Depth of net top:		0 m	0 m	6 m
Hanging ratio:		2:1	2:1	8:10
Gear markers used:		Buoy one end	Buoy one end	
Net panels	Mesh size (mm) :	55 mm	21.70 sq 45 mm stretched	112 mm
	Twine thickness (mm):	0.28 mm	1 mm	0.4 mm
	Net material: PA/ PES/ PE/ PP/ PVA/ UNK	PA	Spun nylon	PA
Acoustic deterrents used:		None	None	None
Maximum operational distance from coast (km):		<1 km	<3 km	4 km
Maximum depth of operation (m):		16 m	16 m	40 m
Time of day nets set		Nets set by state of tide. Fishing from half flood to half ebb		Dusk
Approximate time taken to set nets (hh:mm):		0 :05	0 :05	0 :10
Approximate soak time (hh:mm):		01 :30	01 :30	01 :00
No. of nets set at the same time:		1	1	1

2.2.3.1 Other seaborne driftnet fisheries

As previously stated there are also individuals known to occasionally driftnet from various ports, these are, in almost all cases, using net configurations identical to those used in the sea bass fishery in Clovelly: *i.e.* Nets suspended from the surface, 6 m deep, 400 – 500 m long. Mesh size 112 – 127 mm. These vessels are targeting sea bass and grey mullet[29].

IFCAs and MMO consider these methods to be very selective and report no problem with these fisheries in regards to bycatch or interaction with unauthorised species[28].

2.2.4 Northern Ireland

The quota for the Mourne herring fishery was set at 30.5 tonnes in 2013 and was taken in a few nights by four or five vessels (Fishing News, 2013). Licences for fishing in this fishery may only be given to vessels under 12.2 m in length and these vessels must use nets with a minimum mesh size of 54 mm (Northern Ireland Executive 2013). Fishing occurs off the coast of Mourne in Northern Ireland (Figure 14).

[29] MMO and IFCA representatives, South Western MMO, pers. Comms. 2013

This fishery uses the same nylon herring nets previously used offshore in the region. Due to the inshore nature of the fishery, the nets are fished with weights or drop stones attached to the footrope every ~2 m but as the nets are floated, the weights are suspended above the sea floor[30]. Nets are approximately 30 m in length, use a minimum mesh size of 54 mm and can be set in parallel to each other or alone (Fishing News 2013).

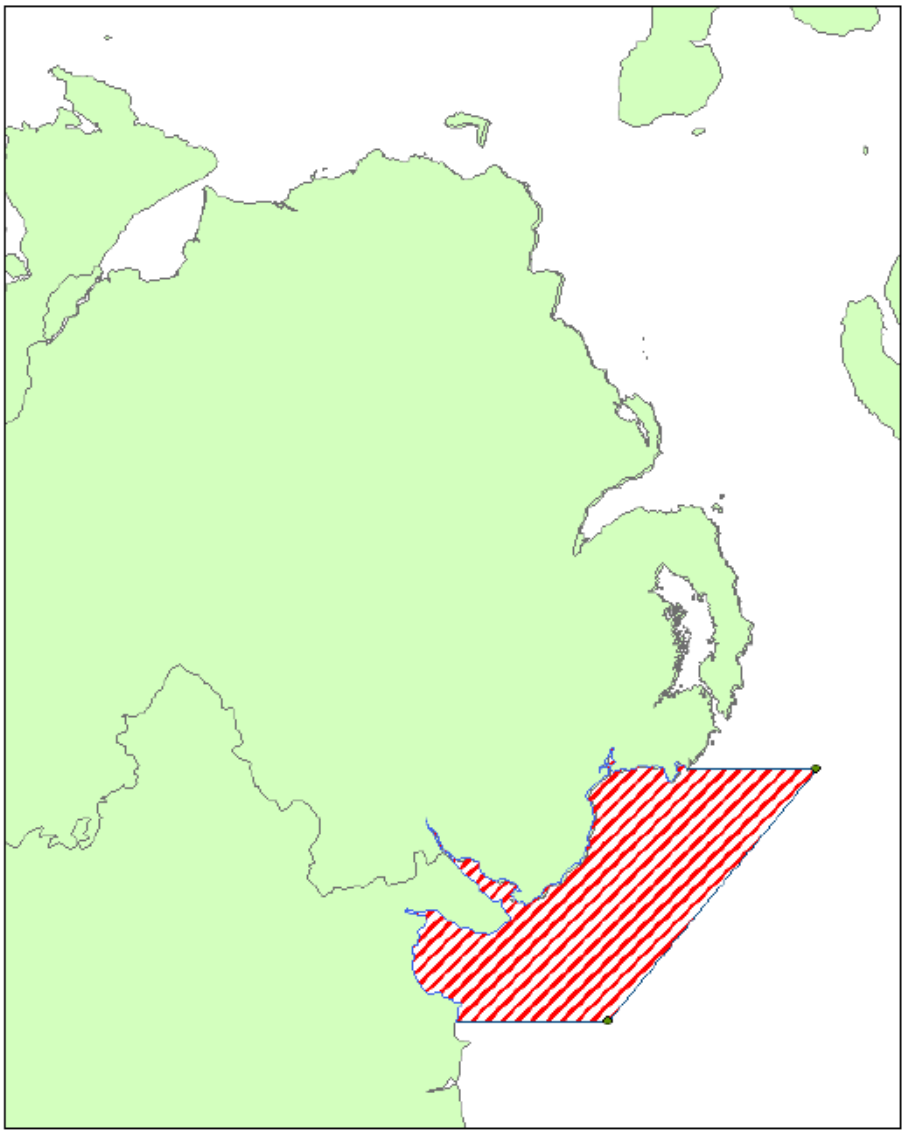

Figure 14: Location of the Mourne herring fishery

Source: AFBI 2013

2.2.5 River and Estuarine Driftnet Fisheries

The North East salmon fishery has been considered the largest salmon driftnet fishery in the UK and is still in operation today. Sea trout are also landed as a secondary target species. The fishery is currently active in ICES Division IVb with the main landing ports including Blythe, North Shields,

[30] Representative of the Inshore fisheries policy team, Department of Agriculture and Rural Development Ireland, pers. Comms. 2013

Amble, and Whitby[31]. More specifically, the fishery operates within the area bound by a line drawn 090° from the Scottish border and a line drawn 90° from Walton on the Naze lighthouse out to 11.1 km (6 nm). The current fishing season extends from 1 June to 31 August, and in 2011 the Northeast salmon driftnet fishery accounted for 94% of the salmon caught in driftnets in England and Wales (CEFAS, 2011). Gear characteristics can be viewed in Table 12.

Table 13: Gear description Northeast Salmon fishery

Fishery		**Salmon (ICES Area IVb)**
Total net length (m) :		550 m (limited by national legislation[32])
Net height (m) :		Varies according to conditions from 9' to 12'
Length of individual net panels		Varies usually 180 m. sheets of netting fixed to headrope into 100/150 to create a loose net rather than one stretched taut
Number of panels:		Once again varies on length of sheet to max of 550 m
Configuration of panels: parallel/continuous		Continuous
Type, number, and colour of floats used:		Usually white torpedo floats or orange weetabix floats one every two m (approx.)
Type and number of weights used:		Leadline
Depth of net top:		Surface
Gear markers used:		Dan buoys
Net panels	Mesh size (mm) :	Min 5 cm (2") knot to knot
	Twine thickness (mm):	Varies
	Net material: PA/ PES/ PE/ PP/ PVA/ UNK	varies
Acoustic deterrents used:		Some netsmen have these but the EA do not make it mandatory
Maximum operational distance from coast (km):		11.1 km (6 Nautical miles)
Maximum depth of operation (m):		No maximum depth
Time of day nets set		According to bylaw (see summary report for close times etc.)
Approximate time taken to set nets (hh:mm):		Dependent upon equipment some boats can shoot net in less than 10 minutes
Approximate soak time (hh:mm):		Dependent upon conditions if high algal presence nets may need to be hauled and cleaned more frequently then re shot or the area where the boat is fishing may have a fast tide which causes the net to drift quickly and hence need to be hauled and re shot
No. of nets set at the same time:		Only one net per boat

Source: Environment Agency[33]

A second driftnet fishery operates in the northeast with sea trout as the primary target species, although salmon are also caught as bycatch. The fishery is active in ICES division IVc: more specifically the area bound by a line drawn 090° from Spurn Head Lighthouse and a line drawn 90° from Walton on the Naze lighthouse out to 11.1 km (6nm). The fishery season spans from the 1 April to 30 September, and there are 27 vessels, all below 10 m in length, involved in the fishery. Each

[31] Environment Agency Fisheries Advisor, pers. comm., 2013
[32] Fisheries Advisor, Environment Agency, pers. Comms. 2013.
[33] Project Manager, Environment Agency, pers. Comms. 2013.

vessel carries one or occasionally two fishers, with total landings representing 408 sea trout in 2012. Each fisher is estimated to spend no more than 7 days at sea per year[31].

The third most significant driftnet fishery for salmon and sea trout operates in northwest England in the estuaries of the rivers Ribble and Lune. The fishery operates from the 1 June to the 31 august, and there are 11 vessels and fishers involved in the fishery. Total landings for 2012 were 713 salmon and 39 sea trout. The fishery is therefore small compared to the northeast salmon fishery and each fisher is estimated to spend no more than 19 days driftnetting per year[31].

Driftnetters are also operating in estuaries in the South West of England and reportedly use similar configurations of net as the sea bass/grey mullet seaborne driftnetters, (see Section 2.2.4) but deployment of the net differs; the practice in the southwest is to allow the estuary bed to slow the drift of the net. Landings data is difficult to ascertain, and no one fishing with this method was available for consultation during the study period. Estuaries in the south west are known to hold concentrations of unauthorised species, Allis shad *(Alosa alosa)*, salmon and sea trout which are vulnerable to gill netting within the mesh sizes used[34].

2.3 Social and economic characteristics

No aggregated figures are available for employment levels in contemporary driftnet fisheries in the UK. Estimations can however be made by taking into account the number of active driftnet vessels and the information obtained during stakeholder consultations pertaining to the number of crew per vessel. The small size of the majority of driftnet vessels indicates that approximately 502 fishers are in part time employment in UK driftnet fisheries (assuming an average of 2 fishers per vessel). Data available on the number of days a vessel fishes with driftnets varied from fishery to fishery and by data source, so a number of estimates are presented here. FAD data provides an average number of 8.8 days fishing with driftnets per vessel in 2012 (MMO, 2013) which, combined with an estimate of 190 days as a maximum number of days an under 10 m vessel can fish in a year[35], gives an estimate of approximately 17 FTE. The same data from 2008 to 2012 gives an average of 10 days fishing with driftnets (MMO, 2013) and an estimate of 26 FTE. In the Eastern channel, individual fishers fish up to 30 days each year using driftnets; this amounts to an estimate of 58 FTE[36]. Based on these estimates FTE for driftnet fisheries ranges respectively from is 0.33 % and 0.38 % to 1.15 % of the total FTE for the UK (FTE in the UK fisheries sector = 6,918 in 2010) (AER 2012). In 2010, the UK fisheries sector accounted for a total of 11,494 jobs (part time and full time) (STECF 2012). Therefore, as a percentage of employment in the fisheries sector, driftnet fisheries could potentially account for 4 % of employment.

In 2011, the UK fleet landed 590 thousand tonnes of fishery products with a total value of €946 million. Of this total, the driftnet fleet in the EMA, SEMA, and SWMA are recorded as landing 600 tonnes, therefore contributing 0.1 % to the UK fishery in terms of landings by weight. The value of landings from UK driftnet fisheries are reported as €1,287,441 - representing 0.14 % of the total value of UK landings in 2011.

[34] Fisheries Advisor, Environment Agency, pers. Comms. 2013.
[35] MRAG et al, 2010. Lot 4: Impact assessment studies related to the CFP. Environmental, Economic, Social and Governance impacts of the STATUS QUO scenario for the 2012 revision of the Common Fisheries Policy. Available: http://ec.europa.eu/fisheries/documentation/studies/impact_assessment_phase_i/phase_i_final_report_en.pdf
[36] Sea bass fisher, Eastbourne, pers. Comms. 2013

2.3.1 Southern North Sea

Consultations undertaken with CEFAS for the study indicated that whilst UK driftnet fishing in ICES division IVc provides only a small proportion of total landings, fishers depend on the flexibility created by the option to use driftnets. This flexibility has become more important in recent years for the under 10 m fleet due to declining fishing opportunities[37].

2.3.2 Eastern Channel

In the sea bass, mackerel and herring fisheries operating from towns on the south coast, there are an average of 2-3 fishers per vessel and the vessels spend 20-30 days fishing with driftnets, the rest of the year they tend to fish with fixed nets, whelk pots and crab and lobster pots[38] [39].

In the mackerel and herring fishery, vessels will take average landings of 50 kg per day which is worth about €183 (£150). There are no interactions with cetaceans or other protected species in this fishery. Neither mackerel nor herring are targeted by gears other than driftnets in this area[36].

In the inshore sea bass fishery, landings are varied and can range from 20-1000 kg per day with a value of between €3.7-7.3/kg (£3-6/kg) (generally the value is lower with higher landings).

The offshore sea bass fishery targeting mature sea bass has estimated landings of 320 kg per fishing trip[40]. This can be extrapolated to landings of approximately 14,400 kg per vessel per year based on the assumption that fishing vessels in the offshore sea bass fishery conduct 45 trips a year.

Fisheries operating within Sussex IFCA's area of control must comply with the IFCA's local byelaws which require nets to be attended at all times (Sussex IFCA 1996). Fishing occurs mostly at night in this fishery and the majority of nets are illuminated to make them easier to observe[41]. Nets for these fisheries are also expensive – costing approximately €9,150 (£7,500) for 2.3 km of net.

2.3.3 Western Channel

Social and economic data has never been gathered solely by method of fishing in the South West, further to which, under 10 m vessels have not needed to keep a log book. Coupled with sales, current and historical, being direct to restaurants, merchants or fish being salted for potting bait, figures are "best estimations" taken from data volunteered by fishers only.

The south west region is highly dependent on tourism, and small fishing ports are integral to the regions attraction to tourists. The economic importance to the wider community from traditionally drift netted fish would warrant further study to evaluate the fisheries wider worth, as the long history and artisanal nature of the fishery add to the tourist's expectation and experience of the region. In North Devon herring is sold specifically as "Clovelly Herring" for example. This is further illustrated by the annual Clovelly herring festival which attracts visitors and national media alike[42].

For vessels in the South West, driftnetting will only account for a part of their overall fishing activity (4 months of the year for pilchards and 4 months for herring), and is highly seasonal and market led. The proportion of time spent using driftnets varies based on the seasons of the target species as well as the weather conditions. When not using driftnets, vessels fish with pots, set nets, and hand lines.

[37] Researchers, CEFAS, pers. Comms. 2013
[38] Representative of Sussex IFCA, pers. Comms. 2013.
[39] Chairman, Hastings fishermen's protection society, pers. Comms. 2013.
[40] Sea bass fisher, Eastbourne, pers. Comms. 2013
[41] Sussex IFCA Representative, pers comm., 2013
[42] Driftnet fisher, Clovelly, pers. Comms. 2013.

Therefore, as fisheries can be variable and weather dependent, fishers maintain flexibility by using a number of different gears[43].

Herring and sea bass drift net costs are minimal once the initial net has been purchased. Floats, head line and lead line do not generally expire and mono filament panels are inexpensive. Unlike other fishing methods, drift nets are almost never lost and not often badly damaged. Fuel costs are low as fishing grounds are within a short steaming distance of the home port, and whilst drifting engines are cut[39].

The costs associated with the pilchard driftnet fishery are also minimal, once the initial purchase of the net has been made, (approximately €600). With its twine construction nets will last for many years and not subject to the damage or loss as would set nets or trawls. The close locality of the fishery to the port makes for minimal fuel costs[44].

The market for herring in North Devon is a niche one, and easily flooded. Prices are dictated by the availability of fish. Herring from the Clovelly fishery is either sold directly to merchants or when no longer required, sent to Plymouth market or salted down for lobster pot bait. Prices for locally sold herring have increased over recent years through collective bargaining. No other vessels fish for herring in this fishery, nor are they fished by other methods. Annual landings of herring from this fishery are around 0.75 tonnes which fetches an average value of €1/kg[39].

The Sea bass fishery off Clovelly is less subject to market flooding, and to some degree is promoted by existing netting by-laws placing certain restrictions on set nets in Bideford bay which include the requirement that set nets must be set at least 3 m below surface level at any state of tide (Cornwall IFCA 2011). As the price of sea bass and grey mullet continues to be high it is thought this fishery may increase. Annual landings of sea bass from this fishery are around 1.5 tonnes which fetches an average value of €9.5/kg[45].

Other driftnet vessels are mostly targeting sea bass and grey mullet *(*species including *Mugil labeo, Mugil capito, Mugil labrosus)*, in vessels averaging 5–6 m and of 20 hp. These vessels (estimated 20 - 30) are distributed across the south west and fish with driftnets occasionally when conditions are favourable. It is thought that driftnet fishing will make up similar percentages to other driftnet fisheries, i.e. 20% and the sea bass and grey mullet will usually be sold to local restaurants, merchants, and fish markets (auctioneers)[42]. Whilst there is little data, the IFCAs, MMO, and Fishing associations report an increased driftnet fishing effort at sea targeting these species. This is being led by recent increases in market value for grey mullet[46].

The Mevagissey pilchard driftnet fishery is dictated by market prices. The tourist season leads to a local demand in pilchard, but when pilchards are located in large shoals, other vessels using ring nets are attracted to the fishery and collapse the price. Thus, depending on the seasonal shoal sizes, the driftnet fleet varies in size from year to year, the most being 6 vessels and the least, one or two. Other fisheries, netting, potting and hand lining are the mainstay of the fleet. Annually around 2 tonnes of pilchards are landed by driftnets which fetch an average price of €1.75/kg. The value from this fishery (using driftnets) is around 20% of the total value by all gears[47].

In the case of these fisheries targeting herring and pilchards, there is a critical quantity of these species which could be caught before the local market, (direct sales to fish mongers or merchant)

[43] MMO representative, South Western MMO, pers. Comms. 2013
[44] Driftnet fisher, Mevagissey, pers. Comms. 2013.
[45] Driftnet fisher, Clovelly, pers. Comms. 2013.
[46] MMO and IFCA representatives, South Western MMO, pers. Comms. 2013
[47] Driftnet fisher, Mevagissey, pers. Comms. 2013.

would become flooded and the price would drop to the point where the fishery is rendered uneconomical. This factor also limits the size of the fleet[42].

Other vessels are fishing at sea to a lesser extent throughout the south west region; this will often be individuals taking advantage of conditions and market prices.

2.3.4 Northern Ireland

There are between 12 and 17 vessels operating in the Mourne herring fishery and approximately 75 people are directly employed as fishers, processors and in factories (AFBI 2013). The value of the fishery in 2013 was around €21,700 with the value of herring of around €220 per tonne[48].

2.3.5 River and Estuarine Driftnet Fisheries

Salmon Driftnet Fisheries in England and Wales

On average, vessels employed are less than 10 m in length with a crew of one or two fishers. Vessels operating in the north east salmon driftnet fishery are estimated to land 33 % of their catch with driftnets and spend approximately 40 days a year using driftnets. No quota has been implemented for these fisheries[49].

2.3.6 Derivative gears

Costs of the gear in the sole drifting trammel net fishery in ICES division IVc are reported at €3 (£2.50) per metre of netting, equating to approximately €5,480 (£4,500) for a complete net[50]. It is likely that similar gears in other parts of the UK will cost a similar amount.

2.4 Sustainability of fisheries

Of the main target species in UK driftnet fisheries, herring, cod, mackerel and sole are managed under quotas and have ICES stock assessments conducted regularly, the results of which are presented in Table 13.

[48] Representative of the Inshore fisheries policy team, Department of Agriculture and Rural Development Ireland, pers. Comms. 2013
[49] Fisheries Advisor, Environment Agency, pers. comm., 2013
[50] Drifting trammel net fisher, Essex, Pers. Comms. 2013

Table 14: Summary of stock status of species with highest landings

Species	Stock	Year of assessment	Stock status – fishing mortality	Stock status - SSB
Herring (ICES 2012a)	North East Atlantic (Norwegian spring-spawning herring)	2011	$F < F_{MSY}$ $F < F_{PA}$ $F > F_{MP}$	$SSB > B_{MSY}$ $SSB > B_{pa}$ $SSB > B_{lim}$ $SSB > SSB_{MP}$
Herring (ICES 2012b)	North Sea autumn spawners	2011	$F < F_{MSY}$ $F < F_{PA}$ $F < F_{MP}$	B_{MSY} undefined $SSB > B_{pa}$ $SSB > B_{lim}$ $SSB > SSB_{MP}$
Cod (ICES 2012b)	Subareas IV, VIId and IIIa	2011	$F > F_{MSY}$ $F < F_{PA}$ $F < F_{lim}$ $F > F_{MP}$	$SSB < B_{MSY}$ $SSB < B_{pa}$ $SSB < B_{lim}$ $SSB < SSB_{MP}$
Mackerel (ICES 2012a)	North East Atlantic	2011	$F > F_{MSY}$ $F > F_{pa}$ $F < F_{lim}$ $F > F_{MP}$	$SSB > B_{MSY}$ $SSB > B_{pa}$ $SSB > B_{lim}$ $SSB > SSB_{MP}$
Sole (ICES 2012b)	Subarea IV (North Sea)	2011	$F > F_{MSY}$ $F < F_{PA}$ $F < F_{lim}$ $F < F_{MP}$	$SSB > B_{MSY}$ $SSB > B_{pa}$ $SSB > B_{lim}$ $SSB > SSB_{MP}$
Sole (ICES 2012b)	Subarea VIId (Eastern Channel)	2011	$F > F_{MSY}$ $F > F_{PA}$ $F < F_{lim}$	$SSB > B_{MSY}$ $SSB > B_{pa}$ $SSB > B_{lim}$

Sources: ICES advice books 6 and 9, 2012

Notes: MSY = Maximum sustainable yield; PA = Precautionary Approach; Lim = Limit; MP = Management Plan; SSB = Spawning Stock Biomass. B_{MSY} is assumed to be $B_{trigger}$.

Of the species subject to quotas, only mackerel landings exceeded the UK's initial quota allocation in 2012, and by less than 1 %. For all species, the proportion of landings and quota taken by driftnet vessels was very low. As such, it is unlikely that driftnetting by UK vessels has had a significant impact on quota species.

However as shown in Table 6, driftnet vessels do account for significant proportions of sea bass in ICES Division IVc. Sea bass recruitment appears to be climate driven, with no clear relationship between spawning stock biomass (SSB) and recruitment strength (ICES WGNEW 2010). Consequently it is not possible to determine management reference points for either SSB or fishing mortality. However adult biomass of sea bass in ICES Divisions IVb & c and VIIa, d, e, h, f and g has been increasing over the last 20 years (ICES WGNEW 2010) and the exploitation rate of juveniles has been decreased through a combination of EU and national measures (Pawson *et al.*, 2005). Consequently the stocks targeted by UK fisheries are thought to be have been sustainably exploited from the early 1990's onwards.

Table 15 Summary of UK driftnet landings, total UK landings and quota (tonnes) in 2012, for quota species targeted by UK driftnets.

Species	Driftnet landings	Total landings	Quota	Driftnet landings %	Quota uptake %
Cod	12.2	13252	13582	0.092	97.6
Herring	174.8	78023	78992	0.224	98.8
Sole	6.2	1966	3198	0.315	61.5
Mackerel	16.7	241789	240385	0.007	100.6

Source: MMO 2013, MMO 2012

During the MSC certification process for the fisheries that have been certified, bycatch levels and species are identified so information was available to us for these fisheries.

2.4.1 Bycatch data

Bycatch data is collected by observers on vessels around the UK (in ICES Subareas IV, VI, VII and VIII) by CEFAS for the Sea Mammal Research Unit (SMRU) at St Andrews University. Between 1996 and 2011, 1,552 trips were observed and of these, 117 hauls with driftnets were observed (of a total of 1066 observed hauls with all static nets). 254 hauls of drifting trammel nets were observed during this same period (Northridge et al., 2011).

Table 16: Shark bycatch rates by species, gear type and ICES subarea

				Number of hauls with bycatch				
Net type	ICES subarea	Total no. hauls	No. hauls with bycatch	Basking shark *(Cetorhinus maximus)*	Blue shark *(Prionace glauca)*	Porbeagle shark *(Lamna nasus)*	Tope	Bycatch rate per haul (Tope)
Driftnet	IV	79	1	0	0	0	1	0.012
Drift trammel	IV	227	2	0	0	0	2	0.0088
Total		306	3	0	0	0	3	

Source: Northridge et al 2011

2.4.2 Protected species[51]

During these trips, a seal was observed as bycatch in a driftnet fishery targeting sea bass in ICES Subarea IV which gave a bycatch rate of 0.018. No seals were caught on other trips.

[51] Protected species are those that a MS is required to monitor under the EU Habitats and birds directives. They include species of marine birds, mammals, fish and reptiles that could be impacted by fisheries e.g. Osprey, harbour seals, Atlantic salmon and loggerhead turtles

Table 17: Seal bycatch rates by metier and ICES subarea

Gear type	Target species	ICES subdivision	No. hauls	No. seals	Bycatch rate
Driftnet	Pilchard, herring, cod	IV	16	0	0
Driftnet	Sea bass	IV	55	1	0.018
Driftnet	Salmon	IV	8	0	0
Drift trammel	Sea bass, cod, sole, ray	IV	227	0	0
Driftnet	Pilchard, herring cod	VI	1	0	0
Driftnet	Pilchard, herring, cod	VII	15	0	0
Driftnet	Sea bass	VII	22	0	0
Driftnet	Salmon	VII	27	0	0
Drift trammel	Sea bass, cod, sole, ray (no species given)	VII	222	0	0
Total			593	1	

Source: Northridge et al 2011

Other protected species that were observed to interact with driftnet fisheries included shad species.

Table 18: Summary of shad bycatch by species, gear and ICES subarea

		Number of hauls with bycatch		
Gear	ICES subarea	Allis Shad	Twaite shad	Unidentified shad species
Driftnet	IV	4	0	6
Drift trammel	IV	5	6	2
Total		9	6	8

Source: Northridge et al 2011

Table 19: Number of individual shad caught by species, gear and ICES subarea

		Number of individuals caught		
Gear	ICES subarea	Allis Shad	Twaite shad	Unidentified shad species
Driftnet	IV	10	0	22
Drift trammel	IV	10	18	7
Total		20	18	29

Source: Northridge et al 2011

Table 20: Number of driftnet hauls with shad bycatch by year and ICES subarea

Year	Gear	ICES subarea	Total no. hauls	No. hauls with bycatch	Bycatch species
1999	Driftnet	IV	37	2	Shad
2007	Driftnet	IV	6	4	Shad

2007	Drift trammel	IV	101	8	Shad (6 Twaite shad)
2009	Driftnet	IV	36	4	Allis shad
2009	Drift trammel	IV	73	5	Allis shad
2007	Driftnet	VII	10	1	Twaite shad
Total			263	24	

Source: Northridge et al 2011

ICES advise that there is no indication that any pelagic fisheries (gear type not specified) in the North Sea pose a major risk to cetaceans. ICES also advises that there is insufficient and incomplete evidence available to recommend further bycatch mitigation measures for all fisheries in the North Sea and North Atlantic and data collection and supply of fishing effort data should be improved to help to inform this (ICES 2010).

SMRU report that their observers noted two instances of harbour porpoise bycatch in a total of 131 observed hauls by driftnets (of these 80 were driftnets and 51 were drifting trammel nets). This study covered both the North Sea and the South West coast of the UK between 1995-2012[52].

2.4.3 Southern North Sea

Bycatches and discards in the previously MSC certified Thames Blackwater herring fishery are reported to be negligible. There is a small amount of whiting and red gurnard *(Chelidonichthys cuculus*) caught as bycatch which are generally taken for personal consumption. Harbour (common) seals *(Phoca vitulina)* are present in the Thames estuary and it is reported that there are interactions with the driftnet fishery but there are no incidental catches of these seals. Small bycatch in the fishery is generally discarded due to its small size and there are too few caught to be of commercial interest. Species discarded tend to comprise of whiting, mackerel, horse mackerel and gurnards in low levels. The protected species allis and twaite shads *(Alosa fallax)* are known to enter the estuary but they do this at a time outside the driftnet fishery season so they do not interact with the fishery (Moody Marine Ltd, 2005).

In the sole trammel net fishery in ICES division IVc, the target species are estimated to constitute 50% of total landings, 40% are non-target retained species, and 10% are discarded. Non-target retained species include cod, thornback ray (*Raja clavata*), and smooth hound (*Mustelus* spp.), with thornback ray constituting the majority of non-target retained catch. Discarded species include juvenile flounder *(Platichthys flesus)*, herring, and dab *(Limanda limanda)*, a proportion of which are thrown back alive as nets are hauled. As sole are a demersal species, nets are cast close to the benthos and are occasionally allowed to drag along the sea floor. However, this practice is reported to land a large proportion of echinoderms (urchins and starfish) and is therefore not frequently repeated. Interaction with protected species are reported to be negligible in this fishery: an individual fisher reported one incident of a seal bycatch during 31 years in the fishery[53]. There is no requirement for the fishers involved in this fishery to report discarded catches.

The sea bass fishery within ICES division IVc has reported incidental catches of harbour seals (*Phoca vitulina*) and grey seals (*Halichoerus grypus*). This fishery takes place within the vicinity of the Wash SAC located on the east coast of England (Jones et al. 2013). The Wash is the largest embayment in the UK; the extensive intertidal flats there and on the North Norfolk Coast provide ideal conditions for harbour seal breeding and hauling-out. This site is the largest colony of common seals in the UK, with some 7% of the total UK population (JNCC, 2013[54]).

[52] Representative, SMRU, Pers. Comms. 2014
[53] Drifting trammel net fisher, Essex, Pers. Comms. 2013c.
[54] http://jncc.defra.gov.uk/ProtectedSites/SACselection/species.asp?FeatureIntCode=S1365

2.4.4 Eastern Channel

The Sussex IFCA conducts risk assessments on each of the fisheries in the region, determining which of the fisheries warrant the most monitoring effort. The small scale driftnet fisheries in the region are generally seen as a low risk fisheries and are not associated with significant bycatch (Sussex IFCA 2013). Due to the combination of high expense and constant observation of nets in fisheries managed by the Sussex IFCA, ghost fishing is also not thought to be an issue with these fisheries.

The small mackerel and herring fishery in this region has low landings and quotas have not been exceeded. In the MSC certification report for the driftnet fishery targeting these species around Hastings, it is stated that bycatch levels were extremely low and the only retained bycatch species were garfish *(Belone belone)* and sprat. There are also no discarded species in this fishery. This information came from consultation with fishers and stakeholders during the certification process. There have been few sightings of cetaceans in this region and the incidental catch by driftnets is negligible[55]. Catches of the protected species of shad are also considered to be negligible. No incidental catches of seabirds have been reported in this driftnet fishery (Moody Marine 2012).

While there are no quotas on sea bass, there is a limit of 5 tonnes/week implemented on vessels (Parliament Briefing papers 2013) and this has occasionally been exceeded[56]. Quotas are currently being discussed by UK parliament and may be reduced to 5 tonnes per month per fisher as a result of ICES advice that European sea bass landings be reduced by 20% in 2013 to protect the stock (ICES 2012a).

The inshore sea bass fishery is reported as being extremely selective with low bycatch rates[57]. Other species that are caught in this fishery include whiting, mackerel, pollock *(Pollachius pollachius)*, mullet (species not given), smooth hound and tope all of which are retained. Very little is discarded. Cetaceans are seen in the area but do not interact with the fishery. There is currently one seal in the area which has never been caught in nets but is a nuisance as it takes fish from the nets. Otherwise there are no interactions in this fishery with protected species. Other gears used by sea bass fishers include anchored nets, sole nets and trammel nets and the key target species include whelk and cuttlefish species[58].

A recent study by the MMO placed observers on driftnet vessels involved in the new offshore sea bass fishery. This study aimed to examine impacts of this fishery as anecdotal accounts of dolphin and seabird bycatch had been previously reported[54].

The cross-tide driftnet fishery targeting sole has in some years exceeded its quota. The Chichester harbour estuarine fishery is thought to sometimes catch some salmon, sea trout and shad (specific species generally unknown) as bycatch and there have been two recorded incidences of fishers retaining these species[54].

2.4.5 Western Channel

The Cornish pilchard driftnet fishery is considered to rarely interact with cetaceans and there are regulations in place to minimise incidental bycatch of them (MRAG Americas 2010). Logbooks are not required for all vessels but there is a voluntary logbook system for vessels under 10 m in length (MRAG Americas 2010). These books help to collect information on bycatch – both retained and discarded. Retained bycatch species include anchovy, sprats, herring, mackerel, sea bass, cod and scad *(Trachurus trachurus)* and these make up around 13 % of the total catch (Macalister Elliott and Partners Ltd 2011). Anchovy and herring are often targeted during their peak seasons (when quota is

[55] Chairman, Hastings fishermen's protection society, pers. Comms. 2013
[56] Representatives from Sussex IFCA, pers. Comms. 2013
[57] Sea bass fisher, Eastbourne, pers. Comms. 2013.
[58] Representative, Sussex IFCA, pers. Comms. 2013

available) so these species are not included under incidental species. This results in a level of incidental catches of around 3 % of the total catch. Sprats are often discarded and discard survival is reported to be good. Around 3 % of catch is thought to be discarded (Macalister Elliott and Partners Ltd 2011).

Given that the vessels in the fisheries in the south west must attend the net, the nets are relatively short and there is a short soak time, bycatch, (if not retained for pot bait) was able to be released alive[59].

The herring fishery operating from Clovelly is thought to be very selective with little discards (<1 % of catch) or bycatch. Pilchards are also caught in this fishery and are retained. Species caught in this fishery that are discarded include gurnard, spider crabs *(Maja squinado)*, dog fish *(Squalus acanthias)*, bull huss *(Scyliorhinus stellaris)*, scad and pouting *(Trisopterus luscus)*. All species are thought to be discarded alive apart from spider crabs which are discarded dead and the level of post capture mortality of dog fish is unknown[55].

In the herring and pilchard fisheries around the South West there were no unauthorised species caught or seabird interaction reported by fishers, MMO or ICFAs. The only protected species interaction was of grey seal feeding from the net whilst it soaked[55].

The sea bass fishery operating from Clovelly is also thought to be very selective with little discards (<1 % of catch). Species discarded include scad, pollock, salmon and sea trout, all of which are thought to survive after being discarded. Grey mullet are retained if caught[60].

The pilchard fishery operating out of Mevagissey is thought to be very selective with little discards (<1 % of catch) and no bycatch. Scad are sometimes caught in this fishery and are discarded dead[61].

In the mullet and sea bass fisheries, bycatch species are thought to include juvenile sea bass, juvenile salmon, sea trout and allis shad[62]. As there are no log books or independent records of landings and sales records do not record location or method of capture for these fisheries, this data is what is expected by the Devon and Severn IFCA and the Cornwall IFCA[58].

The fishermen transporting their vessels to estuaries by road are a newer phenomenon in this area and this is the only driftnet fishery in the south west that has cause for concern for the MMO and for Devon and Severn Inshore Fishery Control Authority (IFCA) and the Cornwall IFCA in terms of compliance and bycatch[63]. No fishers were available during the consultation period so information on these fisheries is limited.

2.4.6 Northern Ireland

The Mourne herring fishery is seen as extremely clean and targeted with no associated bycatch or interactions with protected species[64].

[59] Representative, South West MMO, pers. Comms. 2013.
[60] Driftnet fisher, Clovelly, pers. Comms. 2013.
[61] Driftnet fisher, Mevagissey, pers. Comms. 2013
[62] Representative, Devon and Severn and Cornwall IFCAs, Pers. Comms. 2013.
[63] Representative, South Western MMO, pers. Comms. 2013
[64] Representative of the Inshore fisheries policy team, Department of Agriculture and Rural Development Ireland, pers. Comms. 2013

2.4.7 River and Estuarine Driftnet Fisheries

The relevant management authority, the Environment Agency, are not aware of any interactions with unauthorised species in any of the salmon driftnet fisheries. However, salmon are listed as a Natura 2000 species in the habitats directive; meaning that the species must be maintained at a favourable conservation status. Natura 2000 species are managed by multiple institutions as part of each of the devolved UK governments' Biodiversity Strategies (JNCC 2013).

Data from observer trips run by SMRU recorded 4 cases of guillemot (*Uria aalge*) being caught as bycatch in driftnets during 93 observed hauls in the salmon and sea trout fisheries off Northumberland and Yorkshire but this fishery is being phased out [65]. This study was run between 1996-2011 (SMRU 2012).

[65] Representative, SMRU, pers. Comms. 2014

2.5 National implementation of EU regulatory regime and relevant National Legislation

2.5.1 National legislation

The main European legislation impacting UK driftnet fisheries are: Regulation (EC) No 809/2007, which defines the term driftnet; Regulation (EC) No 1239/98, which restricts the maximum total length of drift nets; and Regulation (EC) No 812/2004, which specifies cetacean monitoring requirements for some UK driftnet fisheries.

There are EU minimum landing size restrictions applied to species that driftnets target (Regulation (EC) No. 850/98) including:

- Sea bass *(Dicentrarchus labrax)* 36 cm,
- Cod *(Gadus morhua)* 35 cm,
- Herring *(Clupea harengus)* 20 cm,
- Mackerel *(Scomber scombrus)* 30 cm,
- Sole *(Solea* spp.) 24 cm,
- Whiting *(Merlangius merlangus)* 27 cm,
- Sardine *(Sardina pilchardus)* 11 cm.

2.5.1.1 National Legislation

A summary of national legislation that can impact, or has impacted, UK driftnet fisheries is provided below.

<u>The Sea Fish (specified sea area) (regulation of nets and prohibition of fishing methods) order 1989 (SI 1989 No. 1284)</u>
This legislation specifies that the mesh size of a gill or other specified nets must be not more than 65 mm and not less than 89 mm except when the net is attended and being used within 5.6 km (3 nautical miles) of the coast. The definition of gill and other specified nets includes driftnets, gill nets, beach seines, trammel nets, tangle nets, stake nets, ring nets, T nets, J nets, hoop nets and any similar nets used for the enmeshing or entrapment of fish, but does not include any trawl, Danish seine or similarly towed net. This ban was obviously in force before Regulation (EC) 850/98 implemented the ban of mesh sizes between 70 and 90 mm for fixed nets in Region 1, including the North Sea, the Channel etc.

<u>Sea fisheries conservation of sea fish – the undersized sea bass order 1989 (SI 1989 No. 1285)</u>
This legislation specifies the minimum landing size of sea bass as being 36 cm.

<u>Sea fisheries conservation of sea fish – the sea bass (specified area) (prohibition of fishing) order 1990 (SI 1990 No. 1156)</u>
This legislation specifies 34 areas which are closed to fishing at certain (specified) times of the year. The areas which could impact driftnet fisheries discussed in this case study are as follows:

- Bradwell Power Station (Essex) Between 30 April and 1 November
- Grain Power Station (Kent) All year
- Kingsnorth Power Station (Kent) All year
- Chichester Harbour (West Sussex) Between 30 April and 1 November

- Rivers, harbours and estuaries in Devon and Cornwall (River Exe, River Teign, River Dart, River Avon, River Yealm, Plymouth Rivers, Plymouth Rivers, River Fowey, Percuil River, Helford River, River Camel, Salcombe, Fal Estuary)

Sea fisheries – the incidental catches of cetaceans in fisheries (England) order 2005 (SI 2005 No. 17)
This order requires that all relevant vessels must admit observers on board when/if requested in order to fulfil the requirements of EC regulation 812/2004.

MMO Completion of sales notes Guidance (Guidance for: The control regulation (2847/93), The CFP basic regulation (2371/2002), Electronic recording and reporting of fishing activities Regulation (1966/2006) and Detailed rules on the implementation of council regulation 1966/2006 (1077/2008))
Sales notes are required in respect of first sales of fish and fishery products and are required to be submitted within 48 hours of the completion of the sale. Sales notes provide an essential aid in cross checking the quantities of fish recorded in logbooks and on landing declarations as well as providing information about market prices and compliance with the Community's grading and price regulations. However if the total weight of first sale fish sold is in quantities of less than 25 kg per buyer per day and is sold direct to the public for their own consumption no sales note would be required.

2.5.1.2 Byelaws

In addition to these national laws, there are a number of local byelaws throughout the UK which impact driftnet fisheries. These are summarised below by IFCA district.

Cornwall (Cornwall IFCA 2013)
In Cornwall there is a byelaw specifying that the minimum landing size for sea bass is 37.5 cm which applies out to 11.1 km (6 nautical miles) from the coast in the whole of the Cornwall Sea Fisheries district. Any fish caught measuring less than 37.5 cm must be returned immediately to the sea. This also applies to sea bass caught in estuaries in Cornwall.

In two specified areas of the Cornwall Sea fisheries district (The Manacles and The Runnelstone), it is prohibited to use nets (of any type) with a mesh size less than 250 mm[66].

In two specified areas of the Cornwall Sea fisheries district, it is prohibited to fish with any gill net (including drifting gillnets) during temporary closures of 21 days implemented to reduce deaths of birds through entanglement.

There are also a number of byelaws relating to fishing with driftnets and trammel nets in estuaries in Cornwall. These are as follows:

- In the Camel and Fowey fishery districts, nets used for fishing must have a mesh size of greater than 38 mm from knot to knot.
- In the Fowey fishery district, it is prohibited to fish for sea fish at night.
- In the River Fowey there are also restrictions on mesh sizes, with a minimum mesh size of 6 inches (approximately 150 mm).

Devon (Devon and Severn IFCA 2011)
In Devon, there are restrictions on the maximum lengths of fishing vessels, but the maximum length limits are sufficiently large that vessels operating in current driftnet fisheries are not affected.

It is prohibited to fish with any type of net in any tidal waters inshore on the rivers Tamar, Plym, Exe and Yealm.

[66] This is from the Byelaw: Mesh of nets in parts of district which was a revision to the Sea Fisheries Regulation Act, 1966

It is prohibited to fish by trawling or with any kind of tangle net or moored or fixed gill nets in areas around Lundy island marine conservation zone. This was implemented to ensure protection from human disturbances around the important marine habitats and species of the island (Natural England 2013).

The minimum mesh size for nets fishing for sea fish is 76 mm. It is prohibited to use more than one net in parallel in order to effectively decrease the mesh size of the combined nets in the Estuaries of the River Taw and Torridge. This does effectively prohibit trammel nets but they are prohibited under a separate byelaw:

It is prohibited to fish with trawl or trammel nets for sea fish in Estuaries in Devon except in small sections of the River Taw and Torridge.

Eastern (Eastern IFCA 2011)

In the Eastern area, there are temporary closures around the region that can be enforced from 1-30th April until the 15th October in the same year. This closure is implemented when the catch rate of salmon and migratory trout as reported by permit holders or witnessed by fishery officers exceeds a predetermined level over any 3 day consecutive period.

Kent and Essex

In the Thames region of Kent and Essex, the maximum vessel length is 17 m and the vessels must have a total engine power less than 221 kW. In this area, the minimum mesh size for a driftnet targeting herring is 54 mm. It is prohibited to take herring during the closure period of the fishery (when the TAC has been taken up) and it is prohibited to use driftnets of total length greater than 250 m in 2 specified areas (Eagle Bank and Studhill) between 1st March and 30th June. It is also prohibited to take seafish from the sea bass nursery area at Bradwell during the period 1st May to 31st October (Kent and Essex IFCA 2013a). This was implemented as these areas are spawning areas for herring (Moody Marine Ltd 2005).

In a small area in the south of the district (Area B), it is prohibited to use a vessel with an overall length greater than 14 m for fishing within 11.1 km (6 nautical miles) of the coast without authorisation and the mesh size of a driftnet used in this area must not be between 65 mm and 89 mm (Kent and Essex 2013b).

North Eastern (North Eastern IFCA 2012)

In the North Eastern district there are fishery closures between 1st-30th April and any salmon or migratory trout taken during this period must be reported within 24 hours of capture.

Temporary closures are also implemented when the catch rate of salmon and migratory trout is reported as being over a predetermined level over any 3 days consecutive period. Once the closure is invoked, the fishery will remain closed until 15th October in the same year.

North Western (North Western IFCA 2013)

In the North Western district, it is prohibited to fish for any seafish in the Heysham sea bass nursery area without the permission of the authority. All nets except trawl nets being used to target shrimps, prawns, mackerel, herring, sprats, whitebait or sand eels must have a mesh size less than 65 mm.

Set and driftnets must be marked by substantial buoys visible above the surface of the water at all states of tide and the boat's name or port letters and numbers must be clearly displayed on one of these buoys. In addition no portion of the net should be less than 200 m from any portion of any other net.

It is prohibited to use any drift, draft, seine or other mobile net (except trawl nets of any kind) in specified areas of the region during the period 1st May to 30th November unless the use of such nets is licensed by the Environment Agency.

There are also restrictions on the gears that can be used by vessels greater than 13.72 m (45 feet) in length in specified areas within 5.6 km (3 nm) of the coast which effectively precludes vessels greater than 13.72 m from using nets in these areas.

No drift or beach seine nets may be used within 5 specified areas in the Cumbria district.

Northumberland (Northumberland IFCA 2013)
In the Northumberland district there are no IFCA byelaws relevant to fishing with driftnets. There are, however, river and estuarine fisheries in this area which are covered by Environment Agency North East Coast (limitation of net licences) order 2012 (see section 2.5.1.3).

Southern (Southern IFCA 2013)
In the Southern district, it is prohibited to use a vessel with an overall length greater than 12 m for fishing within 11.1 km (6 nautical miles) of the coast without authorisation.

Sussex (Sussex IFCA 2013)
The mesh size of a driftnet in this district must be between 65 – 89 mm (Sussex IFCA 2013a).

Fishing for sea bass, or fishing for any fish using sand-eels as bait by any fishing boat within any part of Chichester harbour is prohibited between 30th April and 1st November. Fishing for sea bass, or fishing for any fish using sand-eels as bait by any fishing boat within the Dungeness sea bass conservation area is prohibited at any time throughout the year (Sussex IFCA 2013b).

2.5.1.3 River and Estuarine Driftnet Fisheries

Three main pieces of national legislation govern the salmon and sea trout driftnet fisheries throughout England and Wales.

-Salmon and Freshwater Fisheries Act, 1975, amended by Marine & Coastal Access Act, 2009

-Regional fisheries byelaws made under Water Resources Act, 1989

Under these statutes the following main measures are adopted to control driftnet use:

- All drift net fishers are licensed
- Number of licences available in specified areas are restricted by Net Limitation Order. Orders can cap available licences or reduce availability as fishers leave the fishery. Fishing is restricted to specified areas.
- Byelaws (and/or licence conditions) restrict net design, construction and mode of use, and to set close seasons and times.
- Byelaws can be used to introduce quotas – there are none in place at present.
- All salmon and sea trout caught in licensed drift net (and other) fisheries must be carcass tagged and recorded in log books (returned at season end).

More information is provided below.

Environment Agency North East Coast (limitation of net licences) order 2012– salmon and freshwater fisheries act 1975, environment act 1995
This legislation specifies that the number of licences issued for driftnetting must be limited and that licences will only be issued when an applicant demonstrates that they are dependent for their livelihood on fishing and they held a driftnet licence in the previous year. Licences can also be issued to another applicant for the remainder of a licence year if a licence has lapsed due to the death of a previous licence holder.

Salmon and freshwater fisheries act 1975

This legislation specifies that it is prohibited to shoot or work with any net which is more than three quarters of the width of the waters being fished to target salmon or migratory trout. It also specifies that it is prohibited to use two or more nets in parallel to effectively create a net with a smaller mesh size than the minimum (smaller than 5 cm (2 inches)). It is also prohibited to catch salmon with the intent to sell it between 31st August and the following 1st February or trout other than rainbow trout between 31st Aug and following 1st March.

Regional byelaws of importance

The North West Regional byelaws have implemented the requirement for vessels to remain attached to nets, including driftnets, whilst fishing (Byelaw 13), as was previously a requirement by EU legislation.

2.5.2 National Monitoring, Control and Surveillance of driftnet fleets

2.5.2.1 Southern North Sea and the Eastern Channel

IFCA and MMO staff reported no infringements specific to driftnets relating to minimum landing sizes and mesh sizes where relevant, or driftnet length in recent years along the south coast[67]. Furthermore, UK driftnet fisheries are not considered to present a significant risk and are consequently not prioritised for control and enforcement activities[68].

2.5.2.2 Western Channel

Given the small scale of driftnetting in the southwest and the low risks posed by the fisheries concerned, Devon and Severn IFCA and Cornwall IFCA do not expend the control and enforcement effort required to specifically monitor driftnet fisheries.

However there have been no infringements recorded by the marine driftnet fleet[69]. Vessels working in estuaries only commit infringements when they deliberately allow a driftnet to become anchored, at which point it becomes a fixed engine net in contravention to local bye-laws on fixed engine nets in estuaries. These infringements are difficult to detect if the means of anchoring is not easily provable.

The IFCAs both state that they would like to see local legislation introduced requiring special licenses to be required for estuarine fishing, to include driftnetting in order to improve compliance and monitor bycatch levels[70].

2.5.2.3 River and Estuarine Driftnet Fisheries

The northeast salmon fishery is strictly regulated: inspections occur at sea and in port and authorities aim to inspect all vessels at least once per fishing season. Patrols are spread evenly across the June to August period, with dealer premises also being inspected to ensure compliance with carcass tagging and log book regulations. According to the Environment Agency, no infringements of national or EU regulations governing driftnets were recorded in 2012, but no historical records, pertaining to infringements, are available from the last ten years.

2.5.3 Costs of Monitoring, Control and Enforcement

The MMO and IFCAs were unable to provide total costs for implementing MCS programmes, either in total or for driftnet fisheries alone.

2.5.3.1 River and Estuarine Driftnet Fisheries

[67] Representatives, Sussex IFCA and Southern MMO, pers. Comms. 2013
[68] Representative, Eastern MMO, pers. Comms. 2013.
[69] Marine Officer, South Western MMO, pers. Comms. 2013.
[70] Representatives, Devon and Severn and Cornwall IFCAs, pers. Comms. 2013.

The northeast salmon fishery is strictly regulated: inspections occur at sea and in port, aiming to inspect all vessels at least once per fishing season. Total annual effort and cost of enforcement of the northeast fisheries – estimated to constitute 90% of enforcement effort – are estimated at less than 500 days and less than €91.415 (£75,000)[72].

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Annex 1 Stakeholders contacted with online questionnaire

Organisation	Organisation Type &/or Role	Date Online Questionnaire Sent	Response Received Yes/No
MMO	Management and Control	04/06/2013	No
MMO	Management and Control	19/07/2013	No
CEFAS	Management and Control	05/06/2013	Yes, but via email/tel not through questionnaire
NFFO	Management and Control	06/06/2013	No
Cornwall IFCA	Management and Control	12/06/2013	No
Devon and Severn IFCA	Management and Control	12/06/2013	No
Eastern IFCA	Management and Control	11/06/2013	No
Isles of Scilly IFCA	Management and Control	11/06/2013	No
Kent and Essex IFCA	Management and Control	11/06/2013	No
North East IFCA	Management and Control	11/06/2013	No
North West IFCA	Management and Control	11/06/2013	No
Northumberland IFCA	Management and Control	11/06/2013	Yes
Southern IFCA	Management and Control	01/07/2013	No
Sussex IFCA	Management and Control	11/06/2013	Yes
Marine Scotland, head of fisheries division, regulation and licensing policy team	Management and Control	12/06/2013	No
Department of agriculture and rural development (N Ireland)	Management and Control	12/06/2013	No
Sustainable fisheries project manager - EA Wales	Management and Control	12/06/2013	No
Chair of England and Wales fisheries group Deputy chair of EA board	Management and Control	12/06/2013	No
Wales environment link	Management and Control	12/06/2013	No
WWF UK and Ireland	NGO	14/06/2013	No

Annex 2 Stakeholders Consulted

Organisation	Organisation Type &/or Role in Organisation	Type of consultation and assistance provided *(Email/Telephone/Meeting)*	Date of Consultation
Cornwall IFCA	Management and control	Meeting; South West fisheries	30/07/2013
Department of Agriculture and Rural Development, Northern Ireland	Management and control	Email; Mourne herring fishery	13/12/2013
Devon and Severn IFCA	Management and control	Meeting; South West fisheries	29/07/2015

Organisation	Organisation Type &/or Role in Organisation	Type of consultation and assistance provided *(Email/Telephone/Meeting)*	Date of Consultation
Environment Agency	Management and control	Telephone consultation; Salmon and Sea trout fisheries	15/08/2013
Environment Agency	Management and control	Telephone consultation - Salmon and Sea trout fisheries	15/08/2013
Marine Scotland	Management and control	Telephone; Scottish fisheries	16/08/2013
Marine Scotland /freshwater fisheries	Management and control	Telephone; Scottish fisheries	16/08/2013
MMO	Management and control	Meeting - management authority, data collected on landings by driftnets, effort and ports	03/07/2013
MMO Eastern office	Management and control	Meeting - management and control authority, some information on enforcement	12/07/2013
MMO Hastings	Management and control	Telephone; advice on who to speak to regarding collecting data	30/06/2013
MMO South West	Management and control	Meeting; South West fisheries – monitoring and control	29/07/2015
MMO Southern office	Management and control	Meeting; monitoring and control	07/08/2013
Natural Resources Wales	Management and control	Telephone;	20/08/2013
Natural Resources Wales	Management and control	Telephone;	20/08/2013
Natural Resources Wales	Management and control	Telephone;	20/08/2013
Principal enforcement officer - Cornwall IFCA	Management and control	Meeting; South West fisheries	29/07/2013
Southern IFCA	Management and control	Telephone; fisheries on the South coast	11/07/2013
Sussex IFCA	Management and control	Meeting; fisheries on the south coast, monitoring and control	07/08/2013
Seafish	Non-departmental public body	Telephone; advice on who to speak to regarding collecting data	01/08/2013
Clovelly Shellfishermen's Association	Producer organisation	Meeting; South west fisheries	26/07/2013
Cornish Fish Producers Organisation	Producer organisation	Meeting; South west fisheries	29/07/2013
Mevagissey fishermen's association	Producer organisation	Meeting; South west fisheries	31/07/2013
Hastings fishermen's protection society	Producer organisation	Meeting; fisheries around Hastings	08/08/2013
National Under Ten Fishermen's Association (NUTFA)	Producer organisation	Meeting;	30/07/2013
CEFAS	Research institute	Meetings, telephone	05/06/2013

Organisation	Organisation Type &/or Role in Organisation	Type of consultation and assistance provided *(Email/Telephone/Meeting)*	Date of Consultation
			(1st meeting) 04/07/2013 (tel) 12/07/2013 (2nd meeting
The Wye & Usk Foundation	NGO	Telephone	21/08/2013
Driftnet Fisher – Sole. (Sole fishery ICES division IVc)	Fisher	Telephone; fishery characteristics, gear characteristics	22/08/2013
Fisher - Hastings mackerel	Fisher	Meeting; fishery characteristics, gear characteristics	08/08/2013
Fisher in Brighton	Fisher	Telephone; fishery characteristics, gear characteristics	15/07/2013
Driftnet Fisher - Sea bass (Sea bass Fishery ICES division VIId)	Fisher	Telephone; offshore bass fishery	19/08/2013
Fisher - Clovelly	Fisher	Meeting; fishery characteristics, gear characteristics	30/07/2013
Fisher - Mevagissey	Fisher	Meeting; fishery characteristics, gear characteristics	26/07/2013