

**ECOREGION** Celtic Sea and West of Scotland  
**STOCK** Plaice in Divisions VII f,g (Celtic Sea)

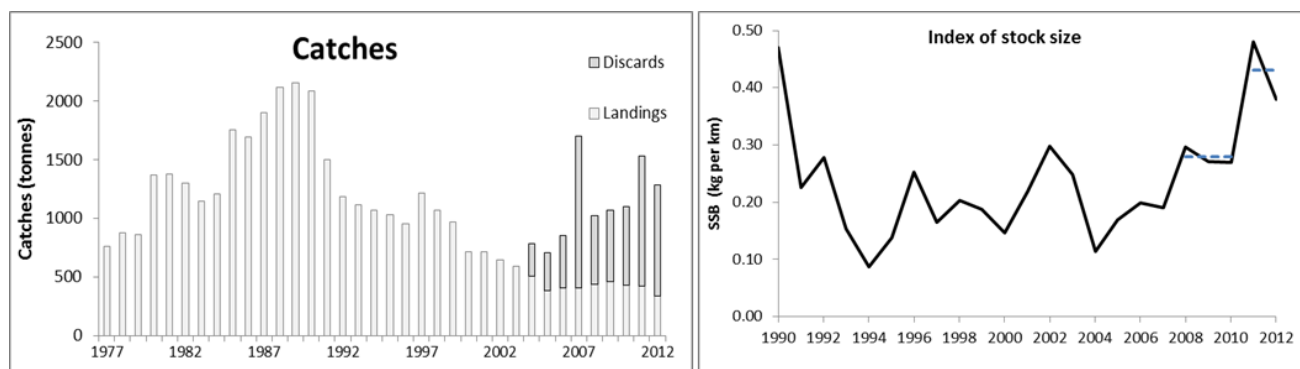
**Advice for 2014**

Based on ICES approach to data-limited stocks, ICES advises that catches should be no more than 1608 tonnes. If discard rates do not change from the average of the last three years, this implies landings of no more than 519 tonnes.

Discards exceed landings and technical measures should be introduced to reduce discard rates.

**Stock status**

F (Fishing Mortality)	
2010–2012	
Qualitative evaluation	Unknown
SSB (Spawning-Stock Biomass)	
2008–2012	
Qualitative evaluation	Increasing



**Figure 5.4.26.1** Plai ce in Divisions VII f,g. Left: Reported landings and discards (tonnes); discards were reported from 2004 to 2012. Right: SSB from the UK (E&W)-BTS-Q3 survey ( $\text{kg km}^{-2}$ ); the dashed horizontal lines indicate the average SSB for the respective year range.

Since 2004 the landings have been relatively stable but the discards have been increasing. The average of the stock size indicator (SSB from the survey) in the last two years (2011–2012) is 50% higher than the average of the three previous years (2008–2010).

**Management plans**

No specific management objectives are known to ICES.

**Biology**

Plai ce aggregate in spawning grounds off the north Cornish coast in the 1st quarter of the year. The condition factor for plai ce is highest in summer/autumn on the more dispersed feeding grounds.

**Environmental influence on the stock**

Juvenile plai ce are distributed inshore and migrate offshore once individuals reach maturity. The recruitment of Celtic Sea plai ce and neighbouring stocks appear to be related to sea surface temperature variations.

## The fisheries

The mixed plaice and sole fishery is dominated by beam trawls and otter trawls, with bycatch of both commercial and non-commercial species. The main fishery occurs in the spawning area off the north Cornish coast, at depths greater than 40 m, approximately 20 to 25 miles offshore. Although plaice are taken throughout the year, the bulk of landings occur during February–March following the peak of spawning, and again in September. There is a high rate of discarding in both beam and otter trawl fisheries. Recent discard rates are very high, more than double the landings in 2011 and 2012. ICES estimates that total international landings for 2012 were 443 t, ~17% above the TAC of 369 t.

**Catch distribution** Catches (2012) = 1390 t, where 32% were landings (443 t) and 68% discards (947 t).

## Effects of the fisheries on the ecosystem

Beam trawling, especially using chain-mat gear, significantly impacts benthic communities, albeit less so on soft substrates and in areas which have been historically exploited by this fishing method.

## Quality considerations

Discards are substantial, consisting mainly of fish below the minimum landing size.

The advice is based on trends derived from the UK(England & Wales) beam trawl survey. The harvest control rules are expected to stabilize stock size, but they may not be suitable if the stock size is low and/or overfished.

The commercial lpue time-series used in the previous assessment is not representative of the abundance in the stock, because discards are not included in the lpue series.

The methods applied to derive quantitative advice for data-limited stocks are expected to evolve as they are further developed and validated.

## Scientific basis

<b>Assessment type</b>	Survey trends.
<b>Stock data category</b>	Category 3.2.0.
<b>Input data</b>	One survey index (UK (E&W)-BTS-Q3); Commercial catches (international landings and discards).
<b>Discards and bycatch</b>	Discards are available from 2004 to 2012 and included to provide catch advice.
<b>Other information</b>	Benchmarked in 2011 (ICES, 2011).
<b>Working group report</b>	<a href="#">WGCSE</a> (ICES, 2013).

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**Reference points**

No reference points are defined for this stock.

**Outlook for 2014**

No analytical assessment is presented for this stock. The main cause of this is problems with the agreed assessment model. Therefore, fishing possibilities cannot be projected.

**ICES approach to data-limited stocks**

For data-limited stocks for which a biomass index is available, ICES uses as harvest control rule index-adjusted *status quo* landings. The advice is based on a comparison of the two most recent index values with the three preceding values, combined with recent catch or landings data. Knowledge about the exploitation status also influences the advised landings.

For this stock, the spawning-stock biomass from the survey is estimated to have increased by more than 20% between the periods 2008–2010 (average of the three years) and 2011–2012 (average of the two years). This implies an increase in catches of 20% in relation to average catches of the last three years, corresponding to catches in 2014 of no more than 1608 t. Assuming that the discard rate remains the same as the average of the last three years (68%), the corresponding landings in 2014 are 519 t.

Considering that the biomass has increased by 50%, no additional precautionary reduction is needed.

**Additional considerations***Management considerations*

Discard rates are high for this stock in some seasons/fleets. The high level of discarding indicated in this mixed fishery would suggest a mismatch between the mesh size employed and the size of the fish landed. Increases in the mesh size of the gear will result in fewer discards and in increased yield from the fishery. The use of larger-mesh gear should be encouraged in this fishery in instances where mixed-fishery issues allow for it.

*Regulations and their effects*

Plaice in the Bristol Channel and Celtic Sea (ICES Divisions VIIIf,g) are managed by TAC and technical measures. Technical measures in force for this stock are minimum mesh sizes, minimum landing size, and restricted areas for certain classes of vessels. The minimum landing size for plaice in Divisions VIIIf,g is 27 cm.

Since 2005, ICES rectangles 30E4, 31E4, and 32E3 (Division VIIIf) have been closed during the first quarter with the intention of reducing the fishing mortality of cod. There is evidence that this closure has redistributed effort to other areas. Closures may have decreased fishing mortality on Celtic Sea plaice, but the degree to which this is effective is unknown.

*Information from the fishing industry*

The UK Fisheries Science Partnership investigations conducted in the Eastern Celtic Sea and Bristol Channel during 2005 confirmed the presence of spawning aggregations off the north Cornish coast. The main issues for the fishery in Divisions VIIIf,g were displacement of effort due to the cod recovery zone; and the restrictions on the use of 80 mm mesh west of 7°West.

*Data and methods*

The benchmark (ICES, 2011) investigated several assessment methods to explore options for incorporating a short time-series of discard observations into the assessment. None of the approaches examined proved to be entirely satisfactory. The group concluded that the Aarts and Poos (2009) method, developed initially for North Sea plaice, could be used as a trends-only assessment for the provision of management advice, but could not be used as a basis for predicting future

catch options. In 2013, the Aarts and Poos (2009) model failed to converge and could not provide realistic representations of observed landings and discards. Moreover, trends in commercial landings (which conflict with the survey trends) are considered not to be representative of trends in the stock due to the lack of discards. Consequently, ICES provided advice on the basis of trends derived from fishery-independent data (the UK(E&W) beam trawl survey) that was previously used in the exploratory assessment. This changed the perception of the stock.

Information derived from the fishery-independent UK(E&W) beam trawl survey indicates that there has been a reduction in average fishing mortality since 2004 (Figure 5.4.26.3) and a commensurate increase (~50%) in spawning-stock biomass over the same period.

#### *Comparison with previous assessment and advice*

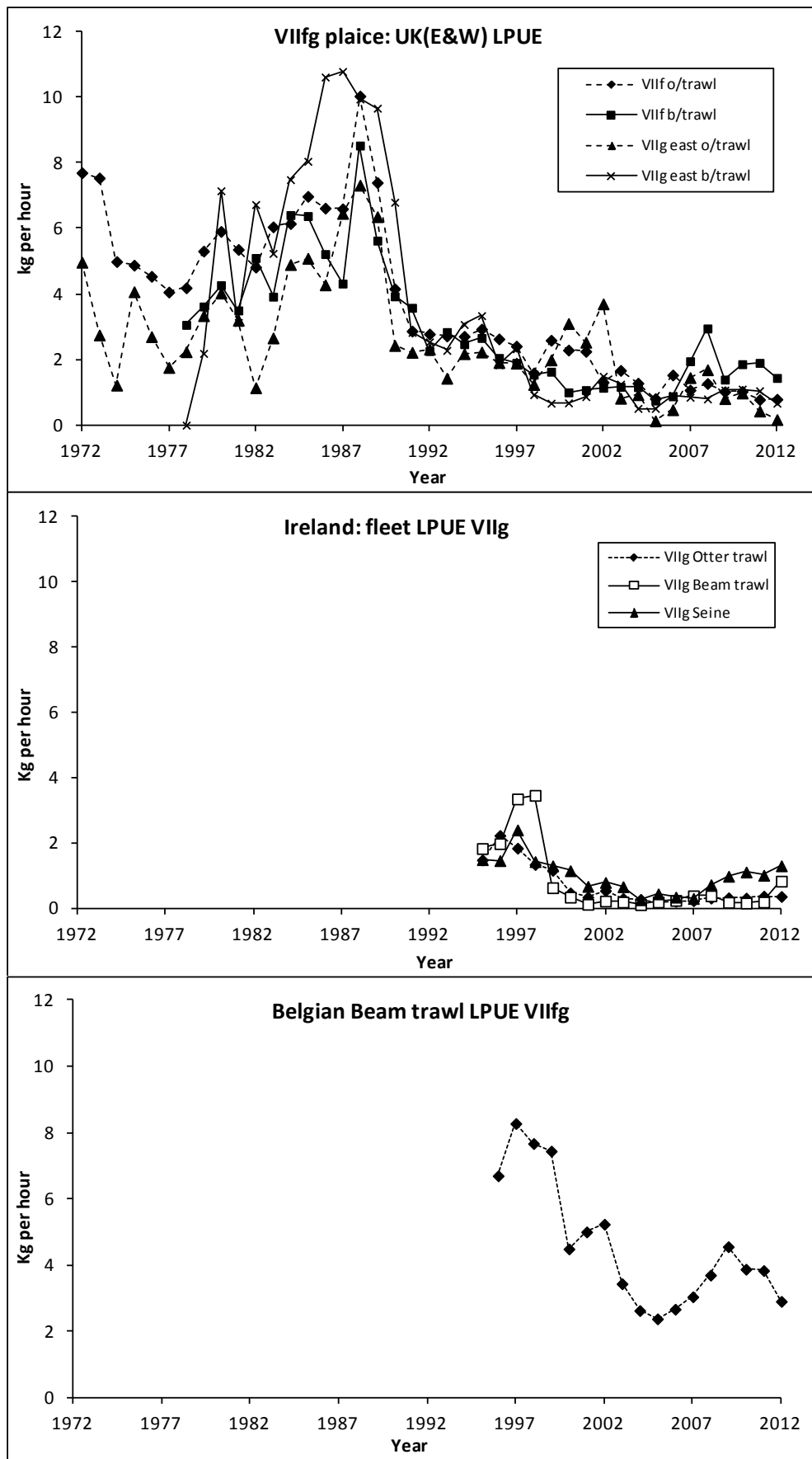
In 2012, advice was provided on the basis of trends derived from the Aarts and Poos (2009) model fitted to catch and tuning series data. In 2013, it proved impossible to use the same basis for advice as last year. Instead, the UK(E&W) beam trawl survey was used to infer trends in recruitment, stock size (spawning-stock biomass), and fishing mortality.

It is no longer possible to assess fishing mortality trends with respect to F reference points. The survey-based evaluation of SSB trends is also different from that generated by the assessment model last year. As a result, this year's advice is for an increase in catches, as opposed to a decrease in catches.

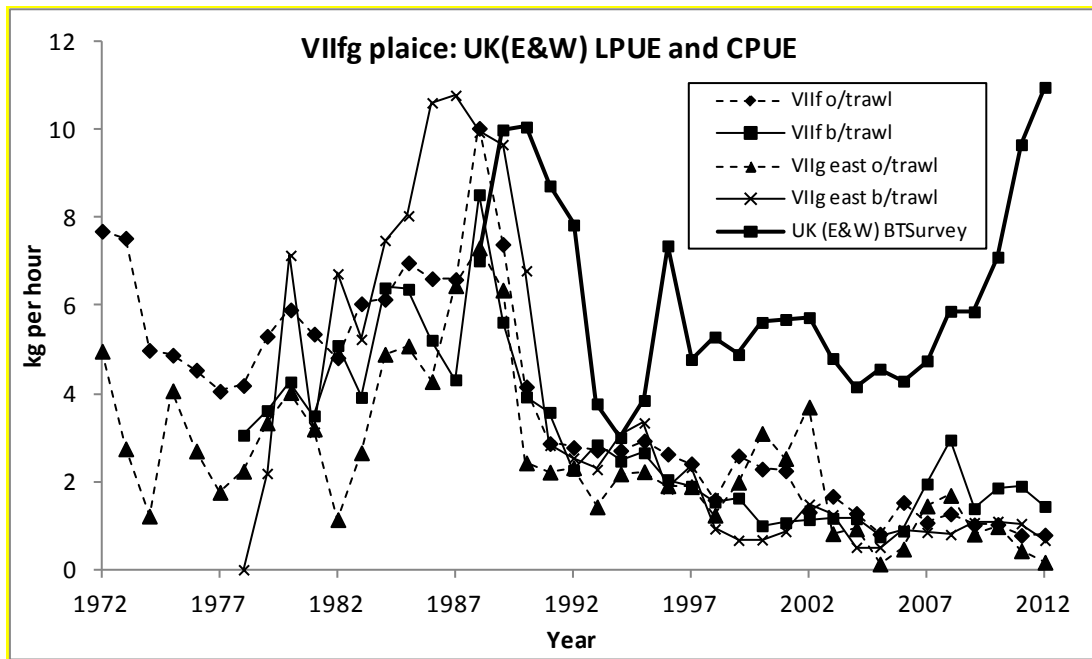
For last year and this year, the basis for the advice is ICES approach to data-limited stocks.

#### **Sources**

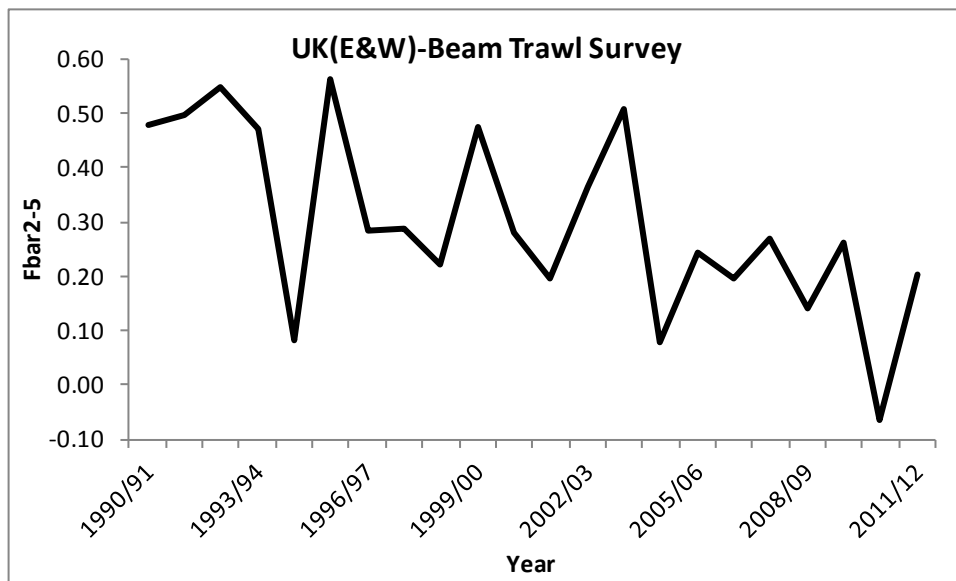
- Aarts, G., and Poos, J. J. 2009. Comprehensive discard reconstruction and abundance estimation using flexible selectivity functions. *ICES Journal of Marine Science*, 66: 763–771.
- ICES. 2011. Report of the Benchmark Workshop on Flatfish (WKFLAT), 1–8 February 2011, Copenhagen, Denmark. ICES CM 2011/ACOM:39.
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**Figure 5.4.26.2a** Plaiice in Divisions VIIfg. Commercial landings per unit effort (lpue) for the UK (in Division VIIfg), Ireland (Division VIIg), and Belgium (Division VIIfg) between 1972 and 2012.



**Figure 5.4.26.2b** Plaice in Divisions VIIfg. UK(E&W) beam trawl survey (UK(E&W) BTSurvey) catch per unit effort (cpue) compared to commercial landings per unit effort (lpue) for the UK between 1972 and 2012.



**Figure 5.4.26.3** Plaice in Divisions VIIfg. Time-series of mean fishing mortality at ages 2-5 for the UK(E&W) Beam Trawl Survey (UK(E&W)-BTS-Q3) from 1990 to 2012.

**Table 5.4.26.1** Plaice in Divisions VIII.f,g (Celtic Sea). ICES advice, management, and landings.

Year	ICES Advice	Predicted catch corresp. to advice	Agreed TAC	Official landings	ICES landings	ICES discards <sup>1</sup>
1987	TAC not to be restrictive on other species	-	1.8	1.91	1.90	-
1988	TAC not to be restrictive on other species	-	2.5	2.19	2.12	-
1989	TAC not to be restrictive on other species	-	2.5	2.58	2.15	-
1990	F likely to be F(88)	~1.9	1.9	2.22	2.08	-
1991	F likely to be F(89)	~1.7	1.9	1.83	1.50	-
1992	No long-term gains in increasing F	-	1.5	1.36	1.19	-
1993	No long-term gains in increasing F	-	1.4	1.30	1.11	-
1994	No long-term gains in increasing F	-	1.4	0.98	1.07	-
1995	No increase in F	1.29	1.4	0.96	1.03	-
1996	20% reduction in F	0.93	1.1	0.98	0.95	-
1997	20% reduction in F	1.10	1.1	1.26	1.22	-
1998	20% reduction in F	1.00	1.1	1.15	1.07	-
1999	35% reduction in F	0.67	0.9	0.66	0.97	-
2000	30% reduction in F	0.70	0.80	0.72	0.72	-
2001	40% reduction in F	0.60	0.76	0.68	0.71	-
2002	At least 35% reduction in F	0.68	0.68	0.62	0.64	-
2003	At least 40% reduction in F	< 0.66	0.66	0.56	0.59	-
2004	F < 0.10 or recovery plan	< 0.21	0.56	0.49	0.51	0.27
2005	70% reduction in F or recovery plan	< 0.25	0.48	0.40	0.39	0.32
2006	50% reduction in F or recovery plan	< 0.40	0.48	0.41	0.40	0.45
2007	50% reduction in F or recovery plan	< 0.38	0.42	0.42	0.41	1.29
2008	60% reduction in F	< 0.24	0.49	0.38	0.44	0.58
2009	75% reduction in F	< 0.17	0.42	N/A	0.46	0.61
2010	50% reduction in F	< 0.33	0.45	0.44	0.43	0.67
2011	See scenarios	-	0.41	0.42	0.42	1.11
2012	Reduce catches	-	0.37	0.45	0.44	0.95
2013	Decrease landings by 19% (1.5% increase followed by 20% PA reduction)	< 0.36	0.37			
2014	Increase catches by 20%	1.608 <sup>2</sup>				

Weights in thousand tonnes.

N/A = French landings not available.

<sup>1</sup>Discards only available from 2004 to 2012.

<sup>2</sup>This value (1.068) refers to total catch, including discards. Therefore, it is not directly comparable to the value advised for 2013 (0.36), which referred only to landings.

Table 5.4.26.2

Plaice in Divisions VIII,g. Nominal landings (in tonnes) as reported to ICES by country and total landings and catches as estimated by ICES.

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Belgium	214	196	171	372	365	341	314	283	357	665
UK (Engl. & Wales)	150	152	176	227	251	196	279	366	466	529
France	365	527	467	706	697	568	532	558	493	878
Ireland	28	0	49	61	64	198	48	72	91	302
N. Ireland										
Netherlands										9
Scotland	0	0	0	7	0	0	0	0	0	1
<b>Total reported</b>	757	875	863	1373	1377	1303	1173	1279	1407	2384
<b>Discards</b>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Unallocated</b>	0	0	0	0	0	0	-27	-69	345	-693
<b>Landings used by WG</b>	757	875	863	1373	1377	1303	1146	1210	1752	1691
<b>Catch as used by WG</b>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Belgium	581	617	843	794	836	371	542	350	346	410
UK (Engl. & Wales)	496	629	471	497	392	302	290	251	284	239
France	708	721	1089	767	444	504	373	298	254	246
Ireland	127	226	180	160	155	180	89	82	70	83
N. Ireland		1								
Scotland				1		5	9	1	2	
<b>Total reported</b>	1912	2194	2583	2219	1827	1362	1303	982	956	978
<b>Discards</b>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Unallocated</b>	-11	-78	-432	-137	-326	-174	-189	88	72	-26
<b>Landings used by WG</b>	1901	2116	2151	2082	1501	1188	1114	1070	1028	952
<b>Catch as used by WG</b>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Belgium	594	540	371	224	241	248	221	212	168	172
UK (Engl. & Wales)	258	176	170	134	136	105	127	87	55	88
France	329	298		287	262	186	165	145	132	106
Ireland	78	135	115	76	45	79	51	45	44	48
<b>Total reported</b>	1259	1149	656	721	684	618	564	489	399	414
<b>Discards</b>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	274	321	453
<b>Unallocated</b>	-42	-82	312	-3	30	24	30	21	-13	-10
<b>Landings used by WG</b>	1217	1067	968	718	714	642	594	510	386	404
<b>Catch as used by WG</b>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	784	707	857

	2007	2008	2009	2010	2011	2012
Belgium	194	187	216	188	210	204
UK (Engl. & Wales)	61	63	55	54	45	44
France	104	62	N/A	136	100	125
Ireland	58	63	63	63	67	76
<b>Total reported</b>	417	375	N/A	442	422	450
<b>Discards</b>	1288	583	608	670	1107	947
<b>Unallocated</b>	-7	62	N/A	-9	-1	-7
<b>Landings used by WG</b>	410	437	463	433	421	443
<b>Catch as used by WG</b>	1698	1020	1071	1103	1528	1390