

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

**Advice for 2013**

Based on the ICES approach for data limited stocks, ICES advises that landings should be no more than 360 tonnes.

This is the first year that ICES is providing quantitative advice for data limited stocks (see Quality considerations).

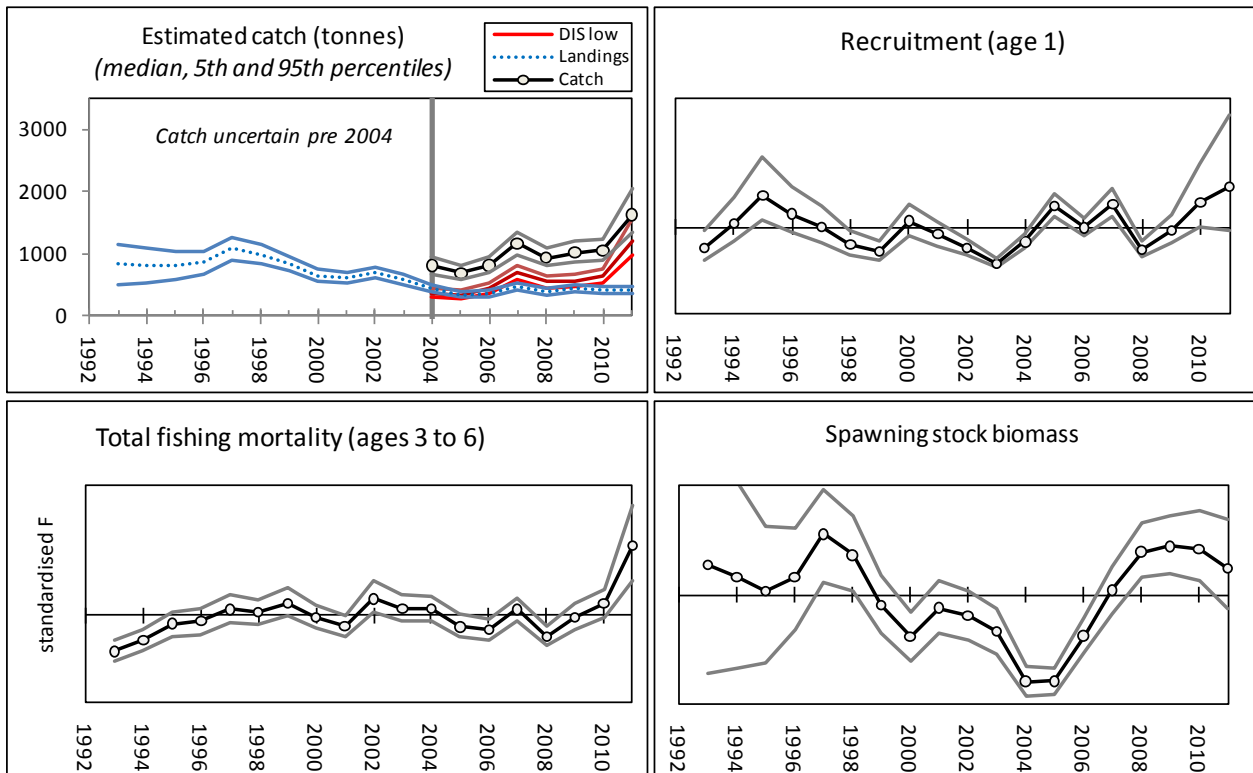
Discards exceed landings and technical measures should be introduced to reduce discard rates.

**Stock status**

F (Fishing Mortality)			
	2009	2010	2011
MSY ( $F_{MSY}$ )	?	?	? Unknown
Precautionary approach ( $F_{pa}, F_{lim}$ )	?	?	? Unknown
Qualitative evaluation	↗	↗	✘ Above poss. reference points

SSB (Spawning Stock Biomass)		
	2007-2011	
MSY ( $B_{trigger}$ )	?	Unknown
Precautionary approach ( $B_{pa}, B_{lim}$ )	?	Unknown
Qualitative evaluation	✘	Below poss. reference points



**Figure 5.4.8.1** Plaice in Divisions VIIIf,g. Estimated catch, landings and discards; Recruitment (age 1); Fishing mortality (ages 3-6); and SSB trends (Central trend lines are the mean estimated values per year, surrounding lines are 90% confidence intervals. Horizontal lines in standardized plots are the mean of the time series).

The assessment is indicative of trends only. SSB has increased since 2004 but is considered to be well below historic levels (based on commercial lpu series starting in the 1970s). Fishing mortality remained stable from 2000, but is estimated to have increased in 2011 resulting from increased discarding. The increase in F in 2011 is considered

uncertain but fishing mortality is considered to be well above levels that would increase SSB to historic levels and achieve high long term yields. Recruitment has been fluctuating without clear trend in recent years.

The average of the stock size indicator (SSB) in the last two years (2010–2011) is 1.5 % higher than the average of the three previous years (2007–2009).

### Management plans

No specific management objectives are known to ICES.

### Biology

Plaice aggregate at spawning grounds of the North Cornwall coast in the 1<sup>st</sup> quarter of the year. The condition factor for plaice is highest in summer/autumn on the more dispersed feeding grounds.

### Environmental influence on the stock

Juvenile plaice are distributed inshore and migrate offshore at maturity. The recruitment of Celtic Sea plaice and neighbouring stocks appear to be related to sea temperature changes.

### 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, about 20 to 25 miles offshore. Although plaice are taken throughout the year, the larger landings occur during February–March after the peak of spawning, and again in September. There is a high rate of discarding in both beam and otter trawl fisheries.

**Catch distribution** Catches (2011) = 1528 t where 28% landings (421 t), 72% discards (1107 t).

### Effects of the fisheries on the ecosystem

Beam trawling, especially using chain-mat gear, is known to have a significant impact on the benthic communities, although less so on soft substrates and in areas which have been historically exploited by this fishing method.

### Quality considerations

Discards are substantial (mainly below the minimum landing size) and have ranged from 30% to 70% in number. In 2011 discards have been included in the assessment for the first time. The time series of discard data available is short and consequently the revised assessment estimates are considered relative. Additionally, low levels of at sea sampling attribute to uncertainties. Estimation of partial fishing mortalities due to the landed and discarded component indicates that the fraction of F due to discarding has increased since 2004 and is considered high but uncertain during 2011 (Figure 5.4.8.3).

The advice is based on the relative trends in SSB derived from the Aarts and Poos (2009) assessment model. 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 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>	Trends only based on Aarts and Poos (2009) assessment model.
<b>Input data</b>	1 survey index (UK (E&W)-BTS-Q3). 2 commercial indices (UK otter, UK beam).
<b>Discards and bycatch</b>	Discards included in the assessment (2004–2011).
<b>Other information</b>	Benchmarked in 2011.
<b>Working group report</b>	<a href="#">WGCSE</a>

**ECOREGION Celtic Sea and West of Scotland**  
**STOCK Plaice in Divisions VIIIf,g (Celtic Sea)****Reference points**

No reference points are defined for this stock. Previous precautionary reference points (2010) are no longer considered appropriate.

**Outlook for 2013**

No reliable forecast can be presented for this stock because the assessment is only indicative of trends and the absolute level of stock size is uncertain.

***ICES approach to data limited stocks***

For data limited stocks for which a biomass index is available, ICES uses as harvest control rule an 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 biomass is estimated to have increased by 1.5% between 2007–2009 (average of the three years) and 2010–2011 (average of the two years). This implies an increase of landings of at most 1.5% in relation to the last three years average landings, corresponding to landings of no more than 446 t. Additionally, considering that is considered overexploited, ICES advises that landings should decrease by a further 20% as a precautionary buffer. This results in landings of no more than 360 t in 2013.

**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.

Catch rates by commercial fleets and research surveys are well below historic levels and the stock is considered at a low level (Figure 5.4.8.2).

***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 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. The effect this had on fishing mortality of plaice is uncertain.

***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 Cornwall 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 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.

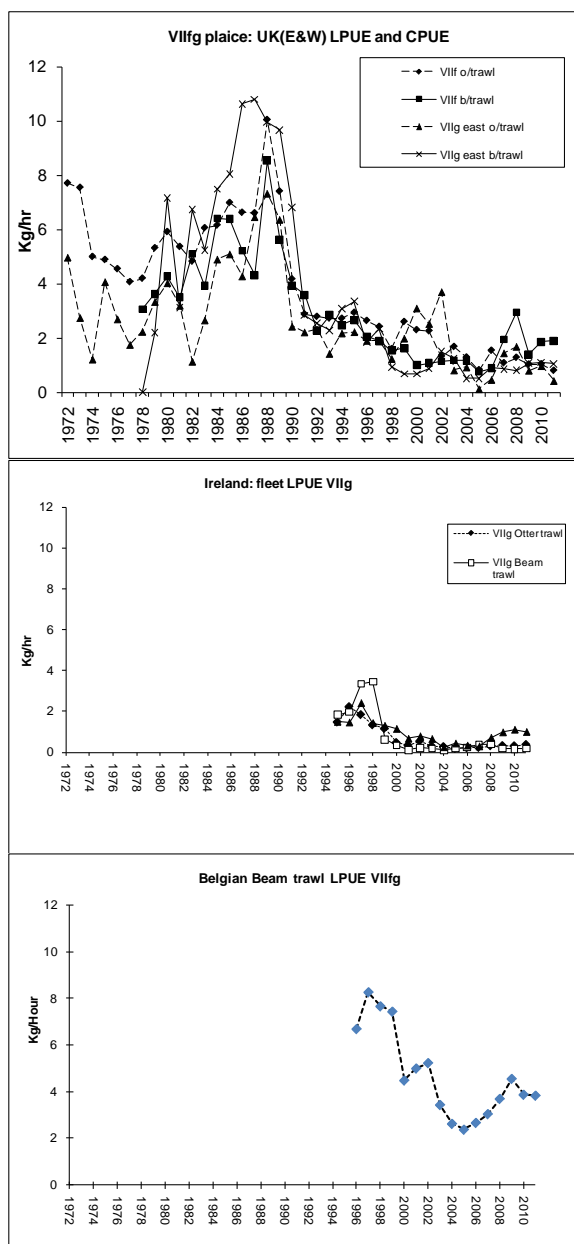
*Comparison with previous assessment and advice*

The assessment model is the same as last year's model.

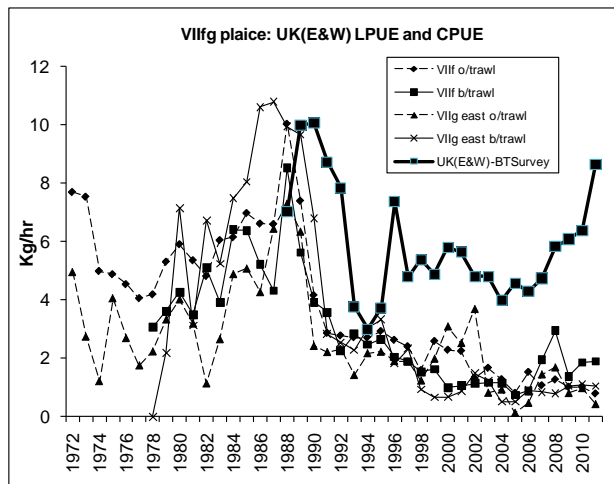
Last year the basis for the advice was the precautionary considerations, and this year the basis for the advice is the ICES approach to Data Limited Stocks.

**Sources**

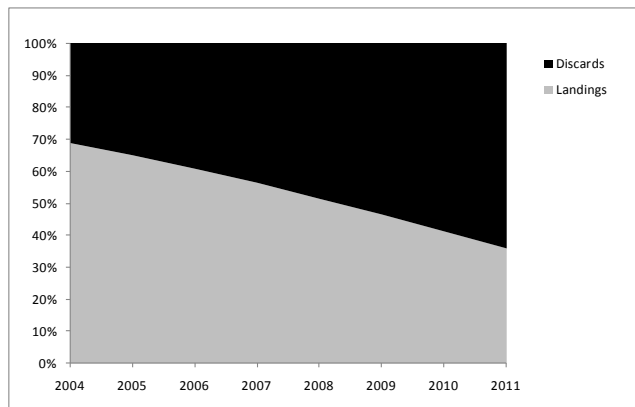
- Aarts, G., and Poos, J.J. 2009. Comprehensive discard reconstruction and abundance estimation using flexible selectivity functions. *ICES Journal of Marine Science*, 66: 763–771.
- ICES. 2012. Report of the Working Group on the Celtic Seas Ecoregion (WGCSE), 9-18 May 2012, Copenhagen, Denmark. ICES CM 2012/ACOM:12.
- ICES. 2011. Report of the Benchmark Workshop on Flatfish (WKFLAT), 1–8 February 2011, Copenhagen, Denmark. ICES CM 2011/ACOM:39.



**Figure 5.4.8.2a** Plaice in Divisions VIIfg. Commercial landings per unit effort (lpue) for the UK (in VIIfg), Ireland (VIIg) and Belgium (VIIfg).



**Figure 5.4.8.2b** Plaice in Divisions VIIIf. UK bottom trawl survey (b/trawl survey) compared to commercial landings per unit effort (lpue) for the UK.



**Figure 5.4.8.3** Plaice in Divisions VIIIf. Percentage of fishing mortality due to the landed and discarded component.

**Table 5.4.8.1** Plaice in Divisions VIIIf,g. ICES advice, management, and landings.

Year	ICES Advice	Predicted catch corresp. to advice	Agreed TAC	Official Landings	ICES Landings
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
2005	70% reduction in F or recovery plan	<0.25	0.48	0.40	0.39
2006	50% reduction in F or recovery plan	<0.40	0.48	0.41	0.40
2007	50% reduction in F or recovery plan	<0.38	0.42	0.42	0.41
2008	60% reduction in F	<0.24	0.49	0.38	0.44
2009	75% reduction in F	<0.17	0.42	N/A	0.46
2010	50% reduction in F	<0.33	0.45	0.44	0.43
2011	See scenarios	-	0.41		0.42
2012	Reduce catches	-	0.37		
2013	Decrease landings by 19% (1.5% increase followed by 20% PA reduction)	<0.36			

Weights in '000 t.

N/A French landings not available.

Table 5.4.8.2

Plaice in Divisions VII f,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>ICES Landings</b>	757	875	863	1373	1377	1303	1146	1210	1752	1691
<b>ICES Catch</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>ICES Landings</b>	1901	2116	2151	2082	1501	1188	1114	1070	1028	952
<b>ICES Catch</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>ICES Landings</b>	1217	1067	968	718	714	642	594	510	386	404
<b>ICES Catch</b>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	784	707	857

	2007	2008	2009	2010	2011
Belgium	194	187	216	188	210
UK (Engl. & Wales)	61	63	55	54	45
France	104	62	N/A	136	98
Ireland	58	63	63	63	67
<b>Total reported</b>	417	375	N/A	442	420
<b>Discards</b>	1288	583	608	670	1107
<b>Unallocated</b>	-7	62	N/A	-9	1
<b>ICES Landings</b>	410	437	463	433	421
<b>ICES Catch</b>	1698	1020	1071	1103	1528