

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

Advice for 2015

Based on ICES approach to data-limited stocks, ICES advises that catches should be no more than 1500 tonnes. If discard rates do not change from the average of the last three years (2011–2013), this implies landings of no more than 420 tonnes.

ICES advises that management measures to reduce discards in the mixed fishery are needed.

Stock status

Fishing pressure	
MSY (F_{MSY})	1995–2013 ? Unknown
Precautionary approach (F_{pa}, F_{lim})	? Unknown
Qualitative evaluation	→ Stable over the time series
Stock size	
MSY ($B_{trigger}$)	2008–2013 ? Unknown
Precautionary approach (B_{pa}, B_{lim})	? Unknown
Qualitative evaluation	→ Stable

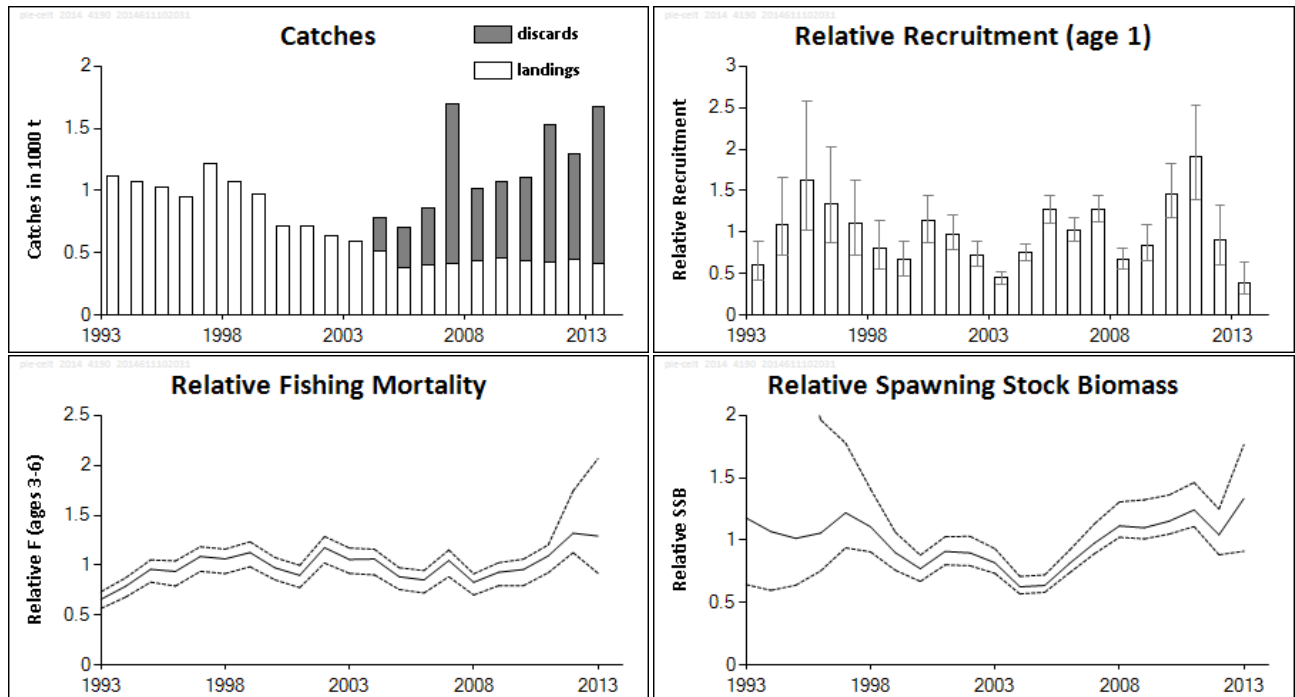
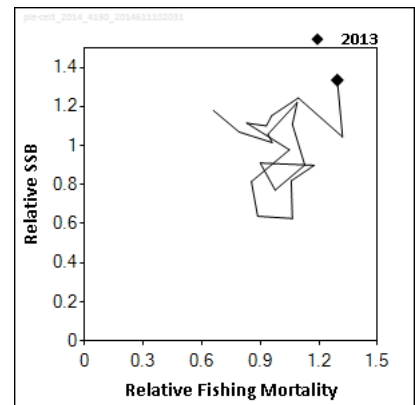


Figure 5.3.26.1 Plaice in Divisions VIIIf,g. Summary of stock assessment (weight in thousand tonnes). Relative values are relative to the average of the time-series. Top right: SSB and F over years.

Since 2004 the landings have been relatively stable but the discards have been increasing. The average of the stock size indicator (SSB from the Aarts and Poos (2009) assessment model) has increased gradually since 2004 and been stable since 2008. Fishing mortality is stable over the time-series. The increase in fishing mortality in the last two years is highly uncertain. Recruitment has fluctuated over the time-series and the 2013 recruitment is estimated to be low.

Management plans

No specific management objectives are known to ICES.

Biology

Plaice aggregate in spawning grounds off the north Cornish coast in the 1st 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 once individuals reach maturity. The recruitment of Celtic Sea plaice 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 2011–2013.

Catch distribution Total catch (2013) = 1674 t, where 409 t were estimated landings (47% beam trawl, 41% otter trawl, and 12% others) and 1265 t discards.

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

The Aarts and Poos (2009) model continues to have difficulty in interpreting the data, although convergence properties have improved compared to last year's assessment. Despite these concerns with the model, the SSB, recruitment, and fishing mortality trends from the model are still considered to be relevant.

The advice is based on an assessment model accepted for trends, used as an indicator of stock size. The uncertainty associated with the index values is available. The methods applied to derive quantitative advice for data-limited stocks are expected to evolve as they are further developed and validated. The harvest control rules are expected to stabilize stock size in the short term (3–5 years), but they may not be suitable if the stock size is low and/or overfished.

Scientific basis

Stock data category	3.2.0 (ICES, 2014a).
Assessment type	Trends only based on the Aarts and Poos (2009) assessment model.
Input data	One survey index (UK (E&W)-BTS-Q3); two commercial indices (UK otter, UK beam). Natural mortality from historical tagging and maturity from a survey (Pawson and Harley, 1997).
Discards and bycatch	Discards included in the assessment since 2004, data series from the majority of the main fleets covering 65–84% of the landings.
Indicators	None.
Other information	Benchmarked in 2011 (ICES, 2011).
Working group	Working Group for the Celtic Seas Ecoregion (WGCSE).

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Reference points

No reference points are defined for this stock.

Outlook for 2015

No reliable forecast can be presented for this stock, because the assessment is only indicative of trends and stock size and fishing mortality are uncertain.

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.

Considering the stable trend in SSB since 2008 and the large uncertainty in the annual estimates, this implies no changes in catches compared to the average of the last three years, corresponding to catches in 2015 of 1500 t. If discard rates do not change from the average of the last three years (72% in 2011–2013), this implies landings in 2015 of no more than 420 t.

Effort of the main fleets has been decreasing since 2000 (Figure 5.3.26.2) and is currently at the recorded lowest level. Therefore, no additional precautionary reduction is needed.

Additional considerations***Advice considerations***

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 increased yield from the fishery. The use of larger-mesh gear and spatial temporal measures to avoid small plaice should be encouraged in this fishery in instances where mixed-fishery issues allow for it.

Management considerations

ICES estimates (409 t) and officially reported total international landings (412 t) for 2013 were ~11% above the 2013 TAC of 369 t.

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 on spawning grounds, but the degree to which this is effective is unknown.

Data and methods

The assessment includes landings data for the full time-series and discards since 2004. The quality and coverage of the discard data has improved in recent years while the estimates remain imprecise. The survey and commercial data are also variable but show trends consistent with the assessment.

Uncertainties in the assessment

In 2014 a review of the Aarts and Poos model discovered an error in the model. This was corrected and though it resulted in convergence being achieved for the stock and a rescaling of the estimated SSB recruitment and fishing mortality, the trends in each metric were unaffected. The model trends were used as the basis for advice in 2014.

Comparison of the basis of previous assessment and advice

This year's assessment is based on the Aart and Poos (2009) model of stock trends. Last year, the assessment was based on trends in the fishery-independent UK(E&W) beam trawl survey.

The basis for the advice this year is the same as last year: 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.

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ICES. 2014a. Advice basis. *In* Report of the ICES Advisory Committee, 2014. ICES Advice 2014, Book 1, Section 1.2.

ICES. 2014b. Report of the Working Group for the Celtic Seas Ecoregion (WGCSE), 13–22 May 2014, Copenhagen, Denmark. ICES CM 2014/ACOM:12.

Pawson, M. G., and Harley, B. F. M. 1997 Revision of Maturity Ogives for plaice in the Irish Sea (ICES Division VIIa) and Celtic Sea (ICES Division VIIf+g). Working document for ICES Northern Shelf Demersal Working Group.

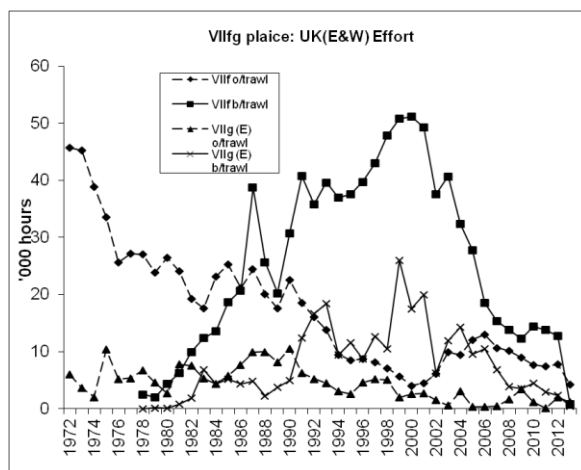


Figure 5.3.26.2 Plaice in Divisions VIIfg. Total effort of main fleets (in 1972–2013). The beam trawl in Division VIII (VIIfb/trawl) in 2013 is not reported consistently with the rest of the time-series.

Table 5.3.26.1 Plaice in Divisions VIII.f,g (Celtic Sea). ICES advice, management, and landings.

Year	ICES Advice	Predicted catch corresp. to advice	Pred. landings corresp. to advice	Agreed TAC	Official landings	ICES landings	ICES discards ¹
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	0.85
	Decrease landings by 19% (1.5% increase followed by 20% PA reduction)	-	< 0.36	0.37	0.41	0.41	1.27
2013	Increase catches by 20%	< 1.608	< 0.519	0.46			
2014	Catches should be no more than recent catches (last 3 years)	< 1.500	< 0.420				

Weights in thousand tonnes.

N/A = French landings not available.

¹Discards only available from 2004 to 2012.

Table 5.3.26.2

Plaice in Divisions VIII.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
Total reported	757	875	863	1373	1377	1303	1173	1279	1407	2384
Discards	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Unallocated	0	0	0	0	0	0	-27	-69	345	-693
Landings used by WG	757	875	863	1373	1377	1303	1146	1210	1752	1691
Catch as used by WG	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	
Total reported	1912	2194	2583	2219	1827	1362	1303	982	956	978
Discards	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Unallocated	-11	-78	-432	-137	-326	-174	-189	88	72	-26
Landings used by WG	1901	2116	2151	2082	1501	1188	1114	1070	1028	952
Catch as used by WG	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
Total reported	1259	1149	656	721	684	618	564	489	399	414
Discards	N/A	N/A	N/A	N/A	N/A	N/A	N/A	274	321	453
Unallocated	-42	-82	312	-3	30	24	30	21	-13	-10
Landings used by WG	1217	1067	968	718	714	642	594	510	386	404
Catch as used by WG	N/A	N/A	N/A	N/A	N/A	N/A	N/A	784	707	857

	2007	2008	2009	2010	2011	2012	2013
Belgium	194	187	216	188	210	203	186
UK (Engl. & Wales)	61	63	55	54	45	44	40
France	104	62	N/A	136	98	126	106
Ireland	58	63	63	63	67	76	80
Total reported	417	375	N/A	442	420	450	412
Discards	1288	583	608	670	1107	854	1265
Unallocated	-7	62	N/A	-9	1	6	3
Landings used by WG	410	437	463	433	421	444	409
Catch as used by WG	1698	1020	1071	1103	1528	1298	1674

Table 5.3.26.3

Plaice in Divisions VIII.f,g. Summary of the assessment. Relative values are relative to the average of time-series.

Year	Relative recruitment Age 1	Relative SSB	Landings tonnes	Discards tonnes	Relative Mean F Ages 3–6
1993	0.61	1.179	1114	0	0.658
1994	1.096	1.07	1070	0	0.79
1995	1.63	1.015	1028	0	0.959
1996	1.345	1.058	952	0	0.938
1997	1.099	1.22	1217	0	1.088
1998	0.808	1.108	1067	0	1.063
1999	0.664	0.9	968	0	1.127
2000	1.133	0.772	718	0	0.975
2001	0.974	0.91	714	0	0.899
2002	0.719	0.899	642	0	1.175
2003	0.447	0.82	594	0	1.057
2004	0.749	0.627	510	274	1.063
2005	1.268	0.638	386	321	0.885
2006	1.022	0.815	404	453	0.853
2007	1.276	0.978	410	1288	1.048
2008	0.664	1.115	437	583	0.829
2009	0.837	1.101	463	608	0.93
2010	1.458	1.153	433	670	0.957
2011	1.902	1.243	421	1107	1.094
2012	0.908	1.044	444	854	1.32
2013	0.393	1.334	409	1265	1.293