

Plaice (*Pleuronectes platessa*) in Division 7.e (western English Channel)

ICES advice on fishing opportunities

ICES advises that when the precautionary approach is applied, catches of the Division 7.e plaice stock in 2021 should be no more than 2177 tonnes.

Note: This advice sheet is abbreviated due to the COVID-19 disruption. The previous advice issued for 2020 is attached as Annex 1.

Stock development over time

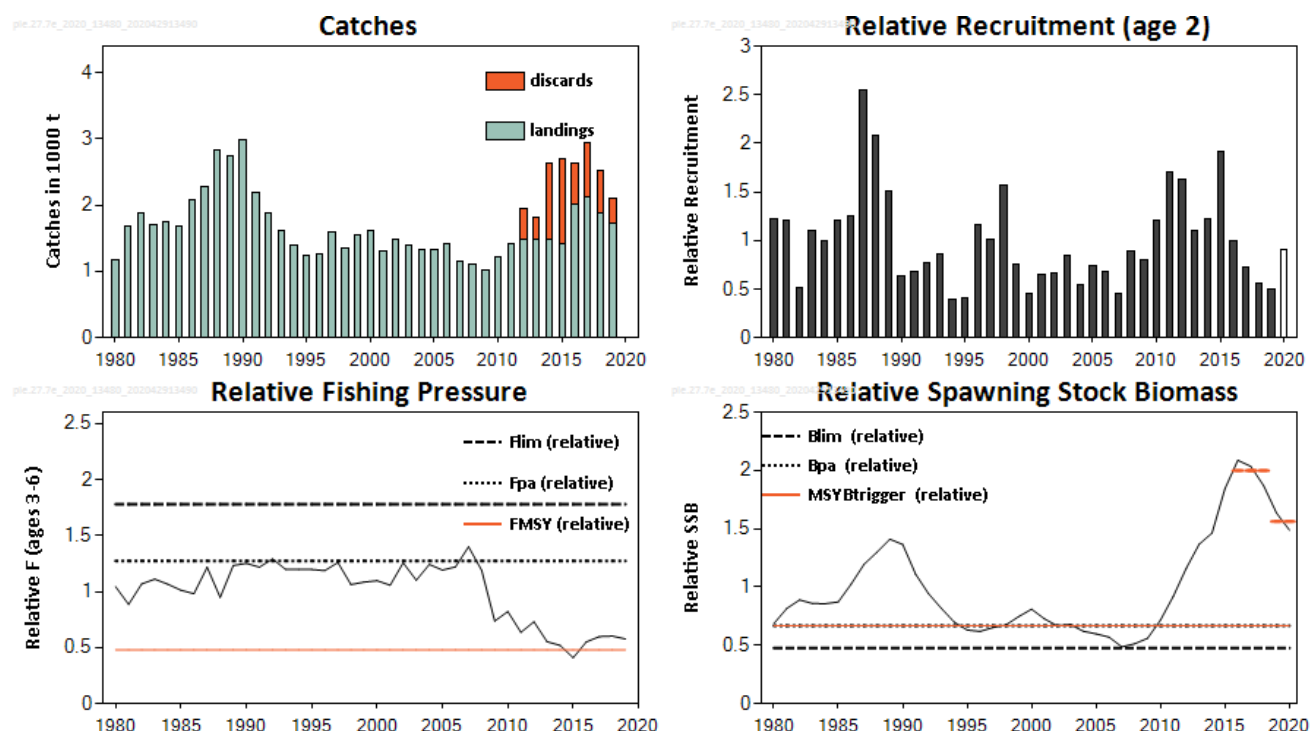


Figure 1 Plaice in Division 7.e. Summary of the stock assessment. Recruitment (R), fishing pressure (F), and spawning-stock biomass (SSB) are relative in relation to the average of the time-series. The assumed recruitment for 2020 is unshaded. Discard data are only available from 2012 and are not included in the assessment. The short orange lines in the relative SSB plot indicate the average values of the respective years (2016 to 2018 and 2019 to 2020).

Stock and exploitation status

Table 1 Plaice in Division 7.e. State of the stock and the fishery relative to reference points.

		Fishing pressure				Stock size		
		2017	2018	2019		2018	2019	2020
Maximum sustainable yield	F_{MSY} proxy	✗	✗	✗	Above proxy	✓	✓	✓
Precautionary approach	F_{pa}, F_{lim}	✓	✓	✓	Harvested sustainably	✓	✓	✓
Management plan	F_{MGT}	?	?	?	Undefined	✓	✓	✓
						$MSY B_{trigger}$ proxy		
						✓	✓	✓
						B_{pa}, B_{lim}		
						✓	✓	✓
						B_{MGT}		
						✓	✓	✓

Catch scenarios

Table 2[‡] Plaice in Division 7.e. The basis for the catch scenarios. *

Division 7.e plaice stock			
Index A (2019–2020)			1.56
Index B (2016–2018)			2.0
Index ratio (A/B)			0.78
Uncertainty cap		Applied	0.8
Advised catch for 2020 issued in 2019			2721 tonnes
Discard rate (2012–2019)			0.28
Precautionary buffer		Not applied (Last applied in 2019)	-
Catch advice **			2177 tonnes
Projected landings corresponding to advice ***			1560 tonnes
% advice change (plaice Division 7.e stock) ^			-20
Plaice in Division 7.e			
Proportion of Division 7.e stock landings caught in Division 7.e (2003–2019)			0.90
Catch of plaice in Division 7.e corresponding to the advice for the stock			1961 tonnes
Projected landings of plaice in Division 7.e corresponding to the advice for the stock ***			1405 tonnes

* The figures in the table are rounded. Calculations were done with unrounded inputs and computed values may not match exactly when calculated using the rounded figures in the table.

** [Recent advised catch] × [uncertainty cap].

*** [Advised catch] × [1 – discard rate].

^ Advice value for 2021 relative to the advice value for 2020.

The current advice has decreased by 20% compared to last year's advice due to the decline in the stock index.

Reference points

Table 3 Plaice in Division 7.e. Reference points, relative values, and their technical basis.

Framework	Reference point	Relative value *	Technical basis	Source
MSY approach	MSY B _{trigger proxy}	0.67	B _{pa}	ICES (2017, 2020)
	F _{MSY proxy}	0.48	EqSim run with segmented regression and with breakpoint at B _{loss} . F _{MSY} was taken as the peak of the median landings yield curve.	ICES (2017, 2020)
Precautionary approach	B _{lim}	0.48	B _{loss}	ICES (2017, 2020)
	B _{pa}	0.67	1.4 × B _{lim}	ICES (2017, 2020)
	F _{lim}	1.78	Based on a segmented regression simulation of recruitment without error.	ICES (2017, 2020)
	F _{pa}	1.27	F _{lim} × exp (–1.645 × σ); σ = 0.2	ICES (2017, 2020)
Management plan	MAP MSY B _{trigger proxy}	0.67	MSY B _{trigger proxy}	EU (2019)
	MAP B _{pa}	0.67	B _{pa}	EU (2019)
	MAP B _{lim}	0.48	B _{lim}	EU (2019)
	MAP F _{MSY proxy}	0.48	F _{MSY proxy}	EU (2019)

* All values are relative to the average of the time-series in the stock assessment (see Table 5).

[‡] Version 2: Field descriptor on 10th row corrected.

History of the advice, catch, and management

Table 4 Plaice in Division 7.e. History of ICES advice, the agreed TAC, official landings, and ICES estimates of landings and discards. Weights are in tonnes.

Year	ICES advice	Catch correspond. to advice 7.e stock	Landings correspond. to advice 7.e stock	Catch corresponding to advice 7.e area	Landings corresponding to advice 7.e area	Agreed TAC 7.d + 7.e	Official landings in 7.e	ICES discard estimates in 7.e	ICES landings 7.e plaice stock
1987	Precautionary TAC		6800			8300	1920	-	2272
1988	Precautionary TAC		6900			9960	2330	-	2835
1989	No increase in effort; TAC		11700			11700	2250	-	2742
1990	No increase in F; TAC		10700			10700	1980	-	285
1991	50% reduction in F in Division 7.e		8800			10700	1640	-	2183
1992	Status quo F (F_{sq}) gives over mean SSB		2000			9600	1570	-	1882
1993	Not outside safe biological limits		-			8500	1440	-	1614
1994	Within safe biological limits		-			9100	1290	-	1404
1995	No increase in F		1400			8000	1160	-	1247
1996	60% reduction in F		600			7530	1140	-	1266
1997	60% reduction in F		510			7090	1370	-	1583
1998	60% reduction in F		500			5700	1240	-	1346
1999	Reduce F below F_{pa}		1100			7400	1150	-	1543
2000	Reduce F below F_{pa}		< 1080			6500	1290	-	1626
2001	Reduce F below F_{pa}		< 930			6000	1110	-	1310
2002	Reduce F below F_{pa}		< 890			6690	1250	-	1472
2003	At least 50% reduction in F		< 530			5970	1240	-	1387
2004	A 55% reduction in F		< 660			6060	1140	-	1337
2005	A 64% reduction in F		< 580			5151	1130	-	1319
2006	Substantial reduction in catch		-			5151	1239	-	1411
2007	Substantial reduction in catch		-			5050	966	-	1146
2008	Substantial reduction in catch		-			5050	890	-	1112
2009	Same advice as last year		-			4646	975	-	1024
2010	Substantial reduction in catch		-			4274	1123	-	1207
2011	See scenarios		-			4665	1354	-	1417
2012	MSY Framework (F_{MSY})		< 1440			5062	1363	380	1492
2013	MSY Framework (F_{MSY})		-		< 2100	6400	1360	291	1472
2014	MSY transition		-		< 1397	5322	1340	1006	1490
2015	MSY Framework (F_{MSY})	< 1885	< 1546		< 1318	6223	1249	1172	1424

Year	ICES advice	Catch correspond. to advice 7.e stock	Landings correspond. to advice 7.e stock	Catch corresponding to advice 7.e area	Landings corresponding to advice 7.e area	Agreed TAC 7.d + 7.e	Official landings in 7.e	ICES discard estimates in 7.e	ICES landings 7.e plaice stock
2016	Precautionary approach (increase recent advised catch by no more than 20%)	≤ 2262	≤ 1697	≤ 1944	≤ 1458	12446	1779	500	2013
2017	Precautionary approach (increase recent advised catch by no more than 20%)	≤ 2714	≤ 1391	≤ 2454	≤ 1258	10022	1911	593	2128
2018	Precautionary approach (increase recent advised catch by no more than 20%)	≤ 3257	≤ 2239	≤ 2946	≤ 2025	10360	1640 *	499	1880
2019	Precautionary approach	≤ 3648		≤ 3283		10354	1520 *	169	1725
2020	Precautionary approach	≤ 2721		≤ 2456		9154			
2021	Precautionary approach	≤ 2177		≤ 1961					

* Preliminary.

Summary of the assessment

Table 5 Plaice in Division 7.e. Assessment summary. Weights are in tonnes.

Year	Relative recruitment (age 2)	Relative SSB	Landings	Discards	Relative F (ages 3–6)
1980	1.22	0.69	1178		1.04
1981	1.20	0.82	1676		0.89
1982	0.52	0.89	1878		1.07
1983	1.10	0.86	1714		1.11
1984	1.00	0.86	1758		1.07
1985	1.20	0.87	1677		1.01
1986	1.25	1.03	2078		0.98
1987	2.5	1.19	2272		1.22
1988	2.1	1.30	2835		0.95
1989	1.50	1.41	2742		1.23
1990	0.63	1.36	2985		1.25
1991	0.67	1.11	2183		1.22
1992	0.76	0.94	1882		1.29
1993	0.86	0.82	1614		1.20
1994	0.40	0.70	1404		1.20
1995	0.40	0.63	1247		1.20
1996	1.16	0.62	1266		1.19
1997	1.01	0.65	1583		1.26
1998	1.57	0.67	1346		1.06
1999	0.75	0.75	1543		1.08
2000	0.45	0.81	1626		1.10
2001	0.64	0.73	1310		1.06
2002	0.67	0.67	1472		1.26
2003	0.84	0.68	1387		1.10
2004	0.54	0.62	1337		1.24

Year	Relative recruitment (age 2)	Relative SSB	Landings	Discards	Relative F (ages 3–6)
2005	0.74	0.60	1319		1.19
2006	0.68	0.57	1411		1.22
2007	0.45	0.49	1146		1.40
2008	0.88	0.51	1112		1.19
2009	0.80	0.56	1024		0.74
2010	1.20	0.72	1207		0.82
2011	1.70	0.92	1417		0.64
2012	1.62	1.16	1492	448	0.73
2013	1.10	1.37	1472	351	0.55
2014	1.22	1.46	1490	1133	0.52
2015	1.92	1.84	1424	1276	0.41
2016	0.99	2.1	2013	618	0.55
2017	0.72	2.0	2128	821	0.60
2018	0.55	1.87	1880	633	0.60
2019	0.50	1.63	1725	366	0.58
2020	0.90 *	1.49			

* Geometric mean of the entire time-series.

Sources and references

EU. 2019. Regulation (EU) 2019/472 of the European Parliament and of the Council of 19 March 2019 establishing a multiannual plan for stocks fished in the Western Waters and adjacent waters, and for fisheries exploiting those stocks, amending Regulations (EU) 2016/1139 and (EU) 2018/973, and repealing Council Regulations (EC) No 811/2004, (EC) No 2166/2005, (EC) No 388/2006, (EC) No 509/2007 and (EC) No 1300/2008. Official Journal of the European Union, L 83: 1–17. <http://data.europa.eu/eli/reg/2019/472/oj>.

ICES. 2017. Report of the Workshop to consider F_{MSY} ranges for stocks in ICES categories 1 and 2 in Western Waters (WKMSYREF4), 13–16 October 2015, Brest, France. ICES CM 2015/ACOM:58. 187 pp. <https://doi.org/10.17895/ices.pub.5348>.

ICES. 2020. Working Group for the Celtic Seas Ecoregion (WGCSE). Draft report. ICES Scientific Reports. 2:40. Xx pp. <http://doi.org/10.17895/ices.pub.5978>. Publication of the full report is expected end of 2020.

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Annex 1

ICES Advice on fishing opportunities, catch, and effort
Celtic Seas and Greater North Sea ecoregions
Published 28 June 2019

Plaice (*Pleuronectes platessa*) in Division 7.e (western English Channel)

ICES advice on fishing opportunities

ICES advises that when the precautionary approach is applied, catches of the Division 7.e plaice stock in 2020 should be no more than 2721 tonnes.

Stock development over time

Fishing mortality (F) declined substantially after 2007, but has increased again since 2015 and is currently above F_{MSY} . The spawning-stock biomass (SSB) has increased substantially since 2008, is currently well above $MSY_{Btrigger}$ but has been decreasing since 2016. Recruitment (R) in the last three years has been below the long term average.

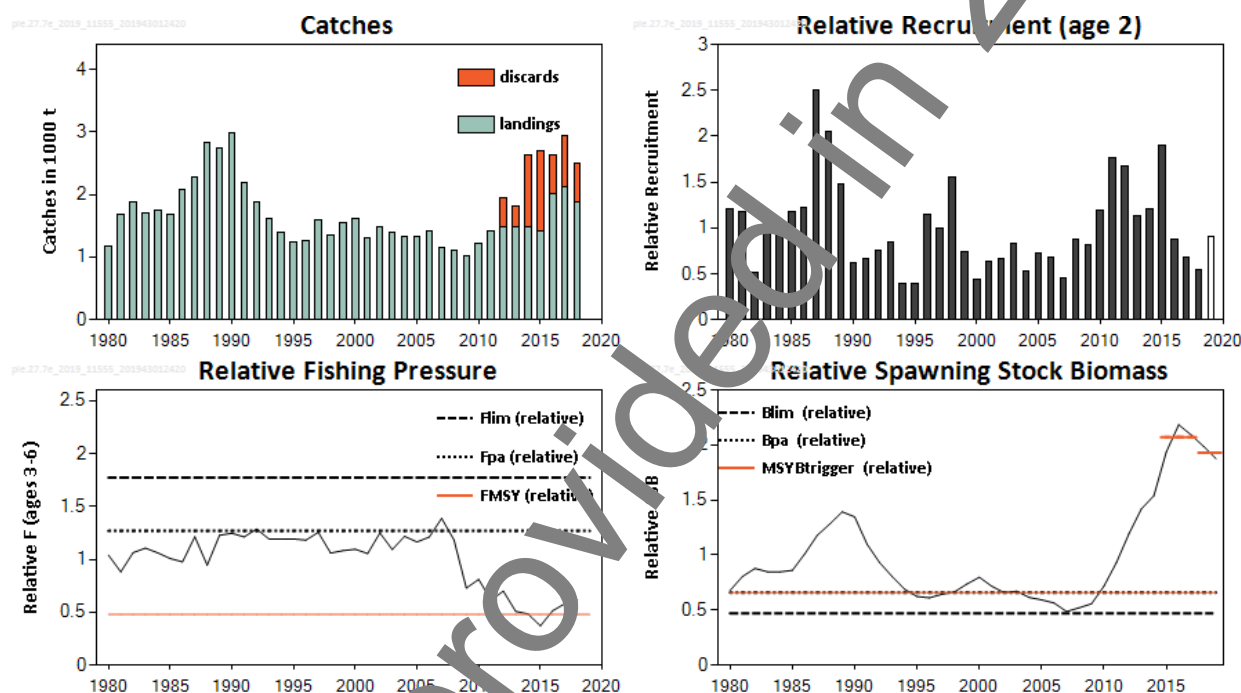


Figure 1 Plaice in Division 7.e. Summary of the stock assessment. Recruitment, fishing pressure, and SSB are relative in relation to the average of the time-series. The assumed recruitment for 2019 is unshaded. Discard data are only available for 2012–2018 and are not included in the assessment. The short orange lines in the relative SSB plot indicate the average values of the respective years (2015 to 2017 and 2018 to 2019).

Stock and exploitation status

ICES assesses that fishing pressure on the stock is above F_{MSY} proxy, but below F_{pa} and F_{lim} , and spawning-stock size is above $MSY_{Btrigger}$ proxy, B_{pa} , and B_{lim} .

Table 1 Plaice in Division 7.e. State of the stock and fishery relative to reference points.

		Fishing pressure			Stock size		
		2016	2017	2018	2017	2018	2019
Maximum sustainable yield	F_{MSY} proxy	✗	✗	✗ Above proxy	$MSY_{Btrigger}$ proxy	✓	✓ Above proxy
Precautionary approach	F_{pa} , F_{lim}	✓	✓	✓ Harvested sustainably	B_{pa} , B_{lim}	✓	✓ Full reproductive capacity
Management plan	F_{MGT}	?	?	? Undefined	B_{MGT}	✓	✓ Above trigger

Catch scenarios

ICES framework for category 3 stocks was applied (ICES, 2012). The SSB values from the assessment are used as the index of stock development. The advice is based on the ratio between the average of the two latest index values (index A) and the average of the three preceding values (index B), multiplied by the recent advised catch. The index is estimated to have decreased by less than 20% and thus the uncertainty cap was not applied. Despite the SSB being well above F_{MSY} trigger, the fishing mortality has been above F_{MSY} over the last three years and the precautionary buffer has not been applied recently; therefore it was applied.

Therefore, the precautionary buffer was applied to the advice. The discard rate is 30% of the total catch in weight.

Table 2 Plaice in Division 7.e. The basis for the catch scenarios*.

Division 7.e plaice stock	
Index A (2018–2019)	1.93
Index B (2015–2017)	2.1
Index ratio (A/B)	0.93
Uncertainty cap	Not applied
Advised catch for 2019 issued in 2018	3648
Discard rate (2012–2018)	0.30
Precautionary buffer	Applied
Catch advice**	2721 tonnes
Wanted catch corresponding to catch advice^	1909 tonnes
% Advice change (plaice Division 7.e stock)***	-25
Plaice in Division 7.e	
Proportion of Division 7.e stock landings caught in Division 7.e (2002–2018)	0.90
Catch of plaice in Division 7.e corresponding to the advice for the stock	2456 tonnes
Wanted catch of plaice in Division 7.e corresponding to the advice for the stock^	1722 tonnes

* The figures in the table are rounded. Calculations were done with unrounded inputs and computed values may not match exactly when calculated using the rounded figures in the table.

** [recent advised catch] × [index ratio] × [precautionary buffer]

*** Advice value 2020 relative to the advice value 2019.

^ “Wanted catch” is used to describe fish that would be landed in the absence of the EU landing obligation.

This year’s advice has decreased by 25% when compared to last year’s advice, which is caused by a decline in the stock index and the application of the precautionary buffer.

Basis of the advice

Table 3 Plaice in Division 7.e. The basis of the advice.

Advice basis	Precautionary approach.
Management plan	The multiannual plan (MAP) for stocks in Western Waters and adjacent waters (EU, 2019) applies to this stock. The MAP stipulates that when the F_{MSY} ranges are not available, fishing opportunities should be based on the best available scientific advice.

Quality of the assessment

The assessment is considered only indicative of trends because it is based on landings data only and because discarding is considered to be substantial in this stock. Reliable discard data are only available from 2012. Exploratory assessments using discard information indicate that the recent fishing mortality is likely to be higher, and recent spawning-stock biomass lower than in the current landings only assessment.

There is uncertainty about the landing statistics of the Division 7.e plaice stock because of migration between this area and the eastern English Channel (Division 7.d) during the spawning period. The assessment adjusts for this by incorporating an added element of Division 7.d landings and age information to account for migration. The assessment results depend on the assumption on the mixing rate, which is estimated from the existing tagging survey (ICES, 2010).

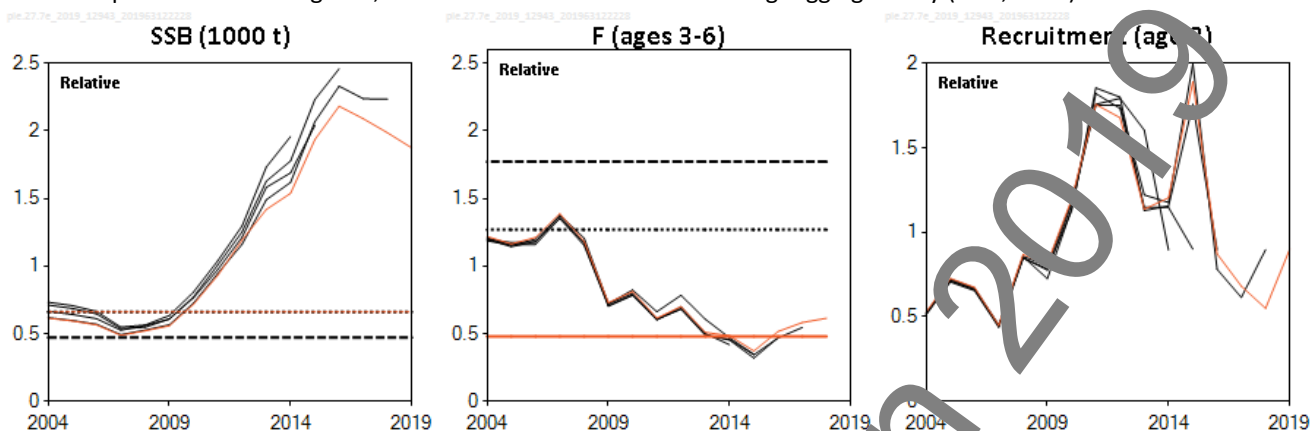


Figure 2 Plaice in Division 7.e. Historical assessment results (final-year recruitment estimates are included for the last two assessments).

Issues relevant for the advice

The stock assessment is for the Division 7.e plaice stock and ICES provides catch advice for that stock. A single TAC covers both of the divisions 7.d and 7.e; management should ensure that fishing opportunities are in line with the stock status for each of the stocks in the combined management area in order to ensure that both stocks are exploited sustainably.

Assuming the same proportion of the Division 7.e plaice stock is taken in Division 7.d as during 2003–2018, this will correspond to catches of plaice in Division 7.e in 2020 of no more than 2456 tonnes.

There is no formal mixed-fishery analysis for this area, but plaice in Division 7.e is considered primarily to be a bycatch in the sole fishery, with substantial discards, and so changes in effort in the directed sole fishery will impact fishing mortality on plaice.

Reference points

Table 4 Plaice in Division 7.e. Reference points, relative values, and their technical basis.

Framework	Reference point	Relative value*	Technical basis	Source
MSY approach	MSY $B_{\text{trigger proxy}}$	0.66	B_{pa}	ICES (2017, 2019)
	$F_{\text{MSY proxy}}$	0.48	EqSim run with segmented regression and with breakpoint at B_{loss} . F_{MSY} was taken as the peak of the median landings yield curve.	ICES (2017, 2019)
Precautionary approach	B_{lim}	0.47	B_{loss}	ICES (2017, 2019)
	B_{pa}	0.66	$1.4 \times B_{\text{lim}}$	ICES (2017, 2019)
	F_{lim}	1.77	Based on a segmented regression simulation of recruitment without error.	ICES (2017, 2019)
	F_{pa}	1.27	$F_{\text{lim}} \times \exp(-1.645 \times \sigma)$; $\sigma = 0.2$	ICES (2017, 2019)
Management plan	MAP MSY $B_{\text{trigger proxy}}$	0.66	MSY $B_{\text{trigger proxy}}$	EU (2019)
	MAP B_{pa}	0.66	B_{pa}	EU (2019)
	MAP B_{lim}	0.47	B_{lim}	EU (2019)
	MAP $F_{\text{MSY proxy}}$	0.48	$F_{\text{MSY proxy}}$	EU (2019)

* All values are relative to the average of the time-series in the stock assessment (see Table 9).

Basis of the assessment

Table 5 Plaice in Division 7.e. Basis of the assessment and advice.

ICES stock data category	3 (ICES, 2018).
Assessment type	Age-based analytical assessment (XSA), considered indicative of trends only.
Input data	Commercial catches (international landings, ages and length frequencies from catch sampling), two survey indices (UK-FSP_Q3 and Q1SWBeam). Maturity and natural mortality are constant for all years.
Discards and bycatch	Used to provide advice, but not included in the assessment. Discard information is available from 2012 onwards.
Indicators	None.
Other information	Inter-benchmark in 2015 (IBPWCFlat2; ICES, 2015). Reference points were defined at WKMSYREF4 (ICES, 2017).
Working group	Working Group for the Celtic Seas Ecoregion (WGCSE)

Information from stakeholders

There is no additional available information.

History of the advice, catch, and management

Table 6 Plaice in Division 7.e. History of ICES advice, the agreed TAC, official landings, and ICES estimates of landings and discards. Weights are in tonnes.

Year	ICES advice	Catch corresponding to advice 7.e stock	Landings corresponding to advice 7.e stock	Catch corresponding to advice 7.e area	Landings corresponding to advice 7.e area	Agreed TAC 7.d + 7.e	Official landings in 7.e	ICES discard estimates in 7.e	ICES landings 7.e plaice stock
1987	Precautionary TAC		6800			8300	1920	-	2272
1988	Precautionary TAC		6900			9960	2330	-	2835
1989	No increase in effort; TAC		11700			11700	2250	-	2742
1990	No increase in F; TAC		10700			10700	1980	-	285
1991	50% reduction in F in Division 7.e		8800			10700	1640	-	2183
1992	Status quo F (F_{sq}) gives over mean SSB		2000			9600	1570	-	1882
1993	Not outside safe biological limits		-			8500	1440	-	1614
1994	Within safe biological limits		-			9100	1290	-	1404
1995	No increase in F		1400			8000	1160	-	1247
1996	60% reduction in F		600			7530	1140	-	1266
1997	60% reduction in F		510			7090	1370	-	1583
1998	60% reduction in F		500			5700	1240	-	1346
1999	Reduce F below F_{pa}		1100			7400	1150	-	1543
2000	Reduce F below F_{pa}		< 1080			6500	1290	-	1626
2001	Reduce F below F_{pa}		< 930			6000	1110	-	1310
2002	Reduce F below F_{pa}		< 890			6690	1250	-	1472
2003	At least 50% reduction in F		< 530			5970	1240	-	1387
2004	A 55% reduction in F		< 660			6060	1140	-	1337
2005	A 64% reduction in F		< 580			5151	1130	-	1319
2006	Substantial reduction in catch		-			5151	1239	-	1411
2007	Substantial reduction in catch		-			5050	966	-	1146
2008	Substantial reduction in catch		-			5050	890	-	1112

Year	ICES advice	Catch corresponding to advice 7.e stock	Landings corresponding to advice 7.e stock	Catch corresponding to advice 7.e area	Landings corresponding to advice 7.e area	Agreed TAC 7.d + 7.e	Official landings in 7.e	ICES discard estimates in 7.e	ICES landings 7.e plaice stock
2009	Same advice as last year		-			4646	975	-	1024
2010	Substantial reduction in catch		-			4274	1123		1207
2011	See scenarios		-			4665	1 54	-	1417
2012	MSY Framework (F_{MSY})		< 1440			5062	1363	380	1492
2013	MSY Framework (F_{MSY})		-		< 2100	6400	2260	291	1472
2014	MSY transition		-		< 1397	5322	134	1006	1490
2015	MSY Framework (F_{MSY})	< 1885	< 1546		< 1318	5223	1249	1172	1424
2016	Precautionary approach (increase recent advised catch by no more than 20%)	≤ 2262	≤ 1697	≤ 1944	≤ 1458	12446	1779	500	2013
2017	Precautionary approach (increase recent advised catch by no more than 20%)	≤ 2714	≤ 1391	≤ 2454	≤ 1222	10022	1911	593	2128
2018	Precautionary approach (increase recent advised catch by no more than 20%)	≤ 3257	≤ 2239	≤ 2946	≤ 2025	10360	1640*	490	1880
2019	Precautionary approach	≤ 3648		≤ 3 83		10354			
2020	Precautionary approach	≤ 2721		≤ 1 56					

* Preliminary.

History of the catch and landings

Table 7 Plaice in Division 7.e. Catch distribution of plaice in 7.e by fleet in 2018 as estimated by ICES.*

Catch	Landings				Discards			
	Beam trawl	Otter trawl	Fixed nets	Other gear	Beam trawl	Otter trawl	Fixed nets	Other gear
2134 t	70%	23%	5%	2%	74%	24%	< 1%	2%
	1644 t				490 t			

*Catch and the catch contribution by fleet correspond to the amount taken in Division 7.e and do not include the catch taken in Division 7.d.

Table 8 Plaice in Division 7.e. History of official landings by country and ICES estimates of landings and discards. All weights are in tonnes.

Year	Belgium	Netherlands	France	UK (E & W) incl. CI's	Others	Total reported	Total*	7.e stock caught in 7.d**	ICES estimated landings	Discards***
1976	5	-	323	312	-	640	640	-	640	
1977	3	-	336	363	-	702	702	-	702	
1978	3	-	314	467	-	784	784	-	784	
1979	2	-	458	515	-	975	977	-	975	
1980	23	-	325	609	9	966	1079	22	117	
1981	27	-	537	953	-	1517	1501	175	1676	
1982	81	-	363	1109	-	1553	1688	190	1878	
1983	20	-	371	1195	-	1586	1495	219	1714	
1984	24	-	278	1144	-	1446	1547	211	1758	
1985	39	-	197	1122	-	1358	1441	236	1677	
1986	26	-	276	1389	-	1691	1810	208	2078	
1987	68	-	435	1419	-	1922	1958	314	2272	
1988	90	-	584	1654	-	2328	2458	377	2835	
1989	89	-	448	1712	-	2249	2358	384	2742	
1990	82	-	N/A	1891	2	1977	2593	392	2985	
1991	57	-	251	1326	-	1634	1843	335	2183	
1992	25	-	419	1110	14	1568	1624	258	1882	
1993	56	-	284	1080	24	1444	1417	197	1614	
1994	10	-	277	998	-	1285	1156	248	1404	
1995	13	-	288	857	-	1158	1031	216	1247	
1996	4	-	279	855	-	1138	1044	222	1266	
1997	6	-	329	1038	1	1374	1323	260	1583	
1998	22	-	327	892	1	1242	1131	215	1346	
1999	12	-	194	947	-	1153	1299	244	1543	
2000	4	-	360	926	-	1290	1281	345	1625	
2001	12	-	303	797	-	1112	1106	204	1310	
2002	27	-	242	976	-	1247	1257	215	1472	
2003	39	-	216	983	-	1240	1277	110	1387	
2004	46	-	184	912	-	1142	1212	126	1337	
2005	48	-	198	867	-	1133	1203	117	1319	
2006	52	-	223	864	-	1239	1313	97	1411	
2007	84	-	202	830	-	966	1003	143	1146	
2008	66	-	148	676	-	890	976	135	1112	
2009	53	2	191	729	-	975	923	101	1024	
2010	51	2	227	843	-	1123	1092	116	1208	
2011	141	3	274	936	-	1354	1334	83	1417	
2012	134	2	224	1003	-	1363	1366	126	1492	448
2013	97	1	211	1041	-	1360	1351	121	1472	351
2014	41	0	223	976	-	1340	1341	149	1490	1133
2015	111	1	224	912	1	1249	1246	178	1424	1276
2016	145	1	204	1430	-	1780	1777	235	2013	618
2017	151		153	1605	1	1911	1915	213	2128	821
2018^	142	3	118	1373	-	1640	1644	236	1880	624

* Estimated by the working group.

** Migration correction (15% of the mature population caught in Quarter 1 in Division 7.d) added to stock.

*** Discard estimated by the working group, including discards from the migration correction.

^ Preliminary

Summary of the assessment

Table 9 Plaice in Division 7.e. Assessment summary. Weights are in tonnes.

Year	Relative recruitment (age 2)	Relative SSB	Landings	Discards	Relative F (ages 3–6)
1980	1.20	0.68	1178		1.04
1981	1.18	0.81	1676		0.88
1982	0.51	0.88	1878		1.06
1983	1.08	0.85	1714		1.11
1984	0.98	0.85	1758		1.06
1985	1.18	0.86	1677		1.01
1986	1.23	1.01	2078		0.98
1987	2.5	1.18	2272		1.21
1988	2.1	1.28	2835		0.94
1989	1.48	1.39	2742		1.23
1990	0.62	1.35	2985		1.25
1991	0.67	1.10	2183		1.21
1992	0.75	0.93	1882		1.29
1993	0.85	0.81	1614		1.19
1994	0.39	0.69	1407		1.19
1995	0.39	0.62	1247		1.19
1996	1.14	0.61	1266		1.18
1997	0.99	0.64	1283		1.25
1998	1.55	0.67	1308		1.06
1999	0.74	0.74	1143		1.08
2000	0.44	0.80	1626		1.10
2001	0.64	0.72	1310		1.05
2002	0.66	0.66	1472		1.25
2003	0.83	0.67	1387		1.09
2004	0.53	0.61	1337		1.22
2005	0.73	0.59	1319		1.16
2006	0.67	0.66	1411		1.21
2007	0.45	0.45	1146		1.39
2008	0.87	0.52	1112		1.18
2009	0.82	0.56	1024		0.73
2010	1.19	0.72	1207		0.81
2011	1.76	0.93	1417		0.62
2012	1.68	1.19	1492	448	0.70
2013	1.14	1.42	1472	351	0.51
2014	1.20	1.54	1490	1133	0.48
2015	1.89	1.94	1424	1276	0.37
2016	2.87	2.2	2013	618	0.52
2017	1.6	2.1	2128	821	0.58
2018	0.5	1.99	1880	624	0.61
2019	0.90*	1.87			

* Geometric mean of the time series.

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