Plaice (*Pleuronectes platessa*) in Division 7.d (eastern English Channel)

ICES advice on fishing opportunities

ICES advises that when the MSY approach is applied, catches in 2019 should be no more than 7864 tonnes.

Assuming the same proportion of the Division 7.e and Subarea 4 plaice stocks is taken in Division 7.d as during 2003–2017, this will correspond to catches of plaice in Division 7.d in 2019 of no more than 9225 tonnes.

Stock development over time

The spawning-stock biomass (SSB) has increased rapidly from 2010 following a period of high recruitment between 2009 and 2015, and is now well above the MSY $B_{trigger}$. Fishing mortality (F) has declined since the early 2000s and it has been below F_{MSY} since 2009. Recruitment (R) is currently around the average of the time-series.
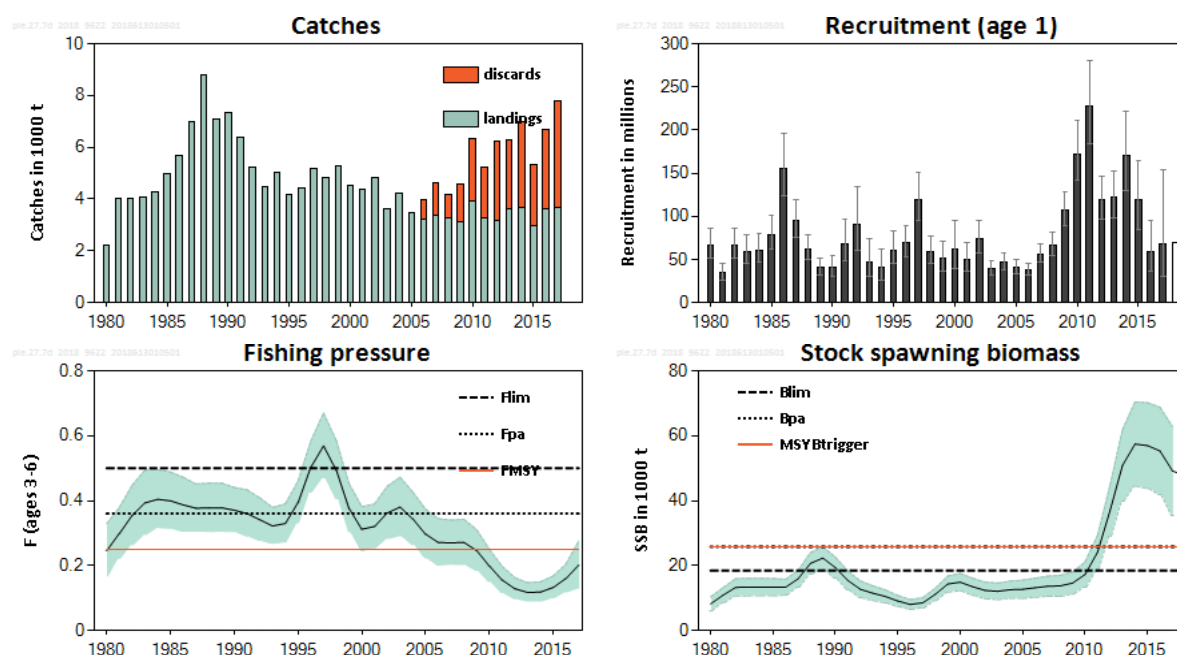

Figure 1   Plaice in Division 7.d. Summary of the stock assessment. Predicted values of recruitment are not shaded. Shaded areas (F, SSB) and error bars (R) indicate ±2 standard errors (approximately 95% confidence intervals).

Stock and exploitation status

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

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

		Fishing pressure				Stock size		
		2015	2016	2017		2016	2017	2018
Maximum Sustainable Yield	F_{MSY}	✓	✓	✓ Below	MSY $B_{Trigger}$	✓	✓	✓ Above trigger
Precautionary Approach	$F_{pa'}$ F_{lim}	✓	✓	✓ Harvested sustainably	$B_{pa'}$ B_{lim}	✓	✓	✓ Full reproductive capacity
Management plan	F_{MGT}	—	—	— Not applicable	B_{MGT}	—	—	— Not applicable

Catch scenarios

Table 2   Plaice in Division 7.d. Assumptions made for the interim year and in the forecast for Division 7.d plaice stock only.

Variable	Value	Notes
$F_{ages\ 3-6}$ (2018)	0.201	Average exploitation pattern (2015–2017) scaled to $F_{ages\ 3-6}$ in 2017
SSB (2019)	42 420	Short-term forecast (STF), in tonnes
R_{age1} (2018–2019)	70 057	Geometric mean 1980–2017, in thousands
Catch (2018)	7 114	STF, in tonnes
Landings (2018)	4 521	STF, in tonnes; projection based on the average landing ratio (2015–2017) by age
Discards (2018)	2 593	STF, in tonnes; projection based on the average discard ratio (2015–2017) by age

Table 3 Plaice in Division 7.d. Annual catch scenarios. All weights are in tonnes.

Basis	Division 7.d plaice stock										Plaice in Division 7.d #					
	Total catch (2019)^	Wanted catch * (2019)	Unwanted catch * (2019)	F_{total} (2019)	F_{wanted} (2019)	$F_{unwanted}$ (2019)	SSB (2020)	% SSB change **	% change in wanted catch ***	% advice change$	Total catch (2019)	Wanted catch* (2019)	Unwanted catch* (2019)	% change in wanted catch^^	% change in the 7.d portion of the TAC ##	% advice change ###
ICES advice basis																
ICES MSY approach (F_{MSY})	7864	4878	2986	0.25	0.117	0.133	37200	-12.3	32	-26	9225	5722	3503	24	17.2	-25
Other scenarios																
F= $F_{MSY\ lower}$	5670	3509	2162	0.175	0.082	0.093	39571	-6.7	-4.9	-46	6651	4116	2536	-10.8	-15.5	-46
F= $F_{MSY\ upper}$	10435	6491	3944	0.344	0.161	0.183	34455	-18.8	76	-1.48	12239	7614	4626	65	55	-1.12
F = 0	0	0	0	0	0	0	45814	8	-100	-100	0	0	0	-100	-100	-100
F_{pa}	10853	6755	4099	0.36	0.169	0.191	34012	-19.8	83	2.5	12731	7923	4808	72	62	2.9
F_{lim}	14302	8936	5367	0.5	0.234	0.266	30399	-28	142	35	16776	10481	6295	127	113	36
SSB (2020) = B_{lim}	26337	16674	9663	1.152	0.539	0.612	18447	-57	350	149	30892	19558	11334	320	290	150
SSB (2020) = B_{pa}	18778	11791	6987	0.707	0.331	0.376	25826	-39	220	77	22026	13831	8195	200	180	78
SSB (2020) = MSY $B_{trigger}$	18778	11791	6987	0.707	0.331	0.376	25826	-39	220	77	22026	13831	8195	200	180	78
F = F_{2018}	6452	3996	2456	0.201	0.094	0.107	38723	-8.7	8.3	-39	7568	4687	2881	1.6	-3.8	-39
Mixed-fisheries scenarios†																
A: Max.	9789			0.353			31239	-26								
B: Min.	3235			0.106			38204	-10								
C: COD	4638			0.155			36693	-13								
D: SQ effort	6896			0.238			34283	-19								
E: Value	6613			0.227			34583	-18								
F: range ‡	7267			0.230			37651	-11								
G:																

* "Wanted" and "unwanted" catch are used to describe fish that would be landed and discarded in the absence of the EU landing obligation, based on discard rate estimates for 2015–2017.

** SSB 2020 relative to SSB 2019.

*** Wanted catch in 2019 relative to the ICES estimates of landings in 2017 (3 689 t) for the Division 7.d plaice stock.

$ Total catch in 2019 relative to advice value 2018 (10 592 t) for the Division 7.d plaice stock.

^ Differences between the total catch and the sum of wanted and unwanted catches are due to rounding.

^^ Wanted catch in 2019 relative to the ICES estimates of landings in 2017 (4 613 t) for plaice caught in Division 7.d.

^^^ Proposed EU multiannual plan (MAP) for the Western Waters (EU, 2016).

All plaice in Division 7.d, including plaice originating from the North Sea and the western English Channel, according to a ratio calculated over the years 2003–2017: 14.75% of the plaice landed in Division 7.d is assumed to originate from the North Sea and the western English Channel, and this is added to the predicted values for the Division 7.d plaice stock. The ratio is applied to total catch, wanted catch, and unwanted catch.

Total catch in 2019 relative to the Division 7.d proportion of the TAC in 2018 (7 871 t), assuming the same proportion of the TAC is taken from Division 7.e as during 2003–2017.

Total catch in 2019 relative to advice value 2018 (12 378 t) for plaice caught in Division 7.d.

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† Version 3: All mixed-fisheries scenarios updated as part of the ICES reopening process.

‡ Version 2: Mixed-fisheries range scenario updated.

Mixed-fisheries assumptions (note: "fleet's stock share" is used to describe the share of the fishing opportunities for each particular fleet, which has been calculated based on the single-stock advice for 2019 and the historical proportion of the stock landings taken by the fleet):

A. Maximum scenario: Each fleet stops fishing when its last stock share is exhausted.

B. Minimum scenario: Each fleet stops fishing when its first stock share is exhausted.

C. COD: Each fleet stops fishing when its individual cod share is exhausted.

D. SQ (*status quo*) effort scenario: The effort of each fleet in 2018 and 2019 is as in 2017.

E. Value scenario: The effort of each fleet is equal to the weighted average of the efforts required to catch the fleet's quota share of each of the stocks, where the weights are the relative catch values of each stock in the fleet's portfolio.

F. Range scenario: The potential for TAC mismatches in 2019 are minimized within the F_{MSY} range, for the demersal fish stocks for which such a range is available (cod.27.47d20; had.27.46a20; pok.27.3a46; ple.27.420; ple.27.7d; sol.27.4; sol.27.7d).

The advice change is due to applying the same F (F_{MSY}) to an estimated stock size that is lower due to lower recruitment.

Basis of the advice

Table 4   Plaice in Division 7.d. The basis of the advice.

Advice basis	ICES MSY approach
Management plan	The EU has proposed a multiannual management plan for the Western Waters, which is not yet finalized (EU, 2018).

Quality of the assessment

There is uncertainty about the landing statistics of the Division 7.d plaice stock because of migrations between this area and the North Sea and the western English Channel during the spawning period. Stock structure and mixing rate during the spawning period need to be investigated, new data are needed to determine if the current mixing rate estimates are still valid given the general increase of plaice stocks. The current assessment results are dependent on the proportion of quarter 1 removals estimated from the historical tagging survey (ICES, 2010).
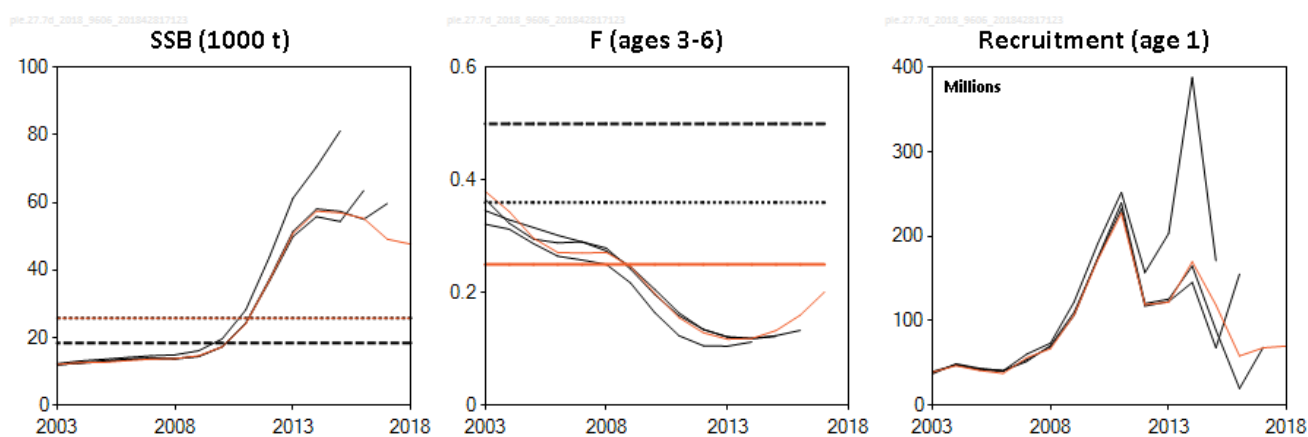

Figure 2   Plaice in Division 7.d. Historical assessment results.

Issues relevant for the advice

The EU is finalizing a MAP for the Western Waters, and ICES provided advice based on the ICES MSY approach.

Plaice is caught in a mixed fishery targeting sole, with 80 mm mesh size. This leads to a large number of plaice being discarded because this mesh size is not matched to the minimum conservation reference size (MCRS).

A single TAC covers both 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.

Mixed-fisheries considerations[††]

Results from a North Sea mixed-fisheries analysis are presented in the ICES mixed-fisheries advice (ICES, 2018a). The analysis has been updated taking into account latest changes made to the assessments and forecasts for stocks with reopened advice.

After years of positive development, North Sea cod is again estimated to be the most limiting stock in the Greater North Sea mixed-fisheries model. For 2019, assuming a strictly implemented landing obligation (corresponding to the "Minimum" scenario), cod is estimated to constrain 24 out of 40 fleet segments. Whiting is the second most limiting stock, constraining twelve fleet segments. Conversely, in the "Maximum" scenario, saithe and both plaice stocks (North Sea and eastern English Channel) would be the least limiting for 17, 9, and 3 fleet segments, respectively. Finally, if

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[††] Version 3: mixed-fisheries text updated

Norway lobster were managed by separate TACs, Norway lobster in FU 7 would be the least limiting for seven fleet segments (ICES, 2018b).

For those demersal fish stocks for which the F_{MSY} range is available, a "range" scenario is presented that minimizes the potential for TAC mismatches in 2019 within the F_{MSY} range. This scenario returns a fishing mortality by stock which, if used for setting single-stock fishing opportunities for 2019, may reduce the gap between the most and the least restrictive TACs, thus reducing the potential for quota over- and undershoots. This "range" scenario suggests that the potential for mixed-fisheries mismatch would be lowered with a 2019 TAC in the lower part of the F_{MSY} range for North Sea plaice and North Sea saithe, and at the highest possible value for cod in accordance with the MSY approach and the MAP (EU multiannual plan).

Reference points

Table 5   Plaice in Division 7.d. Reference points, values, and their technical basis.

Framework	Reference point	Value	Technical basis	Source
MSY approach	MSY $B_{trigger}$	25826 t	B_{pa}	ICES (2015a)
	F_{MSY}	0.25	EQsim analysis based on recruitment period 1981–2014	ICES (2015a)
Precautionary approach	B_{lim}	18447 t	Break-point of hockey stick stock–recruit relationship, based on recruitment period 1981–2014	ICES (2015a)
	B_{pa}	25826 t	$B_{lim} \times \exp(1.645 \times 0.2) \approx 1.4 \times B_{lim}$	ICES (2015a)
	F_{lim}	0.50	EQsim analysis based on recruitment period 1981–2014	ICES (2016)
	F_{pa}	0.36	$F_{lim} \times \exp(-1.645 \times 0.2) \approx F_{lim} / 1.4$	ICES (2016)
Management plan*	MAP MSY $B_{trigger}$	25826 t	MSY $B_{trigger}$	
	MAP B_{lim}	18447 t	B_{lim}	
	MAP F_{MSY}	0.25	F_{MSY}	
	MAP range F_{lower}	0.175 – 0.25	Consistent with ranges provided by ICES (2015a), resulting in no more than 5% reduction in long-term yield compared with MSY.	
	MAP range F_{upper}	0.25 – 0.344	Consistent with ranges provided by ICES (2015a), resulting in no more than 5% reduction in long-term yield compared with MSY	

* Proposed EU multiannual plan (MAP) for the Western Waters (EU, 2018).

Basis of the assessment

Table 6   Plaice in Division 7.d. Basis of the assessment and advice.

ICES stock data category	1 (ICES, 2018c).
Assessment type	Age-based analytical assessment (Aarts and Poos, 2009; ICES, 2018b) that uses catches in the model and in the forecast (ICES, 2018d).
Input data	Commercial catch (international landings, with age frequencies from catch sampling covering 88% of the landings), two survey indices UK-BTS, FGFS. Constant natural mortality by age is calculated from Peterson and Wroblewski (1984). Fixed maturity ogive is based on biological sampling.
Discards and bycatch	Discards are included in the assessment and all major fleets are covered. 79% of the landings had associated discard data in 2017, with age frequencies from catch sampling covering 72% of the discards. 73% of the discard estimates are based on observations. The model reconstructs discards for years where data are not available (before 2006).
Indicators	None.
Other information	Last benchmarked in 2015 (WKPLE; ICES, 2015b).
Working group	Working Group on the Assessment of Demersal Stocks in the North Sea and Skagerrak (WGNSSK)

Information from stakeholders

There is no additional available information.

History of the advice, catch, and management

Table 7 Plaice in Division 7.d. History of ICES advice, official landings for plaice in 7.d, agreed TAC for 7.d and 7.e, and ICES estimates for landings and discards of 7.d plaice, and for plaice in 7.d. All weights are in tonnes.

Year	ICES advice	Landings corresponding to advice			Catch corresponding to advice		Agreed TAC 7.d, e	Official landings of plaice in 7.d*	ICES landings of plaice in 7.d*	ICES landings 7.d plaice	ICES discards of 7.d plaice	ICES discards of plaice in 7.d
		7.d plaice	Plaice in 7.d	Plaice in 7.d, e	7.d plaice stock	Plaice in 7.d						
1987	Precautionary TAC for 7.d,e			6800			8300	7867	8366	7006		
1988	Precautionary TAC for 7.d,e			6900			9960	9103	10420	8785		
1989	No increase in effort for 7.d,e			11700			11700	7115	8758	7093		
1990	No increase in F; TAC for 7.d,e			10700			10700	8367	9047	7349		
1991	TAC for 7.d,e			8800			10700	7913	7813	6362		
1992	*Status quo* F gives mean SSB		7600				9600	6232	6337	5220		
1993	*Status quo* F within safe biological limits		6400				8500	4771	5331	4479		
1994	No long-term gains in increased F		-				9100	5633	6121	5047		
1995	No increase in F		5600				8000	4569	5130	4196		
1996	No long-term gains in increasing F		6500				7530	4598	5393	4430		
1997	No advice		-				7090	5316	6307	5180		
1998	Reduce F in 98 by 30% from 96 value		4300				5700	4830	5762	4832		
1999	Fishing at F_{pa}		6300				7400	5437	6326	5268		
2000	Fishing at F_{pa}		4900				6500	5235	6014	4522		
2001	Fishing at < F_{pa}		< 4400				6000	4968	5266	4380		
2002	Fishing at < F_{pa}		< 5800				6700	5496	5777	4846		
2003	Fishing at < F_{pa}		< 5300				5970	4650	4086	3610		
2004	Fishing at < F_{pa} **		< 5400				6060	4312	4750	4206		
2005	Fishing at < F_{pa} **		< 4400				5150	3706	3991	3485		
2006	No effort increase **						5151	3525	3646	3225	727	749
2007	Average landings **		< 4000				5050	3845	4001	3381	1220	1252
2008	Average landings **		< 3500				5050	3609	3864	3278	888	936

Year	ICES advice	Landings corresponding to advice			Catch corresponding to advice		Agreed TAC 7.d, e	Official landings of plaice in 7.d*	ICES landings of plaice in 7.d*	ICES landings 7.d plaice	ICES discards of 7.d plaice	ICES discards of plaice in 7.d
		7.d plaice	Plaice in 7.d	Plaice in 7.d, e	7.d plaice stock	Plaice in 7.d						
2009	Average landings (2006–2008) **		< 3500				4646	3522	3560	3124	1473	1528
2010	Average landings (2007–2009)		< 3500				4274	3892	4411	3910	2412	2511
2011	Average landings (2008–2010)		< 3500				4665	3593	3649	3291	1926	2024
2012	No increase in catches and reduce discards		-				5062	3612	3723	3179	3043	3336
2013	Transition to F_{MSY} proxy for data-limited stocks by 2015 and reduce discards		< 4300				6400	4182	4127	3604	2696	2955
2014	Transition to F_{MSY} proxy for data-limited stocks by 2015 and reduce discards	< 3016	< 3925				5322	4327	4320	3675	3325	3886
2015	ICES DLS approach (F_{MSY} proxy)	< 2811	< 3469				6223	3748	3727	2957	2368	2821
2016	MSY approach	≤ 10855	≤ 12512	≤ 16249	≤ 16923	≤ 19506	12446	4656	4638	3618	3090	3603
2017	MSY approach	≤ 7550	≤ 8764	≤ 11381	≤ 12805	≤ 14864	10022	4576	4613	3689	4075	5065
2018	MSY approach	≤ 7132	≤ 8335	≤ 10909	≤ 10592	≤12378	10360					
2019	MSY approach				≤ 7864	≤ 9225						

* Plaice in Division 7.d, taking into account fish caught in the first quarter in Division 7.d that come from Division 7.e and Subarea 4 to spawn.

** Single-stock boundary and the exploitation of this stock should be conducted in the context of mixed fisheries.

*** Based on historical (2003-2017) proportion of landings in 7.e relative to 7.d,e

History of the catch and landings

Table 8   Plaice in Division 7.d. Catch distribution of 7.d plaice by fleet in 2017 as estimated by ICES.

Catch (2017)	Wanted catch				Unwanted catch
7764 tonnes	56% beam trawl	27% otter trawl	8.9% trammelnets	8.1% other gears	4075 tonnes
	3689 tonnes				

Table 9   Plaice in Division 7.d. History of commercial catch and landings; both the official and ICES estimated values are presented by area for each country participating in the fishery. All weights are in tonnes.

Year	Belgium	France	UK(E+W)	Others	Official landings in 7.d	Unallocated in 7.d	ICES estimated landings of plaice in 7.d	Quarter 1 removals ^	ICES estimated landings for 7.d plaice ^	ICES estimated landings for plaice in 7.e	Agreed TAC for 7.d,e *
1976	147	1439	376		1962	1	1963		1963	640	
1977	149	1714	302		2165	81	2246		2246	702	
1978	161	1810	349		2320	156	2476		2476	784	
1979	217	2094	278		2589	28	2617		2617	977	
1980	435	2905	304		3644	-994	2650	427	2223	1178	
1981	815	3431	489		4735	34	4769	760	4009	1676	
1982	738	3504	541	22	4805	60	4865	825	4040	1878	
1983	1013	3119	548		4680	363	5043	950	4093	1714	
1984	947	2844	640		4431	730	5161	912	4249	1758	
1985	1148	3943	866		5957	65	6022	1022	5000	1677	
1986	1158	3288	828		5274	1560	6834	1161	5673	2078	
1987	1807	4768	1292		7867	499	8366	1360	7006	2272	8300
1988	2165	5688	1250		9103	1317	10420	1635	8785	2835	9960
1989	2019	3713	1383		7115	1643	8758	1665	7093	2742	11700
1990	2149	4739	1479		8367	680	9047	1698	7349	2985	10700
1991	2265	4082	1566		7913	-100	7813	1451	6362	2183	10700
1992	1560	3099	1572	1	6232	105	6337	1118	5220	1882	9600
1993	877	2792	1102		4771	560	5331	852	4479	1614	8500
1994	1418	3199	1007	9	5633	488	6121	1074	5047	1404	9100
1995	1157	2598	814		4569	561	5130	934	4196	1247	8000
1996	1112	2630	856		4598	795	5393	963	4430	1266	7530
1997	1161	3077	1078		5316	991	6307	1127	5180	1583	7090
1998	854	3276	700		4830	932	5762	931	4832	1346	5700
1999	1306	3388	743		5437	889	6326	1058	5268	1543	7400
2000	1298	3183	754		5235	779	6014	1494	4522	1625	6500
2001	1346	2962	660		4968	298	5266	886	4380	1310	6000
2002	1204	3450	841	1	5496	281	5777	931	4846	1472	6700
2003	998	2893	756	3	4650	-564	4086	476	3610	1387	5970
2004	954	2766	582	10	4312	438	4750	544	4206	1337	6060
2005	832	2432	421	21	3706	285	3991	506	3485	1319	5150
2006	1024	1935	550	16	3525	121	3646	421	3225	1411	5151
2007	1355	2017	463	10	3845	156	4001	620	3381	1146	5050
2008	1386	1740	471	12	3609	255	3864	586	3278	1112	5050
2009	1002	1892	612	16	3522	38	3560	436	3124	1024	4646
2010	1123	2190	517	62	3892	519	4411	501	3910	1208	4274
2011	1067	1994	472	60	3593	56	3649	358	3291	1417	4665
2012	1045	1962	542	63	3612	111	3723	544	3179	1492	5062
2013	1295	2159	641	87	4182	-55	4127	523	3604	1472	6400
2014	1389	2229	633	76	4327	-7	4320	645	3675	1490	5322
2015	1600	1702	392	54	3748	-21	3727	770	2957	1424	6223
2016	2244	1557	795	60	4656	-18	4638	1020	3618	2013	12446
2017	2189	1487	814	86	4576	37	4613	924	3689	2128	10022

* TACs for divisions 7.d and 7.e.
^ Takes into account the 'quarter 1 removal' of 65% of the quarter 1 Division 7.d catches of plaice that originate from Division 7.e and Subarea 4.

Summary of the assessment

Table 10   Plaice in Division 7.d. Assessment summary. Weights are in tonnes.

Year	Recruitment			SSB			Landings	Discards*	F (per year)		
	Age 1	High	Low	SSB	High	Low			Ages 3–6	High	Low
	thousands			tonnes			tonnes				
1980	67189	86581	52112	8212	10386	6038	2223		0.25	0.33	0.163
1981	34271	45074	26054	10894	13204	8584	4009		0.30	0.38	0.22
1982	66110	86193	50699	13300	15979	10621	4040		0.35	0.45	0.26
1983	59196	78020	44949	13389	16073	10705	4093		0.39	0.49	0.29
1984	60585	79466	46209	13377	16059	10695	4249		0.40	0.50	0.31
1985	78402	100497	61213	13367	16009	10725	5000		0.40	0.49	0.31
1986	155400	195998	123271	13327	15763	10891	5673		0.39	0.47	0.30
1987	95149	119585	75676	15909	18487	13331	7006		0.38	0.45	0.30
1988	62368	78870	49338	20705	24022	17388	8785		0.38	0.45	0.30
1989	40256	51928	31206	22323	25803	18843	7093		0.38	0.45	0.30
1990	41107	55134	30653	19368	22603	16133	7349		0.37	0.44	0.30
1991	68460	97182	48226	15433	18337	12529	6362		0.36	0.43	0.29
1992	89799	133746	60253	12702	15259	10145	5219		0.34	0.41	0.27
1993	47340	73353	30545	11504	13775	9233	4479		0.32	0.38	0.27
1994	40149	62174	25908	10514	12509	8519	5047		0.33	0.39	0.27
1995	61062	82324	45323	9107	10791	7422	4196		0.39	0.46	0.33
1996	68878	88504	53594	8030	9515	6545	4430		0.50	0.58	0.42
1997	119510	150862	94644	8551	10118	6984	5180		0.57	0.67	0.47
1998	59351	76720	45894	11149	13048	9250	4831		0.49	0.58	0.40
1999	50782	71346	36124	14335	16799	11871	5268		0.38	0.45	0.30
2000	61350	95183	39515	14903	17563	12243	4521		0.31	0.38	0.24
2001	49805	69442	35731	13491	16095	10887	4380		0.32	0.39	0.25
2002	73854	94980	57445	12351	14904	9798	4846		0.36	0.44	0.28
2003	39033	48643	31311	12082	14609	9555	3610		0.38	0.47	0.29
2004	46751	57640	37950	12585	15215	9955	4206		0.34	0.43	0.26
2005	41120	49736	33979	12720	15510	9930	3485		0.30	0.37	0.22
2006	37584	45350	31127	13186	16116	10256	3225	727	0.27	0.34	0.198
2007	56278	67621	46832	13642	16749	10535	3381	1220	0.27	0.34	0.20
2008	66844	81548	54779	13777	16994	10560	3278	888	0.27	0.34	0.200
2009	106675	128885	88373	14620	17990	11250	3124	1473	0.25	0.31	0.182
2010	172257	210421	141088	17279	21160	13398	3910	2412	0.199	0.25	0.148
2011	227263	279786	184650	24141	29316	18966	3291	1926	0.156	0.198	0.113
2012	119187	146702	96746	36956	44756	29156	3178	3043	0.129	0.163	0.095
2013	121909	152640	97359	50859	61874	39844	3604	2696	0.117	0.147	0.087
2014	169922	221966	130056	57442	70412	44472	3675	3325	0.119	0.150	0.087
2015	118585	164917	85204	56968	70161	43775	2957	2368	0.133	0.168	0.098
2016	58276	94927	35780	55303	68760	41846	3617	3090	0.160	0.20	0.116
2017	67929	154406	29872	49151	62827	35475	3689	4075	0.20	0.28	0.127
2018	70057**			47672							

* Raised discards estimates from observer program. The model reconstructs discards for years where data are not available (before 2006) but the estimates are not shown here.
** Geometric mean 1980–2017.

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