

## Plaice (*Pleuronectes platessa*) in Subarea 4 (North Sea) and Subdivision 20 (Skagerrak)

### ICES advice on fishing opportunities

ICES advises that when the MSY approach is applied, catches in 2024 should be no more than 155 015 tonnes.

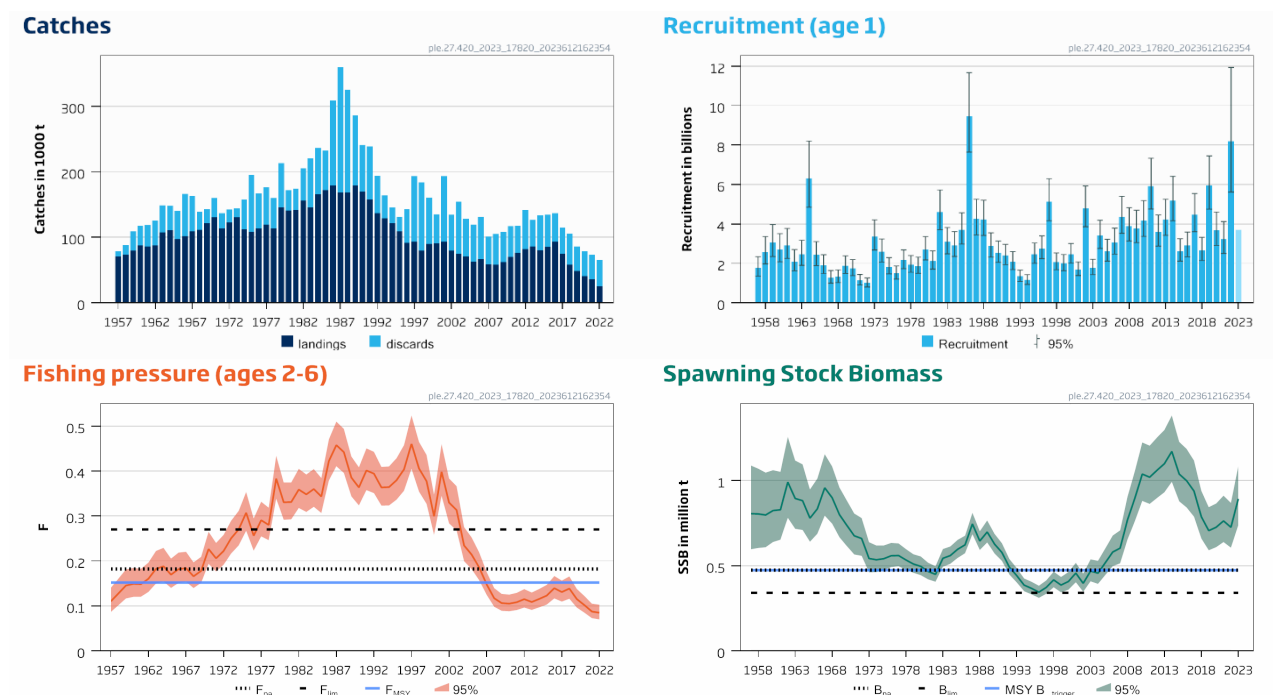
ICES notes the existence of a precautionary management plan, developed and adopted by one of the relevant management authorities for this stock.

### ICES advice on conservation aspects

ICES has not identified any conservation aspects.

### Stock development over time

Fishing pressure on the stock is below  $F_{MSY}$ , and spawning-stock size is above MSY  $B_{trigger}$ ,  $B_{pa}$ , and  $B_{lim}$ .



**Figure 1** Plaice in Subarea 4 and Subdivision 20. Summary of the stock assessment. The assumed recruitment value for 2023 is shaded in a lighter colour. Discards include BMS (below minimum size) landings.

### Conservation status

ICES is not aware of any information on stock/species-specific conservation status.

### Catch scenarios

**Table 1** Plaice in Subarea 4 and Subdivision 20. Values in the forecast and for the interim year.

Variable	Value	Notes
$F_{ages\ 2-6}$ (2023)	0.085	$F_{sq} = F_{ages\ 2-6}$ (2022)
SSB (2024)	916308	Short-term forecast (STF); tonnes
$R_{age\ 1}$ (2023–2024)	3701607	Resampled recruitments from the years 2012–2021 (geometric mean shown); thousands
Total catch (2023)	83059	STF, using exploitation pattern and $F_{ages\ 2-6}$ in 2022; tonnes
Projected landings (2023)	38183	STF, assuming average landings ratio by age 2020–2022; tonnes

Variable	Value	Notes
Projected discards (2023)	44876	STF, assuming average landings ratio by age 2020–2022; tonnes

**Table 2** Plaice in Subarea 4 and Subdivision 20. Annual catch scenarios. Weights are in tonnes.

Basis	ple.27.420 plaice stock									Plaice caught in Subarea 4 and Subdivision 20				
	Total catch (2024)	Projected landings (2024)	Projected discards* (2024)	F <sub>total</sub> (ages 2–6)^ (2024)	F <sub>projected</sub> landings (ages 2–6) (2024)	F <sub>projected</sub> discards (ages 2–3) (2024)	SSB (2025)	% SSB change**	% advice change <sup>§</sup>	Total catch* (2024)	Projected landings (2024)	Projected discards* (2024)	% change in projected catches ^^	% TAC change <sup>§§</sup>
ICES advice basis														
MSY approach: F <sub>MSY</sub>	155015	73761	81254	0.152	0.055	0.097	979895	6.9	2.9	154663	73603	81059	3.1	2.9
Other scenarios														
F <sub>MSY</sub> upper	183181	87235	95946	0.182	0.066	0.116	956040	4.3	22	182829	87077	95751	22	22
F <sub>MSY</sub> lower	121182	57616	63566	0.117	0.042	0.075	1008531	10.1	–19.6	120830	57458	63371	–19.4	–19.6
F = 0 <sup>§</sup>	0	0	0	0	0	0	1113964	22	–100	0	0	0	–100	–100
F <sub>pa</sub>	183181	87235	95946	0.182	0.066	0.116	956040	4.3	22	182829	87077	95751	22	22
SSB (2025) = B <sub>lim</sub>	943298	457172	486126	1.57	0.57	1.00	341003	–63	530	942946	457014	485931	530	530
SSB(2025) = B <sub>pa</sub> = MSY B <sub>trigger</sub>	768290	370607	397683	1.09	0.40	0.70	473850	–48	410	767938	370449	397488	410	410
F = F <sub>2023</sub>	89109	42338	46771	0.085	0.031	0.054	1036300	13.1	–41	88757	42180	46576	–41	–41

\* Including BMS landings and assuming recent discard rates (i.e. 2020–2022).

\*\* SSB 2025 relative to SSB 2024.

<sup>§</sup> Projected catch of plaice stock in 2024 relative to the advised value for 2023, adding the proportion caught in Division 7.d (149987 + 718 = 150705 tonnes).

<sup>^</sup> F<sub>projected</sub> landings and F<sub>projected</sub> discards do not add up to the F<sub>total</sub>, as they are calculated using different ages.

<sup>#</sup> Projected catches for plaice in Subarea 4 and Subdivision 20 in 2024 are calculated as the total catch for the stock (155015) reduced by the catch of the ple.27.420 stock to be taken in Division 7.d when fishing at catch advice level (157.7 tonnes landing + 194.6 tonnes discards).

<sup>^^</sup> Projected catch of plaice in Subarea 4 and Subdivision 20 in 2024 relative to the value in 2023 (149987 tonnes).

<sup>§§</sup> Projected catch of plaice in Subarea 4 and Subdivision 20 in 2024 relative to the 2023 TAC (150705 tonnes) for Subarea 4 and Subdivision 20.

<sup>§</sup> This scenario implies zero fishing in Division 7.d in the first quarter.

## Basis of the advice

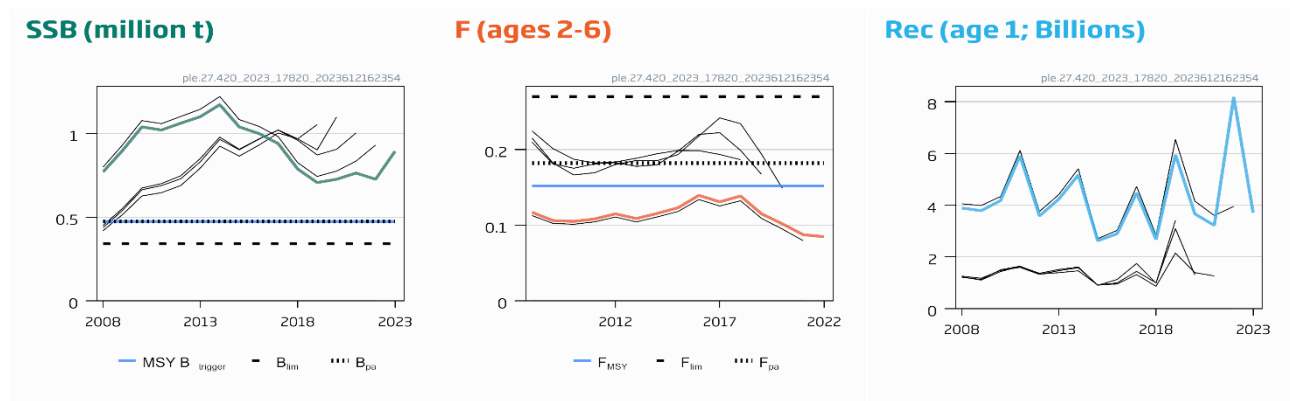
**Table 3** Plaice in Subarea 4 and Subdivision 20. The basis of the advice.

Advice basis	MSY approach
Management plan	An EU multiannual management plan (MAP) has been agreed by the EU for this stock (EU, 2018). There is no agreement with Norway and UK regarding this plan, and it is not used as the basis of the advice for this shared stock. ICES was requested by the EC and UK to provide advice based on the MSY approach and to include FMSY ranges in the catch scenarios.

## Quality of the assessment

In 2022, several hauls planned for the Q3 UK-BTS, the Q3 German BTS, the Q3 Dutch SNS, and the Q1 NS-IBTS were not conducted. The effect of this issue has been investigated and, although one year of missing stations did not have a substantial impact on the current assessment outputs, it may become a problem if the issue persists in the future.

The abundance indices of SNS and DYFS [B7567] surveys targeting plaice ages 0 and 1 have been declining due to the earlier migration of younger fishes to offshore areas, which may result in underestimating the recruiting year classes.



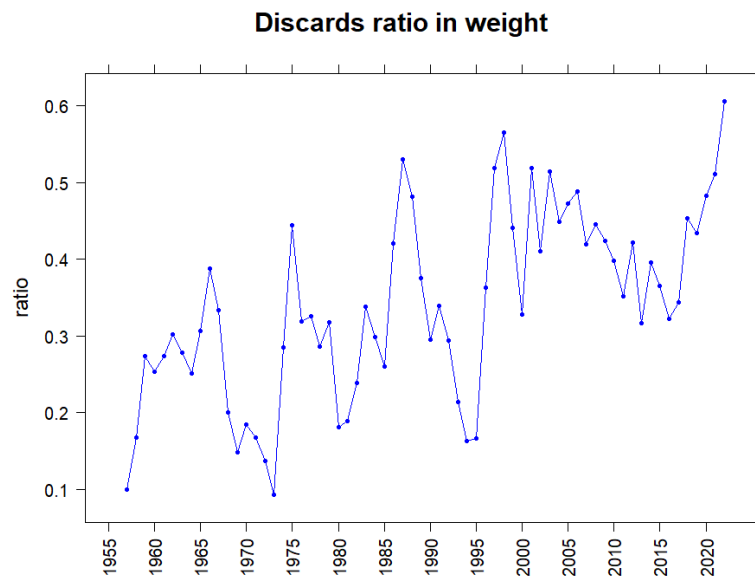
**Figure 2** Plaice in Subarea 4 and Subdivision 20. Historical assessment results (final-year recruitment included for each line, corresponding to the forecast recruitment in the interim year). The reference points were revised in 2022 following a benchmark, and only assessment results from the last two years should be compared to the reference points indicated.

## Issues relevant for the advice

Mature individuals from plaice stock in Division 7.e and stock in Subarea 4 and Subdivision 20 migrate to Division 7.d in the first quarter. Thus, a proportion of catch of these two stocks occurs in Division 7.d. For the ple.27.7e, ple.27.7d, and ple.27.420 stocks, the catch advice is given at stock level but the catch corresponding to each area is provided in the catch scenario table. Of the plaice caught in Division 7.d, 12.49% is assumed to originate from the North Sea and 3.75% from the western English Channel (average ratio calculated over the years 2003–2022); both of these predicted catches are added to the predicted values for the ple.27.7d stock and applied to total catch, projected landings, and projected discards. Following ICES advice basis, catches in Division 7.d will comprise 2367 tonnes from the ple.27.7d stock, plus 352 tonnes from the ple.27.420 stock and 106 tonnes from the ple.27.7e stock. All catch scenarios for ple.27.7e and ple.27.420 stocks assume that fishing opportunities for ple.27.7d stock in 2024 correspond to the “ICES basis for the advice scenario”; for the ple.27.7d stock, however, this amount depends on the scenario.

Between 2014 and 2018, the majority of the Dutch beam trawlers switched to pulse trawls, resulting in reallocation of fishing effort to fishing grounds in the southern part of Division 4.c targeting sole. Pulse trawling has been prohibited since 30 June 2021, following the EU decision in February 2019 to revise the technical measures regulations.

The discards ratio for plaice has increased, rising from 40% in 2014 to 61% in 2022 (Figure 3).



**Figure 3** Discards–catch ratio of plaice in weight.

### Reference points

**Table 4** Plaice in Subarea 4 and Subdivision 20. Reference points, values, and their technical basis.

Framework	Reference point	Value	Technical basis	Source
MSY approach	MSY $B_{trigger}$	473850	$B_{pa}$ ; in tonnes	ICES (2023a)
	$F_{MSY}$	0.152	Stochastic simulations (EqSim) based on the recruitment period 1957–2020	ICES (2023a)
Precautionary approach	$B_{lim}$	341003	$B_{loss}$ , lowest estimated SSB from benchmark assessment, which equals the SSB of year 1996; in tonnes	ICES (2023a)
	$B_{pa}$	473850	$B_{lim} \times \exp(1.645 \times \sigma)$ , $\sigma = 0.20$ ; in tonnes	ICES (2023a)
	$F_{lim}$	0.270	The $F$ that on average leads to $B_{lim}$ from EqSim	ICES (2023a)
	$F_{pa}$	0.182	The $F$ that provides a 95% probability for SSB to be above $B_{lim}$ ( $F_{P.05}$ with advice rule [AR])	ICES (2023a)
EU Management plan (MAP)*	MAP MSY $B_{trigger}$	473850	MSY $B_{trigger}$ ; in tonnes	ICES (2023a)
	MAP $B_{lim}$	341003	$B_{lim}$ ; in tonnes	ICES (2023a)
	MAP $F_{MSY}$	0.152	$F_{MSY}$	ICES (2023a)
	MAP range $F_{lower}$	0.117–0.152	Consistent with ranges resulting in no more than 5% reduction in long-term yield compared with MSY	ICES (2023a)
	MAP range $F_{upper}$	0.152–0.182	Consistent with ranges resulting in no more than 5% reduction in long-term yield compared with MSY	ICES (2023a)

\* EU multiannual plan (MAP) for the North Sea (EU, 2018).

### Basis of the assessment

**Table 5** Plaice in Subarea 4 and Subdivision 20. Basis of the assessment and advice.

ICES stock data category	1 (ICES, 2023b)
Assessment type	Age-based analytical assessment (SAM; Nielsen and Berg, 2014; ICES, 2023c) that uses catches and surveys in the model and in the forecast.
Input data	Commercial catch, ages, and length frequencies from port and observer and self-sampling. Five survey indices: combined BTS and IBTS Q3 (1996–2022, [B2453],[G2829]), BTS-Isis (1985–1995, [B2453]), SNS (split into two series, SNS1 1970–1999 and SNS2 2000–2022, [B3499]), and IBTS Q1 (2007–2022, [G1022]). Both the BTS and IBTS Q3 and the IBTS Q1 survey indices are updated yearly using a delta GAM model (Berg <i>et al.</i> , 2014). Natural mortality is age dependent and time invariant, and it was estimated using Peterson and Wroblewski's method during benchmark. Maturity-at-age is assumed constant over time.

Discards, BMS landings, and bycatch	Data from the majority of fleets were included in the assessment. In 2022, 56% of the total discards in Subarea 4 were obtained from sampling programmes. For Subdivision 20, 62% of the total discards were obtained from sampling programmes. BMS landings, where reported, are included with discards in the assessment from 2016 onwards.
Indicators	None
Other information	Catch information, landings since 1984, and discards since 2002 for plaice from Subdivision 20 (Skagerrak) are now added to plaice for Subarea 4 (North Sea). Plaice migrate into Division 7.d during the first quarter; therefore, 50% of the mature catches in Division 7.d were assigned to the North Sea plaice stock during the stock assessment. This stock was last benchmarked in 2022 (ICES, 2023a).
Working groups	Working Group on the Assessment of Demersal Stocks in the North Sea and Skagerrak ( <a href="#">WGNSSK</a> )

## History of the advice, catch, and management

**Table 6a** Plaice in Subarea 4 and Subdivision 20. **North Sea (Subarea 4)**. ICES advice, TAC, and official and ICES estimates of landings and discards. All weights are in tonnes.

Year	ICES advice	Landings corresponding to advice	Catch corresponding to advice <sup>^</sup>	Agreed TAC	Official landings	ICES landings	ICES discards <sup>^^</sup>
1987	$F < F(84)$ ; TAC	120000		150000	130794	153670	190524
1988	70% of $F(85)$ ; TAC	150000		175000	138412	154475	156423
1989	Reduce $F$ ; buffer SSB	$< 175000$		185000	152408	169818	107793
1990	<i>Status quo</i> $F$ ; TAC	171000		180000	156261	156240	71225
1991	No increase in $F$ ; TAC	169000		175000	143564	148003	80935
1992	No long-term gains in increasing $F$	..*		175000	123481	125190	57049
1993	No long-term gains in increasing $F$	170000*		175000	115277	117113	35016
1994	No long-term gains in increasing $F$	..*		165000	109679	110392	23785
1995	Significant reduction in $F$	87000**		115000	96410	98356	21828
1996	Reduction in $F$ of 40%	61000		81000	80033	81673	52049
1997	Reduction in $F$ of 20%	80000		91000***	81483	83048	100145
1998	Fish at $F = 0.3$	82000		87000	70365	71534	103751
1999	Fish at $F = 0.3$	106000		102000	78617	80662	70976
2000	Fish at $F = 0.3$	95000		97000	82134	81150	44311
2001	Fish at $F = 0.26$	78000		78000	79579	81847	100309
2002	$F < F_{pa}$	$< 77000$		77000	69611	70217	54525
2003	Fish at $F = 0.23$	60000		73000	65405	66489	77838
2004	Recovery plan	-		61000	61064	61436	54605
2005	Rebuild the SSB above $B_{pa}$ in 2006	35000		59000	52735	55700	54169
2006	Rebuild the SSB above $B_{pa}$ in 2007	48000		57000	55832	57943	61917
2007	Rebuild the SSB above $B_{pa}$ in 2008	$< 32000$		50000	49146	49744	39511
2008	Rebuild the SSB above $B_{pa}$ in 2009	$< 35000$		49000	47746	48875	45950
2009	Limit total landings to 55500 t	$< 55500$		55500	52308	54973	45292
2010	Limit total landings to 63825 t	$< 63800$		63800	59831	60674	45728
2011	See scenarios	$< 64200$		73400	66412	67386	40553
2012	Apply first stage of the management plan	$< 84410$		84400	71602	73830	59068
2013	Apply first stage of the management plan	$< 97070$		97100	78999	78905	38864
2014	Apply first stage of the management plan	$< 111631$		111600	69078	70847	51915
2015	(November update) apply second stage of the management plan	$< 128376$	179301	128376	74003	74963	49432
2016	Apply second stage of the management plan	-	$\leq 216345$	131714	78882	81059	42063
2017	MSY approach	-	$\leq 158201$	129917	66856	65442	37613
2018	MSY approach	-	$\leq 142481$	112643	51842	50783	46305
2019	MSY approach	-	$\leq 142217$	125435	41334	39972	33397
2020	MSY approach	-	$\leq 166499$	146852	33860	32736	35747

Year	ICES advice	Landings corresponding to advice	Catch corresponding to advice <sup>^</sup>	Agreed TAC	Official landings	ICES landings	ICES discards <sup>^^</sup>
2021	MSY approach (value revised in May 2021)	-	≤ 167785	143419	28142 <sup>§</sup>	28915	34585
2022	MSY approach	-	≤ 142508	125692	20755 <sup>§</sup>	21267	36988
2023	MSY approach		≤ 149987	132922			
2024	MSY approach		≤ 155015				

\* Catch at *status quo* F.

\*\* Catch at 20% reduction in F.

\*\*\* After revision from 77 000 t.

<sup>^</sup> From 2016 onwards, the advice is for the combined North Sea and Skagerrak stock. From 2024 onwards, the advice is provided at stock level instead of area level.

<sup>^^</sup> Since 2016, discards include BMS landings.

<sup>§</sup> Preliminary.

**Table 6b** Plaice in Subarea 4 and Subdivision 20. **Skagerrak (Subdivision 20)**. ICES advice, TAC, official and ICES estimates of landings and discards. Weights are in tonnes. Advice until 2012 was provided for Skagerrak and Kattegat separately. Since 2016, the Skagerrak component has been merged with plaice in Subarea 4.

Year	ICES advice	Landings corresponding to advice	Catch corresponding to advice <sup>^</sup>	Agreed TAC	Official landings	ICES landings	ICES discards <sup>**</sup>
1992	TAC	14000		11200	9554	9554	
1993	Precautionary TAC	-		11200	9854	9854	
1994	If required, precautionary TAC	-		11200	9551	9551	
1995	If required, precautionary TAC	-		11200	9379	9380	
1996	If required, precautionary TAC	-		11200	8003	8003	
1997	No advice	-		11200	7813	7814	
1998	No increase in F from the present level	11900		11200	6449	6449	
1999	No increase in F from the present level	11000		11200	7049	7049	
2000	$F < F_{pa}$	11800		11200	7001	6989	
2001	$F < F_{pa}$	9400		9400	9351	9231	
2002	$F < F_{pa}$	8510		6420	7080	7102	574
2003	$F < F_{pa}$	18400		10400	7065	7143	1437
2004	$F < F_{pa}$	*		9500	8172	8033	2873
2005	$F < F_{pa}$	< 9500		7600	6146	6099	2081
2006	No increase in F	< 9600		7600	8444	8345	2243
2007	Maintain current TAC	< 9600		8500	7682	7621	2862
2008	No increase in catch	< 9400		9300	7912	8356	1043
2009	Same advice as last year	< 9400		9300	6299	6514	610
2010	Same advice as last year	< 9400		9300	8810	8700	842
2011	Average landings from last three years (2007–2009)	< 8000		7900	8183	8218	1040
2012	Reduce catch	-		7900	7651	7680	846

Year	ICES advice	Landings corresponding to advice	Catch corresponding to advice <sup>^</sup>	Agreed TAC	Official landings	ICES landings	ICES discards**
2013	Increase catch by 7% – protect eastern component		< 8400	9142	6815	6812	1161
2014	Increase catch by 7% – protect eastern component	< 8972	< 10196	10056	8324	9213	1022
2015	Decrease catch (2012–2013) by 13% – protect eastern component	≤ 6287	≤ 7232	10056	9804	9804	676
2016	Apply second stage of the management plan	-	≤ 216345	11766	9772	10900	1908
2017	MSY approach	-	≤ 158201	17639	8643	8775	1353
2018	MSY approach	-	≤ 142481	15343	6009	6229	1487
2019	MSY approach	-	≤ 142217	16782	7597	8091	316
2020	MSY approach	-	≤ 166499	19647	7256	7826	2363
2021	MSY approach (value revised in May 2021)	-	≤ 167785	19188	6522 <sup>§</sup>	6775	2628
2022	MSY approach	-	≤ 142508	16816	3823 <sup>§</sup>	3993	1843
2023	MSY approach		≤ 149987	17783			
2024	MSY approach		≤ 155015				

\* The exploitation of this stock should be conducted in the context of mixed fisheries.

\*\* Since 2016, discards include BMS landings.

<sup>^</sup> From 2016 onwards, the advice is for the combined North Sea and Skagerrak stock. From 2024 onwards, the advice is provided at stock level instead of area level.

<sup>§</sup> Preliminary.

## History of the catch and landings

**Table 7** Plaice in Subarea 4 and Subdivision 20. Catch distribution by fleet in Subarea 4 and Subdivision 20 in 2022, as estimated by ICES.

Catch	Landings			Discards*
64091 tonnes	Beam trawl 48%	Otter trawl 37%	Other 15%	38831 tonnes
	25260 tonnes			

\* Discards include BMS landings from EU and UK fleets.



**Table 8** Plaice in Subarea 4 and Subdivision 20. History of official commercial catch and landings of plaice in Subarea 4, along with ICES estimates. Weights are in tonnes.

Year	Belgium	Denmark	France	Germany	Netherlands	Norway	Sweden	UK	Others	Landings (official)	Landings (ICES estimates)	BMS landings (official)
1980	6092	27057	947	4317	39782	15	7	23031	0	101248	139951	
1981	6091	23395	689	3453	40049	18	3	21624	< 1	95322	139697	
1982	7103	24532	1046	3628	55715	16	6	20889	0	112935	154546	
1983	8916	19114	1185	2397	53608	17	22	17407	0	102666	144030	
1984	10220	23361	1145	2485	61478	17	14	17183	0	115903	156149	
1985	9965	28236	1010	2197	90950	23	18	15912	0	148311	159838	
1986	7232	26332	751	1809	74447	21	16	17294	0	127902	165347	
1987	8554	21597	1580	1794	76612	12	7	20638	0	130794	153670	
1988	11527	20259	1773	2566	77724	21	2	24497	43	138412	154475	
1989	10939	23481	2037	5341	84173	321	12	26104	0	152408	169818	
1990	13940	26474	1339	8747	78204	1756	169	25632	0	156261	156240	
1991	14328	24355	508	7926	67945	560	103	27839	0	143564	148003	
1992	12006	20890	537	6818	51064	836	53	31277	0	123481	125190	
1993	10814	16452	602	6895	48552	827	7	31128	0	115277	117113	
1994	7951	17056	407	5697	50289	524	6	27749	0	109679	110392	
1995	7093	13358	442	6329	44263	527	3	24395	0	96410	98356	
1996	5765	11776	379	4780	35419	917	5	20992	0	80033	81673	
1997	5223	13940	254	4159	34143	1620	10	22134	0	81483	83048	
1998	5592	10087	489	2773	30541	965	2	19915	1	70365	71534	
1999	6160	13468	624	3144	37513	643	4	17061	0	78617	80662	
2000	7260	13408	547	4310	35030	866	3	20710	0	82134	81150	
2001	6369	13797	429	4739	33290	1805	3	19147	0	79579	81847	
2002	4859	12552	552	3927	29081	1897	2	16740	1	69611	70217	
2003	4580	13742	318	3800	27372	1699	2	13892	0	65405	66489	
2004	4344	12121	241	3649	23659	1737	1	15312	0	61064	61436	
2005	3414	11385	192	3380	22266	1660	0	10438	0	52735	55700	
2006	3524	11909	175	3599	22764	1430	0	12431	0	55832	57943	
2007	3894	8132	227	2643	21464	1224	4	11558	0	49146	49744	

Year	Belgium	Denmark	France	Germany	Netherlands	Norway	Sweden	UK	Others	Landings (official)	Landings (ICES estimates)	BMS landings (official)
2008	3396	8232	188	3138	20312	1051	20	11409	0	47746	48875	
2009	3537	8156	272	2931	23152	1116	1	13143	0	52308	54973	
2010	3699	9369	385	3787	26707	1090	5	14789	0	59831	60674	
2011	4588	11636	375	3812	29274	1224	3	15500	0	66412	67386	
2012	5066	12243	281	3873	32193	1025	5	16916	0	71602	73830	
2013	6508	13650	250	4921	33488	843	3	19336	0	78999	78905	
2014	7152	11737	276	4224	27720	584	5	17380	0	69078	70847	
2015	5750	14425	226	5171	30860	169	7	17395	0	74003	74963	
2016	6664	16547	169	4371	32228	94	9	18800	0	78882	81059	
2017	5316	12517	151	2621	31049	67	5	15130	0	66856	65442	5
2018	4887	9670	112	2616	24742	69	3	9743	0	51842	50783	90
2019	3912	6585	62	2074	21185	57	3	7456	0	41334	39970	207
2020	2560	5639	25	1403	18588	36	5	5604	0	33860	32736	184
2021*	2333	4901	9	1255	14757	24	4	4859	0	28142	28915	161
2022*	1321	3527	13	925	10476	17	3	4472	1	20755	21267	131

\* Preliminary.

**Table 9** Plaice in Subarea 4 and Subdivision 20. Historical official landings, along with ICES estimated landings for plaice in Subdivision 20 for each country participating in the fishery. Weights are in tonnes.

Year	Denmark	Sweden	Germany	Belgium	Norway	Netherlands	UK	Landings (ICES estimates)	Landings (official)	BMS landings (official)
1972	5095	70			3			5168	5168	
1973	3871	80			6		1	3957	3958	
1974	3429	70			5		1	3504	3505	
1975	4888	77			6		2	4971	4973	
1976	9251	51		717	6		1	10025	10026	
1977	12855	142		846	6			13849	13849	
1978	13383	94		371	9			13857	13857	
1979	11045	67		763	9			11884	11884	
1980	9514	71		914	11		15	10510	10525	
1981	8115	110		263	13		38	8501	8539	
1982	7789	146		127	11		10	8073	8083	
1983	6828	155		133	14			7130	7130	
1984	7560	311		27	22			7921	7920	
1985	9646	296		136	18			10095	10096	
1986	10645	202		505	26			11378	11378	
1987	11327	241		907	27			12503	12502	
1988	9782	281		716	41			10820	10820	
1989	5414	320		230	33			5997	5997	
1990	8729	779		471	69			10048	10048	
1991	5809	472	15	315	68		< 1	6679	6679	
1992	8514	381	16	537	106			9554	9554	
1993	9125	287	37	326	79			9854	9854	
1994	8783	315	37	325	91			9551	9551	
1995	8468	337	48	302	224			9380	9379	
1996	7304	260	11		428			8003	8003	
1997	7306	244	14		249			7814	7813	
1998	6132	208	11		98			6449	6449	
1999	6473	233	7		336			7049	7049	
2000	6680	230	5		86			6989	7001	
2001	9045	125			181			9231	9351	
2002	6773	141	3		163			7102	7080	
2003	5079	143	8		341	1494		7143	7065	
2004	5999	545	67		106	1455		8033	8172	
2005	4684	554	14		80	814		6099	6146	
2006	6563	366	21		327	1167		8345	8444	
2007	5656	281	21		99	1625		7621	7682	
2008	7163	220	17		79	433		8356	7912	
2009	5828	92	13		60	306	< 1	6514	6299	
2010	7101	127	13		49	1520		8700	8810	
2011	7746	179	13		230	15		8218	8183	
2012	7338	155	12		136	10		7680	7651	
2013	6326	160	10		138	181		6812	6815	
2014	7484	240	46		48	506		8324	8324	
2015	7808	274	14		69	1639		9804	9804	
2016	7966	212	14	0	84	1496		10900	9772	
2017	6837	159	6	0	154	1487		8775	8643	2
2018	4362	79	9	0	23	1536		6229	6009	19
2019	4587	41	15	0	8	2941	5	8091	7597	13
2020	5068	66	2	0	7	2113		7826	7256	22
2021*	4202	41	43	0	2	2234		6775	6522	19
2022*	3116	52	5	0	4	646		3993	3823	14

\* Preliminary.

**Table 10** Plaice in Subarea 4 and Subdivision (SD) 20. History of official commercial landings, along with ICES catches estimates for the stock. Weights are in tonnes.

Year	Total landings 4 + SD 20 (ICES estimates)	Total discards 4 + SD 20 ** (ICES estimates)	Total landings 4 + SD 20 (Official)	Landings 7d *** (ICES estimates)	Discards 7d *** (ICES estimates)
1980	150461	31080	111773	328	
1981	148198	33031	103861	585	
1982	162619	49127	121018	635	
1983	151160	74483	109796	731	
1984	164070	70816	123823	702	
1985	169933	60549	158407	786	
1986	176725	129953	139280	893	
1987	166173	190524	143296	1046	
1988	165295	156423	149232	1258	
1989	175815	107793	158405	1281	
1990	166288	71225	166309	1306	
1991	154682	80935	150243	1116	
1992	134744	57049	133035	860	
1993	126967	35016	125131	655	
1994	119943	23785	119230	826	
1995	107736	21828	105789	718	
1996	89676	52049	88036	741	
1997	90862	100145	89296	867	
1998	77983	103751	76814	716	
1999	87711	70976	85666	814	
2000	88139	44311	89135	1149	
2001	91078	100309	88930	682	
2002	77319	55099	76691	716	
2003	73632	79275	72470	366	
2004	69469	57478	69236	418	
2005	61799	56250	58881	389	
2006	66288	64160	64276	324	16
2007	57365	42373	56828	477	25
2008	57231	46993	55658	451	37
2009	61487	45902	58607	335	43
2010	69374	46570	68641	385	76
2011	75604	41593	74595	275	76
2012	81510	59914	79253	418	225
2013	85717	40025	85814	402	200
2014	80060	52937	77402	496	432
2015	84767	50108	83807	593	348
2016	91959	43971	88654	785	395
2017	74217	38966	75499	711	762
2018	57012	47792	57851	788	446
2019	48063	36713	48931	681	657
2020	40562	38110	41116	326	223
2021	35690	37213	34664*	216	186
2022	25260	38831	24578*	283	593

\* Preliminary.

\*\* Since 2016, discards include BMS landings.

\*\*\* Part of the catches in Division 7.d during spawning migration in the first quarter.

## Summary of the assessment

**Table 11** Plaice in Subarea 4 and Subdivision 20. Assessment summary. Recruitments are in thousands, weights in tonnes. High and Low refer to 95% confidence intervals.

Year	Recruitment (age 1)			Spawning-stock biomass			Landings*	Discards***	Fishing pressure (ages 2–6)		
	Low	R	High	Low	SSB	High			Low	F	High
1957	1347392	1774803	2337795	596684	806128	1089089	70563	7880	0.086	0.11	0.14
1958	1974465	2576366	3361753	604458	804359	1070369	73354	14837	0.101	0.128	0.161
1959	2347070	3053773	3973266	608617	798296	1047090	79300	29864	0.116	0.145	0.181
1960	2085146	2704119	3506834	639506	823957	1061609	87541	29793	0.12	0.149	0.185
1961	2255577	2916679	3771549	652860	828654	1051783	85984	32490	0.12	0.148	0.183
1962	1622827	2093852	2701592	781316	991144	1257322	87472	37903	0.131	0.161	0.197
1963	1906635	2459889	3173682	716645	895194	1118227	107118	41258	0.15	0.182	0.22
1964	4851951	6308523	8202364	710116	882137	1095830	110540	37031	0.154	0.188	0.23
1965	1885364	2419411	3104731	641026	779720	948422	97143	43080	0.14	0.17	0.21
1966	1485550	1902609	2436755	687365	834018	1011959	101834	64718	0.151	0.182	0.22
1967	998938	1279216	1638133	793933	957778	1155436	108819	54546	0.154	0.184	0.22
1968	1028789	1311066	1670795	747028	899839	1083909	111534	27987	0.14	0.166	0.197
1969	1485727	1883254	2387144	666736	799849	959538	121651	21169	0.151	0.178	0.21
1970	1379513	1739924	2194495	615135	736972	882941	130342	29640	0.194	0.23	0.26
1971	909403	1141734	1433421	566081	675895	807013	113944	22995	0.176	0.21	0.24
1972	802168	1005827	1261191	558095	659873	780212	122843	19632	0.191	0.22	0.26
1973	2676874	3356624	4208986	460885	542542	638667	130429	13354	0.22	0.25	0.29
1974	2072117	2589780	3236767	462573	534971	618700	112540	44945	0.23	0.27	0.31
1975	1468898	1835289	2293070	473406	541357	619061	108536	86699	0.27	0.31	0.35
1976	1203802	1501806	1873582	492301	558866	634432	113670	53247	0.22	0.26	0.29
1977	1731951	2156978	2686309	497168	560178	631175	119188	57501	0.25	0.29	0.33
1978	1550765	1929418	2400528	476644	533827	597869	113984	45655	0.25	0.28	0.32
1979	1495672	1861579	2317003	458547	510284	567858	145347	67935	0.34	0.38	0.43
1980	2173687	2703665	3362861	444435	496578	554838	140764	31080	0.29	0.33	0.37
1981	1710427	2124285	2638282	420043	466467	518022	141233	33031	0.29	0.33	0.37
1982	3705556	4605870	5724927	406011	449327	497265	156153	49127	0.32	0.36	0.41
1983	2482971	3079561	3819496	494013	543625	598220	145779	74483	0.31	0.35	0.39
1984	2353325	2917342	3616535	511121	559814	613144	165772	70816	0.32	0.36	0.4
1985	2980127	3690276	4569649	545729	596644	652309	171838	60549	0.31	0.34	0.38
1986	7644729	9446686	11673388	573397	622907	676692	178878	129953	0.38	0.42	0.47
1987	3443650	4253255	5253200	684737	745310	811241	168759	190524	0.41	0.46	0.51
1988	3414541	4217026	5208112	592454	645444	703173	168552	156423	0.4	0.44	0.49
1989	2323008	2870445	3546891	636559	698394	766234	178891	107793	0.34	0.39	0.43
1990	2055383	2537527	3132771	571699	626884	687395	169453	71225	0.32	0.36	0.41
1991	1936062	2397543	2969023	527617	577554	632218	157277	80935	0.36	0.4	0.45
1992	1686067	2091943	2595524	448203	491912	539884	136727	57049	0.35	0.39	0.44
1993	1083007	1341329	1661268	401642	441972	486352	128506	35016	0.32	0.36	0.41
1994	935395	1157463	1432251	350271	386113	425623	121925	23785	0.32	0.36	0.41
1995	2001756	2465575	3036864	331768	367117	406232	109348	21828	0.34	0.38	0.43
1996	2243863	2760570	3396261	311082	344953	382512	91386	52049	0.36	0.4	0.46
1997	4163993	5120333	6296314	335335	372743	414323	92958	100145	0.4	0.46	0.52
1998	1681663	2064067	2533428	373413	416898	465447	79810	103751	0.35	0.41	0.46
1999	1626955	1996429	2449809	343740	386403	434360	89726	70976	0.33	0.38	0.44
2000	2008616	2459211	3010888	359069	407713	462945	90754	44311	0.26	0.3	0.35
2001	1381151	1694638	2079278	402889	456603	517478	92912	100309	0.34	0.4	0.46

Year	Recruitment (age 1)			Spawning-stock biomass			Landings*	Discards ***	Fishing pressure (ages 2–6)		
	Low	R	High	Low	SSB	High			Low	F	High
2002	3856796	4781680	5928358	347019	396850	453837	79178	55099	0.28	0.33	0.38
2003	1431937	1778083	2207905	408639	468727	537650	74722	79275	0.27	0.31	0.37
2004	2756505	3396933	4186153	393282	456154	529077	70511	57478	0.199	0.23	0.28
2005	2116864	2613686	3227111	445711	518179	602429	62796	56250	0.182	0.21	0.25
2006	2468799	3058527	3789125	497490	580621	677644	67143	64160	0.157	0.186	0.22
2007	3525612	4361990	5396781	514225	603437	708127	58576	42373	0.124	0.148	0.176
2008	3135963	3889573	4824284	653842	769512	905644	58336	46993	0.098	0.117	0.14
2009	3054033	3787085	4696089	761786	897359	1057061	62360	45902	0.089	0.106	0.127
2010	3368014	4179064	5185424	880639	1038442	1224522	70340	46570	0.088	0.105	0.125
2011	4757327	5907213	7335035	863122	1020096	1205619	76507	41593	0.091	0.108	0.129
2012	2877692	3582160	4459083	897744	1060963	1253857	82018	59914	0.096	0.115	0.137
2013	3422121	4239308	5251636	931673	1099716	1298069	86222	40025	0.091	0.109	0.13
2014	4163303	5168164	6415559	992546	1171560	1382861	80686	53011	0.097	0.116	0.138
2015	2114640	2622824	3253133	878231	1038444	1227885	85360	49225	0.103	0.123	0.147
2016	2336551	2895949	3589275	842255	999635	1186423	92744	44251	0.117	0.139	0.167
2017	3607077	4471024	5541899	788027	938798	1118415	74928	39372	0.11	0.131	0.156
2018	2145584	2670467	3323754	659455	787311	939956	57800	48000	0.116	0.139	0.166
2019	4752340	5950342	7450344	590856	706290	844276	48745	37376	0.096	0.115	0.138
2020	2916913	3665022	4605002	609028	726120	865725	40888	38270	0.085	0.102	0.122
2021	2507663	3216763	4126377	638989	763264	911708	35905	37447	0.073	0.087	0.105
2022	5614412	8186634	11937311	606026	725990	869701	25543	39354	0.07	0.085	0.103
2023		3701607**		737545	893313	1084439					

\* These values include part of the catches in Division 7.d in the first quarter.

\*\* Recruitment in 2023 is the geometric mean of resampled recruitment estimates from 2012 to 2021.

\*\*\* From 2016, discards include BMS landings from EU and UK fleets.

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