

Plaice (*Pleuronectes platessa*) in subdivisions 21–23 (Kattegat, Belt Seas, and the Sound)

ICES advice on fishing opportunities

ICES advises that when the MSY approach is applied, catches in 2024 should be no more than 17 254 tonnes.

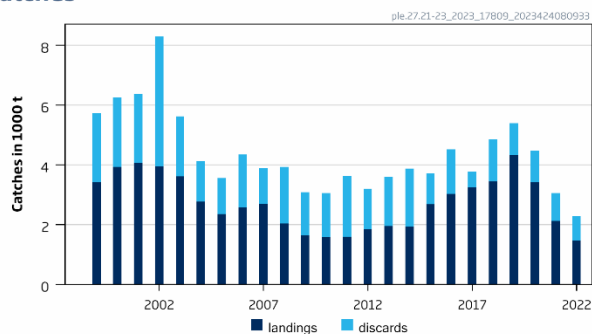
ICES advice on conservation aspects

ICES has not identified any conservation aspects.

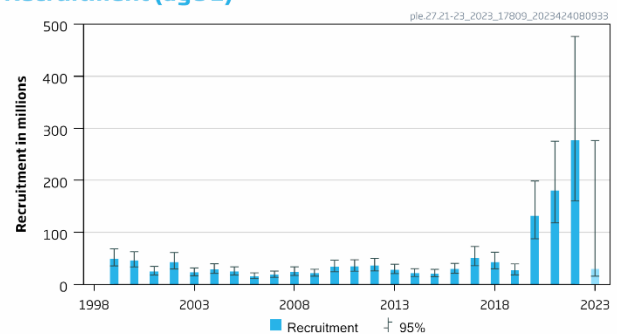
Stock development over time

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

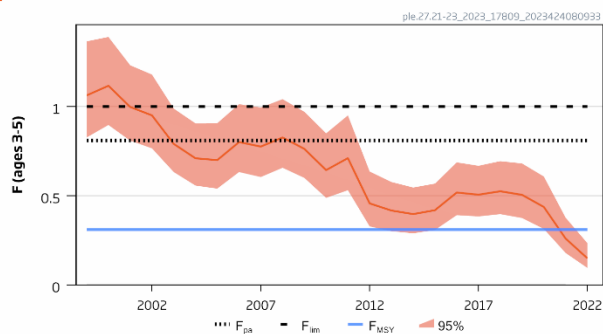
Catches



Recruitment (age 1)



F



SSB

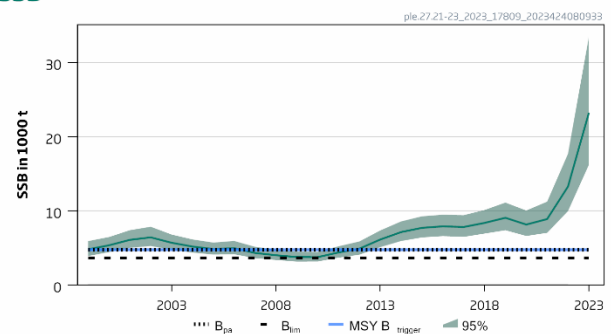


Figure 1 Plaice in subdivisions 21–23. Summary of the stock assessment. The assumed recruitment value for 2023 is shaded in a lighter colour.

Conservation status

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

Catch scenarios

Table 1 Plaice in subdivisions 21–23. Values in the forecast and for the interim year.

Variable	Value	Notes
$F_{\text{ages 3–5}}$ (2023)	0.149	$F_{\text{status quo}} = F_{2022}$
SSB (2024)	33 248	Short-term forecast; tonnes
$R_{\text{age 1}}$ (2023–2025)	29 382	Median resampled from the entire time-series of recruitment; thousands
Total catch (2023)	5 480	Short-term forecast using F_{2023} ; tonnes
Projected landings (2023)	4 048	Short-term forecast, assuming average landings ratio by age in 2020–2022; tonnes
Projected discards (2023)	1 432	Short-term forecast, assuming average discard ratio by age 2020–2022; tonnes

Table 2 Plaice in subdivisions 21–23. Annual catch scenarios. All weights are in tonnes.

Basis	Total catch (2024)	F (2024)	SSB (2025)	% SSB change*	% advice change**
ICES advice basis					
MSY approach: ($F = F_{\text{MSY}}$)	17 254	0.31	33 078	–0.5	45
Other scenarios					
$F = 0$	0	0	43 755	32	–100
$F = F_{2023}$	8 973	0.15	38 062	14.5	–25
$F = F_{\text{pa}}$	35 732	0.81	21 974	–34	200
$F = F_{\text{lim}}$	40 757	1.00	18 914	–43	242
SSB (2025) = $\text{MSY } B_{\text{trigger}}$	64 982	3.26	4 730	–86	445
SSB (2025) = B_{pa}	64 982	3.26	4 730	–86	445
SSB (2025) = B_{lim}	67 192	3.84	3 635	–89	464
MSY approach: ($F = F_{\text{MSY}}$) lower	10 677	0.180	37 022	11	–10.4
SSB (2025) = SSB (2024)	17 090	0.31	33 248	0	43
MSY approach: ($F = F_{\text{MSY}}$) upper	28 763	0.59	26 237	–21.1	141
20% increase on advised catch for 2023	14 297	0.25	34 878	5	20

* SSB 2025 relative to SSB 2024.

** Advice value in 2024 relative to ICES advice value for 2023 (11 914 tonnes).

The 45% increase in catch advice for 2024 is because of the increase in stock size due to recent large year classes entering the fishery.

Basis of the advice

Table 3 Plaice in subdivisions 21–23. The basis of the advice.

Advice basis	MSY approach
Management plan	The EU multiannual plan (MAP) for the Baltic Sea (EU, 2016, 2019, 2020) applies to bycatches of this stock taken when fishing for the target stocks described in the plan. Catches taken in the Kattegat (Subdivision 21) are covered by the North Sea MAP (EU, 2018).

Quality of the assessment

Decreases in stock weight-at-age have been observed in the last three years. For the period 1999–2019, stock weights-at-age were the mean of this period. To reflect the recent declines in stock weights for the years 2020–2022, the annual estimates are used. This change led to a reduction in estimated SSB as compared with last year's assessment. Furthermore, the annual estimates of stock weight-at-age, catch weight-at-age, and maturity from 2022 were used in the forecast.

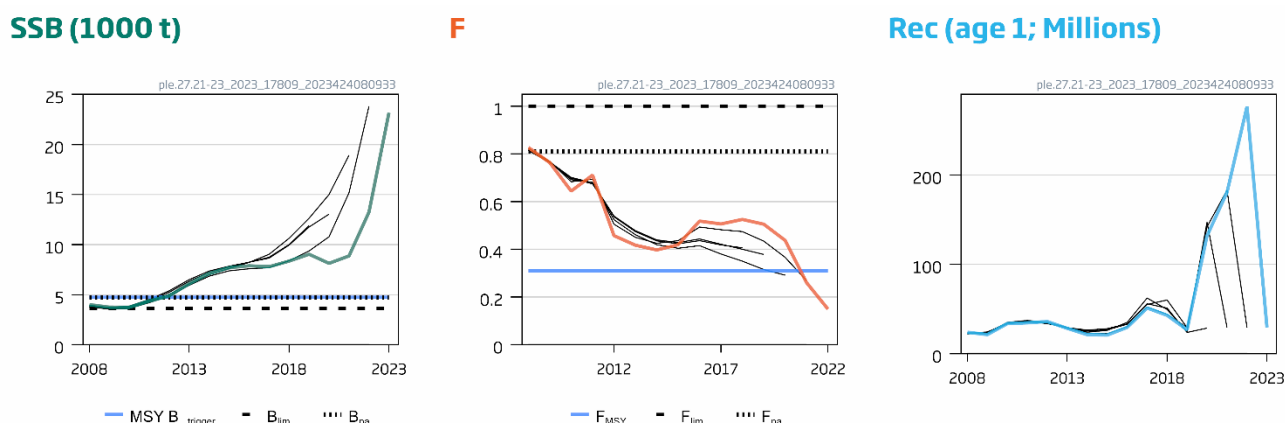


Figure 2 Plaice in subdivisions 21–23. Historical assessment results (final-year recruitment assumptions included for each line).

Issues relevant to the advice

The demersal fishery in Subdivision 22 has changed from being a directed cod fishery to a targeted flatfish fishery.

Plaice in the Baltic Sea (ple.27.21–23 and ple.27.24–32) are both experiencing extraordinarily high recruitment pulses from the 2019, 2020 and 2021 year classes. The trend of high catches of below minimum size (BMS) plaice is expected to continue in demersal fisheries (e.g. *Nephrops* fishery in Subdivision 21 and targeted flatfish fisheries in Subdivision 22).

Increased fishing opportunities for plaice in Subdivision 22 may lead to an increase in the bycatch of cod. There are gears available that successfully reduce cod bycatches in the flatfish fisheries; however, these gears are not currently in use. Reducing the bycatch of cod in flatfish fisheries may enhance the recovery of the cod stocks.

The management areas for plaice in the Baltic Sea (i.e. subdivisions 21 and 22–32) are different from the stock areas (i.e. subdivisions 21–23 and 24–32). As for the plaice stock in subdivisions 24–32 (ICES, 2023a), this section provides an option for calculating TACs by management area, based on the catch distribution observed in 2022. The catch ratio between subdivisions 21 and 22–23 in 2022 was used to calculate a split of the advised catches for the stock in subdivisions 21–23 for 2024. The advised catch for the stock in subdivisions 24–32 was added to the calculated catch for subdivisions 22–23; in this way, plaice catches by management area were obtained that would be consistent with ICES advice for the two stocks, assuming that the distribution of catches would be the same as was observed in 2022. If the distribution changes in 2024, the combined TAC might not be consistent with ICES advice. The details of this calculation are presented in Table 4. This results in catches of no more than 3 788* tonnes in Subdivision 21 and of 17 947* tonnes in subdivisions 22–32.

* Version 2: numbers updated based on results from Table 4.

Table 4 Plaice in subdivisions (SDs) 21–23. Calculation of TACs by management area based on the catch distribution observed in 2022. Weights are in tonnes.

Basis		Catch 2022	Landings 2022	ICES stock advice 2024 (catch)	
Stock area–based	SDs 21–23	2 274	1 467	17 254	
	SDs 24–32	608	458	4 481	
Total advised catch, 2024 (SDs 21–32)				21 735	
Management area–based	SD 21	499	162		
	SDs 22–23	1 775	1 305		
	SDs 22–32	2 383	1 763		
		Calculation			Result
Share of SD 21 of the total catch in SDs 21–23 in 2022		= 499 / 2 274			0.22
		(catch in 2022 SD 21 / catch in 2022 SDs 21–23)			
Catch in 2024 for SD 21		= 17 254 * 0.22			3 788
		(ICES stock advice in 2024 [catch] for SDs 21–23 × share)			
Catch in 2024 for SD 22–32		= 21735 – 3788			17 947
		(total advised catch in 2024 SDs 21–32 minus catch SD 21)			

Reference points

Table 5 Plaice in subdivisions 21–23. Reference points, values, and their technical basis.

Framework	Reference point	Value	Technical basis	Source
MSY approach	MSY B _{trigger}	4 730	B _{pa} ; in tonnes	ICES (2019)
	F _{MSY}	0.31	Stochastic simulations (EqSim) with segmented regression	ICES (2019)
Precautionary approach	B _{lim}	3 635	B _{loss} in 2009, from the 2019 assessment; in tonnes	ICES (2019)
	B _{pa}	4 730	B _{lim} × e ^{1.645*σ} , σ = 0.16; in tonnes	ICES (2019)
	F _{lim}	1.00	The F that on average leads to B _{lim}	ICES (2019)
	F _{pa}	0.81	F _{POS} , the F that provides a 95% probability for SSB to be above B _{lim}	ICES (2021)
Management plan	SSB _{mgt}	Not defined		
	F _{mgt}	Not defined		

Basis of the assessment

Table 6 Plaice in subdivisions 21–23. Basis of the assessment and advice.

ICES stock data category	1 (ICES, 2023b)
Assessment type	Age-based analytical assessment SAM (ICES, 2023c) that uses catches in the model and in the forecast
Input data	Commercial catches; two combined survey indices (NS-IBTSQ1 [G1022] and BITS-Q1 [G2916], NS-IBTS-Q3 [G2829], and BITS-Q4 [G8863]); mean maturity data for the modelled period (Q1 surveys); natural mortalities are fixed and assumed to be 0.1 (except for age 1, which has 0.2); stock weight-at-age for 1999–2019 is the mean of that period, while annual values are used for each year from 2020 onwards.
Discards and bycatch	Discard information is available from 2002 (back-calculated to 1999) from the main fleets and is included
Indicators	None
Other information	The stock was last benchmarked in 2015 (ICES, 2015) and revised in 2019 (ICES, 2019)
Working group	Baltic Fisheries Assessment Working Group (WGBFAS)

History of the advice, catch, and management

Table 7 Plaice in SDs 21–23. ICES advice, TACs, and ICES catches. All weights are in tonnes.

Year	ICES advice	Catch corresponding to advice for SDs 21–23	Catch corresponding to advice for Skagerrak and Kattegat combined	TAC Kattegat (SD 21)	TAC Baltic Sea (SDs 22–32)	ICES landings (SDs 21–23) ^{^^}	Discards (SDs 21–23) ^{^^}
1992	TAC		14 000	2 800		2 700	
1993	Precautionary TAC		-	2 800		1 700	
1994	If required, precautionary TAC		-	2 800		2 100	
1995	If required, precautionary TAC		-	2 800		2 100	
1996	If required, precautionary TAC		-	2 800		3 500	
1997	No advice		-	2 800		3 400	
1998	No increase in F from the present level		11 900	2 800		2 900	
1999	No increase in F from the present level		11 000	2 800		3 400	2 313
2000	$F < F_{pa}$		11 800	2 800		3 900	2 313
2001	$F < F_{pa}$		9 400	2 350		4 100	2 313
2002	$F < F_{pa}$		8 500*	1 600**		3 900	4 357
2003	$F < F_{pa}$		18 400	3 000		3 400	2 004
2004	$F < F_{pa}$		***	1 800		2 600	1 368
2005	$F < F_{pa}$		< 9 500	1 900		2 400	1 197
2006	No increase in F		< 9 600	1 900		2 400	1 769
2007	Maintain current TAC		< 9 600	2 100		2 600	1 190
2008	No increase in catch		< 9 400	2 300		2 000	1 901
2009	Same advice as last year		< 9 400	2 300		1 700	1 447
2010	Same advice as last year		< 9 400	2 300		1 500	1 488
2011	Last three years' (2007–2009) average landings		< 8 000	1 988	3 041	1 600	2 045
2012	Reduce catch		-	1 988	2 889	1 800	1 350
2013	Increase catch by 16%, transition to F_{MSY}	< 1 800 [^]		1 800	3 409	2 000	1 637
2014	Increase landings by 20%	2 224 [^]		2 160	3 409	1 931	1 946
2015	Increase catch by 20%	4 031		2 626	3 409	2 687	1 021
2016	MSY approach	≤ 8 639		2 347	4 034	3 020	1 501
2017	MSY approach	≤ 8 333		2 343	7 862	3 253	988
2018	MSY approach	≤ 5 405		1 483	7 076	3 459	1 387

Year	ICES advice	Catch corresponding to advice for SDs 21–23	Catch corresponding to advice for Skagerrak and Kattegat combined	TAC Kattegat (SD 21)	TAC Baltic Sea (SDs 22–32)	ICES landings (SDs 21–23) ^{^^}	Discards (SDs 21–23) ^{^^}
2019	Precautionary approach	≤ 15 237		1 705	10 122	4 334	1 054
2020	Precautionary approach	≤ 10 636		1 141	6 894	3 409	1 061
2021	MSY approach	≤ 5 176		719	7 240	2 126	927
2022	MSY approach	≤ 8 821		1 038	9 050	1 467	807
2023	MSY approach	≤ 11 914		1 981	11 313		
2024	MSY approach	≤ 17 254					

* In March 2002, ICES revised its advice to 11 600 tonnes for both areas combined.

** The TAC for the two areas combined was adjusted to 11 200 tonnes in mid-2002.

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

^ Landings.

^^ On 1 January 2017, the EU landing obligation was introduced for plaice in SDs 22–32. In 2017, landings include those BMS; while, for 2019 and onwards, Denmark and Sweden BMS catches are included in discards.

History of the catch and landings

Table 8 Plaice in subdivisions 21–23. Catch distribution by fleet in 2022 as estimated by ICES.

Catch (2022)	Landings		Discards*
2 274 tonnes	Active gears 51%	Passive gears 49%	807 tonnes
	1 467 tonnes		

* BMS landings are included in discards.

Table 9 Plaice in SDs 21–23. History of commercial catch and landings. ICES estimated landings by area and country, estimated discards, and officially reported BMS. All weights are in tonnes. Missing values indicate no reported catch; zeros represent either zero reported catch or the rounding down of catch of below one tonne.

Year and SD	Denmark		Germany		Sweden		Aggregate BMS	Total catches
	Discards	Landings	Discards	Landings	Discards	Landings		
2002	3 877	3 654	22	39	458	246		8 296
SD 21	3 314	1 880	0		446	204		5 844
SD 23	178	75	0		13	42		308
SD 22	385	1 699	22	39		0		2 145
2003	1 635	3 308	17	31	353	279		5 623
SD 21	1 235	2 132	0		351	253		3 971
SD 23	23	105	0		1	26		155
SD 22	377	1 071	17	31	0	0		1 496
2004	1 195	2 540	48	54	126	173		4 136
SD 21	711	1 454	0		119	137		2 421
SD 23	48	137	0		7	35		227
SD 22	435	949	48	54		0		1 486
2005	1 048	2 171	37	48	113	135		3 552
SD 21	617	1 145	0		108	100		1 970
SD 23	37	152	0		4	34		227
SD 22	394	874	37	48		0		1 353
2006	1 593	2 321	25	45	152	214		4 350
SD 21	1 165	1 400	0		149	175		2 889
SD 23	17	180	0		3	39		239
SD 22	410	742	25	45		0		1 222
2007	962	2 376	56	75	173	241		3 883
SD 21	641	1 244	0		170	172		2 227
SD 23	42	199	0		2	69		312
SD 22	279	933	56	75		0		1 343
2008	1 807	1 754	16	92	79	182		3 930
SD 21	1 471	899	0		76	137		2 583
SD 23	39	120	0		3	45		207

Year and SD	Denmark		Germany		Sweden		Aggregate BMS	Total catches
	Discards	Landings	Discards	Landings	Discards	Landings		
SD 22	297	735	16	92		0		1 140
2009	1 332	1 317	16	191	99	127		3 082
SD 21	1 033	589	0		99	84		1 805
SD 23	10	144	0		0	42		196
SD 22	289	585	16	191		0		1 081
2010	1 212	1 262	149	226	127	83		3 059
SD 21	388	428	5	5	127	66		1 019
SD 23	5	59	0		1	17		82
SD 22	819	775	144	221		0		1 959
2011	1 823	1 224	127	310	95	51		3 630
SD 21	1 042	327	0		94	40		1 503
SD 23	27	46	0		1	11		85
SD 22	754	851	127	310		0		2 042
2012	1 192	1 439	119	365	39	41		3 195
SD 21	277	196	0		39	30		542
SD 23	1	54	0		1	12		68
SD 22	914	1 189	119	365		0		2 587
2013	1 423	1 561	111	320	104	74		3 593
SD 21	756	232	3	1	103	60		1 155
SD 23	1	76	0		1	14		92
SD 22	666	1 252	109	319		0		2 346
2014	1 750	1 497	100	321	96	113		3 877
SD 21	525	343	1	1	94	68		1 032
SD 23	5	57	0		2	45		109
SD 22	1 220	1 097	99	320		0		2 736
2015	784	2 014	115	560	122	113		3 708
SD 21	345	807	0	0	122	87		1 361
SD 23	6	103	0		0	26		135
SD 22	434	1 103	115	560		0		2 212
2016	1 223	2 199	145	681	133	141		4 522
SD 21	633	984	1	1	131	121		1 871
SD 23	17	107	0		2	20		146
SD 22	573	1 108	144	680		0		2 505
2017	583	2 198	126	936	54	110	4	4 011
SD 21	396	703	0	1	52	97		1 249
SD 23		70	0		3	13		86
SD 22	187	1 424	126	936		0		2 673
2018	969	2 300	365	1 073	65	65	8	4 845
SD 21	777	482	1	1	61	51	0	1 373
SD 23	42	111	0		5	13		171
SD 22	151	1 708	364	1 072	0	0	8	3 303
2019	839	2 775	166	1 498	33	52	25	5 388
SD 21	345	332	4	4	29	28	6	748
SD 23	24	102	0		4	24	0	154
SD 22	470	2 342	162	1 494	0	0	19	4 487
2020	846	2 551	154	820	53	31	14	4 469
SD 21	522	264	8	2	46	17	1	860
SD 23	29	87	0		7	14	1	138
SD 22	296	2 201	146	818		0	12	3 473
2021	561	1 341	257	758	95	27	14	3 053
SD 21	507	197	12	5	93	13	2	828
SD 23	20	63			2	15	0	101
SD 22	34	1 081	245	753	0	0	12	2 124
2022	486	837	195	601	91	29	13	2 274
SD 21	223	140		10	89	11	2	499
SD 23	10	47			2	17	1	77
SD 22	253	650	195	591	0	0	10	1 698

Summary of the assessment

Table 10 Plaice in subdivisions 21–23. Assessment summary. Weights are in tonnes; recruitment is in thousands. High and Low refer to 95% confidence intervals.

Year	Recruitment			SSB			Landings	Discards	Fishing mortality		
	Age 1	High	Low	SSB	High	Low			Ages 3–5	High	Low
1999	49311	68407	35546	4791	5895	3893	3406	2313	1.06	1.37	0.83
2000	45762	62654	33425	5333	6445	4413	3935	2313	1.12	1.39	0.90
2001	24995	34497	18110	6067	7366	4998	4054	2313	1.00	1.23	0.81
2002	42495	61133	29540	6404	7831	5237	3939	4357	0.95	1.18	0.77
2003	22817	31391	16585	5677	6783	4752	3618	2004	0.79	0.99	0.63
2004	28934	39530	21179	5162	6120	4353	2766	1369	0.71	0.91	0.56
2005	24668	33748	18031	4825	5699	4085	2354	1197	0.70	0.91	0.54
2006	15543	22066	10948	4944	5920	4129	2580	1770	0.80	1.01	0.63
2007	18579	25526	13522	4298	5127	3603	2691	1191	0.78	1.00	0.61
2008	23930	33623	17031	3994	4755	3354	2028	1902	0.83	1.04	0.66
2009	21297	29063	15606	3747	4473	3139	1635	1448	0.76	0.97	0.60
2010	33570	46430	24271	3738	4435	3151	1570	1489	0.64	0.85	0.49
2011	34441	47213	25124	4364	5196	3664	1584	2045	0.71	0.95	0.53
2012	35938	49982	25840	4876	5848	4066	1845	1351	0.46	0.64	0.33
2013	28308	38880	20610	6108	7332	5089	1956	1638	0.42	0.58	0.30
2014	21263	30055	15043	7111	8553	5911	1931	1946	0.40	0.55	0.29
2015	20764	28939	14898	7686	9237	6396	2687	1021	0.42	0.57	0.31
2016	29382	40483	21325	7886	9459	6575	3020	1501	0.52	0.69	0.39
2017	51118	72860	35864	7797	9392	6472	3243	530	0.51	0.67	0.38
2018	42873	61848	29720	8352	10089	6914	3446	1400	0.53	0.69	0.40
2019	26739	39351	18169	9040	11091	7368	4334	1054	0.51	0.68	0.38
2020	131944	198520	87695	8129	10021	6593	3409	1061	0.44	0.61	0.31
2021	180585	275442	118396	8870	11216	7014	2126	927	0.26	0.38	0.179
2022	276601	476634	160517	13254	17671	9942	1467	807	0.149	0.23	0.095
2023	29382*	276601*	15543*	23194	33422	16184					

* Median and confidence intervals of resampled recruitment from the entire time-series.

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[Download the stock assessment data and figures](#)

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