Plaice (*Pleuronectes platessa*) in subdivisions 24–32 (Baltic Sea, excluding the Sound and Belt Seas). Replacing advice provided in 2022

ICES advice on fishing opportunities

Please note: The present advice replaces the advice given in May 2022 for catches in 2023

ICES advises that when the MSY approach is applied, catches in 2023 should be no more than 4549* tonnes.

Stock development over time

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

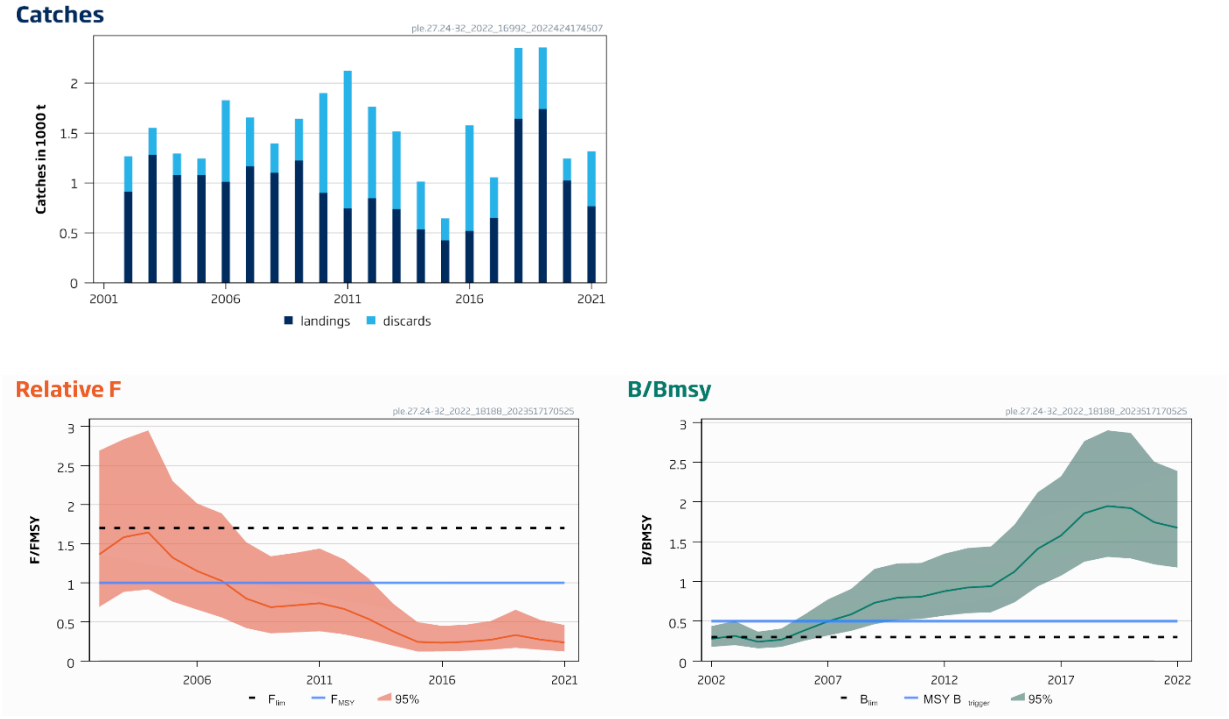

Figure 1 Plaice in subdivisions 24–32. Summary of the stock assessment. Landings include BMS.†

Catch scenarios

Table 1 Plaice in subdivisions 24–32. Values in the forecast and the interim year.

Variable	Value	Notes
F_{2022}/F_{MSY}	0.23	*Status quo* F: F_{sq} (equal to F_{2021})
B_{2023}/B_{MSY}	1.73	Fishing at F_{sq}
Catch (2022)	1 321	Fishing at F_{sq}; in tonnes
Projected landings (2022)	770	Marketable landings assuming 2021 discard rate; in tonnes
Projected discards (2022)	551	Based on 2021 discard rate; in tonnes

* The catch advice was updated after correcting the biomass index calculation used in the assessment.
† Biomass and fishing pressure time series in Figure 1 updated after correcting the biomass index calculation used in the assessment.

Table 2 Plaice in subdivisions 24–32. Annual catch scenarios. All weights are in tonnes.‡

Basis	Total catch (2023)	Projected landings (2023)*	Projected liscards (2023)**	F_{2023}/F_{MSY}	B_{2024}/B_{MSY}	% biomass change^	% advice change^^
ICES advice basis							
MSY approach (35th percentile of predicted catch distribution under $F = F_{MSY}$)	4 549	2 649	1 900	0.84	1.53	−10	+15
Other scenarios							
F_{MSY}	5 202	3 029	2 173	1.00	1.47	−13	+32
F_{2022}	1 342	782	560	0.24	1.75	+3	−3
F = 0	0	0	0	0.0	1.84	+9	−100

* Marketable landings assuming 2021 discard rate.
** Including below minimum size (BMS) landings (EU stocks), assuming 2021 discard rate.
^ Biomass 2024 relative to biomass 2023.
^^ Advice value for 2023 relative to the advice value for 2022 (3 956 tonnes).

This increase in the advice is due to a change in the basis of the advice from precautionary approach to MSY approach based on a category 2 assessment.

Basis of the advice

Table 3 Plaice in subdivisions 24–32. The basis of the advice.

Advice basis	MSY approach
Management plan	The EU multiannual plan for the Baltic Sea (EU, 2016, 2019) applies to bycatches of this stock taken when fishing for the target stocks described in the plan

Quality of the assessment

This stock assessment was reviewed in 2022 (ICES, 2022a) and, as a result, the stock was changed from category 3 to category 2 (ICES, 2022b). The assessment is now based on a stochastic surplus production model that includes revised assumptions and model priors. The trends in fishing mortality and biomass are consistent with previous assessments for this stock. Reference points were also revised, and it is now possible to provide catch advice based on a short-term forecast.

Issues relevant for the advice

Advice for the stock has changed from being based on a precautionary approach to an MSY approach.

Landings have decreased by almost 50% compared to the two previous years. This is likely due to low fishing opportunites for cod in the eastern Baltic, where plaice is caught as bycatch.

The fishery in subdivisions (SDs) 24–32 has changed from being a directed cod fishery to becoming 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 and 2020 year classes, confirmed from both surveys and commercial catches. These year classes will not be fully included in the assessment model until 2023. High catches of below minimum size (BMS) plaice are to be expected if the demersal fisheries do not change.

The management areas for plaice in the Baltic Sea (i.e. subdivisions [SDs] 21 and 22–32) are different from the stock areas (i.e. SDs 21–23 and 24–32). As for the plaice stock in SDs 21–23 (ICES, 2022c), this section provides an option for calculating TACs by management area, based on the catch distribution observed in 2021. The catch ratio between SDs 21 and 22–23 in 2021 was used to calculate a split of the advised catches for the stock in SDs 21–23 for 2023. The advised catch for the

‡ Catch scenarios updated after correcting the biomass index calculation used in the assessment.

stock in SDs 24–32 was added to the calculated catch for SDs 22–23; in this way plaice catches by management area were obtained that would be consistent with ICES advice for the two stocks.

Table 4 Plaice in subdivisions 24–32. Catch and landings overview and calculation of catches by management area for plaice in subdivisions 21–23 and 24–32.

Basis		Catch 2021	Landings 20 21	ICES stock advice 2023 (catch)
Stock area-based	SDs 21–23	3 053	2 126	11 914
	SDs 24–32	1 317	767	4 549§
Total advised catch, 2023 (SDs 21–32)				16 463‡
Management area-based	SD 21	828	215	
	SDs 22–23	2 225	1 912	
	SDs 22–32	3 542	2 679	

	Calculation	Result
Share of SD 21 of the total catch in SDs 21–23 in 2021	= 828/3 053	0.271
	(catch in 2021 SD 21/catch in 2021 SDs 21–23)	
Catch in 2023 for SD 21	= 11 914*0.271	3 232
	(ICES stock advice in 2023 (catch) for SDs 21–23 share)	
Catch in 2023 for SDs 22–32	= 16 463‡– 3 232	13 231‡
	(total advised catch in 2023 SDs 21–32 minus catch SD 21)	
	(landings in 2021 SD 21/landings in 2021 SDs 21–23)	

Reference points

Table 5 Plaice in subdivisions 24–32. Reference points, values, and their technical basis.

Framework	Reference point	Value	Technical basis	Source
MSY approach	MSY $B_{trigger}$	0.5 *	0.25 × K. B_{MSY} is estimated directly from the surplus production model and changes when the assessment is updated.	ICES (2022a)
	F_{MSY}	1*	r/2. Relative value. F_{MSY} is estimated directly from the surplus production model and changes when the assessment is updated.	ICES (2022a)
Precautionary approach	B_{lim}	0.3*	0.15 × K. Relative value.	ICES (2022a)
	B_{pa}	Not defined		
	F_{lim}	1.7*	Relative value. (the F that drives the stock to B_{lim})	ICES (2022a)
	F_{pa}	Not defined		
Management plan	SSB_{mgt}	Not defined		
	F_{mgt}	Not defined		

* Fishing mortality is presented only in relation to F_{MSY} and total stock biomass is presented only in relation to B_{MSY}. K is the carrying capacity and r is the intrinsic biomass growth rate. These values are directly estimated from the stock assessment and change when the assessment is updated

Basis of the assessment

Table 6 Plaice in subdivisions 24–32. Basis of the assessment and advice.

ICES stock data category	2 (ICES, 2022d)
Assessment type	Surplus Production model in Continuous Time that uses catches in the model and in the forecast (SPiCT; ICES, 2022a)
Input data	Commercial catches; two survey biomass indices (BITS-Q1 [G2916] and BITS-Q4 [G8863])
Discards and bycatch	Discard estimates from the main fleets are included in the assessment from 2002 onwards; however, the estimations of the first years (2002–2005) are considered uncertain
Indicators	None
Other information	This stock was last benchmarked in 2015 (ICES, 2015). The stock changed from category 3 to category 2 in 2022 (ICES, 2022a. 2022b).
Working group	Baltic Fisheries Assessment Working Group (WGBFAS)

§ Updated after correcting the biomass index calculation used in the assessment.

History of the advice, catch, and management

Table 7 Plaice in subdivisions 24–32. ICES advice, TACs and ICES catch estimates. All weights are in tonnes.

Year	ICES advice	Landings corresp. to advice*	Catch corresponding to advice	Agreed TAC^	Landings (ICES estimates)	Catches (ICES estimates)
2000	No advice	-		-	630	
2001	No advice	-		-	790	
2002	No advice	-		-	915	1 270
2003	No advice	-		-	1 281	1 550
2004	No advice	-		-	1 081	1 300
2005	No advice	-		-	1 081	1 250
2006	No advice	-		-	1 012	1 830
2007	No advice	-		-	1 167	1 660
2008	No advice	-		-	1 102	1 400
2009	No advice	-		-	1 226	1 640
2010	No advice	-		-	903	1 900
2011	No advice	-		3 041	748	2 130
2012	No increase in catches	-		2 889	848	1 770
2013	No more than 20% catch increase	≤ 900		3 409	738	1 520
2014	No more than 20% landings increase	≤ 1 000		3 409	534	1 020
2015	No more than 20% wanted catches increase	≤ 886		3 409	427	650
2016	Precautionary approach		≤ 2 156	4 034	521	1 580
2017	Precautionary approach		≤ 2 587	7 862	650	1 058
2018	Precautionary approach		≤ 3 104	7 076	1 644	2 355
2019	Precautionary approach		≤ 3 725	10 122	1 741	2 359
2020	Precautionary approach		≤ 2 826	6 894	1 024	1 247
2021	Precautionary approach		≤ 3 297	7 240	767	1 317
2022	Precautionary approach		≤ 3 956	9 050		
2023	MSY approach		≤ 4 549**			

*Prior to 2013 the advice was for subdivisions 22–32.
^For subdivisions 22–32.

History of the catch and landings

Table 8 Plaice in subdivisions 24–32. Catch distribution by fleet in 2021 as estimated by ICES.

Catch (2021)	Landings/wanted catch		Discards	
1 317 tonnes	Active gears 89%	Passive gears 11 %	Active gears 99 %	Passive gears 1 %
	767 tonnes		550 tonnes	

** Updated after correcting the biomass index calculation used in the assessment.

Table 9 Plaice in subdivisions (SDs) 24–32. History of commercial catch and landings; both the official and ICES estimated values are included. Landings are shown by area for each country participating in the fishery. All weights are in tonnes.

Year	Denmark		Germany, Fed. Rep. (+ Germany, Dem. Rep. before 1990)		Poland		Sweden*				Finland	Discards	BMS landings
	SD 24 (+25)	SD 25–27	SD 24 (+25)**	SD 25	SD 25 (+24)***	SD 26	SD 24	SD 25	SD 26	SD 27–29	SD 24–26		
1970	494		16				149						
1971	314		2				107						
1972	290		2				78						
1973	203		45		174	30	75						
1974	126		12		114	86	60						
1975	184		68		158	142	45						
1976	178		85		164	76	44						
1977	221		38		265	26	41						
1978	681		1 201		633	290	32						
1979	2 027		1 611		555	224	113						
1980	1 652		308		383	53	113						
1981	937		83		239	27	118						
1982	393		31		43	64	40	6		8			
1983	297		26		64	12	133	20		26			
1984	166		10		106		23	3		5			
1985	771		633		119	49	25	4		6			
1986	1 019		379		171	59	48	7		10			
1987	794		158		188	5	68	10		13			
1988	323		17		9	1	49	7		10			
1989	149		5		10		34	5		7			
1990	100		2		6		50			0			
1991	112		9		2	1	5	2		2			
1992	74		4		6		3	1		1			
1993	66		6		4		4						
1994	159				43	4	4	7					
1995	343		91		233	2	13	10	1				
1996	263		77		183	5	28	23	10	1			
1997	201		56		308	3	7	8		1			
1998	278		41		101	14	6	17		1			
1999	183		46		145	1	5	10					
2000	161		37		408	3	9	12					
2001	173		43		549	3	9	13					
2002	153	159	137	7	429	3	10	15				353	
2003	326	301	68	25	480	10	16	51		0		271	
2004	167	239	50	13	292	8	6	37				214	
2005	164	241	90	17	511	11	16	28		0		166	
2006	82	632	173	11	52	3	17	41				818	
2007	408	490	151	12			41	61		0		491	
2008	450	339	150	10	29	0	45	69				294	
2009^	581	359	96	21	42	0	43	79		0		418	
2010	345	296	66	13	93	8	22	61	1	0		998	
2011	291	233	109	6	37	1	33	36	0	0	1	1 377	
2012	477	148	86	4	62	2	23	43	1	0	3	917	
2013	382	196	46	1	45	5	29	33	0	0	1	781	
2014	231	118	57	< 1	80	7	21	19	< 1	< 1	< 1	481	
2015	145	69	44	1	140	5	12	12	0	0	0	220	
2016	187	61	93	2	151	3	15	10	< 1	< 1	0	1 060	
2017	124	68	143	1.4	293	3	6	12	< 1	0	0	408	7

Year	Denmark		Germany, Fed. Rep. (+ Germany, Dem. Rep. before 1990)		Poland		Sweden*				Finland	Discards	BMS landings
	SD 24 (+25)	SD 25–27	SD 24 (+25)**	SD 25	SD 25 (+24)***	SD 26	SD 24	SD 25	SD 26	SD 27–29	SD 24–26		
2018	435	160	353	3	667	1	13	11	0	< 1	0	720	9
2019	611	51	331	0	728	1	13	6	0	< 1	0	617	17
2020	462	11	232	2	311	3	1	4	0	< 1	0	223	8
2021	272	5	198	2	286	4	<1	<1	0	<1	0	544	6

* For the years 1970–1981 and 1990 the Swedish catches from subdivisions 25–28 are included in Subdivision 24.
** Values correspond to landings from subdivisions 24 and 25 combined until 2001 – and only from Subdivision 24 afterwards.
*** Values represent mainly landings from Subdivision 25 but may also contain some landings from Subdivision 24.
^ From 2009 onwards landings below 0.5 tonnes are given as < 1, landings ≥ 0.5 tonnes are given as 1. Zeros (0) represent true zero landings. Before 2009, a distinction between "true zero landings" and rounded zero landings (< 0.5 tonnes) is not possible.

Summary of the assessment

Table 10 Plaice in subdivisions 24–32. Assessment summary. Weights are in tonnes. High and low refers to 95% confidence intervals.

Year	B/B_{MSY} [††]			Landings*	Discards	F/F_{MSY} [‡‡]		
	Relative SSB	High	Low			Relative F	High	Low
2002	0.279	0.439	0.177	915	353	1.363	2.691	0.691
2003	0.316	0.503	0.199	1 281	271	1.583	2.836	0.883
2004	0.242	0.369	0.159	1 081	214	1.643	2.950	0.915
2005	0.268	0.408	0.176	1 081	166	1.321	2.301	0.758
2006	0.386	0.586	0.255	1 012	818	1.149	2.014	0.656
2007	0.498	0.775	0.320	1 167	491	1.025	1.888	0.556
2008	0.587	0.908	0.379	1 102	294	0.799	1.520	0.420
2009	0.732	1.159	0.462	1 226	418	0.688	1.340	0.353
2010	0.797	1.230	0.517	903	998	0.712	1.383	0.366
2011	0.808	1.233	0.529	748	1 377	0.739	1.438	0.380
2012	0.878	1.350	0.570	848	917	0.665	1.299	0.340
2013	0.924	1.421	0.601	738	781	0.537	1.055	0.273
2014	0.940	1.442	0.613	534	481	0.378	0.733	0.195
2015	1.123	1.714	0.736	427	220	0.244	0.497	0.120
2016	1.411	2.122	0.938	521	1 058	0.233	0.449	0.121
2017	1.578	2.323	1.072	650	408	0.246	0.465	0.130
2018	1.858	2.767	1.248	1 644	711	0.272	0.513	0.144
2019	1.949	2.902	1.309	1 741	617	0.332	0.656	0.168
2020	1.922	2.868	1.289	1 024	223	0.274	0.527	0.143
2021	1.745	2.507	1.215	767	550	0.236	0.459	0.121
2022	1.676	2.390	1.175					

* Below minimum size (BMS) landings are included since 2017.

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Download the stock assessment data and figures.

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