

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 2021 should be no more than 5176 tonnes.

Note: This advice 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 subdivisions 21–23. Summary of the stock assessment. Weights in thousand tonnes. Recruitment, F, and SSB show confidence intervals (95%) in the plot. Assumed recruitment is unshaded.

Stock and exploitation status

Table 1 Plaice in subdivisions 21–23. 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}	✘	✘	✘	Above	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 subdivisions 21–23. Assumptions made for the interim year and in the forecast. Weights are in tonnes. Recruitment is in thousand individuals.

Variable	Value	Notes
$F_{\text{ages 3-5}}$ (2020)	0.38	$F_{\text{ages 3-5}}$ in 2019.
SSB (2021)	13083	From the F_{2020} assumption.
$R_{\text{age 1}}$ (2020)	28584	Median resampled from the entire time-series.
$R_{\text{age 1}}$ (2021)	28584	Median resampled from the entire time-series.
Total catch (2020)	6319	From the F_{2020} assumption.
Projected landings (2020)	4944	Based on the observed discard rate by age in 2017–2019.
Projected discards (2020)	1375	Based on the observed discard rate by age in 2017–2019.

Table 3 Plaice in subdivisions 21–23. Annual catch scenarios. All weights are in tonnes.

Basis	Total catch (2021)	F (2021)	SSB (2022)	% SSB change *	% Advice change **
ICES advice basis					
MSY approach: ($F = F_{\text{MSY}}$)	5176	0.31	13423	2.6%	-51%
Other scenarios					
$F = 0$	0	0	17338	33%	-100%
$F = F_{2019}$	6174	0.382	12651	-3.3%	-42%
$F = F_{p05}$	9643	0.68	10000	-24%	-9.3%
F_{pa}	10258	0.74	9551	-27%	-3.6%
$F = F_{\text{lim}}$	12478	1	7868	-40%	17.3%
$\text{SSB (2022)} = B_{pa}$	16826	1.775	4732	-64%	58%
$\text{SSB (2022)} = \text{MSY } B_{\text{trigger}}$	16826	1.775	4732	-64%	58%
$\text{SSB (2022)} = B_{\text{lim}}$	18399	2.253	3630	-72%	73%
MSY approach: ($F = F_{\text{MSY}}$) Lower	3194	0.18	14909	14%	-70%
MSY approach: ($F = F_{\text{MSY}}$) Upper	8704	0.59	10729	-18%	-18%

* SSB 2022 relative to SSB 2021.

** Catches in 2021 relative to ICES advised catch for 2020 (10 636 tonnes).

The advised catch has been reduced for 2021, mainly due to a change in the basis for the advice (from precautionary approach to MSY approach).

Quality of the assessment

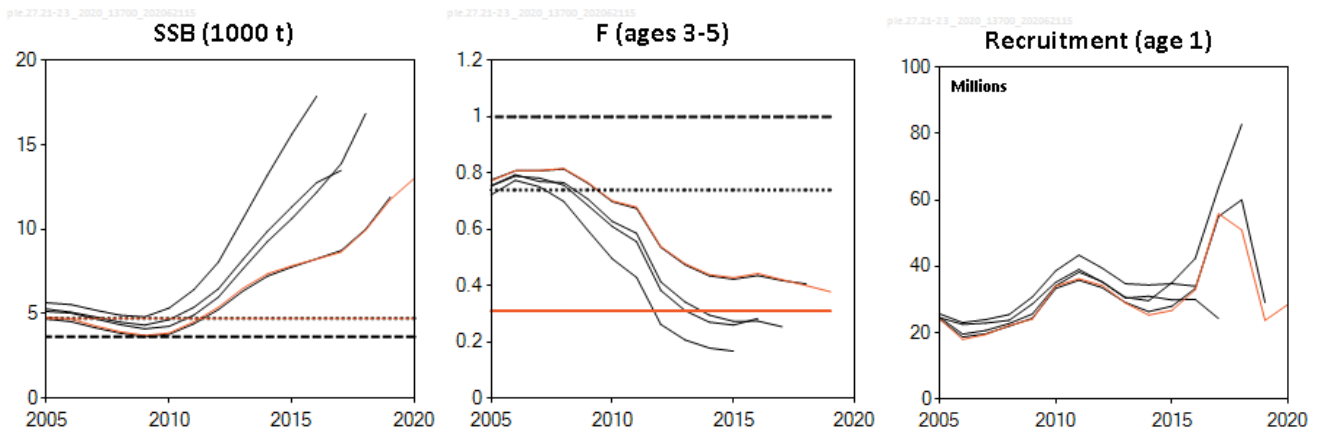


Figure 2* Plaice in subdivisions 21–23. Historical assessment results. The final recruitment estimate in 2020 is the median of the time-series. This stock assessment procedure was revised in 2019.

The combined quarter 3 and 4 survey indices for 2019 were not used in the assessment due to very low catch rates of all ages. This was potentially caused by environmental changes that resulted in distributional shifts of the plaice stock.

Issues relevant for the advice

Table 4 Plaice in subdivisions (SDs) 21–23. Calculation of TACs by management area based on the catch distribution observed in 2019. Weights are in tonnes. Landings including BMS.

Basis		Catch 2019	Landings 2019	ICES stock advice 2021 (catch)
Stock area-based	SDs 21–23	5388	4334	5176
	SDs 24–32	2359	1741	3297
Total advised catch, 2021 (SDs 21–32)				8473
Management area-based	SD 21	748	363	
	SDs 22–23	4640	3971	
	SDs 22–32	6999	5712	
Calculation				
Share of SD 21 of the total catch in SDs 21–23 in 2019		748 / 5388 (catch in 2019 SD 21 / catch in 2019 SDs 21–23)		0.139
Catch in 2021 for SD 21		5176 x 0.139 (ICES stock advice in 2021 [catch] for SDs 21–23 x share)		719
Catch in 2021 for SDs 22–32		8473 - 719 (total advised catch in 2021 SDs 21–32 – catch SD 21)		7754
Share of SD 21 of the total landings in SDs 21–23 in 2019		363 / 4334 (landings in 2019 SD 21 / landings in 2019 SDs 21–23)		0.084

* Version 2: Reference point lines in the figure were updated.

History of the advice, catch, and management

Table 5 Plaice in subdivisions (SDs) 21–23. ICES advice, TACs, and ICES catches. All weights are in tonnes.

Year	ICES advice	Catch corresp. to advice for SDs 21–23	Catch corresp. 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' average landings (2007–2009)		< 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
2019	Precautionary approach	≤ 15 237		1 705	10 122	4 334	1 054
2020	Precautionary approach	≤ 10 636		1 141	6 894		
2021	MSY approach	≤ 5 176					

* 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 1/1/2017 the EU landing obligation was introduced for plaice in SDs 22 to 32. From 2017, landings include below minimum size (BMS) landings.

Summary of the assessment

Table 6 Plaice in subdivisions 21–23. Assessment summary. Weights are in tonnes, recruitment is in thousands. High and low refers to 95% confidence intervals.

Year	Recruitment			SSB			Landings	Discards	Fishing mortality		
	Age1	High	Low	SSB	High	Low			ages 3–5	High	Low
1999	52413	71040	38671	4434	5525	3559	3406	2313	1.02	1.25	0.84
2000	45327	59488	34536	5184	6235	4310	3935	2313	1.02	1.21	0.86
2001	25110	33362	18898	6081	7300	5066	4054	2313	0.96	1.12	0.82
2002	36380	50081	26427	6121	7318	5119	3939	4357	0.90	1.06	0.76
2003	23004	30341	17441	5598	6619	4735	3618	2004	0.81	0.96	0.68
2004	28584	37447	21819	5063	5955	4304	2766	1369	0.77	0.91	0.64
2005	24239	31723	18520	4801	5661	4072	2354	1197	0.77	0.92	0.65
2006	17970	24750	13047	4686	5553	3954	2580	1770	0.81	0.96	0.68
2007	19445	25547	14801	4272	5056	3609	2691	1191	0.81	0.96	0.68
2008	22159	29453	16672	3936	4651	3330	2028	1902	0.82	0.97	0.69
2009	24071	31442	18429	3718	4397	3144	1635	1448	0.77	0.91	0.64
2010	34055	44998	25773	3857	4542	3274	1570	1489	0.70	0.84	0.58
2011	36238	47368	27723	4516	5319	3834	1584	2045	0.68	0.84	0.55
2012	34243	45457	25795	5387	6378	4549	1845	1351	0.54	0.67	0.43
2013	28948	37758	22194	6505	7693	5501	1956	1638	0.48	0.60	0.38
2014	25305	34027	18819	7361	8715	6218	1931	1946	0.44	0.56	0.35
2015	26707	35210	20257	7845	9319	6605	2687	1021	0.43	0.54	0.34
2016	32897	44211	24479	8240	9872	6877	3020	1501	0.44	0.56	0.35
2017	55885	79114	39476	8655	10543	7105	3247	778	0.42	0.55	0.32
2018	50983	76970	33770	9954	12592	7869	3446	1400	0.40	0.55	0.29
2019	23707	43570	12900	11760	15938	8677	4334	1054	0.38	0.56	0.26
2020	28584 *	55885 *	17970 *	13050	18846	8665					

* Median of the time-series.

Sources and references

ICES. 2020. Baltic Fisheries Assessment Working Group (WGBFAS). ICES Scientific Reports, 2:45. <http://doi.org/10.17895/ices.pub.6024>.

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