

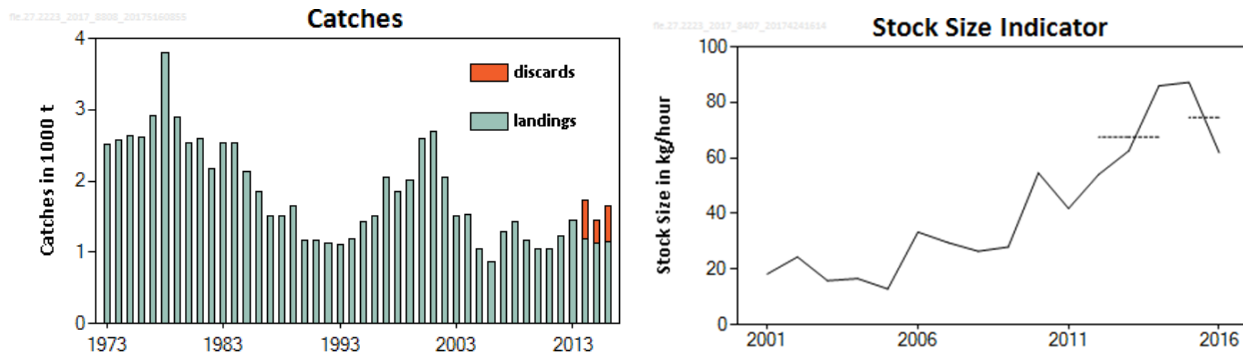
## Flounder (*Platichthys flesus*) in subdivisions 22 and 23 (Belt Seas and the Sound)

### ICES stock advice

ICES advises that when the precautionary approach is applied, catches in each of the years 2018 and 2019 should be no more than 4030 tonnes. If discard rates do not change from the average of the last three years (2014–2016), this implies landings of no more than 2913 tonnes.

### Stock development over time

The stock size indicator from surveys (biomass index) has increased strongly in the last decade.

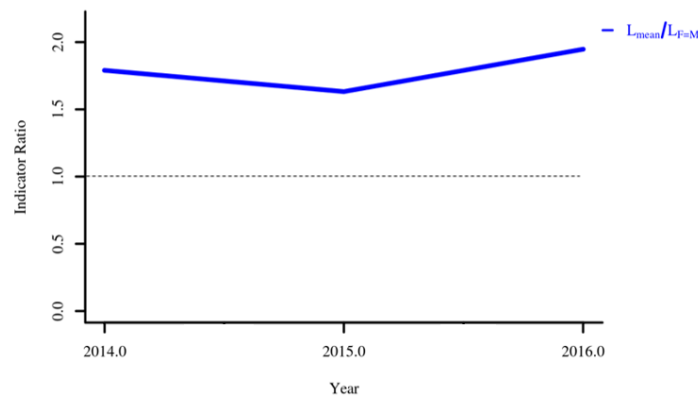


**Figure 1** Flounder in subdivisions 22 and 23. Left: ICES landings and ICES estimates of discards in thousand tonnes. Discard data have only been included since 2014. Right: Combined biomass index (kg per hour) of flounder equal to or larger than 20 cm, from the Baltic International Trawl Survey (BITS – Q1 and Q4). Dashed lines denote the average cpue of the respective year range.

### Stock and exploitation status

**Table 1** Flounder in subdivisions 22 and 23. State of the stock and fishery relative to reference points. The status evaluation is based on reference point proxies (ICES, 2017).

		Fishing pressure			Stock size				
		2014	2015	2016	2014	2015	2016		
Maximum sustainable yield	$F_{MSY}$ proxy	✓	✓	✓	MSY	?	?	?	Undefined
Precautionary approach	$F_{pa}$ , $F_{lim}$	✓	✓	✓	$B_{pa}$ , $B_{lim}$	?	?	?	Undefined
Management plan	$F_{MGT}$	-	-	-	$SSB_{MGT}$	-	-	-	Not applicable
Qualitative evaluation	-	-	-	-	-	➔	➔	➔	Stable



**Figure 2** Flounder in subdivisions 22 and 23. Index ratio  $L_{mean}/L_{F=M}$  from the length-based indicator (LBI; ICES, 2015) method used for the evaluation of the exploitation status. The exploitation status is below the  $F_{MSY}$  proxy when the index ratio value is higher than 1.

### Catch options

The ICES framework for category 3 stocks was applied (ICES, 2012). The Baltic International Trawl Survey (BITS–Q1 and Q4) is used as the index of stock development. The advice is based on a comparison of the two latest index values (index A) with the three preceding values (index B), multiplied by the recent advised catch.

The index is estimated to have increased by less than 20% and thus the uncertainty cap was not applied to calculate the catch advice. Fishing mortality is below proxies of the MSY reference points (as indicated by a length-based analysis). The stock size relative to reference points is unknown. The stock size indicator has increased more than threefold in the last decade; therefore, no additional precautionary buffer was applied. Discarding is known to take place and the discard rate has been estimated for the last three years (2014–2016).

**Table 2** Flounder in subdivisions 22 and 23. The basis for the catch options.\*

Index A (2015, 2016)		75 kg h <sup>-1</sup>
Index B (2012, 2013, 2014)		68 kg h <sup>-1</sup>
Index ratio (A/B)		1.10
Uncertainty cap	Not applied	-
Advised catch for 2017		3650 tonnes
Discard rate (2014, 2015, 2016)		0.28
Precautionary buffer	Not applied	-
Catch advice**		4030 tonnes
Landings corresponding to the catch advice***		2913 tonnes

\* The figures in the table are rounded. Calculations were done with unrounded inputs and computed values may not match exactly when calculated using the rounded figures in the table.

\*\* (Advised catch for 2017) × (index ratio).

\*\*\* (Catch advice) × (1 – discard ratio).

### Basis of the advice

**Table 3** Flounder in subdivisions 22 and 23. The basis of the advice.

Advice basis	Precautionary approach
Management plan	Bycatch of this species is taken into account in the EU Multiannual Plan for the Baltic Sea (EU, 2016).

## Quality of the assessment

The discard ratio in both subdivisions varies between countries, gear types, and quarters. Discarding practices are controlled by factors such as market price and cod catches. Catch sampling is improving and now covers most of the fleet taking relevant amounts of the stock.

## Issues relevant for the advice

Catches are mainly taken as bycatch. This stock is currently not regulated by a TAC.

## Reference points

**Table 4** Flounder in subdivisions 22 and 23. Reference points, values, and their technical basis.

Framework	Reference point	Value	Technical basis	Source
MSY approach	MSY $B_{trigger\_proxy}$			
	$F_{MSY\_proxy}$	17.2 cm	Length-based indicator (LBI); expected mean length of catch (above the length at first catch) when $F = M$ .	ICES (2017)
Precautionary approach	$B_{lim}$			
	$B_{pa}$			
	$F_{lim}$			
Management plan	$F_{pa}$			
	$SSB_{mgt}$			
	$F_{mgt}$			

## Basis of the assessment

**Table 5** Flounder in subdivisions 22 and 23. Basis of assessment and advice.

ICES stock data category	3 ( <a href="#">ICES, 2016</a> ).
Assessment type	Survey trends (ICES, 2017).
Input data	Commercial catches and survey data from Baltic bottom trawl survey (BITS–Q1 and Q4).
Discards and bycatch	Flounder in the Belt Seas and the Sound is mostly a bycatch species in cod fisheries and mixed flatfish fisheries. Discard numbers are included in the advice.
Indicators	A length-based indicator method (LBI; ICES, 2015) deployed catch data from commercial sampling and the biological parameter of the BITS to assess the stock status.
Other information	This stock was benchmarked in 2014 (WKBALFLAT; ICES, 2014).
Working group	Baltic Fisheries Assessment Working Group ( <a href="#">WGBFAS</a> )

## Information from stakeholders

There is no available information.

### History of the advice, catch, and management

**Table 6** Flounder in subdivisions 22 and 23. ICES advice and official landings. All weights are in thousand tonnes.

Year	ICES advice	Predicted landings corresp. to advice*	Agreed TAC	Landings (SDs 22–32, ICES estimates)	Landings (SDs 22–23, ICES estimates)	Catch (ICES estimates)
2000	No advice	-	-	15000	2597	
2001	No advice	-	-	18100	2540	
2002	No advice	-	-	19400	1849	
2003	No advice	-	-	15100	1337	
2004	No advice	-	-	17400	1298	
2005	No advice	-	-	19600	1041	
2006	No advice	-	-	16600	866	
2007	No advice	-	-	19300	1250	
2008	No advice	-	-	16900	1427	
2009	No advice	-	-	15700	1176	
2010	No advice	-	-	16600	1053	
2011	No advice	-	-	15300	1044	
2012	No advice	-	-	15900	1219	
2013	Catches should be reduced by 5%	< 15100	-	21100	1454	
2014	Landings should be reduced by 15%	< 13500	-	20600	1193	1733
2015	No more than 20% landings increase	≤ 1745	-	16900	1130	1444
2016	Precautionary approach (≤ 20% increase)	≤ 3042 **	-	20220	1155	1650
2017	Precautionary approach (≤ 20% increase)	≤ 3650 **	-			
2018	Precautionary approach (≤ 10% increase relative to advised catch for 2017)	≤ 4030 **				
2019	Precautionary approach (≤ 10% increase relative to advised catch for 2017)	≤ 4030 **				

\*Prior to 2015 the advice was for subdivisions 22–32.

\*\* Advice corresponds to total catch and not landings only.

### History of the catch and landings

**Table 7** Flounder in subdivisions 22 and 23. Catch distribution by fleet in 2016 as estimated by ICES.

Catch (2016)	Landings		Discards
	Active gears 66%	passive gears 34%	
1648 tonnes	1155 tonnes		495 tonnes

**Table 8** Flounder in subdivisions 22 and 23. History of commercial 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	Denmark		Germany Dem. Rep.	Germany FRG	Sweden		Total by subdivision		Total subdivisions 22–23
	Subdiv. 22	Subdiv. 23	Subdiv. 22	Subdiv. 22	Subdiv. 22	Subdiv. 23	Subdiv. 22	Subdiv. 23	
1973	1983		181	349			2513		2513
1974	2097		165	304			2566		2566
1975	1992		163	469			2624		2624
1976	2038		174	392			2604		2604
1977	1974		555	393			2922		2922
1978	2965		348	477			3790		3790
1979	2451		189	259			2899		2899
1980	2185		138	212			2535		2535
1981	1964		271	351			2586		2586
1982	1563	104	263	248			2074	104	2178
1983	1714	115	280	418			2412	115	2527
1984	1733	85	349	371			2453	85	2538
1985	1561	130	236	199			1996	130	2126
1986	1525	65	127	125			1777	65	1842
1987	1208	122	71	114			1393	122	1515
1988	1162	125	92	133			1387	125	1512
1989	1321	83	126	122			1569	83	1652
1990	941		52	183			1176		1176
1991	925			246			1171		1171
1992	713	185		227			940	185	1125
1993	649	194		235		26	884	220	1104
1994	882	181		44		84	926	265	1191
1995	859	231		286		58	1145	289	1434
1996	1041	227		189	2	58	1232	285	1517
1997	1356			655		42	2011	42	2053
1998	1372			411		61	1783	61	1844
1999	1473			510		37	1983	37	2020
2000	1896			660		41	2556	41	2597
2001	2030			458		52	2488	52	2540
2002	1490			317		42	1807	42	1849
2003	1063			241		33	1304	33	1337
2004	952			315		31	1267	31	1298
2005	725	184		94		38	819	222	1041
2006	620	182		34		30	654	212	866
2007	585	233		406		26	991	259	1250
2008	554	199		627		47	1181	246	1427
2009	505	113		521		37	1026	150	1176
2010	557	91		376		29	933	120	1053
2011	441	78		497	0.2	28	938	106	1044
2012	530	98		569		22	1099	120	1219
2013	639	83		713		19	1352	102	1454
2014	513	68		589		23	1102	91	1193
2015	361	73		679		16	1040	90	1130
2016	436	63		641		15	1077	78	1155

## Summary of the assessment

**Table 9** Flounder in subdivisions 22 and 23. Total landings (tonnes) and stock size indicator. The stock size indicator is a combined biomass index of flounder equal to or larger than 20 cm, from the Baltic International Trawl Survey (BITS–Q1 and Q4). The individual indices are weighted averages per depth stratum area and the two indices are combined using geometric mean.

Year	Stock size indicator	Landings	Discards
	kg h <sup>-1</sup>	tonnes	tonnes
1996		1517	
1997		2053	
1998		1844	
1999		2020	
2000		2597	
2001	18.3	2540	
2002	24	1849	
2003	15.8	1337	
2004	16.6	1298	
2005	12.9	1041	
2006	33	866	
2007	30	1250	
2008	26	1427	
2009	28	1176	
2010	55	1053	
2011	42	1044	
2012	54	1219	
2013	63	1454	
2014	86	1193	540
2015	87	1130	314
2016	62	1155	495

## Sources and references

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