

8.3.10 Flounder (*Platichthys flesus*) in subdivisions 27 and 29–32 (northern central and northern Baltic Sea)

ICES stock advice

ICES advises that when the precautionary approach is applied, commercial landings in 2017 should be no more than 329 tonnes. ICES cannot quantify the corresponding total catches.

Stock development over time

The combined biomass index from four surveys conducted in subdivisions 27, 29, and 32 has increased since 2012; however, the index has been highly variable over the full time-series.

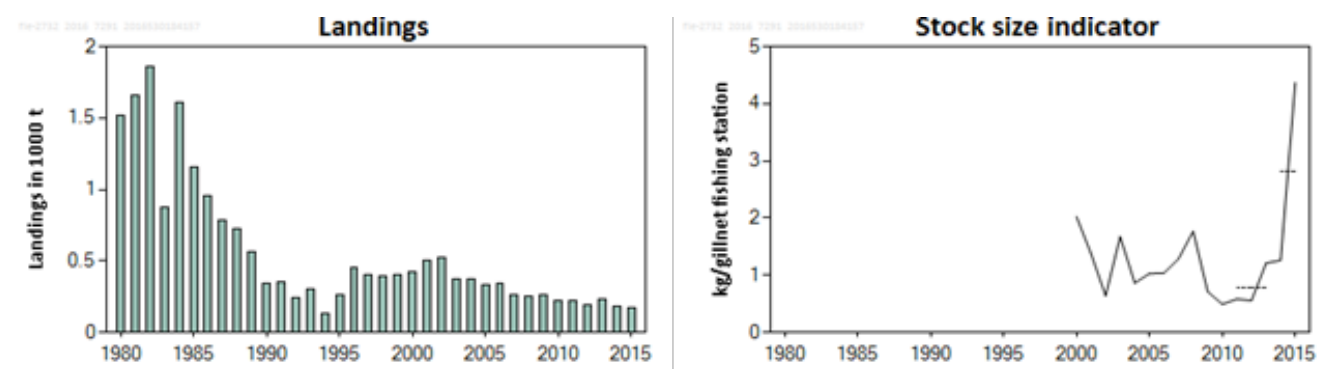


Figure 8.3.10.1 Flounder in subdivisions (SDs) 27 and 29–32. Left panel: Official landings (tonnes). Right panel: Combined biomass index of four surveys (Muuga Bay (SD 32), Küdema Bay (SD 29), Muskö (SD 27), and Kvädöfjärden (SD 27); $\text{kg} \times [\text{gillnet fishing station}]^{-1}$). The dashed lines denote the average of the biomass index of the respective year range.

Stock and exploitation status

Table 8.3.10.1 Flounder in subdivisions 27 and 29–32. State of the stock and fishery relative to reference points.

Table 6.3-10.12: Founder in subdivisions 27 and 29 - SE: State of the stock and fishery relative to reference points.										
		Fishing pressure				Stock size				
		2013	2014	2015		2013	2014	2015		
Maximum sustainable yield	F _{MSY}	?	?	?	Undefined	MSY B _{trigger}	?	?	?	Undefined
Precautionary approach	F _{pa} , F _{lim}	?	?	?	Undefined	B _{pa} , B _{lim}	?	?	?	Undefined
Management plan	F _{MGT}	-	-	-	Not applicable	SSB _{MGT}	-	-	-	Not applicable
Qualitative evaluation	-	?	?	?	Unknown	-	↗	→	↗	Increasing

Catch options

The ICES framework for category 3 stocks was applied (ICES, 2012). The trends in a combined biomass index of four surveys (Muuga Bay (SD 32), K dema Bay (SD 29), Musk  (SD 27), and Kv d fj rden (SD 27); $\text{kg} \times \text{gillnet fishing station}^{-1}$) was 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 landings.

The index is estimated to have increased by more than 20% and thus the uncertainty cap was applied in estimating the landings advice. The stock status relative to candidate reference points is unknown. The precautionary buffer was applied in 2014, thus no additional buffer has been applied here. Discarding is known to take place, but ICES cannot quantify the corresponding catch.

Table 8.3.10.2 Flounder in subdivisions 27 and 29–32. For stocks in ICES data categories 3–6, one landings option is provided.

Index A (2014, 2015)		2.82
Index B (2011, 2012, 2013)		0.78
Index ratio (A/B)		3.59
Uncertainty cap	Applied	1.2
Recent advised landings for 2016		274 t
Discard rate		Unknown
Precautionary buffer	Not applied	-
Landings advice*		329 t

*(Recent advised landings) \times cap.

Basis of the advice

Table 8.3.10.3 Flounder in subdivisions 27 and 29–32. The basis of the advice.

Advice basis	Precautionary approach.
Management plan	There is no management plan for flounder in this area. There is a proposed EU management plan for the Baltic Sea where bycatch of this species is considered. The plan has not been formally implemented.

Quality of the assessment

The advice is based on a stock size indicator calculated as a weighted average of biomass indices from four surveys. Weighting of the four survey indices is required but adds uncertainty to the combined index. In the 2015 K dema Bay survey (Subdivision 29) the biomass indicator showed a fourfold increase that is probably not representative of the stock development. An increase is also seen for all the other surveys (except the Muuga Bay survey in Subdivision 32), but at a much smaller scale. Substitution of the K dema Bay 2015 survey value with a value estimated using the average increase from 2014 and 2015 from the other areas would not change the advice.

The estimated discard ratio in subdivisions 27 and 29–32 varies between countries, fleets, and vessels. Discarding practices are controlled by factors such as market price and cod catches. Given the high variability in the discard ratios, estimating discards is very uncertain and cannot be used.

Issues relevant for the advice

Catches are mainly taken as bycatch, and this stock is currently not regulated by a TAC. In the northern Baltic Sea the importance of recreational fishery is substantial. In Sweden and Finland, the flatfish catch from the recreational fishery probably equals or even exceeds the commercial catch. In Estonia, the reported recreational catch is on average estimated to be 20–30% of the commercial landings. The quality of these estimates is however too low to be included in quantitative advice.

The exploitation status of the stock is unknown since estimates of fishing effort from the most important commercial fishery, passive gears, were not available to ICES for the main fishing nation, Estonia.

Reference points

No reference points are defined for this stock.

Basis of the assessment

Table 8.3.10.4 Flounder in subdivisions 27 and 29–32. The basis of the assessment.

ICES stock data category	3 (ICES, 2016a)
Assessment type	Survey trends (ICES, 2016b)
Input data	Commercial landings and survey data from Estonian Marine Institute in the Muuga Bay (SD 32) and Küdema Bay (SD 29) and from Swedish University of Agricultural Sciences in Muskö (SD 27) and Kvädöfjärden (SD 27).
Discards and bycatch	Discarding is known to take place but cannot be quantified.
Indicators	None
Other information	Recreational catches are known to be substantial but cannot be quantified. This stock was benchmarked in 2014 (WKBALFLAT; ICES, 2014).
Working group	Baltic Fisheries Assessment Working Group (WGBFAS)

Information from stakeholders

There is no available information.

History of advice, catch and management

Table 8.3.10.5 Flounder in subdivisions 27 and 29–32. History of ICES advice, agreed TAC, and ICES estimates of landings. Weights in thousand tonnes.

Year	ICES advice*	Predicted landings corresp. to advice*	Agreed TAC	ICES estimated landings SDs 27 and 29–32
2000	No advice	-	-	0.422
2001	No advice	-	-	0.503
2002	No advice	-	-	0.523
2003	No advice	-	-	0.374
2004	No advice	-	-	0.373
2005	No advice	-	-	0.330**
2006	No advice	-	-	0.344**
2007	No advice	-	-	0.263
2008	No advice	-	-	0.249
2009	No advice	-	-	0.262
2010	No advice	-	-	0.227
2011	No advice	-	-	0.221
2012	Reduce catches	-	-	0.190
2013	Catches should be reduced by 5%*	< 15.1*	-	0.237
2014	Landings should be reduced by 15%*	< 13.5*	-	0.183
2015	Decrease landings by 2% (20% increased, followed by 20% PA reduction)	< 0.228	-	0.176
2016	Precautionary approach ($\leq 20\%$ increase)	≤ 0.274	-	-
2017	Precautionary approach ($\leq 20\%$ increase)	≤ 0.329	-	-

* Advice prior to 2015 was for flounder in subdivisions 22–32.

**Includes also recreational landings for Estonia.

History of catch and landings

Table 8.3.10.6 Flounder in subdivisions 27 and 29–32. Catch distribution by fleet in 2015 as estimated by ICES.

Total catch (2015)	Commercial landings		Recreational landings	Discards
Unknown	95 % with passive gears	5 % with active gears	Recreational landings are substantial but could not be quantified	Discards are known to take place but could not be quantified
	176 t			

Table 8.3.10.7 Flounder in subdivisions (SDs) 27 and 29–32. History of ICES landings, by area and country. Weights are in tonnes. Zero cells have landings values under 0.5 tonnes.

Year	Country	SD 27	SD 29	SD 30	SD 31	SD 32	Total
1980	Finland*		27	14	1	11	53
	Sweden	20	32				52
	USSR		334			1080	1414
	Total	20	393	14	1	1091	1519
1981	Finland*		67	4		7	78
	Sweden	21	34				55
	USSR		445			1078	1523
	Total	21	546	4	0	1085	1656
1982	Finland*		38	6		6	50
	Sweden	65	3				68
	USSR		615			1121	1736
	Total	65	656	6	0	1127	1854
1983	Finland*		28	7		3	38
	Sweden	212	9				221
	USSR		497			1114	1611
	Total	212	534	7	0	1117	1870
1984	Finland*		27	10		6	43
	Sweden	53	2				55
	USSR		286			1226	1512
	Total	53	315	10	0	1232	1610
1985	Finland*		21	9		7	37
	Sweden	47	2				49
	USSR		265			806	1071
	Total	47	288	9	0	813	1157
1986	Finland*		36	11		5	52
	Sweden	60	3				63
	USSR		281			556	837
	Total	60	320	11	0	561	952
1987	Denmark	1					1
	Finland*		37	18		3	58
	Sweden	51	2				53
	USSR		279			397	676
	Total	52	318	18	0	400	788
1988	Finland*		43	21		5	69
	Sweden	68	3				71
	USSR		257			331	588
	Total	68	303	21	0	336	728
1989	Finland*		39	24		6	69
	Sweden	66	3				69
	USSR		214			214	428
	Total	66	256	24	0	220	566

Year	Country	SD 27	SD 29	SD 30	SD 31	SD 32	Total
1990	Finland*		35	19		4	58
	USSR		144			141	285
	Total	0	179	19	0	145	343
1991	Finland*		53	17		5	75
	Sweden	88					88
	Estonia		135			51	186
	Total	88	188	17	0	56	349
1992	Finland*		48	10		5	63
	Sweden	86	3				89
	Estonia		47			46	93
	Total	86	98	10	0	51	245
1993	Finland*		52	26		5	83
	Sweden	83					83
	Estonia		86			55	141
	Total	83	138	26	0	60	307
1994	Denmark	9					9
	Finland*		47	24		8	79
	Sweden	33	10				43
	Estonia		3			4	7
	Total	42	60	24	0	12	138
1995	Denmark		1				1
	Finland*		54	29		6	89
	Sweden	81					81
	Estonia		52			35	87
	Total	81	107	29	0	41	258
1996	Finland*		47	36		9	92
	Sweden	114					114
	Estonia		99			145	244
	Total	114	146	36	0	154	450
1997	Finland*		35	32		13	80
	Sweden	105					105
	Estonia		96			125	221
	Total	105	131	32	0	138	406
1998	Finland*		36	21		14	71
	Sweden	70					70
	Estonia		79			87	166
	Total	70	115	21	0	101	307
1999	Denmark	0	1				1
	Finland*		43	22	2	9	76
	Sweden	15					15
	Estonia		150			164	314
	Total	15	194	22	2	173	406
2000	Denmark	1					1
	Finland*		34	13	0	9	56
	Sweden	73					73
	Estonia		166			126	292
	Total	74	200	13	0	135	422
2001	Denmark	10					10
	Finland*		28	14	0	7	50
	Sweden	85			3		88
	Estonia		135			220	355
	Total	95	164	14	3	227	503

Year	Country	SD 27	SD 29	SD 30	SD 31	SD 32	Total
2002	Finland*		16	8		11	35
	Sweden	90		5			95
	Estonia		166			226	392
	Total	90	182	13	0	247	523
2003	Denmark	1					1
	Finland*	0	16	9	0	7	31
	Sweden	57					57
	Estonia		156			128	284
	Total	57	172	9	0	135	374
2004	Finland*		13	18	0	4	34
	Sweden	45					45
	Estonia		127			167	294
	Total	45	140	18	0	171	373
2005	Finland*		11	10	0	3	23
	Sweden	47	2	0			49
	Estonia		144			114	258
	Total	47	157	10	0	117	330
2006	Finland*		11	4	0	2	17
	Sweden	33					33
	Estonia		165			129	294
	Total	33	176	4	0	131	344
2007	Finland*		6	1	0	2	9
	Sweden	39	0	0	0		39
	Estonia		110			104	214
	Total	39	116	1	0	107	263
2008	Finland		5	1	0	5	11
	Sweden	49	0	0			49
	Estonia		103			86	189
	Total	49	108	1	0	89	249
2009	Finland		6	1	0	3	10
	Sweden	41	0	0			41
	Estonia		109			102	210
	Total	41	115	1	0	105	262
2010	Finland	0	6	1	0	3	10
	Sweden	36	0	0			36
	Estonia		85			96	180
	Total	36	91	1	0	99	227
2011	Finland	0	5	1	0	2	9
	Sweden	34	0	0	1		35
	Estonia	0	94	0	0	83	177
	Total	34	99	1	1	85	221
2012	Finland		3	0	0	1	5
	Poland		3				3
	Sweden	36	0		0		36
	Estonia		79			67	147
	Total	36	85	0	0	69	190
2013	Finland		3	1	0	1	5
	Poland		3				3
	Sweden	31	0				31
	Estonia		123			75	198
	Total	31	129	1	0	77	237

Year	Country	SD 27	SD 29	SD 30	SD 31	SD 32	Total
2014	Finland		2	0	0	1	4
	Poland		0				
	Sweden	29	0				29
	Estonia		85			65	150
	Total	29	87	0	0	67	183
2015	Finland		3	0	0	1	4
	Poland		0				0
	Sweden	26	0	0			27
	Estonia		81			64	145
	Total	26	85	0	0	64	176

* Finland 1980–2007: Landings from SDs 27 and 28 are included in SD 29, and landings from SD 31 are included in SD 30.

Summary of the assessment

Table 8.3.10.8 Flounder in subdivisions (SDs) 27 and 29–32. Biomass index for the surveys in Muuga Bay (SD 32), Küdema Bay (SD 29), Muskö (SD 27), Kvädöfjärden (SD 27), and the combined index [kg (gillnet station)⁻¹].

Survey	Muuga–Q4* SD 32	Kudema–Q4* SD 29	Kvädöfjärden–Q4* SD 27	Muskö–Q4* SD 27	Combined for SD 27**	Combined SDs 27 and 29–32***
1989			1.05			
1990			1.52			
1991			0.53			
1992			1.75	5.04	3.40	
1993	0.49		1.72	4.98	3.35	
1994	0.20		1.15	1.23	1.19	
1995	0.43		1.08	0.94	1.01	
1996	0.40		0.56	0.17	0.37	
1997	0.47		0.72	0.62	0.67	
1998	0.73		1.14	0.69	0.91	
1999	0.28		0.87	0.20	0.53	
2000	0.25	3.45	1.45	1.09	1.27	2.03
2001	0.65	2.32	1.40	1.11	1.25	1.38
2002	0.17	1.01	1.43	0.56	0.99	0.64
2003	0.30	2.89	0.52	1.10	0.81	1.67
2004	0.47	1.37	0.50	0.87	0.68	0.86
2005	0.39	1.70	0.20	0.53	0.36	1.03
2006	0.42	1.57	0.31	1.02	0.67	1.04
2007	0.10	2.24	0.58	2.51	1.54	1.29
2008	0.11	2.68	1.29	4.44	2.87	1.77
2009	0.36	0.86	0.20	2.20	1.20	0.71
2010	0.14	0.79	0.45	1.04	0.75	0.49
2011	0.24	0.97	0.16	0.50	0.33	0.58
2012	0.13	1.03	0.14	0.48	0.31	0.56
2013	0.13	2.03	0.32	0.95	0.63	1.21
2014	0.09	2.35	0.43	0.98	0.70	1.26
2015	0.07	8.70	0.53	1.32	0.92	4.37

*Biomass prior to 2009 is estimated from numbers and length distribution.

**Arithmetic mean.

***Weighted mean with the respective SD landings.

Sources and references

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