

Sprat (*Sprattus sprattus*) in Division 3.a (Skagerrak and Kattegat)

ICES advice on fishing opportunities

ICES advises that when the precautionary approach is applied, catches from 1 July 2018 to 30 June 2019 should be no more than 7506 tonnes.

Stock development over time

The abundance index has been fluctuating over the time-series, without trend and with high interannual variability. The stock abundance index in 2018 is 136% higher than the average of the four preceding years.

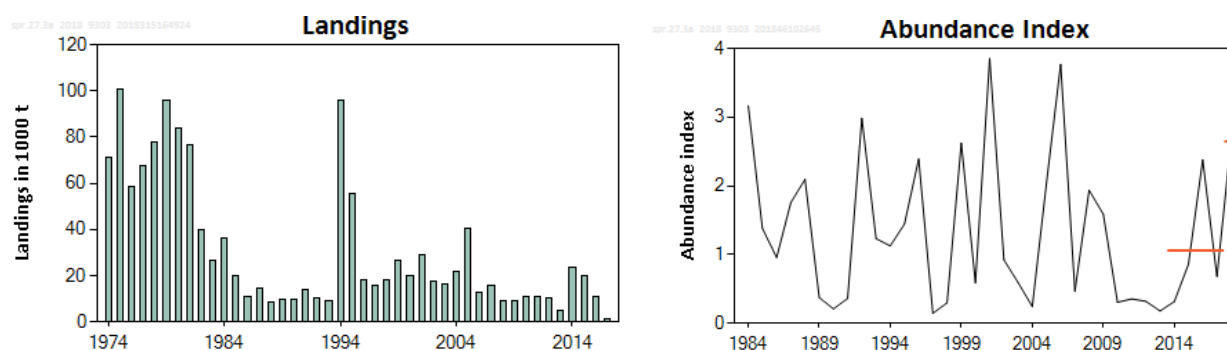


Figure 1 Sprat in Division 3.a. Summary of the stock assessment. The index of the stock size is derived combining three survey indices: the herring acoustic survey (HERAS) in June–July of the previous year, the third quarter International Bottom Trawl Survey (IBTS) of the previous year, and the first quarter IBTS in the current year. The red horizontal lines indicate the average of the four years (2014–2017) preceding 2018, and the 2018 index.

Stock and exploitation status

ICES cannot assess the stock and exploitation status relative to MSY and PA reference points because the reference points are undefined.

Table 1 Sprat in Division 3.a. State of the stock and fishery relative to reference points.

	Fishing pressure				Stock size					
		2015	2016	2017	2016	2017	2018			
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	Qualitative evaluation	↗	↘	↗	Increasing

Catch scenarios

The ICES framework for category 3 stocks was applied (ICES, 2012). The index of stock size is derived from the combination of three surveys (see Table 9), and it is applied as the index of stock abundance. The advice is based on a comparison of the latest index value (index A) with the four preceding values (index B), multiplied by the recent advised catch. The index is estimated to have increased by more than 20% and thus the uncertainty cap was applied. ICES considers that a precautionary reduction

of catches should be implemented every three years unless there is ancillary information clearly indicating that the current level of exploitation is appropriate for the stock. The precautionary buffer was applied in 2017; it is therefore not applied in 2018.

Table 2 Sprat in Division 3.a. The basis for the catch scenarios.*

Index A (2018)		2.49
Index B (2014–2017)		1.05
Index ratio (A/B)		2.36
Uncertainty cap	Applied	1.2
Advised catch for 1 July 2017 to 30 June 2018		6255 tonnes
Discard rate		Negligible
Precautionary buffer	Not applied	
% advice change**		+20%
Catch advice***		7506 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.

** Advice value 2018 relative to advice value 2017.

*** [Advice for the 2017/2018 season] × [uncertainty cap].

Basis of the advice

Table 3 Sprat in Division 3.a. The basis of the advice.

Advice basis	Precautionary approach
Management plan	There is no management plan for sprat in this area.

Quality of the assessment

The advice is based on a combined abundance index from three surveys, used as an indicator of stock size. The uncertainty associated with the index values is not available. There are concerns related to the accuracy of these abundance indices as analyses show that the survey may not cover the entire stock, but the current assessment is considered to reflect stock trends.

Issues relevant for the advice

ICES provides catch advice for the period July to June in the following year. The advice given for this stock since 2012 has not been used as the basis for setting the TAC and catches have frequently exceeded ICES advice.

The stock will be benchmarked in 2018.

Reference points

There are no reference points for this stock.

Basis of the assessment

Table 5 Sprat in Division 3.a. Basis of the assessment and advice.

ICES stock data category	3 (ICES, 2016)
Assessment type	Survey trends (ICES, 2018)
Input data	Commercial catches (international landings), surveys (1st and 3rd quarters IBTS, HERAS). The index is calculated using three surveys and the relative proportions-at-age in the catches (ICES, 2015).
Discards and bycatch	Discards are not included. Discarding is known to have taken place but is now considered negligible.
Indicators	None
Other information	Benchmarked in WKSPRAT (ICES, 2013a). For this short-lived species, in-year (July–June) advice is given.
Working group	Herring Assessment Working Group for the Area South of 62°N (HAWG)

Information from stakeholders

There is no additional available information.

History of the advice, catch, and management

Table 6 Sprat in Division 3.a. ICES advice and official landings. All weights are in tonnes. Values of official landings for the period 1987–2015 are presented to the nearest thousand tonnes.

Year	ICES advice	Predicted catch corresponding to advice	Agreed TAC*	Official landings**	ICES landings
1987	-	-	80000	68000	14000
1988	TAC for “mixed clupeoid” fishery	80000	80000	63000	9000
1989	Lowest possible level; TAC for “mixed clupeoid” fishery	80000	80000	62000	10000
1990	Lowest possible level; TAC for “mixed clupeoid” fishery	60000	65000	43000	10000
1991	Lowest possible level; zero TAC for “mixed clupeoid” fishery	-	50000	44000	14000
1992	No advice for sprat; zero TAC for “mixed clupeoid” fishery	-	50000	40000	11000
1993	No advice for sprat	-	45000	36000	9000
1994	Separate sprat TAC based on recent catches	10000–14000	43000	67000	96000
1995	Separate sprat TAC based on recent catches	9000–14000	43000	45000	56000
1996	No advice	-	43000	28000	18000
1997	Reduce by-catch of herring	-	40000	19000	15800
1998	Limited by restriction on juvenile herring catches	-	40000	26000	18400
1999	Limited by restriction on juvenile herring catches	-	50000	33000	26700
2000	Limited by restriction on juvenile herring catches	-	50000	28000	20100
2001	Limited by restriction on juvenile herring catches	-	50000	43000	29107
2002	Limited by restriction on juvenile herring catches	-	50000	31000	17703
2003	Limited by restriction on juvenile herring catches	-	50000	33000	16479
2004	Limited by restriction on juvenile herring catches	-	50000	32000	21996
2005	Limited by restriction on juvenile herring catches	-	50000	48000	40296
2006	Limited by restriction on juvenile herring catches	-	52000	23000	12507
2007	Limited by restriction on juvenile herring catches	-	52000	21000	15706
2008	Limited by restriction on juvenile herring catches	-	52000	12000	9123
2009	Same advice as last year	-	52000	13000	9208
2010	Same advice as last year	-	52000	13000	10706
2011	No advice ***	-	52000	13000	10731
2012	20% reduction in catches (last 3 years’ average) ***	< 8200	52000	14000	10417

Year	ICES advice	Predicted catch corresponding to advice	Agreed TAC*	Official landings**	ICES landings
2013 [#]	Reduce catch by at least 36% compared to the average catch of the last three years	< 6787	41600	9000	3752
2014 [#]	Wanted catch at the level of the 2013 advice ^{##}	< 6787	33280	24000	18584
2015 [#]	Precautionary approach (20% more than recent advice) ^{##}	< 8144	33280	20000	13276
2016 [#]	Precautionary approach (20% more than recent advice) ^{##}	≤ 9773	33280	11031	8204
2017 [#]	Precautionary approach (36% less than recent advice)	≤ 6255	33280	1413	1418
2018 [#]	Precautionary approach (20% more than recent advice)	≤ 7506	26624		

* TAC applies to all species in “mixed clupeoid” catches for the period 1988–1997.

** Includes other species in “mixed clupeoid” catches.

*** Limited by restriction on juvenile herring catches.

[#] Advice for the period 1 July to 30 June.

^{##} The term “wanted catch” is used to describe fish that would be landed in the absence of the EU landing obligation (EU, 2013). Note that even though the EU landing obligation was in effect in 2016, discards are unknown for this fishery; therefore, advice is for wanted catch.

History of the catch and landings

Table 7 Sprat in Division 3.a. Catch distribution by fleet in 2017 as estimated by ICES.

Catch (2017)	Landings		Discards
	Trawl 82%	Purse-seine 18%	
1418 tonnes	1418 tonnes		negligible

Table 8 Sprat in Division 3.a. History of commercial catch 1996–2017 as estimated by ICES. These figures do not in all cases correspond to the official statistics and cannot be used for management purposes. Catch data prior to 1996 are not presented as they are considered less reliable because of mixed clupeoid catches. With the implementation of an improved monitoring scheme in 1996, catch data after 1996 are considered reliable. Catches are in tonnes from 2001. From 1996 to 2000 the figures are presented to the nearest 100 tonnes.

Year	Skagerrak						Kattegat			Div. 3.a total
	Denmark	Sweden	Norway	Germany	Faroe Islands	Total	Denmark	Sweden	Total	
1996	7000	3500	1000			11500	3400	3100	6500	18000
1997	7000	3100	400			10500	4600	700	5300	15800
1998	3900	5200	1000			10100	7300	1000	8300	18400
1999	6800	6400	200			13400	10400	2900	13300	26700
2000	5100	4300	900			10300	7700	2100	9800	20100
2001	5209	4546	1398			11153	14945	3009	17954	29107
2002	3507	2829	13			6349	9939	1428	11367	17703
2003	2301	2442	836			5579	7882	3058	10940	16479
2004	6207	4451	1100			11758	8200	2038	10238	21996
2005	12074	5674	712			18460	19782	2054	21836	40296
2006	1217	2771	303			4291	6602	1614	8216	12507
2007	1438	2835	1642			5915	8466	1325	9791	15706
2008	254	1500	894			2648	5575	900	6475	9123
2009	1103	1431	672			3206	5786	216	6002	9208
2010	3369	1165	913			5447	5022	237	5259	10706
2011	3494	1758	708			5960	4499	272	4771	10731
2012	1742	1252	481			3476	6692	249	6941	10417
2013	263	660	859			1782	1599	371	1970	3752
2014	12002	1050	257	47		13356	4746	482	5228	18584
2015	7465	950	298			8712	4192	371	4563	13276
2016	3255	768	346		15	4369	3482	338	3820	8204
2017	0	32	218			250	999	169	1168	1418

Summary of the assessment

Table 9 Sprat in Division 3.a. Assessment summary. Weights are in tonnes. ICES estimates of landings were rounded between 1974 and 2000.

Year	Stock size index*	IBTS Q1 Age 1	IBTS Q1 Age 2	IBTS Q3 Age 1	HERAS Age 1	ICES estimated landings
1974						71300
1975						100600
1976						58800
1977						67400
1978						77900
1979						95600
1980						83900
1981						76300
1982						39600
1983						26400
1984	3.166076	5675.453	868.877			36100
1985	1.380817	2157.763	2347.024			19700
1986	0.956598	628.636	1979.238			10800
1987	1.757527	2735.918	2845.931			14000
1988	2.088047	914.468	5262.547			9000
1989	0.373957	413.943	911.276			10000
1990	0.208638	481.022	223.894			10000
1991	0.360365	492.498	726.822	493.724		14000
1992	2.985069	5993.636	598.711	1731.961		11000
1993	1.230977	1589.922	4168.612	309.005		9000
1994	1.125253	1788.861	715.839	9945.215		96000
1995	1.444297	2204.074	1769.532	13295.42		56000
1996	2.388705	199.3	5515.416	130.748		18000
1997	0.145006	232.654	391.234	437.176		15800
1998	0.295901	72.245	1585.222	62.82		18400
1999	2.62065	4534.96	355.242	8082.645		26700
2000	0.587273	292.316	737.798			20100
2001	3.850318	6539.478	1144.344	8501.662		29107
2002	0.922889	1180.52	1035.707	3568.48		17703
2003	0.594313	461.659	1247.151	444.802		16479
2004	0.24247	402.87	49.002	7388.165		21996
2005	2.043981	3314.171	1563.164	12817.78		40296
2006	3.766132	1323.589	11855.76	849.819	61.3	12507
2007	0.466176	774.11	306.631	10899.96	5611.9	15706
2008	1.933472	150.598	981.9	809.366	23.0	9123
2009	1.588595	2686.719	124.463	3258.747	169.5	9208
2010	0.305503	218.659	618.486	2335.444	836.1	10706
2011	0.353702	135.548	2887.269	1413.118	45.4	10731
2012	0.319149	209.485	1531.549	832.37	123.9	10417
2013	0.179	301.264	237.338	356.27	14.5	3752
2014	0.315756	518.178	229.093	30111.5	614.5	18584
2015	0.860154	957.727	206.943	16064.67	840.8	13276
2016	2.379112	4209.697	2217.673	5035.249	5.4	8204
2017	0.66017	1110.195	724.379	2443.699	11	1418
2018	2.486794	4660.733	1099.798			

* Calculated using the age 1 index (IBTS Q1 age 1) and the age 2 index (IBTS Q1 age 2, and IBTS Q3 age 1 and HERAS age 1 in the previous year), weighted by the relative proportions of age 1 and age 2 in the sprat commercial catches (ICES, 2018).

Sources and references

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