

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

ICES stock advice

ICES advises that when the precautionary approach is applied, wanted catches from July 2016 through June 2017 should be no more than 9773 tonnes. ICES cannot quantify the corresponding total catches.

It should be noted that this advice is an in-year advice for the second half of 2016 and first half of 2017 and should not be applied for the calendar year 2017.

Stock development over time

The survey biomass index is higher in 2016 than the long-term average; the large magnitude of the increase is confirmed by all three available surveys. The exploitation status of the stock is unknown.

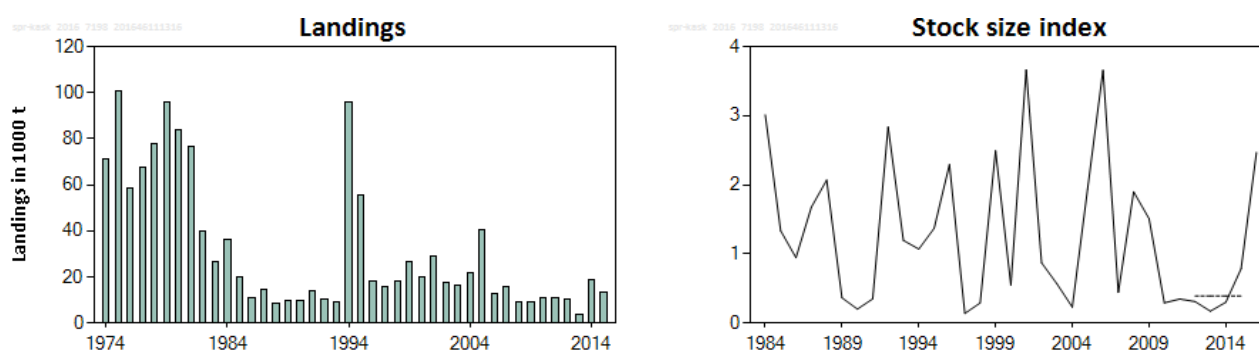


Figure 6.3.50.1 Sprat in Division 3.a. ICES estimates of landings (in thousand tonnes, left panel). The index of stock size is derived from the combination of three survey indices: the herring acoustic survey (HERAS) in June–July, the third quarter International Bottom Trawl Survey (IBTS), and the first quarter IBTS in the following year. The dashed horizontal lines indicate the average of the respective years.

Stock and exploitation status

Table 6.3.50.1 Sprat in Division 3.a. State of the stock and fishery, relative to reference points.

		Fishing pressure			Stock size		
		2013	2014	2015	2014	2015	2016
Maximum Sustainable Yield	F_{MSY}	?	?	?	MSY $B_{trigger}$?	?
Precautionary approach	F_{pa} , F_{lim}	?	?	?	B_{pa} , B_{lim}	?	?
Management plan	F_{MGT}	-	-	-	SSB_{MGT}	-	-
Qualitative evaluation	-	?	?	?	-	↗	↗
				Unknown			Increasing

Catch options

The ICES framework for category 3 stocks was applied (ICES, 2012). The index of stock size is derived from the combination of three surveys: the herring acoustic survey (HERAS) in June–July, the third quarter International Bottom Trawl Survey (IBTS), and the first quarter IBTS in the following year, and it is applied as the index of stock development. 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. The precautionary buffer was not applied because: (1) the index ratio has increased by more than 50%, and (2) it was applied previously (ICES, 2013a).

Table 6.3.50.2 Sprat in Division 3.a. For stocks in ICES categories 3-6, one catch option is possible.

Index _A (2016)		2.60
Index _B (2012–2015)		0.41
Index ratio (I_A/I_B)		6.3
Uncertainty cap	Applied	1.2
Recent advice (2015)		8144 t
Discard rate		Unknown
Precautionary buffer	Not applied	-
Wanted catch advice*		9773 t

* (recent advice x cap)

Basis of the advice

Table 6.3.50.3 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. As sprat has a very patchy distribution, the sampling in the surveys may not be appropriate.

Issues relevant for the advice

In recent years, the advice given for this stock has not been implemented and landings in 2015 exceeded the ICES catch advice by a factor of 1.6.

ICES provides catch advice for the period July to June in the following year. The TAC at present corresponds to the calendar year (January to December). The advice and the TAC year should be consistent.

In 2015 the sprat catch potential was limited as the fishery was closed in accordance to the regulation of the herring bycatch quota in the 1st quarter.

Under the EU landing obligation, which entered into force in 2015, up to 9% inter-species quota transfers are allowed for stocks that are considered to be within safe biological limits (see Article 15 of EU, 2013). In 2015, inter-species quota transfer were not made by the industry (ICES, 2016a). Potential quota transfers in 2016 were not considered in this catch advice. The catch of sprat under the other species' quotas (e.g. herring) under this regulation may result in a risk of overexploitation of sprat in Division 3.a. To achieve F_{MSY} exploitation, any transfer under this regulation should be accounted for in setting the TAC.

In 2016, the EU landing obligation is in effect but discards are unknown for this fishery; therefore, advice is for wanted catch.

Reference points

No reference points are defined for this stock.

Basis of the assessment

Table 6.3.50.4 Sprat in Division 3.a. The basis of the assessment.

ICES stock data category	3 (ICES, 2016b)
Assessment type	Survey trends (ICES, 2016a)
Input data	Commercial catches (international landings), surveys (1st and 3rd Quarter IBTS, HERAS).
Discards and bycatch	Discards are not included. Discards are known to have taken place but are not quantified.
Indicators	None
Other information	Benchmarked in WKSPRAT (ICES, 2013b). For this short-lived stock, 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 available information.

History of advice, catch and management

Table 6.3.50.5 Sprat in Division 3.a. History of ICES advice, the agreed TAC, official and ICES estimates of landings. All weights are in thousand tonnes.

Year	ICES Advice	Predicted catch corresponding to advice	Agreed TAC*	Official Landings**	ICES landings
1987	-	-	80	68	14
1988	TAC for “mixed clupeoid” fishery	801	80	63	9
1989	Lowest possible level; TAC for “mixed clupeoid” fishery	801	80	62	10
1990	Lowest possible level; TAC for “mixed clupeoid” fishery	601	65	43	10
1991	Lowest possible level; Zero TAC for “mixed clupeoid” fishery	-	50	44	14
1992	No advice for sprat; Zero TAC for “mixed clupeoid” fishery	-	50	40	11
1993	No advice for sprat	-	45	36	9
1994	Separate sprat TAC based on recent catches	10–14	43	67	96
1995	Separate sprat TAC based on recent catches	9–14	43	45	56
1996	No advice	-	43	28	18
1997	Reduce by-catch of herring	-	40	19	16
1998	Limited by restriction on juvenile herring catches	-	40	26	18
1999	Limited by restriction on juvenile herring catches	-	50	33	27
2000	Limited by restriction on juvenile herring catches	-	50	28	20
2001	Limited by restriction on juvenile herring catches	-	50	43	29
2002	Limited by restriction on juvenile herring catches	-	50	31	18
2003	Limited by restriction on juvenile herring catches	-	50	33	17
2004	Limited by restriction on juvenile herring catches	-	50	32	20
2005	Limited by restriction on juvenile herring catches	-	50	48	40
2006	Limited by restriction on juvenile herring catches	-	52	23	13
2007	Limited by restriction on juvenile herring catches	-	52	21	16
2008	Limited by restriction on juvenile herring catches	-	52	12	9
2009	Same advice as last year	-	52	13	9
2010	Same advice as last year	-	52	13	11
2011	No advice ***	-	52	13	11
2012	20% Reduction in catches (last 3 years average) ***	< 8.2	52	14	10

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	< 6.787	41.6	9	4
2014 [#]	Wanted catch at the level of the 2013 advice ^{##}	< 6.787	33.3	24	19
2015 [#]	Precautionary approach (20% more than recent advice) ^{##}	≤ 8.144	33.3	20	13
2016 [#]	Precautionary approach (20% more than recent advice) ^{##}	≤ 9.773	33.28		

* TAC applies to all species in “mixed clupeoid” catches for the period 1988–97.

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

*** Limited by restriction on juvenile herring catches.

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

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

History of catch and landings

Table 6.3.50.6 Sprat in Division 3.a. Catch distribution by fleet in 2015 as estimated by ICES.

Total catch (2015)	Landings		Discards
Unknown	Skagerrak 8.7 kt	Kattegat 4.6 kt	Unknown
	13.3 kt		

Table 6.3.50.7 Sprat in Division 3a. History of commercial catch in (thousand tonnes) 1996–2015 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 due to mixed clupeoid catches. After 1996 catch data are considered reliable due to the implementation of an improved monitoring scheme in 1996.

Year	Skagerrak					Kattegat			Div. 3.a total
	Denmark	Sweden	Norway	Germany	Total	Denmark	Sweden	Total	
1996	7.0	3.5	1.0		11.5	3.4	3.1	6.5	18.0
1997	7.0	3.1	0.4		10.5	4.6	0.7	5.3	15.8
1998	3.9	5.2	1.0		10.1	7.3	1.0	8.3	18.4
1999	6.8	6.4	0.2		13.4	10.4	2.9	13.3	26.7
2000	5.1	4.3	0.9		10.3	7.7	2.1	9.8	20.1
2001	5.2	4.5	1.4		11.2	14.9	3.0	18.0	29.1
2002	3.5	2.8	*		6.3	9.9	1.4	11.4	17.7
2003	2.3	2.4	0.8		5.6	7.9	3.1	10.9	16.5
2004	6.2	4.5	1.1		11.8	8.2	2.0	10.2	22.0
2005	12.1	5.7	0.7		18.5	19.8	2.1	21.8	40.3
2006	1.2	2.8	0.3		4.3	6.6	1.6	8.2	12.5
2007	1.4	2.8	1.6		5.9	8.5	1.3	9.8	15.7
2008	0.3	1.5	0.9		2.6	5.6	0.9	6.5	9.1
2009	1.1	1.4	0.7		3.2	5.8	0.2	6.0	9.2
2010	3.4	1.2	0.9		5.4	5.0	0.2	5.3	10.7
2011	3.5	1.8	0.7		6.0	4.5	0.3	4.8	10.7
2012	1.7	1.3	0.5		3.5	6.7	0.2	6.9	10.4
2013	0.3	0.7	0.9		1.9	1.6	0.4	2.0	3.9
2014	12.0	1.1	0.3	*	13.4	4.7	0.5	5.2	18.6
2015	7.5	0.9	0.3		8.7	4.2	0.4	4.6	13.3

* < 0.05 kt

Summary of the assessment

Table 6.3.50.8 Sprat in Division 3.a. Assessment summary with weights (in tonnes). The IBTS and HERAS indices are given by survey year and the anomalies and stock size index by assessment year.

Year	Stock size index*	IBTS Q1 Age 1	IBTS Q1 Age 2	IBTS Q3 Age 1	HERAS Age 1	IBTS Q1 Age 1 anomaly	IBTS Q1 Age 2 anomaly	IBTS Q3 Age 1 anomaly	HERAS Age 1 anomaly	ICES estimated landings (tonnes)
1974										71300
1975										100600
1976										58800
1977										67400
1978										77900
1979										95600
1980										83900
1981										76300
1982										39600
1983										26400
1984	3.012803859	5675.453	868.877			3.481833	0.50094			36100
1985	1.336368124	2157.763	2347.024			1.323766	1.353147			19700
1986	0.945339608	628.636	1979.238			0.385662	1.141104			10800
1987	1.675636929	2735.918	2845.931			1.678458	1.640785			14400
1988	2.067308139	914.468	5262.547			0.561017	3.034054			8700
1989	0.364561201	413.943	911.276			0.25395	0.525385			9800
1990	0.200949234	481.022	223.894			0.295102	0.129083			9700
1991	0.349878787	492.498	726.822	493.724		0.302143	0.41904			14000
1992	2.835941459	5993.636	598.711	1731.961		3.677035	0.345179	0.088335		10500
1993	1.195691462	1589.922	4168.612	309.005		0.975401	2.40336	0.309876		9100
1994	1.069870064	1788.861	715.839	9945.215		1.097448	0.412708	0.055286		96000
1995	1.369317488	2204.074	1769.532	13295.42		1.352177	1.020201	1.779362		55600
1996	2.292181715	199.3	5515.416	130.748		0.122269	3.179843	2.378769		18000
1997	0.138754202	232.654	391.234	437.176		0.142731	0.225561	0.023393		15800
1998	0.291004183	72.245	1585.222	62.82		0.044322	0.91394	0.078218		18400
1999	2.491516178	4534.96	355.242	8082.645		2.782152	0.20481	0.01124		26700
2000	0.550158091	292.316	737.798			0.179333	0.425368	1.446118		20100
2001	3.662731985	6539.478	1144.344	8501.662		4.011903	0.659757			29100
2002	0.871210341	1180.52	1035.707	3568.48		0.724237	0.597124	1.521087		17700
2003	0.567691974	461.659	1247.151	444.802		0.283223	0.719029	0.63846		16500
2004	0.23039108	402.87	49.002	7388.165		0.247157	0.028251	0.079582		22000
2005	1.942497437	3314.171	1563.164	12817.78		2.03321	0.901222	1.321864		40300
2006	3.656566232	1323.589	11855.76	849.819	61.3	0.812008	6.835288	2.29331		12500
2007	0.443303371	774.11	306.631	10899.96	5611.90	0.474909	0.176784	0.152047	0.073477	15700
2008	1.898667338	150.598	981.9	809.366	23	0.09239	0.566102	1.950181	6.728182	9100
2009	1.509864622	2686.719	124.463	3258.747	169.5	1.648275	0.071758	0.144809	0.027575	9200
2010	0.291952886	218.659	618.486	2335.444	836.1	0.134145	0.35658	0.583043	0.203216	10700
2011	0.346563335	135.548	2887.269	1413.118	45.4	0.083157	1.664618	0.417849	1.002411	10700
2012	0.310450607	209.485	1531.549	832.37	123.9	0.128517	0.882995	0.25283	0.054431	10416
2013	0.171016792	301.264	237.338	356.27	14.5	0.184822	0.136834	0.148925	0.148545	3900

Year	Stock size index*	IBTS Q1 Age 1	IBTS Q1 Age 2	IBTS Q3 Age 1	HERAS Age 1	IBTS Q1 Age 1 anomaly	IBTS Q1 Age 2 anomaly	IBTS Q3 Age 1 anomaly	HERAS Age 1 anomaly	ICES estimated landings (tonnes)
2014	0.300242628	518.178	229.093	30111.5	614.5	0.317897	0.132081	0.063743	0.017384	18537
2015	0.785240345	957.727	206.943	16064.67	840.8	0.587556	0.11931	5.387441	0.736732	13276
2016	2.469419966	4208.379	2216.262			2.581798	1.277758	2.874233	1.008046	
Avg	1.261972475	1630.019	1734.493	5589.203	834.1	1	1	1	1	31688

* Calculated from the age 1 indicator (IBTS Q1 age 1) and the age 2 indicator (IBTS Q3 age 2, and IBTS Q3 age 1 and HERAS age 1 in the previous year), taking into account the relative proportions of age 1 and age 2 in the sprat commercial catches (ICES, 2016a). The index is calculated using the comparison of the previous year's combined index with the previous four years' index to calculate the catch multiplier (CM).

Sources and references

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