

6.4.18 Sprat in Subarea IV (North Sea)

In-year advice

State of the stock

The state of the stock is uncertain. Survey trends indicate the stock size has increased from the 1980s and varied around an average level since 1998 with no trend.

Management objectives

There are no explicit management objectives for this stock.

Reference points

No reference points have been defined for this stock.

Single-stock exploitation boundaries

ICES notes that there is no evidence recent catches have created problems for the stock.

There is no basis for specific numerical advice for the TAC in 2009.

Management considerations

The sprat stock in the North Sea is dominated by young fish. The stock size is mostly driven by the recruiting year class. Thus, the fishery in a given year will be dependent on that year's incoming year.

In the forecast table for North Sea herring, industrial fisheries are allocated a by-catch of approx 10 000 t of juvenile herring in 2010. It is important to continue monitoring of by-catch of juvenile herring to ensure compliance with this allocation.

Catches in recent years have been well below the advised and agreed TAC and have decreased because of economic and other reasons.

Impacts of fisheries on the ecosystems

Multispecies investigations have demonstrated that sprat is one of the important prey species in the North Sea ecosystem. The effects of the sprat fishery on other fish species and seabirds are at present unknown.

Factors affecting the fisheries and the stock

Regulations and their effects

To avoid misreporting Norwegian vessels are not allowed to fish in the Norwegian zone until the quota in the EU-zone has been taken. These vessels are not allowed to fish in the 2nd and 3rd quarters in the EU and the Norwegian zone.

Impacts of the environment on the fish stock

The zooplankton community structure that is sustaining the sprat stocks appears to be changing, and there has been a long-term decrease in total zooplankton abundance in the northern North Sea (Reid *et al.*, 2003; Beaugrand, 2003; ICES, 2006a). The implications of the environmental change for sprat are unknown.

Scientific basis

Data and methods

There is currently no analytical assessment for this stock. There is no apparent relation between the survey indices and catch at age data.

A benchmark assessment is scheduled for September 2009.

Uncertainties in assessment and forecast

Application of alternative assessment methods and the use of additional information sources (e.g. acoustic surveys, catch per unit effort) are required to improve our level of understanding and adequately predict the stock development.

Comparison with previous assessment and advice

Previous advice has been based around a relationship between the IBTS Q1 index and catches, resulting in specific numerical advice. Because recent catches have been low due to other factors than stock abundance, the historical relationship between stock size and catch is now considered inappropriate to provide annual quantitative advice..

Sources of information

Beaugrand, G. 2003. Long-term changes in copepod abundance and diversity in the north-east Atlantic in relation to fluctuations in the hydroclimatic environment. *Fisheries Oceanography*, 12: 270-283.

ICES. 2006a. Report of the Study Group on Recruitment Variability in North Sea Planktivorous Fish (SGRECVAP). ICES CM 2006/LRC:03. 82 pp.

ICES 2006b. Herring Assessment Working Group for the Area South of 62°N (HAWG). ICES CM 2006/ACFM:20.

ICES. 2008. Report of the Herring Assessment Working Group for the Area South of 62°N, 11-19 March 2008. ICES CM 2008/ACOM:02.

ICES. 2009. Report of the Herring Assessment Working Group for the Area South of 62°N, 17-25 March 2009. ICES CM 2009/ACOM:03.

Reid, P. C., Edwards, M., Beaugrand, G., Skogen, M., and Stevens, D. 2003. Periodic changes in the zooplankton of the North Sea during the twentieth century linked to oceanic inflow. *Fisheries Oceanography*, 12: 260–269.

Table 6.4.18.1 Sprat in Subarea IV (North Sea). Single stock exploitation boundaries (advice), management and catch.

Year	ICES Advice	Predicted catch corresp. to advice	Agreed TAC ¹	Official Catches	ICES Catch
1987	Catch at lowest practical level	0	57	78	32
1988	TAC < recent catches, preferably zero	0	57	93	87
1989	No advice	-	59	50	63
1990	No advice	-	59	49	73
1991	No advice	-	55	92	112
1992	No advice	-	55	72	124
1993	No advice	-	114	127	200
1994	No advice for sprat; maintain by catch regulations	-	114	184	320
1995	No advice	-	175	190	357
1996	No advice	-	200	141	136
1997	Enforce by-catch regulations	-	150	123	103
1998	Limited by restrictions on juvenile herring	-	150	175	163
1999	Limited by restrictions on juvenile herring	-	225	167	188
2000	Limited by restrictions on juvenile herring	-	225	208	196
2001	Catch prediction	225	225	180	170
2002	Catch prediction	160	232	167	144
2003	Catch prediction	175	257		177
2004	Catch prediction	171	257		194
2005	Catch prediction	244	257		206
2006	Catch predictions	<<250	175		114
2007	Catch prediction	< 195	175		84
2008	Catch prediction	< 170	170		61
2009	No advice	-	170 ²		
2010	Advice will be provided in 2010				

Weights in '000 t.

¹EU zone.

²Provisional.

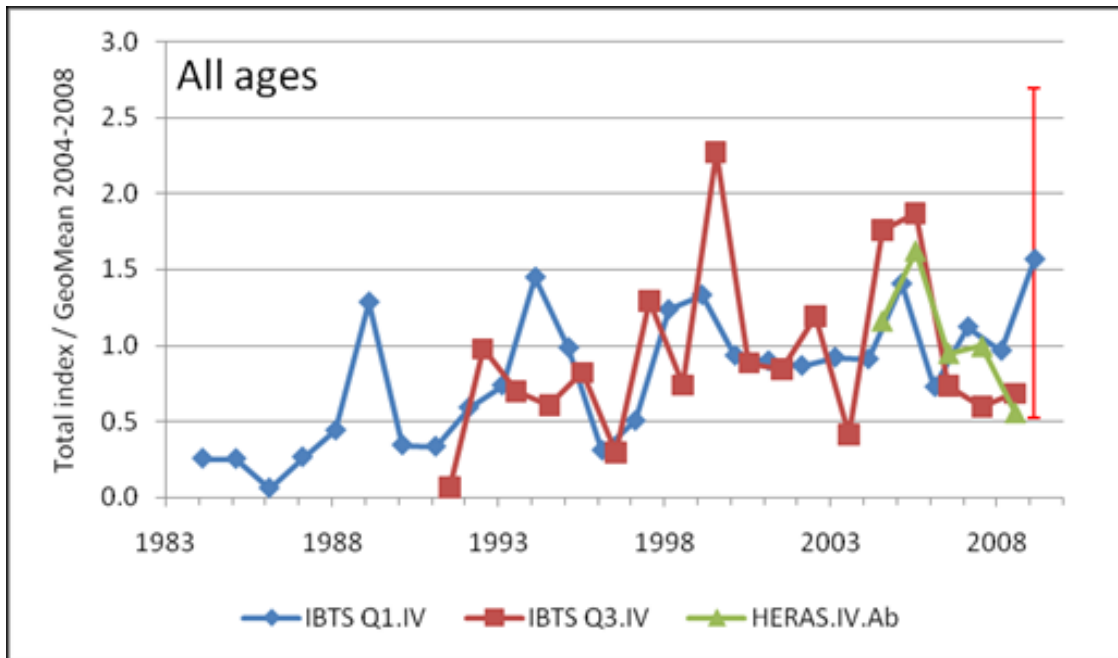


Figure 6.4.18.1 North Sea sprat. Normalised IBTS Q1, Quarter 3 and HERAS acoustic survey indices for North Sea sprat. All indices are normalised by their Geometric mean over the common period from 2004-2008. For reference, the 95% confidence intervals on the 2009 IBTS Q1 index are shown, as estimated from bootstrapping performed by the ICES DATRAS database.

Table 6.4.18.2 Sprat in Subarea IV (North Sea) Catches ('000 t). See ICES CM 2006b/ACFM:20. for earlier catch data. Catch in fjords of western Norway excluded. (Data provided by Working Group members except where indicated). These figures do not in all cases correspond to the official statistics and cannot be used for management purposes. The IVb catches for 2000-2007 divided by IVbW and IVE can be found in ICES CM 2008/ACOM:02,

Country	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Division IVa													
Denmark	0.3			0.7	0.1	1.1		*		*	0.8	*	
Sweden					0.1								
Total				0.7	0.2	1.1		*		*	0.8	*	
Division IVb													
Denmark	76.5	93.1	119.3	160.3	162.9	143.9	126.1	152.9	175.9	204.0	79.5	55.5	51.4
Norway	52.8	3.1	15.3	13.1	0.9	5.9	*		0.1		0.8	3.7	1.3
Sweden	0.5		1.7	2.1		1.4				*			
UK(Scotland)				1.4								0.1	
Total		96.2	136.3	176.9	163.8	151.2	126.1	152.9	176.0	204.1	80.3	59.3	52.7
Division IVc													
Denmark	3.9	5.7	11.8	3.3	28.2	13.1	14.8	22.3	16.8	2.0	23.8	20.6	8.1
Netherlands				0.2									
Norway		0.1	16.0	5.7	1.8	3.6					9.0	2.9	
UK(Engl. & Wales)	2.6	1.4	0.2	1.6	2.0	2.0	1.6	1.3	1.5	1.6	0.5	0.3	*
UK(Scotland)													0.2
Total		7.2	28.0	10.8	32.0	18.7	16.4	23.6	18.3	3.6	33.4	23.8	8.4
Total North Sea													
Denmark	80.7	98.8	131.1	164.3	191.1	157.1	142.0	175.2	192.7	206.0	103.4	76.8	59.6
Netherlands				0.2									
Norway	52.8	3.2	31.3	18.8	2.7	9.5	*		0.1		9.8	6.7	1.3
Sweden	0.5		1.7	2.1		1.5				*			
UK(Engl. & Wales)	2.6	1.4	0.2	1.6	2.0	2.0	1.6	1.3	1.5	1.6	0.5	0.3	*
UK(Scotland)				1.4								0.1	0.2
Total	136.6	103.4	164.3	188.4	195.9	170.2	143.6	176.5	194.3	207.7	113.7	83.8	61.1

* < 50 t