

7.3.26 Sardine (*Sardina pilchardus*) in Divisions VIIIa,b,d and Subarea VII (Bay of Biscay, Southern Celtic Seas and English Channel)

ICES stock advice

ICES advises that when the precautionary approach is applied, catches should be no more than 33 065 tonnes in each of the years 2016 and 2017. All catches are assumed to be landed.

Stock development over time

The combined stock size indicator index for Divisions VIIIa,b,d, shows an increasing trend over the last five years. Indications of Recruitment, age 1 from the PELGAS survey in Divisions VIIIa,b,d, show that 2013 and 2015 Recruitments are the highest in the time-series (Figure 7.6.23.1, bottom right panel). There is currently no biomass or recruitment information for Subarea VII. Current harvest rate is close to the long-term mean and is likely to be close to F_{MSY} (Figure 7.6.23.1, bottom left panel).

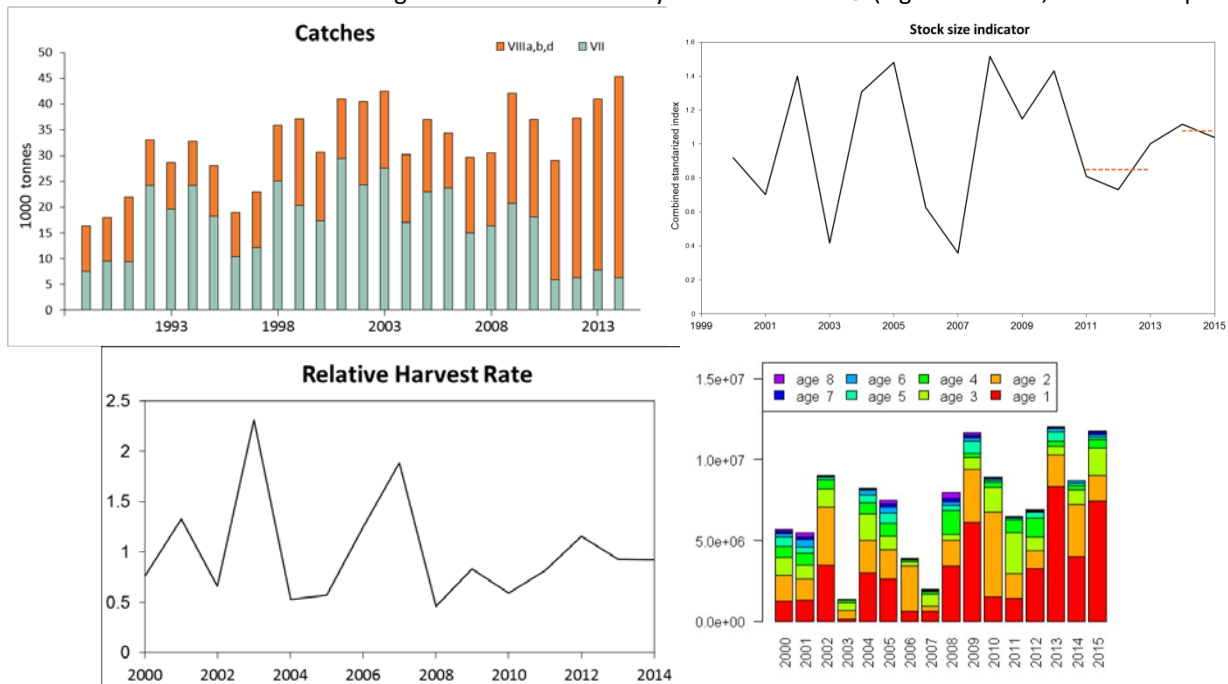


Figure 7.3.26.1 Sardine in Divisions VIIIa,b,d and Subarea VII. Top left panel: ICES estimates of catch (thousand tonnes). Top right panel: trends in the combined stock size indicator index. Bottom left panel: relative harvest rate. Bottom right panel: age structure from the PELGAS (acoustic) survey.

Stock and exploitation status

Table 7.3.26.1 Sardine in Divisions VIIIa,b,d and Subarea VII. State of the stock and fishery relative to reference points.

		Fishing pressure			Stock size				
		2012	2013	2014	2013	2014	2015		
Maximum Sustainable Yield	F_{MSY}	?	?	?	MSY	?	?	?	Undefined
Precautionary approach	F_{pa}, F_{lim}	?	?	?	B_{pa}, B_{lim}	?	?	?	Undefined
Management Plan	F_{MGT}	-	-	-	SSB_{MGT}	-	-	-	Not applicable
Qualitative evaluation	-	✓	✓	✓	-	↗	↗	→	Stable

Catch options

The ICES framework for category 3 stocks was applied (ICES 2012). The PELGAS and BIOMAN indices were used as a combined survey index of stock development (the annual average of the two indices standardized by their long-term means). 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 combined survey index is estimated to have increased by more than 20% and thus the uncertainty cap is applied. The stock status relative to possible reference points is unknown. The exploitation on the stock is considered to be stable and close to F_{MSY} (Figure 7.3.26.1, bottom left panel: relative harvest rate). Therefore the precautionary buffer is not applied to the catch advice. Discards are negligible.

Table 7.3.26.2.2. Sardine in Divisions VIIIa,b,d and Subarea VII. For stocks in ICES data categories 3–6, one catch option is provided.

Index A (2014, 2015)		1.08
Index B (2011, 2012, 2013)		0.85
Index ratio (A/B)		1.27
Uncertainty cap	Applied	1.2
Recent advised catch for 2015		27 554 t
Discard rate		Negligible
Precautionary buffer	Not applied	-
Catch advice*		33 065 t

* (recent advised catch x cap)

Basis of the advice

Table 7.3.26.3 Sardine in Divisions VIIIa,b,d and Subarea VII. The basis of the advice.

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

Quality of the assessment

The advice is based on biomass and egg abundance indices from two surveys, used as a combined index of stock size based solely on information from the Bay of Biscay. The lack of catch composition and survey information in the Celtic seas and the English Channel impairs the possibility of performing an analytical assessment for the whole area.

Issues relevant for the advice

An exploratory analysis shows that fishing mortality is just above natural mortality and it is likely to be close to F_{MSY} (ICES, 2015a).

Reference points

No reference points are defined for this stock.

Basis of the assessment

Table 7.3.26.4 Sardine in Divisions VIIIa,b,d and Subarea VII. The basis of the assessment.

ICES stock data category	3.2. (ICES, 2015b)
Assessment type	Survey trends-based assessment (ICES, 2015a).
Input data	Commercial catches (international landings for Subarea VII and Divisions VIIIa,b,d; ages and length frequencies from catch sampling in Divisions VIIIa,b,d only); two survey indices in Divisions VIIIa,b,d (PELGAS (acoustic biomass), BIOMAN (egg counts)) and age composition.
Discards and bycatch	Not included and are considered negligible.
Indicators	None.
Other information	Benchmarked in February 2013 (WKPELA ; ICES, 2013) and is planned to be benchmarked in 2017.
Working group	Working Group on Southern Horse Mackerel, Anchovy, and Sardine (WGHANSA)

Information from stakeholders

There is no available information.

History of advice, catch and management

Table 7.3.26.5 Sardine in Divisions VIIIa,b,d and Subarea VII. History of ICES advice, the agreed TAC, and ICES estimates of landings. Weights in thousand tonnes.

Year	ICES Advice	Predicted catch corresp. to advice	Official landings	ICES catches
2010	None		37.1	32.2
2011	None		30.9	30.9
2012	None		37.2	37.2
2013	None		41.0	41.0
2014	20% Reduction of catches (average of last 3 years)	<27.554	45.3	45.3
2015	No new advice, same as for 2014	<27.554		
2016	Precautionary approach (increase catches by no more than 20%)	≤33.065		
2017	Precautionary approach (same advised catch value as given for 2016)	≤33.065		

History of catch and landings

Table 7.3.26.6 Sardine in Divisions VIIIa,b,d and Subarea VII. Catch distribution by fleet in 2014 as estimated by ICES.

Total catch (2014)	Landings			Discards
45.3 kt	80% purse-seiners (VIIIa,b,d)	4% pelagic trawl (VIIIa,b,d)	16% all fleets Subarea VII	Negligible
	45.3kt			

Table 7.3.26.7 Sardine in Divisions VIIIa,b,d and Subarea VII. History of ICES estimates of catch presented by area and country. Weights in tonnes.

Year	Subarea VII									Divisions VIIIa,b,d							Total catch
	France	United Kingdom	Netherlands	Ireland	Germany	Denmark	Lithuania	Spain	France	Spain	Netherlands	Ireland	United Kingdom	Denmark	Germany	Lithuania	
1989	1219	1660	11			4667			8811								16368
1990	1128	2078	6		107	6113			8543								17975
1991	1963	2952			8	4462			12482	35							21902
1992	1777	4493	41		4	17843			8847	43							33048
1993	1135	4917	109			13395			8805	45				308			28714
1994	1285	2081	20		2	20804			8604								32796
1995	1282	7133	107		66	9603			9877		24						28092
1996	1563	7304	48			1396			8604								18915
1997	3346	7280	411		13	1124			10706		26						22906
1998	1974	6873	1647	192	100	14316			9778	873					68		35821
1999	3502	4815	5166	3195	146	3490		8	14361	2384				124	11		37202
2000	1667	4353	6586	2577	436	1682			11301	1989	34				38		30663
2001	9625	10375	6608	2427	454				10982	3720	333				135		40939
2002	8642	7858	1905	5728	224			10	12963	2881	23	19	276		4		40533
2003	12546	4358	6897	3765	25				10631	2408	68	1700	68				42466
2004	8882	2681	2187	2444	109	742			9971	1853	6	1401					30276
2005	15363	3631	2231	1435	274			5	11787	1203	1	974			54		36958
2006	17724	1925	2287	1257	481		17	2	9810	839	2	49		12	78	5	34489
2007	11217	2654	1106	14		4			13966	706				48			29715
2008	10491	3470	2073	236	42	54			12111	1989				1	39		30507
2009	14781	2541	3406	33					20743	602							42106
2010	8725	2521	6645	25	106	13			16087	2948							37070
2011	707	3604	513	983	22	3			17925*	5283*	5						29045
2012	444	4423	1439	8					15952*	14948*							37214
2013	1768	3722	1804	236	214	40			20066	12423	445		252				40971
2014	1202	3889	249		18	953			17706	21295							45312

* ICES estimates for 2011 and 2012.

Summary of the assessment

Table 7.3.26.10 Sardine in Divisions VIIIa,b,d and Subarea VII . Assessment summary with weights (in thousand tonnes). Abundance in billions.

Year	Biomass, PELGAS	Error estimation(%)	Egg abundance, BIOMAN	Combined index	Relative Harvest Rate
1999			1.1		
2000	376.442	16.6	5	0.91793889	0.759782509
2001	383.515	23.4	2.2	0.702740705	1.325044728
2002	563.88	17.6	7.8	1.399930748	0.658552821
2003	111.234	48.2	3.3	0.41763016	2.312799153
2004	496.371	24.2	7.8	1.307334576	0.526744692
2005	435.287	27.0	11	1.480579125	0.567760609
2006	234.128	23.4	3.8	0.62635372	1.25241817
2007	126.237	31.8	2.3	0.357887173	1.88850448
2008	460.727	27.8	11	1.515472941	0.457867412
2009	479.684	19.6	6.1	1.147900297	0.834311512
2010	457.081	18.2	10	1.430150757	0.589561594
2011	338.468	14.0	4.3	0.809628386	0.815969776
2012	205.627	15.	5.6	0.731839712	1.156588313
2013	407.74	14.8	5.5	1.001028253	0.930933475
2014	339.607	53.1	8.1	1.116411536	0.923160757
2015	416.5241	12.3	5.8	1.037173018	

Sources and references

ICES. 2012. ICES Implementation of Advice for Data-limited Stocks in 2012 in its 2012 Advice. ICES CM 2012/ACOM 68. 42 pp.

ICES. 2013. Report of the Benchmark Workshop on Pelagic Stocks (WKPELA 2013), 4–8 February 2013, Copenhagen, Denmark. ICES CM 2013/ACOM:46.

ICES. 2015a. Working Group on Southern Horse Mackerel, Anchovy and Sardine (WGHANSA), Lisbon, Portugal, 24–29 June 2015, ICES CM 2015/ACOM:16.

ICES. 2015b. Advice basis. *In* Report of the ICES Advisory Committee, 2015. ICES Advice 2015, Book 1, Section 1.2.