

Sardine (*Sardina pilchardus*) in Subarea 7 (southern Celtic Seas and the English Channel)

ICES stock advice

ICES advises that when the precautionary approach is applied, catches in 2024 should be no more than 13 459 tonnes.

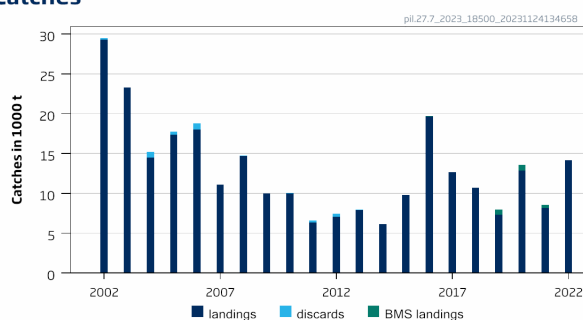
ICES advice on conservation aspects

ICES has not identified any conservation aspects.

Stock development over time

ICES cannot assess the stock and exploitation status relative to MSY reference points because these are undefined. Stock size is above I_{stat} (index trigger value for biomass safeguard, a precautionary approach reference point).

Catches



Biomass Index

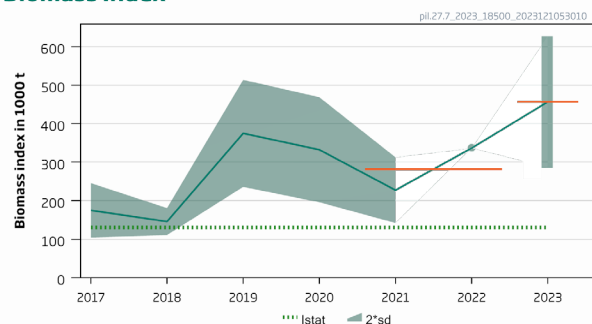


Figure 1 Sardine in Subarea 7. Left: Catches disaggregated by category since 2002, including below minimum size (BMS) landings. Right: Biomass index from the PELTIC acoustic survey, with 95% confidence interval (shaded area; the calculation of the 2022 value did not allow to produce a confidence interval). The horizontal orange lines indicate the biomass index for 2023 and the average for 2021–2022.

Conservation status

ICES is not aware of any information on stock-/species-specific conservation status.

Catch scenarios

ICES framework for category 3 short-lived stocks using the 1-over-2 rule was applied (ICES, 2020a). The biomass estimate for the total area of the PELTIC acoustic survey was used as the biomass index. The advice is based on the ratio between the last index value (index A) and the average of the two preceding values (index B), multiplied by last year's advice. The index is estimated to have increased by 62% and thus the uncertainty cap was not applied. The 1-over-2 rule with an uncertainty cap of 80% and a biomass safeguard is considered precautionary and as such a PA buffer was not considered (ICES, 2012, 2020a, 2020b). Discarding is considered negligible.

Table 1 Sardine in Subarea 7. The basis for the catch scenarios*.

Index A (2023)		456 482 tonnes
Index B (2021–2022)		281 711 tonnes
Index ratio (A/B)		1.62
Biomass safeguard (I_{stat})		Not applied
Uncertainty cap	Not applied	-
Advised catch for 2023		8 306 tonnes
Discard rate		Negligible
Catch advice 2024**		13 459 tonnes
% advice change		+62 %

* 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 for 2023] × [index ratio]

The advice for 2024 is higher than the advice for 2023 because of an increase in stock size.

Basis of the advice

Table 2 Sardine in Subarea 7. The basis of the advice.

Advice basis	Precautionary approach
Management plan	ICES is not aware of any agreed precautionary management plan for sardine in this area

Quality of the assessment

The PELTIC survey in October 2022 only sampled in approximately 30% of the total area used for the estimation of sardine biomass because of technical reasons. Based on past surveys, approximately 50% of the sardine in the total survey area are usually found in the area surveyed in 2022. An estimate of the biomass in the total area was obtained by raising the estimate from the area covered in 2022 to the total area based on historical proportions. This estimate utilized the best information available to the working group and is considered to be representative of the stock size.

The October 2023 PELTIC cruise surveyed the total area with full coverage.

Issues relevant for the advice

French catches from ICES rectangles 25E5 and 25E4 (Subarea 7) have been traditionally allocated to Division 8.a, as they occur in the boundary between divisions and are considered to be more closely associated with the sardine stock in divisions 8.a–b and 8.d. In 2022, the catch reallocated to Subarea 8 was 10 300 tonnes, which constitutes 73% of the catches in the rest of Subarea 7. The boundary between sardine stocks in subareas 7 and 8 is unclear, and further studies are needed to support this procedure to allocate catches. Similarly, little is known about the extension of the stock in the North Sea, where sardine is also present.

Reference points

Table 3 Sardine in Subarea 7. Reference points, values, and their technical basis.

Framework	Reference point	Value	Technical basis	Source
MSY approach	MSY $B_{trigger}$	Not defined		
	F_{MSY}	Not defined		
Precautionary approach	I_{stat}	120 751 tonnes	Geomean(I_{hist}) × exp(−1.645 × sd(log(I_{hist}))); I_{hist} is the available historical series of the abundance index (2017–2021)	ICES (2022)
	B_{lim} , B_{pa}	Not defined		
	F_{lim}	Not defined		
	F_{pa}	Not defined		
Management plan	SSB _{mgt}	Not defined		
	F_{mgt}	Not defined		

Basis of the assessment

Table 4 Sardine in Subarea 7. The basis of the assessment.

ICES stock data category	3 (ICES, 2023a)
Assessment type	Survey trends-based assessment
Input data	Commercial catch, biomass estimates from the total area of the acoustic survey PELTIC [A6259]
Discards and bycatch	Discards were not included as discarding is considered negligible
Indicators	None
Other information	This stock was benchmarked in 2021 (WKWEST; ICES, 2021)
Working group	Working Group on Southern Horse Mackerel, Anchovy, and Sardine (WGHANSA)

History of the advice, catch, and management

Table 5a Sardine in divisions 8.a–b and 8.d, and Subarea 7*. ICES advice and official landings. No TAC is set for this stock. All weights are in tonnes.

Year	ICES advice	Catch corresponding to advice	Official landings	ICES landings
2010	None		32592	30287
2011	None		28847	28840
2012	None		37214	37214
2013	None		40971	40130
2014	20% reduction of catches (average of last three years)	< 27554	45312	42015
2015	No new advice, same as for 2014	< 27554	36928	38070
2016	Precautionary approach (increase catches by no more than 20%)	≤ 33065	47324	49161
2017	Precautionary approach (same advised catch value as given for 2016)	≤ 33065	57889	43101

* Prior to 2017, sardine in this area was assessed as a single stock combining Subarea 7 (English Channel and Celtic Sea) and divisions 8.a–b and 8.d (Bay of Biscay).

Table 5b Sardine in Subarea 7. ICES advice and official landings. No TAC is set for this stock. All weights are in tonnes.

Year	ICES advice	Catch corresponding to advice	Official landings*	ICES landings
2018	Precautionary approach: 20% reduction in catch relative to the 2014–2016 average	Value not quantified	17462	10671
2019	Precautionary approach: same advice as for 2018	Value not quantified	15214	7937
2020	No catch advice	Value not quantified	26481	13553
2021	No catch advice	Value not quantified	20239	8524
2022	Precautionary approach	≤ 6 906	20738	14178
2023	Precautionary approach	≤ 8 306		
2024	Precautionary approach	≤ 13 459		

*Official landings include some catches from ICES rectangles 25E5 and 25E4, which are not part of the pil.27.7 stock. Sardine landings in these rectangles may be greater than for the entirety of the pil.27.7 stock.

History of the catch and landings

Table 6 Sardine in Subarea 7. Catch distribution by fleet in 2022 as estimated by ICES.

Catch	Landings			Discards
	Pelagic trawl	Purse-seine	Other gears	
14 178 tonnes	40 %	53 % *	7 %	Negligible
	14 178 tonnes			

* Landings from UK erroneously reported as gillnets were allocated to purse-seine.

Table 7 Sardine in Subarea 7. History of reported landings; values are presented for each country participating in the fishery. All weights are in tonnes *.

Year	Rectangles 25E5, 25E4 (Subarea 7)	Subarea 7, excluding rectangles 25E5, 25E4								
	France	Belgium	Denmark	France	Germany	Ireland	Lithuania	Netherlands	Spain	United Kingdom
1970	n/a	0	0	1014	2112	0	0	38	0	890
1971	n/a	0	0	1350	3362	0	0	108	0	1242
1972	n/a	0	0	1297	1553	0	0	54	0	2190
1973	n/a	0	0	1603	2577	0	0	17	0	2375
1974	n/a	0	0	833	1826	0	0	15	0	1280
1975	n/a	0	0	678	4043	0	0	561	0	6
1976	n/a	0	0	1284	2346	0	0	127	0	3
1977	n/a	0	0	3544	183	0	0	623	0	10778
1978	n/a	0	0	2773	1463	0	0	1523	0	549
1979	n/a	0	0	3247	1188	0	0	1321	0	46
1980	n/a	0	0	3573	79	0	0	1131	0	753
1981	n/a	0	4471	1125	0	0	0	553	0	35
1982	n/a	0	1311	908	0	0	0	928	0	141
1983	n/a	0	4743	802	19	0	0	795	0	6
1984	n/a	0	1210	817	0	0	0	0	0	1
1985	n/a	0	3111	2089	0	0	0	0	0	20
1986	n/a	0	3602	2570	0	0	0	0	0	30
1987	n/a	0	1573	965	0	0	0	0	0	124
1988	n/a	0	3234	2586	0	0	0	0	0	0
1989	n/a	0	4667	1219	0	0	0	11	0	1660
1990	n/a	0	6113	1128	107	0	0	6	0	2078
1991	n/a	0	4462	1963	8	0	0	0	0	2952
1992	n/a	0	17843	1777	4	0	0	41	0	4493
1993	n/a	0	13395	1135	0	0	0	109	0	4917
1994	n/a	0	20804	1285	2	0	0	20	0	2081
1995	n/a	0	9603	1282	66	0	0	107	0	7133
1996	n/a	0	1396	1563	0	0	0	48	0	7304
1997	n/a	0	1124	3346	13	0	0	411	0	7280
1998	n/a	0	14316	1974	100	192	0	1647	0	6873
1999	n/a	0	3490	119	146	2375	0	5166	8	4815
2000	1324	0	1682	4074	436	354	0	6586	0	4353
2001	1281	0	0	8589	454	1060	0	6609	0	10375
2002	1872	0	0	7977	130	11417	0	1905	0	6636
2003	5685	0	0	8186	13	4030	0	6897	0	4150
2004	2700	0	0	7807	60	2046	0	2187	0	2389
2005	4487	0	0	10605	140	922	0	2231	0	3457
2006	5032	0	0	11120	246	2416	0	2287	0	1925
2007	2829	0	4	7315	0	28	0	1106	0	2574
2008	3033	0	53	8562	43	473	0	2073	0	3306
2009	4780	0	0	3918	0	65	0	3406	0	2568
2010	6608	0	13	706	62	50	0	6645	0	2540
2011	5456	0	3	237	5	1966	0	513	0	3614
2012	5098	0	40	372	587	16	0	1637	0	4423
2013	6901	0	40	1703	214	473	0	1739	0	3722
2014	4737	0	953	1100	18	0	0	193	0	3893
2015	2569	0	1011	1208	1551	555	0	1171	0	4301
2016	8610	1	2286	925	1941	464	1	4697	0	9389
2017	6790	0	2460	820	1475	329	0	0	0	7596

Year	Rectangles 25E5, 25E4 (Subarea 7)	Subarea 7, excluding rectangles 25E5, 25E4								
	France	Belgium	Denmark	France	Germany	Ireland	Lithuania	Netherlands	Spain	United Kingdom
2018	7034	1	263	606	758	89	0	811	0	8143
2019	6255	0	0	671	53	33	40	90	0	7049
2020	12034	0	3217	592	0	58	0	185	0	9500
2021	12409	0	89	743	0	509	0	111	0	7074
2022	10300	1	3151	1393	2	993	0	89	0	8549

n/a = not available.

* Only catches from 2002 to 2019 were revised by all countries for the benchmark in 2021. Therefore, catches prior 2002 are excluded from Figure 1.

Summary of the assessment

Table 8 Sardine in Subarea 7. Assessment summary. The 'High' and 'Low' columns represent the 95% confidence intervals of the biomass index. All values are in tonnes.

Year	Biomass index (total area)			Landings	Discards	BMS landing
	Low	Median	High			
2002				29287	190	
2003				23276	10	
2004				14488	737	
2005				17354	377	
2006				17994	785	
2007				11108	15	
2008				14675	51	
2009				9957	40	
2010				10017	4	
2011				6337	275	
2012				7075	342	
2013				7891	91	
2014				6157	0	
2015				9783		15
2016				19634		68
2017	103811	174637	245464	12662	28	18
2018	110408	145514	180620	10670	16	1
2019	235510	374617	513724	7317	111	620
2020	195609	332098	468587	12852		701
2021	141654	227117	312580	8155		370
2022	**	336306*	**	14178		
2023	285757	456482	627206			

* Raised estimate.

** No uncertainty estimates were available.

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. <https://doi.org/10.17895/ices.pub.5322>
- ICES. 2020a. Tenth Workshop on the Development of Quantitative Assessment Methodologies based on LIFE-history traits, exploitation characteristics, and other relevant parameters for data-limited stocks (WKLIFE X). ICES Scientific Reports. 2:98. 72 pp. <http://doi.org/10.17895/ices.pub.5985>
- ICES. 2020b. Workshop on Data-limited Stocks of Short-Lived Species (WKDLSSLS2). ICES Scientific Reports. 2:99. 119 pp. <http://doi.org/10.17895/ices.pub.5984>
- ICES. 2021. Benchmark Workshop on selected stocks in the Western Waters in 2021 (WKWEST). ICES Scientific Reports. 3:31. 504 pp. <https://doi.org/10.17895/ices.pub.8137>
- Sardine (*Sardina pilchardus*) in Subarea 7 (Southern Celtic Seas, English Channel). *In* Report of the ICES Advisory Committee, 2022. ICES Advice 2022, pil.27.7, <https://doi.org/10.17895/ices.advice.19772449>
- ICES. 2023a. Advice on fishing opportunities. *In* Report of the ICES Advisory Committee, 2023. ICES Advice 2023, section 1.1.1. <https://doi.org/10.17895/ices.advice.22240624>
- ICES. 2023b. Working Group on Southern Horse Mackerel, Anchovy and Sardine (WGHANSA). ICES Scientific Reports. 5:67. <https://doi.org/10.17895/ices.pub.23507922>

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