

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

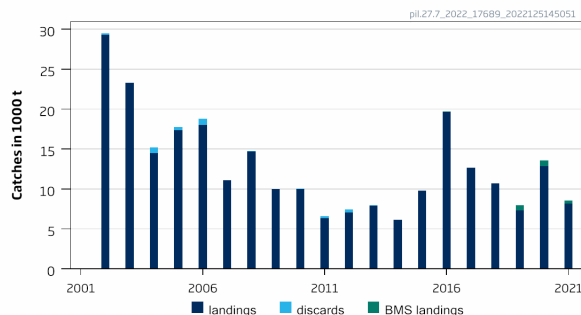
ICES stock advice

ICES advises that when the precautionary approach is applied, catches in 2023 should be no more than 8306 tonnes.

Stock development over time

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

Catches



Biomass Index

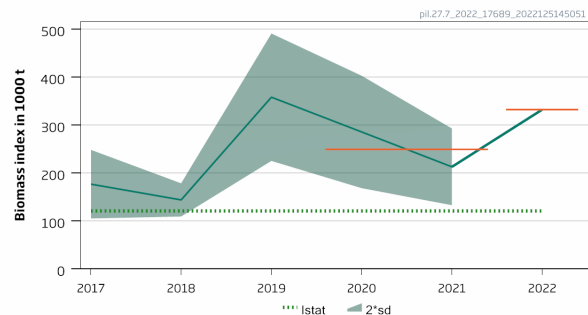


Figure 1 Sardine in Subarea 7. Catches disaggregated by category since 2002, including below minimum size (BMS) landings. The biomass was estimated from the total area of the acoustic survey PELTIC, and the shaded areas on the biomass plot represent 95% confidence intervals (the calculation of the PELTIC survey [A6259] index in 2022 did not allow for confidence intervals). The orange horizontal lines indicate the biomass index for 2022 and the average for 2020–2021.

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 20% 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 (2022)		336 306 tonnes
Index B (2020–2021)		279 607 tonnes
Index ratio (A/B)		1.20
Biomass safeguard (I_{stat})		Not applicable
Uncertainty cap	Not applied	-
Advised catch for 2022		6 906 tonnes
Discard rate		Negligible
Catch advice 2023**		8 306 tonnes
% advice change		+20 %

* 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 2022] × [index ratio]

The advice for 2023 is higher than the advice for 2022 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 covered 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.

Issues relevant for the advice

The 1-over-2 rule performs the best when there is no time lag between the survey producing the biomass estimate and the TAC implementation (ICES, 2020c). This is especially important for short-lived species, as part of the observed stock will not be available for the fishery when there is a large lag in time. The PELTIC survey is conducted in October, and the biomass estimate is already incorporated in the catch advice for the following year, with a time lag of only two months.

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 2021 the catches reallocated were larger than the remaining catches in 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.

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}) \times $\exp(-1.645 \times sd(\log(I_{hist}))$); I_{hist} is the available historical series of the abundance index (2017–2021)	ICES (2022a)
	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, 2022b)
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	20368	8524
2022	Precautionary approach	≤ 6 906		
2023	Precautionary approach	≤ 8 306		

*Official landings include 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 2021 as estimated by ICES.

Catch	Landings				Discards
	Pelagic trawl 18 %	Purse-seine 44 %	Gillnet 29%	Other gears 9 %	
8524 tonnes	8524 tonnes				Negligible

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	France**	United Kingdom	Netherlands	Ireland	Germany	Denmark	Lithuania	Belgium	Spain
1970	1014	890	38	0	2112	0	0	0	0
1971	1350	1242	108	0	3362	0	0	0	0
1972	1297	2190	54	0	1553	0	0	0	0
1973	1603	2375	17	0	2577	0	0	0	0
1974	833	1280	15	0	1826	0	0	0	0
1975	678	6	561	0	4043	0	0	0	0
1976	1284	3	127	0	2346	0	0	0	0
1977	3544	10778	623	0	183	0	0	0	0
1978	2773	549	1523	0	1463	0	0	0	0
1979	3247	46	1321	0	1188	0	0	0	0

Year	France**	United Kingdom	Netherlands	Ireland	Germany	Denmark	Lithuania	Belgium	Spain
1980	3573	753	1131	0	79	0	0	0	0
1981	1125	35	553	0	0	4471	0	0	0
1982	908	141	928	0	0	1311	0	0	0
1983	802	6	795	0	19	4743	0	0	0
1984	817	1	0	0	0	1210	0	0	0
1985	2089	20	0	0	0	3111	0	0	0
1986	2570	30	0	0	0	3602	0	0	0
1987	965	124	0	0	0	1573	0	0	0
1988	2586	0	0	0	0	3234	0	0	0
1989	1219	1660	11	0	0	4667	0	0	0
1990	1128	2078	6	0	107	6113	0	0	0
1991	1963	2952	0	0	8	4462	0	0	0
1992	1777	4493	41	0	4	17843	0	0	0
1993	1135	4917	109	0	0	13395	0	0	0
1994	1285	2081	20	0	2	20804	0	0	0
1995	1282	7133	107	0	66	9603	0	0	0
1996	1563	7304	48	0	0	1396	0	0	0
1997	3346	7280	411	0	13	1124	0	0	0
1998	1974	6873	1647	192	100	14316	0	0	0
1999	119	4815	5166	2375	146	3490	0	0	8
2000	4074	4353	6586	354	436	1682	0	0	0
2001	8589	10375	6609	1060	454	0	0	0	0
2002	7977	6636	1905	11417	130	0	0	0	0
2003	8186	4150	6897	4030	13	0	0	0	0
2004	7807	2389	2187	2046	60	0	0	0	0
2005	10605	3457	2231	922	140	0	0	0	0
2006	11120	1925	2287	2416	246	0	0	0	0
2007	7315	2574	1106	28	0	4	0	0	0
2008	8562	3306	2073	473	43	53	0	0	0
2009	3918	2568	3406	65	0	0	0	0	0
2010	706	2540	6645	50	62	13	0	0	0
2011	237	3614	513	1966	5	3	0	0	0
2012	372	4423	1637	16	587	40	0	0	0
2013	1703	3722	1739	473	214	40	0	0	0
2014	1100	3893	193	0	18	953	0	0	0
2015	1208	4301	1171	555	1551	1011	0	0	0
2016	925	9389	4697	464	1941	2286	1	1	0
2017	820	7596	0	329	1475	2460	0	0	0
2018	606	8143	811	89	758	263	0	1	0
2019	671	7049	90	33	53	0	40	0	0
2020	592	9500	185	58	0	3217	0	0	0
2021	743	7074	111	509	0	89	0	0	0

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

** Catches from ICES rectangles 25E5 and 25E4 are not included.

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)	High	Low	Landings	Discards	BMS landing
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	176696	248358	105035	12662	28	18
2018	143845	178548	109141	10670	16	1
2019	358028	490975	225081	7317	111	620
2020	285564	402929	168200	12852		701
2021	212772	292836	132707	8155		370
2022	336306*	**	**			

* Raised estimate.

** No uncertainty estimates were available.

Sources and references

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[Download the stock assessment data and figures.](#)

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