

Anchovy (*Engraulis encrasicolus*) in Subarea 8 (Bay of Biscay)

ICES advice on fishing opportunities

ICES advises that when the EU management strategy is applied, catches in 2021 should be no more than 33 000 tonnes.

Note: This advice sheet is abbreviated due to the COVID-19 disruption. The previous advice issued for 2020 is attached as Annex 1.

Stock development over time

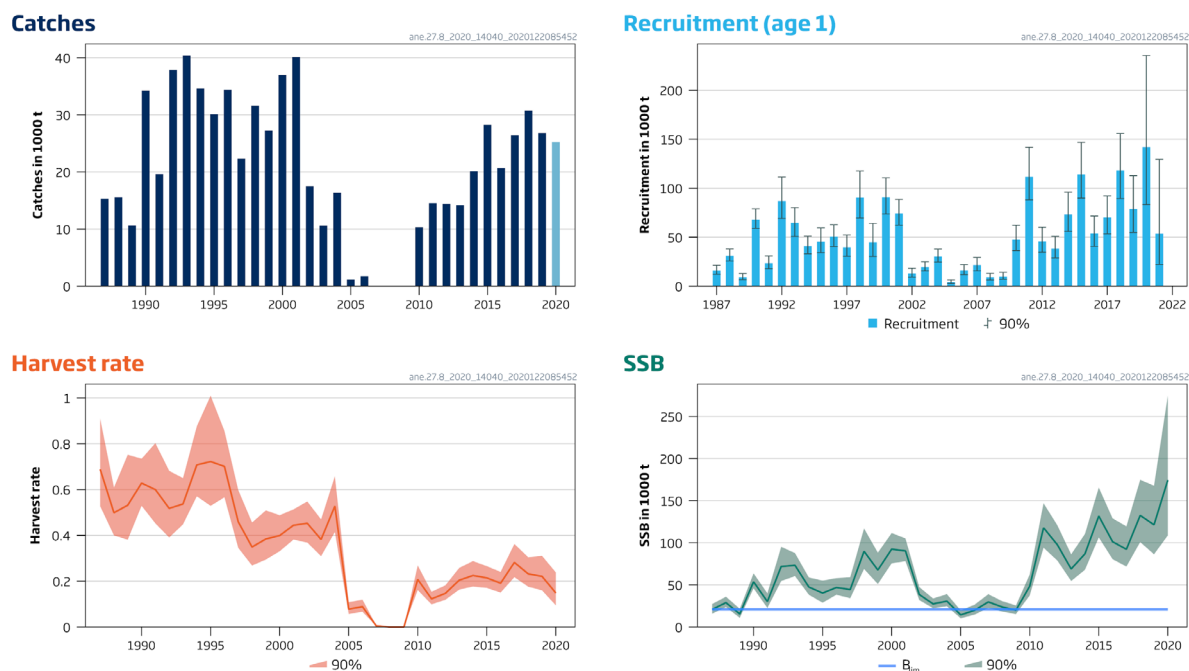


Figure 1 Anchovy in Subarea 8. Summary of the stock assessment. Trends in catch (the 2020 lighter blue bar is a preliminary estimation), recruitment (age 1 biomass, estimated on January 1), harvest rate (catch/SSB), and spawning-stock biomass (estimated in mid-May).

Stock and exploitation status

Table 1 Anchovy in Subarea 8. State of the stock and fishery relative to reference points.

		Fishing pressure				Stock size		
		2018	2019	2020		2018	2019	2020
Maximum sustainable yield	F_{MSY}	?	?	?	Undefined	MSY	?	?
						$B_{trigger}$?	?
Precautionary approach	$F_{pa} \cdot F_{lim}$?	?	?	Undefined	B_{lim}	✓	✓
								✓ Above Blim
Management plan	F_{MGT}	—	—	—	Not applicable	B_{MGT}	✓	✓
								✓ Above lower management trigger point

Catch scenarios

Table 2 Anchovy in Subarea 8. Basis for the catch scenarios.

Variable	Value	Notes	Source
HR (2020)	0.149	Harvest rate estimate from the stock assessment.	ICES (2020)
SSB (2020)	174428	SSB estimate (in mid-May) from the stock assessment (tonnes).	ICES (2020)
R _{age1} (2021)	53601	Recruitment estimate (on 1 January, from the stock assessment, in tonnes of biomass).	ICES (2020)
Catch (2020)	25935	Catches to the end of October (25232 t) plus assumed catches for November and December) based on the average percentage in 2010–2019 (2.7%). Preliminary value, used as input in the stock assessment (tonnes).	ICES (2020)
Discards (2020)	Negligible	Discarding is considered negligible.	ICES (2020)

Table 3 Anchovy in Subarea 8. Annual catch scenarios. All weights are in tonnes.

Basis	Total catch (2021)	Probability of SSB* < B _{lim} based on stochastic short-term forecast (2021)	SSB* (2021)	HR** (2021)	% SSB change ***	% TAC change ^	% advice change ^^
ICES advice basis							
Harvest control rule in the management strategy	33000	< 0.001	118900	0.28	-32	3.5	3.5
Other scenarios							
HR (2021) = 0	0	< 0.001	132368	0.00	-24	-100	-100
HR (2021) = HR (2020)	18562	< 0.001	124840	0.149	-28	-42	-42
Catch (2021) = 10000	10000	< 0.001	128327	0.078	-26	-69	-69
Catch (2021) = 20000	20000	< 0.001	124251	0.161	-29	-37	-37
Catch (2021) = 30000	30000	< 0.001	120141	0.25	-31	-6	-6
Catch (2021) = 40000	40000	< 0.001	115991	0.35	-34	25	25
Catch (2021) = 50000	50000	< 0.001	111803	0.45	-36	57	57

* SSB corresponds to mid-May estimate, with 60% of the catch assumed to be taken in the first six months of the year.

** Harvest rate (HR) is calculated as catch/SSB.

*** SSB (2021) relative to SSB (2020).

^ Catch (2021) relative to the 2020 TAC (31 892 t).

^^ Advice for 2021 relative to advice for 2020 (31 892 t).

Quality of the assessment

Due to the Covid-19 disruption, the PELGAS acoustic survey was not carried out in 2020. Along with the BIOMAN Daily Egg Production Method (DEPM) survey, this is one of the spring surveys that provides estimates of total biomass and age structure in the stock assessment model. The stock annex was applied as in previous years, except without the PELGAS 2020 data. The lack of PELGAS data is expected to have an impact on the assessment results, but the exact extent of this impact cannot be quantified. A sensitivity analysis was conducted in which the stock assessments for the last three years were repeated with the removal of the terminal year's indices from PELGAS. This showed larger uncertainty in estimates for all three years. The maximum absolute change for R , SSB , and HR was up to 2%, 3%, and 10% in the 2017, 2018, and 2019 assessments respectively. However, the impact of this uncertainty on advised catches for 2021 is considered to be minimal because the management plan has a cap on advised catches when biomass is high, as is currently the case.

The current assessment has resulted in an upwards revision of the 2020 recruitment (age 1) estimate (Figure 2). In 2019 the JUVENA survey could not cover the whole distribution, and the recruitment for 2020 was considered to be slightly underestimated. The 2020 biomass estimate from the DEPM survey is the highest of the time-series (334 300 t), well above the next highest value (223 200 t) observed in 2019. Seventy-six percent of the total biomass in BIOMAN 2020 corresponds to age 1.

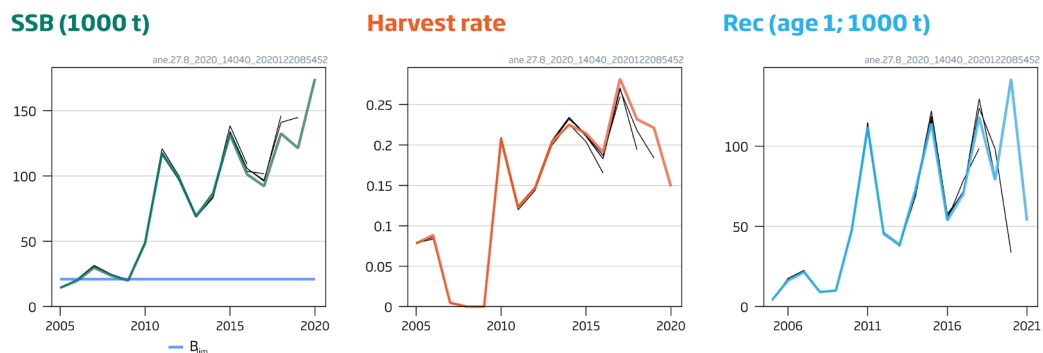


Figure 2 Anchovy in Subarea 8. Historical assessment results.

Issues relevant for the advice

The SSB in 2020 is estimated to be 44% larger than that in 2019. The advised catch for 2021, however, is only 3.5% larger than the advised catch for 2020 because it corresponds to the maximum TAC level allowed in the management strategy.

Some French catches are usually taken in Subarea 7, near the border to Subarea 8 (ICES rectangles 25E4 and 25E5), and are considered to belong to the same stock and fishery. These catches typically represent less than 2% of the total stock catches and should be taken into consideration in managing the fishery.

History of the advice, catch, and management

Table 4 Anchovy in Subarea 8. ICES advice and official landings. All weights are in tonnes. Official catches for the management year (1 July to 30 June of the following year) are not available for 2010–2015.

Year	ICES advice	Catch corresponding to advice	Agreed TAC		Official catch	ICES catch ##
1987	Not assessed	-	32000		14188	15308
1988	Not assessed	-	32000		14045	15581
1989	Increase SSB; TAC	10000*	32000		5898	10614
1990	Precautionary TAC	12300	30000		22053	34272
1991	Precautionary TAC	14000	30000		11581	19634
1992	No advice	-	30000		25370	37885
1993	Reduced F on juveniles; closed area	-	30000		29266	40393
1994	Reduced F on juveniles; closed area	-	30000		28474	34631
1995	Reduced F on juveniles; closed area	-	33000		28626	30115
1996	Reduced F on juveniles; closed area	-	33000		25452	34373
1997	Reduced F on juveniles; closed area	-	33000		18179	22337
1998	Reduced F on juveniles; closed area	-	33000		27026	31617
1999	Reduced F on juveniles, closed area	-	33000		15757	27259
2000	Closure of the fishery	0	33000		34567	36994
2001	Preliminary TAC at recent exploitation	18000	33000		37086	40149
2002	Preliminary TAC at recent exploitation	33000	33000		19118	17507
2003	Preliminary TAC at recent exploitation	12500	33000		9964	10595
2004	Preliminary TAC at recent exploitation	11000	33000		15528	16361
2005	Rebuilding SSB	5000	30000		1086	1128
2006	Closure of the fishery	0	5000		1807	1753
2007	Closure of the fishery	0	0		141	141**
2008	Closure of the fishery	0	0		0	0
2009	Closure of the fishery	0	0		190	0
2010	Closure of the fishery	0	7000		-	6111***
2010/2011^	See scenarios	-	15600		-	15120
2011/2012^	Risk of SSB falling below $B_{lim} < 5\%$	< 47000	29700		-	12217
2012/2013^	Risk of SSB falling below $B_{lim} < 5\%$	< 28000	20700		-	16737
2013/2014^	Risk of SSB falling below $B_{lim} < 5\%$	< 18000	17100		-	17551
2014/2015^	Risk of SSB falling below $B_{lim} < 5\%$	< 23000	20100		-	5832^^
2015	Management plan	< 25000	25000		27562	28258
2016	Management plan	≤ 25000	33000#		20225	20670
2017	Management strategy	≤ 33000	33000		25470	26450
2018	Management strategy	≤ 33000	33000		30756	30773
2019	Management strategy	≤ 33000	33000		26857	26857
2020	Management strategy	≤ 31892	31892			25935 ^^^
2021	Management strategy	≤ 33000				

* Mean catch 1985–1987.

** Experimental fisheries.

*** Catch from January 2010 to June 2010.

^ From 2011 to 2014 the advice, TAC, and landings are valid from 1 July to 30 June the following year.

^^ Catch restricted to the last six months of the year of 2014, due to a change in the management calendar.

^^^ Provisional catch in 2020.

Initial TAC was set to 25 000 t; in June 2016 it was raised to 33 000 t.

Includes catches from ICES rectangles 25E4 and 25E5 in Subarea 7, starting in 2010.

Summary of the assessment

Table 5 Anchovy in Subarea 8. Assessment summary. Recruitment, SSB, and catches are in tonnes. High and low refer to 90% confidence limits.

Year	Recruitment			SSB			Total catches	Harvest rate		
	R (age 1)	High	Low	SSB	High	Low		(Ages 2+)	High	Low
1987	15953	21336	12070	20890	27277	15799	15308	0.69	0.91	0.53
1988	31069	38025	25742	28883	36031	23645	15581	0.50	0.61	0.40
1989	9155	12967	6514	15492	21623	10951	10614	0.53	0.75	0.38
1990	67952	78879	59002	53711	63752	45920	34272	0.63	0.73	0.53
1991	23409	30991	17702	30197	40042	22564	19634	0.60	0.80	0.45
1992	86961	111393	69108	71862	95247	54573	37885	0.52	0.68	0.39
1993	64687	80019	50700	73205	87770	60498	40393	0.54	0.65	0.45
1994	41032	51022	32986	47513	58937	38373	34631	0.71	0.88	0.57
1995	45430	59530	34268	40301	55044	28826	30115	0.72	1.01	0.53
1996	50481	62617	40361	46913	58097	38407	34373	0.70	0.86	0.57
1997	39547	52248	30446	44533	59203	34174	22337	0.46	0.60	0.35
1998	90506	117546	69525	89921	117056	68852	31617	0.35	0.46	0.27
1999	44815	64115	30269	67639	88308	51077	27259	0.38	0.51	0.29
2000	90750	110612	73595	92431	111583	75607	36994	0.40	0.49	0.33
2001	74259	88482	62280	90363	105210	78169	40149	0.44	0.51	0.38
2002	13120	18254	9318	38628	47453	31919	17507	0.45	0.55	0.37
2003	19670	24925	15532	27430	33916	22306	10595	0.38	0.47	0.31
2004	30286	37943	24542	30661	39072	24604	16361	0.53	0.66	0.41
2005	4225	6315	2745	14417	19748	10402	1128	0.078	0.108	0.057
2006	16221	22018	11724	19781	26412	14679	1753	0.089	0.119	0.066
2007	21472	29336	15582	29775	39036	22626	0	0.0047	0.0062	0.0036
2008	9141	13129	6281	23806	30768	18340	0	0.00	0.00	0.00
2009	9993	14151	6939	19916	25604	15365	0	0.00	0.00	0.00
2010	47647	62250	36309	48541	62489	37480	10317	0.21	0.27	0.161
2011	111700	141830	88069	117841	147008	94124	14530	0.123	0.154	0.099
2012	45706	60227	34692	97697	120845	78915	14402	0.147	0.182	0.119
2013	38403	50831	28982	68919	86340	54598	14192	0.20	0.26	0.163
2014	73143	95928	55943	86898	110537	67893	20126	0.22	0.29	0.177
2015	114105	146694	89894	131727	165676	106353	28258	0.21	0.27	0.171
2016	53732	71684	40521	101320	129057	80549	20670	0.191	0.24	0.150
2017	70145	92044	53446	92245	119551	71770	26450	0.28	0.36	0.22
2018	118109	155944	89457	132518	174805	100863	30773	0.23	0.30	0.176
2019	78828	112811	54796	121352	167789	86321	26857	0.22	0.31	0.160
2020	142008	235452	83314	174428	274687	108729	25935*	0.149	0.24	0.094
2021	53601	129484	22061							

*Preliminary estimate.

Sources and references

ICES. 2020. Working Group on Southern Horse Mackerel, Anchovy and Sardine (WGHANSA). Draft report. ICES Scientific Reports. 2:41. 655 pp. <http://doi.org/10.17895/ices.pub.5977>.

Recommended citation: ICES. 2020. Anchovy (*Engraulis encrasicolus*) in Subarea 8 (Bay of Biscay). In Report of the ICES Advisory Committee, 2020. ICES Advice 2020, ane.27.8. <https://doi.org/10.17895/ices.advice.5899>

Catch scenarios

Table 2 Anchovy in Subarea 8. Basis for the catch scenarios.

Variable	Value	Notes
HR (2019)	0.184	Harvest rate estimate from the stock assessment.
SSB (2019)	144 834 tonnes	SSB (mid-May) estimate from the stock assessment.
R _{age1} (2020)	33 706 tonnes	Recruitment estimate from the stock assessment (on 1 January, in biomass).
Catch (2019)	26 622 tonnes	Preliminary value, used as input in the stock assessment. The November and December catches were assumed to be 3.3% of the annual catches (average percentage in 2010–2017).
Discards (2019)	Negligible	Discarding is considered negligible.

Table 3 Anchovy in Subarea 8. Annual catch scenarios. All weights are in tonnes.

Basis	Total catch (2020)	Probability of SSB < B _{lim} * (2020) based on stochastic short-term forecast	SSB * (2020)	HR ** (2020)	% SSB change ***	% TAC change ^	% Advice change ^^
ICES advice basis							
Harvest control rule in the management strategy	31892	< 0.001	86229	0.31	-40	-3.4	-3.4
Other scenarios							
HR (2020) = 0	0	< 0.001	95 54	0	-31	-100	-100
HR(2020) = HR(2019)	17230	< 0.001	923 5	0.184	-36	-49	-49
Catch (2020) = 10000	10000	< 0.001	95 21	0.105	-34	-70	-70
Catch (2020) = 20000	20000	< 0.001	9114	0.22	-37	-39	-39
Catch (2020) = 30000	30000	< 0.001	8 016	0.35	-40	-9.1	-9.1
Catch (2020) = 40000	40000	< 0.001	828 9	0.48	-43	21	21
Catch (2020) = 50000	50000	< 0.001	78608	0.64	-46	52	52

* The SSB corresponds to mid-May, with 60% of the catch assumed to be taken in the first six months of the year.

** Harvest rate (HR) is calculated as Catch/SSB.

*** SSB (2020) relative to SSB (2019).

^ Catch (2020) relative to the 2019 TAC (33 000 t).

^^ Advice for 2020 relative to advice for 2019 (33 000 t).

The advice for 2020 is lower than the advice for 2019, because of an expected lower SSB in 2020.

Basis of the advice

Table 4 Anchovy in Subarea 8. The basis of the advice.

Advice basis	EU Management strategy
Management plan	<p>A set of harvest control rules for a management calendar year from January to December was evaluated by STECF (2013–2014). The European Commission requested that ICES provide its advice in 2015 according to one of these rules and according to a different one since 2016. ICES has reviewed the harvest control rule selected in 2016 and concluded that it is precautionary (Annex 9 in ICES, 2016). The harvest control rule upon which the current advice is based sets the TAC from January to December as:</p> $TAC_{y+1} = \begin{cases} 0 & \text{if } \widehat{SSB}_{y+1} \leq 24000 \\ -2600 + 0.40 \cdot \widehat{SSB}_{y+1} & \text{if } 24000 < \widehat{SSB}_{y+1} \leq 89000 \\ 33000 & \text{if } \widehat{SSB}_{y+1} > 89000 \end{cases}$ <p>where \widehat{SSB}_{y+1} is the expected spawning-stock biomass in mid-May year $y+1$.</p>

Quality of the assessment

The current assessment results align well, in general, with the observed trend in the surveys. Due to bad weather conditions the JUVENA 2019 survey could not cover the whole distribution area, and the 2019 juvenile biomass index may be slightly underestimated. In previous years, the part of the survey that was missed in 2019 accounted on average for about 10% of the estimated juvenile survey biomass. This leads to a possible slight underestimation of the 2020 SSP.

The catch data for 2019 are preliminary. Preliminary catch statistics were available from January to October. The catches in November and December were assumed to be 3.3% of the total annual catch (based on the average proportion observed since the reopening of the fishery, 2010–2017). Age-structured catches in the first six months of the year were also preliminary. The harvest rate estimate for 2019, therefore, is also preliminary.

Some French catches are usually taken in Subarea 7, near the border to Subarea 8 (ICES rectangles 25E4 and 25E5), and are considered to belong to the same stock and fishery. These catches have, therefore, been included in the assessment and typically represent less than 2% of the total stock catches.

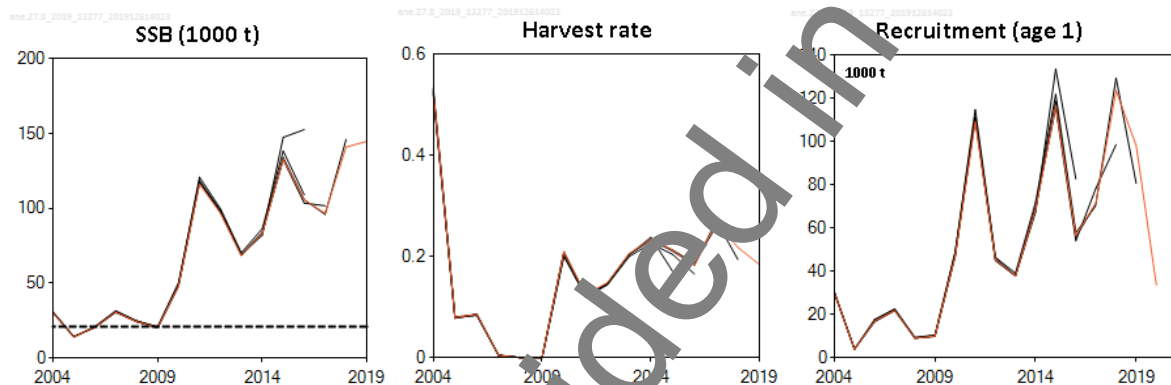


Figure 2 Anchovy in Subarea 8. Historical assessment results. Horizontal line refers to B_{lim}.

Issues relevant for the advice

SSB in 2020 is estimated to be 39% lower than that in 2019. The advised catch for 2020, however, is only 3% lower than the advised catch for 2019. This happened because in 2019, despite the high SSB, the advised catches were capped at the highest level allowed under the management strategy.

Reference points

Table 5 Anchovy in Subarea 8. Reference points, values, and their technical basis.

Framework	Reference point	Value	Technical basis	Source
MSY approach	MSY trigger	Not defined		
	F _{msy}	Not defined		
Precautionary approach	B _{lim}	21000 t	B _{lim} : mean of SSB estimates in the two years 1987 and 2009, the minimum estimated biomass that produced substantial recruitment (Annex 8 in ICES, 2013).	ICES (2013)
	B _{pa}	Not defined		
	F _{lim}	Not defined		
	F _{pa}	Not defined		
Management plan	SSB _{mgt}	24000 t (lower trigger) 89000 t (upper trigger)	TAC set to zero if SSB below the lower trigger, and to 33000 t if SSB is above the upper trigger. The harvest control rule results in 5% probability of SSB < B _{lim} in the long term.	STECF (2014)
	F _{mgt}	Not defined		

Basis of the assessment

Table 6 Anchovy in Subarea 8. Basis of the assessment and advice.

ICES stock data category	1 (ICES, 2018).
Assessment type	Two-stage Bayesian biomass dynamic model (CBBM) assessment that uses catches in the model and in the forecast (ICES, 2019).
Input data	Commercial catches (international landings, ages and length frequencies from catch sampling), three surveys (BIOMAN (1987-2019), PELGAS (1989-2019), JUVENA (2003-2019)); annual mortality data from DEPM survey (BIOMAN) and natural mortalities derived from spring surveys.
Discards and bycatch	Discarding and bycatch are considered negligible.
Indicators	None.
Other information	The assessment was benchmarked in 2013 (WKPELA; ICES, 2013).
Working group	Working Group on Southern Horse Mackerel, Anchovy and Sardine (WGSA/NSA)

Information from stakeholders

There is no available information.

History of the advice, catch, and management

Table 7 Anchovy in Subarea 8. ICES advice and official landings. All weights are in tonnes. Official catches (shown as "-") have not been provided for the management year.

Year	ICES advice	Catch corresponding to advice	Assessed TAC	Official catch	ICES catch ##
1987	Not assessed	-	32000	14188	15308
1988	Not assessed	-	32000	14045	15581
1989	Increase SSB; TAC	16000	32000	5898	10614
1990	Precautionary TAC	12300	30000	22053	34272
1991	Precautionary TAC	14000	30000	11581	19634
1992	No advice	-	30000	25370	37885
1993	Reduced F on juveniles; closed area	-	30000	29266	40393
1994	Reduced F on juveniles; closed area	-	30000	28474	34631
1995	Reduced F on juveniles; closed area	-	33000	28626	30115
1996	Reduced F on juveniles; closed area	-	33000	25452	34373
1997	Reduced F on juveniles; closed area	-	33000	18179	22337
1998	Reduced F on juveniles; closed area	-	33000	27026	31617
1999	Reduced F on juveniles; closed area	-	33000	15757	27259
2000	Closure of the fishery	0	33000	34567	36994
2001	Preliminary TAC at recent exploitation	18000	33000	37086	40149
2002	Preliminary TAC at recent exploitation	33000	33000	19118	17507
2003	Preliminary TAC at recent exploitation	12500	33000	9964	10595
2004	Preliminary TAC at recent exploitation	11000	33000	15528	16361
2005	Rebuilding SSB	5000	30000	1086	1128
2006	Closure of the fishery	0	5000	1807	1753
2007	Closure of the fishery	0	0	141	141**
2008	Closure of the fishery	0	0	0	0
2009	Closure of the fishery	0	0	190	0
2010	Closure of the fishery	0	7000	-	6111***
2010/2011^	See scenarios	-	15600	-	15120
2011/2012^	Risk of SSB falling below $B_{lim} < 5\%$	< 47000	29700	-	12217
2012/2013^	Risk of SSB falling below $B_{lim} < 5\%$	< 28000	20700	-	16737
2013/2014^	Risk of SSB falling below $B_{lim} < 5\%$	< 18000	17100	-	17551
2014/2015^	Risk of SSB falling below $B_{lim} < 5\%$	< 23000	20100	-	5832^^

Year	ICES advice	Catch corresponding to advice	Agreed TAC	Official catch	ICES catch ##
2015	Management plan	< 25000	25000	27562	28258
2016	Management plan	≤ 25000	33000 [#]	20225	20670
2017	Management strategy	≤ 33000	33000	25470	26450
2018	Management strategy	≤ 33000	33000	30756	30773
2019	Management strategy	≤ 33000	33000		25743 ^{^^^}
2020	Management strategy	≤ 31892			

* Mean catch in 1985–1987.

** Experimental fisheries.

*** Catch from January 2010 to June 2010.

^ From 2011 to 2014 the advice, TAC, and landings are valid from 1 July to 30 June the following year.

^^ Catch restricted to the last six months of the year of 2014, due to a change in the management calendar.

^^^ Provisional catch in 2019.

[#] The initial TAC was set to 25 000 t; in June 2016 it was raised to 33 000 t.

^{##} Includes catches from the ICES rectangles 25E4 and 25E5 in Subarea 7, starting in 2010.

History of the catch and landings

Table 8 Anchovy in Subarea 8. Catch distribution by fleet in 2018 as estimated by ICES.

Catch (2018)	Landings		Discards
30773 tonnes	Purse-seiner 97%*	Polagic trawler 3%	93 tonnes
	30680 tonnes		

* Including 15 tonnes not landed, but used as live bait by the tuna fishing fleet

Table 9 Anchovy in Subarea 8. History of commercial catch and landings; both the official and ICES estimated values are presented. All weights are in tonnes.

Year	Official catch	ICES catch***
1960	80947	58085
1961	69969	75494
1962	65295	59123
1963	51956	48652
1964	80381	76973
1965	85296	83615
1966	48909	48358
1967	41460	41175
1968	38429	39619
1969	33098	36083
1970	23637	23485
1971	29086	28612
1972	32927	33067
1973	28196	28009
1974	31312	31117
1975	26426	26302
1976	36166	37261
1977	48319	48191
1978	45367	45219
1979	22673	26349
1980	22256	22102
1981	10876	10815
1982	4712	4991
1983	15699	14153
1984	28423	35179
1985	10816	11486
1986	7698	7923
1987	14188	15308
1988	14045	15581
1989	5898	10614
1990	22053	34272

Year	Official catch	ICES catch***
1991	11581	19634
1992	25370	37885
1993	29266	40393
1994	28474	34631
1995	28626	30115
1996	25452	34373
1997	18179	22337
1998	27026	31617
1999	15757	27259
2000	34567	36000
2001	37086	40149
2002	19118	17007
2003	9964	10595
2004	15528	11361
2005	1086	1173
2006	1807	1753
2007**	141	141
2008	0	0
2009	190	0
2010	10665	10317
2011	14369	14530
2012	16636	14402
2013	14366	14192
2014	20611	20126
2015	27562	28258
2016	20005	20670
2017	25470	26450
2018	30705	30773
2019		26622 *

* Preliminary estimate.

** Experimental fisheries.

*** Includes catches from the ICES rectangles 25E4 and 25E5 in Subarea 7, starting in 2010.

Summary of the assessment

Table 10 Anchovy in Subarea 8. Assessment summary. Weights are in tonnes. High and low refer to 90% confidence limits.

Year	Recruitment (Age 1)	High	Low	SSB	High	Low	Total catches	Harvest rate (Ages 2+)	High	Low
	tonnes									
1987	16055	21452	12045	21047	27458	16032	15308	0.68	0.93	0.52
1988	30900	38056	25730	29048	36312	23808	15581	0.50	0.61	0.40
1989	9192	12951	6586	15762	22053	11171	10614	0.32	0.44	0.37
1990	67208	78549	58629	53542	63866	46060	34272	0.53	0.73	0.53
1991	22898	30450	17468	30041	39911	22732	19634	0.60	0.80	0.45
1992	86754	109965	68761	72089	93511	54683	37885	0.53	0.68	0.40
1993	63569	78532	50315	72865	87773	60794	40393	0.54	0.65	0.45
1994	41035	50989	32907	47655	59360	38533	34651	0.71	0.87	0.57
1995	45327	59494	34237	40797	55908	29190	30115	0.71	1.00	0.52
1996	49943	61865	39860	47179	58336	38770	34373	0.70	0.85	0.56
1997	39442	51428	30510	45007	58792	34698	22337	0.45	0.59	0.35
1998	90893	118123	70367	90773	117921	70156	39617	0.35	0.45	0.27
1999	43812	62030	29839	68202	88184	51921	27253	0.38	0.50	0.29
2000	89002	108560	72228	91606	110418	75477	26994	0.40	0.49	0.33
2001	73425	87331	61603	89961	104638	77956	40149	0.45	0.51	0.38
2002	13132	18484	9444	38870	47598	22105	17507	0.45	0.54	0.37
2003	19343	24513	15288	27489	33915	22541	10595	0.38	0.47	0.31
2004	29925	37376	24340	30549	38532	24487	16361	0.53	0.66	0.42
2005	3896	5773	2547	14169	19323	10493	1128	0.080	0.109	0.058
2006	16970	23196	12417	20474	27155	15310	1753	0.086	0.115	0.065
2007	21859	29840	16014	30782	40186	23544	141	0.0046	0.0060	0.0035
2008	8968	12785	6338	24378	31367	18955	0	0.00	0.00	0.00
2009	10076	14035	7156	20308	25878	15753	0	0.00	0.00	0.00
2010	46760	60717	36127	48206	61497	37511	10317	0.21	0.27	0.163
2011	109175	138430	86888	116057	145317	93556	14530	0.125	0.155	0.100
2012	45263	59040	34810	96790	119491	79259	14402	0.148	0.181	0.120
2013	37695	49665	28605	68386	85833	54511	14192	0.21	0.26	0.164
2014	68844	89393	51949	83421	105626	64028	20126	0.23	0.31	0.185
2015	116494	149669	91943	132856	166825	106993	28258	0.21	0.26	0.169
2016	56581	75543	42830	105794	135311	83155	20670	0.183	0.23	0.143
2017	71719	94252	54959	96808	125701	74865	26450	0.27	0.35	0.21
2018	123661	164542	94135	141030	185370	105442	30773	0.22	0.29	0.166
2019	98195	142412	64320	144834	201916	103047	26622*	0.184	0.26	0.132
2020	33706	64193	17342							

*Preliminary estimate.

Sources and references

- ICES. 2013. Report of the Benchmark Workshop on Pelagic Stocks (WKPELA 2013), 4–8 February 2013, Copenhagen, Denmark. ICES CM 2013/ACOM:46. 483 pp. <https://doi.org/10.17895/ices.pub.5745>.
- ICES. 2016. Report of the Working Group on Southern Horse Mackerel, Anchovy and Sardine (WGHANSA), 24–29 June 2016, Lorient, France. ICES CM 2016/ACOM:17. 554 pp. <https://doi.org/10.17895/ices.pub.5349>.
- ICES. 2018. Advice basis. In Report of the ICES Advisory Committee, 2018. ICES Advice 2018, Book 1, Section 1.2. <https://doi.org/10.17895/ices.pub.4503>.
- ICES. 2019. Working Group on Southern Horse Mackerel, Anchovy and Sardine (WGHANSA). ICES Scientific Reports, 1:34. 441 pp. <http://doi.org/10.17895/ices.pub.4983>.
- STECF. 2013. Scientific, Technical and Economic Committee for Fisheries – Advice on the Harvest Control Rule and Evaluation of the Anchovy Plan Com (2009) 399 Final (STECF-13-24). Publications Office of the European Union, Luxembourg, EUR 26326 EN, JRC 86109. 71 pp.
- STECF. 2014. Scientific, Technical and Economic Committee for Fisheries (STECF) – Evaluation/scoping of Management plans – Data analysis for support of the impact assessment for the management plan of Bay of Biscay anchovy (COM (2009) 399 final). STECF-14-05. Publications Office of the European Union, Luxembourg, EUR 26611 EN, JRC 89792. 128 pp.

Recommended citation: ICES. 2019. Anchovy (*Engraulis encrasicolus*) in Subarea 8 (Bay of Biscay). In Report of the ICES Advisory Committee, 2019. ICES Advice 2019, ane.27.8. <https://doi.org/10.17895/ices.advice.5544>.