

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

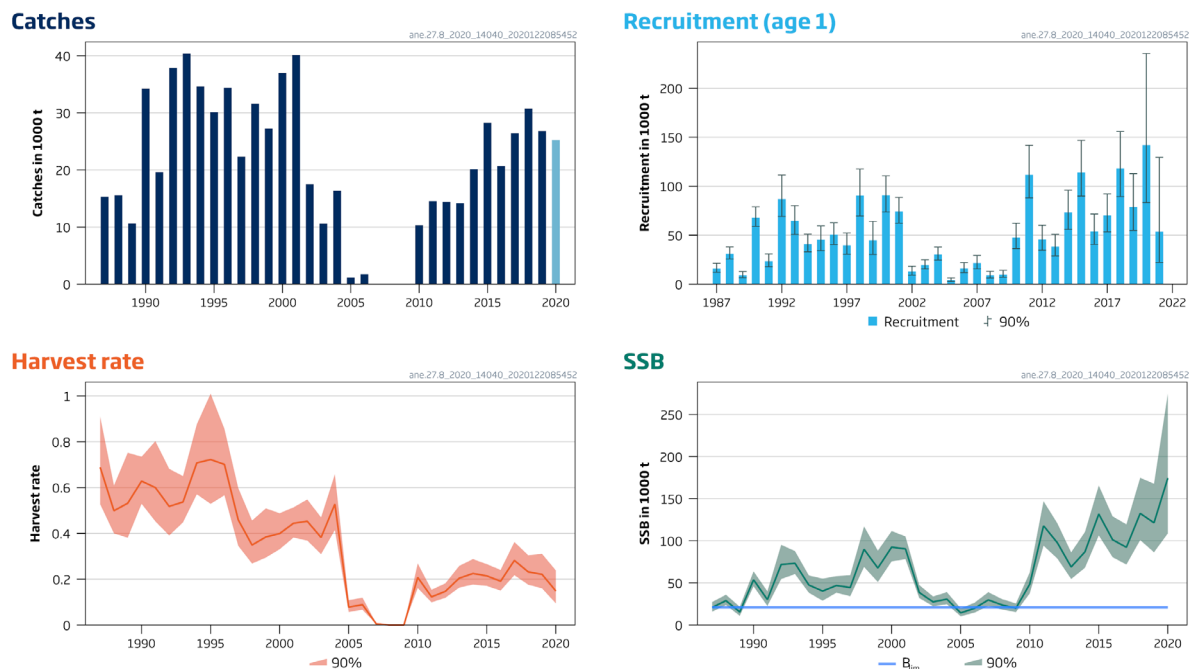


Figure 1 Anchovy in Subarea 8. Summary of the stock assessment. Trends in catch (the 2020 lighter blue bar is a preliminary estimation), recruitment (age 1 biomass, estimated on January 1), harvest rate (catch/SSB), and spawning-stock biomass (estimated in mid-May).

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	$B_{trigger}$?	?	?	Undefined
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.

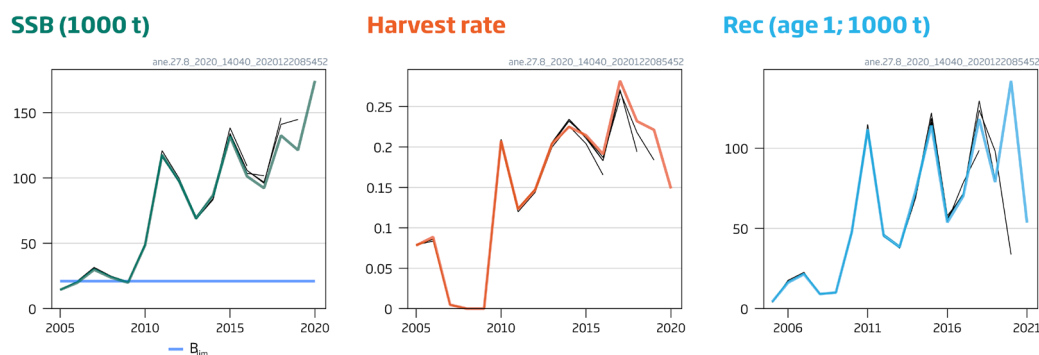


Figure 2 Anchovy in Subarea 8. Historical assessment results.

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>.

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