ICES Advice on fishing opportunities, catch, and effort
Bay of Biscay and the Iberian Coast ecoregion
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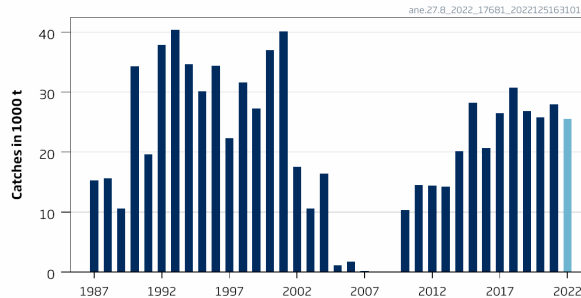## Anchovy (*Engraulis encrasicolus*) in Subarea 8 (Bay of Biscay)

ICES advice on fishing opportunities

ICES advises that when the EU management plan is applied, catches in 2023 should be no more than 33 000 tonnes.
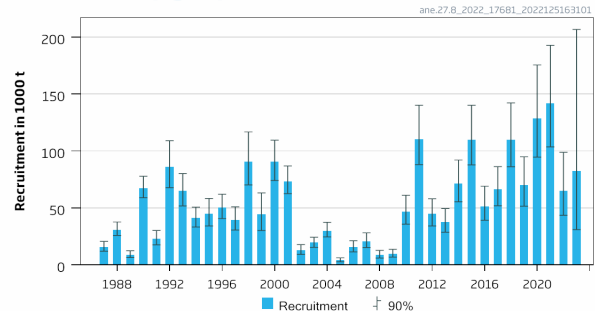
Stock development over time

Spawning-stock size is above B_{lim}; no reference points for B_{pa}, MSY $B_{trigger}$, or fishing pressure have been defined for this stock.

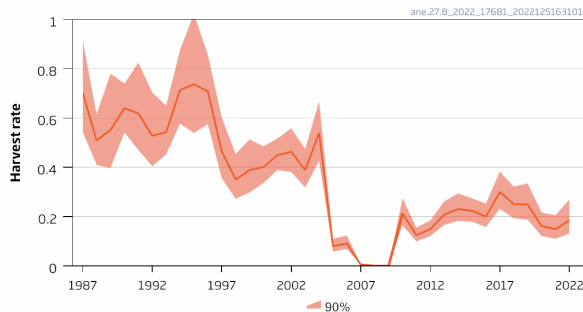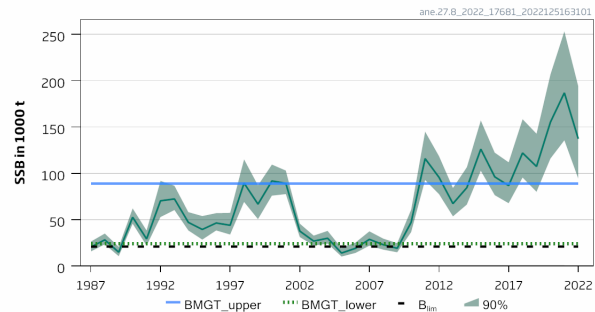
Figure 1   Anchovy in Subarea 8. Summary of the stock assessment. Trends in catch (the 2022 lighter blue bar is a preliminary estimation), recruitment (age 1 biomass, estimated on January 1), harvest rate (catch/SSB), and spawning-stock biomass (estimated in mid-May).

Catch scenarios

Table 1   Anchovy in Subarea 8. Basis for the catch scenarios.

Variable	Value	Notes
HR (2022)	0.186	Harvest rate estimate from the stock assessment
SSB (2022)	137278	SSB estimate (in mid-May) from the stock assessment (tonnes)
R_{age1} (2023)	82389	Recruitment estimate (on 1 January, from the stock assessment, in tonnes of biomass)
Catch (2022)	25496	Catches to the end of October (24 884 tonnes) plus assumed catches for November and December, based on the average percentage 2010–2021 (2.4%). Preliminary value, used as input in the stock assessment (in tonnes).
Discards (2022)	Negligible	Discarding is considered negligible

Table 2   Anchovy in Subarea 8. Annual catch scenarios. All weights are in tonnes.

Basis	Total catch (2023)	Probability of SSB* < B_{lim} based on stochastic short-term forecast (2023)	SSB* (2023)	HR** (2023)	% SSB change ***	% TAC change^	% advice change^^
ICES advice basis							
Harvest control rule in the management plan	33000	< 0.001	120428	0.27	−12	0.00	0.00
Other scenarios							
HR_{2023} = 0	0	< 0.001	134125	0.000	−2	−100	−100
HR_{2023} = HR_{2022}	23136	< 0.001	124568	0.186	−9	−30	−30
Catch_{2023} = 10000	10000	< 0.001	130020	0.077	−5	−70	−70
Catch_{2023} = 20000	20000	< 0.001	125876	0.159	−8	−39	−39
Catch_{2023} = 30000	30000	< 0.001	121692	0.25	−11	−9	−9
Catch_{2023} = 40000	40000	< 0.001	117465	0.34	−14	21	21
Catch_{2023} = 50000	50000	< 0.001	113195	0.44	−18	52	52

* 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 (2023) relative to SSB (2022).
^ Catch (2023) relative to the 2022 TAC (33 000 tonnes).
^^ Advice for 2023 relative to advice for 2022 (33 000 tonnes).

The advice for 2023 is unchanged from the advice for 2022. In both years the SSB is above the upper trigger in the management plan, resulting in the maximum allowable catch under the management plan harvest control rule.
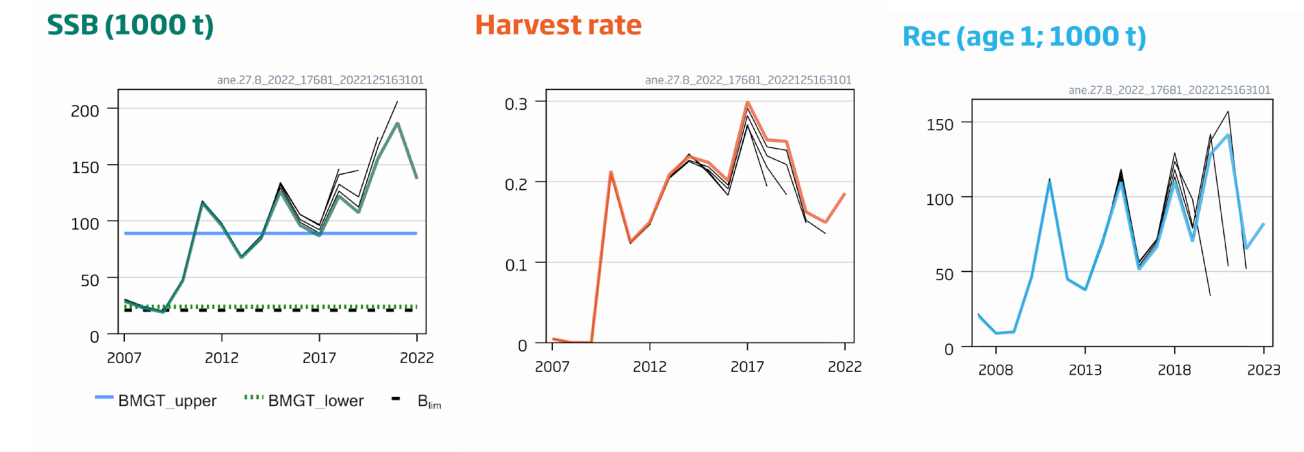
Basis of the advice

Table 3   Anchovy in Subarea 8. The basis of the advice.

Advice basis	Management plan
Management plan	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: $$TAC_{y+1} = \begin{cases} 0 & if\ \widehat{SSB}_{y+1} \leq 24000 \\ -2600 + 0.40 \cdot \widehat{SSB}_{y+1} & if\ 24000 < \widehat{SSB}_{y+1} \leq 89000 \\ 33000 & if\ \widehat{SSB}_{y+1} > 89000 \end{cases}$$ where SSB_{y+1} is the expected spawning-stock biomass in mid-May year y+1.

Quality of the assessment

In 2019 the JUVENA survey could not cover the whole distribution, and the recruitment index for 2020 was considered underestimated. This may explain the historical revision of this recruitment estimate in the assessment (Figure 2).

SSB (1000 t)

Harvest rate

Rec (age 1; 1000 t)

Figure 2   Anchovy in Subarea 8. Historical assessment results.

Issues relevant for the advice

The advice is based on the management plan agreed for this stock and evaluated as precautionary by ICES (2016). No MSY reference points have been defined for this stock and, therefore, no MSY advice is provided.

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 Subarea 8 stock and fishery. These catches typically represent less than 2% of the total Subarea 8 stock catches and should be taken into consideration when managing the fishery.

Reference points

Table 4   Anchovy in Subarea 8. 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	B_{lim}	21000 t	Mean of SSB estimates in the two years 1987 and 2009, the minimum estimated biomass that produced substantial recruitment	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 5   Anchovy in Subarea 8. Basis of the assessment and advice.

ICES stock data category	1 (ICES, 2022a)
Assessment type	Two-stage Bayesian biomass dynamic model (CBBM) assessment that uses catches in the model and in the forecast (ICES, 2022b)
Input data	Commercial catches (international landings, ages and length frequencies from catch sampling), three surveys (BIOMAN [I9143] 1987–2022, PELGAS [A4150] 1989–2022, JUVENA [A6767] 2003–2022); annual maturity data from DEPM survey (BIOMAN [I9143]) and constant natural mortalities estimated 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 ([WGHANSA](#))

History of the advice, catch, and management

Table 6   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

Year	ICES advice	Catch corresponding to advice	Agreed TAC	Official catch	ICES catch##
2016	Management plan	≤ 25000	33000 #	20225	20670
2017	Management plan	≤ 33000	33000	25470	26450
2018	Management plan	≤ 33000	33000	30756	30773
2019	Management plan	≤ 33000	33000	26820	26857
2020	Management plan	≤ 31892	31892	25597	25823
2021	Management plan	≤ 33000	33000	27982^^^	27982
2022	Management plan	≤ 33000	33000		25496^^^
2023	Management plan	≤ 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.

^^^ Preliminary.

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

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

History of the catch and landings

Table 7   Anchovy in Subarea 8. Catch distribution by fleet in 2021 as estimated by ICES.

Catch	Landings		Discards
27982 tonnes	Purse-seiner 99.96 %	Pelagic trawler 0.04 %	26 tonnes*
	27956 tonnes		

* Mainly from demersal trawlers

Table 8   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	ICES catch***					Official catch
	France (8ab)	Spain (8bc)	Spain (live bait catches)	Unallocated	Total	
1960	1085	57000			58085	80947
1961	1494	74000			75494	89969
1962	1123	58000			59123	65295
1963	652	48000			48652	51956
1964	1973	75000			76973	80381
1965	2615	81000			83615	85296
1966	839	47519			48358	48909
1967	1812	39363			41175	41460
1968	1190	38429			39619	38429
1969	2991	33092			36083	33098
1970	3665	19820			23485	23637
1971	4825	23787			28612	29086
1972	6150	26917			33067	32927
1973	4395	23614			28009	28196
1974	3835	27282			31117	31312
1975	2913	23389			26302	26426
1976	1095	36166			37261	36166
1977	3807	44384			48191	48319
1978	3683	41536			45219	45367
1979	1349	25000			26349	22673
1980	1564	20538			22102	22256
1981	1021	9794			10815	10876
1982	381	4610			4991	4712
1983	1911	12242			14153	15699
1984	1711	33468			35179	28423
1985	3005	8481			11486	10816

Year	ICES catch***					Official catch
	France (8ab)	Spain (8bc)	Spain (live bait catches)	Unallocated	Total	
1986	2311	5612			7923	7698
1987	4899	9863	546		15308	14188
1988	6822	8266	493		15581	14045
1989	2255	8174	185		10614	5898
1990	10598	23258	416		34272	22053
1991	9708	9573	353		19634	11581
1992	15217	22468	200		37885	25370
1993	20914	19173	306		40393	29266
1994	16934	17554	143		34631	28474
1995	10892	18950	273		30115	28626
1996	15238	18937	198		34373	25452
1997	12020	9939	378		22337	18179
1998	22987	8455	176		31617	27026
1999	13649	13145	465		27259	15757
2000	17765	19230			36994	34567
2001	17097	23052			40149	37086
2002	10988	6519			17507	19118
2003	7593	3002			10595	9964
2004	8781	7580			16361	15528
2005	952	176	0		1128	1086
2006	913	840	0		1753	1807
2007 **	140	1	0		141	141
2008	0	0	0		0	0
2009	0	0	0		0	190
2010	4573	5744			10317	10665
2011	3615	10916			14530	14369
2012	5975	7896		531	14402	16636
2013	2392	11801			14192	14366
2014	4012	16114			20126	20611
2015	4261	23992		5	28258	27562
2016	2300	18060	310		20670	20225
2017	3153	22955	332	9	26450	25470
2018	3151	27607	15		30773	30756
2019	2048	24802	7		26857	26820
2020	138	25661	24		25823	25600
2021	64	27917	1		27982	27982*
2022					25496*	

* Preliminary estimate.

** Experimental fisheries.

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

Summary of the assessment

Table 9   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		(Age 1+)	High	Low
1987	15676	20599	11942	20468	26455	15706	15308	0.70	0.92	0.54
1988	30749	37612	25736	28281	35121	23346	15581	0.51	0.62	0.41
1989	8929	12363	6406	14917	20746	10556	10614	0.55	0.78	0.40
1990	67249	77841	58961	52683	62267	45566	34272	0.64	0.74	0.54
1991	23016	30221	17576	29241	38440	21943	19634	0.62	0.83	0.47
1992	86090	108999	67709	70402	91931	52822	37885	0.53	0.70	0.40
1993	65183	80184	51772	72428	86753	60386	40393	0.54	0.65	0.45
1994	41119	50723	33205	47111	58246	38354	34631	0.71	0.88	0.58

Year	Recruitment			SSB			Total catches	Harvest rate		
	R (age 1)	High	Low	SSB	High	Low		(Age 1+)	High	Low
1995	44812	58304	34129	39486	53966	28453	30115	0.74	1.02	0.54
1996	50333	62070	40583	46426	57136	38354	34373	0.71	0.86	0.58
1997	39429	50969	30542	44010	57461	33931	22337	0.46	0.60	0.36
1998	90601	116758	70165	89497	115198	69088	31617	0.35	0.45	0.27
1999	44550	63205	30158	66799	87168	50539	27259	0.39	0.51	0.30
2000	90611	109498	74036	91838	109575	75924	36994	0.40	0.49	0.34
2001	73370	86889	62514	89242	103113	77598	40149	0.45	0.52	0.39
2002	12763	17723	9190	37719	45892	31278	17507	0.46	0.56	0.38
2003	19580	24294	15397	26910	32871	22059	10595	0.39	0.48	0.32
2004	29988	37350	24548	29990	37974	24186	16361	0.54	0.67	0.43
2005	4152	6156	2699	14022	19334	10159	1128	0.080	0.111	0.058
2006	15691	21235	11409	19130	25388	14105	1753	0.092	0.124	0.069
2007	20809	28124	15154	28812	37510	21872	141	0.0049	0.0064	0.0038
2008	8754	12694	6036	22959	29614	17641	0	0.00	0.00	0.00
2009	9625	13674	6768	19163	24750	14806	0	0.00	0.00	0.00
2010	46659	61153	35771	47259	61102	36619	10317	0.21	0.28	0.165
2011	110485	140126	87995	116009	145188	92737	14530	0.125	0.156	0.100
2012	44839	58040	34158	95732	118687	77500	14402	0.150	0.185	0.121
2013	37721	49476	28597	67375	84313	53566	14192	0.21	0.26	0.167
2014	71460	92058	55374	84623	106780	66318	20126	0.23	0.29	0.183
2015	109804	140167	87748	126223	157264	102765	28258	0.22	0.27	0.180
2016	51350	69062	39156	96296	122448	76434	20670	0.20	0.25	0.158
2017	66575	86259	51814	86851	112038	67758	26450	0.30	0.38	0.23
2018	109836	142234	86140	122060	158569	95440	30773	0.25	0.32	0.194
2019	69984	94918	51488	107430	142885	80052	26857	0.25	0.34	0.188
2020	128389	175558	94602	155351	206898	115953	25823	0.162	0.22	0.122
2021	141682	192774	103540	187017	253399	135599	27982	0.149	0.21	0.110
2022	65158	98865	43476	137278	194166	94268	25496*	0.186	0.27	0.131
2023	82389	206732	30964							

* Preliminary estimate.

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Download the stock assessment data and figures

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