9.5 ALB-MD - Mediterranean albacore

The status of the Mediterranean albacore stock is based on the 2024 assessment using 2022 as the terminal year for catch data. Complete information is found in the Report of the Intersessional Meeting of the Albacore Species Group including the Mediterranean Albacore Stock Assessment (ICCAT, 2021c) and the Report of the 2024 ICCAT Mediterranean Albacore Data Preparatory and Stock Assessment Meeting (ICCAT, 2024f).

ALB-MD-1. Biology

Albacore is a temperate tuna widely distributed throughout the Atlantic Ocean and Mediterranean Sea. On the basis of the biological information available for assessment purposes, the existence of three stocks is assumed: North and South Atlantic stocks (separated at 5°N) and a Mediterranean stock (**ALB-MD Figure 1**). However, some studies support the hypothesis that various sub populations of albacore exist in the Mediterranean.

Scientific studies on albacore stocks, in the North Atlantic, North Pacific and the Mediterranean, suggest that environmental variability may have a substantial impact on albacore stocks, affecting fisheries due to a shift in species distribution, as well as productivity and potential maximum sustainable yield (MSY) of the stocks.

The expected lifespan for Mediterranean albacore is around 15 years. In the Mediterranean, there is a need to integrate different available studies so as to better characterize growth of Mediterranean albacore. Besides some additional recent studies on maturity, in general, there is poor knowledge about Mediterranean albacore biology and ecology in some areas.

More information on Mediterranean albacore biology and ecology is published in the ICCAT Manual.

ALB-MD-2. Description of fisheries or fishery indicators

During the assessment, the catch series were revised and approved by the Group. It is known that the catch series of some ICCAT CPCs are still incomplete, and efforts are being made to recover those catches to complete Task 1 estimations. In 2022 and 2023, the reported landings were 2,295 t and 2,286 t, respectively, below those in the last decade (**ALB-MD-Table 1** and **ALB-MD-Figure 2**). The majority of the catch came from longline fisheries. EU-Italy is the main harvester of Mediterranean albacore, with around 44% of the catch during the last 10 years. Catches from the Italian fleet in 2023 (1,167 t) were around 95% of the average annual levels calculated for EU-Italy over the period 2018-2022 (1,220 t). However, the historical catch needs to be revised to get the precise contribution by gear and country to the total removals.

ALB-MD-3. State of stocks

In 2024, the stock assessment for Mediterranean albacore was conducted using catch and catch per unit effort (CPUE) data up to 2022. A Bayesian state space surplus production model (JABBA) was used for assessment purposes.

Eight indices were used: Spanish, Ionian, Ligurian, Med-South, and historical Italian longline indices, western Mediterranean larval index (providing information on the trends of the spawning biomass), and the Spanish Tournament index and the Greek longline index (new). These indices (expressed in fish number or weight) showed a general noisy but rather constant trend over time. Comparatively, the larval survey suggests the largest decrease in biomass during the 2000s and early 2010s (**ALB-MD-Figure 3**). The historical part of the index used data collected with a different gear and was calibrated to be consistent with the latter data. However, there was uncertainty as to whether this calibration was appropriate for ALB. Thus, it was decided to consider two scenarios: a continuous series and one splitting the index into two time series (2001-2005/2012-2022).

Overall, the data inputs to the model remain uncertain, including: possible underreporting of the catch; limitations both in spatial and temporal coverage of available indices of abundance; the fact that most indices are limited to the most recent years of the fisheries; and, conflicting trends among these indices. In fact, the treatment of the larval index (split or not) proved crucial when characterizing the current state of the stock.

The results from these two scenarios provided very different perceptions of the stock status. Under scenario 1 that considered the larval index as a continuous index like in the 2021 assessment (referred to as "scenario S12" in the detailed report), estimated current fishing mortality levels (2022) are above F_{MSY} (1.22; 0.66-2.10, median and 95% Confidence Interval (CI)), and the current biomass is below the B_{MSY} level (0.58; 0.31-1.10, median and 95% CI) (**ALB-MD-Figure 4**). The probability of being in the red, yellow, orange and green quadrants of the Kobe plot is 74.2%, 21.2%, 0.4% and 4.2%, respectively (**ALB-MD-Figure 4**). In contrast, under scenario 2 (splitting the larval index, referred to as "scenario S19" in the detailed report) results indicate that current fishing mortality levels (2022) are below F_{MSY} (0.42; 0.13-1.17, median and 95% CI), and the current biomass is above the B_{MSY} level (1.44; 0.59-2.64, median and 95% CI) (**ALB-MD-Figure 4**). The probability of being in the red, yellow, orange and green quadrants of the Kobe plot is 3 above the B_MSY level (1.44; 0.59-2.64, median and 95% CI) (**ALB-MD-Figure 4**). The probability of being in the red, yellow, orange and green quadrants of the Kobe plot is 5.5%, 15.2%, 0.2% and 79.1%, respectively (**ALB-MD-Figure 4**).

ALB-MD-4. Outlook

The Committee emphasized that the substantial uncertainties in the assessment, which resulted in two very different stock statuses, prevent the provision of a clear outlook for the stock at this time. The two alternative scenarios considered would support substantially different TAC values in the future and the Committee is unable to judge which one reflects the most appropriate scenario.

The two alternative scenarios considered in the assessment were projected to 2036 using the current TAC (2,500 t) and probabilities of $B>B_{MSY}$ were at or above 60% by the end of the projection period for both scenarios. While the Committee is unable to judge which one of the scenarios was the most appropriate it appears that the current TAC will recover the stock and achieve $B>B_{MSY}$ with a probability higher than 60% regardless of which is the most appropriate scenario.

ALB-MD-5. Effect of current regulations

In 2021, the Commission enacted the *Recommendation by ICCAT to establish a Rebuilding Plan for Mediterranean Albacore* (Rec. 21-06), initiating a 15-year rebuilding plan commencing in 2022 and extending until 2036, aimed at achieving B_{MSY} with at least minimum 60% likelihood. Subsequently, in 2022, the Commission replaced Rec. 21-06 with the *Recommendation by ICCAT amending the Recommendation 21-06 to establish a Rebuilding Plan for Mediterranean albacore* (Rec. 22-05), the one currently in force. Recommendation 22-05 confirms the 15-year recovery plan and includes various provisions such as: a 2,500 t Total Allowable Catch (TAC) for the years 2022, 2023, and 2024; a restricted number of fishing vessels (based on 2017 or 2018 data); a census of licensed sport and recreational vessels (with a maximum catch limit of three albacore specimens per vessel per day); and a seasonal closure spanning three months from 1 October to 30 November, along with an additional month between 15 February and 31 March, or alternatively, from 1 January to 31 March. The Committee was not able to test the effectiveness of these recent regulations.

ALB-MD-6. Management recommendations

The Committee reiterates that the substantial uncertainties in the assessment prevent providing specific TAC advice at this time. However, the Committee noted that, in both scenarios, the current TAC (2,500 t) would allow to meet the management objectives to recover the stock above B_{MSY} with a probability higher than 60%.

Further work is required to address the key issues identified, including the treatment of the western Mediterranean larval index and the reliability of the catch data, before the Committee can provide robust management recommendations for the Mediterranean albacore stock. The Committee emphasized that the uncertainty in total catch is of paramount importance in production models and was not adequately addressed in the models presented. To the extent that the reported catches are inaccurate or incomplete, the ability of these models to reflect the stock dynamics accurately is undermined. The Committee concluded that the previous assessments of 2021 and 2017 (ICCAT, 2017a) were likely affected by the same issues. Therefore, the Committee suggests re-evaluating the stock status only after addressing the main concerns expressed.

MEDITERRANEAN ALBACORE SUMMARY TABLE									
Maximum Sustainable Vield	Scenario 1: 3,564 t (2,584 - 4,663)								
	Scenario 2: 4,174 t (2,831 - 7,936) ¹								
Current (2023) Yield	2,286 t								
Yield in last year of assessment (2022)	2,295 t								
Bassa /Bugy	Scenario 1: 0.58 (0.31-1.10)								
B20227 BMSY	Scenario 2: 1.44 (0.59-2.64) ¹								
Eason /Eway	Scenario 1: 1.22 (0.66-2.10)								
F 2022/ F MSY	Scenario 2: 0.42 (0.13-1.17) ¹								
Stock Status	Overfished: Scenario 1: YES								
Stock Status	Scenario 2: NO								
	Overfishing: Scenario 1: YES								
	Scenario 2: NO								
	Rec. 22-05: 15-year Rebuilding plan (2022-2036);								
	TAC for years 2022, 2023 and 2024: 2,500 t								
	Limited number of vessels								
Management measures in effect:	(reference year 2017 or 2018);								
	Census of authorized sport & recreational vessels								
	(maximum three albacore specimens/vessel/day);								
	11me closure: $01/10-30/11 + 1$ month between								
	Time closure: 01/10-30/11 + 1 month between 15/02-31/03: alternatively. 01/01-31/03.								

¹ Median and 95% credibility intervals for the Bayesian surplus production model under the two alternative scenarios considered.

ALB-MD-Table 1. Estimated catches (t) of albacore (*Thunnus alalunga*) by area, gear, and flag

			1994	1995	1996	1997	1998	1999	2008	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2819	2020	2021	2022	2023
DTAL	MED		1349	1587	3150	2541	2698	4856	5577	4870	5608	7898	4874	3529	3965	6520	2970	4024	2124	4628	2047	1503	2400	3800	4396	3176	2863	2762	2675	2895	2295	2286
Landings		Baitboat	81	163	205	0	33	96	88	77	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Longline	350	87	391	348	194	416	2796	2597	3704	4248	2335	1997	3025	4101	2694	2160	1719	2327	1959	1392	2343	3235	4333	3087	2378	2656	2497	2798	2112	2126
		Other surf.	766	1031	2435	1991	2426	4271	2693	2196	1757	46	87	169	134	182	246	634	404	1408	8	18	27	5	4	2	2	8	29	1	34	20
		Purse seine	23	0	0	0	0	0	0	0	1	3557	24.52	1362	2803	2237	25	1230	0	869	68	86	15	543	34	82	481	30	66	72	110	129
		Trawl	0	0	0	0	0	0	0	0	0	48	0	0	0	0	5	0	0	0	0	0	5	7	9	3	2	2	5	13	1	0
		Troll	129	306	119	202	45	73	0	0	117	0	0	0	2	0	1	0	1	0	6	0	3	0	0	2	1	67	62	5	0	0
Discards		Longline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	6	7	8	10	16	0	0	0	16	5	39	11
Landings	CP	EU-Czoatia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	7	12	20	30	11	7	2	2	1	1	0	0	0
		EU-Cyprus	0	0	0	0	0	0	6	0	12	30	255	425	507	712	209	223	206	222	31.5	3.50	377	495	542	568	624	714	632	513	448	346
		EU-España	218	475	429	380	126	284	152	200	209	1	138	189	382	516	238	204	277	343	389	244	283	53	51	206	71	68	67	133	98	134
		EU-France	23	3	0	5	5	0	0	0	1	0	0	0	0	2	1	0	1	2	0	0	1	1	0	0	0	15	15	24	36	13
		EU-Greece	1	0	952	741	11.52	2005	1786	1840	1352	950	773	623	402	448	191	116	125	126	126	165	287	541	1332	608	522	297	1.58	182	145	245
		EU-Italy	1107	1109	1769	1414	1414	2561	3630	2826	4032	6913	3671	2248	4584	3970	2104	2727	1109	2501	1117	615	1353	1602	1490	1348	1044	1287	1423	1192	11.54	1167
		EU-Malta	0	0	0	1	1	6	4	4	2	5	10	15	18	1	5	1	2	5	19	29	62	37	56	4	104	77	13	137	50	30
		EU-Portugal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
		Egypt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	246	77	396	429	278	316	622	177	164
		Japan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Korea Rep	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Libya	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	750	800	0	30	21	19	17	20	15
		Maroc	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	120	0	0	0	0	0	0	0	0	0	0	0	10	10	10
		Syria	0	0	0	0	0	0	0	0	0	0	0	0	0	19	14	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
		Turkiye	0	0	0	0	0	0	0	0	0	0	27	- 30	73	8.52	208	631	402	1396	62	71	0	53	25	44	38	4	16	58	118	1.50
Discards		EU-Cyprus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	6	7	8	10	16	0	0	0	16	5	37	8
		EU-España	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	3



ALB-Figure 1. Geographic distribution of albacore accumulated catch by major gears and decade (1970-2022). Baitboat and troll catches prior to the 1990s, these catches were assigned to only one $5^{\circ}x5^{\circ}$ stratum in the Bay of Biscay. Plots are scaled to the maximum catch observed from 1970 to 2022 (last decade only covers 3 years).



ALB-MD-Figure 2. Total albacore catches reported to ICCAT (Task 1) by gear for the Mediterranean stock. The red line is the current TAC.



ALB-MD-Figure 3. Mediterranean albacore. Abundance indices used in the 2024 Mediterranean Albacore Stock Assessment (ICCAT, 2024f). n and w refer to abundance indices in number and weight, respectively.



ALB-MD-Figure 4. Mediterranean albacore. Stock status trajectories of B/B_{MSY} and F/F_{MSY} over time (1980-2022) with uncertainty around the current estimate (Kobe plots) for Bayesian surplus production model, as well as probability of being overfished and overfishing (red), of being neither overfished nor overfishing (green), of being overfished but not overfishing (yellow) and of overfishing but not overfished (orange), for scenarios 1 a) and 2 b). The probability distributions shown in each axis represent uncertainty around current B/B_{MSY} and F/F_{MSY} .