

13.3 SKJ - Skipjack (*Katsuwonus pelamis*)

Introduction

The last stock assessment for eastern and western Atlantic skipjack was conducted in 2022. For a complete and detailed description of the assessment, the state of knowledge and status of the eastern and western Atlantic skipjack tuna stocks, readers should consult the Report of the 2022 Skipjack Tuna Data Preparatory Meeting (Anon., 2022a) and the Report of the 2022 Skipjack Stock Assessment Meeting (Anon., 2022b). A summary of both stock status is provided below (Tables 1a and 1b). Table 2 provides estimated catches and discards by gear, for the period 2000-2024. The Kobe Phase Plots and uncertainty of current status estimates are summarized in Figure 1. Table 3 provides estimated probabilities (%) that the fishing mortality will be below F_{MSY} and spawning stock biomass will be above SSB_{MSY} in future years under different constant catch scenarios.

Table 1a. Eastern Atlantic skipjack summary table.

<i>Indicator</i>		<i>Stock Status</i>
Maximum Sustainable Yield (MSY)	216,617 t (172,735 – 284,658 t) ¹	2020
TAC (2024)	None	
Current (2024) Yield	181,999 t ²	
Relative Biomass (B_{2020}/B_{MSY})	1.60 (0.50 – 5.79) ³	
Relative Fishing Mortality (F_{2020}/F_{MSY})	0.63 (0.18 – 2.35) ³	
Stock Status	Overfished: NO (18% probability of being overfished) Overfishing: NO (21% probability of overfishing)	
Management measure in effect	Rec. 24-01 ⁴	

¹ Median and 95% confidence interval estimated from the joint uncertainty grid.

² Provisional and subject to revision.

³ Median and 95% confidence interval based on 90,000 iterations of the multivariate lognormal (MVLN) approximation for Stock Synthesis and 90,000 Markov chain Monte Carlo (MCMC) iterations for JABBA.

⁴ Rec. 24-01 only entered in force in June 2025, but other previous Recommendation (Rec. 23-01, Rec. 22-01 and Rec. 21-01) included several measures that impacted fishing for the eastern stock (e.g. temporal closure on fishing for schools associated with FADs, limits to the number of FADs, changes in FAD design, etc.).

Table 1b. Western Atlantic skipjack summary table.

<i>Indicator</i>		<i>Stock Status</i>
Maximum Sustainable Yield (MSY)	35,277 t (28,444 – 46,340 t) ¹	2020
TAC (2024)	None	
Current (2024) Yield	23,207 t ²	
Relative Biomass (SSB_{2020}/B_{MSY})	1.60 (0.90 – 2.87) ³	
Relative Fishing Mortality (F_{2020}/F_{MSY})	0.41 (0.19 – 0.89) ³	
Stock Status	Overfished: NO (9% probability of being overfished) Overfishing: NO (3% probability of overfishing)	
Management measure in effect	Rec. 24-01 ⁴	

¹ Median and 95% confidence interval estimated from the joint uncertainty grid.

² Provisional and subject to revision.

³ Median and 95% confidence interval based on 90,000 iterations of the multivariate lognormal (MVLN) approximation for Stock Synthesis.

⁴ Rec. 24-01 only entered in force in June 2025, but other previous Recommendations (Rec. 23-01, Rec. 22-01 and Rec. 21-01) also applied to the western stock. No fleets were targeting western skipjack using FADs, so the impact of those Recommendations on the western stock and fisheries was likely to be minimal.

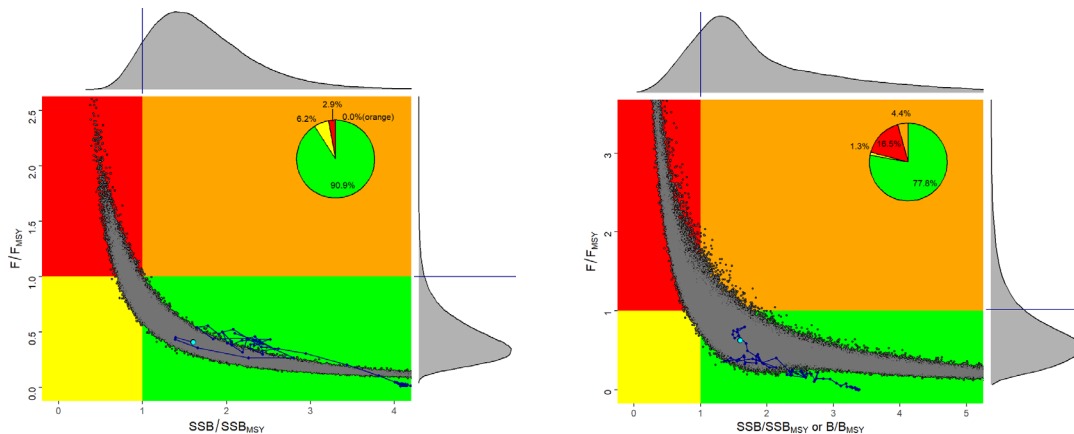


Figure 1. Kobe plots for the western (left) and eastern (right) Atlantic skipjack stock status in 2020, estimated during the 2022 stock assessment. The upper graph represents the smoothed frequency distribution of SSB_{2020}/SSB_{MSY} or B_{2020}/B_{MSY} estimates for 2020, while the right graph represents the smoothed frequency distribution of F_{2020}/F_{MSY} estimates for 2020. The inserted pie charts indicate the probability of the stock being within each Kobe colour quadrant. The line indicates the stock status trajectory starting in 1952 for western and eastern stocks.

Outlook

Eastern Atlantic

The combined results of the assessment, based on the median of the entire uncertainty grid, showed that in 2020 the East Atlantic skipjack tuna stock was in healthy condition. The median MSY was estimated as 216,617 t from the uncertainty grid of the deterministic runs. The results indicated a stock status of not overfished (18% probability of being overfished), with no overfishing (21% probability of overfishing) (Table 1a). However, there is large uncertainty in biomass estimates reflected in the long tails of the biomass distribution relative to B_{MSY} (95% CI of 0.5 to 5.79 B/B_{MSY}). This large range of uncertainty in stock status estimates has implications on the estimated probabilities for each constant catch scenario in the projections that have been used to develop management advice.

Western Atlantic

The combined results of the assessment, based on the median of the entire uncertainty grid, showed that in 2020 the West Atlantic skipjack tuna stock was in healthy condition. The median MSY was estimated as 35,277 t from the uncertainty grid of the deterministic runs. The results indicated a stock status of not overfished (9% probability of being overfished), with no overfishing (3% probability of overfishing) (Table 1b).

Management recommendation

Eastern Atlantic

The stock status of eastern Atlantic skipjack tuna in 2020 was estimated with a high probability (78%) to be in a healthy condition (green quadrant of the Kobe plot), with that stock not overfished or subjected to overfishing. According to the Kobe II Strategy Matrix (K2SM), a future constant catch using the median MSY of 216,617 t will have about 55% probability of maintaining the stock in the green quadrant of the Kobe plot through 2028. Assuming a constant catch at MSY^2 , the probability of the stock biomass being below 20% of B_{MSY} in 2028 was about 17%, and the probability of stock biomass being below 10% in 2028 was about 14%. Moreover, provisional catches for 2022 were substantially higher than the MSY estimated in the last stock assessment. The Commission should also be aware that fishing effort for skipjack also impacts other species that are caught in combination with skipjack particularly in the purse seine FOB fisheries (particularly juveniles of yellowfin and bigeye tuna).

² Projections were conducted with the MSY estimated for each model of the uncertainty grid.

Western Atlantic

The status of the western Atlantic skipjack stock in 2020 was estimated with a high probability (91%) to be in healthy condition (green quadrant of the Kobe plot), not overfished nor undergoing overfishing. According to the K2SM, a future constant catch using the median MSY of 35,277 t would have had about 70% probability of maintaining the stock in the green quadrant of the Kobe plot by 2028. Assuming a constant catch at MSY, the probabilities of the stock biomass being below 20% or 10% of the B_{MSY} until 2028 were less than 1%. The Committee recommended that the Commission adopt one of the MSE-tested Management Procedures (MPs) and that a TAC be set based on that MP for 2026 and beyond (see sections 19.41 and 19.42 of this report).

Table 3. Kobe II matrices giving the probability that: a) $F \leq F_{MSY}$; b) $B \geq B_{MSY}$; and c) the joint probability of $F \leq F_{MSY}$ and $B \geq B_{MSY}$, in a given year for a given catch level (thousand t). B refers to SSB for the western SKJ stock, and total biomass for the eastern SKJ stock.

Eastern Atlantic

a) Probability that $F \leq F_{MSY}$

TAC (kt)	2023	2024	2025	2026	2027	2028
100	91%	92%	93%	93%	93%	94%
110	90%	92%	92%	93%	93%	93%
120	89%	91%	92%	92%	93%	93%
130	88%	90%	91%	92%	92%	92%
140	87%	89%	90%	91%	91%	92%
150	85%	87%	88%	89%	90%	90%
160	84%	85%	86%	87%	88%	88%
170	82%	84%	84%	85%	85%	86%
180	81%	81%	82%	82%	82%	82%
190	79%	79%	79%	78%	77%	76%
200	77%	76%	75%	73%	71%	70%
210	75%	73%	71%	68%	65%	63%
220	73%	70%	67%	63%	59%	57%
230	71%	67%	62%	57%	53%	50%
240	69%	63%	57%	51%	46%	42%
250	67%	60%	52%	45%	39%	35%
260	65%	56%	47%	38%	32%	27%
270	63%	52%	42%	33%	26%	20%
280	60%	48%	36%	27%	20%	14%
290	58%	44%	31%	21%	14%	10%
300	56%	40%	26%	16%	10%	7%

b) Probability that $B \geq B_{MSY}$

TAC (kt)	2023	2024	2025	2026	2027	2028
100	82%	88%	91%	92%	93%	93%
110	82%	88%	90%	92%	92%	93%
120	82%	87%	90%	91%	92%	92%
130	82%	87%	89%	91%	92%	92%
140	81%	86%	88%	90%	91%	91%
150	81%	85%	87%	89%	90%	90%
160	81%	84%	86%	87%	88%	89%
170	80%	83%	84%	85%	86%	87%
180	80%	81%	82%	82%	82%	83%
190	79%	80%	80%	79%	78%	77%
200	79%	78%	77%	74%	72%	70%
210	78%	76%	73%	70%	66%	63%
220	77%	74%	69%	64%	60%	58%
230	77%	72%	65%	59%	55%	52%
240	76%	69%	61%	54%	49%	45%
250	75%	66%	57%	49%	43%	37%
260	74%	63%	53%	44%	36%	29%
270	73%	61%	48%	38%	29%	19%
280	72%	57%	44%	32%	20%	12%
290	71%	54%	39%	24%	12%	9%
300	70%	51%	34%	17%	9%	7%

c) Probability that $F \leq F_{MSY}$ and $B \geq B_{MSY}$

TAC (kt)	2023	2024	2025	2026	2027	2028
100	82%	88%	91%	92%	93%	93%
110	82%	88%	90%	92%	92%	93%
120	81%	87%	90%	91%	92%	92%
130	81%	86%	89%	90%	91%	92%
140	81%	85%	88%	89%	90%	91%
150	80%	84%	86%	88%	89%	90%
160	79%	83%	84%	86%	87%	88%
170	79%	81%	83%	84%	84%	85%
180	78%	79%	80%	80%	81%	81%
190	77%	77%	77%	77%	76%	75%
200	76%	75%	74%	72%	70%	68%
210	75%	72%	70%	67%	63%	61%
220	73%	70%	65%	61%	57%	55%
230	71%	66%	60%	55%	51%	48%
240	69%	63%	55%	49%	45%	41%
250	67%	59%	50%	43%	38%	33%
260	65%	54%	45%	37%	31%	25%
270	62%	50%	40%	32%	24%	17%
280	60%	46%	34%	26%	17%	10%
290	58%	41%	30%	19%	10%	8%
300	55%	38%	25%	13%	7%	6%

Western Atlantic

a) Probability that $F \leq F_{MSY}$

TAC (1000s mt)	2023	2024	2025	2026	2027	2028
16	100%	100%	100%	100%	100%	100%
18	100%	100%	100%	100%	100%	100%
20	100%	100%	100%	100%	100%	100%
22	99%	100%	100%	100%	100%	100%
24	99%	99%	99%	100%	100%	100%
26	98%	98%	98%	99%	99%	99%
28	97%	97%	97%	97%	97%	97%
30	96%	95%	94%	93%	93%	92%
32	94%	92%	91%	89%	87%	85%
33	93%	91%	88%	86%	83%	80%
34	92%	89%	86%	82%	79%	75%
35	91%	87%	83%	78%	74%	70%
36	90%	85%	80%	75%	70%	65%
38	88%	81%	74%	67%	61%	56%
40	85%	76%	67%	59%	53%	48%

b) Probability that $B \geq B_{MSY}$

TAC (1000s mt)	2023	2024	2025	2026	2027	2028
16	99%	100%	100%	100%	100%	100%
18	99%	100%	100%	100%	100%	100%
20	99%	100%	100%	100%	100%	100%
22	99%	99%	100%	100%	100%	100%
24	99%	99%	99%	100%	100%	100%
26	98%	99%	99%	99%	99%	99%
28	98%	98%	98%	98%	98%	98%
30	98%	97%	96%	96%	95%	94%
32	97%	96%	94%	92%	90%	88%
33	97%	95%	93%	90%	87%	84%
34	96%	94%	91%	87%	83%	79%
35	96%	93%	89%	84%	79%	74%
36	96%	92%	87%	81%	75%	69%
38	95%	89%	82%	73%	66%	60%
40	94%	86%	76%	66%	59%	53%

c) Probability that $F \leq F_{MSY}$ and $B \geq B_{MSY}$

TAC (1000s mt)	2023	2024	2025	2026	2027	2028
16	99%	100%	100%	100%	100%	100%
18	99%	100%	100%	100%	100%	100%
20	99%	100%	100%	100%	100%	100%
22	99%	99%	100%	100%	100%	100%
24	99%	99%	99%	99%	100%	100%
26	98%	98%	98%	99%	99%	99%
28	97%	97%	97%	97%	97%	97%
30	96%	95%	94%	93%	93%	92%
32	94%	92%	91%	89%	87%	85%
33	93%	91%	88%	86%	83%	80%
34	92%	89%	86%	82%	79%	75%
35	91%	87%	83%	78%	74%	70%
36	90%	85%	80%	75%	70%	65%
38	88%	81%	74%	67%	61%	56%
40	85%	76%	67%	59%	53%	48%