

2025 Report of the SCRS to the ICCAT Panel 1: Tropical Tuna

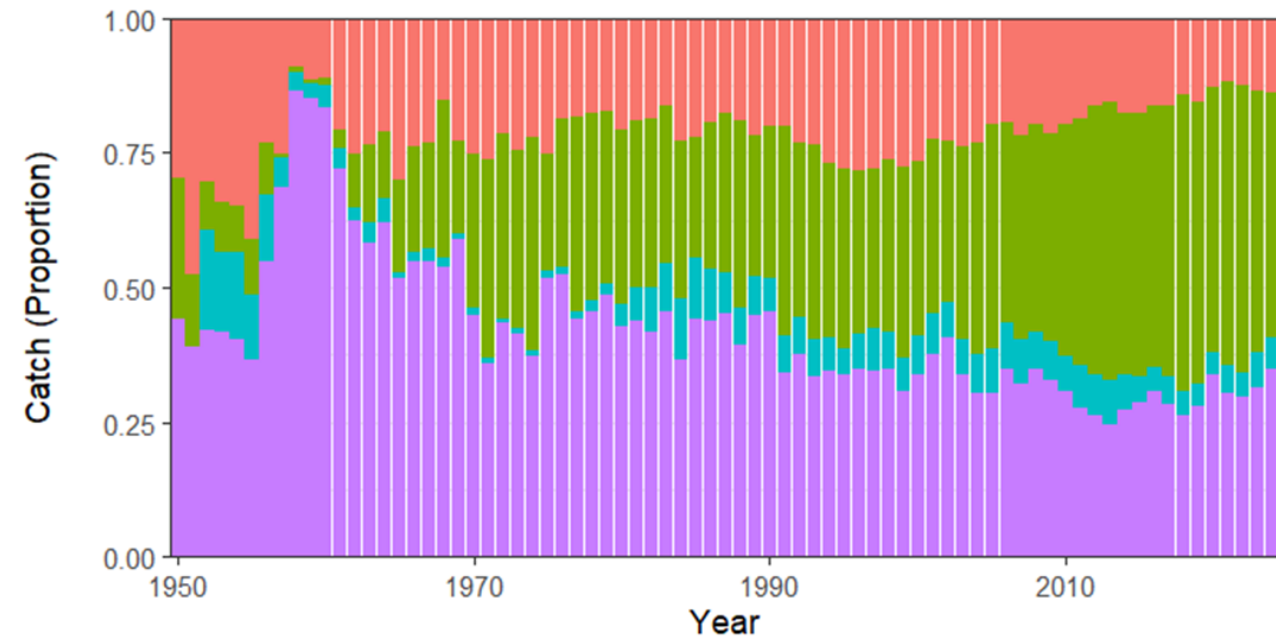
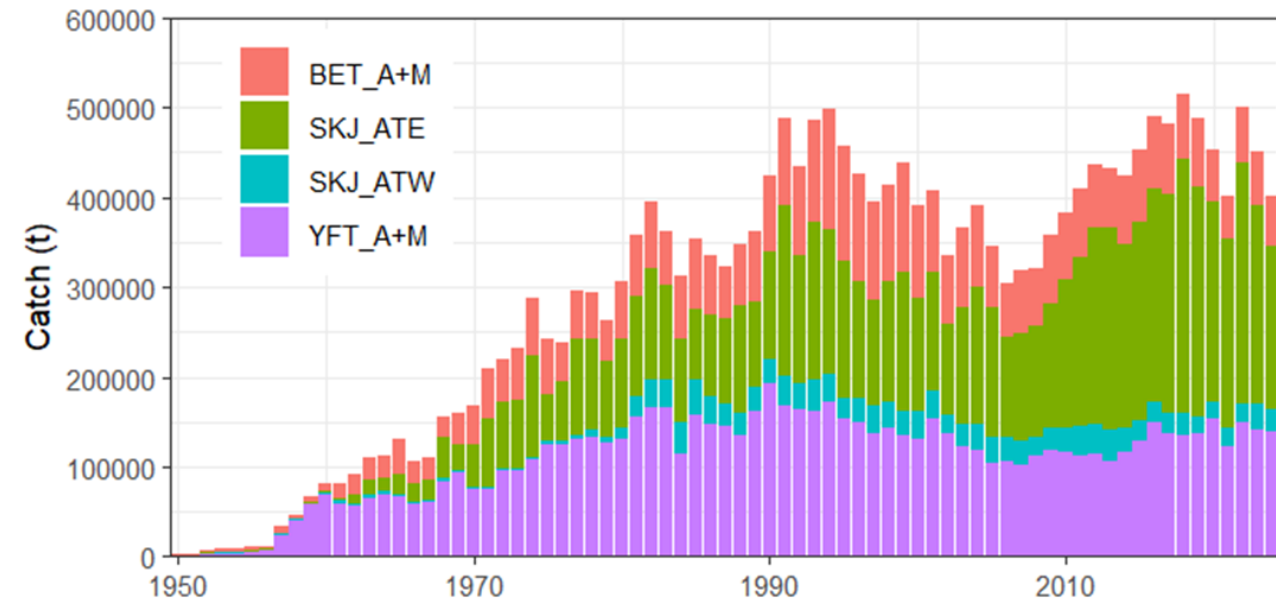
Stock status, Responses,
MSE, and Research

29th Regular Meeting of the Commission
17-24 November 2025
Seville, Spain



Outline

- Stock status and recommendations
 - SKJ-W
 - SKJ-E
 - YFT
 - BET (assessed this year)
- Responses to Commission (19.30 – 19.42)
- Management Strategy Evaluation
 - SKJ-W
 - Multi-stock MSE

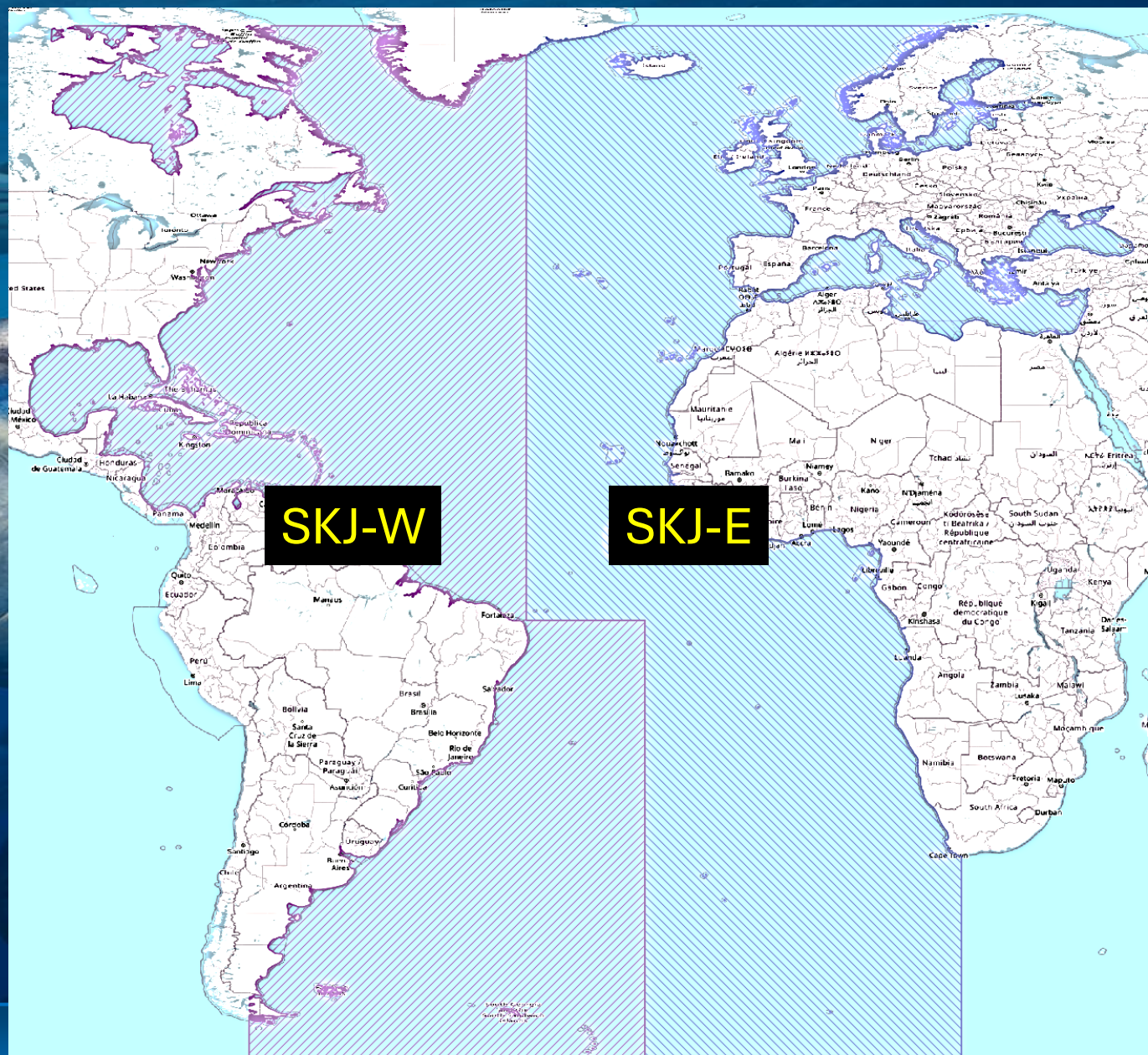


Skipjack



Last assessed in 2022

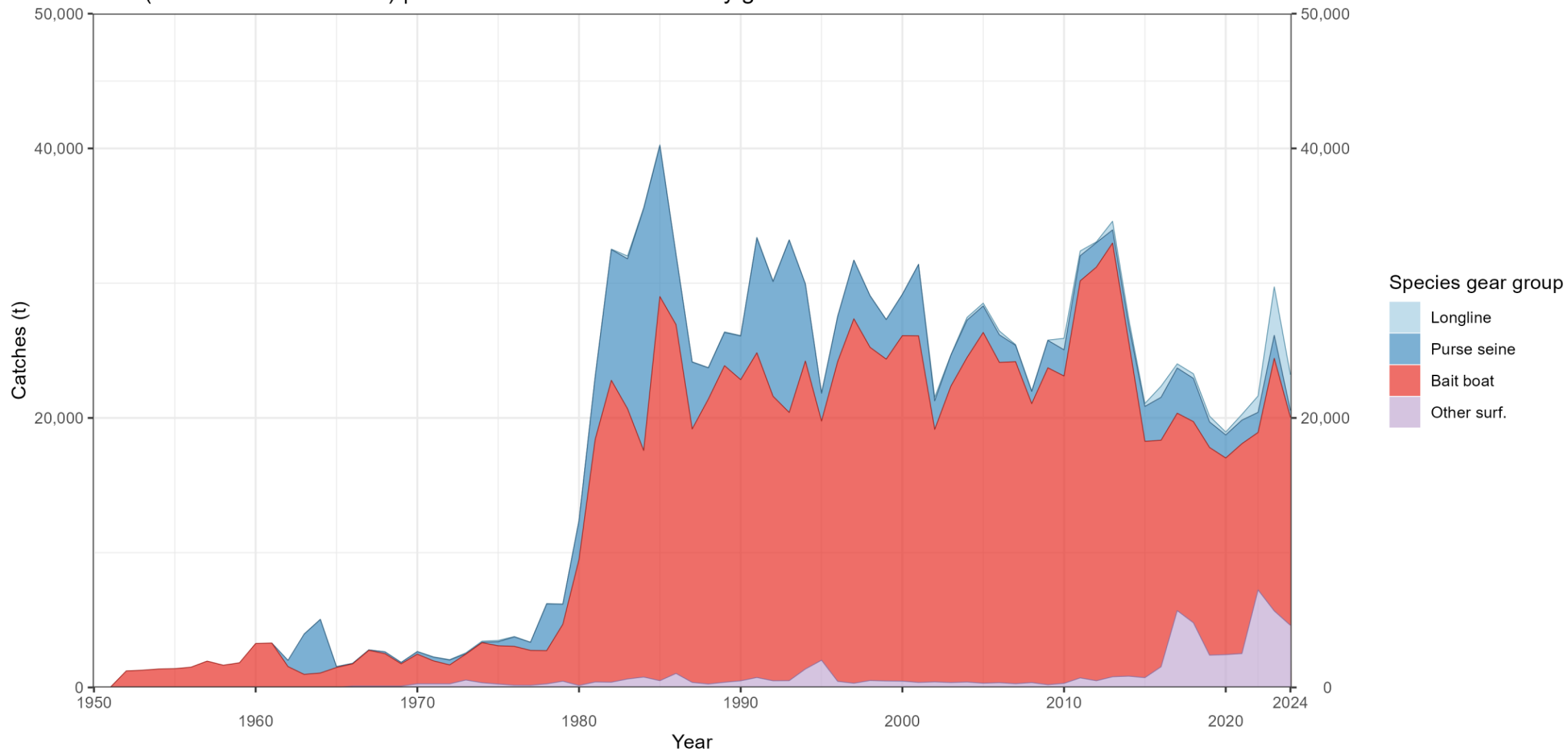
Skipjack

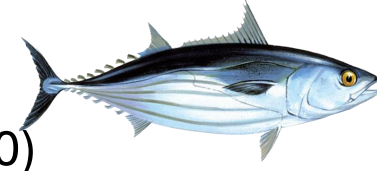




SKJ-W

SKJ (Western atlantic stock) | Cumulative Task 1 catches by gear





West Atlantic Skipjack summary table (assessed in 2022 using data through 2020)

SKJ-W

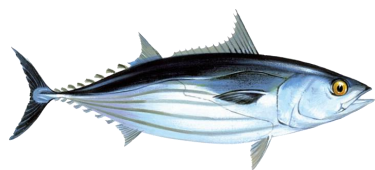
Western Atlantic skipjack		
Indicator		Stock Status
Maximum Sustainable Yield (MSY)	35,277 t (28,444 – 46,340 t) ¹	2020
Current (2025) TAC	None	
Current (2024) Yield	23,207 t ²	
Relative Biomass (B_{2020}/B_{MSY})	1.60 (0.90 – 2.87) ³	
Relative Fishing Mortality (F_{2020}/F_{MSY})	0.41 (0.19 – 0.89) ³	
Stock Status	Overfished: NO (9% probability of being overfished)	
	Overfishing: NO (3% probability of overfishing)	
Management Measures 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.

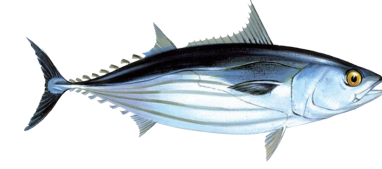
⁴ Rec. 24-01 only entered in force in June 2025, but other previous Recommendations (Rec. 23-01, Rec. 22-01 and Rec. 21-01) also applied to the western stock. No fleets were targeting western skipjack using FADs, so the impact of those Recommendations on the western stock and fisheries was likely to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



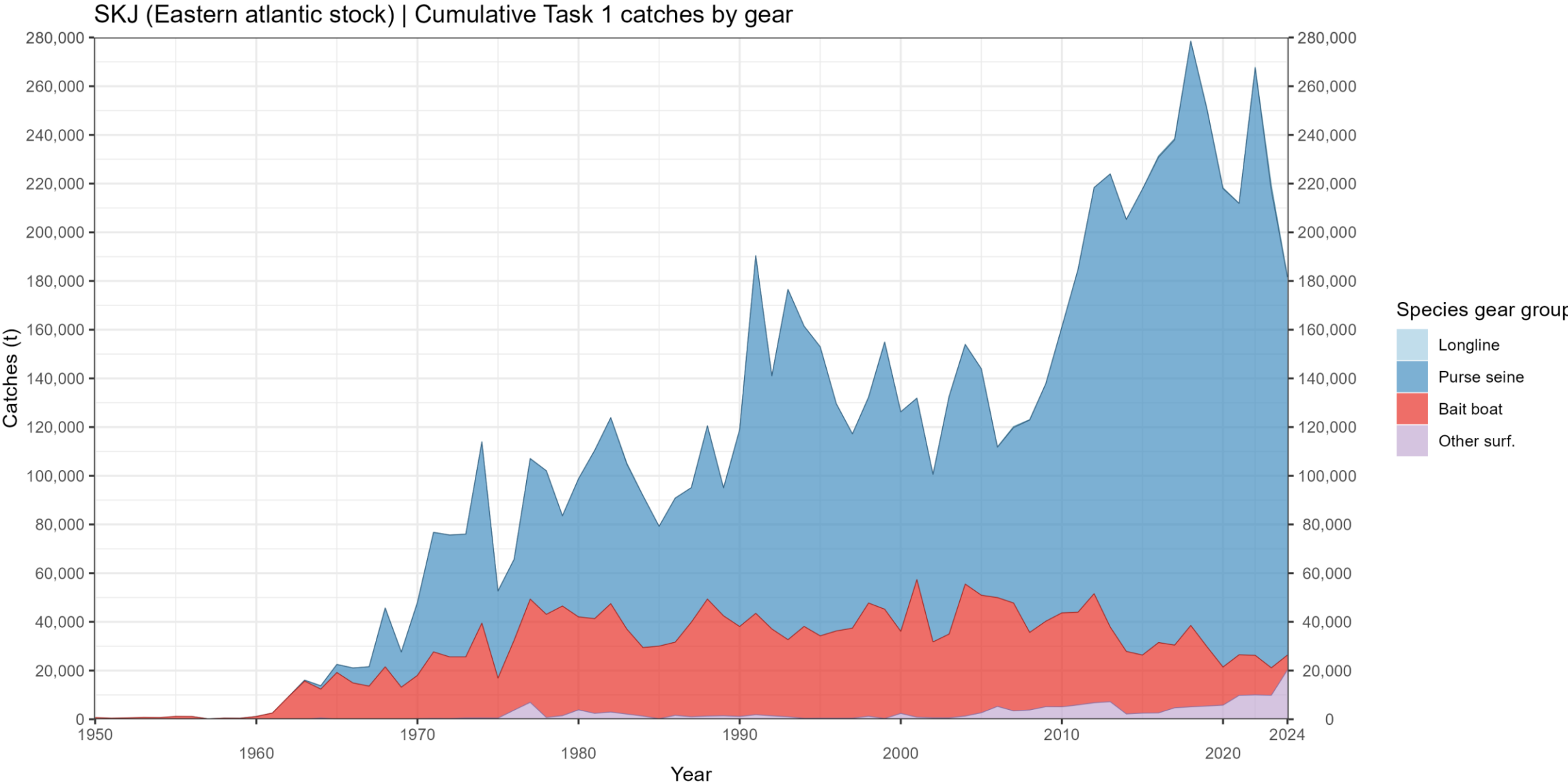
SKJ-W

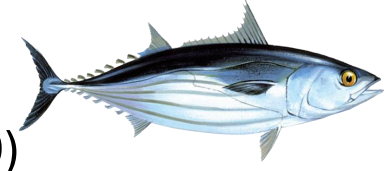
- According to the K2SM, a future constant catch using the median MSY of 35,277 t would have had about 70% probability of maintaining the stock in the green quadrant of the Kobe plot by 2028.
- The Committee recommended that the Commission **adopt one of the MSE-tested Candidate Management Procedures (CMPs)** and that a **TAC be set** based on that MP for 2026 and beyond.





SKJ-E





East Atlantic Skipjack summary table (assessed in 2022 using data through 2020)

SKJ-E

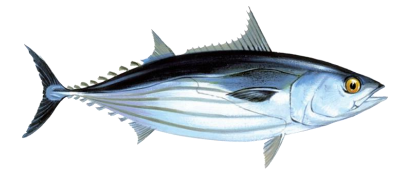
Eastern Atlantic skipjack			Stock Status
Indicator			
Maximum Sustainable Yield (MSY)	216,617 t (172,735 – 284,658 t) ¹		
Current (2025) TAC	None		
Current (2024) Yield	181,999 t ²		
Relative Biomass (B_{2020}/B_{MSY})	1.60 (0.50 – 5.79) ³		
Relative Fishing Mortality (F_{2020}/F_{MSY})	0.63 (0.18 – 2.35) ³		
Stock Status	Overfished: NO (18% probability of being overfished)		
	Overfishing: NO (21% probability of overfishing)		
Management Measures in effect	Rec. 24-01 ⁴		2020

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.).



SKJ-E

- According to the 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.
- 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).



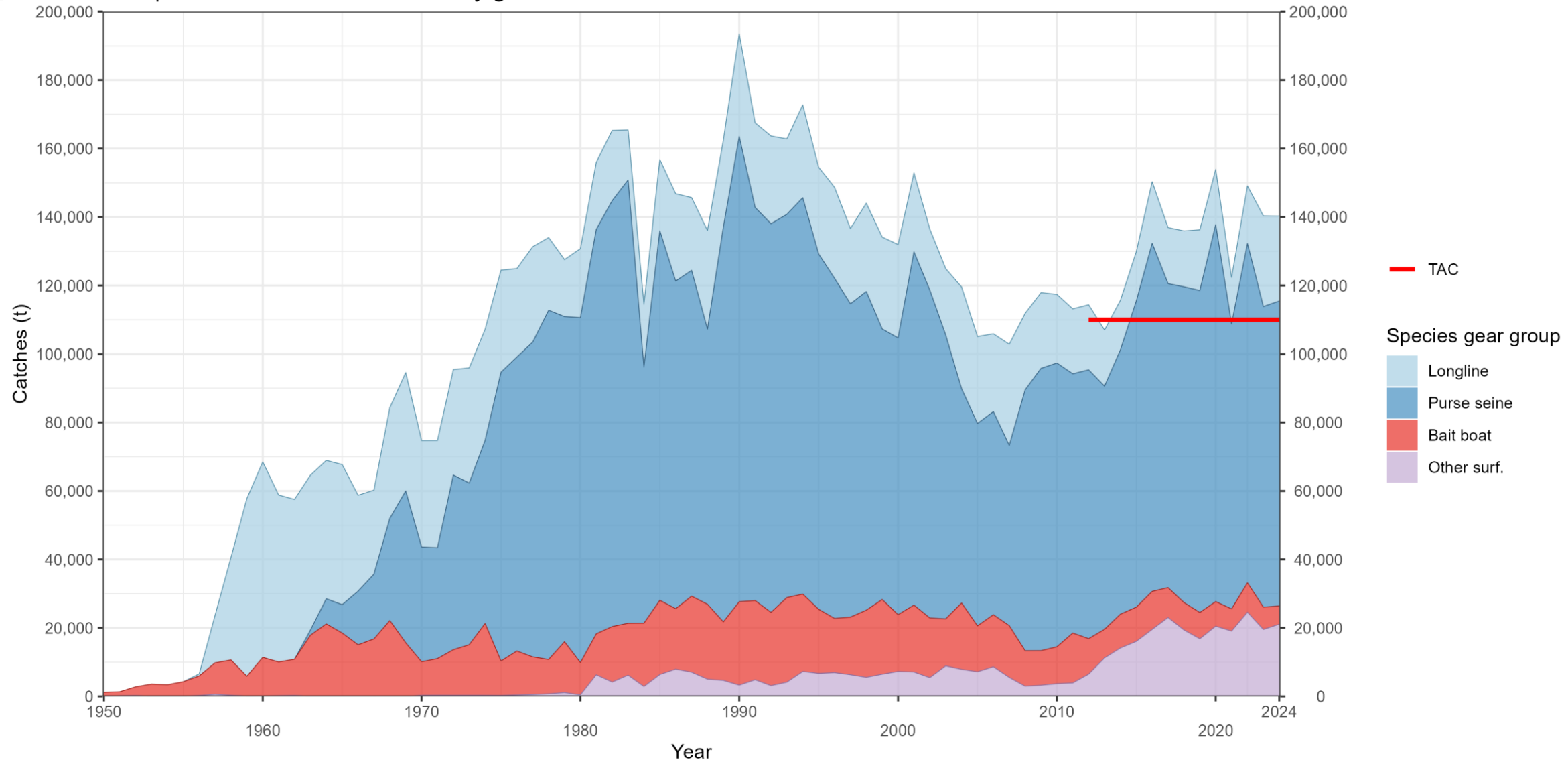


Yellowfin Tuna

Last assessed in 2024



YFT | Cumulative Task 1 catches by gear vs. TAC





Indicator		Stock Status
Maximum Sustainable Yield (MSY) ¹	121,661 t (107,485 t - 188,456 t) ³	2022
TAC (2024)	110,000 t	
Current (2024) Yield ²	140,302 t	
Relative Spawning Biomass (SSB ₂₀₂₂ /SSB _{MSY})	1.37 (0.91-2.15)	
Relative Fishing Mortality (F ₂₀₂₀₋₂₀₂₂ /F _{MSY}) ¹	0.89 (0.40-1.46)	
Stock Status	Overfished: NO (19% probability of being overfished) ⁴ Overfishing: NO (42% probability of overfishing) ⁴	
Management measures in effect	Rec. 24-01 ⁵ TAC (2025) 110,000 t	

¹ Median of 4,000 Monte Carlo iterations of the Stock Synthesis base case.

² Provisional and subject to revision as of 23 September 2025.

³ Median and 80% confidence intervals are shown.

⁴ As estimated from the Kobe plot probability in each quadrant.

⁵ Rec. 24-01 only entered in force in June 2025, but other previous Recommendations (Rec. 22-01and Rec. 17-01) also applied to YFT stock.



YFT

- The Committee noted that increased harvests of juveniles could have negative consequences for yellowfin tuna long term MSY.
- Should the Commission wish to increase long-term sustainable yield, the Committee continues to recommend that effective measures be found to limit catches associated with floating objects (FOBs) and other fishing **mortality of small yellowfin tuna.**

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

Catch	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
0kt	93%	94%	97%	99%	100%	100%	100%	100%	100%	100%
100kt	90%	87%	86%	85%	85%	85%	85%	85%	84%	84%
105kt	89%	87%	85%	84%	83%	82%	81%	81%	80%	80%
110kt	88%	86%	84%	82%	80%	79%	78%	76%	75%	74%
115kt	86%	83%	81%	79%	76%	74%	72%	70%	68%	66%
120kt	83%	80%	77%	74%	71%	67%	65%	63%	62%	61%
125kt	81%	77%	73%	69%	65%	62%	60%	58%	56%	55%
130kt	78%	74%	68%	64%	60%	57%	55%	53%	51%	49%
135kt	75%	70%	64%	60%	56%	53%	50%	48%	46%	44%
140kt	71%	66%	61%	56%	51%	48%	45%	44%	42%	41%
145kt	68%	63%	57%	52%	48%	44%	42%	41%	39%	38%
150kt	65%	60%	54%	48%	44%	42%	39%	38%	36%	35%
155kt	62%	56%	51%	45%	42%	39%	37%	35%	34%	33%
160kt	60%	54%	47%	43%	39%	36%	34%	33%	31%	30%



YFT

- Catch levels, averaging about **141,000 t over the last 5 years** (2018–2022), are expected to result in overfishing and lead to an overfished status if they continue.
- Existing conservation and management measures appear to be **insufficient** to limit harvest (Commission should establish a mechanism to ensure that the catches of YFT do not exceed any adopted TAC).





Bigeye Tuna

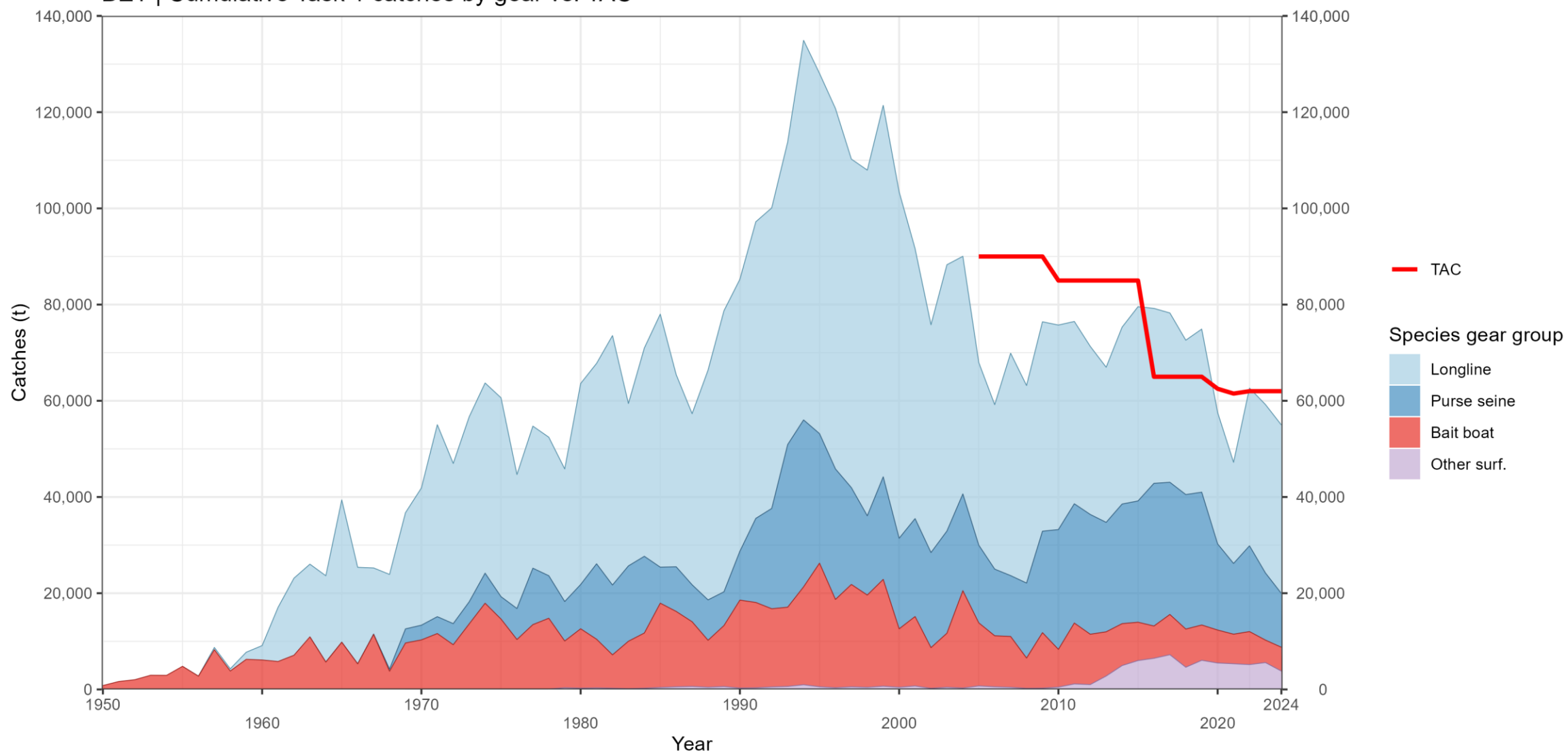
Assessed in 2025





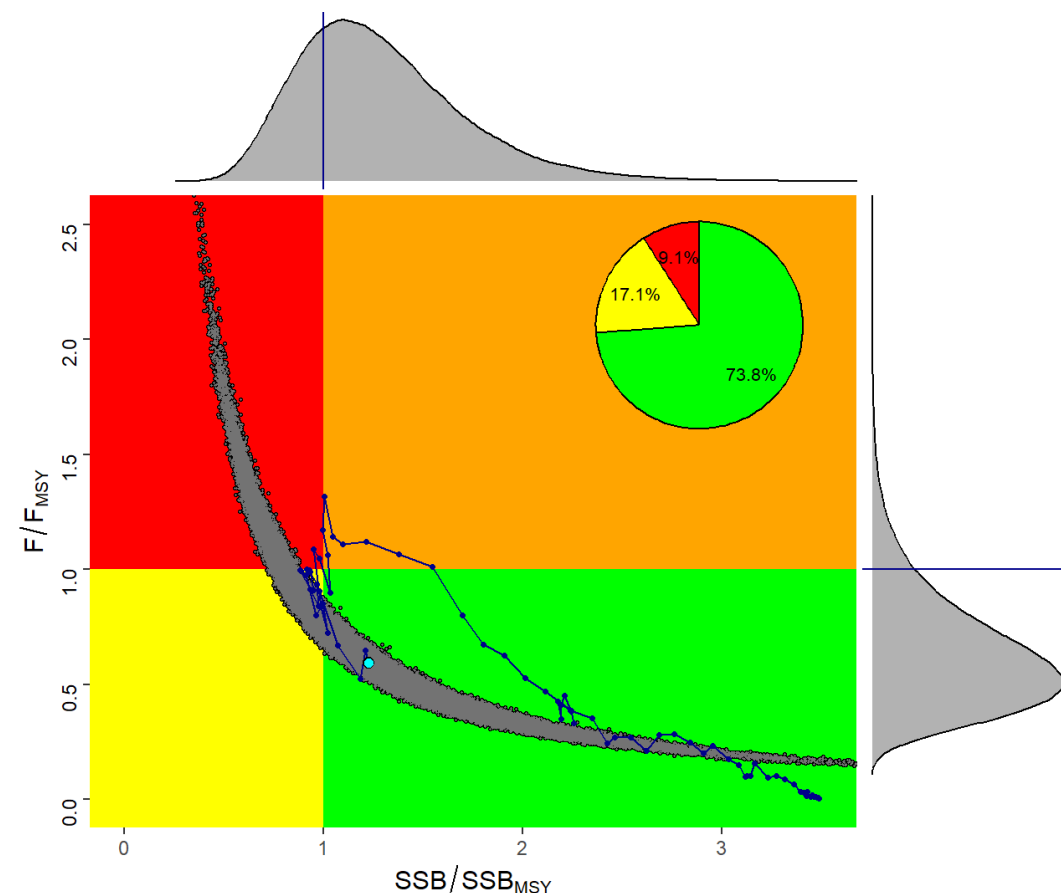
BET

BET | Cumulative Task 1 catches by gear vs. TAC





- The Committee noted that **two important sources of uncertainty highlighted in the advice from the 2021 BET stock assessment** (i.e. the development of joint longline index and the assumptions regarding natural mortality) **were specifically addressed during this assessment.**
- Similar stock status in 2019 when 2021 assessment and in the 2025 assessment compared, suggesting that **changing model assumptions did not substantially affect historic view of the stock status.**
- Conclusion that **the improved stocks status estimated in the 2025 stock assessment results from recovery of the stock.**



Atlantic bigeye tuna summary table (assessed in 2025 using data through 2023)



BET

<i>Indicator</i>		<i>Stock Status</i>
Maximum Sustainable Yield (MSY) ¹	86,030 t (79,702 t - 114,311 t) ³	2023
TAC (2024)	62,000 t	
Current (2024) Yield ²	54,984 t	
Relative Spawning Biomass (SSB ₂₀₂₃ /SSB _{MSY})	1.23 (0.81-1.85) ³	
Relative Fishing Mortality (F ₂₀₂₃ /F _{MSY})	0.59 (0.36-0.98) ³	
Stock Status	Overfished: NO (26.2% probability of being overfished) ⁴	
Management measure in effect	Overfishing: NO (9.1% probability of overfishing) ⁴ Rec. 24-01 ⁵ TAC (2025) 73,011 t	

¹ Combined result of 18 stock synthesis model runs using data from 1950-2023.
² Provisional and subject to revision as of 23 September 2025.
³ Point estimate, 80% bias corrected confidence intervals are shown.
⁴ As estimated from the Kobe plot probability in each quadrant.
⁵ Rec. 24-01 only entered in force in June 2025, but other previous Recommendations (Rec. 21-01, Rec. 22-01 and Rec. 23-01) also applied to the BET stock.



BET

Probability $F \leq F_{MSY}$ and $SSB \geq SSB_{MSY}$

Catch (t)	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
50000	86%	91%	94%	97%	98%	99%	100%	100%	100%	100%	100%	100%	100%
52500	86%	90%	94%	96%	98%	99%	100%	100%	100%	100%	100%	100%	100%
55000	85%	90%	93%	96%	97%	99%	99%	100%	100%	100%	100%	100%	100%
57500	85%	89%	92%	95%	97%	98%	99%	99%	100%	100%	100%	100%	100%
60000	84%	88%	91%	94%	96%	97%	98%	99%	99%	100%	100%	100%	100%
62500	84%	88%	91%	93%	95%	96%	97%	98%	99%	99%	99%	100%	100%
65000	84%	87%	90%	92%	94%	95%	96%	97%	98%	98%	99%	99%	99%
67500	83%	86%	89%	90%	92%	93%	95%	96%	96%	97%	98%	98%	98%
70000	83%	85%	87%	89%	90%	92%	93%	94%	94%	95%	96%	96%	97%
72500	83%	85%	86%	87%	88%	89%	90%	91%	92%	93%	93%	94%	94%
73011	83%	84%	86%	87%	88%	89%	90%	90%	91%	92%	92%	93%	94%
75000	82%	83%	84%	85%	86%	87%	87%	88%	88%	89%	90%	90%	91%
77500	81%	82%	83%	83%	83%	84%	84%	85%	85%	85%	85%	86%	86%
80000	79%	80%	80%	80%	80%	81%	81%	81%	81%	81%	81%	81%	81%
82500	77%	78%	78%	77%	77%	77%	77%	76%	76%	76%	75%	75%	75%
85000	76%	75%	75%	74%	74%	73%	72%	71%	71%	70%	70%	69%	68%
87500	73%	72%	72%	71%	70%	69%	68%	67%	65%	64%	64%	62%	62%
90000	71%	70%	69%	67%	66%	64%	63%	61%	60%	59%	58%	57%	55%
92500	68%	67%	66%	64%	62%	60%	58%	56%	55%	54%	52%	51%	50%
95000	66%	64%	62%	60%	58%	56%	54%	52%	50%	48%	47%	46%	45%
97500	63%	61%	59%	56%	54%	51%	49%	47%	46%	44%	43%	42%	42%
100000	60%	59%	56%	53%	50%	47%	45%	43%	41%	40%	40%	39%	39%

- **Projections** assumed that recent (2021-2023) **fleet catchability, selectivity and the relative catch between fleets**, would continue and recruitment would follow the estimated spawner/recruitment relationship.
- Future constant catch of 73,011 t has a high probability (91%) of maintaining the stock in the green quadrant of the Kobe plot in 2034



- **Increases in the proportion of small fishes in the harvests** has had a consequence for the total production of bigeye tuna fisheries (i.e. **reduced yield at MSY**)
- The Committee noted that **fishing mortality has decreased in recent years** and that F on age 1 has decreased by the greatest proportion (*Response 19.30 in 2025 SCRS Report*)



Responses for tropical tuna

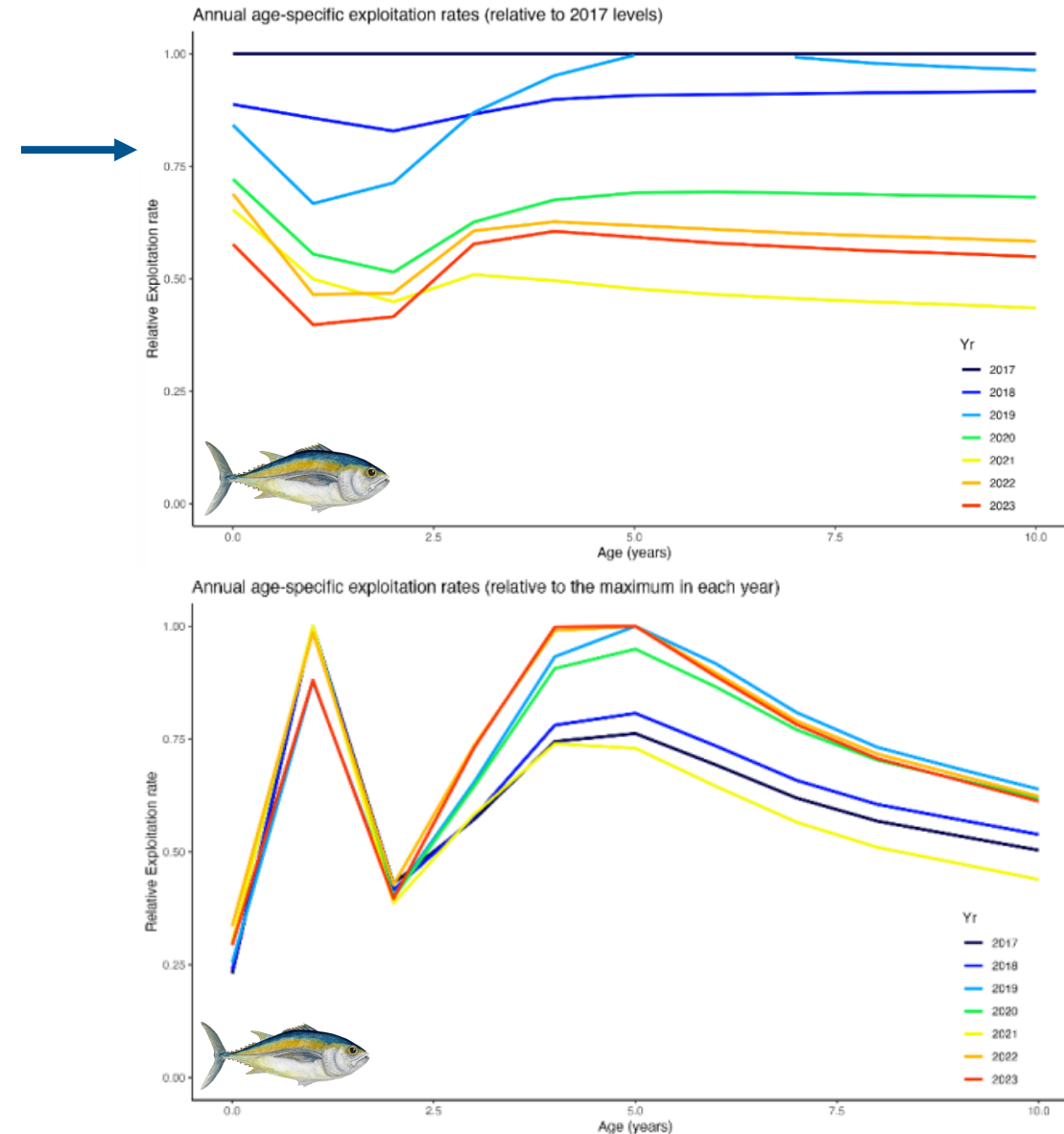
Summarized

MSE focus

- 19.30 – Fishing prohibited with FADs (REC 24-01 para 31)
- 19.31 – advice on max number of FAD sets per vessel or per CPC
- 19.32 – SCRS and IMM review requirements of para 39-40 and make recommendations to remove duplication and streamline FAD data and reporting obligations (REC 24-01 para 42)
- 19.33 – recommendations on additional dFAD management options (REC 24-01 para 51)
- 19.34 – improvements to observer programmes including how coverage should be stratified (REC 24-01 para 67)
- 19.35 – report on implementation of port sampling programme by CPC (REC 24-01 para 73)
- 19.36 – explore efficacy of full fishery closures (REC 24-01 para 79a)
- 19.37 – estimate capacity in the Convention area (REC 24-01 para 79b)
- 19.38 – Advise on final LRPs for BET, YFT and SKJ-E (RES 24-02 para 2)
- 19.39 – Consider interim OM objectives (RES 24-02)
- 19.40 – Evaluate differential impacts of fishing operations on the whole range of the stock (RES 24-02 para 4)
- 19.41 – Run the SKJ-W MP and advise the Commission on resulting TAC per process
- 19.42 – Finalise tuning of the MP to achieve the status objective specified in para 2 (REC 24-04 para 8)

Response 19.30 – Fishing prohibited with FADs

- **Absolute levels of exploitation (F) generally declined from 2017-2023 for all ages, with the exploitation rates for the youngest ages (1-2 yrs) declining slightly more (59% versus 43%) than for the older ages (5+ yrs)**
- Analysis suggests that **recent management measures** and fisheries trends has had some measurable effect on **reducing catches of juvenile bigeye tuna**.



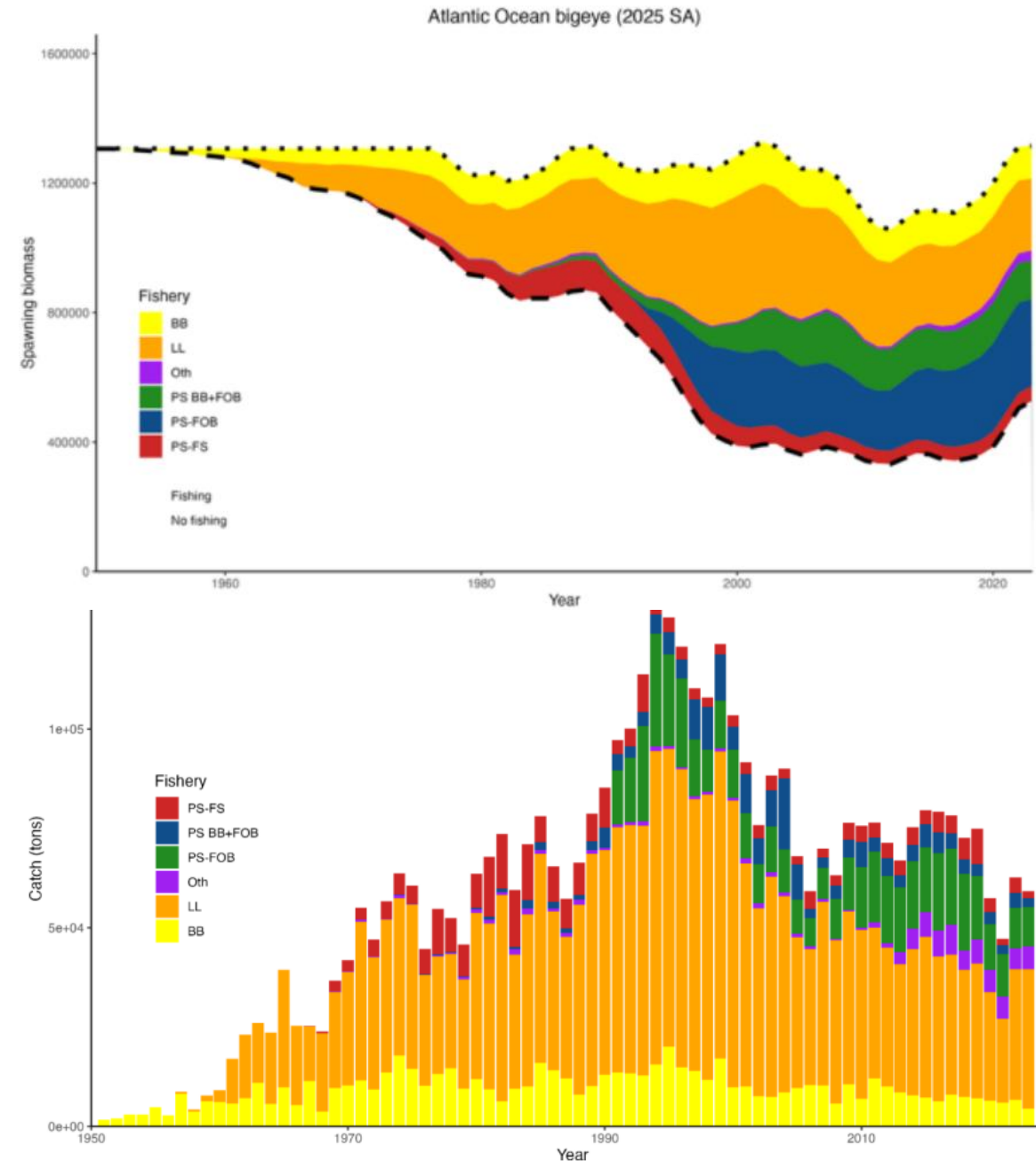
Response 19.30 – Fishing prohibited with FADs



To illustrate the differential impacts of fishing operations (e.g., purse seine, longline, and baitboat) on the spawning potential of tropical tuna stocks, **in its 2024 Report the SCRS prepared fishery impact plots based on the reference case models for YFT (2024 assessment) and BET (2019 assessment).**

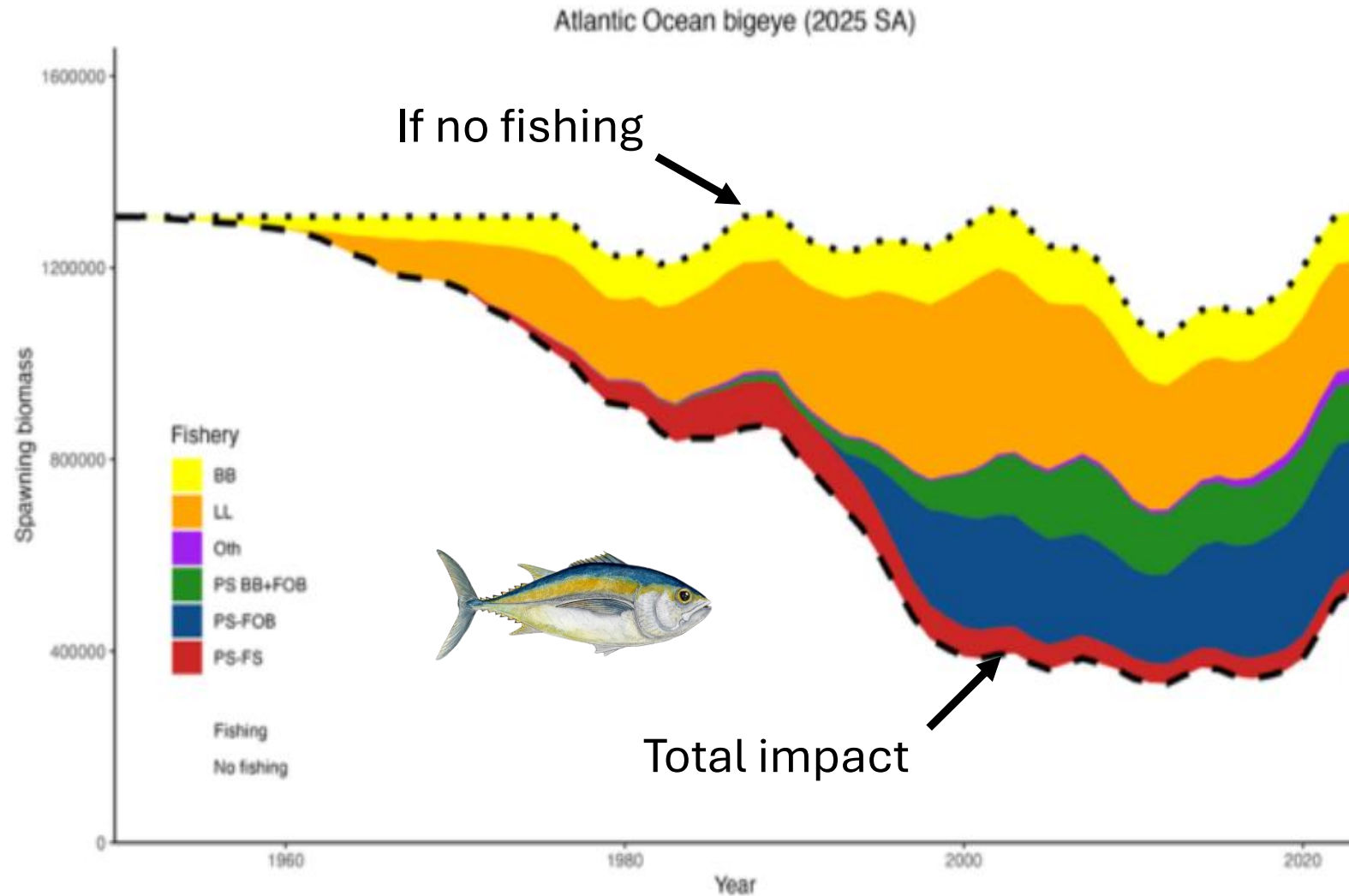
Impact plots provide an indication of the relative impacts of the different fisheries on the stock integrating catches, selectivity and biology.

In 2025, the SCRS updated the BET impact plots using the reference case from the 2025 BET assessment.



Response 19.30 – Fishing prohibited with FADs

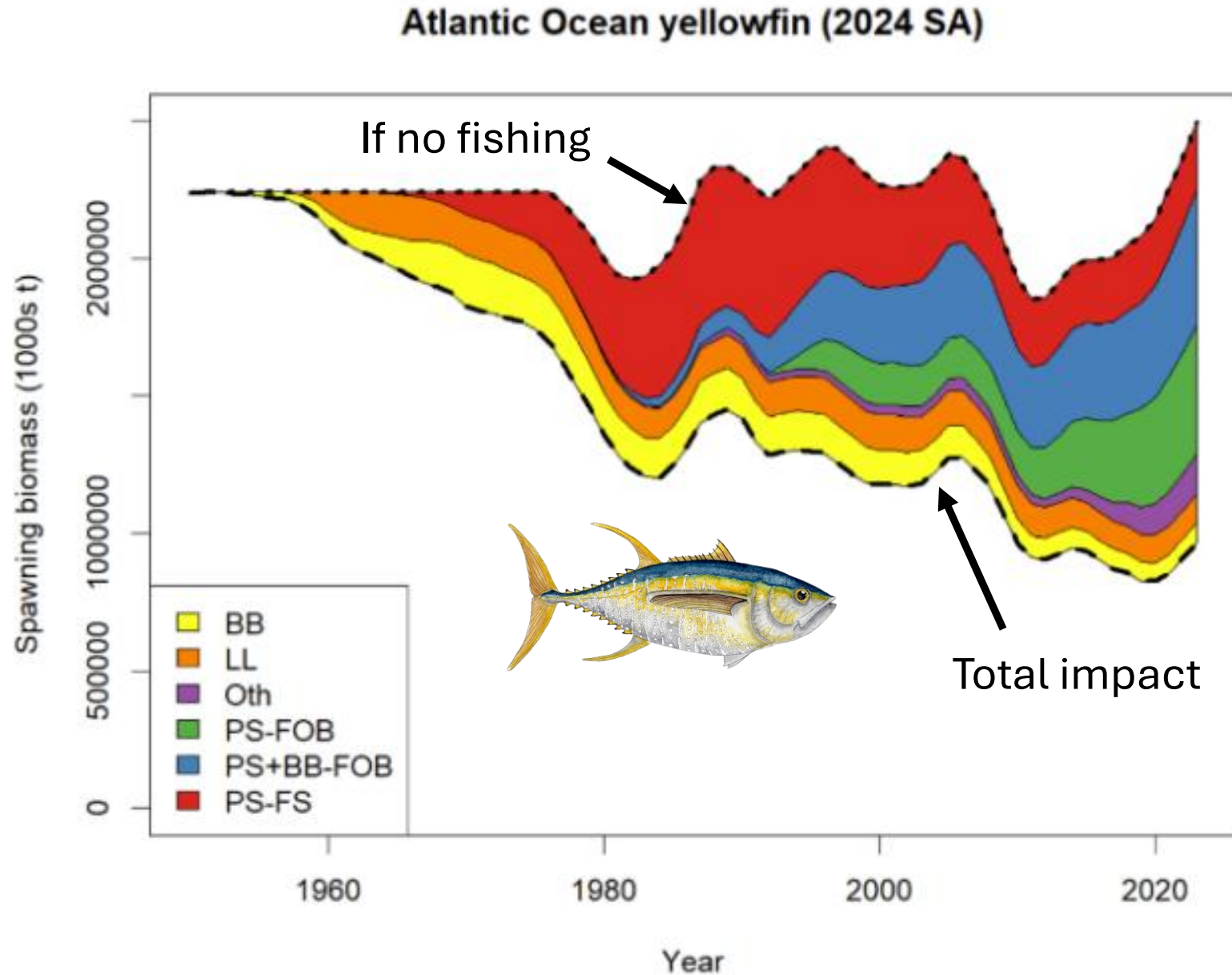
- Fishery impact plot for BET:
 - 1960's to 1970s impacts on SSB were primarily associated with bait boat and longline fishing. Fishing by purse seiners on free schools (PS-FS) increased from 1970s until the 1990s
 - 1990's fishing on floating objects (PS-FOB) became increasingly impactful.
 - Currently, almost 50% of the impacts on SSB are associated with purse seine fishing on floating objects (PS-FOB and PS BB+FOB), although other fishing fleets/gears continue to have an important impact (LL: 27%; BB:13.5%).



Response 19.30 – Fishing prohibited with FADs

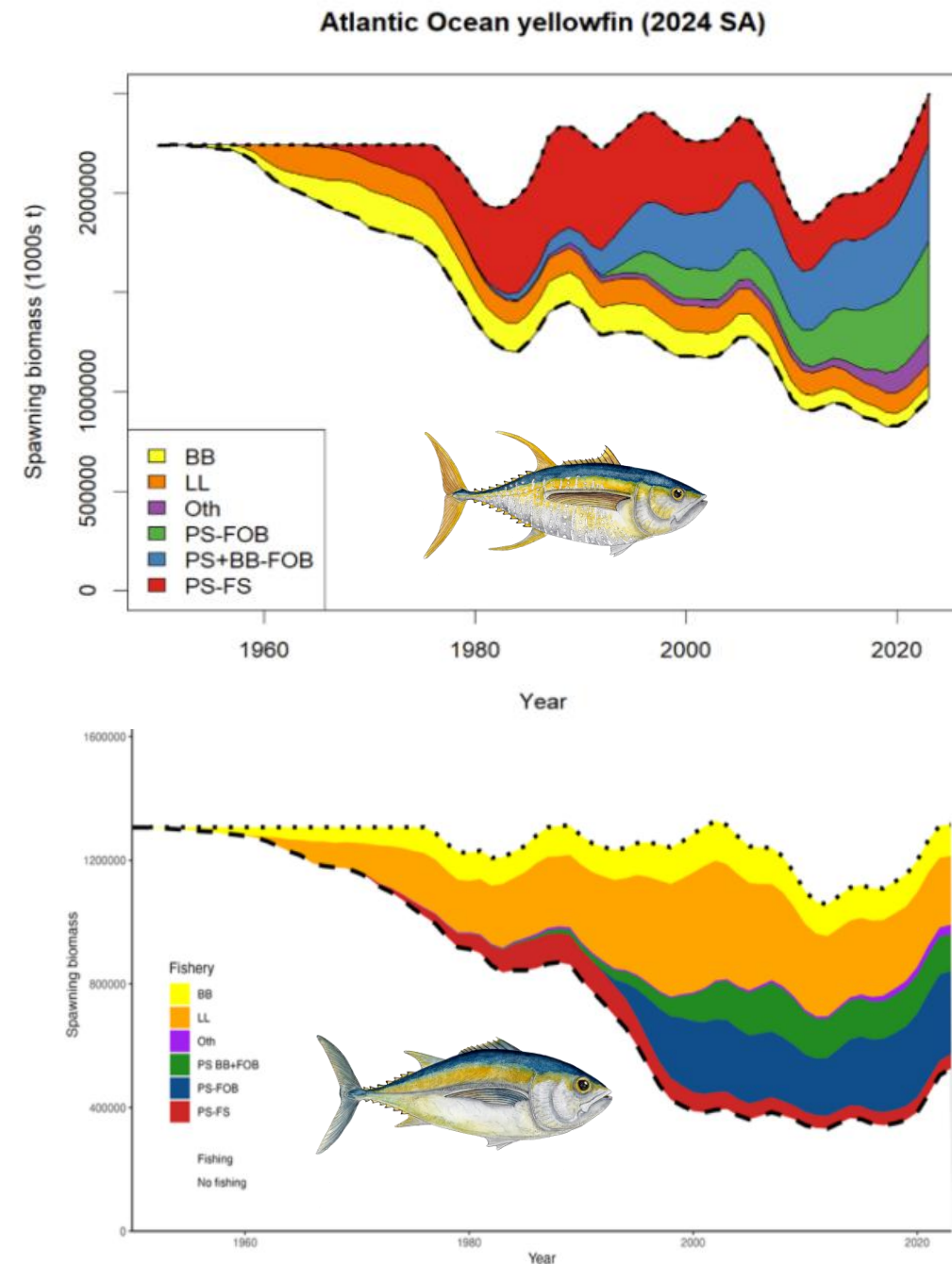
Fishery impact plot for YFT (from 2024 SCRS Report):

- Since 1960s decreased impact of the longline fisheries & concurrent increase of early PS fisheries
- 1990s the transition from PS-free school towards FOB associated fishing beginning



Response 19.30 – Fishing prohibited with FADs

- Comparison of impact plots for YFT (upper plot) and for BET (lower plot)
- The order of the colors top to bottom are reversed between the two plots, but this is due to software constraints. The order is not meaningful.



Response 19.31 – Max number of FAD sets

The Commission requested the SCRS to provide advice to the Commission on the maximum number of FAD sets per vessel or per CPC in the Convention area in 2025, with historical Task 2 CE data for FAD sets to be submitted by 1 August 2025.

- El Salvador, Guatemala and Panama provided information on activities of their purse seine fleets on FADs for 2018-2024.
- The SCRS seeks additional guidance from the Commission regarding the specific quantitative management objectives to be achieved
- ongoing MSE work could consider these specific quantitative management objectives

Response 19.31 – Max number of FAD sets (continued)

- The Committee noted that a project funded in 2025 (**POSEIDON**) was intended to facilitate the **evaluation of management alternatives**, including decisions regarding FAD management, and produced a proof of concept.
- Although the Committee could not achieve full consensus to recommend additional funding for that project in 2026, the Committee noted that continued work on POSEIDON could inform this, and other responses to the Commission regarding fisheries management.
- The completion of the POSEIDON project would require additional funding (€100,000) and also requires CPCs to provide high-resolution data (previously requested) as the available data are incomplete.
- In addition, a longline fleet component to the POSEIDON analysis is required to better reflect the impact of this gear over target species and bycatch, and linkage of those fleets with other fleets and/or gears. The addition of the longline component would require additional costs (€99,000)

Response 19.34 – Improvements to observer programmes

The SCRS shall provide advice on the improvements to observer programmes including how coverage should be stratified across vessels, seasons and areas to achieve maximum effectiveness

- The Committee has recommended at least 20% coverage. For tropical tuna fisheries, ICCAT requires 100% observer coverage on purse seine vessels, but lower minimums (5–10%) for other gears and vessel sizes, which are often insufficient for reliable bycatch estimates.
- Before any optimization strategy can be finalized, it is important to agree upon the relevant scientific and management objectives.
- Optimizing stratified sampling in fisheries requires carefully selecting strata, allocating samples, and understanding how these choices impact data collection, accuracy and efficiency
- It would be beneficial for the **Commission to establish clear management objectives** for the observer programme, and to communicate specific scientific questions the SCRS should address.



Response 19.37 – Estimate capacity

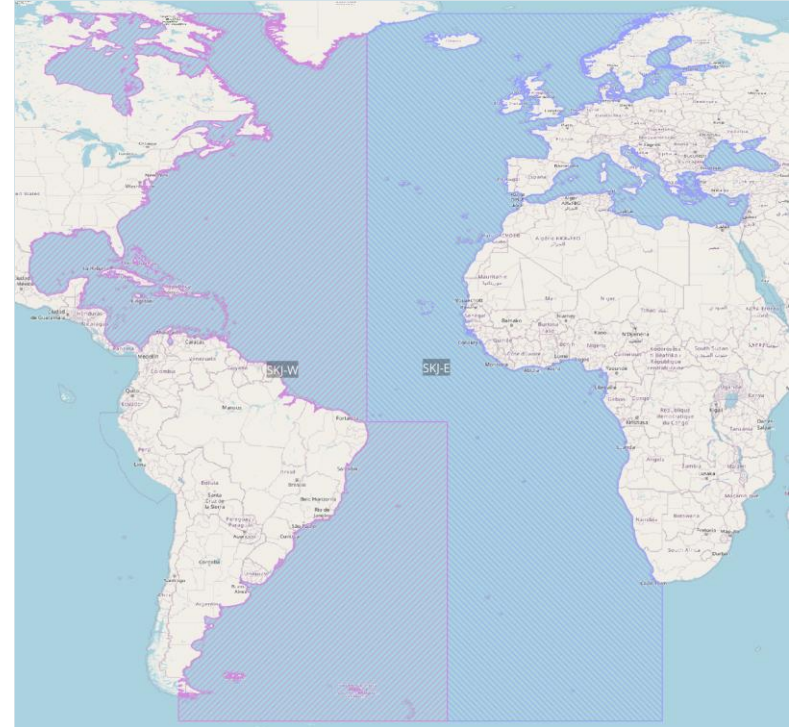
An estimate of capacity in the Convention area, to include at least all the fishing units that are large-scale or operate outside the EEZ of the CPC they are registered in

- The response includes an initial estimation of the fishing capacity for tropical tunas in the ICCAT Convention Area for the year 2024, focusing on large-scale vessels (20 meters or larger in length overall) using data primarily submitted via form ST01-T1FC.
- The estimated GT (in volume) for vessels $\geq 20\text{m}$ LOA reported as having fished in 2024 and that are likely to target tropical tunas. This should be considered a minimum estimate of capacity because several CPCs had not reported form ST01 as of the time these analyses were conducted.
- Recommendations to the Commission
 - **improve compliance with timely reporting of ST01**
 - Fishing Plans presented to PA1 should contain separate sections (active vessels and another for capacity aspirations).
 - Vessel tonnage be reported in GT only
 - Require that Fish Hold Volume be reported for all vessels $>20\text{m}$

Western Atlantic Skipjack Tuna Management Strategy Evaluation

Final CMP Results

29th Regular Meeting of the Commission
17-24 November 2025
Seville, Spain





Work done in 2025 (MSE Technical Development)

- ***Include updated data up to 2024***
 - Catch;
 - Relative abundance indices;
 - Size compositional data;
- ***Reconditioning the OMs with the new data***
- ***Improve CMPs***
 - Tuning process;



Management Objectives (Rec. 24-04)

Management Objectives	Corresponding Performance Indicators
Status The stock should have a 60% or greater probability of occurring in the green quadrant of the Kobe matrix over the medium-term (4-10 years) using a 30-year projection period.	PGK_{short} : Probability of being in the Kobe green quadrant (i.e., $SSB \geq SSB_{MSY}$ and $F < F_{MSY}$) in years 1-3 PGK_{medium} : Probability of being in the Kobe green quadrant (i.e., $SSB \geq SSB_{MSY}$ and $F < F_{MSY}$) in years 4-10 PGK_{long} : Probability of being in the Kobe green quadrant (i.e., $SSB \geq SSB_{MSY}$ and $F < F_{MSY}$) over years 11-30 PGK_{all} : Probability of being in the Kobe green quadrant (i.e., $SSB \geq SSB_{MSY}$ and $F < F_{MSY}$) over years 1-30 POF: Probability of $F > F_{MSY}$ over years 1-30 PNOF: Probability of $F < F_{MSY}$ over years 1-30
Safety There should be no greater than 10% probability of the stock falling below B_{LM} ($0.4 * SSB_{MSY}$) at any point during the 30-year projection period.	LRP_{short} : Probability of breaching the limit reference point (i.e., $SSB < 0.4 * SSB_{MSY}$) over years 1-3 LRP_{medium} : Probability of breaching the limit reference point (i.e., $SSB < 0.4 * SSB_{MSY}$) over years 4-10 LRP_{long} : Probability of breaching the <u>limit reference point</u> (i.e., $SSB < 0.4 * SSB_{MSY}$) over years 11-30 LRP_{all} : Probability of breaching the limit reference point (i.e., $SSB < 0.4 * SSB_{MSY}$) over years 1-30
Yield Maximize overall catch levels.	AvC_{short} – Median catches (t) over years 1-3 AvC_{medium} – Median catches (t) over years 4-10 AvC_{long} – Median catches (t) over years 11-30
Stability Any changes in TAC between management periods should be 25% or less.	VarC_{medium} – Variation in TAC (%) between management cycles over years 4-10 VarC_{long} – Variation in TAC (%) between management cycles over years 11-30 Var_{all} – Variation in TAC (%) between management cycles over years 1-30



Candidate Management Procedures



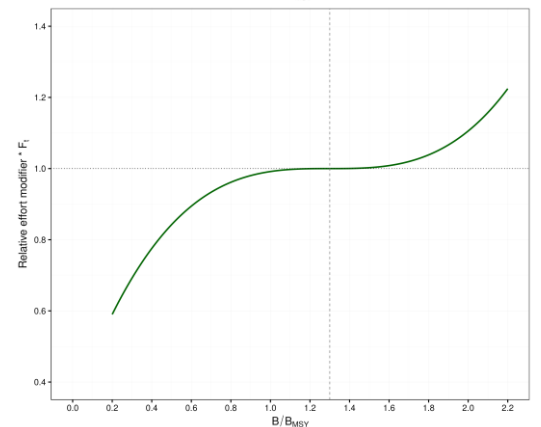
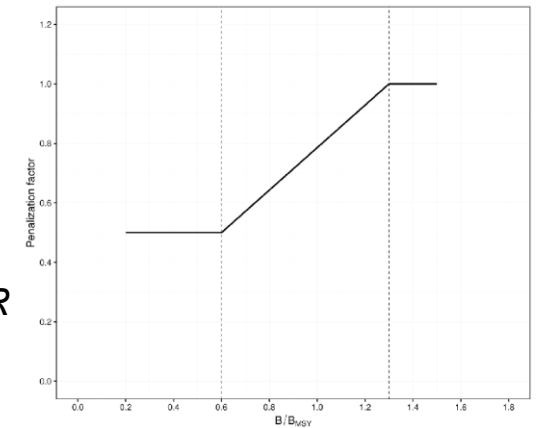
Empirical MPs Tested

- *Constant Exploitation (CE)*
- *Index Ratio (IR) using combined index*



Model-base MPs Tested

- *Surplus Production Model with linear HCR (SP)*
- *Surplus Production Model with non-linear HCR (SPAH)*

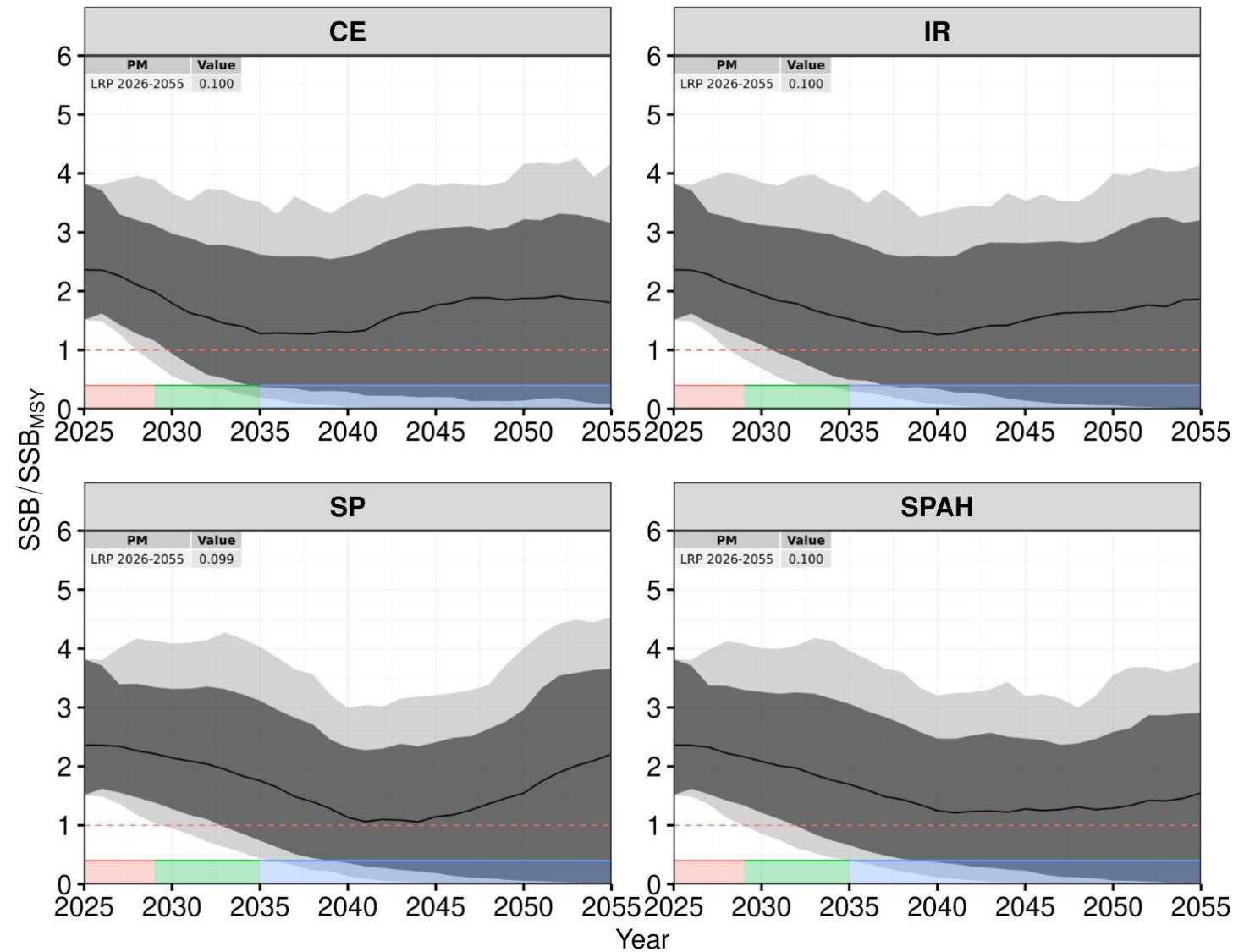
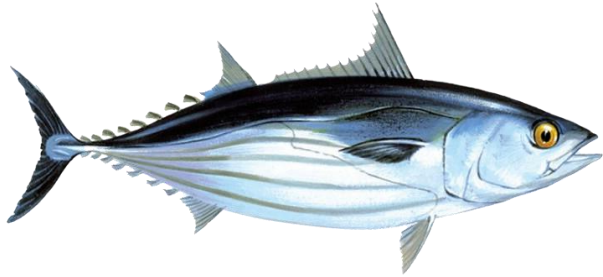


Per Rec. 24-04, all CMPs have a 3-year management cycle and a 25% limit on TAC changes between management cycles.

A maximum TAC of 45,000 tonnes is included in all CMPs. Necessary to constrain catch variability (see Sant'Ana et al., 2025).

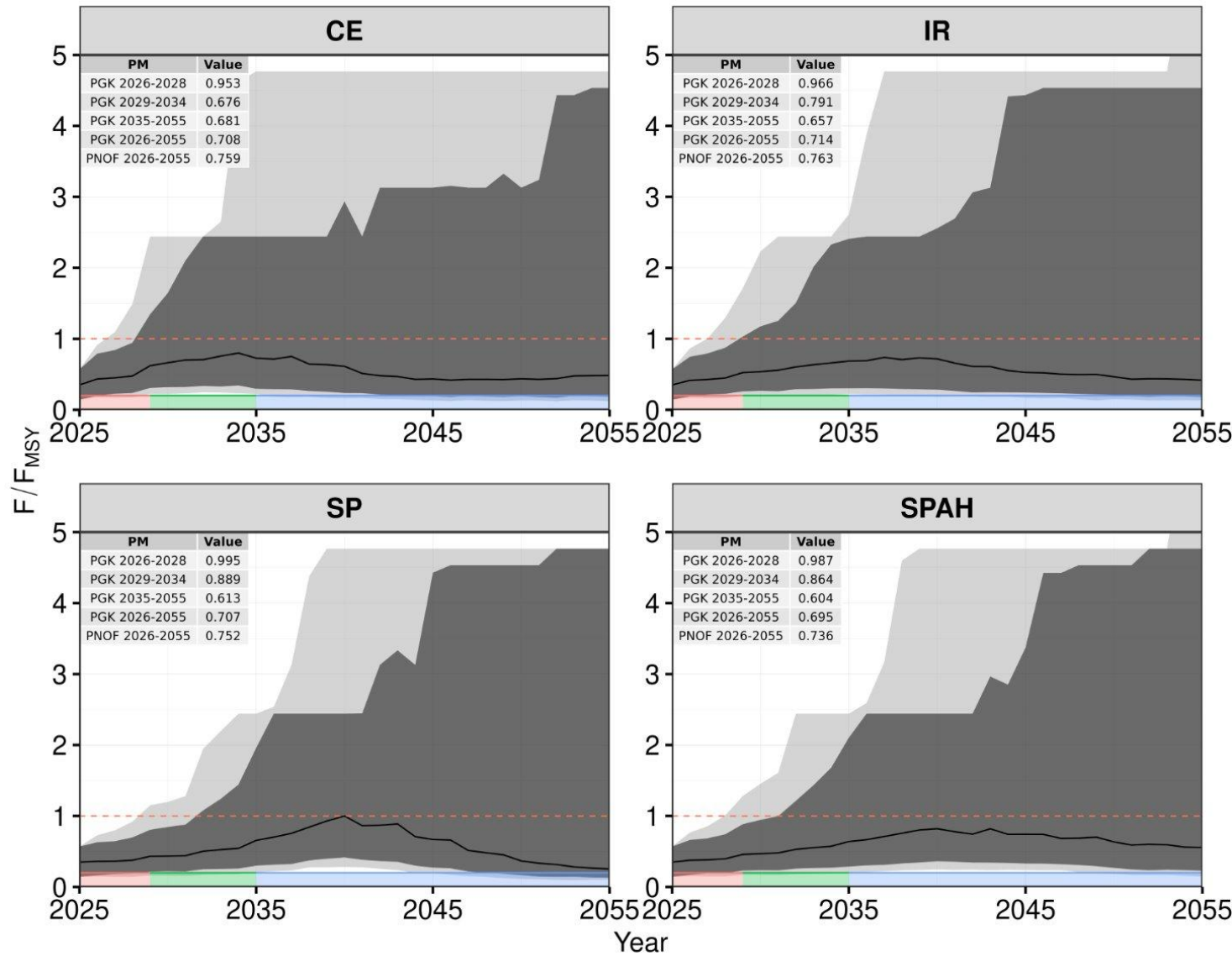
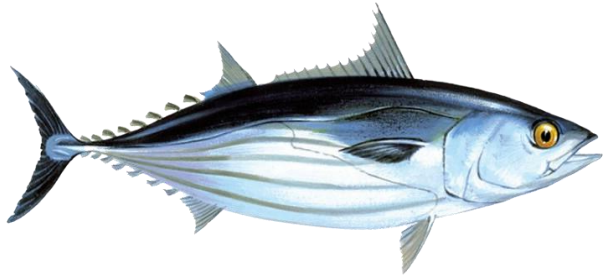


Results – SSB/SSB_{MSY} trajectory Reference OM Grid





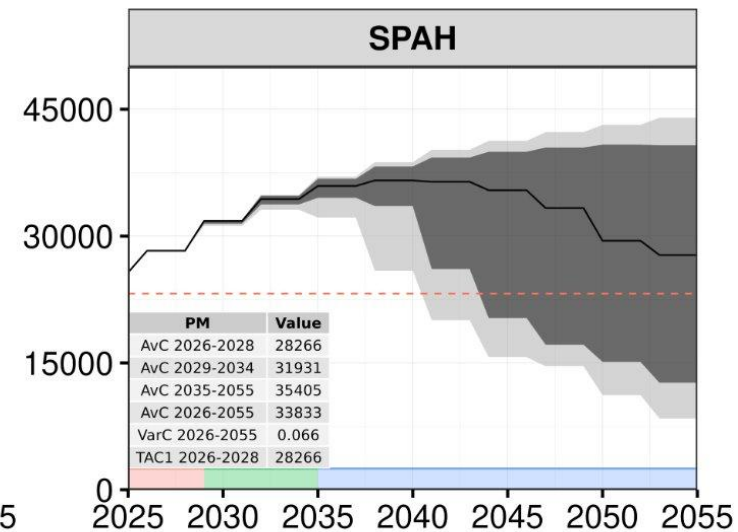
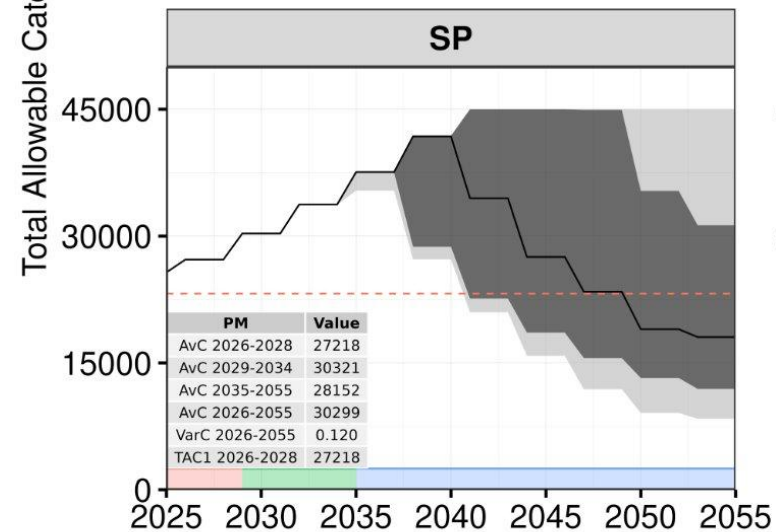
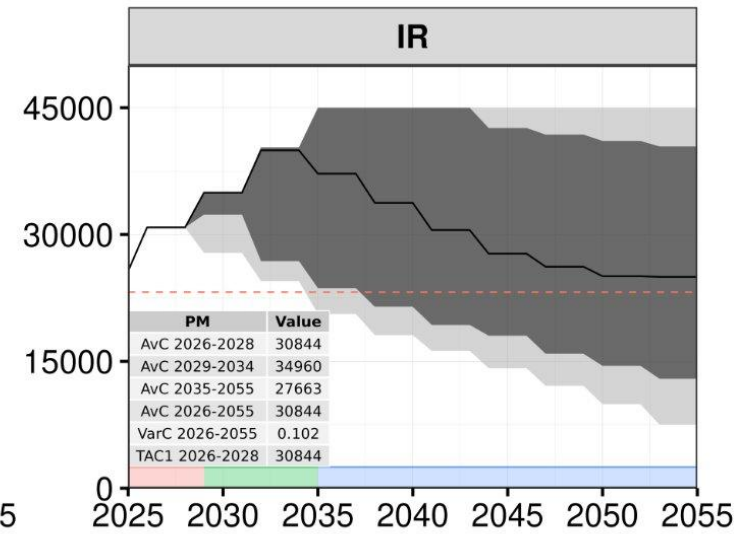
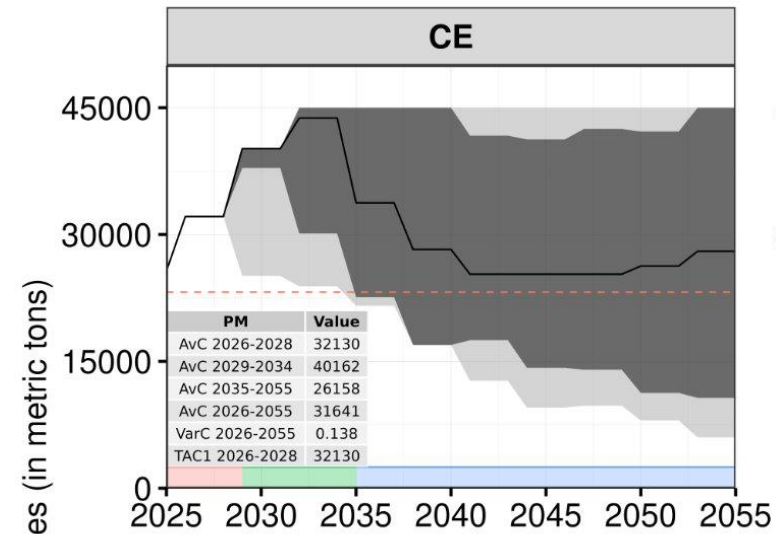
Results – F/F_{MSY} trajectory Reference OM Grid





Results – TAC trajectory Reference OM Grid

CMP	SKJ-W TAC1 (2026-2028)
CE	32,130 t
IR	30,844 t
SP	27,218 t
SPAH	28,266 t



Year



Results – Quilt Plot Reference OM Grid

MP	PGK	PGK_short	PGK_mid	PGK_long	LRP	LRP_short	LRP_mid	LRP_long	POF	PNOF	AvC	AvC_short	AvC_mid	AvC_long	VarC	VarC_mid	VarC_long
CE	0.71	0.95	0.68	0.68	0.10	0.00	0.03	0.13	0.24	0.76	31,640.63	32,129.52	40,161.90	26,157.76	0.14	0.11	0.13
IR	0.71	0.97	0.79	0.66	0.10	0.00	0.01	0.14	0.24	0.76	30,844.34	30,844.34	34,959.98	27,663.01	0.10	0.11	0.10
SP	0.71	1.00	0.89	0.61	0.10	0.00	0.00	0.14	0.25	0.75	30,298.89	27,217.88	30,321.19	28,152.37	0.12	0.11	0.12
SPAH	0.69	0.99	0.86	0.60	0.10	0.00	0.01	0.14	0.26	0.74	33,833.18	28,265.68	31,931.10	35,404.71	0.07	0.08	0.06

Status: The stock should have a 60% or greater probability of occurring in the green quadrant of the Kobe matrix over the medium-term (4-10 years) using a 30-year projection period;

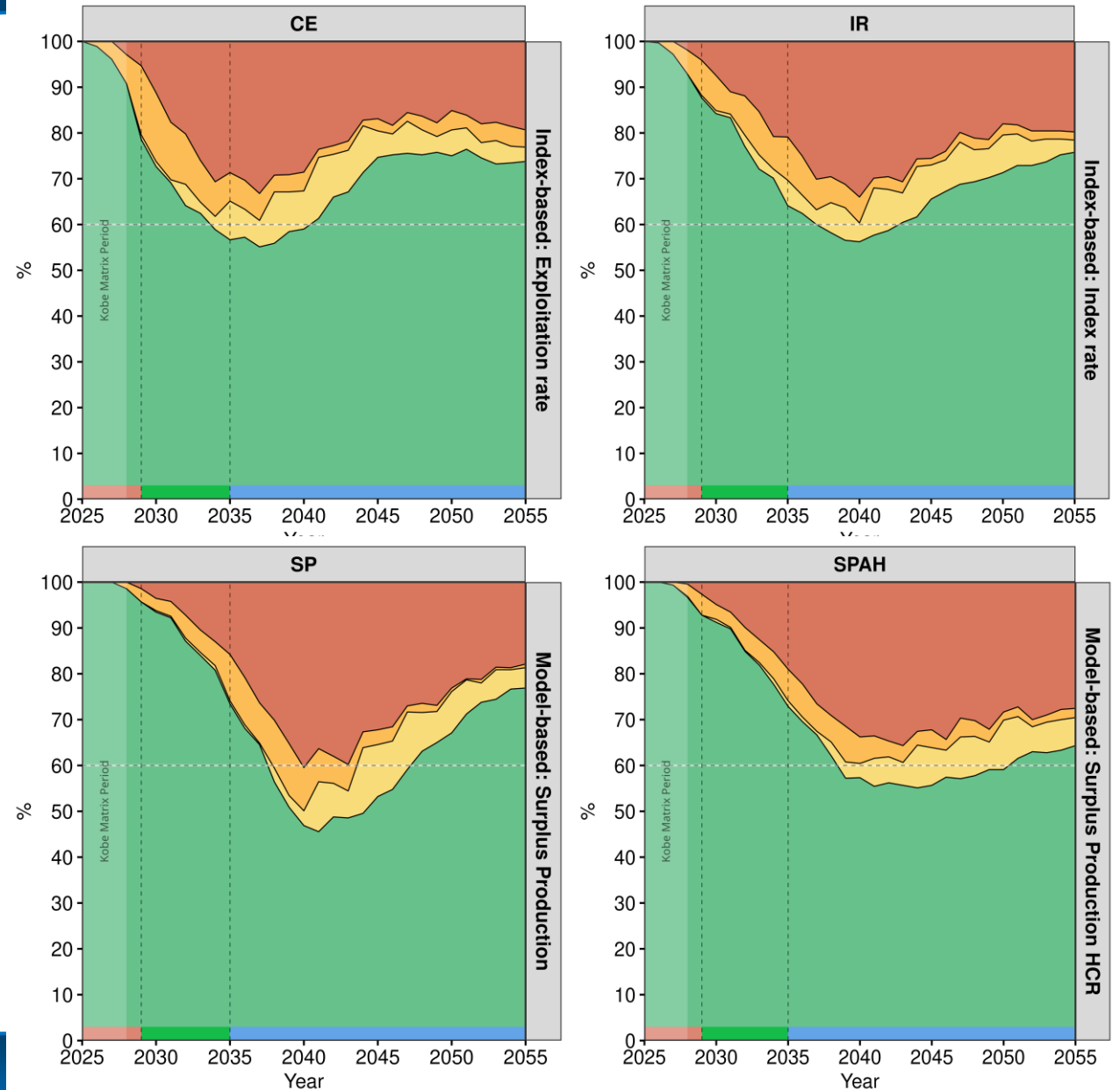
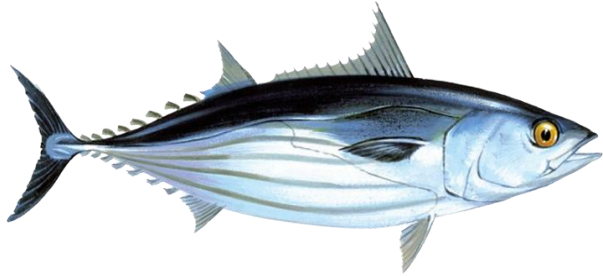
Safety: There should be no greater than 10% probability of the stock falling below B_{LIM} ($0.4 \cdot B_{MSY}$) at any point during the 30-year projection period;

Yield: Maximize overall catch levels;

Stability: Any changes in TAC between management periods should be 25% or less.

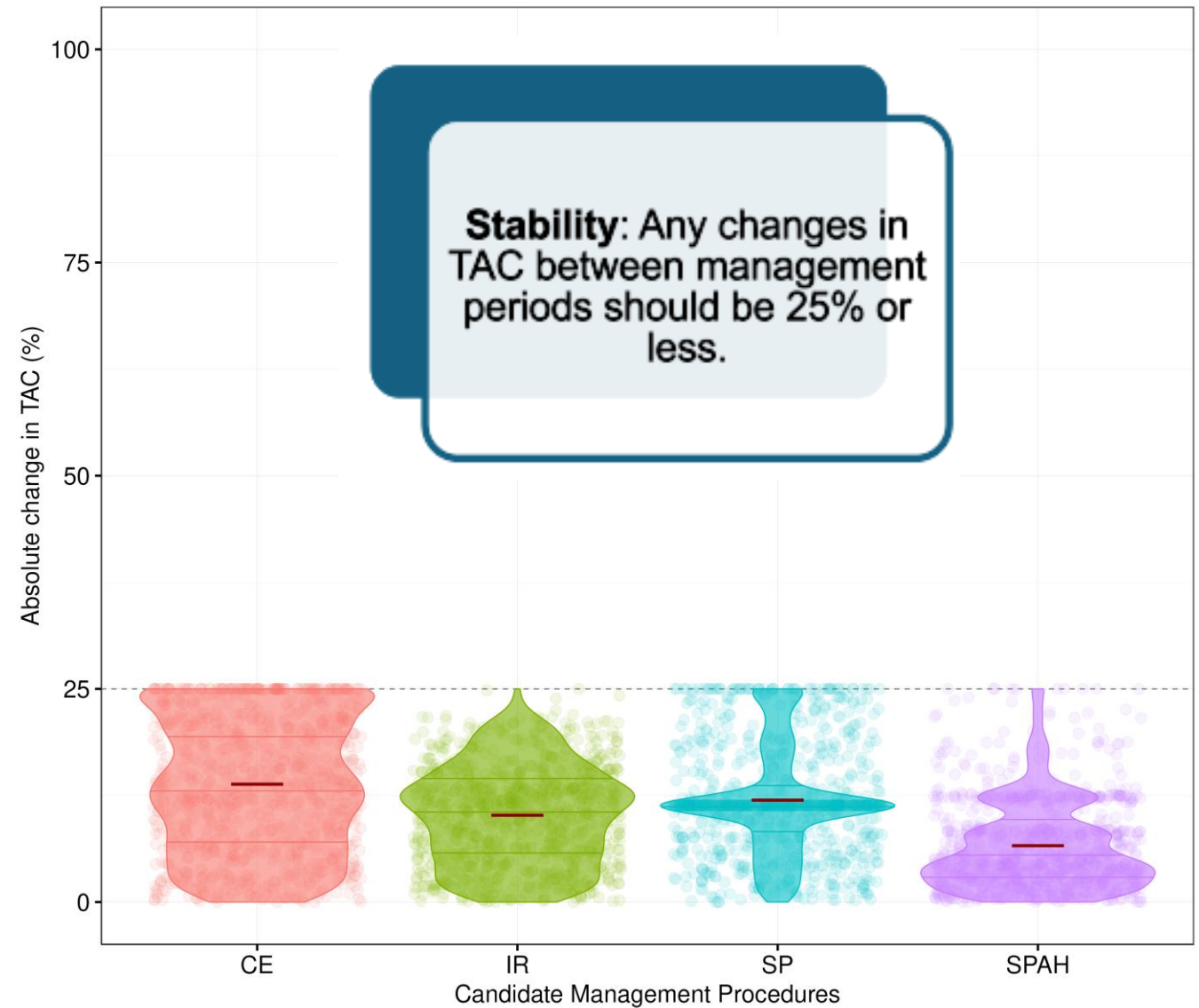
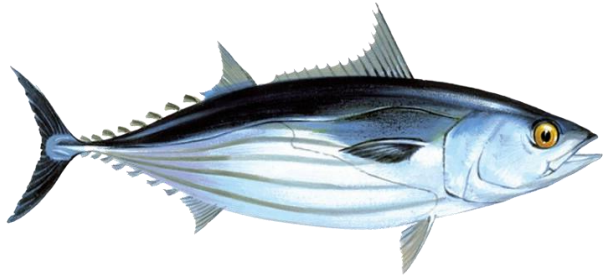


Results – Kobe Timeseries Reference OM Grid





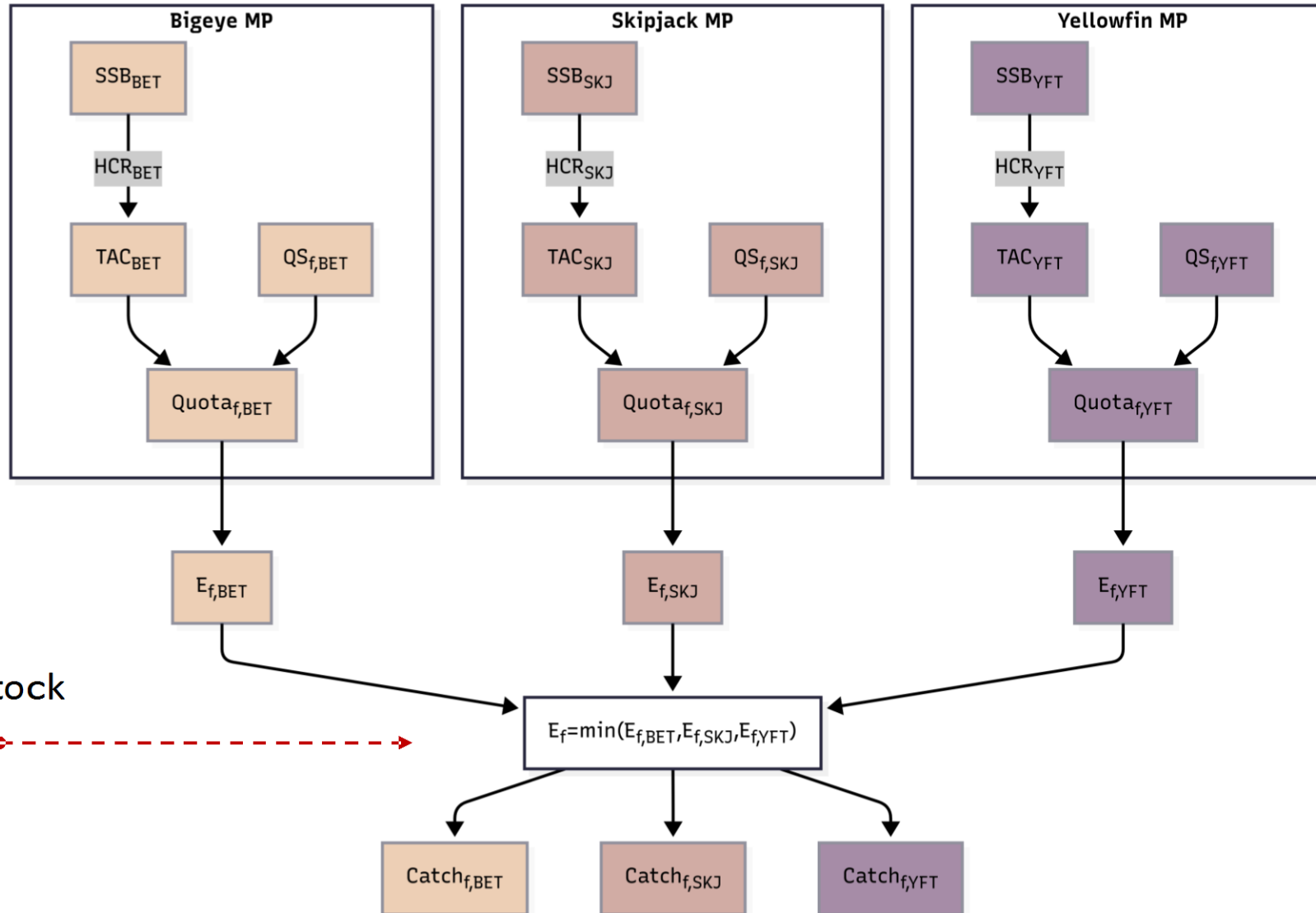
Results – Violin Plot Reference OM Grid



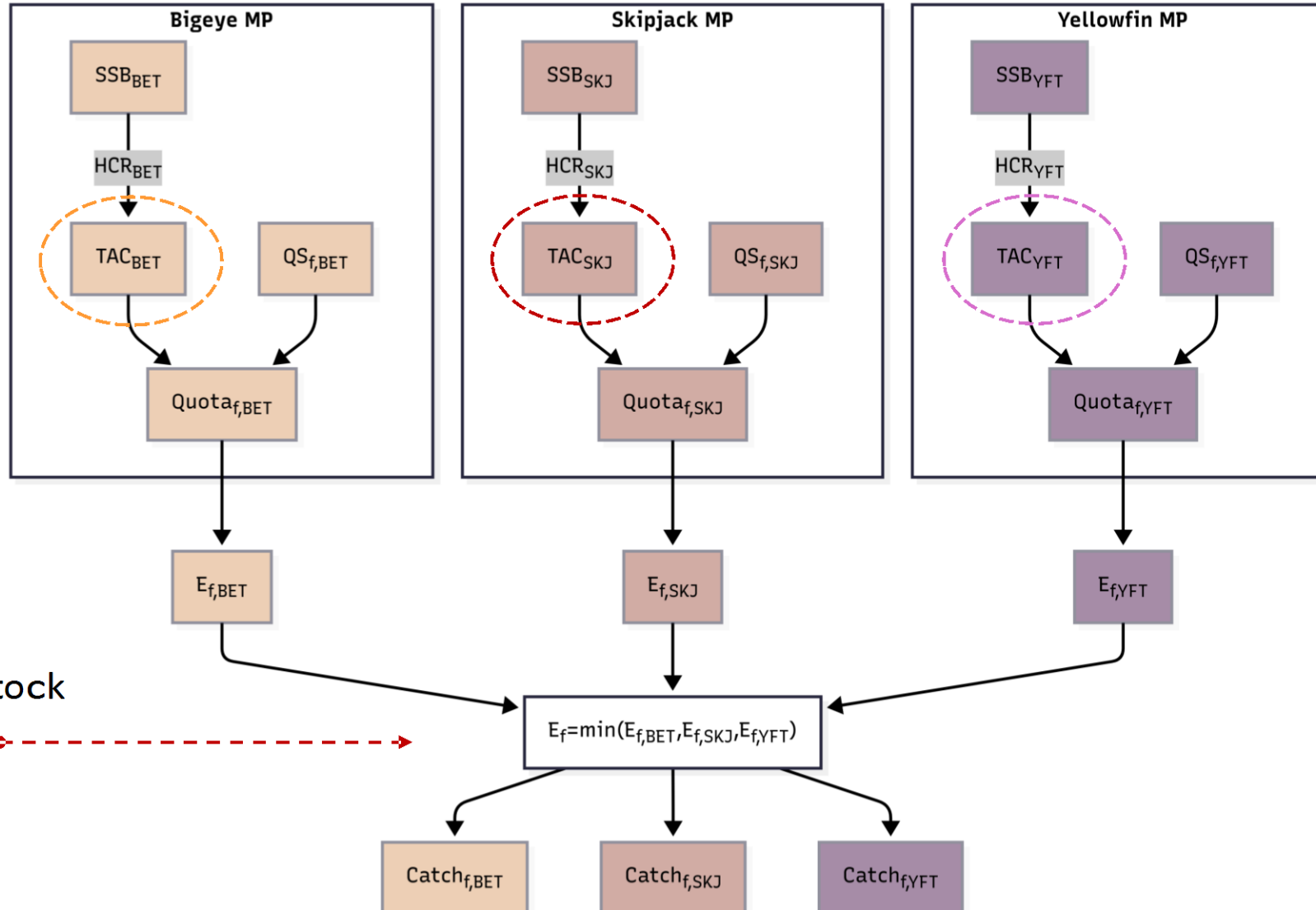
MULTI-STOCK MSE FOR TROPICAL TUNAS



How the MP works?



What management advice will the Commission receive?





What management advice will the Commission receive?

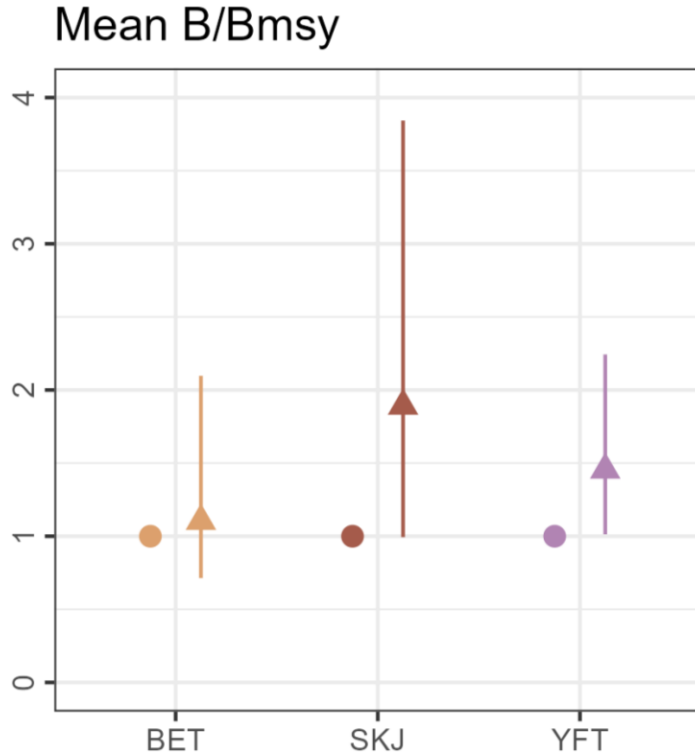
- The TACs will be calculated from the MP (data, model and HCR) applied to each one of the stocks (TAC_{BET} , TAC_{YFT} , TAC_{SKJ}).
- The MSE simulations are built assuming that technical interactions make it impossible to achieve the TAC for the three stocks
- Therefore, based on the recent share of catch between fleets for each stock, fleets will adapt their effort to fulfil the TAC for the most restrictive stock, and this will affect their catch of the other two stocks as well.



Contrasting paradigms (trade-offs)

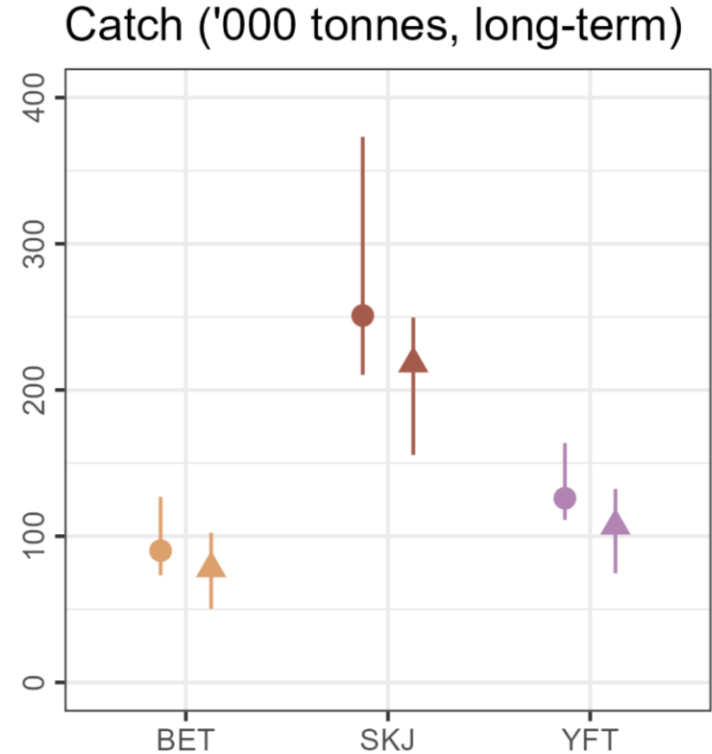
PARADIGM 1: Three stocks at MSY, perfect knowledge and control (for contrast, 1: MSY) .

PARADIGM 2: Effort adjustments to meet TAC for one stock constrains catch on the other stocks (2: MSE).



Paradigm

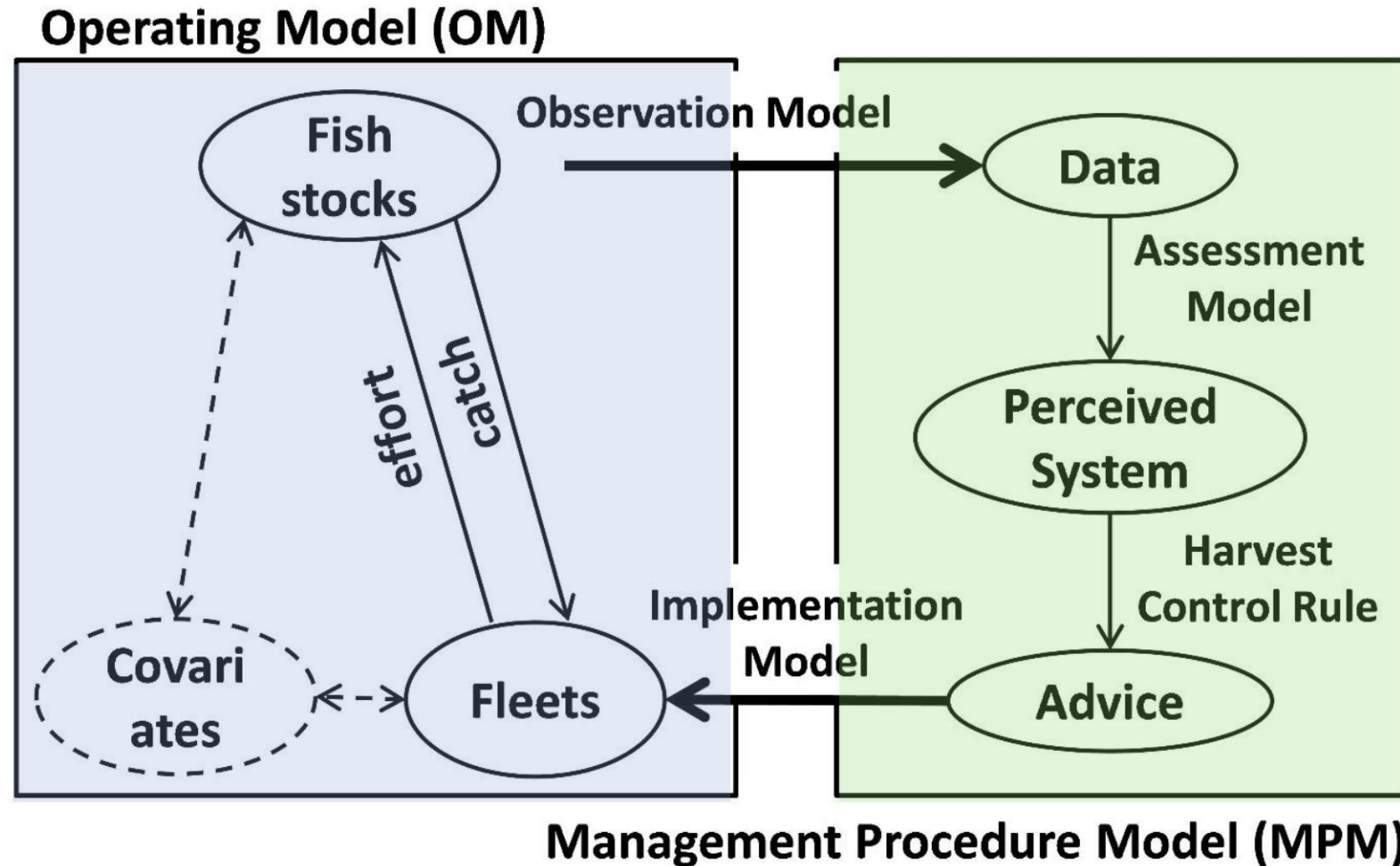
- 1: MSY
- ▲ 2: MSE



Paradigm

- 1: MSY
- ▲ 2: MSE

Current status of MSE and plans for 2026





Current status of MSE and plans for 2026

- All components of MSE developed (refinements can be made).
- Preliminary CMPs available (SCRS/2025/P/095).
- Currently model-based CMPs, empirical can be developed.
- Trial Specification Document in ICCAT repository.
- Start communication with stakeholders (ambassadors, Panel 1, Commission, WGSDMS...).
- In 2025 (October-December), CMPs and evaluations re-done after feedback (if required).
- In 2026, continue communication with stakeholders
 - Common understanding of how the multistock MP will operate.
 - Further refinements to add realism.
 - Additional visualization tools if necessary.

SUMMARY

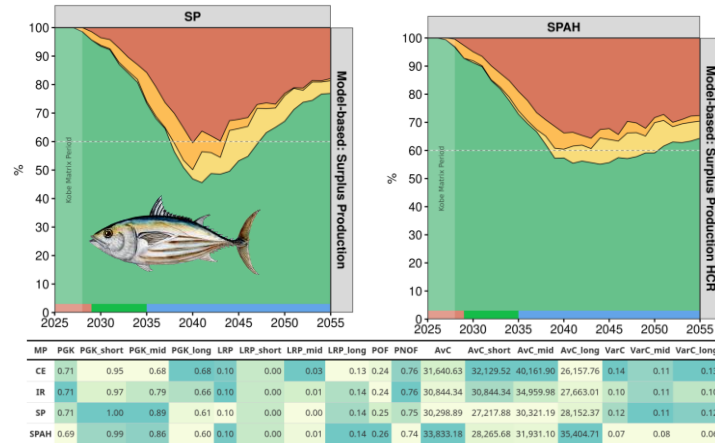
- TACs will be calculated from the MP for three stocks (TAC_{BET} , TAC_{YFT} , TAC_{SKJ}).
- Technical interactions make it impossible to achieve the TAC for the three stocks.
- Fleets will adapt their effort to fulfil the TAC for the most restrictive stock, and this will affect their catch of the other two stocks (in the simulations).
- Trade-off between long term catch (and TAC) and conservation objectives (PGK), and others...
- The MSE simulation framework can be refined to add realism.
- Trial Specification Document available with preliminary evaluations.
- Simpler MPs, empirical? Constant catch unless CPUEs fall below certain level?

An underwater photograph showing a large, sleek tuna with a yellow stripe along its side swimming towards the left. Below it, a school of smaller, silver fish with dark spots on their sides swims in the same direction. In the background, a dense kelp forest with brown, feathery fronds hangs from the surface. The water is clear and blue.

Tropical Tuna Research and Funding

Research undertaken in 2025

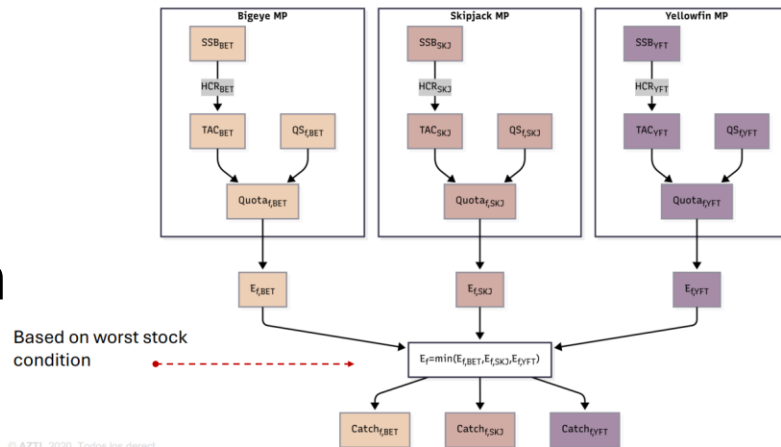
- MSE developments
 - **W SKJ** – following feedback from PA1 - OM reconditioning with updated data through 2024 & CMP re-tuning
 - **Multi-stock** – further developed MSE framework including developing mechanism to implement multi-stock CMP, and creation of a Shiny tool for visualisation



- Continuation of funds for **tag recovery and maintenance** of AOTTP databases



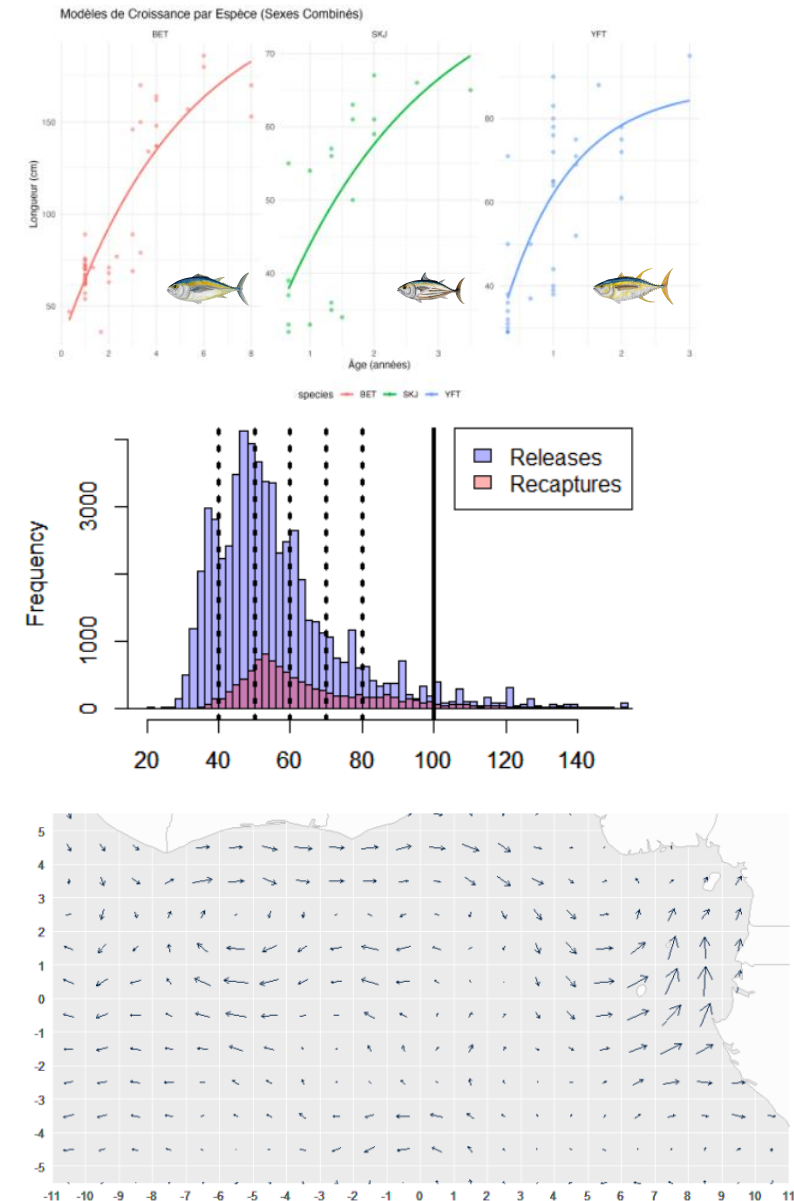
How the MP will work and alternatives....



Additional research undertaken in 2025

- Sample collection for **age and growth**
 - Number of specimens surpassed objectives
 - Preliminary age-length keys updated continuing work to improve results
- **Mortality/exploitation** estimation for TT
 - Recs made to reduce uncertainty in estimates
 - Contractor agreed to integrate feedback to final estimates
- Proof of concept for **agent-based spatio-temporal** model development (POSEIDON-EAO)
 - Model developed that predicts fishery targets with alignments to observed data
 - Initial results explored effectiveness of management with next steps to continue dev. (to support development of responses incl. REC24-01 para 34)

GRAPHES PRELIMINAIRES



Research activities planned beginning in 2026 include:

- tagging
- reproduction
- age and growth
- epigenetic ageing
- defining tropical tuna environmental habitat
- ongoing MSE work



I would like to thank the SCRS Tropical Tuna officers for their contributions throughout the year and for this presentation:

Coordinator: Serena Wright (United Kingdom)

Yellowfin tuna Rapporteur/Bigeye Tuna Chair:

Shannon Calay (USA, retired)

Yellowfin tuna Rapporteur: Matthew Lauretta (USA)

Skipjack Rapporteurs:

Eastern Atlantic - Davy Angueko (Gabon)

Western Atlantic - Rodrigo Sant'Ana (Brazil)

Thanks also to Gorka Merino (Spain) for contributions to this presentation

Images of tropical tunas in natural settings within this presentation were created by Craig Brown for the use of ICCAT, using AI (Gemini, Copilot, ChatGPT)

