



2024 Report of the  
Standing Committee of Research and Statistics (SCRS) to  
the ICCAT Panel 1 – Tropical Tunas

*Limassol, Cyprus  
12 November 2024*

Complete 2024 SCRS Report available online AS [PLE-104/2024](#)



## *Tropical Tuna Presentation Summary*

### **Presentation Summary**

- Review of the 2024 YFT Stock Assessment and elements of the YFT Executive Summary
- Responses to the Commission
- MSE Progress
  - Multi-Stock MSE (YFT, BET, E-SKJ)
  - Detailed Presentation of W-SKJ MSE and Candidate Management Procedures
- Work Plan



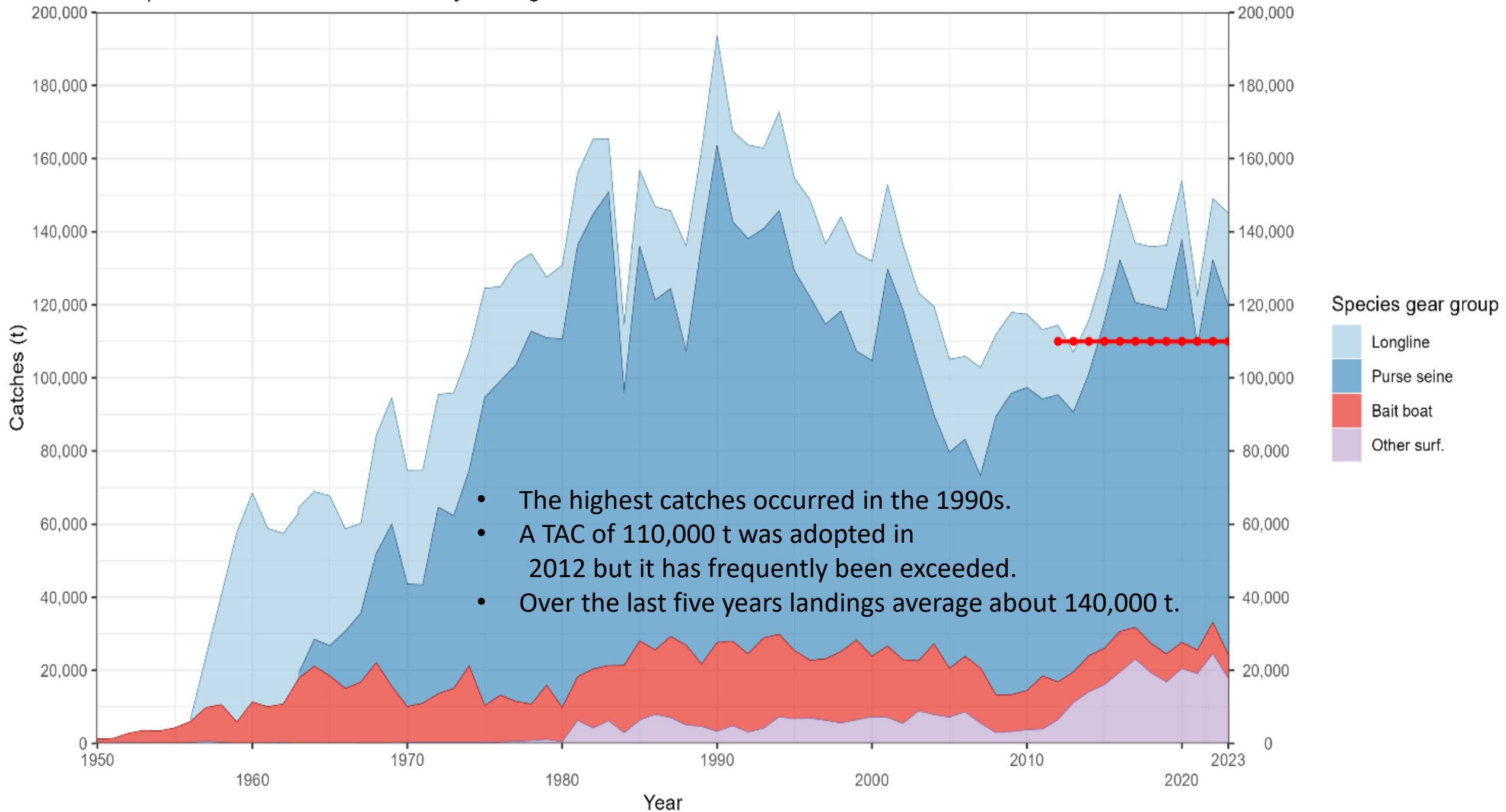
ICCAT CICTA CICAA



# 2024 Stock Assessment of Atlantic Yellowfin Tuna

- Apr 8-12: Data Preparatory  
Madrid, Spain
- Jul 8-12: Stock Assessment  
Madrid, Spain

YFT | Cumulative Task 1 catches by main gears vs. TAC



# Fisheries Indicators

- Consistent with the 2019 assessment, 3 indices were used

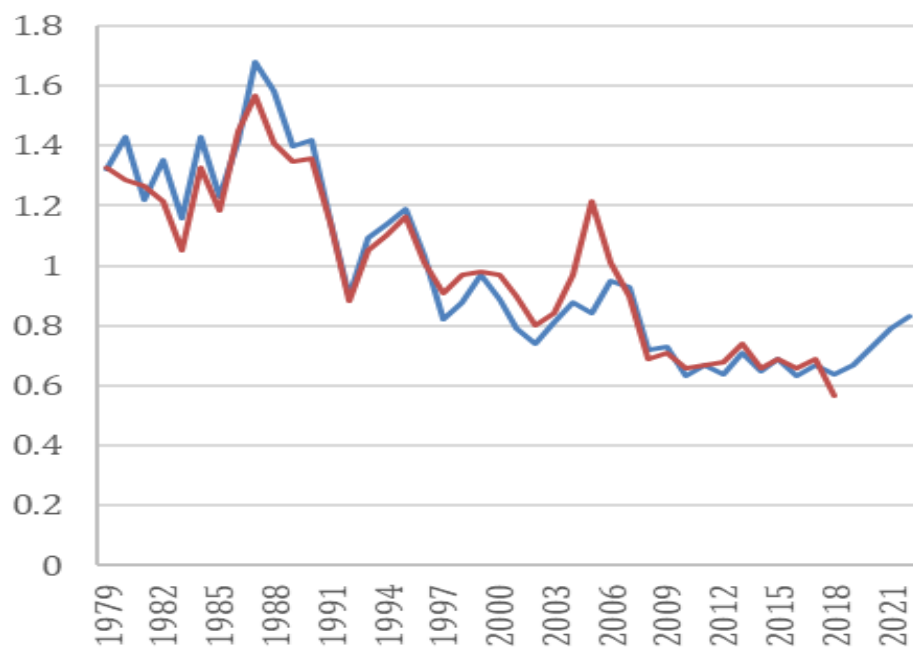
- Joint CPC LL index

(Region 2) of adult yellowfin

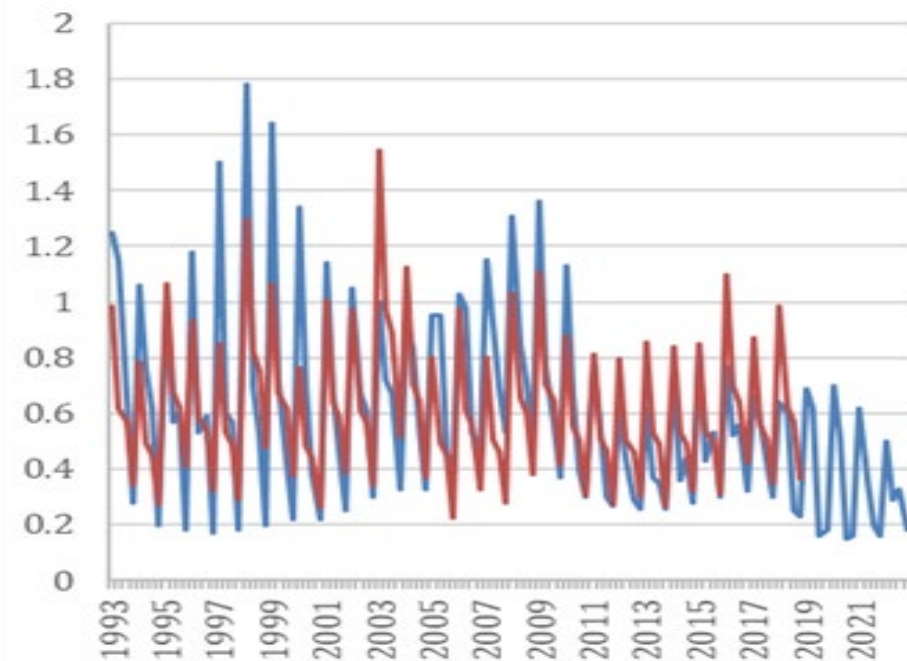
- Free-school PS index of adult yellowfin
- Echosounder buoy derived index of juveniles associated with FADs.

Note: The red lines show the index used in the 2019 assessment, and the blue line shows the updated index provided for the 2024 assessment. Note: PS Free School index was estimated on a quarterly basis while the others are annual.

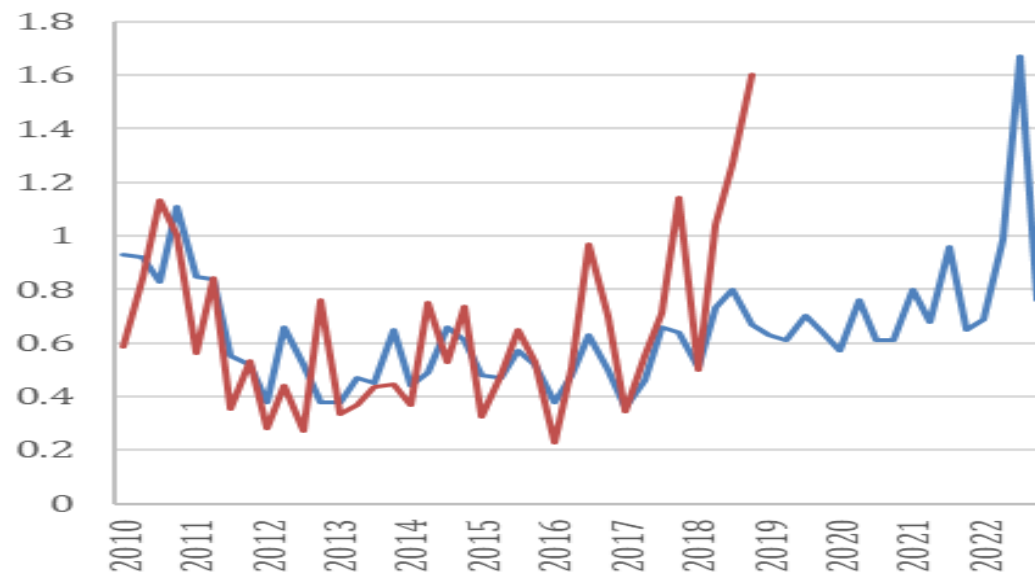
### Joint LL- Region 2



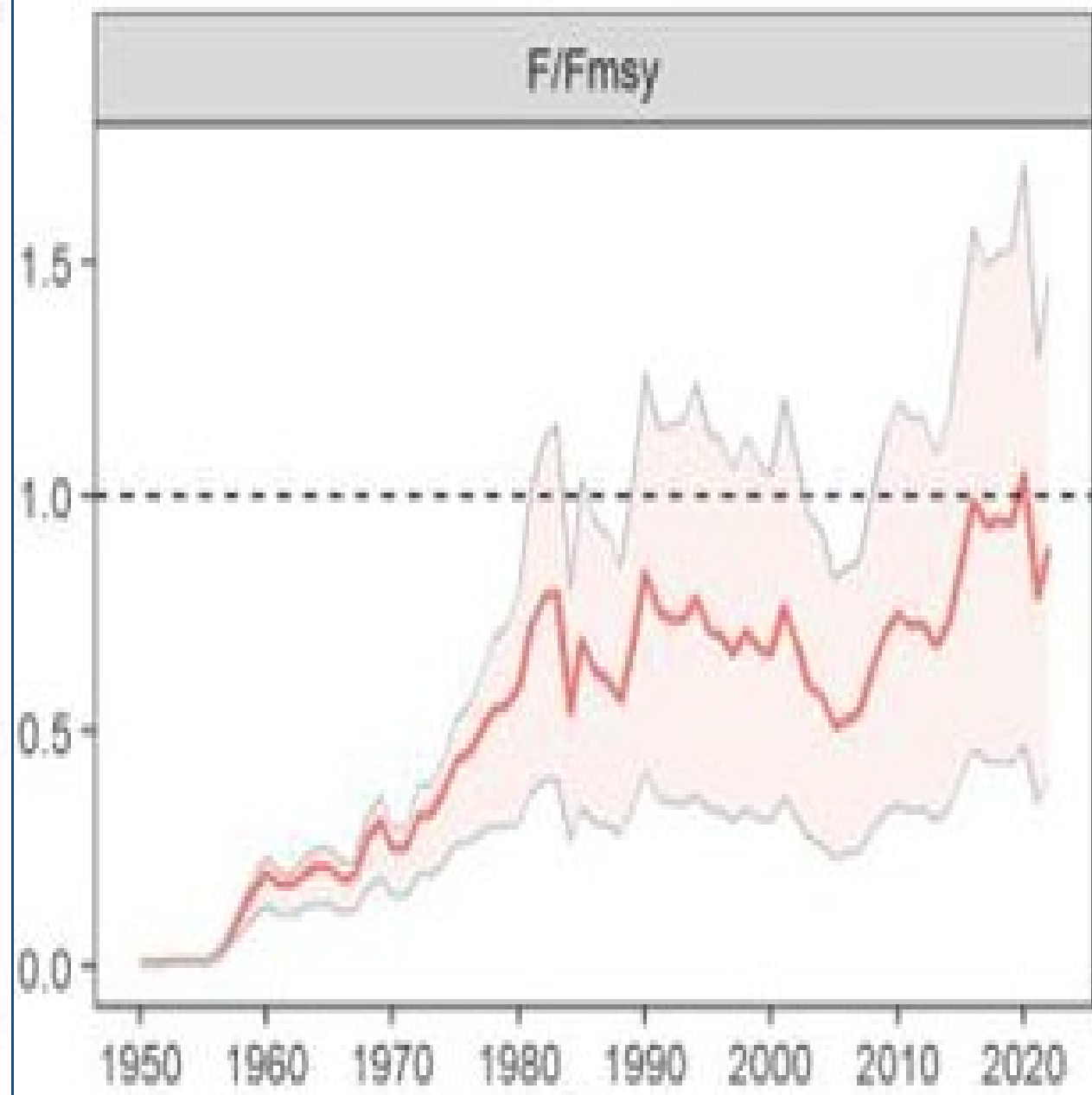
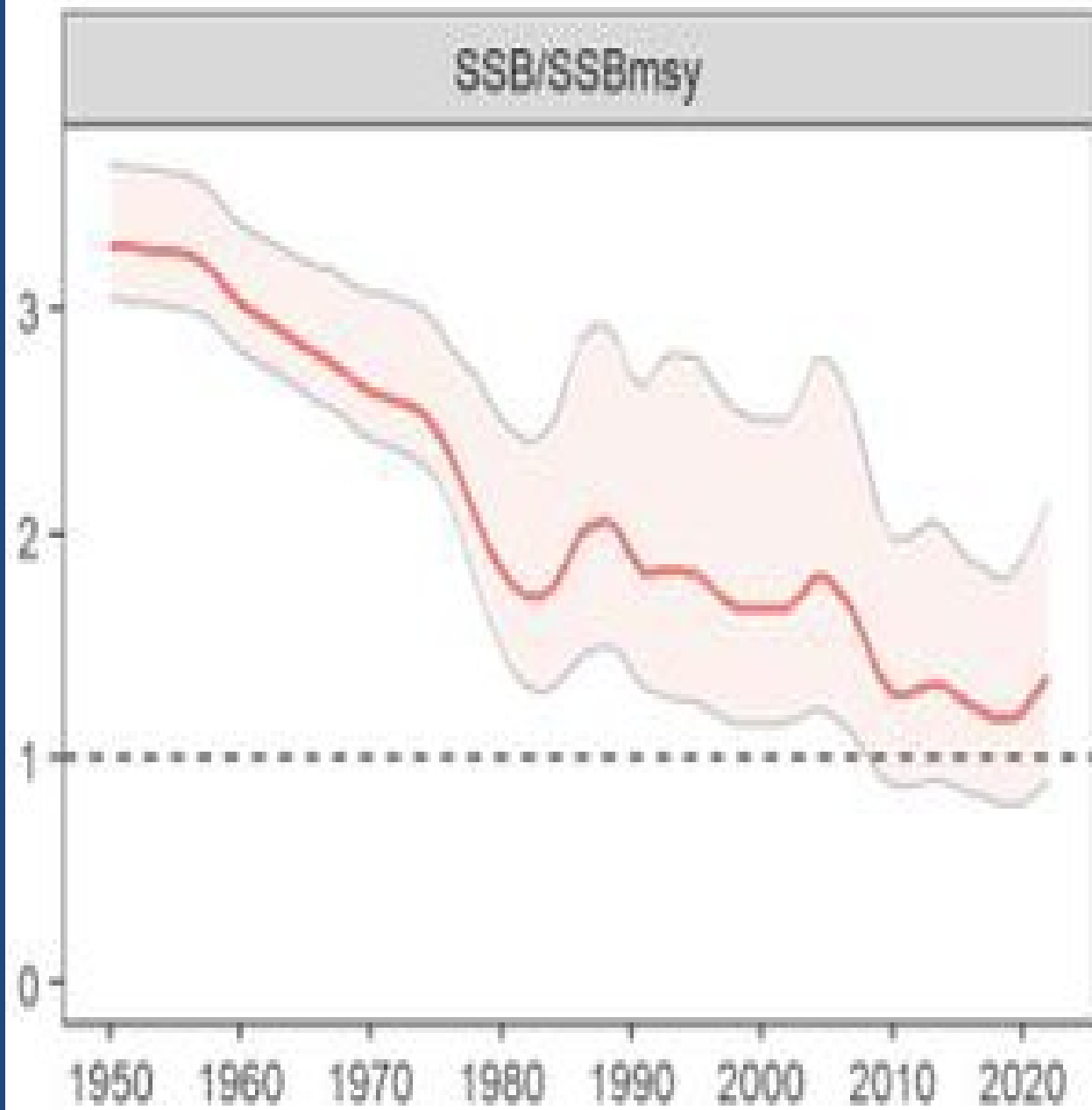
### PS Free School Index



### Acoustic Buoy Index

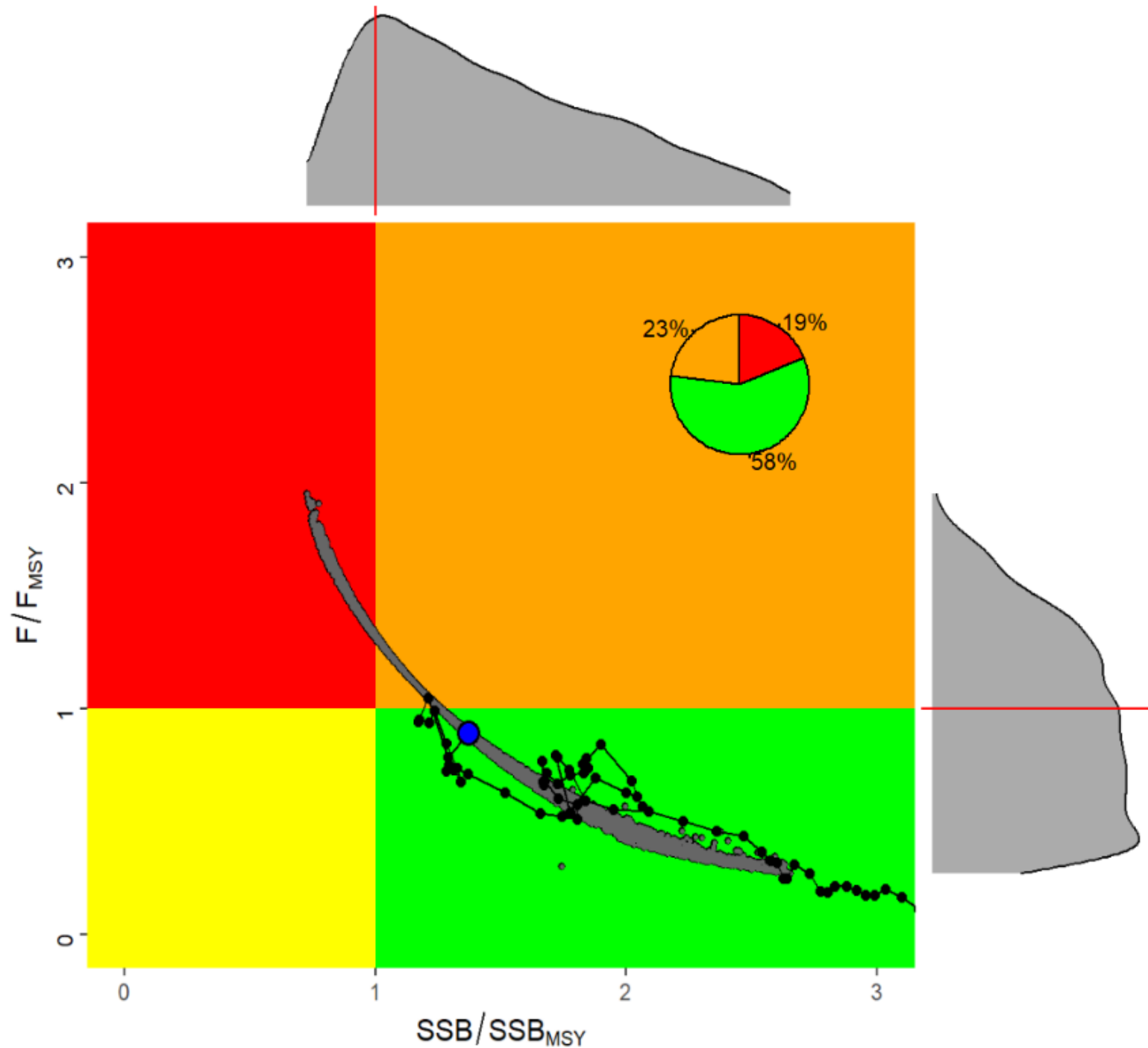


# Stock Assessment Results:



# Stock Status

- $B/B_{MSY} = 1.37$ 
  - Overfished : No
  - 81% Probability
- $F/F_{MSY} = 0.89$ 
  - Overfishing: No
  - 58% Probability
- $MSY = 121,661 \text{ t}$





# Outlook

- Recent catches (5-year average ~140K t) are expected to lead to overfishing if they continue

Probability that  $F \leq F_{MSY}$

Catch	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
0kt	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
100kt	92%	91%	90%	89%	89%	89%	88%	88%	88%	88%
105kt	90%	89%	87%	86%	85%	85%	84%	83%	83%	82%
110kt	88%	86%	84%	82%	81%	80%	79%	77%	76%	75%
115kt	86%	83%	81%	79%	76%	74%	72%	70%	68%	67%
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%



# Outlook

- Recent catches are expected to deplete the stock to levels below  $B_{MSY}$  if they continue

Probability that  $B \geq B_{MSY}$

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	89%	86%	84%	82%	81%	79%	78%	76%	75%	74%
115kt	89%	86%	83%	81%	78%	76%	74%	72%	69%	67%
120kt	89%	85%	82%	78%	75%	72%	69%	66%	64%	62%
125kt	89%	85%	81%	76%	72%	68%	64%	61%	59%	57%
130kt	89%	84%	80%	74%	70%	64%	60%	57%	54%	52%
135kt	88%	84%	78%	72%	66%	60%	56%	53%	50%	48%
140kt	88%	84%	77%	70%	63%	57%	53%	49%	46%	44%
145kt	88%	83%	76%	68%	59%	54%	49%	45%	43%	41%
150kt	88%	82%	74%	66%	56%	50%	46%	43%	40%	38%
155kt	87%	82%	73%	63%	54%	47%	43%	40%	38%	36%
160kt	87%	81%	72%	61%	51%	44%	41%	37%	35%	34%

# Outlook

- Reducing catch to the current TAC (110,000 t) is expected to status in the green quadrant through 2034 with 74% probability

“Green Quadrant” or Joint 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%



# Outlook

- Reducing catch to 125,000 t is expected to maintain healthy status in the green quadrant through 2034 with 55% probability

“Green Quadrant” or Joint 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%

# Outlook

- Current levels of catch (~140,000 t) are associated with a 13% probability of severe stock depletion (<20% of  $B_{MSY}$ ). Reducing catches lessens the probability of that outcome

Probability of $B < 20\%$ of $B_{MSY}$										
Catch	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
0kt	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
100kt	0%	0%	0%	0%	0%	0%	1%	1%	1%	1%
105kt	0%	0%	0%	0%	0%	1%	1%	1%	1%	1%
110kt	0%	0%	0%	0%	0%	1%	1%	1%	1%	2%
115kt	0%	0%	0%	0%	1%	1%	1%	1%	2%	3%
120kt	0%	0%	0%	0%	1%	1%	1%	2%	3%	4%
125kt	0%	0%	0%	0%	1%	1%	2%	3%	4%	5%
130kt	0%	0%	0%	0%	1%	1%	2%	4%	5%	7%
135kt	0%	0%	0%	1%	1%	2%	3%	5%	7%	10%
140kt	0%	0%	0%	1%	1%	2%	4%	6%	9%	13%
145kt	0%	0%	0%	1%	2%	3%	5%	8%	12%	17%
150kt	0%	0%	0%	1%	2%	4%	7%	10%	15%	21%
155kt	0%	0%	0%	1%	2%	5%	8%	13%	20%	26%
160kt	0%	0%	0%	1%	3%	6%	10%	16%	24%	32%

# Management Recommendations

- Reducing catch levels to the current TAC of 110,000 t is expected to maintain stock status in the green quadrant through 2034 with at least 74% probability
- Catches less than 125,000 t have at least a 55% probability of remaining in the green quadrant
- Current catch levels, averaging nearly 140,000 t over the last 5 years, will lead to overfishing and an overfished status if they continue
- Given that the TAC has been exceeded frequently by substantial amounts, existing conservation and management measures appear to be insufficient to limit harvest. The Committee recommends that the Commission strengthen such measures.

# Management Recommendations

- The Commission should also be aware that increased harvests on small yellowfin tuna have been shown to have negative consequences to both long-term sustainable yield and stock status
- Should the Commission wish to increase long-term sustainable yield, the Committee continues to recommend that effective measures be found to reduce fishing mortality on small yellowfin tuna (e.g., FOB-related and other fishing mortality of small yellowfin tuna)

Comparison of the SCRS estimation of large-scale purse seiners operating in the Atlantic Ocean in 2018 and 2020-2023.

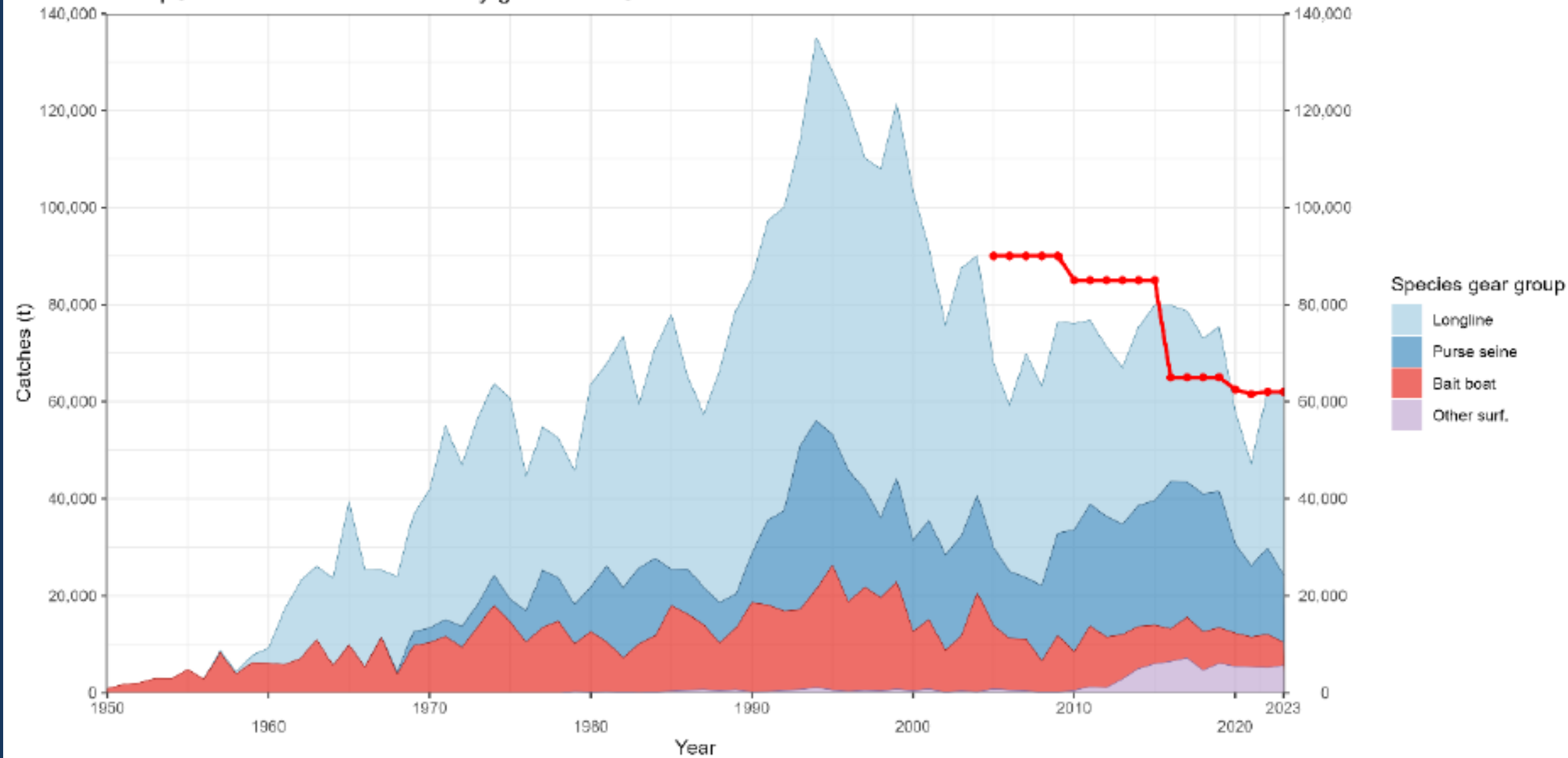
When a number is uncertain, a range (min.-max.) is given.

The table reflects updates made during the SCRS Plenary meeting.

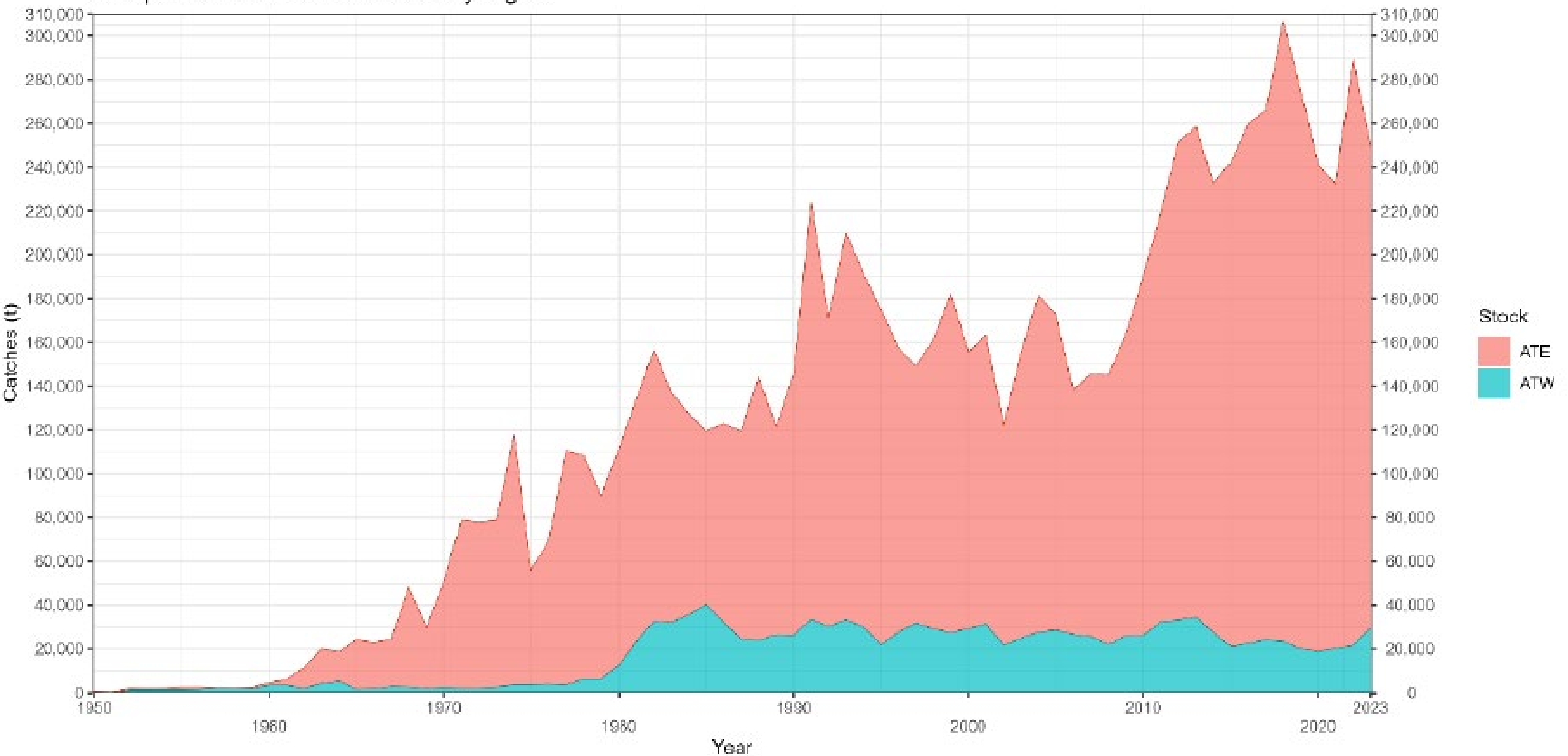
<i>Flag/Year</i>	<i>2018</i>	<i>2020</i>	<i>2021</i>	<i>2022</i>	<i>2023</i>
BLZ	2	8	8	8	10
CPV	1	1	1	0	0
CUW	5	4	4	2	0
EU.ESP	10	10	11	10	8
EU.FRA	10	9	10	10	9
GHA	15	16	16-17	16-17	16
GIN	0	0	1	1	1
GTM	2	2	2	2	2
LBR	0	2	2	0	0
MAR	0	1	3-4	3-4	1
PAN	2	4	4	4	4
SEN	7	7	7	7	6
SLV	4	4	3	3	3
VEN	0	1	2-4	2-3	2
<b>Total</b>	<b>58</b>	<b>69</b>	<b>74-78</b>	<b>68-71</b>	<b>62</b>



BET | Cumulative Task 1 catches by gear vs. TAC



SKJ | Cumulative Task 1 catches by region



# Responses to the Commission

**19.38 Fishing prohibited with FADs, [Rec. 22-01 para 28](#)**

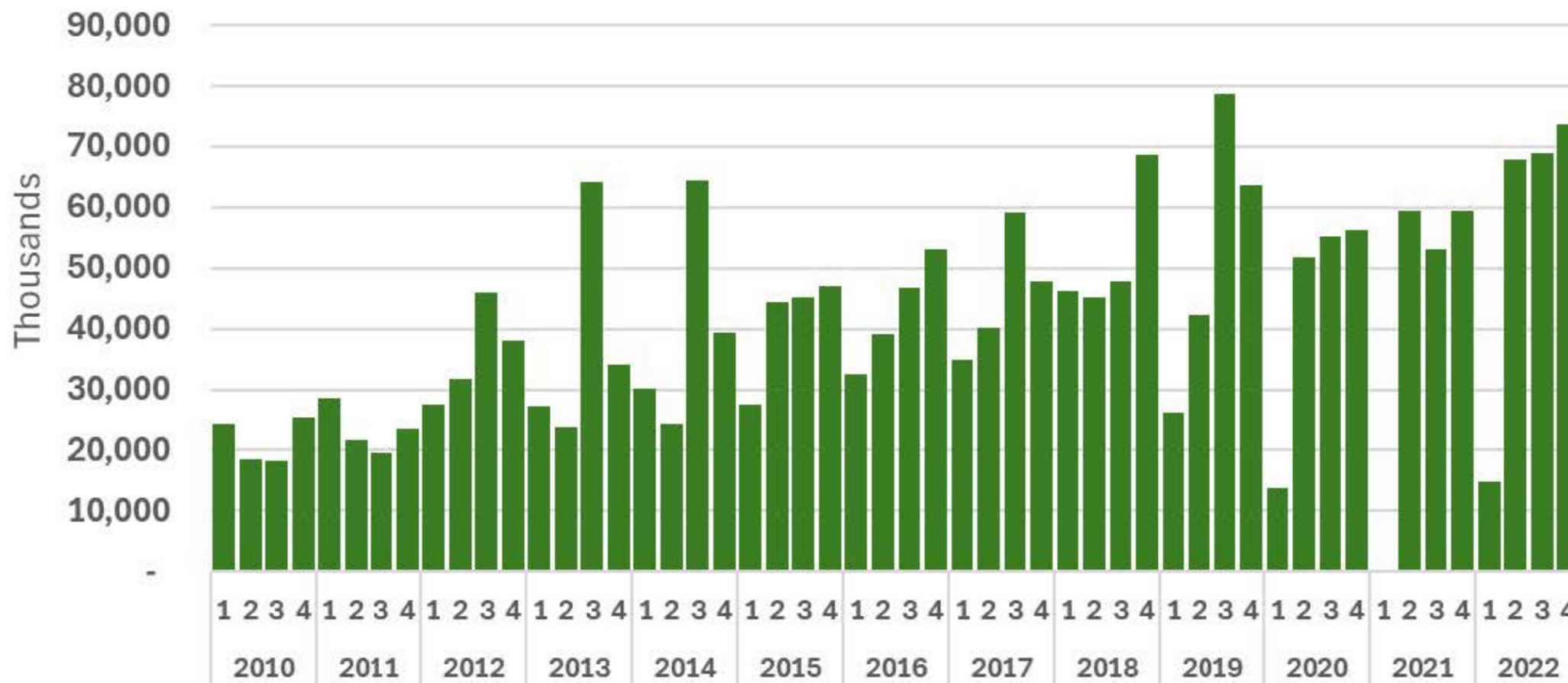
**Background:** 1 January to 13 March 2023, throughout the Convention area. This should be reviewed and, if necessary, revised based on advice by the SCRS taking into account monthly trends in free school and FAD-associated catches and the monthly variability in the proportion of juvenile tuna in catches. SCRS should provide this advice to the Commission in 2023.

- Using catch alone, it is not possible to fully evaluate the impact of the full closure on the fishing mortality of juvenile yellowfin and bigeye,
- In order to provide a response, the Committee carried out several types of analyses, including analyses that can only be carried out through a stock assessment.
- In some cases, these analyses were possible only for yellowfin tuna which was assessed in 2024. The Committee intends to conduct similar analyses for bigeye tuna in 2025.



19.38 Fishing prohibited with FADs, Rec. 22-01 para 28 (continued)

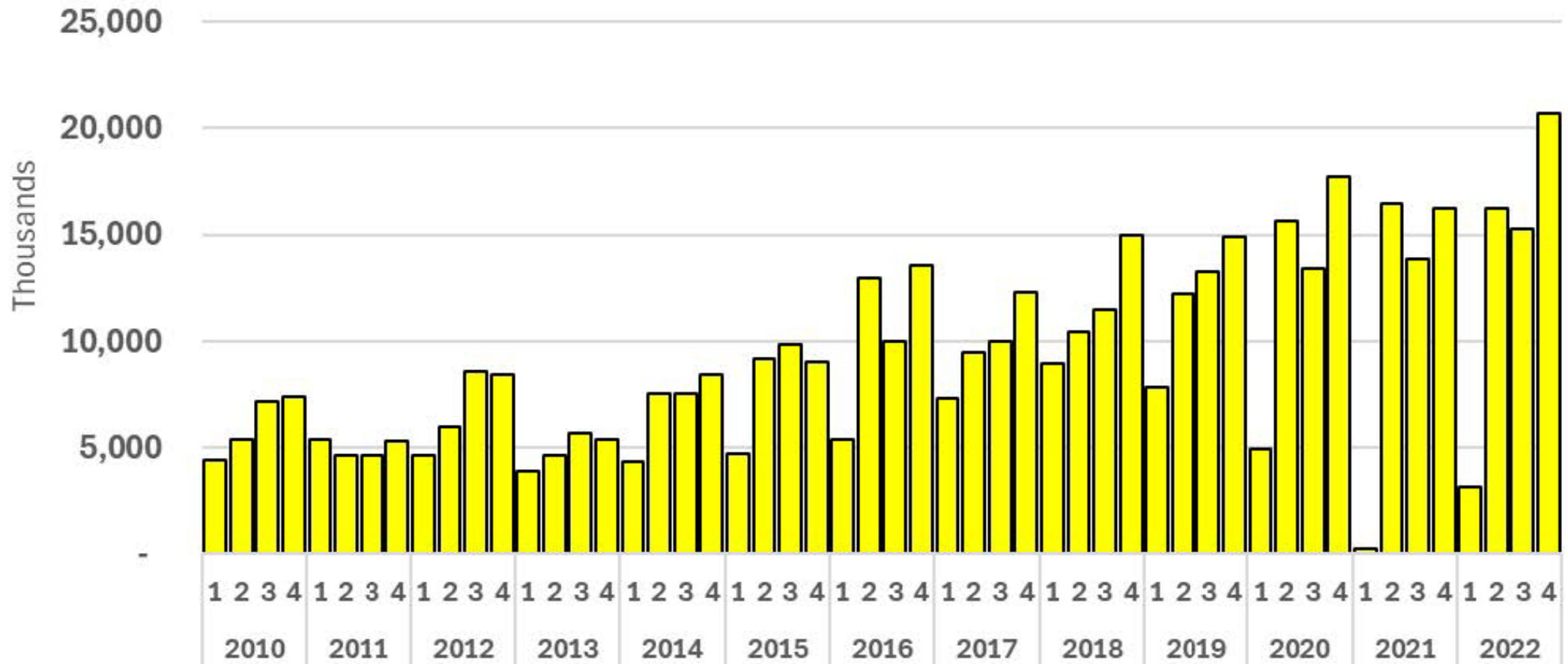
Catches of SKJ by year and quarter by PS-FOBs





19.38 Fishing prohibited with FADs, Rec. 22-01 para 28 (continued)

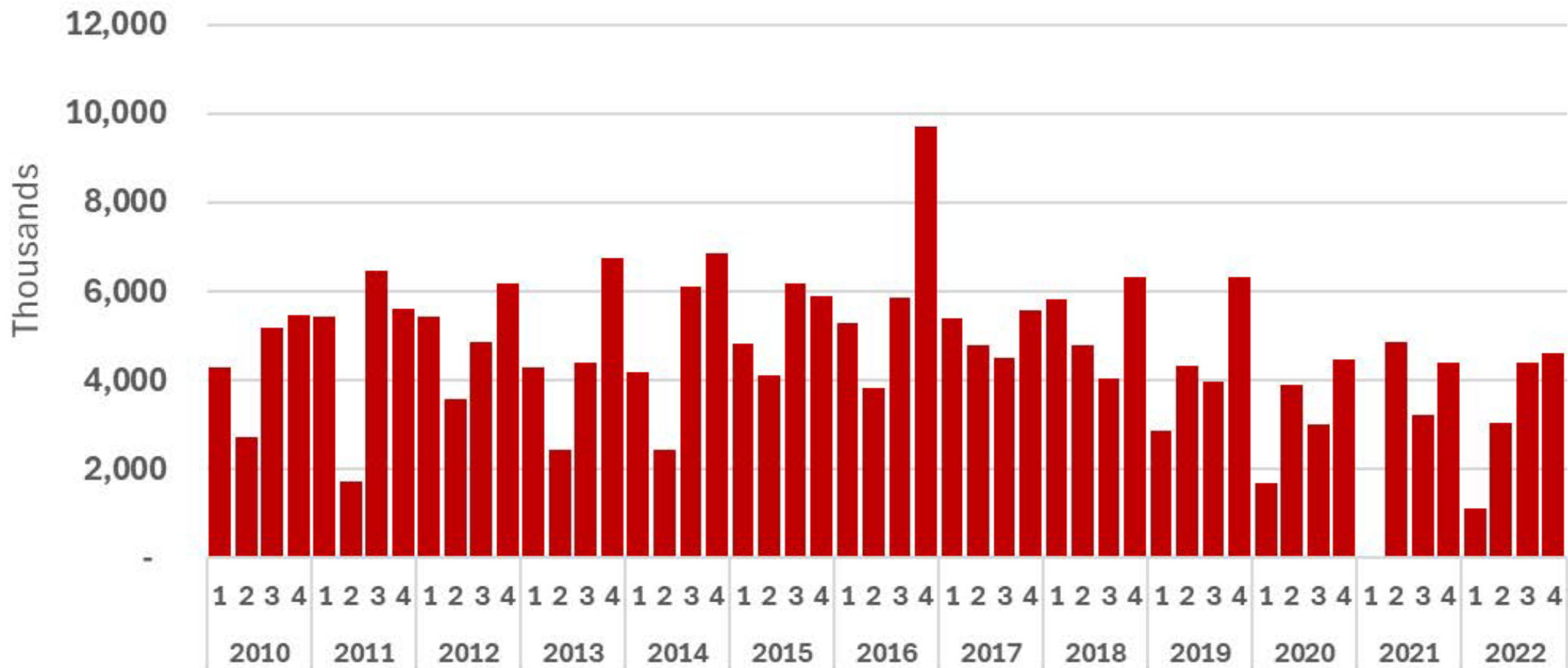
### Catches of YFT by year and quarter by PS-FOBs





19.38 Fishing prohibited with FADs, Rec. 22-01 para 28 (continued)

### Catches of BET by year and quarter by PS-FOBs

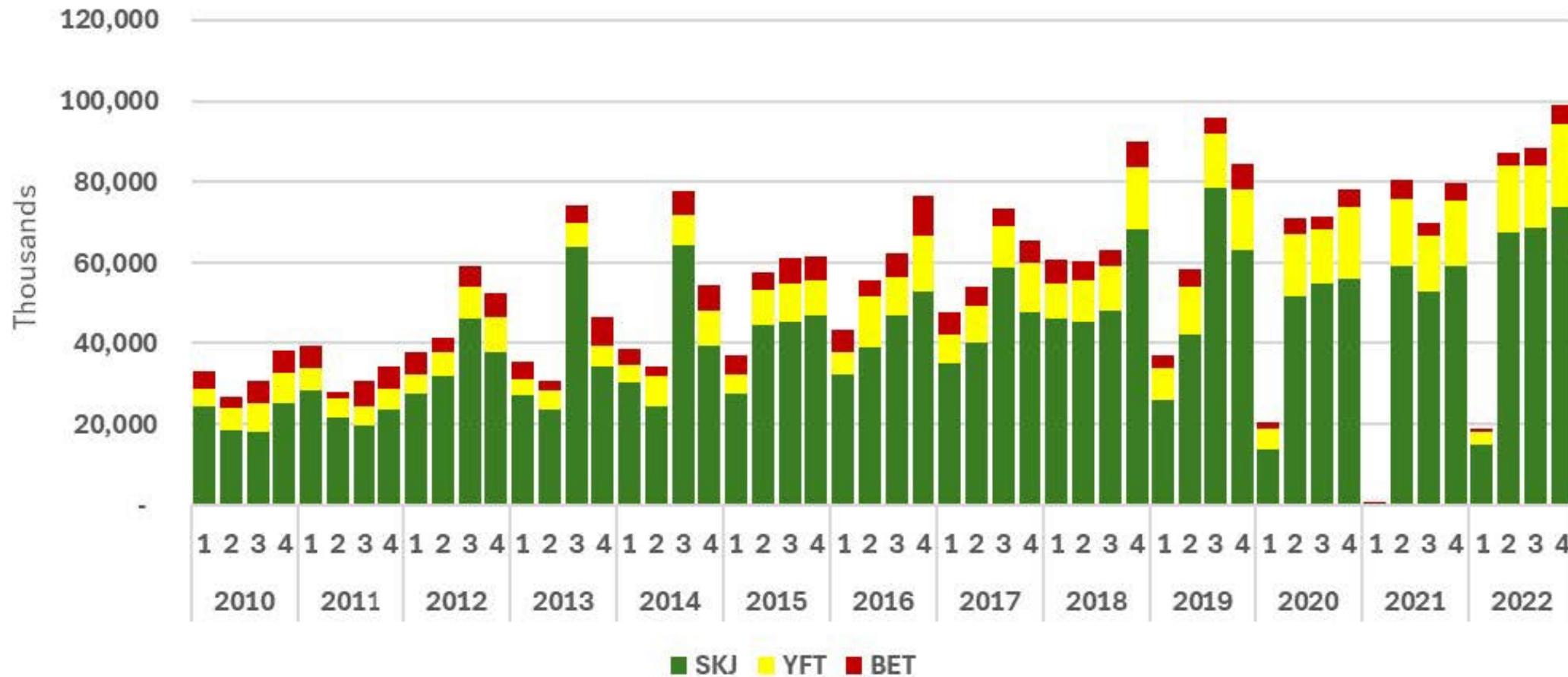






19.38 Fishing prohibited with FADs, Rec. 22-01 para 28 (continued)

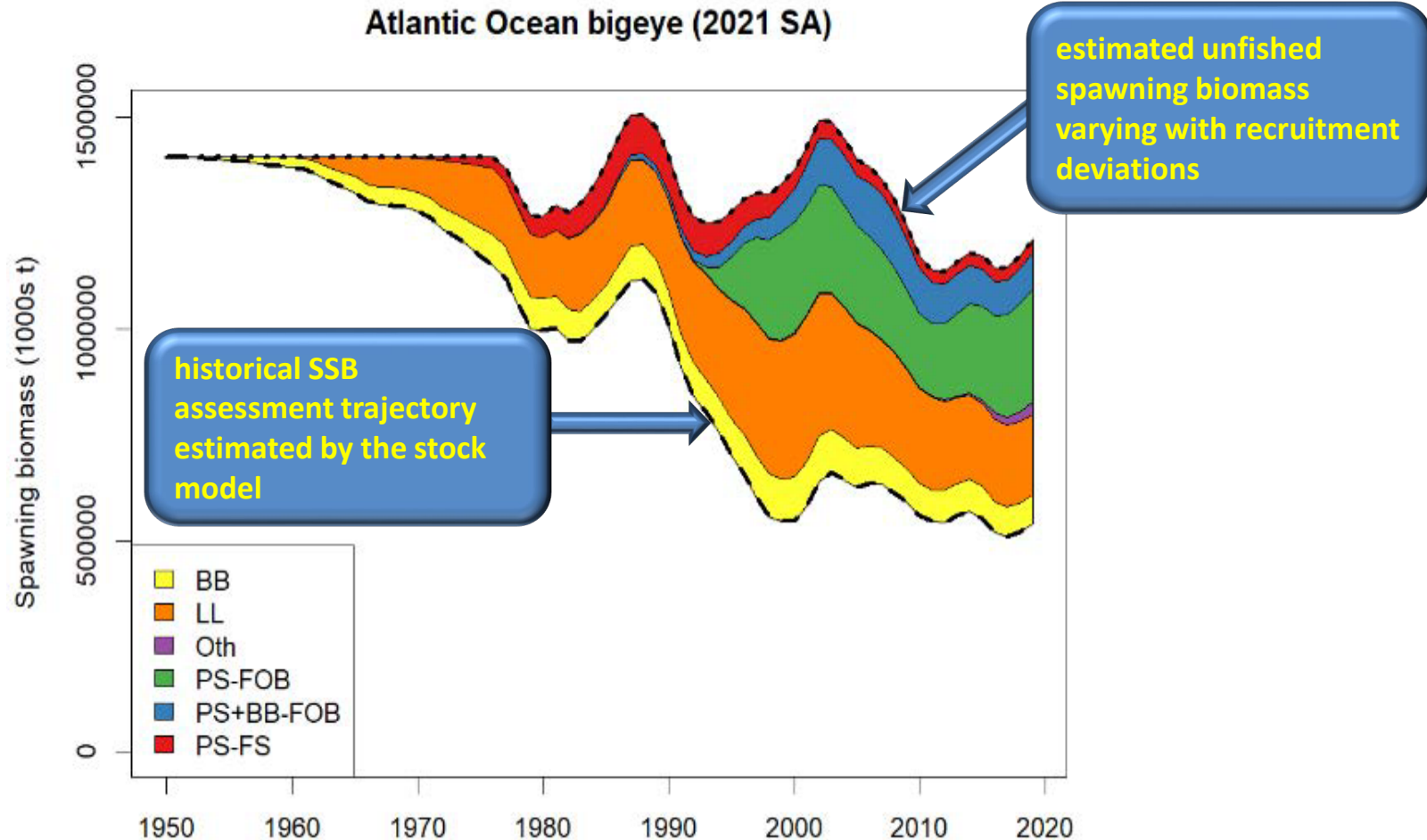
Catch (t) tropical tunas by year quarter by PS on FAD





19.38 Fishing prohibited with FADs, Rec. 22-01 para 28 (continued)

# Impact of each gear over time on the spawning biomass of the BET stock







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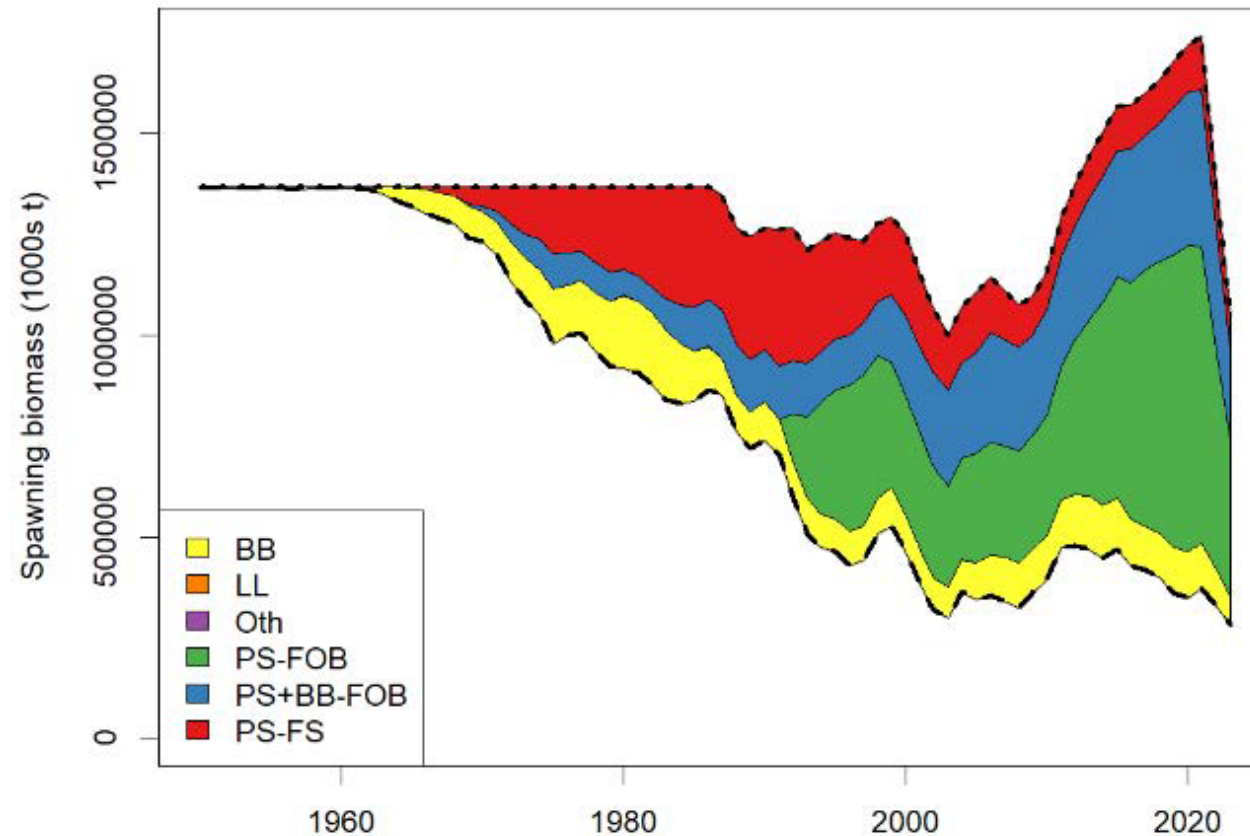
## Response to the Commission



19.38 Fishing prohibited with FADs, Rec. 22-01 para 28 (continued)

### Impact of each gear over time on the spawning biomass of the E-SKJ stock

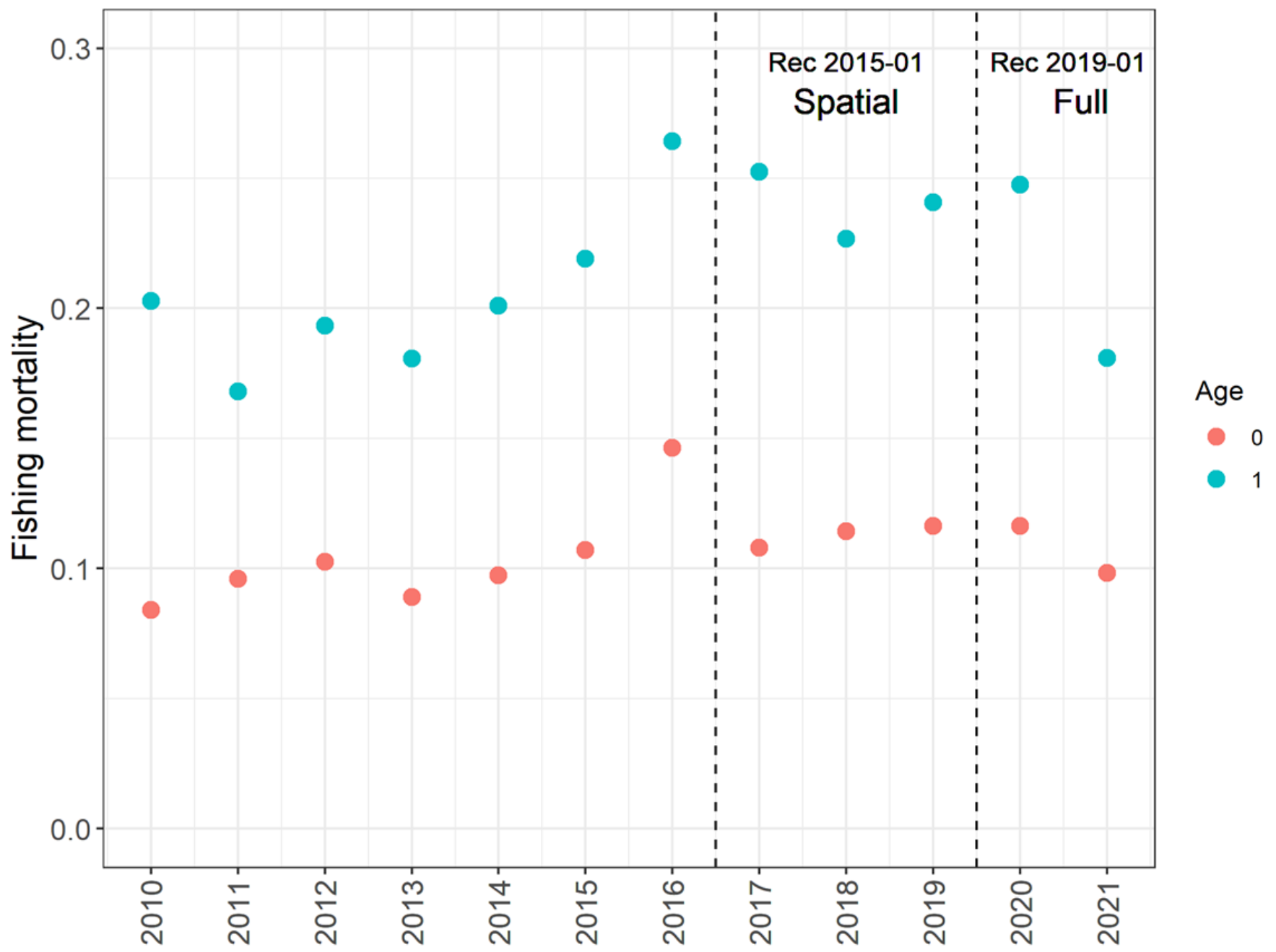
Atlantic Ocean skipjack (2022 SA)



**Estimated fishing mortality on age 0 and age 1 YFT for 2010-2021**

**F at age in 2022 is not included in this comparison because recruitment (Age 0) was not estimated for 2022**

### Juvenile yellowfin tuna



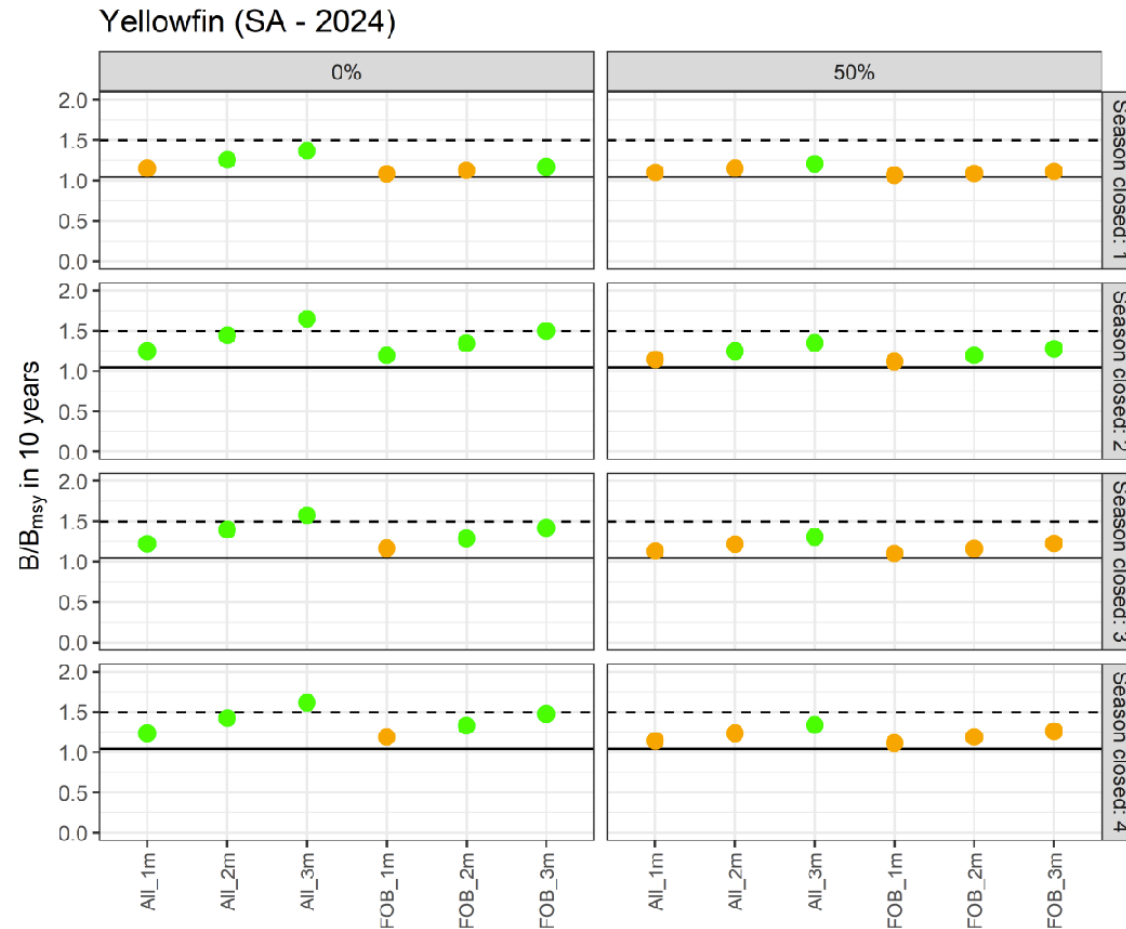




# Response to the Commission

## 19.38 Fishing prohibited with FADs, Rec. 22-01 para 28 (continued)

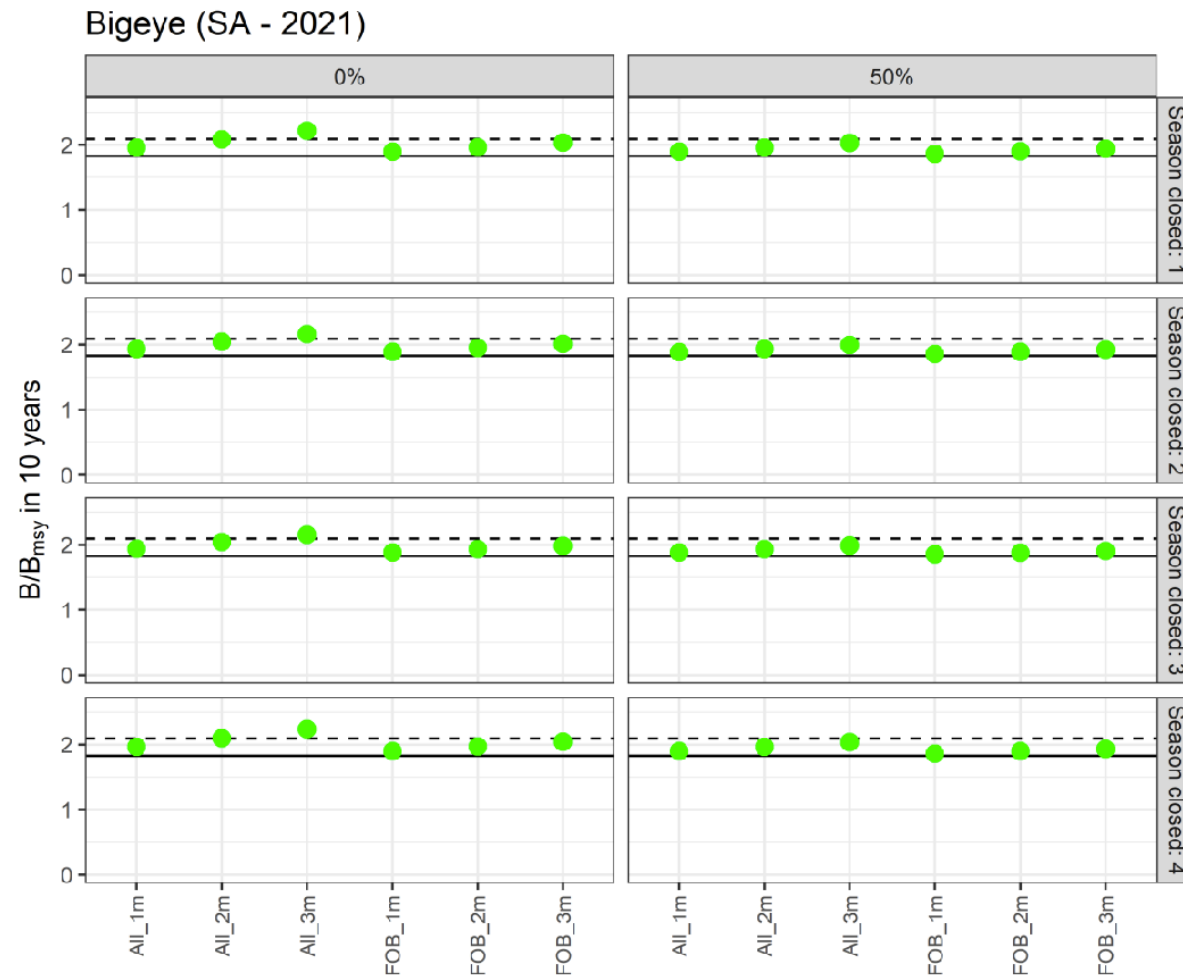
### Effect of alternative closure scenarios on stock status (after 10 yrs with catches at current TAC)





## 19.38 Fishing prohibited with FADs, Rec. 22-01 para 28 (continued)

### Effect of alternative closure scenarios on stock status (after 10 yrs with catches at current TAC)





# Responses to the Commission

19.31 The SCRS to inform on CPCs that have provided by 31 July 2022 the required historical FAD set data, Rec. 22-01, para 31

Not included in this presentation

19.36 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, Rec. 22-01 para 66b

Not included in this presentation (although the table of results was included as it is part of the YFT Executive Summary)

19.37 Further analysis shall be conducted by the SCRS on the impact of support vessels on the catches of juvenile yellowfin and bigeye tuna to be considered in 2023, Rec. 22-01, para 33

Not included in this presentation



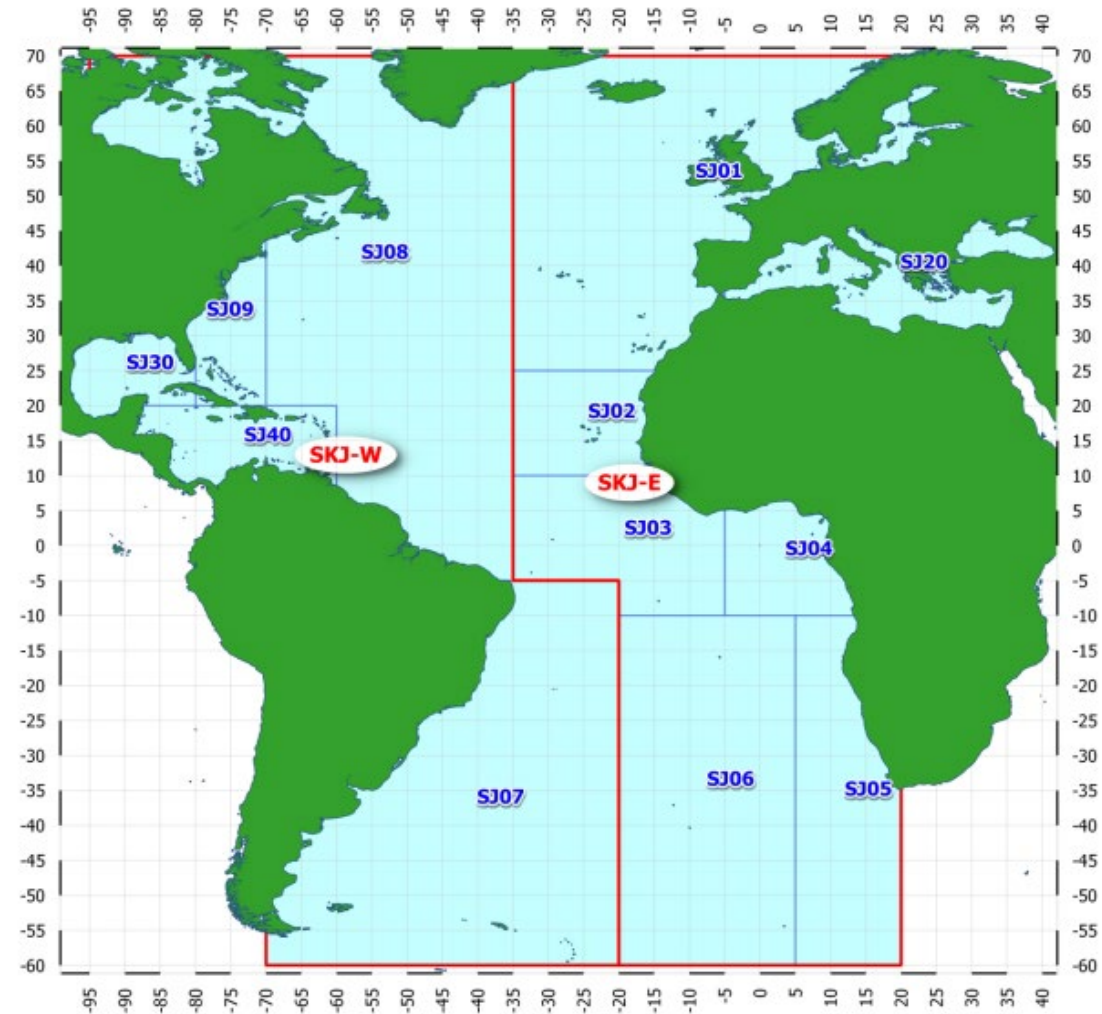
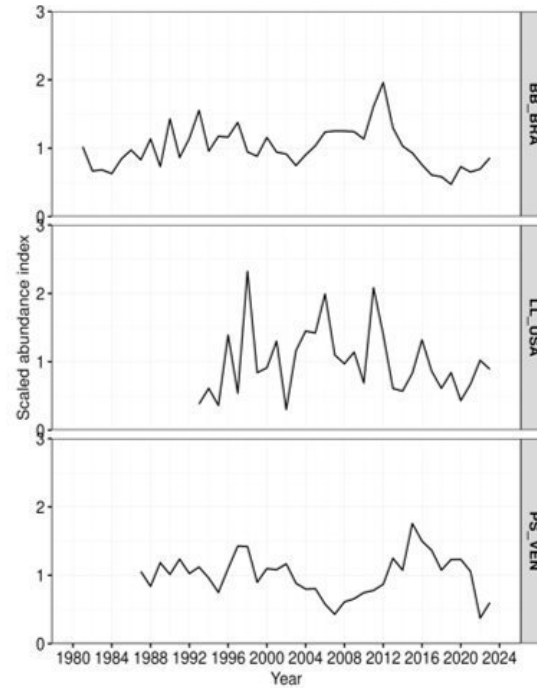
## Work completed in 2024 (Technical Development)

- **Include updated data up to 2022 in the MSE development:**
  - *Catch in 2021 and 2022;*
  - *Update 3 main CPUE indices;*
  - *Develop combine index from 3 main CPUE indices;*
- **Improve CMPs:**
  - *Development new CMP;*
  - *Tuning process;*
  - *Develop two types of CMPs depending on type of adjustment of TAC:*
    - *the same proportional adjustment regardless the TAC needs to be reduced or increased (Symmetrical);*
    - *proportional adjustment of TAC is greater when TAC needs to be reduced than when it needs to be increased (Asymmetrical)Development of adjustment rule for TAC (asymmetrical; symmetrical);*



## New data available

- All catches and indices were updated up to 2022;
- Catches
  - 2021 – 20.048 t
  - 2022 – 21.377 t
- Combined index for CMPs
  - Data from 3 CPCs accounting for more than 96% of catch in the Western Atlantic





## Robustness Test

- Robustness test 01 – TAC exceeded by 10% error implementation
- Robustness test 02 – TAC exceeded by 10% error implementation
- *Robustness test 03 [NOT yet available]*
  - *Climate change scenario based on varying the growth parameter [2025 Work];*
  - *Other climate change scenarios will be considered in 2025 too.*

## Candidate Management Procedures (10 CMPs)

### Empirical index-based CMPs:

- *CE*
  - *CE\_01* - TAC is adjusted asymmetrically (20% - 25%)
  - *CE\_02* - TAC is adjusted symmetrically (20%)
  - *CE\_03* - TAC without constraint limits
- *Iratio*
  - *IR\_01* - TAC is adjusted asymmetrically (20% - 25%)
  - *IR\_02* - TAC is adjusted symmetrically (20%)
  - *IR\_03* - TAC without constraint limits

### Model-based CMPs:

- *FMSY, if  $\geq BMSY$* 
  - *SP\_01* - Surplus production model
  - *SP\_02* - State-space surplus production model
- *80% FMSY, if  $\geq BMSY$* 
  - *SP\_03* - Surplus production model
  - *SP\_04* - State-space surplus production model

## CMP Performance Results

- The results have changed considerably since May 2023 when Panel 1 advised on operational management objectives.
  - *Development of a combined index and incorporation of actual fishery data rather than simulations only.*
  - *These new results, using the final OM reference set and better accounting for uncertainty, make achieving a 70% probability of green Kobe over 30-year projections harder, leading to lower average yields than earlier simulations.*
- The **Status** management objective was achieved by nearly all CMPs tested, with the exception of CE\_02 (69%) and CE\_03 (66%).
- All CMPs achieve a 90% or higher chance of not breaching the limit reference point over the entire projection period, although some CMPs are down to 88% for years 21-30 (**Safety**).
- The list of tested CMPs covers different methods and structures - diversity of approaches:
  - *Empirical and model-based CMPs;*
  - *Different harvest control rules;*
  - *Different ways of using the abundance index and exploitation rates.*

## Results



### CMP Performance Quilt Plot:

Reference OM Grid

MP	AvC_short	AvC_med	AvC_long	PGK_short	PGK_med	PGK_long	PGK	PNOF	nLRP_short	nLRP_med	nLRP_long	nLRP	VarCmedium	VarClong	VarC
IR_01	20581	21096	20065	0.71	0.72	0.69	0.70	0.77	1.00	0.96	0.88	0.91	0.01	0.00	0.00
IR_02	20581	21096	20065	0.71	0.72	0.69	0.70	0.77	1.00	0.96	0.88	0.91	0.01	0.00	0.00
IR_03	20581	21106	20061	0.71	0.72	0.69	0.70	0.77	1.00	0.96	0.88	0.91	0.01	0.00	0.00
CE_01	20677	20609	20324	0.71	0.72	0.69	0.70	0.80	1.00	0.96	0.92	0.94	0.22	0.31	0.25
CE_02	20677	20712	20641	0.71	0.72	0.67	0.69	0.79	1.00	0.96	0.91	0.93	0.21	0.29	0.23
CE_03	20677	21571	20189	0.71	0.68	0.64	0.66	0.77	1.00	0.95	0.90	0.92	0.34	0.53	0.37
SP_01	21616	22142	19716	0.70	0.68	0.71	0.70	0.78	1.00	0.94	0.89	0.92	0.04	0.02	0.02
SP_02	21395	17649	15658	0.68	0.75	0.87	0.82	0.90	1.00	0.96	0.96	0.97	0.31	0.26	0.28
SP_03	21616	22142	19716	0.70	0.68	0.71	0.70	0.78	1.00	0.94	0.89	0.92	0.04	0.02	0.02
SP_04	21395	17695	15771	0.68	0.75	0.86	0.82	0.89	1.00	0.96	0.96	0.97	0.31	0.26	0.28

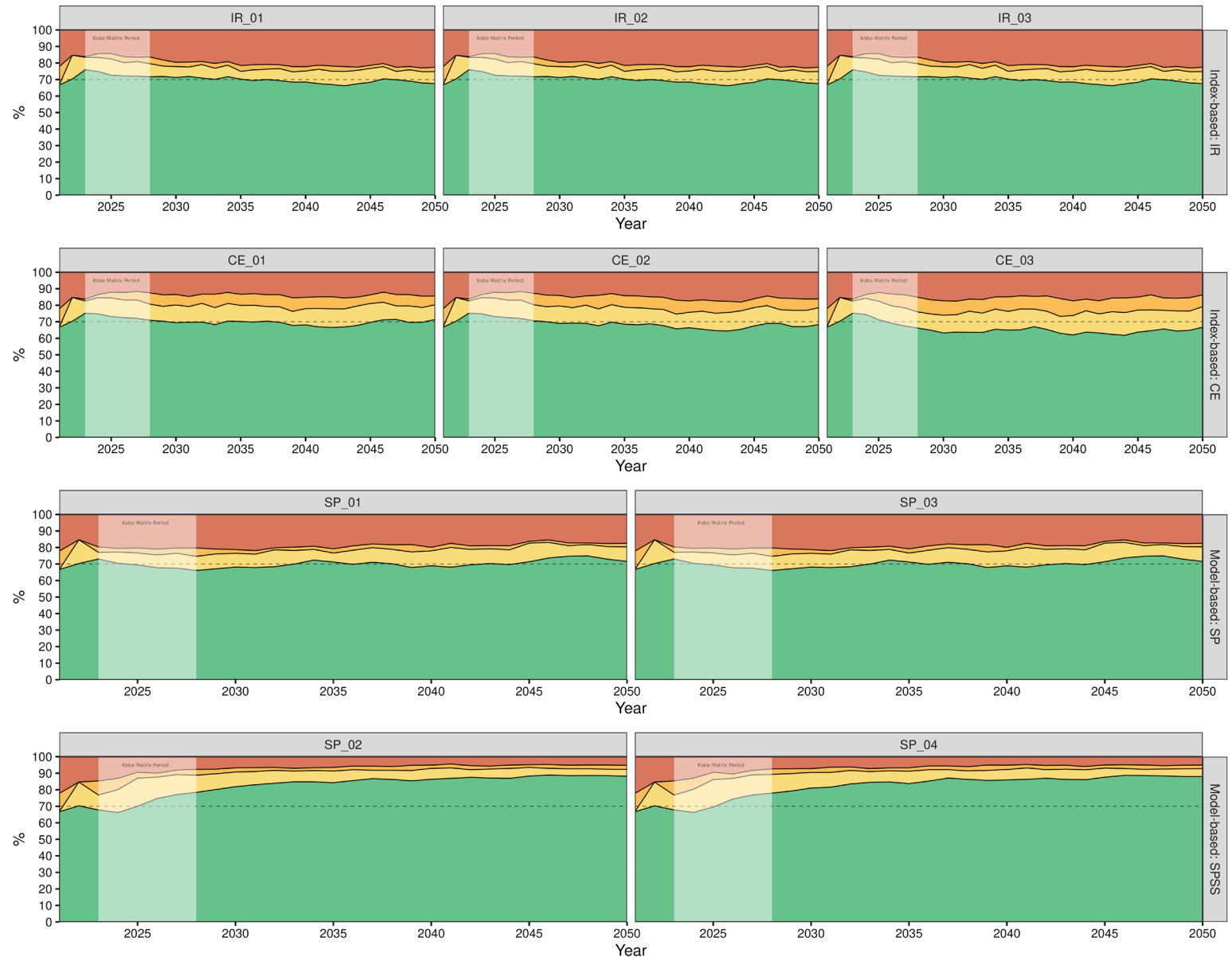


## Results



**CMP Performance  
Timeseries Kobe plot:**

Reference OM Grid

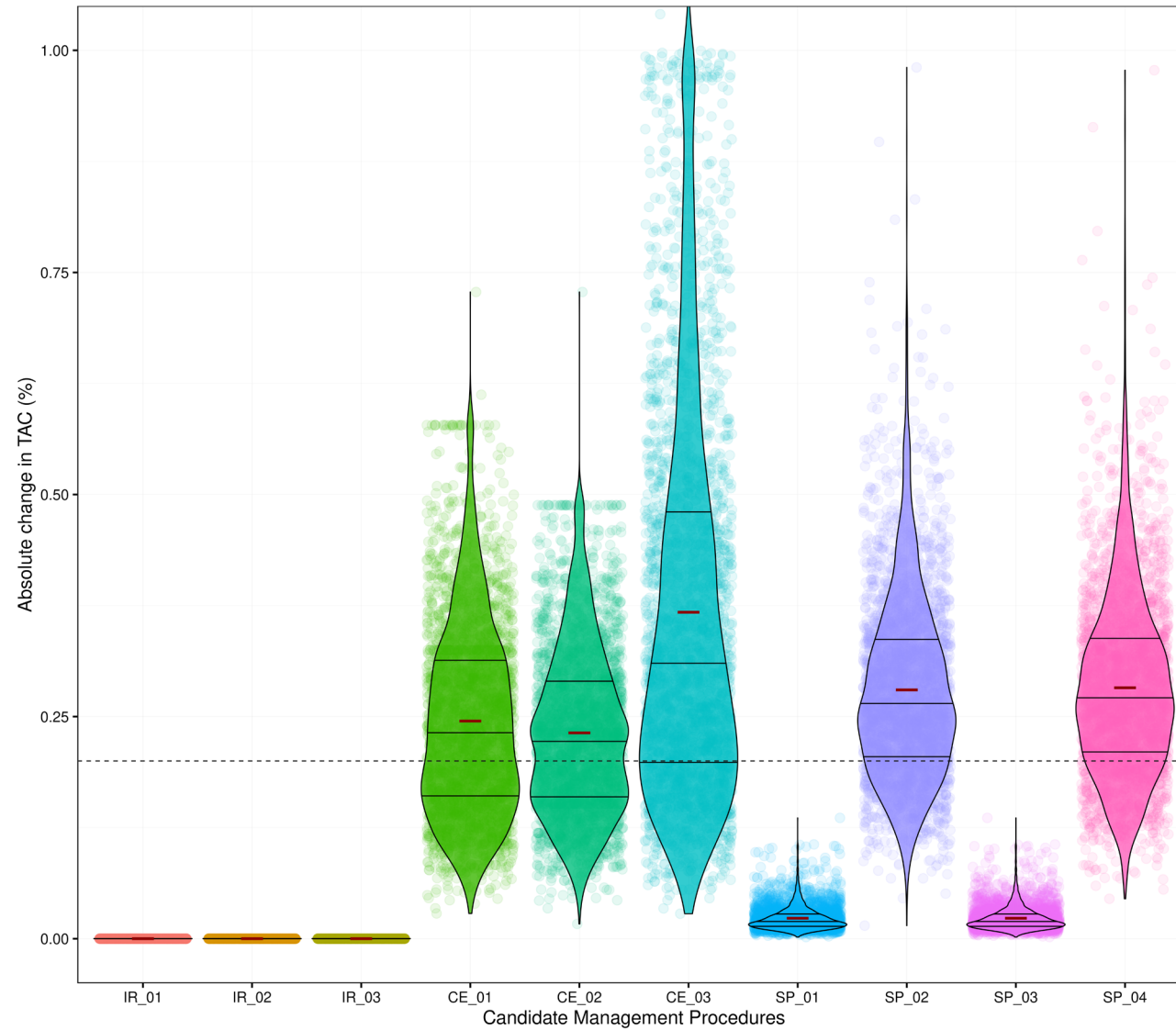


## Results



### CMP Performance Violin plot:

Reference OM Grid



## Results



### CMP Performance TAC1:

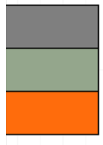
Reference OM Grid

CMP	TAC1
CE_01	20,559.79
CE_02	20,559.79
CE_03	20,559.79
IR_01	20,000.11
IR_02	20,000.11
IR_03	20,000.11
SP_01	23,891.52
SP_02	15,378.83
SP_03	23,891.52
SP_04	15,332.60

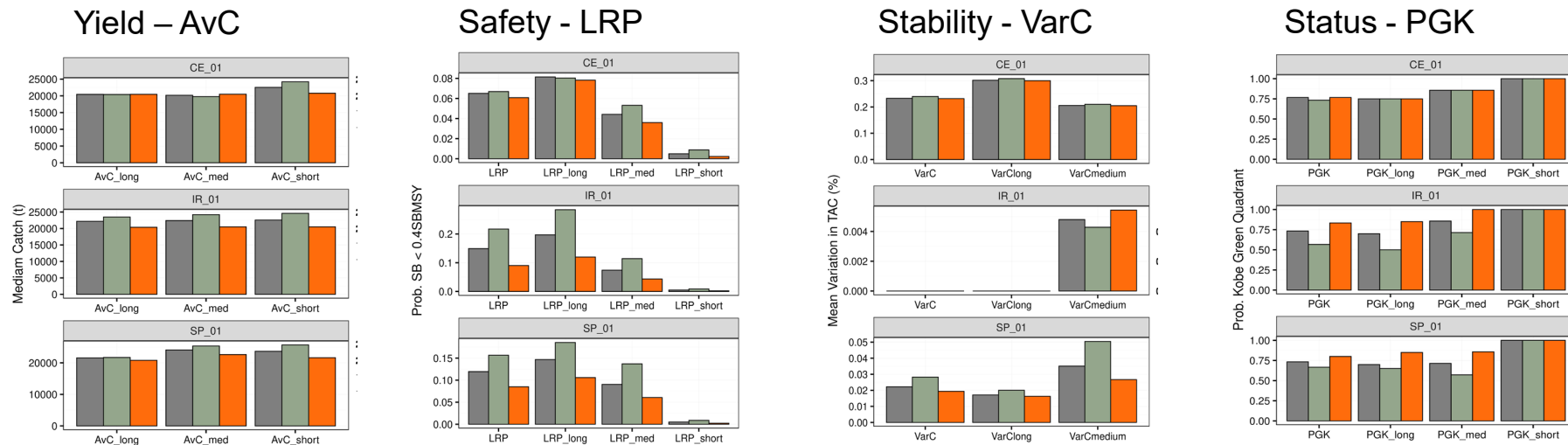
TAC for the first management cycle

## Robustness tests

- All performance metrics were examined for 10 CMPs
  - Some CMPs results are shown below (example)*
- Robustness tests do not present considerable changes in the performance metrics



- Robustness test 01 – 10% overage TAC error implementation
- Robustness test 02 – 20% overage TAC error implementation
- Perfect TAC Implementation



## Proposed MP application and review schedule

Year	Management cycle	Activity					Data inputs	
		MP run	MP advice implemented	Stock assessment	MSE review	Exceptional circumstances	Combined index <sup>1</sup>	Exceptional circumstances indicators
2024		X					X	
2025	1		X			X		X
2026						X		X
2027		X				X	X	X
2028	2		X			X		X
2029						X		X
2030		X		X	X	X	X	X

<sup>1</sup>The combined index may be updated every year, depending on the requirements set out in exceptional circumstances protocol (ECP).



## Other Matters

### ***SKJ-W MSE workplan in 2025 (if an MP is adopted in 2024)***

- Development of an exceptional circumstances protocol;
- Development of additional robustness tests based on Climate Change scenarios.



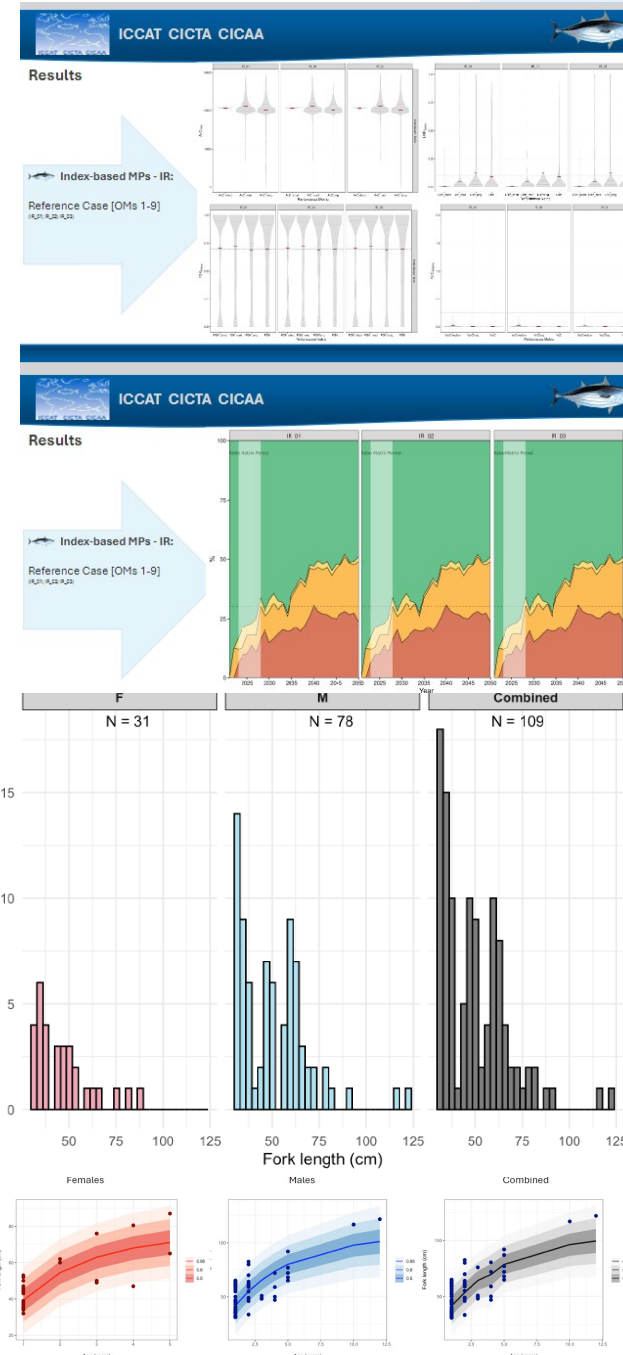
**The Committee draws the attention of the Commission that the development on multi-stock management strategy evaluation (MSE) for tropical tuna is progressing and multi-stock Management Procedure (MP) could be ready for adoption by the Commission in several years if resources are sufficiently allocated. The Committee suggests the Commission that the adoption of management objectives and performance metrics in consultation with the SCRS would be helpful to advance the process for the development of multi-stock tropical tuna MSE, which would be more complicated than single-stock MSE (SKJ-W). The Committee requests the Commission provide priority, clear direction and commitment for the development and implementation of the multi-stock tropical tuna MSE.**

# MSE Roadmap

The current version of the MSE Roadmap can be found in Appendix 7 of the 2024 SCRS Report

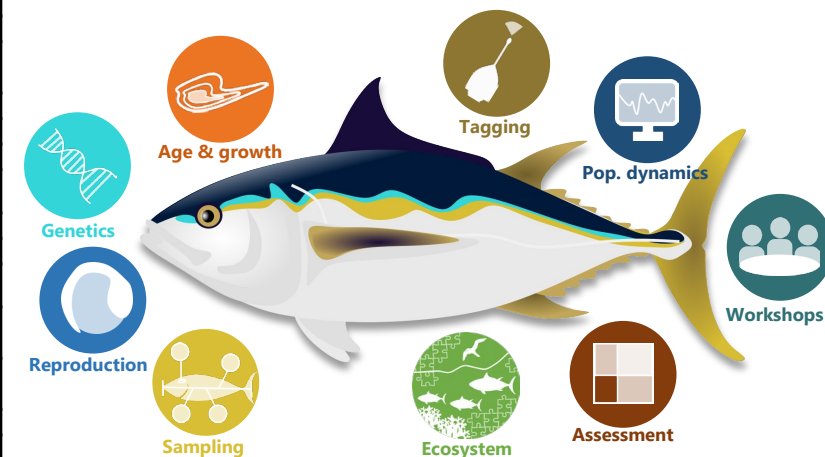
# TTRaD activities (2024)

- MSE developments
  - **W SKJ** – CMP development, incorporation of abundance indices & robustness tests
  - **Multi-stock** – explored uncertainties, develop conditioned OMs and observation error models, incorporated climate change impacts and multi-stock management procedures (HCR development)
  - **Workshop** planned for Oct 2024
- Sample collection for **age and growth** (including preliminary updates)
- Continuation of funds for tag recovery and maintenance of AOTTP databases



# TTRaD plan

Theme	Short			Medium		Long	
	2025	2026	2027	2028	2029	2030	2031
<b>Sampling</b>							
Review and targeted sampling of tropical tunas (hard parts, mucus, and other tissue sampling for biological parameters and to develop a long-term hard part and tissue bank)	15	50	50	50	50	50	50
AOTTP awareness and tag recovery activities	8.75	5	5	5	15	15	15
New tagging programs				10	50	50	50
<b>Life history</b>							
Improved natural mortality and growth estimates from available processed samples (biological samples and tagging).	50	50			25		25
(1) Improved estimation of growth curves and maximum age, (2) determine the best hard structure used for ageing (otolith vs spines) for SKJ, (3) explore alternative age validation for SKJ, and (4) Update tropical tuna reproductive parameters [ITUNNES]							
Assess if epigenetic approaches work for tropical tunas (feasibility and costing)		30					
Developing indicators for maturation / spawning of tropical tuna using mucus swabs (feasibility and costing) (All)		20					
Update length-weight relationships using recent data sources [NS]							
Workshop on age, growth, trophics		40					
Update tropical tuna reproductive parameters				25		25	
Assess the influence of conversion factors [NS]							
<b>Stock Assessment</b>							
Tropical tuna MSE development and review	75	75	75	50	50	50	50
Estimate SKJ exploitation from tag data to support MSE development	25						
Clean format and subset tag data for SS & analysis of long-term c-tag recoveries			175				
Caribbean data improvements							
MSE engagement workshops			50				
Data improvement and research workshops	40			40		40	
Close Kin Mark Recapture feasibility study (abundance)		15					
<b>Advice, ecology and population dynamics</b>							
YFT/BET environmental habitat definition		50	50				
Spatio-temporal model to improve FAD management – (POSEIDON) (All)	100	100					
Changes in productivity and distribution of tropical tunas in relation to the environment - climate (ALL)		50			50		
Spatio-temporal modelling including FAD density– (VAST & other approaches) (All)		50	50				
Check validity of stock unit				100	100	100	
E SKJ population structure [ITUNNES]							
Trophic dynamic update [ITUNNUFS]							



# Tropical Tunas Workplan

- Bigeye tuna assessment
  - Update indices including joint LL (need sufficient time ahead of data prep)
- Develop & revise common fishery indicators
- Improve basic fishery data
- TTRaD activities including
  - MSE development
  - Update age and growth and mortality







# Tropical Tuna Recommendations

## With financial implications

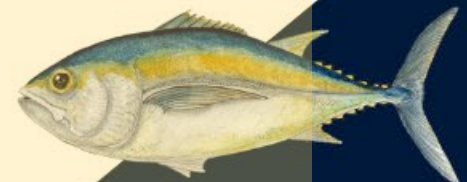
1. **MSE** developments and review for W SKJ and multi-stock MSE
2. Update fishing and natural **mortality for BET** ahead of the scheduled BET stock assessment meeting
3. Coordinated sample collection (including storage) for **age and growth** and preliminary analysis
4. **AOTTP** tag recovery activities and offices
5. **Spatio-temporal model** development to improve responses to Commission related to FAD management in the Atlantic Ocean
6. Estimation of **skipjack exploitation rates** from AOTTP data to determine whether exploitation rates from tagging can be used to improve the performance of SKJ assessment models.



# Tropical Tuna Recommendations

## General recommendations

1. The Committee strongly supports the proposal for the **list of Fishery Indicators** developed for the PS tropical fisheries, and encouraged CPCs to review and complete the information for all tropical PS fleets currently active. The Committee also discussed and recommended that this type of fishery Indicator format be **adapted for all other main fleets** targeting Tropical tunas, including longline and baitboat fleets. For this, it is requested that the **Secretariat (SC-Stats)** prepare and present during 2025 a **summary of available information** that can complete the proposed fishery indicator information.
2. The Committee requests that the **joint longline index** be updated for bigeye tuna using high resolution catch and effort information from the main longline fleets operating in the Atlantic (e.g., Japan, US, Brazil, Korea (Rep.) and Chinese Taipei). This index should ideally be developed at the set-by-set level and provided **well in advance** of the bigeye tuna data preparatory meeting.



Thank You