

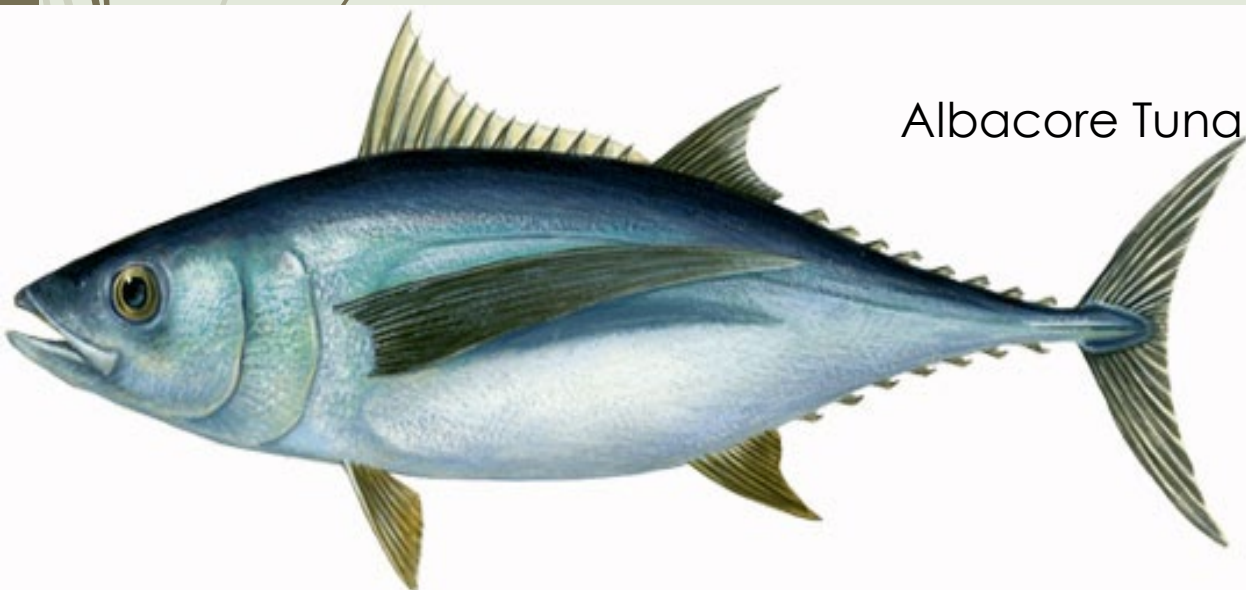


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SCRS Report 2023

Panel 2 – Northern Temperate Tuna



Albacore Tuna



Bluefin Tuna



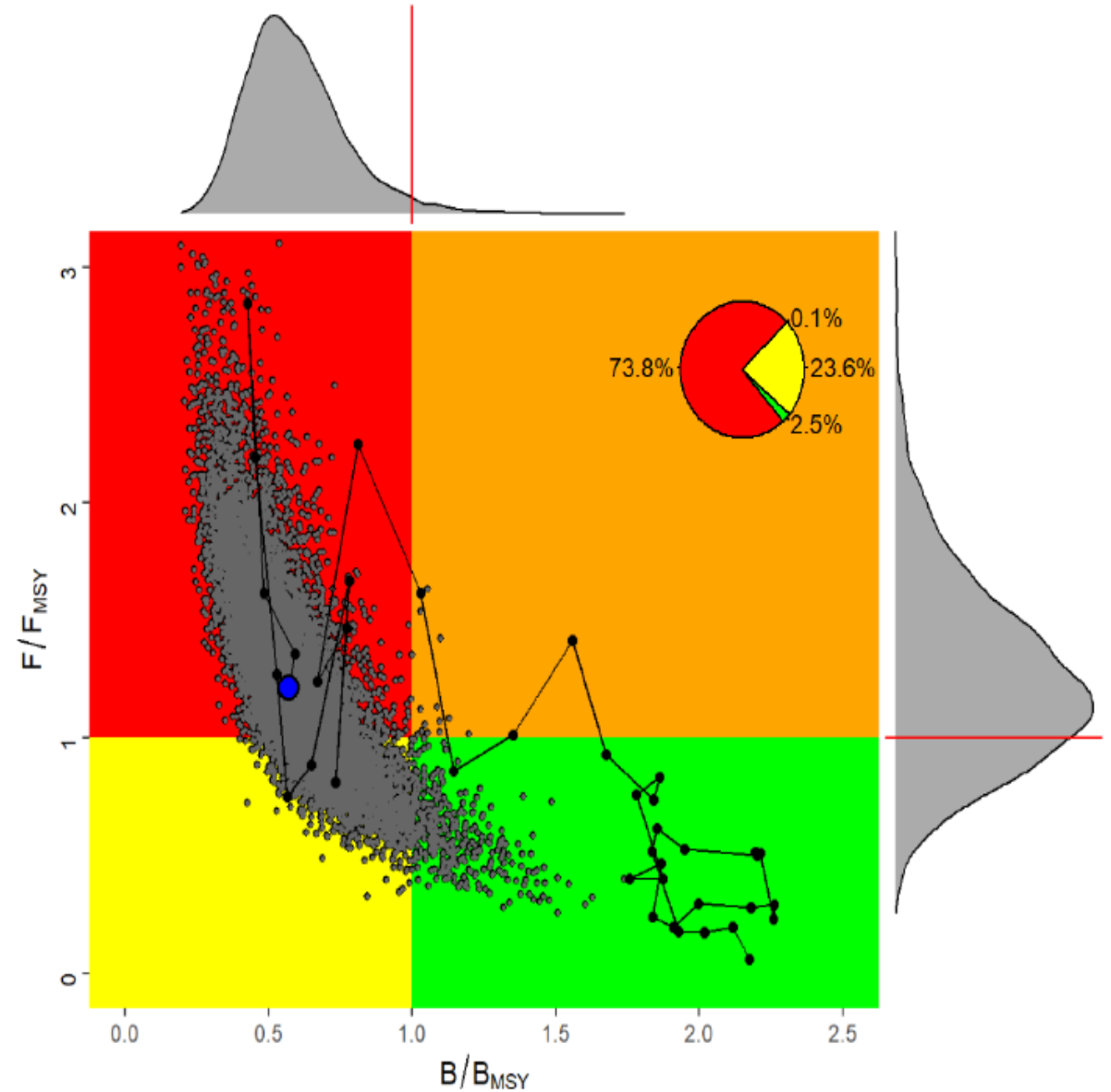
Summary Northern Temperate Tunas

Presentation Summary

- Brief Overview of Mediterranean Albacore stock Status
- Overview of results from 2023 Albacore Stock Assessment, Evaluation of Exceptional Circumstances, and MSE related work
- Effects of Current regulations (from Executive Summaries)
- Management recommendations (from Executive Summaries)
- Highlights from research programs
- ALB and BFT Workplan
- Recommendations with financial implications
- Responses to the Commission

Mediterranean Albacore Stock Status

Last assessed in 2021, using data up to 2019



Mediterranean Albacore Stock Status

Last assessed in 2021, using data up to 2019

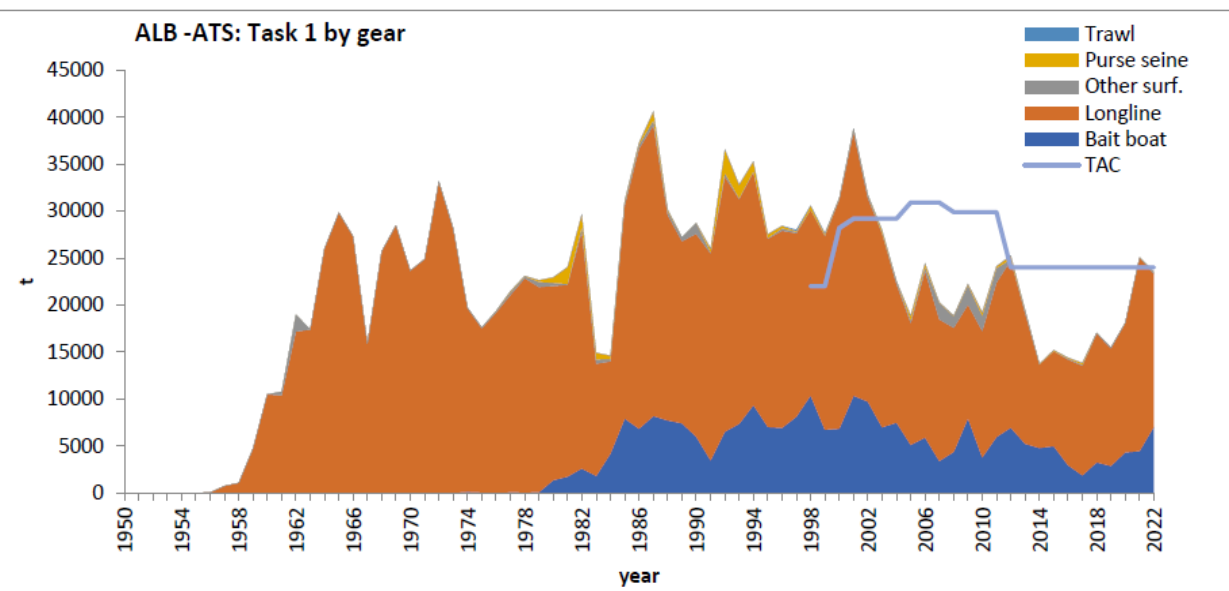
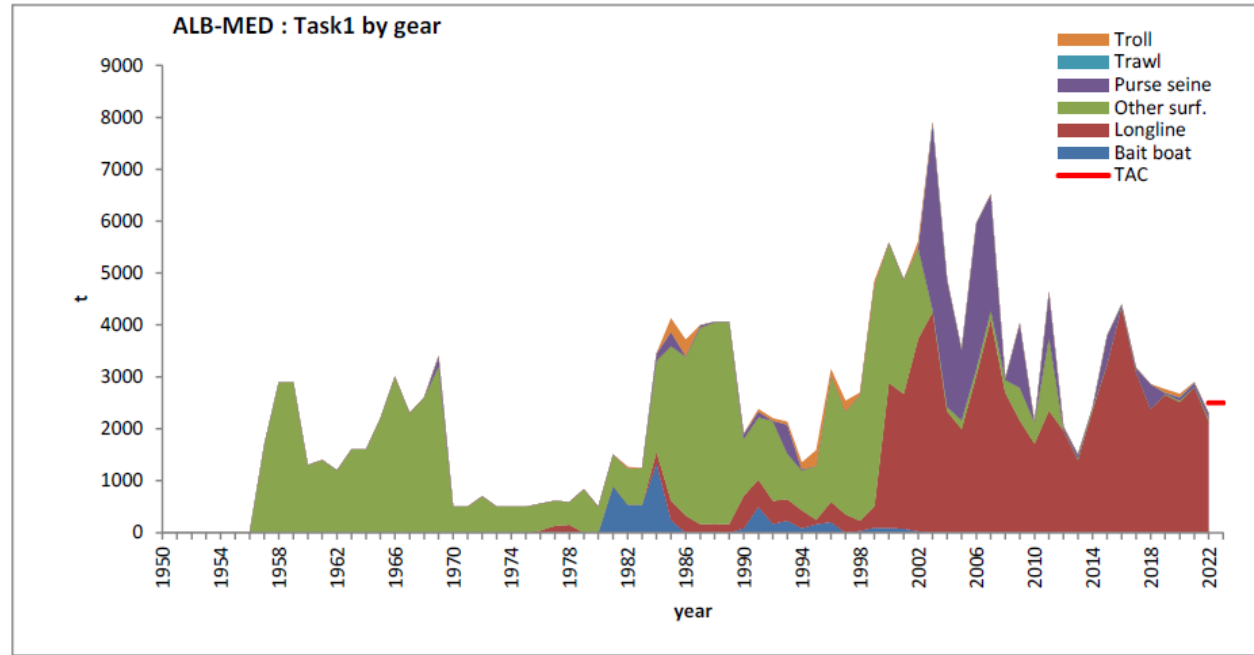
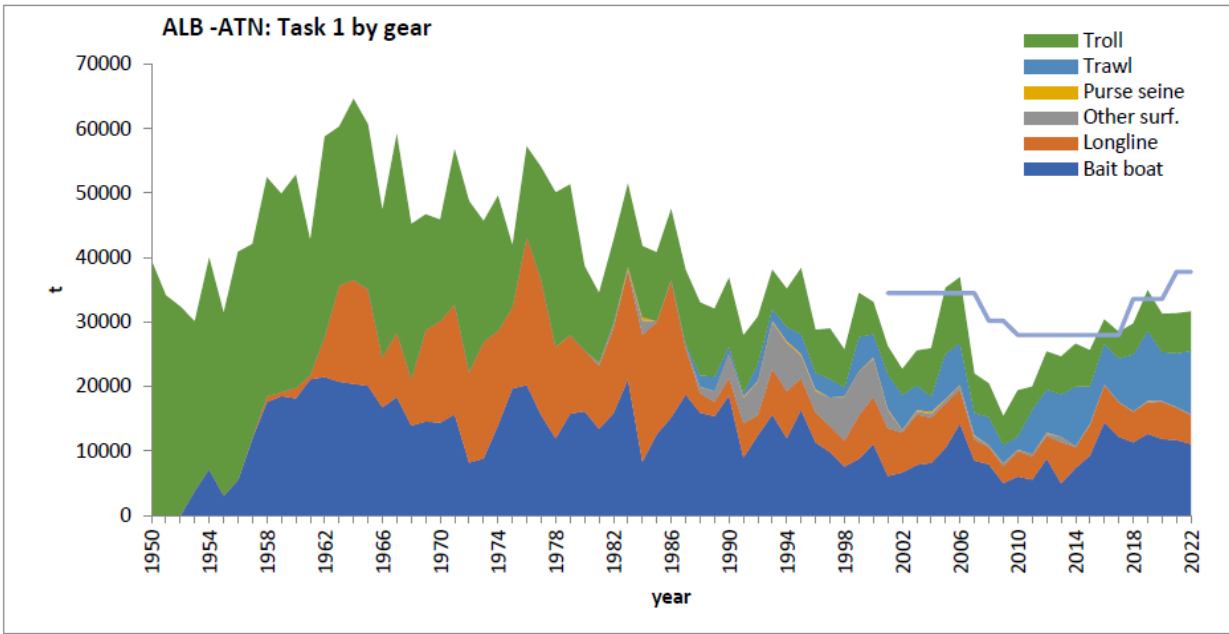
MEDITERRANEAN ALBACORE SUMMARY	
	Mediterranean
Maximum Sustainable Yield	3,653.9 t (2,446-5,090 t) ¹
Current (2022) Yield	2,295 t
Yield in last year of assessment (2019)	2,484 t
B _{MSY}	19,703.1 t (11,676 - 36,833 t) ¹
F _{MSY}	0.184 (0.091 - 0.335) ¹
B ₂₀₁₉ /B _{MSY}	0.570 (0.322 - 1.004) ¹
F ₂₀₁₉ /F _{MSY}	1.213 (0.618 - 2.175 t) ¹
Stock Status	Overfished: YES Overfishing: YES
Management measures in effect:	Rec. 22-05 15-year Rebuilding plan (2022-2036); TAC for years 2022, 2023 and 2024: 2,500 t Limited number of vessels (reference year 2017 or 2018); Census of authorized sport & recreational vessels (maximum 3 albacore vessel/day); 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.

MED - There is considerable uncertainty about current stock status and the ability of the available CPUE series to monitor stock trends is limited.

Current fishing mortality levels (2019) are above F_{MSY} (1.2), Median and the current biomass is below the B_{MSY} level (0.57).

2021 State of the stock - Albacore



Total albacore catches in the North Atlantic, South Atlantic and the Med stocks to 2022.

Mpb: MP iteration

- $TAC=0.8 \times F_{msy} \times B_{cur}=0.8 \times 0.1146443 \times 519,799 = 47,673 \text{ t}$
- Exceeds the allowed maximum change in TAC ($1.25 \times TAC_{2021-2023} = 47,251 \text{ t}$).
- Therefore, the **TAC advice for the period 2024-2026 is 47,251 t.**
- Consistent with SS3 short term projection at $0.8F_{msy}$:

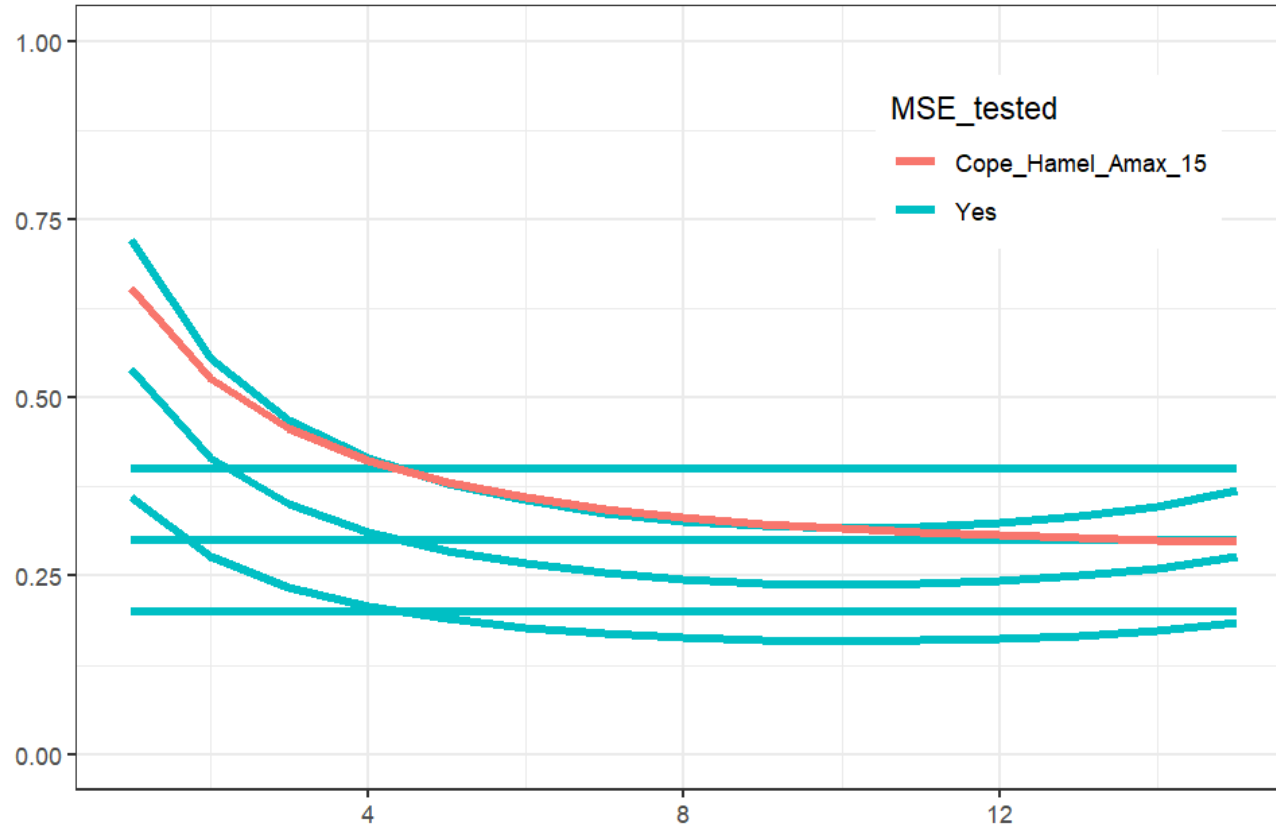
Year	Mean	95%LCI	95%UCL
2024	50173	35671	64675
2025	49029	37080	60978
2026	47979	37959	57999

Exceptional Circumstances

Response to Rec 21-04 Par. 4 (SCI 97)

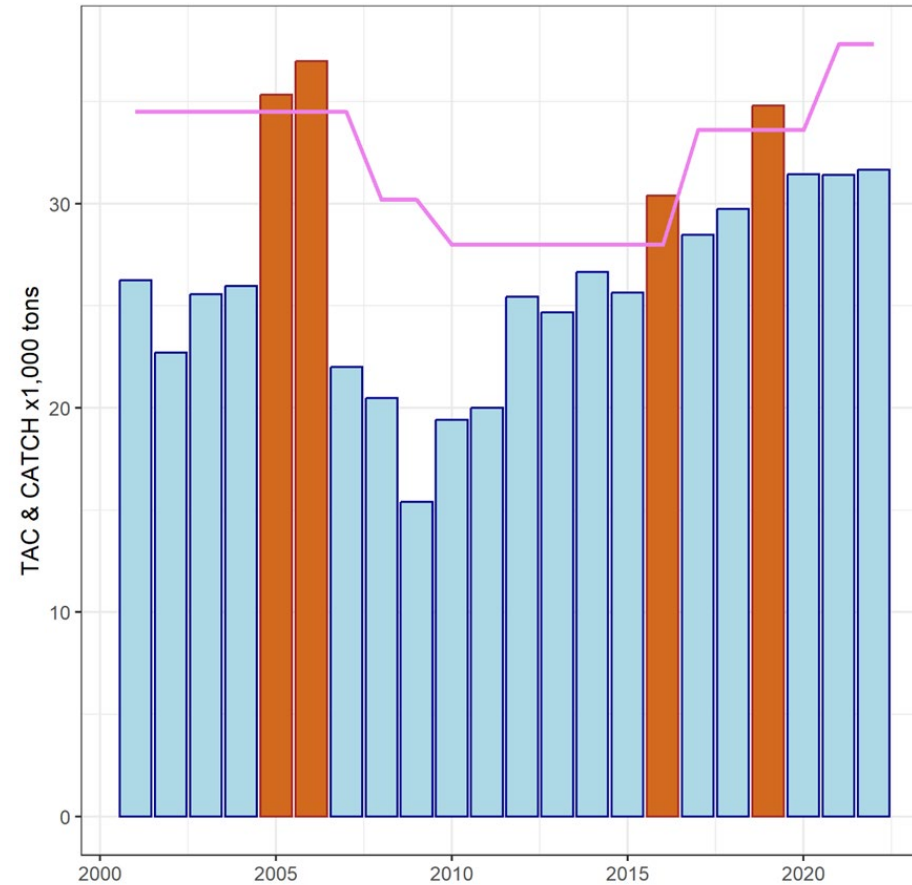
<i>Principle</i>	<i>Indicator</i>	<i>Criterion</i>	<i>Frequency of evaluation of Exceptional Circumstances</i>
a. Stock dynamics	Relative stock biomass (B/B_{MSY}) ¹	Falls outside the 2.5% and 97.5% percentile range of values in any year from the OMs used in the MSE when the accepted MP was tested	Each benchmark stock assessment (every 6-7 years)
	Relative fishing mortality (F/F_{MSY}) ¹		
	Growth ²	Are substantially different from the values from the OMs used in the MSE when the accepted MP was tested	After completion, presentation, and acceptance by the SCRS of a study as the new reference
	Maturity ²		
	Natural mortality ²		
CPUE ³	Falls outside the 2.5% and 97.5% percentile range of values in any year from the OMs used in the MSE when the accepted MP was tested	Annually	
b. Application of the MP	CPUE	If two or more series have not been updated for two or more years. If two or more series are determined to no longer reflect abundance	Each MP iteration (every 3 years)
	Catch	Catch data are unavailable or substantially unreported	Each MP iteration (every 3 years)
	Relative stock biomass (B/B_{MSY}) ⁴	Values from the production model in an iteration of the MP fall outside the 2.5% and 97.5% percentile range of values in any year produced by the accepted MP's production model during MSE testing	Each MP iteration (every 3 years)
	Relative fishing mortality (F/F_{MSY}) ⁴		
c. Implementation of the TAC	Catch	Total catch is above by more than 20% the TAC set using the MP	Annually

MSE: Exceptional Circumstances



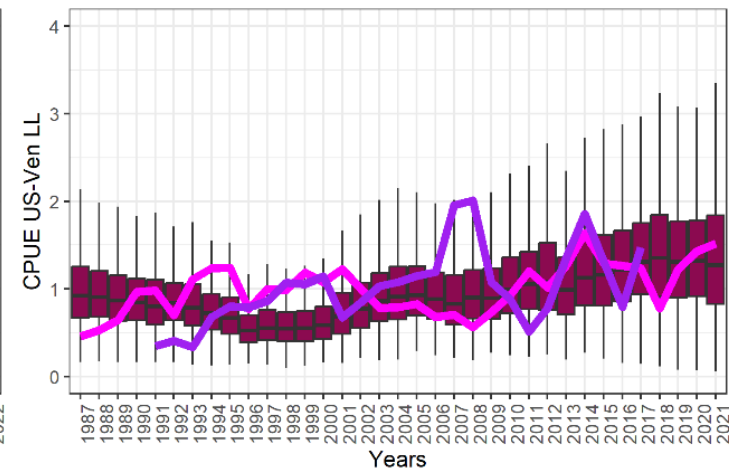
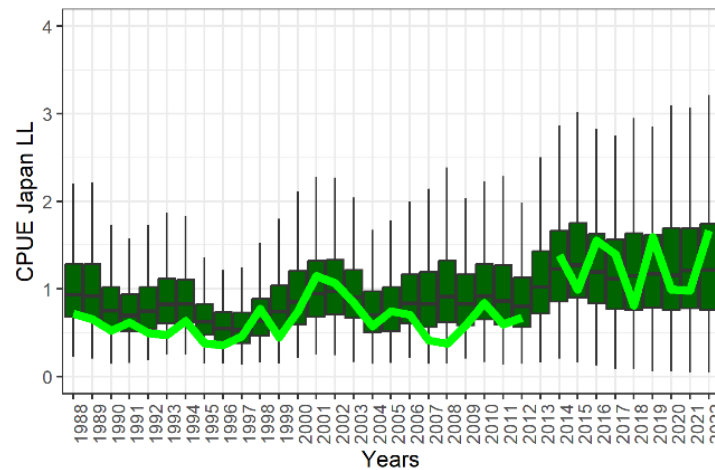
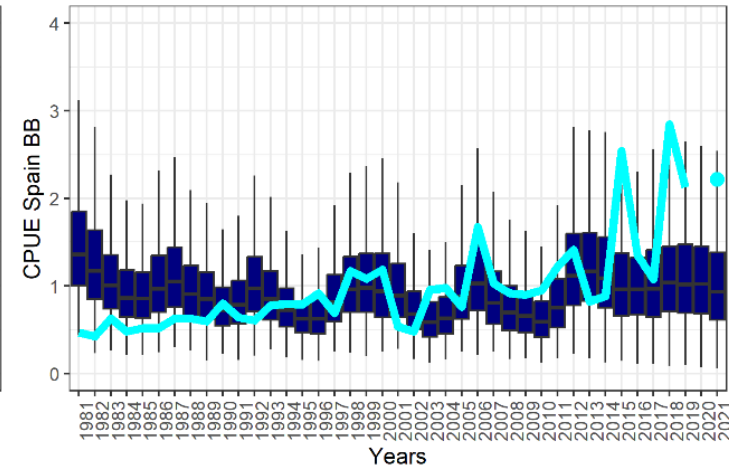
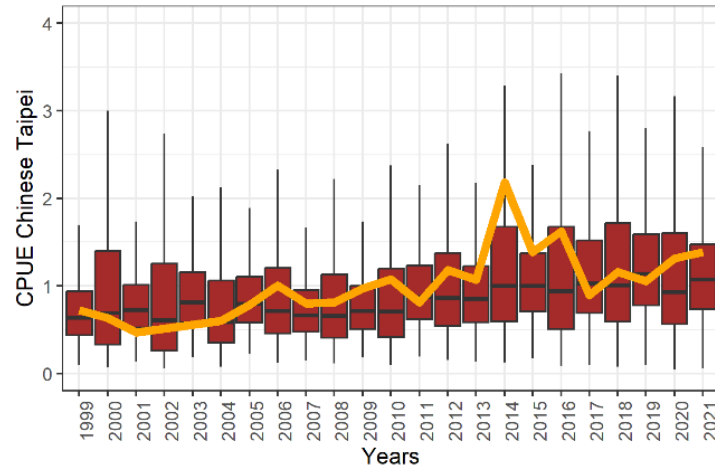
- New M values within tested values

MSE: Exceptional Circumstances



- 2022 catch below TAC

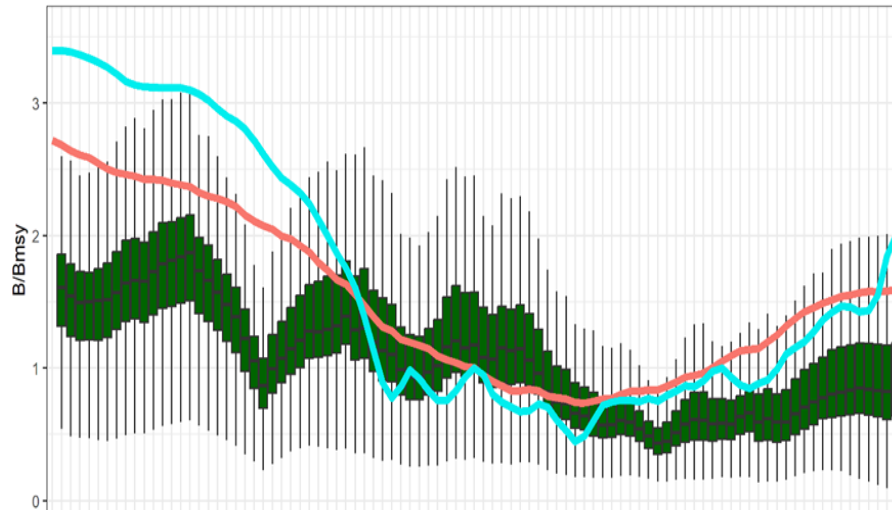
MSE: Exceptional Circumstances



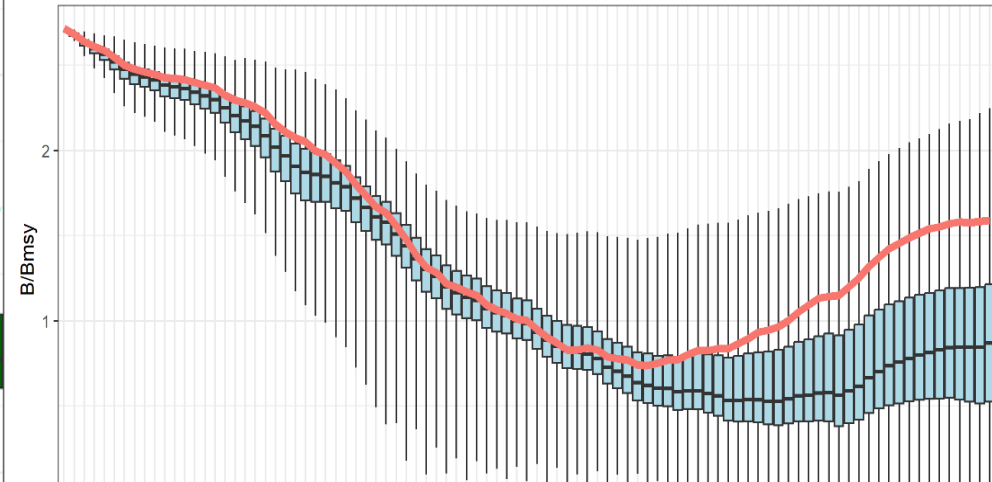
- CPUUEs within 2.5%-97.5% percentile range

MSE: Exceptional Circumstances

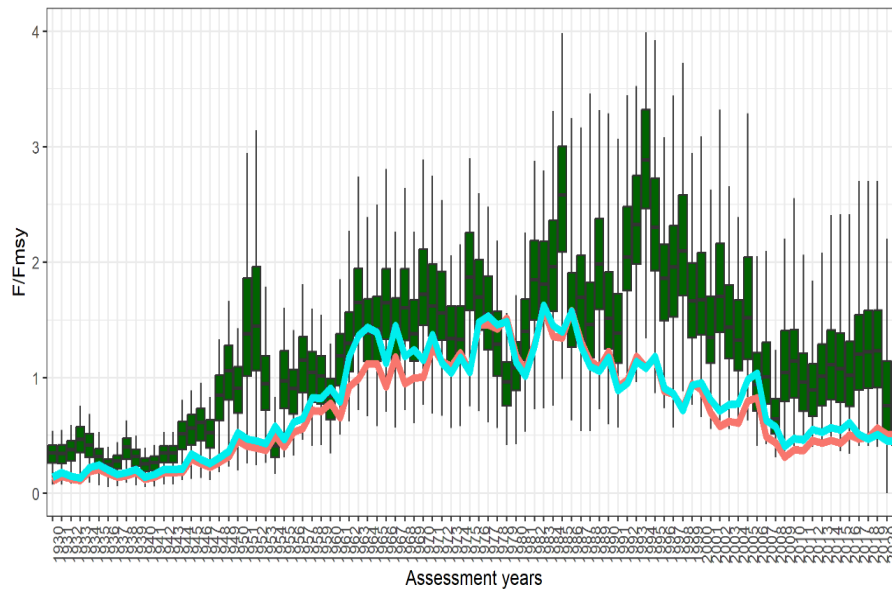
Operating Models (MSE) vs 2023 stock assessment



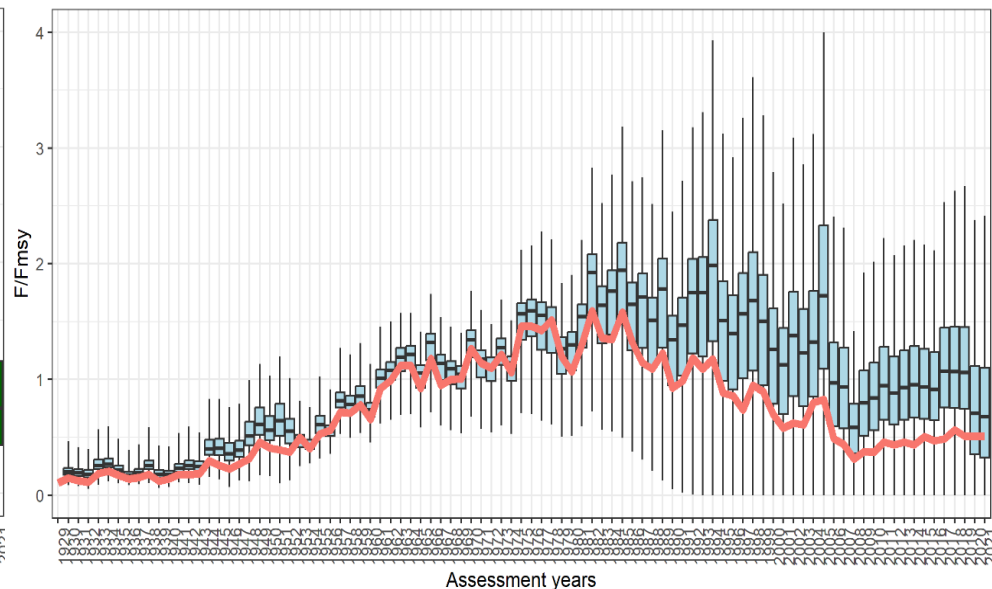
Management Procedure (MSE) vs 2023 stock assessment



Operating Models (MSE) vs 2023 stock assessment



Management Procedure (MSE) vs 2023 stock assessment



- **B/Bmsy and F/Fmsy within bounds**

MSE: Exceptional Circumstances

Response to Rec 21-04 Par. 4 (SCI 97)

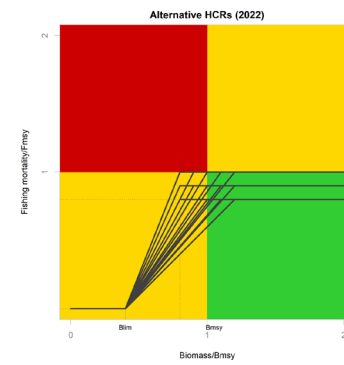
- **M at age within bounds**
- **Catch below TAC**
- **CPUEs within 2.5%-97.5% percentile range**
- **B/bmsy and F/Fmsy within bounds**

-> Thus, no exceptional circumstances detected

MSE: Additional analyses

Response to Rec 21-04 Par. 14 (SCI 98)

COMPLETED



Coordinates of HCR		Status	Safety	Catch	Stability
Bthreshold	Ftarget	pGr(%)	pBint(%)	LongY(kt)	MAP%
0.8	0.8	64.68	18.41	30.86	9.54
0.9	0.8	67.21	18.06	30.53	10.47
1*	0.8*	70.94	14.68	30.76	12.14
1.1	0.8	74.38	11.74	31.37	15.49
1.2	0.8	73.53	10.65	31.2	16.47
0.8	0.9	55.03	22.29	31.65	10.16
0.9	0.9	59.68	20.35	31.53	12.51
1	0.9	61.65	18.03	31.2	14.2
1.1	0.9	64.24	16.5	31.21	20.53
1.2	0.9	65.71	13.53	31.37	17.07
0.8	1	47.09	28.35	31.79	10.75
0.9	1	49.38	24.65	31.54	13.39
1	1	55.47	22.35	31.09	16.09
1.1	1	59.38	18.21	31.33	18.77
1.2	1	58.38	18.12	30.92	24.15

Response:

Identify HCR variants with Pgreen>60%

MSE: Additional analyses

Response to Rec 21-04 Par. 14 (SCI 98)

COMPLETED

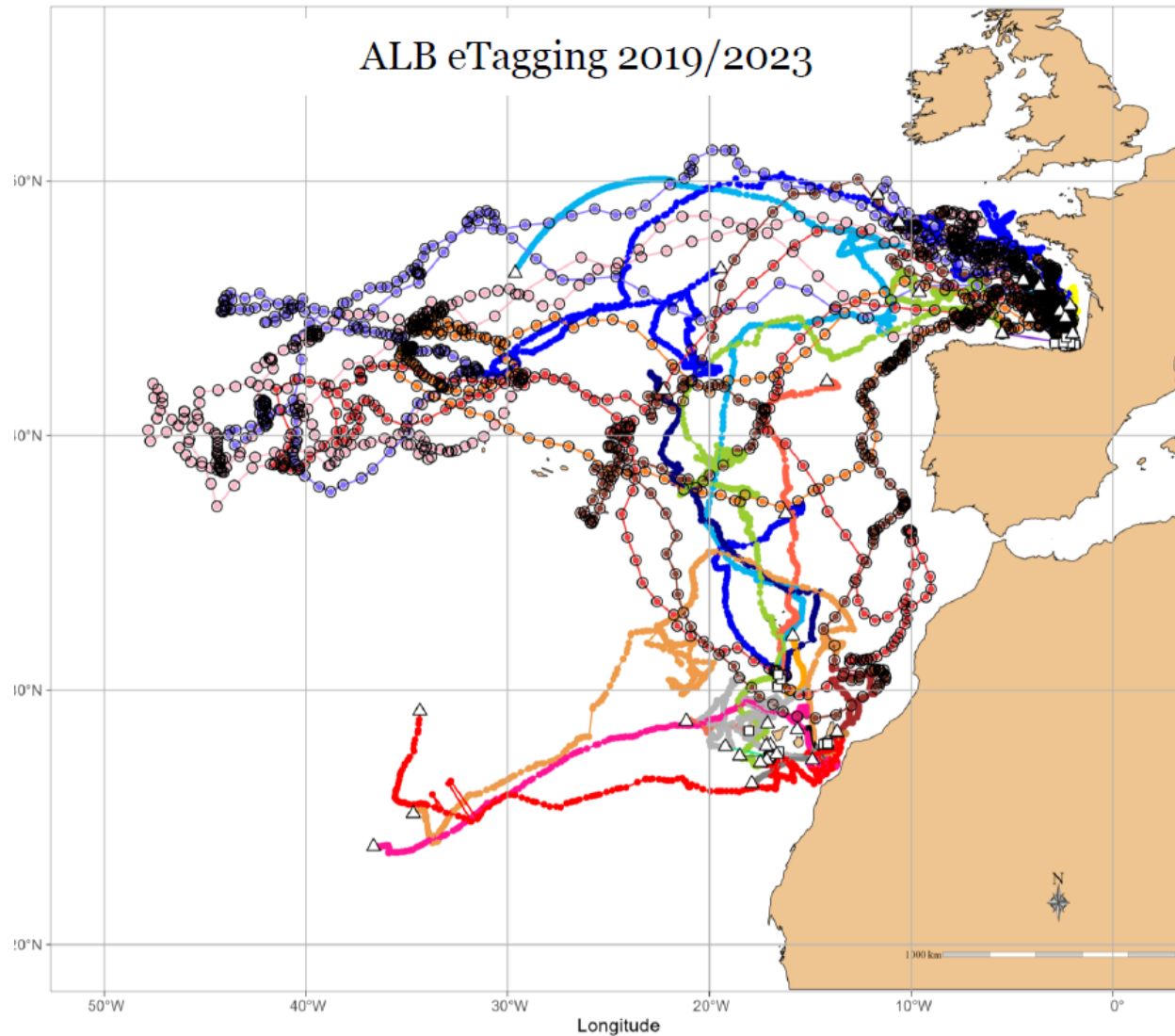
Absence of CPUE		pGr(%)	pBint(%)	LongY(kt)	Stability MAP%
Miss 1 CPUE	Spain BB	60.14	22.43	30.00	15.35
	Japan LL	62.79	17.93	29.69	18.33
	Chinese Taipei	67.50	15.79	29.29	18.37
	US/Ven	66.50	14.36	29.69	20.03
Miss 2 CPUE	Sp/Jap	64.29	18.14	28.24	29.92
	Sp/ChT	65.93	15.79	28.47	27.94
	Sp/Ven/US	61.14	18.50	27.53	30.92
	Jap/ChT	60.86	21.29	28.07	29.66
	Jap/US/Ven	65.86	15.43	28.03	29.52
	ChT/US/Ven	66.86	17.57	27.37	41.58
Miss 3 CPUE	Spain Only	66.93	19.07	26.11	85.77
	Japan Only	59.36	18.93	25.56	128.47
	Chinese Taipei Only	61.71	20.64	27.20	38.50
	Ven/US Only	68.29	15.21	25.96	98.83
Carry Over		pGr(%)	pBint(%)	LongY(kt)	Stability MAP%
Carry Over	Historic	84.62	3.79	26.51	21.09
Bank and Borrow		pGr(%)	pBint(%)	LongY(kt)	Stability MAP%
Bank and Borrow	20%-20% TAC	71.41	13.53	29.81	37.13
Beyond Blim Stability		pGr(%)	pBint(%)	LongY(kt)	Stability MAP%
Beyond Blim Stability	20-25%	65.44	18.62	29.99	6.81

Response:

Nº CPUEs: management objective met in almost all cases

-> Underreporting: unreported catch of 10% or more above the TAC would result in not achieving the management objective

ALBYP: e-tagging



31 PSATS

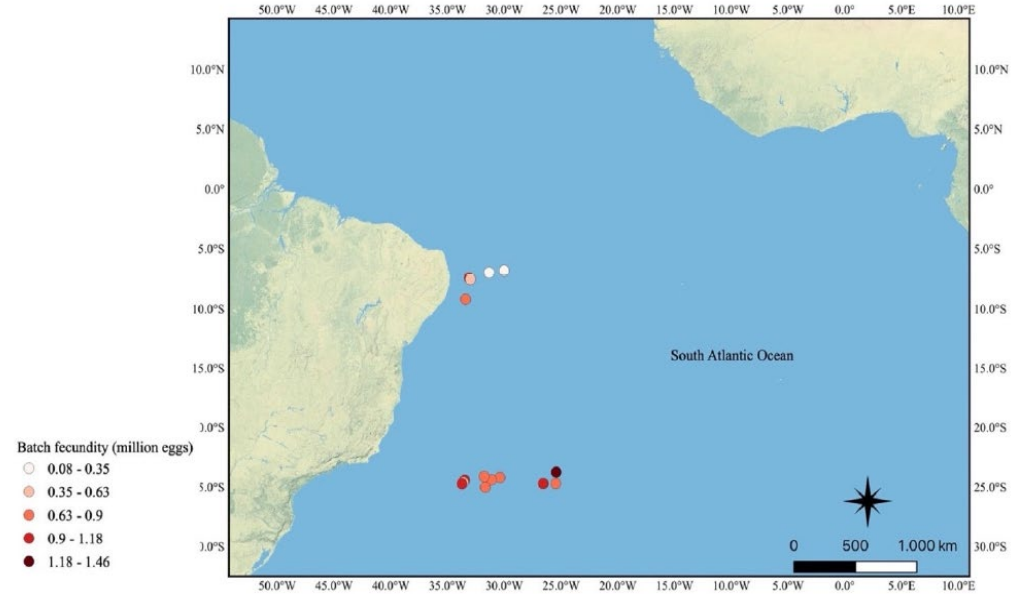
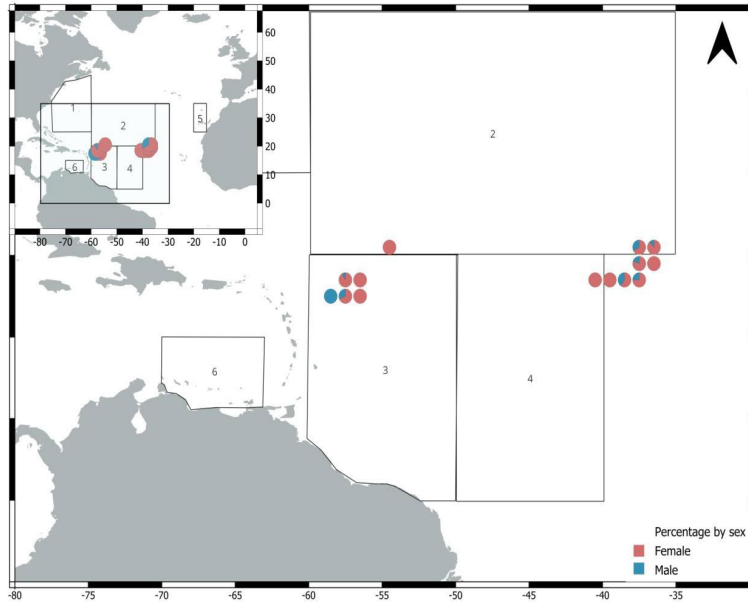
108 IATs (13.4% recovery rate)

37 tracks, >4000 days

8 full year tracks

-> fidelity to Bay of Biscay

ALBYP: Reproductive biology



- North-South differences in L50 and fecundity
- Need to continue

ALB: Workplan 2024 (SCI 71)

Med (Rec 21-06) stock assessment: 1 Intersessional meeting (6 days)

NORTH:

- MSE
 - Condition Oms
 - OEM
 - Evaluate MP
 - Document
- Exceptional Circumstances
- ALBYP: etagging, reproduction + aging

SOUTH:

- ALBYP: etagging, reproduction + aging

ALB: Workplan 2024 (SCI 71)

MEDITERRANEAN

- Update CPUEs
- Strict Jabba update with data up until 2022
- Research:
 - Detailed plan
 - Larval hábitat modeling
 - Growth model

ALB: Recommendations (SCI 84)

Albacore	2024	2025
Tagging, rewards and awareness	45,000	45,000
Biological studies:		
Reproduction	25,000	25,000
Age and growth	10,000	10,000
Genetic		
Other		
Sample collection and shipping	6,500	6,500
MSE		
Progress of the N-ALB MSE	30,000	30,000
TOTAL	€116,500	€116,500

- Integrate Med into ALBYP
- Complete Task 1 Med



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Bluefin Tuna



2023 work conducted for BFT (SCI_62):

- Online MSE Technical team to draft initial considerations for Exceptional circumstances
- Three GBYP meetings (Described in App 6 Report of the Atlantic-wide Research Programme for Bluefin Tuna (GBYP))
 - Larval indices
 - Close-kin mark recapture
 - Electronic tag coordination



BFT science developments

Indices: Strict updates MP indices (9/10 available) and improvements to others

Stock assessment: ASAP multifleet results (Carrano et al SCRS 125)

Biology: Genomics: Diaz-Arce et al SCRS 160, Otolith Chemistry: Artetxe et al SCRS 161, Epigenetic aging Davies et al SCRS P-104 and see GBYP reports

Farm dynamics: Furuno stereoscopic camera using Artificial intelligence to estimate fish weight (Kawai SCRS 139). Interpolation of growth table (Ortiz & Tsukahara SCRS 164) and high-capacity biological sampling (Zambetti et al SCRS 146), Sex ratio and condition in farms (Haddi et al SCRS 155)

Tagging: Substantial electronic and conventional tagging (Ford, SCRS 154) and see GBYP reports

Offshore Wind Energy development (SCRS_P_102, friendly request to ICCAT Ecosystems to consider further)



Work conducted for BFT (SCI_62)

Larval indices/Early life history: Formation of an early life history technical subgroup and associated leads, commitment to ensuring larval surveys meet standardized criteria and can provide data for close-kin mark recapture- 7638 larvae from Balearics available. Explore possibilities for implementing new BFT larval index surveys, and habitat/spatial-temporal modelling

Close-Kin Mark Recapture: *"The workshop also put forward an aspirational vision to be in a position, by 2027, for CKMR to inform potential reconditioning of the MSE operating models to address the greatest source of uncertainty in the MSE which are the absolute scale of the stocks. The BFT WG [endorsed] this goal and has placed necessary steps into the 2024 and 2025 workplan."*

Electronic tag coordination- *"strategic plan for further tagging to fill in identified gaps and improve stock assessment, including a list of priorities for future tagging campaigns."*



102	SCRS to advise to what extent the fishing seasons for different gear types and/or fishing areas might be extended and/or modified, Rec. 22-08 para 32	Minor revisions
103	SCRS shall report on the coverage level achieved by each CPC and provide any recommendations to improve the effectiveness of CPC's observer programmes, Rec. 22-08 para 99	no response
104	SCRS should evaluate procedures and results related to the stereoscopic camera programme (or alternative methods) provided by CPCs and report to the Commission at the next Annual meeting, Rec. 22-08 para 173	some revisions
105	SCRS should develop an algorithm to convert length into weight for fattened and/or farmed fish, Rec. 22-08 para 204/218	Minor revisions
106	SCRS shall review the stereoscopic cameras systems specifications, and if necessary provide recommendations to modify them, Rec. 22-08 Ann. 9, para 1, item vii	Minor revisions
107	Review on specific spawning times and areas of bluefin tuna in the western Atlantic, Rec. 22-10 para 18	no response
108	Provide guidance on a range of fish size management measures and their impact on yield per recruit and spawner per recruit considerations, Rec. 22-10 para 22	no response
109	SCRS shall assess the occurrence of exceptional circumstances annually, Rec. 22-09 para 9	NEW
110	SCRS to provide scientific guidance on the exceptional circumstances protocol for the BFT MP, Rec. 22-09 para 12	NEW
111	SCRS to review the Third Draft Exceptional Circumstances (EC) protocol for Atlantic Bluefin Tuna. ICCAT circular # 9518	NEW



Exceptional circumstances protocols (See ICCAT circular # 9518)

ICCAT CIRCULAR # 9518/2023 Third EXCEPTIONAL CIRCUMSTANCES PROTOCOL FOR BLUEFIN TUNA from PA2

The following 3 general principles indicate the possibility of ECs:

- a. When there is evidence that the stocks are in states not previously considered to be plausible in the context of the management strategy evaluation (MSE);
- b. When there is evidence that the data required to apply the management procedure (MP) are not available.
- c. When there is evidence that total catch for either the West area or the East area is above the total allowable catch (TAC) for the respective area

Triggering EC does not immediately result in TAC advice from the MP being rescinded; rather, it means that the SCRS needs to examine the indicators to determine if a change in advice is warranted, in other words SCRS will evaluate the existence and then the degree of consequence of the EC.



Draft Exceptional circumstances provisions (SCRS responding to ICCAT circular # 9518)

Principle	Indicator	Criterion	Frequency
a. Stock dynamics	Indices	If one or more of the combined index values fall outside the 2.5% and 97.5% percentile range in any year from the operating models used in the MSE when the accepted MP was tested.	Annually
	Abundance, Life history or fishery dynamics	Evidence that the stocks and fishery dynamics are in states not previously considered to be plausible in the context of the MSE; such evidence would need to be so consequential that it would meaningfully affect TAC advice from the MP.	After completion, presentation, and acceptance by the SCRS of a study as the new reference
b. Data availability for the MP	Indices	If three or more indices among the 10 are missing in a single year or if two or more indices are missing consecutively for two or more years.	Annually
c. Implementation of TAC	Catch	If the total catch for either the West area or the East area is X% or more repeatedly above the TAC for the respective area set using the MP (the SCRS is still discussing whether or not a specific level of catch over TAC can be defined that would trigger EC).	Annually

¹ This range is the two-tailed 95% confidence interval, which is a standard for determining statistically significant deviations. .

² This discussion focuses on excess catches which would constitute EC. Exceeding TAC set though an MP by catch levels that do not constitute EC still carries the same potential adverse consequences of exceeding TAC determined by other means. Sufficient mechanisms to prevent exceeding the TAC should be maintained.



Exceptional circumstances protocols (See ICCAT circular # 9518)

3. Actions to be taken in light of ECs

If the SCRS determines that an EC exists that precludes the application of the MP or makes the application of the MP or the implementation of its results inadvisable based on the principles outlined in Section 1, the SCRS shall evaluate the nature of the EC and advise the Commission on:

- (a) Alternative management options for the coming fishing year aimed at ensuring, at a minimum, stability in the status of the stocks, including the implications of: (i) maintaining the status quo TACs , (ii) reducing the TACs by [20]% or another appropriate percentage in particular in light of indications of stock decline, and (iii) any other appropriate conservation and management actions;
- (a) Whether the existing MP can and should be adjusted or whether development of a new MP is required; and
- (a) Whether a stock assessment or other SCRS-approved method of determining TACs is needed for providing management advice in the interim.



a. Stock dynamics: Combined index values (SCI₁₁₀)

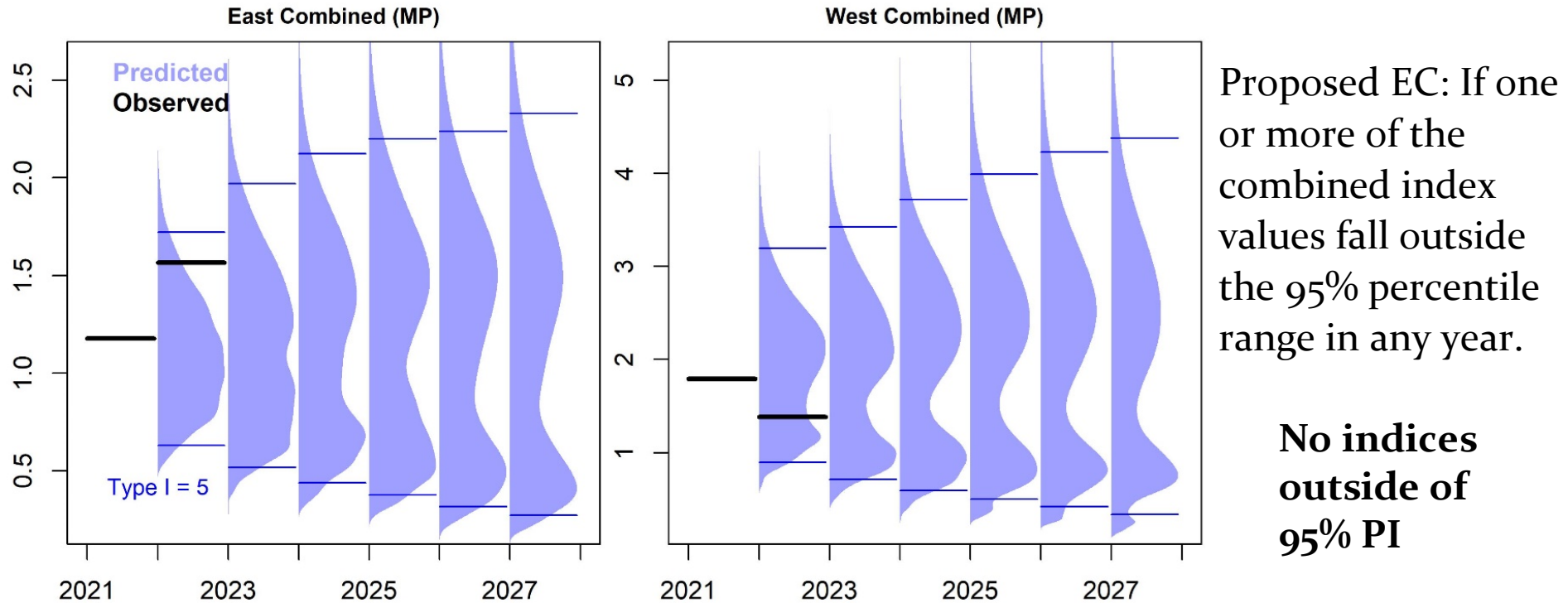
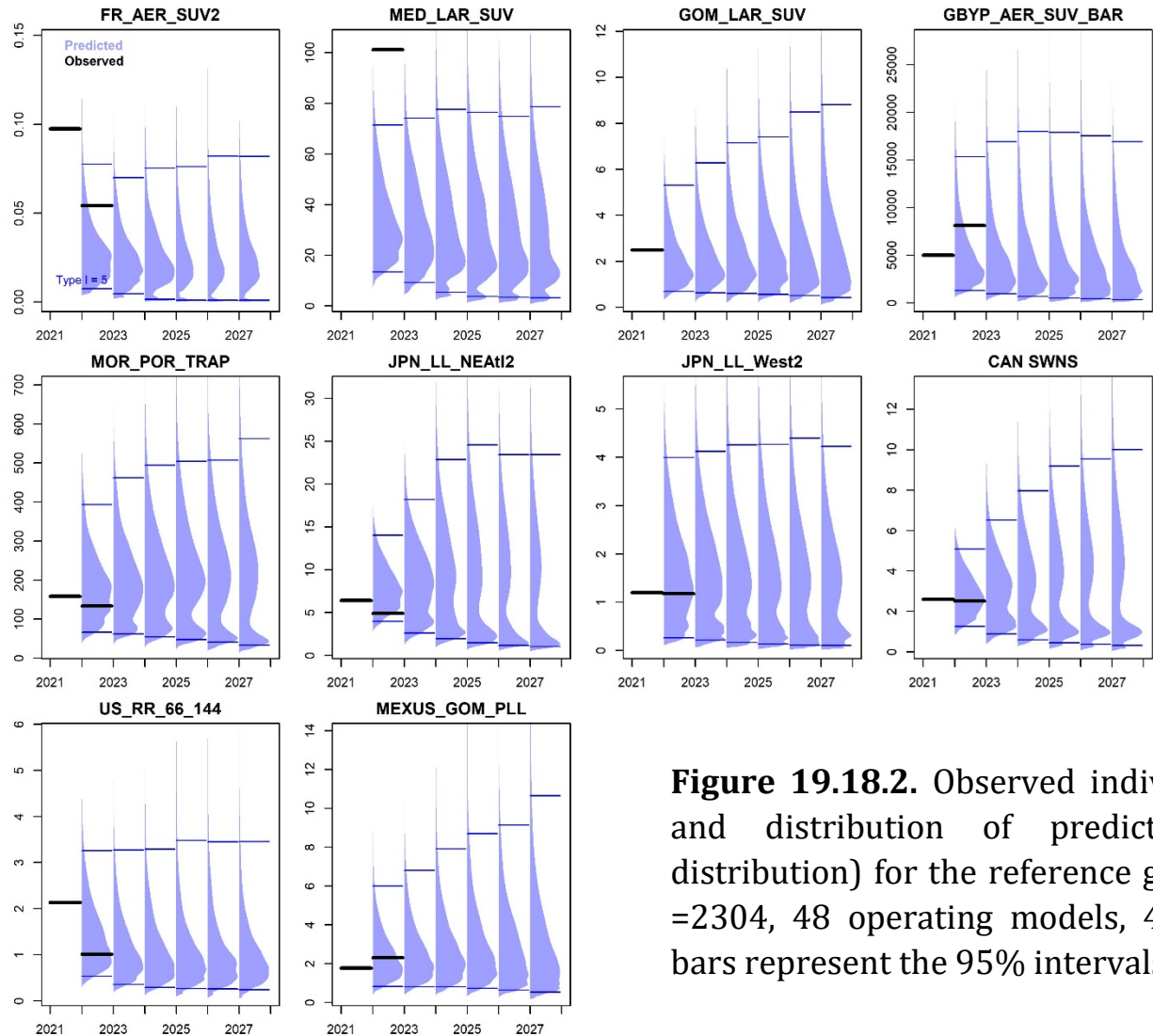


Figure 19.18.1. Standard marginal plots of observed composite indices (black bars) and distribution of posterior predicted data (blue density distribution) for the reference grid of operating models (n =2304, 48 operating models, 48 simulations each). Blue bars represent the 95% intervals.



a. Stock dynamics: individual index values (SCI₁₁₀)



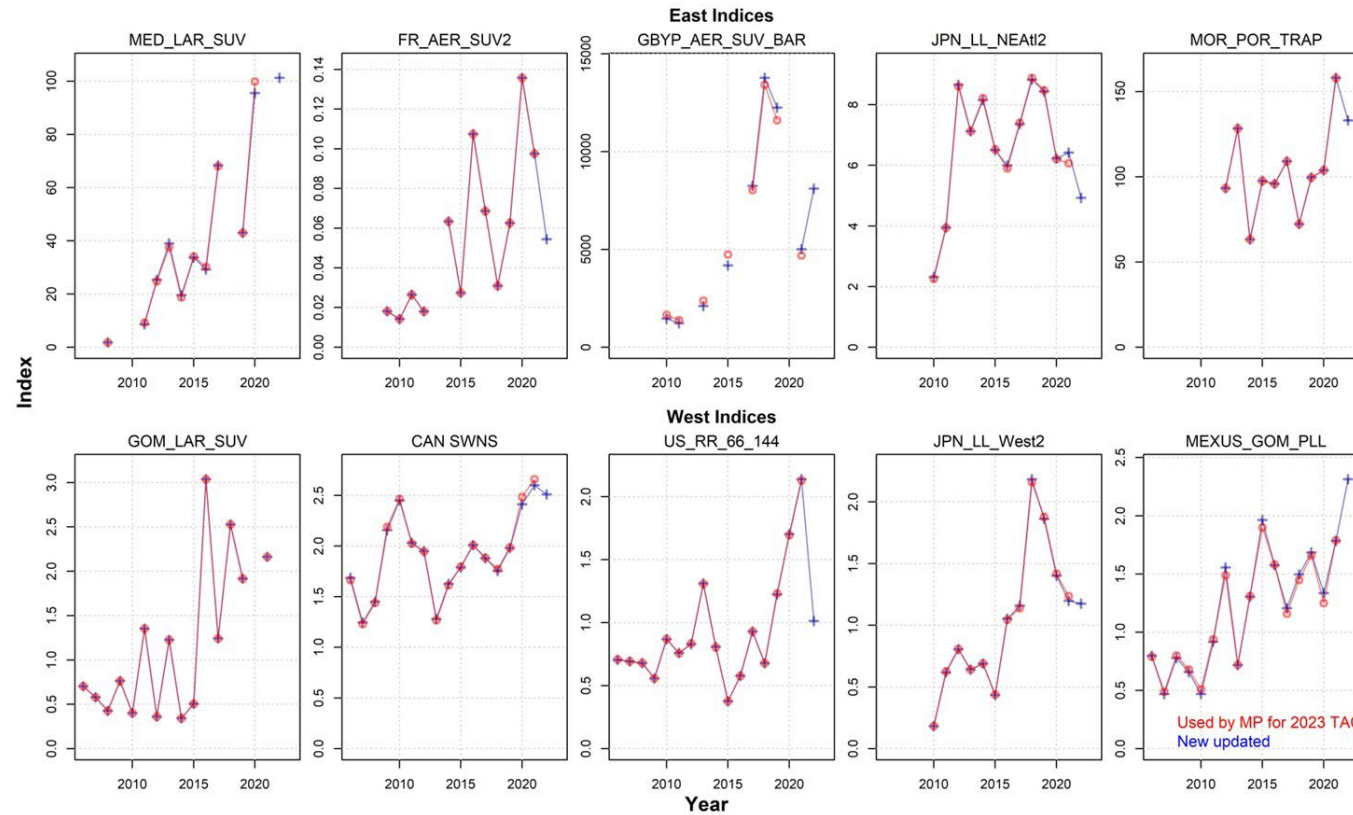
For qualitative advice,
e.g. how
consequential an EC
determination might
be

**One excursion high,
not consequential**

Figure 19.18.2. Observed individual indices (black bars) and distribution of predicted data (blue density distribution) for the reference grid of operating models (n =2304, 48 operating models, 48 simulations each). Blue bars represent the 95% intervals.



b. Data availability for MP



If 3 or more indices among the 10 are missing in a single year or if 2 or more indices are missing consecutively for 2 or more years

9/10 indices available for 2023

Figure 19.18.4. Plot of indices used in MP calculations (red) and the new updated indices (blue). Red values are original indices used to determine the 2023 TAC and used in MSE conditioning and blue are strict updates of the indices through 2022.



Regarding catch overages

Regarding the 'X%' of catch overages, the Committee cannot provide scientific rationale regarding what degree of TAC overage would constitute EC. The SCRS tested continuing (unreported) TAC overages (for 30 years) up to 20% and found that the was somewhat robust to such overages, albeit achieved through substantial cuts in TAC. As a result, the Committee considers that evidence for the catch being above the TAC is not, scientifically, a rationale for invoking EC, but is primarily a management issue. Almost certainly, substantial TAC overages would result in more catch taken out of the stock, reducing indices and resulting in a reduction in TAC. Hence this situation is not technically an EC for the MP. However, from the perspective of meeting other Commission objectives, as well as specifications of the overall management plan such as maintaining agreed-upon allocations and maintaining compliance, TAC overages even lower than 20% may be undesirable to the Commission. Should the Commission wish to include TAC overage as an EC, the percent overage should be determined on the basis of management objectives.

Furthermore, a scenario where unreported TAC overages of 20% were "discovered" after 6 years, then paid back over the next six years, generally putting things back on track for expected MP performance. Therefore, it is reasonable to expect that existing ICCAT practices regarding overage and payback should be sufficient to avoid EC for overages up to 20% of the TAC.



Regarding bracketed 20% reduction

Regarding the bracketed '20%' reduction in TAC as an action to be taken in response to EC, the Committee cannot provide additional scientific guidance on a particular predetermined value of a reduction that would be appropriate. Rather the specific recommendation from the Committee should depend on the situation.

In other words, an EC is determined to exist, then it would be the responsibility of the SCRS to develop scientific advice for the Commission regarding an appropriate response, taking into account the particular situation.



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Thank You



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Thank You

