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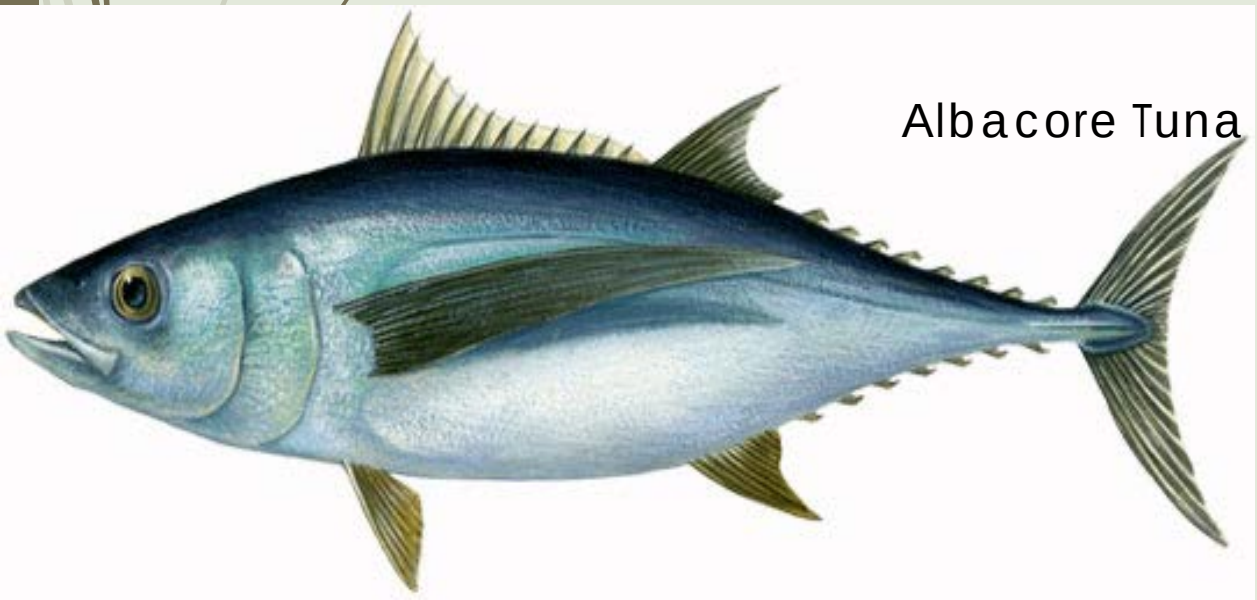
SCRS Report 2021

Panel 2 – Northern Temperate Tuna



Albacore Tuna

Bluefin Tuna

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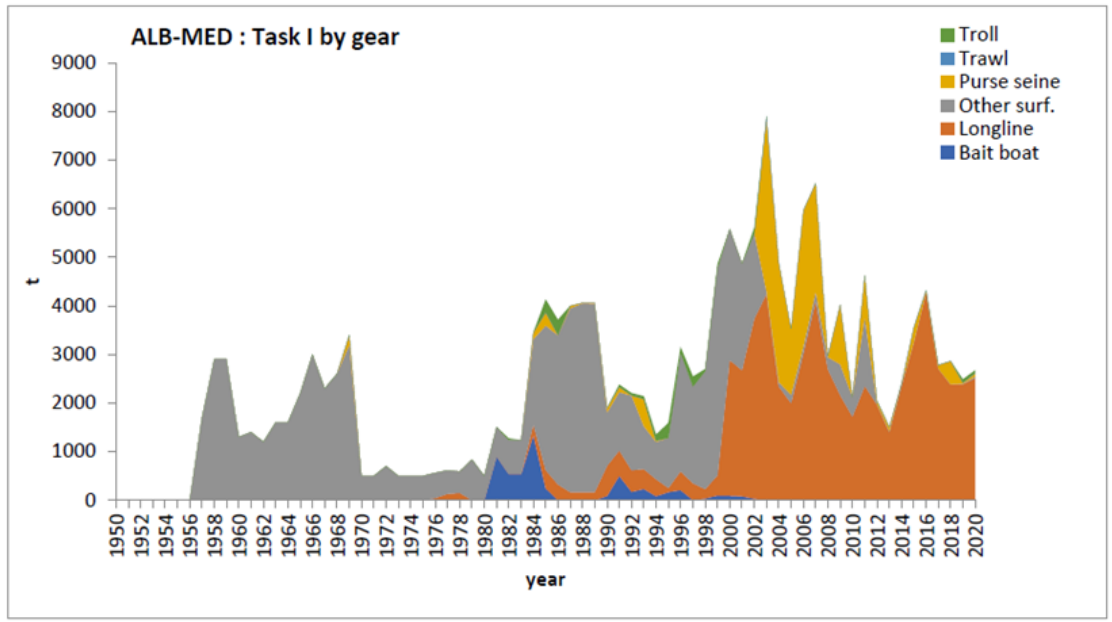
Summary Northern Temperate Tunas

Note: Covid-19 continued to imposed restrictions on the operational capability of the SCRS, its Sub-committees and Working Groups. SCRS advice in 2021 to Commission focused on the 4 priority areas (assessed stocks, research recommendations, workplans and responses to the commission.

Presentation Summary

- State of Stocks and Outlook (from Executive Summaries)
  - Med Albacore
  - Western Bluefin tuna
- Effects of Current regulations (from Executive Summaries)
- Management recommendations(from Executive Summaries)
- Workplan
- Recommendations with financial implications
- Responses to the Commission

2021 State of the stock - Albacore



ALB-Figure 2. Total albacore catches reported to ICCAT (Task 1) by gear for the Mediterranean stock.

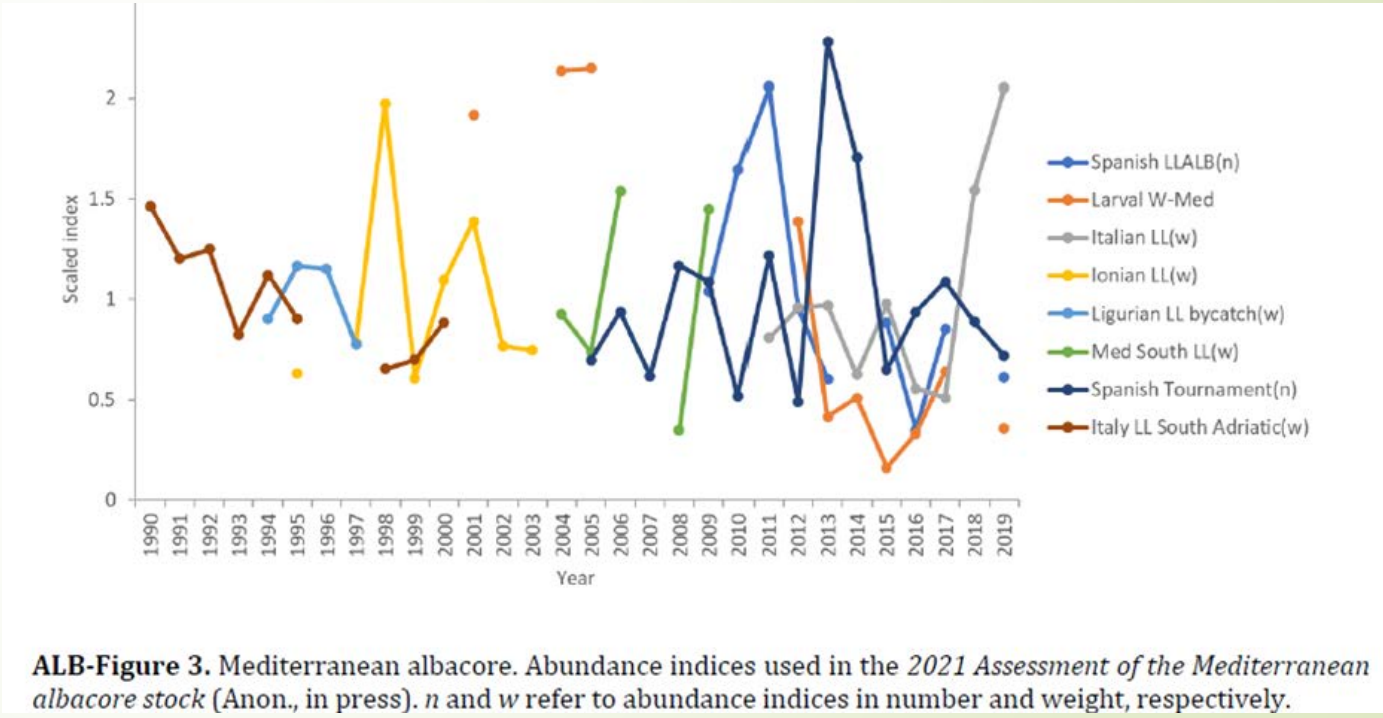
Total albacore catches in the North Atlantic, South Atlantic and the Med stocks to 2020.

- **North Atlantic** Catches were less than the TAC (33,600t for 2018-2020) in 2020 (31,188).
- **South Atlantic Albacore** catches decreased in 2019 and increased in 2020 to 17,971t
- Albacore Catches in **MED** decreased between 2016 and 2019 but increased to 2,675t in 2020. The fishery has been dominated by longline gear since 2012.

2021 Fishery Indicators – Mediterranean Albacore

- Stock assessment conducted in 2021 with data to 2019 using, A Bayesian state space surplus production model (JABBA)

- Fishery indicators
  - Catch Updated to 2019
  - 8 abundance indices updated to 2019 where possible.



ALB-Figure 3. Mediterranean albacore. Abundance indices used in the *2021 Assessment of the Mediterranean albacore stock* (Anon., in press). *n* and *w* refer to abundance indices in number and weight, respectively.

- Data inputs to the model remain uncertain, including possible under-reporting of the catch and limitations both in spatial and temporal coverage.

State of the Stock – MED Albacore

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 FMSY (1.2), Median and the current biomass is below the BMSY level (0.57).

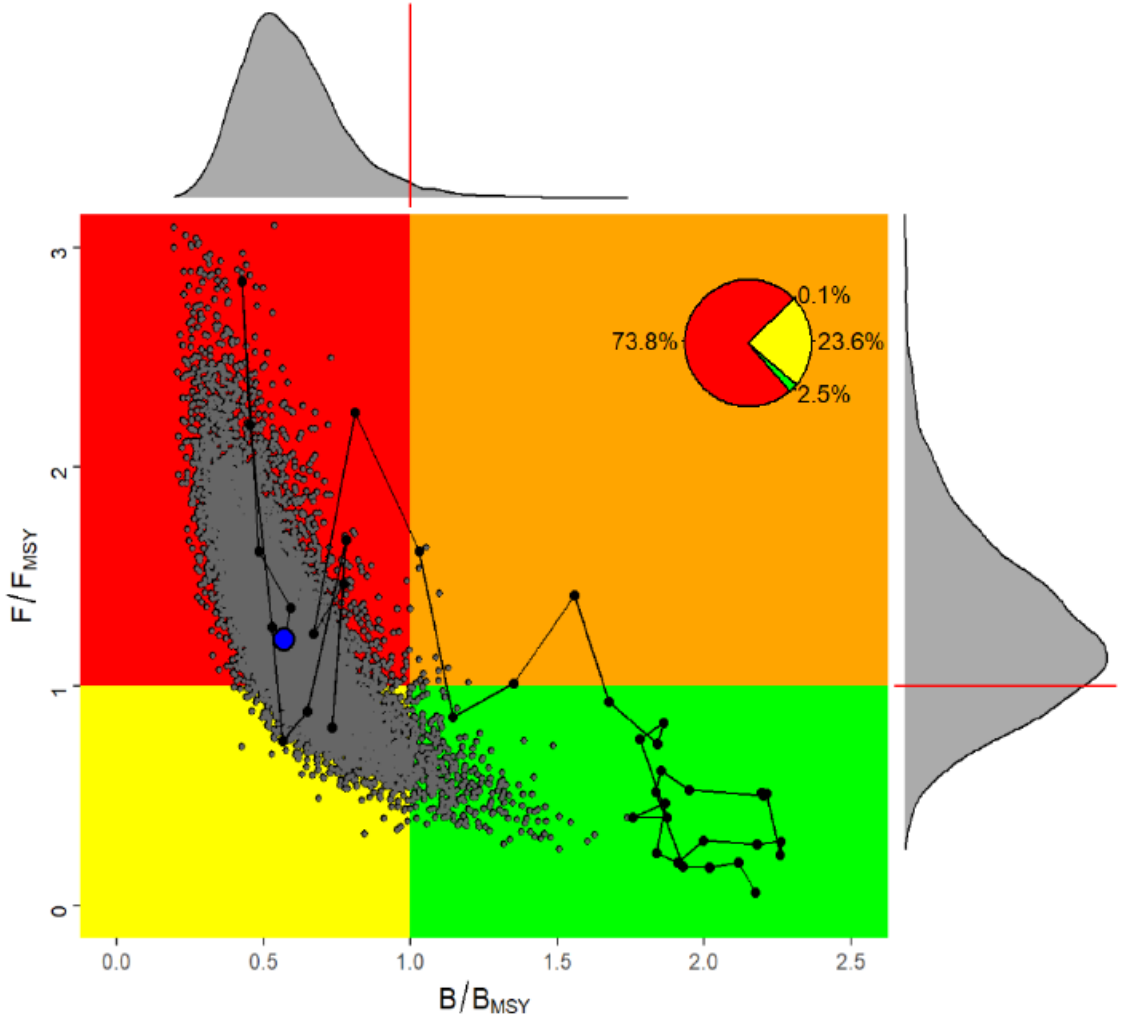
MEDITERRANEAN ALBACORE SUMMARY	
	Mediterranean
Maximum Sustainable Yield	3,653.9 t (2,446-5,090 t)[1]
Current (2020) Yield	2,675 t
Yield in last year of assessment (2019)	2,484 t
B_{MSY}	19,703.1 t (11,676 - 36,833 t)[1]
F_{MSY}	0.184 (0.091 - 0.335)[1]
B_{2019}/B_{MSY}	0.570 (0.322 - 1.004)[1]
F_{2019}/F_{MSY}	1.213 (0.618 - 2.175 t)[1]
Stock Status	Overfished: YES Overfishing: YES
Management measures in effect:	Rec. 17-05: Time closure of two months (1 October-30 November) for longlines, aimed at protecting the Mediterranean swordfish juveniles. A list of vessels authorized to target Mediterranean albacore implemented in 2017. No increase of catch and effort until more accurate advice is delivered.

[1] Median and 95% credibility intervals for the Bayesian surplus production model.

State of the Stock- MED Albacore

MED Albacore.

- **Overfished**
- **Overfishing Occurring**



Mediterranean Albacore

Effects of current regulations:

The seasonal closure (2012) aimed at protecting swordfish in the Mediterranean(Rec. 16-05, Rec. 13-04, and Rec. 11-03) also affects the albacore fisheries in the Mediterranean.

Management recommendations:

- Catches on the order of those observed in the first decade of the 2000s (5,000 t) are not sustainable and catches exceeding 4,000 t have a high probability of driving the stock to extremely low levels,
- Catches of 2,700 t, close to the average of the last three years (2017-2019), would allow the stock to recover to the green quadrant of the Kobe plot with a greater than 50% probability by 2032.
- Catches higher than 2,700 t will delay the recovery of the stock and have a greater than 17% probability for B below 0.2*BMSY(ALB-Table 3).
- Decreasing catches below 2,700 t would allow for faster recoveries and/or higher probabilities of being in the green quadrant.

MED - Albacore

Mediterranean albacore estimated probabilities (in %) based on Bayesian surplus production model that the stock fishing mortality is below FMSY and biomass is above BMSY. Projections for constant catch levels (0 t to 4,000 t. Assumed catches for 2020 and 2021 were 2,700 t (average of the 2017-2019 period).

Probability of green status ($B>B_{MSY}$ and $F<F_{MSY}$).

TAC | Year	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
0	18	35	52	66	76	83	88	91	94	95	97	97	98	98
500	18	32	47	60	71	78	83	87	90	92	94	95	96	97
1000	18	30	42	54	63	70	76	80	84	87	89	90	92	93
1500	18	28	38	48	55	61	67	71	75	78	81	83	84	86
2000	18	27	34	41	48	53	57	61	65	67	70	72	73	75
2500	18	24	30	35	39	43	47	50	52	54	57	58	60	61
2600	18	24	29	34	37	41	44	47	50	52	54	56	57	58
2700	18	23	28	32	36	40	42	45	48	49	51	53	54	55
2800	18	23	28	31	34	38	41	42	44	46	48	49	50	51
2900	17	22	26	30	33	36	38	41	42	44	45	46	47	48
3000	18	22	26	29	32	34	36	39	40	41	43	44	44	45
3600	16	18	20	21	22	23	24	24	25	25	26	26	26	27
4000	13	14	16	16	17	17	18	18	18	18	18	18	18	17

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Albacore Research and Workplan

Common Workplan: (North, South, Mediterranean)

- To continue research activities for all the stocks and develop a comprehensive Albacore Research Programme with a focus on: biology and ecology, monitoring stock status, and management strategy evaluation, over the next 4 years. - One intersessional meeting is envisaged (5 days, scheduled within April to July).

North Atlantic Stock Proposed Workplan:

- The main objectives for 2022 are to build a new reference case for the North Atlantic stock assessment,
- evaluate exceptional circumstances for this stock, and
- to continue the reproductive biology (including aging of analyzed individuals, using spines) and electronic tagging.

South Atlantic Stock Proposed Workplan:

Consolidate activities on reproductive biology (including aging of analyzed individuals, using spines) and start electronic tagging.

Mediterranean Stock Proposed Workplan:

The 2022 research will focus on setting up an information network to promote collaboration among scientists working on this species in the Mediterranean. The main objective will be the development of a detailed research plan.

Albacore Research Recommendation with financial implications

- **The Committee recommends continued funding of the Albacore Research Programme for North and South Atlantic stocks, as well as to start funding the research for the Mediterranean stock. Of high priority is the continuation of electronic tagging and reproductive biology studies (with associated aging of samples) in the North and South Atlantic, and to progress on the North Atlantic albacore MSE.**
- **The Committee also supports the larval research and recommends further research on the use of larval indices in stock assessments, including development of larval habitat models, corrected abundance indices and their impact in the MED ALB stock assessment.**

Albacore	2022 (€)	2023 (€)	2024 (€)
Tagging, rewards and awareness	40,000*	40,000	**20,000****
Biological studies:			
Reproduction	35,000*	25,000	
Age and growth	10,000*		
Sample collection and shipping	5,000*	5,000	
Other fisheries related studies (including data recovery, etc.)			
Mediterranean ALB larval index related studies	33,000	33,000	
Workshops/meetings			
Equipment			
MSE	20,000	30,000	30,000
TOTAL	**143,000**	**133,000**	**50,000**

2021 ALBacore Responses to the Commission

21.34 Taking into account relevant scientific advice, the Commission shall review, and revise Rec. 17-04 as amended by this Recommendation and Rec. 16-06 as amended by Rec. 20-03, including consolidation of relevant provisions into a single recommendation at its 2021 Commission meeting. Rec. 20-04, para 4 (18)

Following the 2021 Panel 2 (PA2) intersessional meeting, the Committee was requested to:
1. Review the "ALB EC Protocol for SCRS review.doc".
2. Provide its plan to formalize i) a set of data to be used; and ii) stock assessment methods.

The Committee has conducted substantial effort on the ALB MSE. The number of CPUE series that need to be available and the percentage by which catch data are underreported, that would trigger an exceptional circumstance has not been determined. However, the Committee is confident that the proposed indicators would be effective in detecting exceptional circumstances. Based on a bank and borrow concept, exceptional circumstances would be triggered if annual catch exceeded the TAC by more than 20%. Successive years with catch exceeding TAC by 20% or more have not been tested in the MSE.

2021 ALBacore Responses to the Commission

21.34 Taking into account relevant scientific advice, the Commission shall review, and revise Rec. 17-04 as amended by this Recommendation and Rec. 16-06 as amended by Rec. 20-03, including consolidation of relevant provisions into a single recommendation at its 2021 Commission meeting. Rec. 20-04, para 4 (18) - **Continued**

Provide its plan to formalize i) a set of data to be used; and ii) stock assessment methods. Technicial specifications to assemble a full North Atlantic albacore MP are listed below.

Software: mpb

- Model: Fox (biomass dynamic), with the following specifications:
  - Catch time series start year: 1930
  - Catch and CPUE time series final year: t-1 preferably (t-2 otherwise)).
  - Biomass at the start of the time series = K
  - Variance treatment for the CPUE indices: model weighted

Indices:

Index	*First year*
Chinese Taipei LL late	1999
Japan bycatch LL	1988
Spanish baitboat	1981
US LL	1987
Venezuelan LL	1991

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Bluefin Tuna

2021 Eastern Bluefin Tuna – Summary

A Stock update (role over of inputs) was conducted in 2020, with the previous assessment conducted in 2019.

2021 Summary:
The updated eastern abundance indicators were evaluated by the Group to determine whether they support the current TAC advice of 36,000 t. Overall the indices fit reasonably well within the prediction intervals and do not suggest that the TACs advice needs to be revisited.
Eastern BFT catches in 2020 were 34,965 t and below the TAC.

2022 TAC advice for EBFT remains at 36,000t.
2023 TAC Advice to be determined under an MSE framework with the MP to be selected by the Commission in 2022.

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2021 Western Bluefin Tuna – Summary

Summary.

- Previous assessment in 2020 was a strict update. The 2021 assessment was a new and full stock assessment but restricted to two stock assessment models (VPA and Stock Synthesis) for management advice.
- Significant changes to the model specifications and input data were made in 2021.
- The 2021 stock assessment used 10 CPUE and two survey indices up to and including 2020 of which 5 underwent major revisions.
- Management advice was based on MSY reference points with short-term advice based on an F0.1 reference point using recent recruitment.
- The low recruitment observed in the 2020 assessment was estimated to have increased and returned to levels at or above the 2017 estimate.
- Major differences in stock status were observed from 2020 wBFT stock assessment.
- An external expert was recruited to review the assessment process and results.

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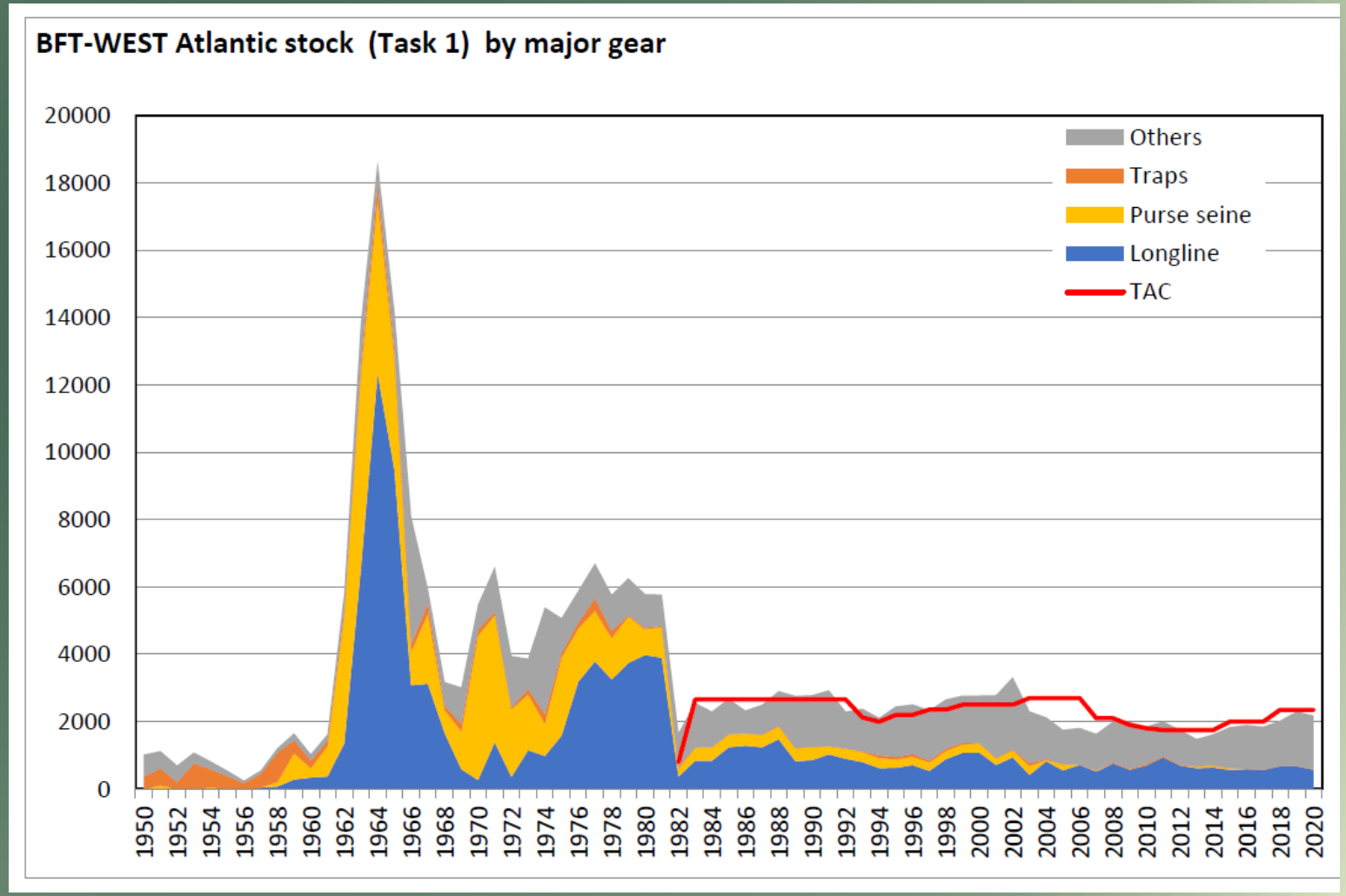
2021 Western Bluefin Tuna – Fishery Indicators

- Catches in the western Atlantic were updated to 2020.
- Essentially catches have been increasing since 2012 tracking the increasing TAC.
- LL catches declined slightly in 2020 from recent highs in 2018 and 2019.
- Catches have been below the TAC since 2012.



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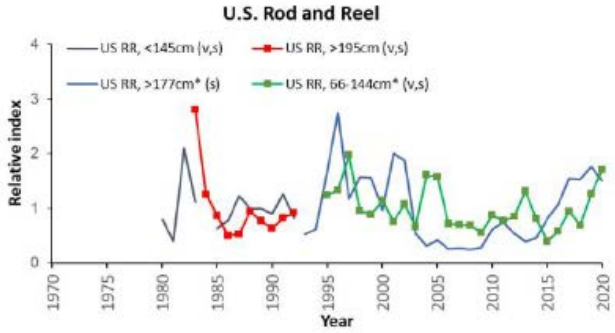
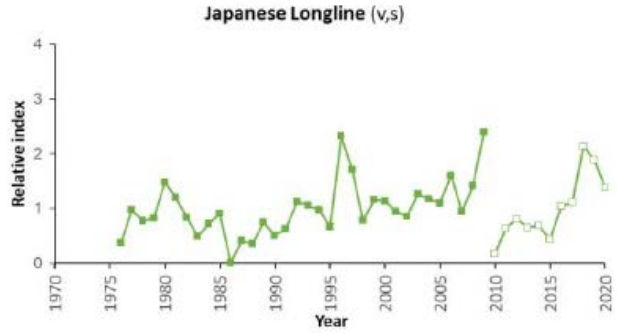
2021 Western Bluefin Tuna – Fishery Indicators

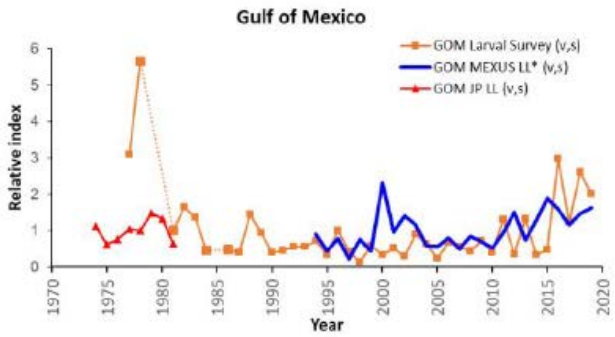
Indices of relative abundance for western bluefin tuna. Most indices showed an upward trend since the previous assessment except the Japanese Longline.

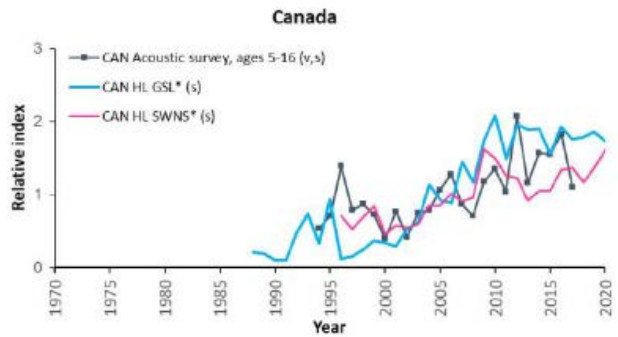
Note:

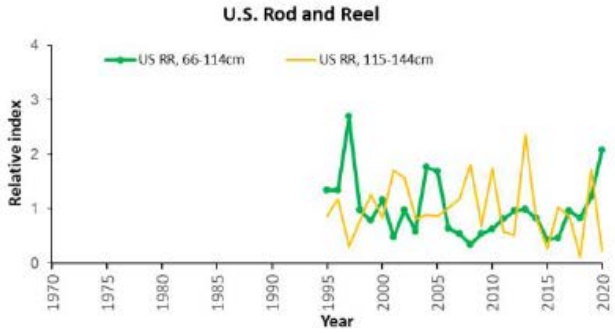
- Indices denoted with "*" represent revised indices rather than strict updates of indices used in the 2020 stock assessment. Indices denoted with an "s" were used in Stock Synthesis and indices with a "v" were used in VPA.
- U.S. Rod and Reel 66-114 and 115-144 indices are shown for illustrative purposes but were superseded by the combined 66-144 index.











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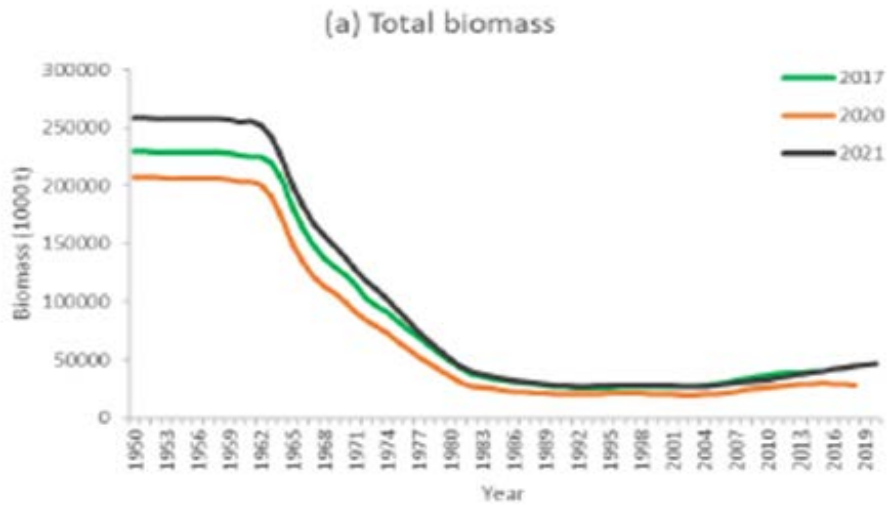
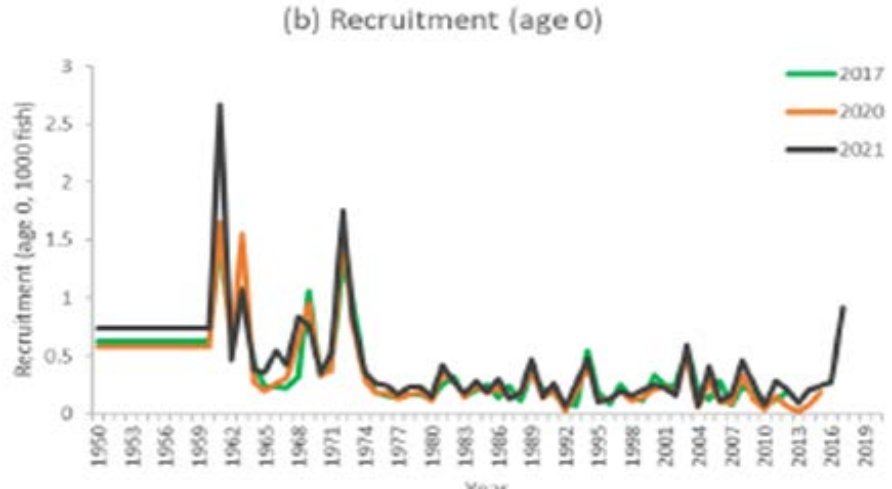
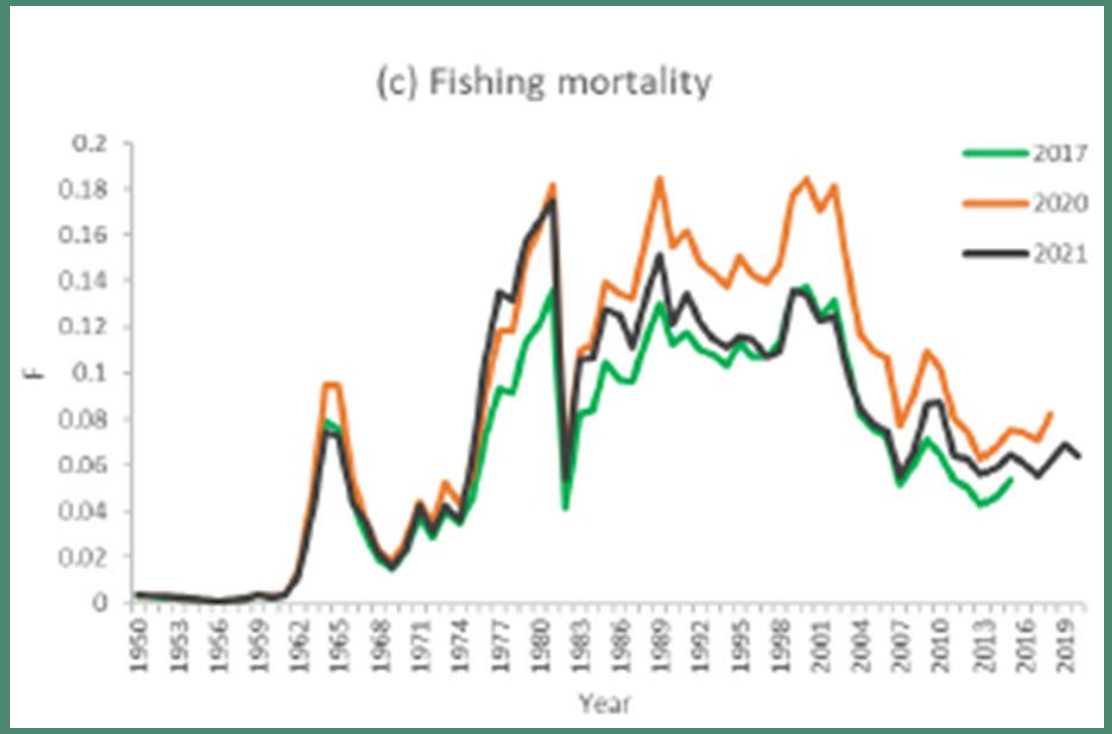
2021 Western Bluefin Tuna – Biomass, Recruitment, Fishing mortality







Major differences between assessments observed with the addition of 2 years data, revised and new indices and changes in selectivity. Outputs are based on Stock Synthesis only for the 2021 assessment.

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2021 Western Bluefin Tuna – State of the Stock

The SCRS cautions that conclusions from the latest assessment (Anon., 2021d), using data through to 2020, do not capture the full degree of uncertainty in the assessments and projections.

Factors contributing to uncertainties include mixing between the stocks, recruitment, age composition, age at maturity, the possibility of regime shifts, assumptions regarding selectivity, and indices of abundance.

The Committee deemed only Stock Synthesis suitable for projections and specific management advice. The VPA was rejected due to a severe retrospective pattern.

An independent review recommended against using either the VPA or Stock Synthesis for management advice.

WEST ATLANTIC BLUEFIN TUNA SUMMARY	
Current Catch including discards (2020)	2,179*
$F_{current\ (2018\text{-}2020)}$	0.063 (0.059-0.067)[2]
$F_{0.1}$	0.118 (0.113-0.123)[3]
$F_{current\ (2018\text{-}2020)}/F_{0.1}$	0.53 (0.49-0.58)[2]
Estimated probability of overfishing ($F_{current\ (2018\text{-}2020)}$)/$F_{0.1}$)	<1%
Stock status[1]	Overfishing: No
Management Measures:	[Rec. 20-06] TAC of 2,350 t in 2021, including dead discards.

* As of 20 September 2021.
[1] Biomass reference points to determine stock status were not estimated in the 2021 assessment due to uncertainty in recruitment potential.
[2] Mean and approximate 80% confidence interval from the multivariate lognormal approximation approach from the assessment.
[3] Mean and approximate 80% confidence interval from the hessian-based standard errors.

Management advice is based on a F reference point to project short-term catches based on recent recruitments. F0.1 was considered a reasonable proxy for FMSY since 2018.

2020 Western Bluefin Tuna – Projections

Kobe II matrix giving the probability that the fishing mortality rate (F) will be less than the F reference point (F≤F0.1, overfishing not occurring) over the next two years for alternative constant annual catches, based on results from the 2021 Stock Synthesis (combined two maturity specifications).

TAC	2022	2023
0 - 3000	100%	100%
3100	99%	99%
3200	98%	98%
3300	94%	95%
3400	91%	89%
3500	83%	81%
3600	71%	70%
3700	60%	56%
3800	45%	48%
3900	36%	34%
4000	25%	23%
4100	18%	18%
4200	11%	10%
4300	7%	6%
4400	5%	4%
4500	2%	2%
4600	1%	1%
4700	1%	1%
4800 - 5000	0%	0%

Percentage change in total stock biomass for alternative constant annual catches, based on results from the 2021 Stock Synthesis(combined two maturity specifications).

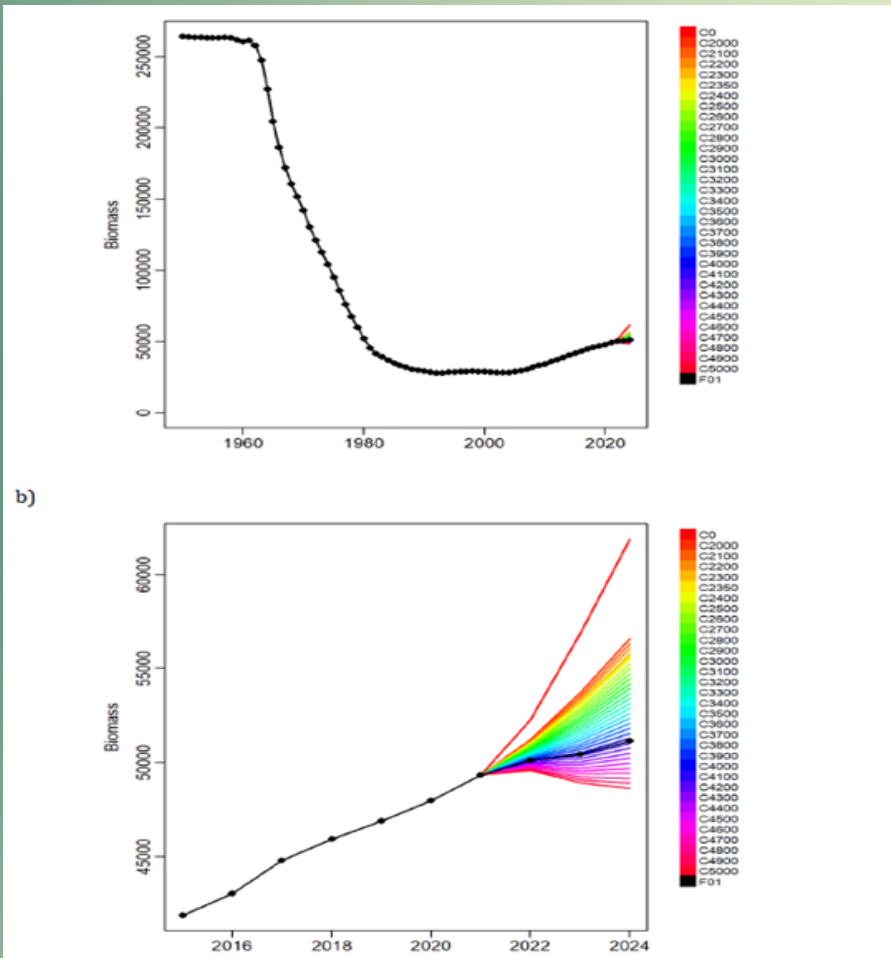
Catch	2022	2023
0	5.9%	15.3%
2000	3.8%	8.9%
2200	3.6%	8.2%
2350	3.4%	7.7%
2400	3.4%	7.6%
2600	3.2%	6.9%
2800	2.9%	6.3%
3000	2.7%	5.6%
3200	2.5%	5.0%
3400	2.3%	4.4%
3600	2.1%	3.7%
3800	1.8%	3.1%
4000	1.6%	2.4%
4200	1.4%	1.8%
4400	1.2%	1.1%
4600	1.0%	0.5%
4800	0.7%	-0.2%
5000	0.5%	-0.8%

2021 Western Bluefin Tuna – Outlook

The 2021 assessment indicates that recent (2012-2017) recruitments were higher than those estimated for the same period in the 2020 assessment and the averages assumed for the 2020 projections.

In 2017 the population was projected to decline by ~7.5% from 2017 to 2020 at the current (2020) TAC of 2,350 t and in 2020 the population estimated to have experienced an 11.7% decline over the same time period.

The current assessment estimates that the total biomass has experienced a 9% increase from 2017-2020.



BFTW-Figure 6. Projected total stock biomass (mt) of bluefin tuna in the West Atlantic under alternative constant catch scenarios, averaged across maturity specifications for Stock Synthesis. The deterministic model runs are averaged across both maturity specifications. (a) Upper panel: 1950-2024, (b) lower panel: zoomed in to 2015 to 2024.

Western Bluefin Tuna - Management Recommendations

Variability in the estimation of the absolute scale of the population is an inherent property of stock assessment models. The Committee has long highlighted the uncertainty in western BFT management advice given the varying fraction of eastern migrants in the western management area. Considering the uncertainty associated with the revisions to the stock assessment, and the conclusions of the external review, the current advice should be used with caution

The Committee advises that the Commission could implement a moderate increase to the current W-BFT TAC of 2,350 t.

In determining this moderate increase, in addition to the K2SM, the results from alternative approaches to evaluate the current change in the western biomass and its response to future harvests were examined. The empirical approach indicated a 4% increase of the western area relative abundance and a 16% increase of the western spawning stock relative abundance, The MSE approach indicated a 28% increase based on the TAC that maintains annual increases in the Western stock SSB in the near term.

BFT Recommendations with financial implications

2022 Recommendations

1. **Continued funding to support the essential work of GBYP including funding of Tagging and reward, biological studies, sample collection and shipping, other fisheries related studies (e.g. fisheries independent indices and Workshops), MSE development process, and the coordination.**
2. **Three Meetings devoted to MSE refinement and dialogue with Panel 2 (coordinated by GBYP).**
3. **Three Meetings of the Bluefin Tuna Species Group (2 MSE meetings and EBFT data preparatory).**
4. **Support for the specified sub-group (SG) on EBFT modelling (the request would be for travel for the modelling sub-group to an in-person meeting maximum of 9 modelers to be supported])**
5. **External expert to review EBFT assessment and to attend both DP in 2022 and SA meetings in 2023 (if required).**

Bluefin tuna	2022
Tagging, rewards and awareness	
Electronic and conventional tagging, rewarding and awareness	€280,000.00
Fishery Independent Indices	
Biological studies:	
Microchemistry	€40,000.00
Age and growth	€40,000.00
Genetic	€80,000.00
Other (if any, i.e. fisheries independent indices**)**	
Aerial surveys	€350,000.00
Development of Model-based approaches	€50,000.00
Sample collection and shipping	€100,000.00
Workshops/meetings	
GBYP workshops (TBD, probably further WS for BFT sampling coordination and Close Kin)	€80,000.00
MSE	
Progress of the BFT MSE + process review	€160,000.00
Sub-TOTAL	**€1,180,000.00**
Programme coordination (include staff salaries, SC external member contract, SC members travel and ICCAT staff participation)	€320,000.00
TOTAL	**€1,500,000.00**

ABFT Progress on MSE -2021

- The BFT MSE is on track to provide TAC advice for both stocks for 2023.
- The Committee adopted the reference set of OMs along with a set of Robustness test OMs.
- The OMs were reconditioned to reflect catch and index data through 2019, reviewed and accepted.
- The reference grid of 48 OMs contains 4 Factors: Recruitment (3 levels), Spawning fraction/Natural mortality rate for both stocks (2 levels), Scale (4 levels), and Length composition weighting in likelihood (2 levels). OM Plausibility weights were also adopted.
- The MSE Code review indicated that ICCAT can be confident about the validity of implementation of the main code components.
- Development of 9 CMP.
- Introduction of the Ambassador Programme, the preparation of Communication material, and MSE workshops in October.
- New wBFT stock assessment conducted in 2021 with data up to 2020.

ABFT Workplan for 2022

1. Intersessional Meetings:
    a) 1st MSE intersessional meeting (4 days) in about April;
    b) E-BFT data preparatory meeting in May (5 days) with data until 2021;
    c) 2nd MSE intersessional meeting (5 days) in about September
2. Work and dialogue related to the MSE
    a) CMP developers continue work to refine CMPs and the BFT WG continue MSE work.
    b) Dialogue with Panel 2:
        1) Panel 2 November-December 2021 (present MSE update and CMP/indicators)
        2) Panel 2 March 2022 (present update on CMP results)
        3) Panel 2 May- June 2022 (present update on CMP results)
        4) Panel 2 October/November 2022 (present update on CMP results)
3. Technical Subgroup Activities:
    1. BFT Technical Subgroup on Abundance Indices (e.g. Trap indices potential new indices)
    2. BFT Technical Subgroup on Assessment models (alternative assessment models for EBFT Stock Synthesis and ASAP).
    3. BFT Technical Subgroup on Growth in Farms. Complete growth in farms studies and report findings

ABFT Workplan for 2022 -Continued

5. **Responses to the Commission related work.**

6. **Other workshops** (organized directly by GBYP will and that require the involvement of BFT SG)

- Technical workshop for the design and evaluation of the feasibility of a biological sampling scheme for the implementation of the CKMR approach to the Atlantic BFT Eastern Stock
- Workshop on BFT electronic tagging, focused on the development and joint use of a global ICCAT etagging database
- Workshop on the coordination and standardization of BFT larval surveys and potential development of larval basin scale indices.
- Workshop on coordination of BFT biological sampling at the international level.

ABFT Roadmap for 2021/22

- Intersessional Meeting with Panel 2 on MSE and its development (Nov 2021)
- COMM (PA2) intersessionally to:
  - Recommend final operational management objectives and identify performance indicators
  - Develop guidance on range of appropriate management responses should exceptional circumstances be found to occur.
- SCRS to conduct data preparatory meeting for EBFT
- SCRS to complete MSE, incorporating feedback from Commission through PA2
- COMM (PA2) and SCRS to present final CMPs for review.
- COMM to adopt a MP at the Annual Meeting, including TAC

- SCRS to continue work on criteria for determining exceptional circumstances and will be informed by the Exceptional Circumstances Protocol developed by Panel 2 for northern albacore.

2021 ABFT Responses to the Commission

Western Atlantic bluefin tuna

21.22 Provide advice to the Commission on the appropriate management measures, approaches, and strategies, including, inter alia, regarding TAC levels for the western Atlantic bluefin tuna stock for future years. Rec. 20-06, para 6 (17).

The SCRS conducted a stock assessment for the western Atlantic bluefin tuna stock in 2021 to incorporate the most recent available data up to 2020, including the revised abundance indices adopted by the Bluefin Tuna Species Group. The results indicated that a moderate increase in TAC is warranted for 2022.

2021 ABFT Responses to the Commission

Western Atlantic bluefin tuna

21.23 SCRS to report to the Commission in 2021 on CPCs efforts to enhance the collection and analysis of biological samples from Atlantic bluefin tuna fisheries, such as through sample contributions to the coordinated sampling plan recommended by the SCRS. Rec. 20-06, para 8 (20). Specific to wBFT.

Many CPCs have substantially increased their collection of biological material for aging, genetics, growth and reproduction and stock of origin through systematic sampling of the fisheries. Sample coverage for wBFT averages 15% of the landed catch. The Committee notes that ongoing work by national programmes in the Eastern Atlantic and Mediterranean and the coordination of biological sampling by GBYP has also increased biological sampling coverage.

Table. Western-area-CPC-based biological sampling by for bluefin tuna over years 2016-2019, samples can include otoliths, gonads, genetic material, etc.

Year	Total number of fish sampled*	Total catch in number	Total sample coverage (%)
2016	1677	13218	13%
2017	2374	13816	17%
2018	2117	13923	15%
2019	2617	17439	15%

* Samples can include otoliths, gonads, genetic material, etc.

2021 ABFT Responses to the Commission

Eastern Atlantic bluefin tuna

21.24 The SCRS shall annually advise on the TAC. Rec. 20-07, paragraph 1 (Rec. 19-04, para. 5)

Background: 5. The total allowable catches (TACs), inclusive of dead discards, for the years 2021 and 2022 shall be set at 36,000 t, respectively, in accordance with the SCRS advice. However, the 2022 TAC shall be reviewed and amended, as appropriate, at the 2021 Commission annual meeting based on new SCRS advice in 2021.

The updated eastern abundance indicators were examined to evaluate whether or not it was necessary to change the current TAC advice of 36,000 t recommended for 2022 (Rec. 20-07). The updated biomass indicators and the projections of 2017 assessment did not provide any evidence to alter the current management advice. No change in the current TAC advice of 36,000 t is recommended for 2022.

2021 ABFT Responses to the Commission

Eastern Atlantic bluefin tuna

21.24 The SCRS shall annually advise on the TAC. Rec. 20-07, paragraph 1 (Rec. 19-04, para. 5)

Figure 21.24.1. Updates of indices of abundance for the E-BFT presented in 2021.

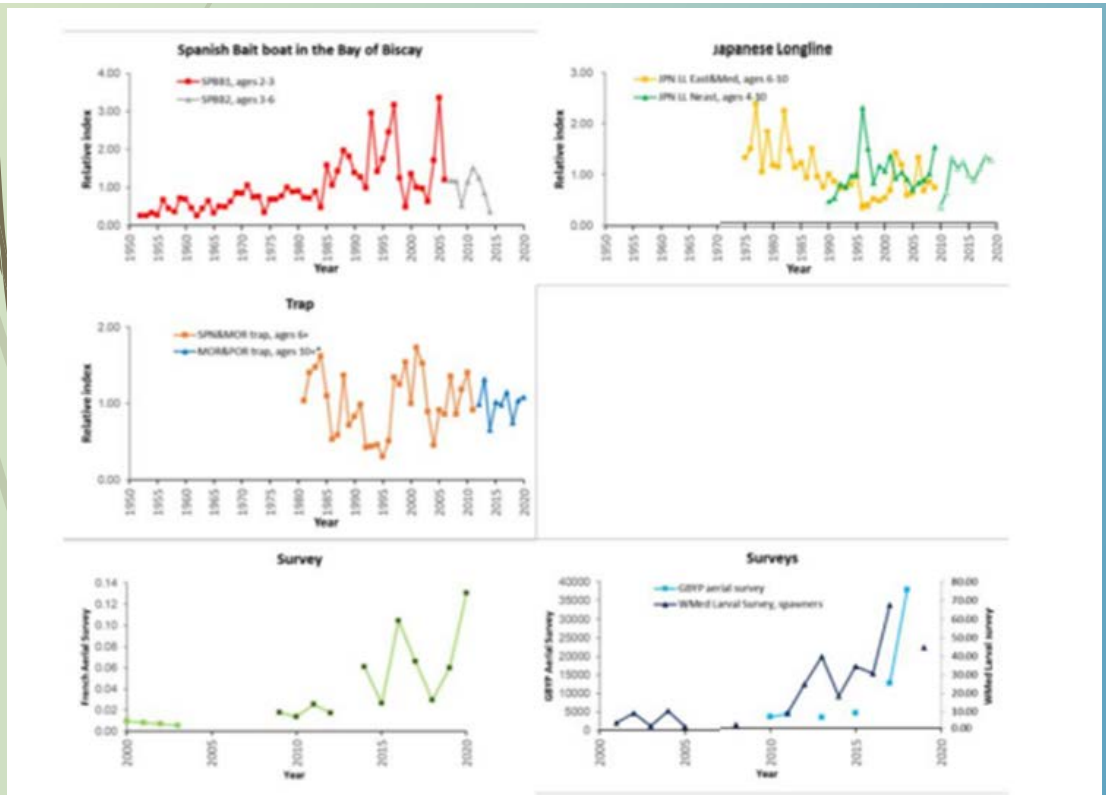
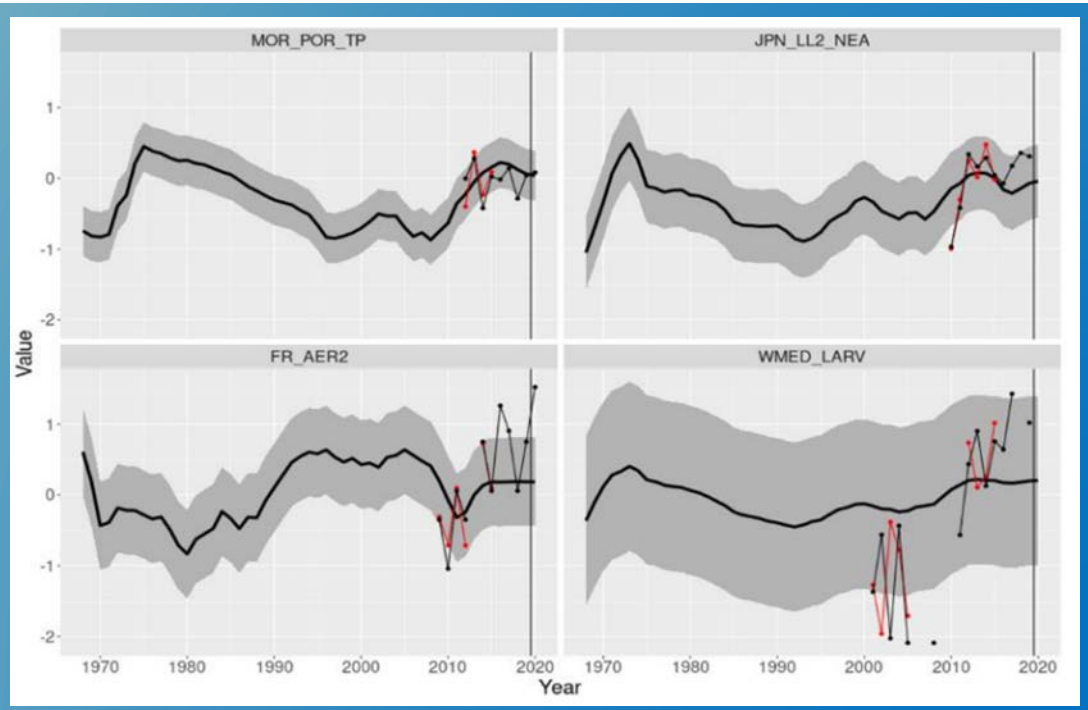


Figure 21.24.2. Updated indices (values post 2019, black line) compared with the 80% prediction intervals from the 2017 VPA projected forward.



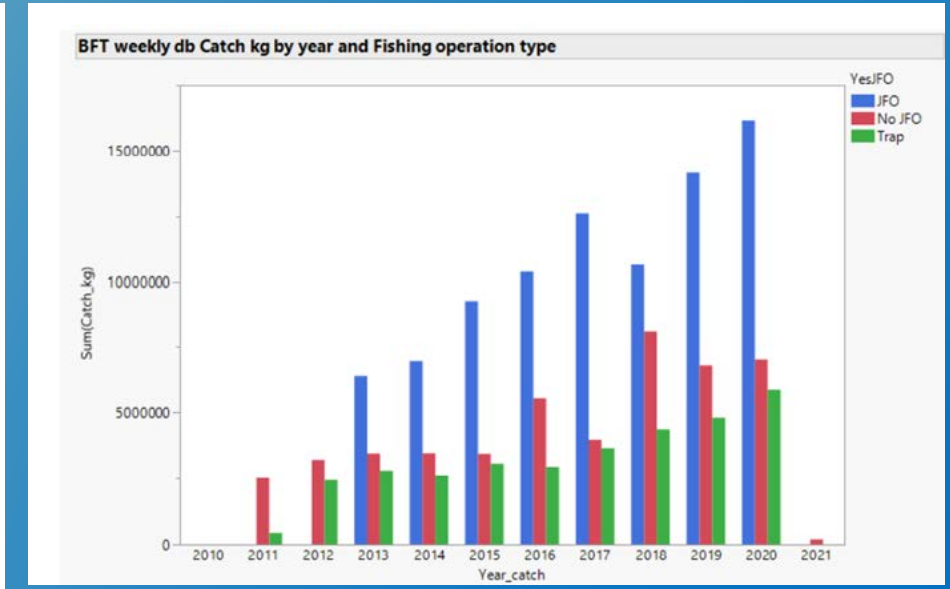
ICCAT CICTA CICAA

2021 ABFT Responses to the Commission

Eastern Atlantic bluefin tuna

21.25 SCRS should review no later than 2021, and each time an eastern Atlantic and Mediterranean bluefin tuna stock assessment is performed, CPCs fishing capacity is commensurate with its allocated quota by using relevant yearly catch rates by fleet segment and gear proposed by the SCRS and adopted by the Commission in 2009. Rec. 20-07, para 4 (18)

The ICCAT Commission in 2019 requested to review and update the catch rates of fleets targeting E-BFT by main fishing gear and vessel size category to the SCRS. Since 2010 several changes and regulations have been implemented (Rec. 10-04, Rec. 12-03, Rec. 14-05, Rec. 18-02, Rec. 19-04) that impacted the activity of the fleets targeting this resource, bluefin farming operations have become the main destination of the catches, and e so-called “Joint-Fishing = Operations” (JFO)have become the primary type of fishing operation for the East bluefin stock in terms of total catches (Figure 21.25.1).



The SCRS defines catch rates as nominal CPUE (CPUE) per vessel (i.e. catch and effort, measured as fishing days from the VMS data that is associated with each vessel).

Note: There are over 3000 vessels registered for E-BFT fisheries, however of these vessels (~12%) account for about 86% of the Catch.

Table 21.25.5. Preliminary estimates of nominal catch rates (CPUE, tones per day fishing) by vessel gear type, size category, and whether in JFO fishing operation (shaded rows) or not. "Core Fleet" is composed of vessels with a minimum annual catch of 5 t and at least 4 years of BFT reported catch Values provided are the mean and upper 90% confidence bounds (5% low, 95% upper) of by vessel observed catch rates from the BFT weekly report dbase 2013 – 2020.

Vessel category	Core Fleet	JFO fishing	Nominal CPUE mean t/day fishing	low 95% CPUE	upp 95% CPUE
PS Large LOA >= 40 m	Yes	Yes	13.14	0.38	147.92
PS Large LOA >= 40 m	No	No	0.46	0.05	9.53
PS Large LOA >= 40 m	No	Yes	4.57	0.09	74.23
PS Medium 24 <= LOA < 40 m	Yes	No	15.37	1.82	90.76
PS Medium 24 <= LOA < 40 m	Yes	Yes	3.93	0.16	74.68
PS Medium 24 <= LOA < 40 m	No	No	1.06	0.03	25.87
PS Medium 24 <= LOA < 40 m	No	Yes	8.68	0.55	93.60
PS Small LOA < 24 m	Yes	No	1.61	1.18	2.21
PS Small LOA < 24 m	No	No	3.35	0.79	12.25
LL Large LOA >= 40 m	Yes	No	0.35	0.05	1.48
LL Large LOA >= 40 m	No	No	0.27	0.03	1.21
LL Medium 24 <= LOA < 40 m	No	No	0.03	0.00	0.16
LL Small LOA < 24 m	Yes	No	0.23	0.01	2.54
LL Small LOA < 24 m	No	No	0.10	0.01	2.26
BB Medium 24 <= LOA < 40 m	Yes	No	0.26	0.02	2.70
BB Medium 24 <= LOA < 40 m	No	No	0.25	0.01	3.92
BB Small LOA < 24 m	Yes	No	0.34	0.04	2.72
BB Small LOA < 24 m	No	No	1.00	1.00	1.00

ABFT Responses to the Commission

21.26 SCRS to identify growth rates including in weight and size gains during the fattening period, and review and update the growth table published in 2009, and the growth rates utilized for farming the fish referred to under paragraph 35 c, and considering the difference among geographic areas (including Atlantic and Mediterranean) in updating the table. Rec. 20-07, para 8 (Rec. 19-04, para 28)

- The SCRS initiated, through the GBYP, numerous farm-based field studies in different geographical areas and established a Subgroup to analyze the data and facilitate the elaboration of a single and coordinated answer.
- Major limitations encountered during the early stages of the study for individual fish measurements tagged in cages (high mortality of large tagged fish).
- The Subgroup concluded that different methodological approaches, from individual growth studies (based on tagging) and whole cage-based growth studies to a broader analysis based on the available length/weight data from stereo camera measurements at caging, harvesting sampling data and eBCDs, should be combined to address the Commission's request.
- Due to time constraints, only results for the whole farm caged fish population. not split by geographical area or other parameters are available. The finalized tables require additional analyses and will be completed in 2022.

ABFT Responses to the Commission

Table 21.26.1. Updated matrix of the expected "mean weight" at harvest of farmed bluefin tuna as function of length and weight (straight fork length, FL; round weight, RWT) at caging (rows) and time in farms (columns, months after caging). The values in parenthesis correspond to the upper 90% confidence interval, which could be considered a reasonable proxy for the 'maximum' growth rate.

		Predicted wgt (kg) at harvest BFT farmed								
Start Age	Size SFL cm	4	5	6	7	8	9	10	11	12
1	53									
2	77									
3	98									
4	118	57 (121)	60 (124)	63 (127)	66 (131)	69 (133)	72 (137)	75 (140)	79 (143)	82 (146)
5	136	104 (168)	107 (171)	110 (175)	113 (178)	116 (181)	120 (184)	123 (187)	126 (190)	129 (193)
6	152	146 (210)	149 (213)	152 (217)	155 (220)	158 (223)	162 (226)	165 (229)	168 (232)	171 (235)
7	167	185 (250)	188 (253)	192 (256)	195 (259)	198 (262)	201 (265)	204 (268)	207 (272)	210 (275)
8	180	219 (284)	222 (287)	226 (290)	229 (293)	232 (296)	235 (299)	238 (302)	241 (306)	244 (309)
9	193	253 (318)	257 (321)	260 (324)	263 (327)	266 (330)	269 (333)	272 (337)	275 (340)	278 (343)
10	204	282 (347)	285 (350)	289 (353)	292 (356)	295 (359)	298 (362)	301 (365)	304 (369)	307 (372)
11	214	309 (373)	312 (376)	315 (379)	318 (382)	321 (385)	324 (389)	327 (392)	330 (395)	334 (398)
12	223	332 (397)	335 (400)	338 (403)	342 (406)	345 (409)	348 (412)	351 (415)	354 (418)	357 (421)
13	232	356 (420)	359 (423)	362 (426)	365 (430)	368 (432)	371 (436)	374 (439)	378 (442)	381 (445)
14	240	377 (441)	380 (444)	383 (447)	386 (451)	389 (453)	392 (457)	395 (460)	399 (463)	402 (466)
15	247	395 (459)	398 (463)	401 (466)	405 (469)	408 (472)	411 (475)	414 (478)	417 (481)	420 (484)
16	253	411 (475)	414 (478)	417 (481)	420 (485)	423 (488)	426 (491)	430 (494)	433 (497)	436 (500)
17	259	427 (491)	430 (494)	433 (497)	436 (500)	439 (503)	442 (506)	445 (510)	448 (513)	452 (516)
18	264	440 (504)	443 (507)	446 (510)	449 (513)	452 (516)	455 (520)	458 (523)	462 (526)	465 (529)
19	269	453 (517)	456 (520)	459 (523)	462 (527)	465 (529)	468 (533)	472 (536)	475 (539)	478 (542)
20	273	463 (528)	466 (531)	470 (534)	473 (537)	476 (540)	479 (543)	482 (546)	485 (549)	488 (552)
21	278	476 (541)	480 (544)	483 (547)	486 (550)	489 (553)	492 (556)	495 (559)	498 (562)	501 (566)
22	281	484 (548)	487 (552)	491 (555)	494 (558)	497 (561)	500 (564)	503 (567)	506 (570)	509 (573)
23	285	495 (559)	498 (562)	501 (565)	504 (568)	507 (571)	510 (575)	513 (578)	517 (581)	520 (584)
24	288	503 (567)	506 (570)	509 (573)	512 (576)	515 (579)	518 (582)	521 (585)	525 (589)	528 (592)
25	290	508 (572)	511 (575)	514 (578)	517 (582)	520 (584)	524 (588)	527 (591)	530 (594)	533 (597)

ABFT Responses to the Commission

Table 21.26.1. Updated matrix of the expected "percent weight gain" at harvest of farmed bluefin tuna as function of length and weight (straight fork length, FL; round weight, RWT) at caging (rows) and time in farms (columns, months after caging). The values in parenthesis correspond to the upper 90% confidence interval, which could be considered a reasonable proxy for the 'maximum' growth rate.

		Expected percent wgt (kg) increase at harvest BFT farmed								
Start Age	Size SFL cm	4	5	6	7	8	9	10	11	12
1	53									
2	77									
3	98									
4	118	87% (299%)	97% (309%)	108% (320%)	118% (331%)	128% (340%)	138% (351%)	149% (361%)	159% (371%)	169% (382%)
5	136	127% (267%)	134% (274%)	141% (281%)	148% (288%)	154% (294%)	161% (301%)	168% (308%)	175% (315%)	181% (322%)
6	152	130% (232%)	135% (237%)	140% (242%)	145% (247%)	150% (252%)	155% (257%)	160% (262%)	165% (267%)	170% (272%)
7	167	123% (200%)	126% (204%)	130% (207%)	134% (211%)	137% (215%)	141% (219%)	145% (222%)	149% (226%)	153% (230%)
8	180	112% (174%)	115% (177%)	118% (180%)	121% (183%)	124% (186%)	127% (189%)	130% (192%)	133% (195%)	136% (198%)
9	193	100% (151%)	102% (153%)	105% (156%)	107% (158%)	110% (160%)	112% (163%)	115% (165%)	117% (168%)	120% (170%)
10	204	90% (133%)	92% (135%)	94% (137%)	96% (139%)	98% (141%)	100% (143%)	102% (145%)	104% (147%)	106% (149%)
11	214	80% (118%)	82% (120%)	84% (121%)	86% (123%)	87% (125%)	89% (127%)	91% (129%)	93% (131%)	95% (132%)
12	223	72% (105%)	74% (107%)	75% (109%)	77% (110%)	79% (112%)	80% (114%)	82% (115%)	83% (117%)	85% (118%)
13	232	64% (94%)	66% (95%)	67% (97%)	69% (98%)	70% (100%)	72% (101%)	73% (103%)	74% (104%)	76% (106%)
14	240	58% (85%)	59% (86%)	60% (87%)	62% (89%)	63% (90%)	64% (91%)	65% (92%)	67% (94%)	68% (95%)
15	247	52% (77%)	53% (78%)	55% (79%)	56% (80%)	57% (82%)	58% (83%)	59% (84%)	61% (85%)	62% (86%)
16	253	47% (71%)	49% (72%)	50% (73%)	51% (74%)	52% (75%)	53% (76%)	54% (77%)	55% (78%)	56% (80%)
17	259	43% (65%)	44% (66%)	45% (67%)	46% (68%)	47% (69%)	48% (70%)	49% (71%)	50% (72%)	51% (73%)
18	264	39% (60%)	40% (61%)	41% (62%)	42% (63%)	43% (64%)	44% (65%)	45% (66%)	46% (67%)	47% (68%)
19	269	36% (55%)	37% (56%)	38% (57%)	39% (58%)	40% (59%)	41% (60%)	42% (61%)	43% (62%)	44% (63%)
20	273	33% (52%)	34% (53%)	35% (54%)	36% (55%)	37% (55%)	38% (56%)	39% (57%)	40% (58%)	40% (59%)
21	278	30% (48%)	31% (48%)	32% (49%)	33% (50%)	33% (51%)	34% (52%)	35% (53%)	36% (54%)	37% (54%)
22	281	28% (45%)	29% (46%)	30% (47%)	31% (48%)	31% (48%)	32% (49%)	33% (50%)	34% (51%)	35% (52%)
23	285	26% (42%)	26% (43%)	27% (44%)	28% (44%)	29% (45%)	30% (46%)	30% (47%)	31% (47%)	32% (48%)
24	288	24% (40%)	25% (40%)	25% (41%)	26% (42%)	27% (43%)	28% (43%)	28% (44%)	29% (45%)	30% (46%)
25	290	23% (38%)	23% (39%)	24% (40%)	25% (40%)	26% (41%)	26% (42%)	27% (43%)	28% (43%)	29% (44%)

ABFT Responses to the Commission

21.27 SCRS advice, not later than 2022, on possible extension on the fishing seasons for different gear types and/or fishing areas, without negatively influencing the stock development and by ensuring the stock is managed sustainably. Rec. 20-07, para 9 (Rec. 19-04, para 33).

Background: *33. Not later than 2022, the Commission shall decide to what extent the fishing seasons for different gear types and/or fishing areas might be extended and/or modified based on the SCRS advice without negatively influencing the stock development and by ensuring the stock is managed sustainably.*

No new information was presented to the Committee on this matter in 2021. However, this request is broad in scope considering the diversity of fleets, spatial coverage and seasonality. The Committee requests more details on the questions to be addressed in order to undertake the appropriate data compilation and analysis. Specific objectives of the request would be helpful given that some CPC fleets could not fill their quota during the fishing season.

ABFT Responses to the Commission

21.28 The SCRS shall report on National observer programmes. Rec. 19-04, para 83

Background: For the scientific aspect of the programme, the SCRS shall report on the coverage level achieved by each CPC, and provide a summary of the data collected and any relevant findings associated with that data. The SCRS shall also provide any recommendations to improve the effectiveness of CPCs observer programmes.

No new information was provided in 2020 or 2021, possibly due to the constraints imposed by the global pandemic crisis.

ABFT Responses to the Commission

21.29 Programmes to estimate the number and weight of bluefin tuna to be caged – The SCRS should evaluate such procedures and results and report to the Commission. Rec. 19-04, para 99

The specific analyses of transfer records to estimate minimum sample size that is representative of the bluefin tuna being caged have not been carried out, since full raw data from stereo camera videos are not still available to the Secretariat.

An ad hoc study on this matter could be planned and carried out within GBYP Phase 12, if the data are made available.

ABFT Responses to the Commission

21.30 SCRS shall provide new advice on the TAC for the following year when the goal of maintaining the biomass around B0.1 (to be achieved by fishing at or less than F0.1) is not achieved and the objectives of this plan are in danger. Rec. 19-04, para 114

Background: When, as a result of a scientific evaluation, the goal of maintaining the biomass around B0.1 (to be achieved by fishing at or less than F0.1) is not achieved and the objectives of this plan are in danger, the SCRS shall provide new advice on the TAC for the following year.

Response: The Committee concluded that there is no evidence to recommend a change in the current TAC advice for 2022. See response 21.24 of the report.

ABFT Responses to the Commission

21.31 Standards and procedures for stereoscopic cameras systems in the context of caging operations
Rec. 19-04, Annex 9, item 1 iii

Background: When the length measurements of the fish present a multi-modal distribution (two or more cohorts of distinct sizes), it shall be possible to use more than one conversion algorithm for the same caging operation. The most up to date algorithm(s) established by SCRS shall be used to convert the fork length of a single fish into weight, according to the size category of the fish measured during the caging operation.

Response: A recent study related to length-weight relationships for bluefin tuna in the Gulf of Cadiz/Southern cost of Portugal (SCRS/2021/146), using data collected over 15 years from the Portuguese traps was reviewed.

The Committee recommends four different equations to be used by the stereoscopic-system for the estimation of the BFT catches transferred to cages:

- Atlantic Moroccan traps (Rodriguez-Marin et al., 2015),
- Portuguese traps for the period June to August (Lino et al., 2021),
- purse-seine catches for juveniles in the Adriatic Sea (Katavic et al., 2018), and
- purse seine catches in the Mediterranean (Deguara et al., 2017).

ABFT Responses to the Commission

21.32 SCRS shall review the specifications and, if necessary, provide recommendations to modify them.
Rec. 19-04, Annex 9, item vi

Background: The report on the results of the stereoscopical programme should include details on all the technical specifications above, including the sampling intensity, the way of sampling methodology, the distance from the camera, the dimensions of the transfer gate, and the algorithms (length-weight relationship). The SCRS shall review these specifications, and if necessary, provide recommendations to modify them.

Response:

- The Committee revised some technical specifications as indicated in the responses to the Commission's requests: items 21.29, 21.31 and 21.33 of this report. The Committee will continue this process and revise other aspects of the technical specifications, such as the sampling methodology being applied at caging and the distances between the sampled fish and the stereocamera.
- Automated techniques to measure caged fish are being explored, potentially making it easy to increase the percentage of sampled fish.

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ABFT Responses to the Commission

21.33 Method proposed for the calculation of a margin of error and range of the stereoscopic camera system, Rec. 19-04, Annex 9, section 2

Background: **In accordance with what was agreed at the Intersessional Meeting of Panel 2 (March 2020) «Clarify section 2 of Annex 9 of Rec. 19-04, paragraph iii concerning the determination of the percentage range».**

Response:

The proposed method is a 5-step calculation that uses the size measurement input of each fish measured, the estimated round weight (RWT) of each fish (using a user-defined weight-size relationship), the margin of size measure error (error%) provided by the software, the count of fish measured, and the total number of fish counted in the recording file (total count).

Conclusions of SCRS analysis:

- This procedure simply uses the size error measurement from the video file and software to estimate the range for the estimated total biomass of caged fish.
- The procedures are computationally correct.

2022 SCRS Calendar

	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE
January						1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
February									1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28		
March		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31						
April					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30				
May							1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
June			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30						
July					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31			
August	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31						
September				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30					
October						1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
November		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30							
December				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31				

BFT MSE
COM intersessional
On-line reporting WG
SKJ Data Preparatory
Atl-SWO Data preparatory
SWO MSE**
SWO MSE
COM intersessional
BFT MSE Tech. Group**
WGSAM
SC-ECO
E-BFT Data preparatory
E-BFT DP
BFT MSE
COM intersessional
Atl-SWO Stock Assessment
Atl-SWO SA
SKJ Stock Assessment
TT MSE
SHK intersessional
BFT MSE Tech. Group**
SCRS Species Groups*+
SCRS Plenary
SCRS
BFT MSE
Commission meeting

(*) Meetings of SC-STATS, ALB, BFT, BIL, SHK, SMT, SWO and TRO (+) SC STATS will be on 19 Sep 2022 Free day in ICCAT Meeting of technical nature Commision meetings/Secretariat meeting preparation/holidays

Thank You

Growth Studies

Location	Method	Dates	Pro/Con	Length intervals	Duration intervals in captivity	Comments
Southern Portugal/TUNIPEX farm	Tagging	July-December 2019	individual growth trajectories of adult fishes/stress induced mortality of tagged fishes.	110/240 cm	4-6 months	Stereocam measurements of tagged fishes will allow to evaluate SC system accuracy
Southern Portugal/TUNIPEX farm	Stereo-camera measurements at caging (minimumn 20% of caged fishes) and direct L/W measurements at harvesting of all the fishes farmed in 2016 and 2017.	July-December 2020	mean and maximum growth rates of caged population in a representative cage/no individual growth rates	110/240 cm	4-6 months	Determination of growth rates in fishes with an initial bad condition, which has in principle the higher potential growth rates
Western Mediterranean/Balfegó farm	Stereo-camera measurements at caging and direct L/W measurements at harvesting in selected cages.	June 2016-June2018	mean and maximum growth rates of caged population/no individual growth rates.	130/240 cm	4-18 months	L/W at harvesting available for 100%of caged fishes.
Western Mediterranean/Balfegó farm	Bi-monhtly stereo-camera measurements from caging to harvesting (minimum 20% of fishes in the cage) and direct L/W measurements at harvesting in one representative cage	June 2019-December 2020	mean and maximum growth rates of caged population&determination of seasonal growth rates/no individual growth rates.	100/340 cm	4-18 months	L/W at harvesting available for 100%of caged fishes
Adriatic sea/Pelagos farm	Tagging/oxytetraciclin injection	June 2019-December 2021	individual growth trajectories of adult fishes/stress induced mortality of tagged	75/130 cm	18-30 months	Otolith reading validation studies
Adriatic sea/Pelagos farm	Seasonal (3 months) stereo-camera measurements from caging to harvesting (minimum 20% of caged fishes)and direct L/W measurements at harvesting in two representative cages	June 2019-December 2022	mean and maximum growth rates of caged population in a representative cage/no individual growth rates	75/130 cm	18-30 months	L/W at harvesting available for 100% of caged fishes
Central Mediterranean/Aquabiotech	Bi-monhly stereo-camera measurements from caging to harvesting (minimum 20% of caged fishes) and direct L/W measurements at harvesting of all the fishes in one representative cage	June 2019-December 2020	mean and maximum growth rates of caged population&determination of seasonal growth rates/no individual growth rates.	96/264 cm	4-18 months	L/W at harvesting available for 100%of caged fishes
Eastern Mediterranean/Akua group farm	Bi-monhtly stereo-camera measurements from caging to harvesting (minimum 20% of caged fishes)and direct L/W measurements at harvesting of all fishes in one representative cage	June 2019-December 2021	mean and maximum growth rates of caged population&determination of seasonal growth rates/no individual growth rates.	120/230 cm	18/30 months	L/W at harvesting available for 100%of caged fishes
All areas where BFT farming takes place	Stereo-camera measurements at caging (minimum 20% of caged fishes) and direct L/W measurementsof all fishes at harvesting in all BFT farms	2014-2019	mean and maximum growth rates of caged population in all BFT farms/no individual growth rates	whole length range of purse seine catches	4-30 months	DB useful for stock assessment
Morocco Atlantic	Stereo-camera measurements at caging (minimum 20% of caged fishes).At harvesting both stereoscopic camera measurement and direct L/W measurementsof at least 10% fishes at harvesting in 12 BFT cages	May-September 2019/May-September 2020	mean and maximum growth rates of caged population in all Moroccan BFT farms/no individual growth rates.	140/300 cm	4 months	The preliminary results (no individual growth aproach) suggest that growth rates could be higher than those used by the SCRS. SCRS/2019/193
Malta	Stereo-camera measurements at caging (minimum 20% of caged fishes) and direct L/W measurements of at least 10% fishes at harvesting of 37 BFT cages.	June 2014-December 2018	mean and maximum growth rates of caged population in all BFT farms/no individual growth rates.Challenges to identify individual grwth rates	165/278cm at caging	3-5.5 months	Determination of growth rates in upper mode of population in the cages. SCRS/2019/183

North Atlantic ALB Workplan 2021

North Atlantic Stock Proposed Work Plan (Details Appendix 13)

- Continue work on Exceptional Circumstance, update (up to 2019) the yearly standardized CPUEs, in weight, and determine if exceptional circumstance have occurred.
  - Japanese longline
  - Chinese-Taipei longline
  - US longline
  - Venezuela longline
  - Spanish baitboat
- Prepare of Stock Synthesis model reference case assessment, including updating Irish and French mid-water trawl indices.
- Hold an intersessional meeting in Nov/Dec to fit SS models to the data
- Continue to Implement comprehensive Research Programme For 2021, the priority is to complete the reproductive biology and electronic tagging studies, and to start working on a Stock Synthesis model as part of the MSE activities

Mediterranean ALB Workplan 2021

An intersessional assessment meeting should be held. This meeting is high priority and all CPCs involved in Mediterranean albacore fisheries need to be involved. The meeting should cover the following topics:

Review of available data with emphasis in historical series.

Updated standardized CPUE indices for the most important fisheries. All data needs to be ready at least one month before the meeting, to allow for bringing a preliminary assessment ready by the start of the meeting.

Updated information on species biology

Identification of appropriate stock assessment approaches, including data poor methods, to increase confidence in the Jabba assessment.

Exploration of the potential of using alternative indicators and reference points (Lopt, measures based on reproductive potential, etc.).

Identifying research priorities (with a view to incorporate these in the ICCAT Albacore Research Program).

South Atlantic ALB Workplan 2021

The Group stressed the need to start incorporating research activities for this stock on the Albacore Research Programme . Consistent with the north Atlantic albacore workplan, it is prioritized to start activities on reproductive biology and electronic tagging.

ALB Recommendations with Financial Implocations

The Committee recommends continued funding of the albacore research program for North Atlantic albacore. The research will be focused on three main research areas: biology and ecology, monitoring of stock status, and management strategy evaluation. For the Mediterranean stock, although there are still considerable gaps in knowledge on the species biology, fisheries and statistics, to date, the Group has not set research priorities; therefore, no fund.

For 2021 the Group recommended to continue electronic tagging activities in the north Atlantic, to start tagging in the Southern Atlantic, to conduct reproductive biology studies in both stocks, and to progress on the north Atlantic albacore MSE.

The Group request funds to a short term-contract to support advances in larval studies in the Balearic Sea and other spawning areas (e.g. central and eastern Mediterranean), namely investigating the spatio-temporal distribution of larval habitats and dependencies with local mesoscale oceanography, and investigating the ecology of early life stages and the factors determining larval survival.

Requested funds for 2021 : 153,000 Euro