

Report of the 2026 First Intersessional Meeting of the Bluefin Tuna Species Group
(Online, 9-12 March 2026)

The results, conclusions and recommendations contained in this report only reflect the view of the Atlantic Bluefin Tuna Species Group (BFT SG). Therefore, these should be considered preliminary until the SCRS adopts them at its annual Plenary meeting and the Commission revises them at its annual meeting. Accordingly, ICCAT reserves the right to comment, object and endorse this report, until it is finally adopted by the Commission.

1. Opening, adoption of agenda, meeting arrangements, and assignment of Rapporteurs

The online meeting was held from 9 to 12 March 2026. Dr Tristan Rouyer (EU.France), East Atlantic and Mediterranean Bluefin Tuna Rapporteur, and Dr John Walter (United States (U.S.)), West Atlantic Bluefin Tuna Rapporteur, as meeting Co-Chairs, opened the 2026 First Intersessional Meeting of the Bluefin Species Group (BFT SG) (the Group) and welcomed participants. Mr Camille Jean Pierre Manel, ICCAT Executive Secretary, welcomed the participants and wished them success in their meeting.

The Chair proceeded to review the Agenda which was adopted with some changes (**Appendix 1**). The List of participants is included in **Appendix 2**. The List of papers and presentations provided at the meeting is attached as **Appendix 3**. The abstracts of all SCRS documents and presentations provided at the meeting are included in **Appendix 4**. The following participants served as Rapporteurs:

<i>Sections</i>	<i>Rapporteur</i>
Items 1, 11	A. Kimoto
Item 2	M. Lauretta
Item 3	G. Melvin
Item 4	N. Rodríguez-Ezpeleta, H. Arrizabalaga, F. Alemany
Item 5	D. Álvarez-Berastegui, A. Gordo, C. Peterson
Item 6	C. Brown, J. Walter, T. Rouyer
Item 7	A. Hanke, C. Peterson
Items 8-10	J. Walter, T. Rouyer

2. Status check modeling

2.1 Data inputs

2.1.1 Size composition

Document SCRS/2026/028 reported on the updated catch and size data available up to 2024 for the status check (stock assessment). An additional four years of data are available for the East Atlantic Stock Synthesis model (prior assessment in 2022, [Anon., 2022](#)), and an additional four years of data are available for the West Atlantic model (prior assessment in 2021, [Anon., 2021](#)). Comparison of the total landings showed no significant changes for the historic period. However, significant changes in the size compositions of several purse seine fleets were documented because major updates since 2022 were introduced by the Standing Committee on Research and Statistics (SCRS) in the ICCAT database. The lack of size composition data reported was shown for the years 2022-2024 for important purse seine (PS) fleets operating in the Mediterranean.

Considerable discussion was given on the fleet structure of the Mediterranean purse seine fleets, and a final proposal for potential model improvements was made that included: i) assigning small size fish data by PS-EU.Italy in the Adriatic and Ionian Sea to the PS-EU.Croatia fleet (**Figure 1**); and ii) separating PS-Türkiye as one fleet (**Figure 2**), and iii) revising the other PS fleet.

2.1.2 Age data

Document SCRS/2026/024 and presentation SCRS/P/2026/019 summarized the aging databases available for the West and East Atlantic area models, respectively. Quelle *et al.*, 2025 contains detailed information on the East Atlantic data, reviewed during the 2025 SCRS meeting. The East Atlantic data were enhanced

with the addition of two new fields, creating conditional age-at-length (CAAL) and enabling its integration into the Stock Synthesis model. Over 25,000 fish have been aged from both areas using standardized protocols across labs, which greatly increased the amount of information on age-at-length, and average asymptotic growth. Both datasets indicated mean asymptotic growth is between 240 and 280 cm straight fork lengths (SFL).

Updated growth models for the West Atlantic area showed good agreement with prior analyses, and demonstrated model selection for the Richards curve to parameterize in Stock Synthesis models. In addition, a two-phase growth model best described the observed data, with the von Bertalanffy model showing improved fit to younger age classes, and the Richards model showing improved fit to older ages. The estimated break point occurred around 5.5 years old and approximately 175 cm SFL. The Group noted this corresponds to the observed change in migration patterns, and potentially maturity (**Figure 3**). However, it was also noted that the recreational and commercial size limits and size selectivity strongly influence observed growth and must be addressed before attribution of these effects to biology. Integrated modeling within the Stock Synthesis model may partially address the confounding influence of size selectivity.

Comparison of growth between the areas showed general agreement for ages 2-4 and older age classes; however, a discrepancy in the West area fish for ages 5 to 7 was noted with bimodal distributions of length. Several hypotheses were discussed to explain the difference, including fleet selectivity, retention limits, stock- or sex-specific growth, maturity, or ageing bias. Comparison of growth increments in the West Atlantic showed good agreement with the growth pattern estimated for the East data for those age classes, and the Group recommended further examination of the age data in the West Atlantic for those specific age classes.

2.1.3 Indices

Indices used for the continuity models are outlined in Section 5 of this report.

2.1.4 Catch

Catch data inputs were obtained from the Task 1 Nominal Catches (T1NC) dataset and CATDIS matrices produced by the Secretariat.

2.1.5 Biological data (natural mortality, reproduction, etc.)

Detailed specifications of biological assumptions for the West and East Atlantic/Mediterranean area continuity models were reported in documents SCRS/2026/021 and SCRS/2026/023, respectively. A summary of biological assumptions is presented in **Table 1**.

The Group considered whether to remove one of the axes of uncertainty for age at maturity, however it did not reach consensus on removing the older age at maturity. The Group looks forward to receiving recent results from the Slope Sea longline cruise to target spawning fish in this area to consider this topic further for the MSE review. Hence, no changes to the biological assumptions were made for the initial continuity model updates.

2.2 Review initial Continuity model runs: Stock Synthesis (East and West)

Document SCRS/2026/021 presented a provisional update of the West area Stock Synthesis model, incorporating four additional years of catch data, size composition data and updated indices of abundance. It was explained that in the 2021 Western Bluefin Stock Assessment ([Anon., 2021](#)), the age data were incorrectly assigned to wrong fleets and age composition data for the Japan longline fleet were mistakenly included in the log-likelihood component. Overall, the 2021 model with corrected age data showed a similar trend to the 2021 Western Bluefin Stock Assessment ([Anon., 2021](#)), but with a notable change in biomass in the early period. The analysts indicated the change was primarily due to the removal of the early period age composition for the Japan longline fleet.

The Group noted that the revised Canadian catch data for 2024 by fleet and the updated age data were not yet included at the time of the meeting, and would be evaluated during the intersessional period. The model with updated data also showed a similar trend to the 2021 Western Bluefin Stock Assessment (Anon., 2021), but with a notable change in biomass in the early period.

The Group highlighted some difficulty in fitting both the indices of abundance and the composition data, similar to the performance observed in the MSE and prior assessments for both stocks. The Group discussed data weighting, or potential alternatives to test the robustness of the estimated change in stock status to different data treatments and model assumptions. In particular, the most recent index values were not fit correctly by the model, and warranted further model testing. The Group outlined the next steps, including integration of the revised size-at-age data, alternative data weights especially for the composition data, and evaluation of historic landings on stock depletion estimates.

Document SCRS/2026/023 documented the exploratory runs for the update assessment of eastern Atlantic and Mediterranean bluefin tuna using Stock Synthesis. The analyst reported on the difficulty in fitting the various data components, namely fleet selectivity. It was indicated that significant changes to the historical length composition data, by removing estimated length data, made updating the model more challenging than a strict update.

The Group discussed the conflict between the index data, length composition data, and conditional age-at-length data. The model fits to length compositions were relatively poor, particularly for fleet 10, the Mediterranean purse seine prior to 2008 in the second quarter. This was highlighted as an area for additional work, as the fleet constitutes a large proportion of the landings for this period, including estimates of inflated catches.

The Group emphasized the need to fill the important data gaps in size composition for several major harvesters in the Mediterranean for the years 2022-2024 and request the Secretariat to send a reminder to relevant CPCs with the aim of providing the missing data by 1 April 2026.

The Group reminded that all CPCs are required to submit the bluefin tuna size distribution of all catches in the mandatory ST-04 statistical forms, as the ST-06 form collects only data from the farming operations for monitoring. The Group would also like to note that the SCRS 2025 recommendation to utilize artificial intelligence (AI) to measure 100% of the stereo-camera footage at the time of first transfer or first caging would streamline the integration of these data into the stock assessment and avoid the need for back calculation of size at capture.

It was agreed that further development of this Stock Synthesis model would proceed on the basis of Run 20, which implemented a time block in the PS-Norway (FL07_PS_NOR) selectivity to differentiate between the modern and the historical Norwegian purse seine fleets. The recommended next steps include integration of the revised age-at-length information to better inform growth parameters, modification of catch and size related to PS-Italy (see item 2.1), focused effort to improve the fits to fleet selectivity, and, once a stable base-case model has been achieved, to develop sensitivities to investigate tensions between different data sources and their impact on the assessments results.

The Co-Chairs acknowledged and thanked the lead analysts for their considerable effort in preparing updated models for this meeting. A Bluefin Tuna Technical Sub-group on Assessment Models was formed to discuss model development and progress up to the Second Intersessional Meeting of the Bluefin Tuna Species Group in July 2026.

2.3 New mixing models

Presentation SCRS/P/2026/017 provided the multi-stock stock assessment ([multiSA](#)) R package developed to integrate stock mixing in the assessment of Atlantic bluefin tuna, and further generalized for application to other mixed stocks. The package is available on the R-CRAN with associated model documentation. The modeling platform was tested by comparison with single stock models, including the West Atlantic bluefin tuna Stock Synthesis and South Atlantic albacore assessment, and showed comparable estimates to those models. Further, the model was simulation tested with M3, the current platform for the MSE operating models, and also showed good replication of results in terms of stock biomass estimates and trends. The next steps involve development of a mixed stock model, which the Bluefin Tuna Technical Sub-group on Assessment Models will discuss in the interim period before the assessment.

Key points that would need to be discussed included: 1) evaluation of model spatial areas; 2) size classes and maturity; 3) integration of new electronic tagging, stock composition, and additional data; 4) revised or new indices of abundance; 5) inclusion of Close-Kin Mark-Recapture (CKMR) data or estimates in the model; 6) predictions of numbers of kin pairs, specifically parent-offspring, and intra- and inter-cross cohort siblings by spawning area; and 7) predictions of stock mixing by fleet.

3. Status check model revisions

3.1 Include Close-Kin Mark-Recapture (CKMR) for the western stock

This will be included in the multiSA mixing model but not for the area-based Stock Synthesis models.

3.2 Others (including index revisions)

Index revisions were addressed in Section 5 (review of indices) of this report.

Document SCRS/2026/022 presented a progress report on the efforts to develop an alternative assessment model for a status check of western BFT. The current approach used the continuity model which was based on the 2021 assessment model, however because of the uncertainty associated with biomass estimation and stock mixing, it was believed to not be useful for provision of biomass-based management advice. This is especially true if the historical “area-based” assessment approach was to be used. Furthermore, given the concerns over the poor data in the early assessment period and input parameters, the authors believed that a fundamental reform of the assessment was required. What can be done with the alternative model and how it should be applied in the process is a decision for the Group once it is completed by the Second Intersessional Meeting of the Bluefin Tuna Species Group in July 2026.

The report provided the technical details of proposed changes to the overall assessment, much of which needs to be discussed by the Bluefin Tuna Technical Sub-group on Assessment Models and was only touched upon at the First Intersessional Meeting of the Bluefin Species Group. The report tried to address issues associated with the variable influx of eastern fish to the West Atlantic, and conflict between CPUE and the assessment, conflicting biomass scale among sources, and poor data periods within the time series. Proposed changes included redefinition of fleet structure (15 vs 14 fleets), modifications to the input parameters such as natural mortality, growth assumptions, maturity and the stock recruitment relationship. It proposed the truncation of the time series from 1950 to 1985. The objective of this exercise is to develop a simplified model compared to the continuity model.

The Group recognized the extensive amount of work and thought that have gone into the model development to date. However, based on what was presented there were a lot of proposed changes to digest that could not be dealt with within the time constraints of the current meeting. It was also asked if the CKMR data could be integrated into the model. Concern was expressed about how CKMR (a stock-specific indicator) could be included in an area-based assessment, after some discussion it was concluded that it may be possible as some stock composition data are available. Scale was still an issue and will eventually have to be addressed at some point in time. Steepness (fixed at 1) of the stock recruitment relationship could also be problematic. Choosing the appropriate indices was also identified as a challenge.

The question was also raised as to the ultimate purpose of this proposed model, and how it will be used in providing advice. Specifically, what was the difference between this and the continuity model. The authors felt that how it was used will be up to the Group once it is complete. They were simply exploring developing an alternative model. The Group discussed the merits of the single stock approach when there are 2 stocks and prioritize the development of a multi-stock model. Finally, it was suggested to focus on the task at hand for now and redo the current continuity model for the status check. After that the authors can look at what can be done for the future.

4. Review new science (mixing/otolith/movement, etc.) data input in the current operating models

Presentation SCRS/P/2026/015 reviewed genetic evidence supporting the existence of two main spawning populations of Atlantic bluefin tuna (Mediterranean Sea and Gulf of Mexico) and that larvae collected in the Slope Sea displayed intermediate genetic profiles covering the full range between the two populations. The new larval samples collected in 2025 showed the same pattern as samples collected approximately ten years earlier. Kinship analyses identified both full- and half-sibling pairs among larvae, providing information on spawning dynamics in the area.

The Group discussed as follows:

- It was stated that the results indicated ongoing connectivity between the eastern (Mediterranean) and western (Gulf of Mexico) populations and confirm the Slope Sea as a recurrent area of admixture.
- It was noted that genetic differentiation between the eastern and western populations persisted despite evidence of interbreeding and it was asked why such differentiation can be maintained if interbreeding has occurred over long-time scales. It was suggested that migration between spawning areas may not be constant through time but could occur in pulses, that interbreeding is recent or that admixed individuals are less fit.
- It was clarified that the analyses presented do not assign individuals to stocks but instead describe genetic structure and ancestry distributions. Thus, the observation of admixing is not due to a classification problem.
- It was stated that current results on the Slope Sea are not ready for direct inclusion in current assessment or management models, pointing out that it is not necessary by now to develop a new model considering three different populations, but that it is important to know the proportion of individuals that interbreed.
- It was emphasized that continued sampling (larvae and adults) is required to evaluate interannual variability and demographic relevance of the admixture. There will be the possibility to analyze spawning adults collected in the Slope Sea. Cross cohort sibship in the Slope Sea would provide useful information on annual survival.
- Three documents were provided in background documents that give an updated overview on age at spawning including for individuals collected in the Slope Sea.

Document SCRS/2026/020 compared alternative analytical approaches for estimating mixing proportions in the West Atlantic using genetic data. Different classifiers (Support Vector Machine, Latent Dirichlet Allocation, Random Forest) and estimation frameworks (Direct Maximum Likelihood, Generalized Linear Mixed Models) were evaluated. The use of probabilistic (“soft call”) approaches was recommended to avoid artefacts associated with hard assignment thresholds and to produce statistically stable and biologically realistic estimates suitable for MSE applications.

The Group discussed as follows:

- It was noted that different classifiers can produce substantially different estimates of western population contribution. It was stated that hard assignment thresholds can exaggerate biological signals and underestimate uncertainty.
- It was noted that soft-call approaches retain information from genetically intermediate individuals, but all individuals are assigned to one of the two stocks.
- It was questioned how genetic-based estimates in this document compare with otolith-based classifications, particularly across age classes. It was stated that differences between genetic and otolith estimates were expected due to their different biological meanings (ancestry vs. early-life environment).

- It was suggested that mixing estimates provided to assessment models should be standardized and accompanied by uncertainty. It was stated that harmonization of approaches across data types would be desired before operational use, but it was also explained that both data types should be treated considering their particularities. The Bluefin Tuna Technical Sub-group on Stock Mixing was tasked to further discuss this.

Document SCRS/2026/027 synthesized genetic and otolith-based stock-of-origin information across GBYP phases. Results showed consistent large-scale spatial patterns, with high eastern population contribution in the Mediterranean and East Atlantic, and intermediate mixing in the West Atlantic. No robust long-term temporal trends in mixing proportions were detected at basin scale.

The Group discussed as follows:

- It was stated that differences between genetic and otolith estimates are partly driven by spatial and temporal sampling coverage.
- It was noted that otolith chemistry can indicate higher western population contribution in some regions or seasons.
- It was stated that unbalanced sampling can strongly influence perceived temporal trends.
- It was suggested that mixing rates should be interpreted in the context of fishing effort and fishery representation.
- It was agreed that a harmonized statistical framework is needed to integrate the mixing proportions obtained by multiple data sources.

Document SCRS/2026/030 showed otolith stable isotope data from more than a decade of sampling in the Gulf of Maine rod and reel (RR) fishery. Results showed dominance of Mediterranean-origin (eastern) fish, with increasing contribution of Gulf of Mexico-origin (western) individuals among larger and older fish. Stock-composition information was applied to revise CPUE, catch-at-age, and catch-at-length indices.

The Group discussed as follows:

- It was noted that younger age classes are under-represented in the dataset. It was noted that it could be in relation to minimum size regulations.
- It was stated that classification uncertainty should be propagated into revised indices.
- It was agreed that stock-composition information can substantially change interpretation of fishery-dependent indices.

Presentation SCRS/P/2026/016 summarized electronic tagging data from the GBYP database, focusing on migratory pathways, timing of movements, and size-dependent behaviour. Clear size thresholds were observed, with larger fish showing broader movements and inter-basin transitions. Evidence of homing behaviour and potential cases of skip spawning was presented.

The Group discussed as follows:

- It was noted that many tracks remain unclassified due to limited contextual information and lack of genetic analyses to determine stock of origin.
- It was stated that genetic assignment, as well as sex determination, of tagged fish would improve interpretation.
- It was agreed that tagging data are valuable for informing movement matrices, but remain spatially incomplete.
- It was recommended to plan an action aiming at determining the stock of origin and sex of the tagged specimens that remain unassigned, through the genotyping of available samples from these individuals.

Presentation SCRS/P/2026/005 showed that habitat suitability models for bluefin tuna based on potential prey distributions, under multiple climate scenarios, projected poleward shifts in suitable habitat for bluefin tuna and key prey species, with declining suitability in traditional spawning areas. Changes in overlap with fishing effort spatial distribution were also presented.

The Group discussed as follows:

- It was noted that differences among age classes should be considered.
- It was pointed out that these models focus mainly on adult foraging habitats, and that declining suitability in spawning habitats derived from prey availability do not necessarily imply a negative impact on recruitment processes, since in fact higher temperatures may favour the larval fitness and survival.
- It was stated that Mediterranean dynamics were insufficiently represented, and it was noted that Mediterranean and non-Mediterranean species were used in the set of prey species considered.
- It was suggested that potential effects on CPUE and catchability should be explored.
- It was noted that the key question is whether future environmental scenarios should be considered in the MSE operating models.

Presentation SCRS/P/2026/020 showed how otolith isotope data of one year old BFT juveniles were used to infer experienced temperatures and field metabolic rates. A thermal optimum around 26–28 °C was identified, with metabolic suppression above 28–29 °C, potentially affecting growth and survival.

The Group discussed as follows:

- It was noted that otolith isotopic signals integrate three months of experienced temperatures.
- It was suggested that avoidance of high temperatures could influence observed patterns.
- It was stated that linking metabolic proxies to growth and mortality would improve model relevance, and that these links could be defined under experimental conditions.
- It was noted that studies under experimental conditions determining the influence of temperature (T) of growth and survival in larvae have been already carried out, and the results presented to the Group.
- It was highlighted that these studies could allow testing of hypotheses against data and drive future data collection.

Presentation SCRS/P/2026/022 outlined a proposal for a genetic mark–recapture framework in bluefin tuna, similar to the one used in southern bluefin tuna. For that aim, it was proposed to use whole-genome data to identify haplotypes, and test whether these allow to better detect contamination and reduce unassigned individuals.

The Group discussed as follows:

- It was stated that such approaches could complement existing assessment tools and require a study design.
- It was noted that coordination with ongoing genetic and tagging programmes would be required.
- It was explained that during the first year it is planned to carry out the whole genome analyses and in the second, the panel will be developed.

- The potential implications in terms of contribution to the future management framework were discussed. The Group looks forward to continuing engaging in conversation on this matter.

5. Critical review of catch per unit effort (CPUE) time series

The Group reviewed the tables of indices and decided which indices to include or exclude for the status check (**Table 2**). The final decisions on which indices to include in reconditioning of the OMs will need to be taken at the September Bluefin Tuna Species Group meeting, noting that final decisions on indices for management procedures require meeting specific conditioning criteria.

5.1 Strictly updated

The Group updated the strict updated indices table, including indices that the Group did not use for the stock assessments, nor for the OMs (**Table 3**).

5.2 New/revised indices

Presentation SCRS/P/2026/014 provided the acoustic index in the Gulf of St Lawrence (GSL), which has historically been broadly consistent with fishery CPUE, but recent updates suggest a marked decline in bluefin tuna abundance that is not consistent with CPUE. The authors updated the index (including 2020 and 2022) and described a standardization using the Vector Autoregressive Spatio-Temporal (VAST) model, accounting for changes in survey methodology, specifically changes in boats and eco-sounders, environmental conditions, and herring biomass. The authors also examined potential changes in catchability (e.g. vessel changes since 2022) and detection methods; the VAST configuration used 15 knots. The standardized index improved smoothing across most years, including the large shifts in 2018–2019.

Questions were raised about whether the sampling adequately covers the full herring distribution, given indications from other regions, such as Norway, of northward shifts in spawning areas. If such a shift were occurring in the Gulf of St Lawrence, bluefin tuna could also be expected to move North. The authors responded that they are expanding the sampling area and incorporating information from surveys conducted further North of the Gulf of St Lawrence to better capture any spatial changes.

Concerns were also expressed about the influence of the recent low index values on population models, especially when high densities in small areas produce point estimates with large coefficients of variation (CVs). Some participants noted that, if CVs remain large, a break in the time series might need to be considered, and pointed out that the period where a break could occur coincides with changes in survey vessels. In light of these issues, the authors mentioned the possibility of removing herring biomass from the standardization to avoid indexing prey availability instead of bluefin tuna abundance, and indicated that they will update additional years of the index and analyze other available acoustic datasets from the Gulf of St Lawrence. The authors also offered to document criteria for identifying potential breaks in the series and assessing the implications of vessel and detection-method changes.

Document SCRS/2026/025 presented technical methodologies for the development of an acoustics-based, fishery independent abundance index in the Bay of Biscay. This study evaluated the capability of the Kongsberg M3 high-frequency multibeam sonar (500 kHz) to generate non-invasive FL estimates of tunas across a wide range of operational scenarios.

The presentation described the use of multi-beam sonar to estimate FL and outlined a validation pathway to support assessment studies. It was clarified that the “raw” data currently represent mean values per fishing event rather than individual fish measurements. Technical aspects, including the comparison between acoustic and sampling measurements and the potential use of other sonars in the future were discussed.

Document SCRS/2026/031 presented further developments of an acoustics-based, fishery independent abundance index in the Bay of Biscay based on document SCRS/2026/025. The spatial distribution of detected bluefin schools was shown, as well as the estimated number and size/age of individuals in the detected schools.

Questions centered on the risk of extrapolating a local index to the entire population (noting similar work underway in Norway) and on potential climate-driven spatial shifts that could affect interpretation. One concern was that the low value in the last year coincided with a shift in the spatial sampling area. While expanding the spatial and temporal sampling window was considered to mitigate design-related biases, the authors ultimately ruled this out owing to cost constraints. At present, conversion to biomass is not possible because required calibrations are still pending. Other effects would also be required to standardize this dataset (e.g. changes in the type of area sampled, continental shelf vs slope). It was also asked whether this index was proposed for inclusion in the MSE; it was clarified that it is not intended for the MSE at this stage.

The Group updated the revised indices as contained in **Table 4**.

The Group discussed determining which indices were valid for the status check and MSE. It was emphasized that for the status check, new indices should be excluded, due to the overload of work and lack of time before the Second Intersessional Meeting of the Bluefin Tuna Species Group in July 2026. The list of indices and the decisions made are included in **Table 2**. Additionally, the Group agreed that the historical indices will be retained for the status check (Stock Synthesis) and the current OMs (M3).

New indices that require further exploration were not recommended for inclusion in the status check (e.g. PS-Balfegó, Larval index, revised Mor-Por trap index) for the sake of continuity and efficiency. Nevertheless, the Group considered including some of the revised indices in the West Atlantic Stock Synthesis sensitivity runs to determine whether they reconciled pre-existing conflicts and model diagnostic concerns.

Regarding the strictly updated indices, slight modifications have been made. The first one was replacing U.S. RR 66-114 cm and U.S. RR 115-144 cm with U.S. RR 66-144 cm for the MSE, noting this has been reflected in the West Atlantic Stock Synthesis.

The decision regarding the indices to be considered in the MSE was to leave them as they are for the time being (both the strict updated and the revised new indices), leaving them all as possible options for use in the MP. The incorporation of new indices might optimize MP performance (e.g. VAST-based indices). The Group expressed the desire to include novel indices in the MSE OMs, with an option to turn them on or off based on performance within the OM and need for the candidate MP.

There was a discussion on whether a constraint should be placed on the CVs of the abundance indices included in the stock assessment model, such that no CV would be less than 0.2. Different views were expressed on the matter, although it was clarified that this was a recommendation of the Working Group on Stock Assessment Methods (WGSAM) and standard practice in many stock assessments. Non-linearity in the relationship between indices and abundance should be carefully considered. Some Atlantic bluefin tuna indices may exhibit hyperstability and/or experience changes in catchability over time. In these situations, analysts should consider accounting for these nonlinearities outside of the stock assessment or operating model, where possible (e.g. updated VAST analyses). Any index that does not represent relative abundance is not suitable as an MP indicator and may not be required in the MSE.

6. Discussion on the decisions of the Intersessional Meeting of Panel 2

The SCRS Chair informed the Group of the discussions regarding the bluefin tuna MSE at the Intersessional Meeting of Panel 2 held in Madrid between 3–5 March 2026. At that meeting, the SCRS Chair presented an update on the SCRS bluefin tuna MSE work, including both the ICCAT MSE Roadmap and the SCRS Bluefin Tuna Species Group Workplan adopted for 2026. He noted that several CPCs expressed strong concerns regarding elements of the SCRS workplan related to initiating the MSE review process in 2026, such as the potential for revising the MSE and establishing MP development teams. Several members of Panel 2 perceived this as reflecting a prejudgment by the SCRS of the 2026 status assessment results and the start of a new, prolonged process similar to the one used to develop the current MP.

It was clarified that while the SCRS focus in 2026 is on the status check, the MSE review process must begin in 2026 to be completed by 2028. The workplan elements do not reflect a prejudgment of the assessment results; rather, they are necessary steps to complete the MSE review within the planned timeline, including contingency plans dependent on the assessment results and review progress.

The discussions at the Intersessional Meeting of Panel 2 highlighted the need for improved communication between the SCRS and Panel 2, especially regarding the nature of status assessments, MSE reviews, and CKMR. The Group discussed options for improving communication between scientists and managers, such as providing clear explanatory documents at each meeting and holding informal science-manager meetings to allow for in-depth, interactive discussions.

To this end, the Group reviewed a draft document intended to provide an overview of the concepts and process of MP/MSE review, and provided initial comments. This document will be further refined intersessionally, aiming for adoption of the informational document at the Second Intersessional Meeting of the Bluefin Tuna Species Group in July 2026, and inclusion as an appendix of that meeting's report.

7. MSE review data scoping and recommendations

The following items were discussed together:

7.1 Finalize alternative model structure(s)

7.2 Draft sensitivity "status assessment" model runs from MSE models

7.3 Create Candidate Management Procedure (CMP) developer teams

The Group discussed data scoping and recommendations for the MSE review, noting that these discussions and decision points were largely preliminary and will require further conversation as the process progresses. The need to finalize alternative operating model structure(s) and create CMP developer teams was considered premature.

The Group considered a previous proposal to simplify the M3 model structure to 4 areas. Further strata reductions were considered to be too time consuming for the status check, but might be possible for the MSE review. The option of reconfiguring multiSA to a 7-area model was weighed against reconfiguring M3 to be a 4-area model, so there could be a fair comparison of the models. Alternatively, it was considered to be sufficient to fit multiSA, as currently configured, to the 2022 data used in M3. The Group noted that Panel 2 had given the SCRS sufficient latitude to make the proposed modifications to the models and also considered the need to follow the contracting schedule.

The Group agreed that the simplification to 4 strata will be pursued in the multiSA status check and sensitivity runs, and noted that the hope is that the multiSA will also be the basis for future OM development and review during the MSE update in 2027.

The Group noted the need to move forward (i.e. the Contractor under guidance by the Bluefin Tuna Technical Sub-group on Assessment Models) in a step-wise fashion, leveraging status assessment, sensitivity analyses, and corresponding guidance (e.g. following indices discussion) in multiSA to build M3 operating models following these steps:

1. Develop multiSA (for status check)
2. Refit multiSA with revised indices (for status check)
3. Condition 4-area multiSA model similar to M3 using 2022 data (for status check)
4. Reduce M3 to a 4-area model and compare with multiSA conditioned on same data (for continuity MSE check)
5. Confirm simplified OM structure (based on the discussions at the July 2026 bluefin tuna second intersessional meeting).

8. Next steps

Workplan for the East bluefin tuna Stock Synthesis

1. Start from Stock Synthesis Run 20 (SCRS/2026/023) as set up.
2. Replace the conditional age-at-length (CAAL) data used in the 2022 assessment with the new CAAL database (SCRS/P/2026/019) available in 2026.
3. Fleet structure in Stock Synthesis models
 - Maintain the current fleet structure;
 - For PS-Other fleet (F12_PS_OTH): remove catch and size by PS-ITA-Adriatic and PS-ITA-Ionian;
 - For PS-HRV (Croatia, F08_PS_HRV) fleet: add catch and size by PS-ITA-Adriatic and PS-ITA-Ionian;
 - All other fleets to remain unchanged.
4. For fleets which have irreconcilable heterogeneity over time, attempt to use a random walk (or some suitable alternative, such as annual deviations) on selectivity to act more “VPA-like” so as to remove the fish but diminish the fleet influence on estimated recruitments. For PS-Norway (F07_PS_NOR), apply a time block to the selectivity to differentiate the modern Norwegian fishery from the historical one.
5. Develop series of sensitivity runs

Starting from a base-case data-weighting scheme (in principle, Francis standard weighting on length composition data and conditional weighting on CAAL data, and a CV of no less than 0.2 on all abundance indices), develop a series of sensitivity runs alternatively down weighting or excluding different sources of data to understand tensions between data sources and impacts on the assessment results. Among the sensitivities, examine the impact of increasing the CV of the inflated catch entries (F09_PS_MED_pre2008 and F10_PS_MED_pre2008Q2, 1998-2005) from the current CV=0.15 to CV=0.30.

6. Use base model and consider sensitivities for F/F0.1 status similar to advice provided in 2022.

Workplan for the west bluefin tuna synthesis

1. Use Stock Synthesis continuity run (SCRS/2026/021) as set up with high and low age at maturity.
2. Use base models and average for F/F0.1 status similar to advice provided in 2021.
3. Time permitting, consider additional Stock Synthesis modeling runs as sensitivities, according to analyst discretion.

Workplan for Multi-Stock Assessment with Regional Spatiotemporal dynamics (multiSA)

1. On 1 April 2026: Data deadline and online check in meeting to finalize all data inputs for the multiSA model.
 - P-SAT movement matrix through 2024.
 - Genetic stock of origin data - relying on the expertise of the Bluefin Tuna Technical Sub-group on Stock Mixing.
 - Otolith data - separate likelihood ideally to be able to toggle on or off.
 - Fleet structure - retain original OM structure with changes as noted above for the East BFT Stock Synthesis.
 - Stock recruitment (S-R) - Beverton-Holt, attempt to estimate S-R parameters, otherwise fix steepness at an appropriate value, to be determined.
 - Incorporate West BFT CKMR.
 - 4-spatial areas.
 - [Git hub repository](#).

2. On 1 May 2026: Check-in with the Contractor and the modeling sub-group to address any outstanding questions he may have for the Group.
3. On 10 June 2026: Deadline for the multiSA report in advance of the July 2026 bluefin tuna second intersessional meeting.

Deliverables:

- A data object containing all processed data, organized for use in the multiSA model.
- Base case multi-stock spatial stock assessment model and assessment report.
- Reports of supporting analyses (sensitivity analyses, likelihood profiling, retrospective analysis).
- SCRS document with the assessment diagnostics and model predictions.
- New splash page with all data and model.

9. Recommendations

1. The Group recommended the Secretariat to explore suitable forms for a CKMR meeting in coordination with relevant Commission and SCRS officers: Close-Kin Mark-Recapture, global perspective and potential management applications in the context of ICCAT fisheries.
2. Recover genetic samples from P-SAT tagged fish and run for genetic stock ID and sex using the array.
3. The Group also recommended that the Secretariat explores the possibility of utilizing stereoscopic camera data from ST-06 forms for filling any of the outstanding gaps that might not be covered by CPCs future submissions.
4. The Group reiterated the recommendation that utilizing AI to measure 100% of the stereo-camera footage at the time of first transfer or first caging would streamline the integration of these data into the stock assessment.
5. Consider mapping purse seine activity from Vessel Monitoring System (VMS) at a later meeting unless the need is covered by a recent analysis using Automatic Identification System (AIS) data.

10. Other matters

SCRS/2026/026 presented a new visualization Shiny application tool (BioTuna) for a long-term tissue bank collected through the ICCAT Atlantic-Wide Research Programme for Bluefin Tuna (GBYP). This repository currently contains thousands of biological samples along with associated analytical results such as stock-of-origin assignments and age estimates.

The Group congratulated the authors on the development of BioTuna and encouraged further progress in light of the feedback provided. The Group discussed then where the data were physically stored, in AZTI, and also the quality insurance. Points were raised about the data management plan, specifically aspects regarding co-funded data, which would require discussions outside of the Group.

11. Adoption of the report and closure

The report was adopted during the meeting. The Co-Chairs of the Group thanked all the participants for their efforts. The meeting was adjourned.

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Table 1. The assumptions related to life history attributes in the assessment for the West Atlantic and East Atlantic and Mediterranean stocks.

<i>Life history attribute</i>	<i>Assumption used by the SCRS</i>	<i>Source (see also ICCAT Manual)</i>	<i>Notes</i>
Growth (length at age)	<p>West (early and late maturity scenarios): Richards model Early maturity scenario: $A_1=1; A_2=34; L_1=42.98; L_2=273.08; k=0.30; p=-0.97$ Late maturity scenario: $A_1=1; A_2=34; L_1=42.98; L_2=273.10; k=0.30; p=-0.97$</p> <p>East & Med: Richards model $A_1=1; L_1=53.24; L_{INF}=271; k=0.22; p=-0.14$</p>	Ailloud <i>et al.</i> (2018)	<p>The parameters for Richards curve for the West were estimated in the model with initial values of Ailloud <i>et al.</i> (2018).</p> <p>For the East & Med the parameters L_1 and k were estimated in the model (R20), whereas L_{INF} and p were fixed.</p>
Growth (length-weight)	<p>West: $W=1.77054 e^{-5*L} 3.001252$</p> <p>East & Med: $W=3.50801e^{-5*L} 2.878451$</p>	Rodriguez-Marín <i>et al.</i> (2016)	Size-weight relationship (Rodriguez-Marín <i>et al.</i> , 2016)
Natural mortality	<p>West (early and late maturity scenarios): Estimated Lorenzen Curve fixing M at age 20 Early maturity scenario: 0.39 (Age0), 0.33, 0.29, 0.25, 0.21, 0.19 (Age 5), 0.17, 0.15, 0.14, 0.13, 0.12 (Age 10), 0.12, 0.11, 0.11, 0.11, 0.10 (Age 15 and older)</p>	Lorenzen (1996) mortality vector based on the growth model (Ailloud <i>et al.</i> , 2017) and rescaled to have a value of 0.1 at age 20	Lauretta (2018)

	<p>Late maturity scenario: 0.39 (Age0), 0.33, 0.29, 0.25, 0.21, 0.19 (Age 5), 0.17, 0.15, 0.14, 0.13, 0.12 (Age 10), 0.12, 0.11, 0.11, 0.11, 0.10 (Age 15 and older)</p> <p>East & Med: Estimated Lorenzen curve fixing M at age 20 at 0.1 0.50 (Age0), 0.32, 0.27, 0.22, 0.19, 0.17 (Age 5), 0.15, 0.14, 0.13, 0.12, 0.12 (Age 10), 0.11, 0.11, 0.11, 0.11, 0.10 (Age 15 and older)</p>		
Longevity	<p>West: 34 yr</p> <p>East & Med: 30 yr</p>	<p>Neilson and Campana (2008)</p> <p>Fromentin and Fonteneau (2001)</p>	<p>Based on radiocarbon traces.</p> <p>Based on tagging data.</p>
Spawning-at-age	<p>West (early and late maturity scenarios): Early maturity scenario: Same as East & Med. Late maturity scenario: 0 (Age 0), 0, 0, 0, 0, 0.001, 0.007, 0.039, 0.186, 0.563, 0.879, 0.976, 0.996, 0.999, 1, ... (age 15 and older)</p> <p>East & Med: 0 (Age 0), 0, 0, 0.25, 0.5, 1 (Age 5 and older)</p>	<p>Porch and Hanke (2018)</p> <p>Anon. 1998</p>	<p>Porch and Hanke (2018) estimated spawning fraction oogive based on age composition data from the U.S. longline fishery in the Gulf of Mexico 2009-2014. Recent findings indicate fish were mature at age 5 (Knapp <i>et al.</i>, 2013). M50 at 105 cm, (age 3.5) from Corriero <i>et al.</i> (2005).</p>

Table 2. Index selection for the status check and MSE review.

East/West	Index	Details	Selectivity	Used for CMPs	STD value*	AC*	Include in status check (Y/N)	Status check for MSA (Y/N)	comment	values (file/sheet/column)
West	CAN GSL RR	1988-2022, Q3, GSL	14: RRCAN	No	-	-	Yes	Yes	no longer supported?	Strict update/West/Z
West	CAN SWNS RR	1996-2024, Q3, W Atl	14: RRCAN	Yes	OM-estim	OM-estim	Yes	Yes		Strict update/West/X
West	US RR 66-144	1995-2024, Q3, W Atl	15: RRUSAFS (50 – 150cm)	Yes	OM-estim	OM-estim	Yes	Yes		Strict update/West/B
West	US RR 66-114	1995-2020, Q3, W Atl	15: RRUSAFS (50 – 125cm)	No***	OM-estim	OM-estim	No	No	replaced by US RR 66-144	Strict update/Other/J
West	US RR 115-144	1995-2020, Q3, W Atl	15: RRUSAFS (100 – 150cm)	No***	OM-estim	OM-estim	No	No	replaced by US RR 66-144	Strict update/Other/L
West	US RR 177+	1993-2024, Q3, W Atl	16: RRUSAFB (175cm+)	No	-	-	Yes	Yes		Strict update/West/D
West	JPN LL West2	2010-2024, Q4, W Atl	18: LLJPNnew	Yes	OM-estim	OM-estim	Yes	Yes		Strict update/West/P
West	US-MEX GOM PLL	1994-2024, Q2, GOM	1: LLOTH	Yes	OM-estim	OM-estim	Yes	Yes		Strict update/West/J
West	GOM LAR SUV	1977-2024 (gaps 1979-1980, 1985, 2020, 2022), Q2, GOM	SSB	Yes	OM-estim	OM-estim	Yes	Yes		Strict update/West/L
West	CAN ACO SUV2	2018-2019, Q3, GSL	14: RRCAN (150cm+)	No**	-	-	Yes	No		Strict update/West/V
East	MOR POR TRAP	2012-2024 (gaps 2023, 2024), Q2, S Atl	13: TPnew	Yes	OM-estim	OM-estim	Yes	Yes		Strict update/East/H
East	JPN LL NEAt2	2010-2024, Q4, N Atl	18: LLJPNnew	Yes	OM-estim	OM-estim	Yes	Yes		Strict update/East/N
East	FRA AER SUV2	2009-2024 (gap 2013), Q3, Med	15: RRUSAFS	Yes	OM-estim	OM-estim	Yes	Yes		Strict update/East/R
East	GBYP AER SUV BAR	2010-2024 (gaps 2012, 2014, 2016, 2020), Q2, Med	SSB	Yes	0.45#	0.2#	Yes	Yes		Strict update/East/V
East	W-MED LAR SUV	2001-2024 (gaps 2006, 2007, 2009, 2010, 2018, 2021), Q2, Med	SSB	Yes	OM-estim (years 2012-2019)	OM-estim (2012-19)	Yes	Yes		Strict update/East/T

* OM-estim means OM-specific estimates from the index residuals of the corresponding OM fit. When the estimated AC is < 0, it is fixed at AC=0 for the projections with that OM.

** The Canadian acoustic survey index is simulated in the BFT MSE package, but should not be used in CMPs at this time because of uncertainty about calibration in the change to a different vessel.

*** Not recommended for CMPs but still projected for sensitivity runs.

GBYP AER SUV BAR index will be refit by contractor and SE and AC re-evaluated with a preference given to using estimated SE and AC values

East/West	Revised/New indices	Details	Selectivity	Used for CMPs	STD value*	AC*	Include in status check (Y/N)	Consider in MSE review (Y/N)	comment	values (file/sheet/column)
West	VAST JPN LL West2	2010-2024, Q4, W Atl	18: LLJPNnew	NA	NA	NA	No	Yes		Revised/West/P
West	VAST CAN SWNS RR	1996-2024, Q3-Q4; WATL	RRCAN (145-240 kg, 194-232 cm)	NA	NA	NA	Yes (sensitivity)	Yes (sensitivity)	index is in numbers	Revised/West/V
West	VAST CAN GSL RR	1996-2024, Q3-Q4; GSL	RRCAN (240-370 kg, 232-270 cm)	NA	NA	NA	Yes (sensitivity)	Yes (sensitivity)	Index is in number	Revised/West/X
West	VAST CAN ACO SUV	1994-2023, Q3, GSL	Survey~RRCAN (240-370 kg, 232-270 cm)	NA	NA	NA	No	Yes	replace the entire index CAN ACO SUV2	Revised/West/T
West	VAST US RR 177+	2002-2022, Q3, W Atl	16: RRUSAFB (175cm+)	NA	NA	NA	No	Yes		Revised/West/D
East	VAST JPN LL NEAt2	2010-2024, Q4, N Atl	18: LLJPNnew	NA	NA	NA	No	Yes		Revised/East/N
East	sdmTMB POR-MOR TRAP	2008-2024, Q2-Q3, E Atl	TRAP	NA	NA	NA	No	Yes	Possible hyperstability	Revised/East/H
East	Larval fitness index	1982-2025	SSB	NA	NA	NA	No	Yes		Strict update/Other/F
East	PS-Balfegó	2003-2025	SSB average weight limitis (75-200kg)	NA	NA	NA	No	Yes		Strict update/Other/D

Table 3. Strict updated indices for the East Atlantic and Mediterranean and West Atlantic, and other indices for potential use in the MSE review.

East Atlantic and Mediterranean

series	SPN BB	SPN-FR BB	MOR-SPN TRAP	MOR-POR TRAP	JPN LL Est&Med	JPN LL NEAT1	JPN LL NEAT2	French Aerial survey 1	French Aerial survey 2	WMed Larval Survey	WMed GBYP Aerial Survey									
age	2-3	3-6	6+	10+	6 - 10	4 - 10	4 - 10	2-4	2-4	Spawners	Spawners									
indexing	Weight	Weight	Number	Number	Number	Number	Number	Number of schools	Number of schools	Spawners	Total weight (t)									
area	East Atlantic	East Atlantic	East Atl and Med	East Atl and Med	East Atl and Med	NEast Atl	NEast Atl	West Med	West Med	West Med	Balearic Sea									
method	Delta lognormal RE	Delta lognormal RE	Neg. Binom. (log) no.	Neg. Binom. (log) no.	Delta Lognormal RE	Delta Lognormal RE	Delta Lognormal RE	Mid-year	Mid-year											
time of the year	Mid-year	Mid-year	Mid-year	Mid-year	Mid-year	Begin-year	Begin-year	Mid-year	Mid-year											
source	SCRS/2014/054	SCRS/2015/169	SCRS/2014/060	SCRS/P/2025/024	SCRS/2012/131	SCRS/2025/067	SCRS/2025/067	SCRS/2022/068	SCRS/2025/176	SCRS/2025/207	GBYP Phase 14, SHORT-TERM									
Year	Std. CPUE	CV	Std. CPUE	CV	Std. CPUE	CV	Std. CPUE	CV	Std. CPUE	CV	Std. CPUE	CV	Index	CV	Index	CV	Index	CV	Index	CV
1952	179.22	0.43																		
1953	184.74	0.53																		
1954	226.46	0.41																		
1955	187.01	0.42																		
1956	470.53	0.43																		
1957	315.05	0.41																		
1958	252.25	0.41																		
1959	506.79	0.41																		
1960	485.16	0.43																		
1961	327.29	0.41																		
1962	180.12	0.46																		
1963	312.09	0.49																		
1964	457.40	0.42																		
1965	228.91	0.41																		
1966	349.10	0.42																		
1967	345.89	0.41																		
1968	447.00	0.42																		
1969	610.62	0.40																		
1970	594.66	0.43																		
1971	744.71	0.40																		
1972	525.63	0.41																		
1973	535.63	0.40																		
1974	245.39	0.44																		
1975	484.22	0.41					1.90	0.15												
1976	483.96	0.41					2.15	0.12												
1977	547.56	0.41					3.53	0.14												
1978	705.26	0.41					1.50	0.15												
1979	623.01	0.41					2.70	0.14												
1980	634.81	0.45					1.69	0.16												
1981	510.66	0.42			768.36	0.57	1.63	0.17												
1982	503.78	0.42			1038.12	0.35	3.32	0.13												
1983	625.14	0.43			1092.05	0.35	2.12	0.13												
1984	331.71	0.45			1200.27	0.35	1.62	0.12												
1985	1125.74	0.41			814.46	0.35	1.75	0.15												
1986	751.21	0.42			394.33	0.28	1.32	0.14												
1987	1008.43	0.42			433.53	0.28	2.16	0.13												
1988	1394.68	0.42			1014.56	0.28	1.35	0.14												
1989	1285.60	0.40			531.45	0.26	1.05	0.16												
1990	986.51	0.41			614.37	0.23	1.41	0.14	0.43	0.25										
1991	901.20	0.42			727.86	0.23	1.21	0.13	0.54	0.22										
1992	695.16	0.43			313.95	0.23	1.03	0.14	0.80	0.16										
1993	2093.55	0.40			325.36	0.23	1.04	0.14	0.74	0.13										
1994	1007.03	0.42			341.90	0.23	1.12	0.16	0.95	0.15										
1995	1235.91	0.41			223.43	0.23	1.42	0.15	0.97	0.14										
1996	1739.29	0.40			375.22	0.25	0.50	0.22	2.36	0.13										
1997	2246.41	0.40			992.41	0.25	0.53	0.21	1.43	0.14										
1998	879.51	0.41			925.14	0.25	0.71	0.17	0.82	0.15										
1999	339.77	0.44			1137.45	0.25	0.64	0.22	1.21	0.14										
2000	960.44	0.40			739.23	0.23	0.74	0.20	1.04	0.12			0.02	0.38						
2001	704.49	0.45			1284.62	0.23	0.96	0.17	1.32	0.13			0.01	0.37						
2002	687.42	0.42			1130.42	0.23	2.05	0.15	0.89	0.13			0.01	0.49			5.00	0.41		
2003	444.91	0.48			662.66	0.24	1.70	0.13	1.00	0.16			0.01	0.31			12.21	0.49		
2004	1210.46	0.42			332.36	0.23	0.82	0.18	0.87	0.13							2.73	0.52		
2005	2383.57	0.40			677.39	0.23	0.88	0.15	0.68	0.13							13.37	0.42		
2006	850.09	0.48			633.94	0.23	1.91	0.15	0.81	0.13							2.34	0.38		
2007			2179.98	0.31	1000.60	0.23	0.94	0.19	0.85	0.13										
2008			2154.01	0.30	634.18	0.23	1.22	0.17	0.99	0.13							2.21	0.77		
2009			955.38	0.30	876.71	0.23	1.04	0.24	1.50	0.12			0.02	0.35						
2010			2126.20	0.31	1042.24	0.24							2.21	0.13					1659	0.55
2011			2785.47	0.30	674.97	0.23							3.75	0.17			0.01	0.53	1392	0.43
2012			2306.99	0.39									8.23	0.22			0.03	0.25	10.52	0.40
2013			1569.13	0.44		101.60	0.32						6.81	0.17			0.02	0.27	30.07	0.20
2014			678.29	0.41		139.70	0.35						7.75	0.23			0.06	0.27	43.61	0.30
2015						68.80	0.34						6.24	0.23			0.03	0.24	22.98	0.29
2016						106.30	0.35						5.77	0.20			0.11	0.20	40.41	0.23
2017						104.30	0.36						7.03	0.23			0.07	0.25	33.48	0.28
2018						118.80	0.36						8.41	0.24			0.03	0.17	80.03	0.24
2019						78.70	0.36						8.07	0.23			0.06	0.14	15569	0.31
2020						108.40	0.34						5.94	0.20			0.14	0.15	51.00	0.24
2021						113.00	0.34						6.14	0.20			0.10	0.14	13797	0.40
2022						172.00	0.30						4.70	0.21			0.05	0.26	114.95	0.22
2023						139.60							2.94	0.19			0.10	0.29	5325	0.53
2024													5.40	0.17			0.06	0.16	10375	0.45
																			10597	0.75
																			2200	

Table 3. Continued.

West Atlantic

series	US RR-66-144cm	US RR->177cm	US RR-145cm	US RR-195cm	MEXUS GOM LL	GOM Larval	JPN LL1*	JPN LL2	JPN LL GOM	CAN Acoustic	CAN Acoustic	CAN SWNS RR	CAN GSL RR			
	age	>177cm	<145cm	>195cm	8-35	Survey	4 - 10	5 - 16	9-16	survey1	survey2	5-16	8-16			
indexing	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number			
area	West Atl	West Atl	West Atl	West Atl	West Atl	West Atl	West Atl	West Atl	GOM	Gulf of St Lawrence	Gulf of St Lawrence	West Atl (SW Nova Scotia)	Gulf of St Lawrence			
method	Negative binomial GLM	GAM	GLMM	GLMM	Negative binomial GLM	GOM	Delta Lognormal RE	Delta Lognormal RE	Delta Lognormal RE	Delta Lognormal RE	Delta Lognormal RE	Delta Lognormal RE	Delta Lognormal RE			
time of the year	June to October	July to October				May	Begin-year	Begin-year	Begin-year	Begin-year	Begin-year	Begin-year	Begin-year			
source	SCRS/P/2024/021	SCRS/2021/036	SCRS/1993/067	SCRS/1993/067	SCRS/2022/160	SCRS/P/2018/055	SCRS/2025/067	SCRS/2025/067	SCRS/2025/067	SCRS/1991/071	SCRS/2021/036	SCRS/2021/036	SCRS/2025/188			
se in SS3 and OM	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	no	yes			
Year	Std.index	CV	Std.index	CV	Std.index	CV	Std.index	CV	Std.index	CV	Std.index	CV	Std.index	CV	Std.index	CV
1970																
1971																
1972																
1973																
1974										0.97	0.27					
1975										0.53	0.21					
1976								0.37	0.55	0.67	0.21					
1977							2.44	0.47	0.93	0.46	0.91	0.22				
1978							4.33	0.23	0.78	0.49	0.88	0.23				
1979									0.75	0.39	1.29	0.28				
1980			0.80	0.43					1.37	0.40	1.16	0.27				
1981			0.40	0.52			0.83	0.44	1.10	0.37	0.55	0.24				
1982			2.10	0.33			1.23	0.28	0.78	0.39						
1983			1.11	0.26	2.81	0.10	1.16	0.34	0.47	0.47						
1984					1.25	0.19	0.33	0.53	0.67	0.40						
1985			0.63	0.64	0.86	0.30			0.83	0.37						
1986			0.78	0.43	0.50	1.10	0.35	0.42	0.01	0.77						
1987			1.22	0.40	0.53	0.48	0.31	0.47	0.38	0.44						
1988			0.99	0.38	0.94	0.36	1.19	0.32	0.34	0.49					0.06	0.35
1989			0.99	0.43	0.76	0.36	0.79	0.37	0.69	0.42					0.21	0.30
1990			0.90	0.34	0.63	0.34	0.33	0.34	0.48	0.44					0.15	0.28
1991			1.26	0.35	0.82	0.28	0.31	0.55	0.59	0.42					0.07	0.33
1992			0.82	0.42	0.91	0.28	0.44	0.34	1.02	0.38					0.26	0.28
1993							0.47	0.64	0.97	0.38					0.31	0.25
1994		0.46	0.17				0.57	0.34	0.90	0.37	0.03	0.28			0.16	0.25
1995	1.12	0.12	0.72	0.12			0.44	0.28	0.25	0.53	0.64	0.47			0.27	0.26
1996	1.25	0.12	2.36	0.11			0.72	0.19	0.80	0.49	2.14	0.38			0.07	0.10
1997	1.82	0.10	0.97	0.25			0.20	0.54	0.35	0.39	1.58	0.37			0.29	0.05
1998	0.89	0.10	0.99	0.13			0.71	0.27	0.13	0.53	0.73	0.42			0.36	0.06
1999	0.85	0.17	1.32	0.15			0.46	0.25	0.49	0.50	1.07	0.36			0.04	0.12
2000	1.10	0.18	0.39	0.16			2.29	0.14	0.23	0.51	1.05	0.38			0.70	0.13
2001	0.70	0.11	0.90	0.19			0.95	0.18	0.42	0.32	0.90	0.37			0.31	0.06
2002	0.97	0.15	1.79	0.08			1.44	0.17	0.27	0.64	0.81	0.39			0.11	0.04
2003	0.60	0.09	0.41	0.15			1.17	0.15	0.71	0.38	1.20	0.41			0.55	0.09
2004	1.49	0.09	0.58	0.15			0.59	0.16	0.53	0.67	1.10	0.44			0.09	0.10
2005	1.46	0.11	0.49	0.16			0.53	0.16	0.18	0.29	1.02	0.35			0.48	0.09
2006	0.67	0.16	0.29	0.25			0.82	0.16	0.56	0.36	1.47	0.42			0.59	0.09
2007	0.64	0.09	0.24	0.25			0.47	0.15	0.46	0.37	0.88	0.61			1.01	0.14
2008	0.63	0.10	0.29	0.22			0.75	0.14	0.34	0.37	1.43	0.65			0.16	0.17
2009	0.50	0.12	0.42	0.20			0.65	0.14	0.60	0.32	2.34	0.52			0.06	0.09
2010	0.80	0.10	0.95	0.12			0.46	0.14	0.30	0.51	0.55	0.53			1.13	0.19
2011	0.71	0.12	0.65	0.13			0.91	0.15	1.15	0.39	1.88	0.38			0.07	0.04
2012	0.77	0.13	0.59	0.12			1.54	0.12	0.27	0.47	2.48	0.37			1.40	0.24
2013	1.22	0.13	0.33	0.17			0.71	0.14	0.98	0.34	1.99	0.37			1.00	0.07
2014	0.73	0.15	0.45	0.16			1.32	0.13	0.27	0.37	2.13	0.39			0.96	0.17
2015	0.35	0.14	0.70	0.10			1.97	0.13	0.39	0.30	1.32	0.37			0.66	0.11
2016	0.54	0.15	0.83	0.09			1.56	0.13	2.39	0.26	3.29	0.41			0.92	0.16
2017	0.86	0.14	1.46	0.07			1.25	0.14	0.99	0.29	3.67	0.42			0.91	0.16
2018	0.63	0.16	1.42	0.07			1.53	0.14	2.02	0.24	6.77	0.39			0.99	0.17
2019	1.16	0.13	1.80	0.06			1.71	0.14	1.48	0.28	5.68	0.38			0.87	0.16
2020	1.57	0.15	1.66	0.07			1.37	0.16			4.38	0.43			0.16	0.60
2021	2.02	0.12	1.35	0.11			1.77	0.14	1.95	0.31	3.62	0.36	0.01	0.01	1.13	0.19
2022	0.94	0.15	3.04	0.07			2.30	0.14			3.55	0.36			0.88	0.16
2023	0.74	0.18	1.71	0.08			1.88	0.14	3.08		2.43	0.36			1.41	0.28
2024	2.25	0.10	1.83	0.07			2.25	0.15	1.55		7.12	0.44			1.32	0.24

* the value for 1986 in JPNLL1 was not used in Stock synthesis model in 2021

Table 3. Continued.

Other indices for potential use in the MSE review.

Stock	East & Med		East & Med		East & Med	
<i>series</i>	W+C Med GBYP Aerial Survey		Balfegó PS		Larval Fitness Index	
<i>age</i>	Spawners		75-200kg			
<i>indexing area</i>	Total weight (t)		Weight		West Med	
<i>method of the year source</i>	SCRS/P/2022/018		Mid-year SCRS/2025/177		SCRS/P/2025/107	
Year	Index	CV	Index	CV	Index	SD
1970						
1971						
1972						
1973						
1974						
1975						
1976						
1977						
1978						
1979						
1980						
1981						
1982					0.0067	0.0006
1983					0.0035	0.0003
1984					0.0003	0
1985					0.0031	0.0004
1986					0.0037	0.0006
1987					0.0031	0.0005
1988					0.0044	0.0008
1989					0.0113	0.0027
1990					0.0082	0.001
1991					0.0068	0.0013
1992					0.0113	0.0022
1993					0.0034	0.0004
1994					0.0192	0.0045
1995					0.0118	0.002
1996					0.0053	0.0007
1997					0.0051	0.0008
1998					0.0084	0.0014
1999					0.0137	0.0026
2000					0.0044	0.0007
2001					0.009	0.0017
2002					0.0035	0.0004
2003			10.54		0.0482	0.0159
2004			10.14		0.0121	0.0024
2005			9.90		0.0111	0.0014
2006			10.33		0.0246	0.0054
2007			10.82		0.0069	0.0008
2008			10.75		0.0125	0.0021
2009			10.82		0.0185	0.0038
2010	4956	0.36	11.14		0.0166	0.0025
2011	9581	0.31	10.60		0.0115	0.0021
2012			11.66		0.015	0.0033
2013	13585	0.28	12.16		0.0176	0.0033
2014			13.30		0.0124	0.002
2015	16754	0.39	12.30		0.0382	0.0098
2016			12.61		0.0078	0.0011
2017	20635	0.28	12.71		0.0265	0.0053
2018	22149	0.24	12.83		0.0342	0.0098
2019	16654	0.30	12.65		0.0193	0.0034
2020			13.24		0.0213	0.005
2021			12.75		0.0149	0.0026
2022			12.10		0.0713	0.0285
2023			19.92		0.0594	0.0185
2024			12.79		0.0274	0.0079
2025			12.93			

series	West		West		West		West		West	
<i>series</i>	US RR 66-114cm		US RR 115-144cm		CAN RR SWNS VAST		US CAN RR joint VAST		Tagging	
<i>age</i>	66-114cm		115-144cm		>177cm		>177cm			
<i>indexing area</i>	Number		Number		Number		Number		West Atl	
<i>method</i>	GLMM		GLMM		VAST		VAST		1-3	
<i>time of the year source</i>	SCRS/2021/034		SCRS/2021/034		SCRS/2025/071		SCRS/2025/071		Relative mortality SCRS/2000/99	
Year	Std. index	CV	Std. index	CV	Index	CV	Index	CV	Index	CV
1970									0.65	0.21
1971									0.69	0.21
1972									0.43	0.23
1973									0.00	0.28
1974									0.64	0.21
1975									0.52	0.22
1976									0.48	0.23
1977									0.86	0.20
1978									0.62	0.22
1979									0.62	0.22
1980									0.82	0.20
1981									0.90	0.20
1982										
1983										
1984										
1985										
1986										
1987										
1988										
1989										
1990										
1991										
1992										
1993										
1994										
1995	1.33	0.15	0.86	0.20						
1996	1.34	0.15	1.18	0.20						
1997	2.69	0.12	0.30	0.22						
1998	0.97	0.12	0.79	0.17						
1999	0.79	0.21	1.26	0.26						
2000	1.16	0.21	0.84	0.30						
2001	0.47	0.14	1.70	0.16						
2002	0.97	0.18	1.56	0.22	5483.15	1075.26	10967.44	1574.17		
2003	0.58	0.11	0.81	0.14	3089.84	723.57	7471.08	1340.34		
2004	1.77	0.11	0.90	0.15	4334.69	1021.66	11105.69	1778.05		
2005	1.68	0.12	0.86	0.18	4664.06	1253.80	12403.55	2015.57		
2006	0.64	0.19	1.01	0.25	4841.50	1329.27	13573.13	2149.58		
2007	0.54	0.11	1.19	0.13	3438.42	894.50	10472.77	1703.54		
2008	0.34	0.13	1.81	0.13	3109.41	802.05	9668.90	1648.74		
2009	0.54	0.14	0.68	0.20	3763.46	944.52	10889.16	1787.66		
2010	0.63	0.13	1.74	0.15	5159.95	1280.40	13461.80	2233.86		
2011	0.81	0.14	0.59	0.20	5141.93	1258.47	13273.64	2192.51		
2012	0.96	0.15	0.52	0.24	7350.44	1836.27	20263.50	3268.00		
2013	0.99	0.15	2.36	0.18	3421.64	908.13	11287.89	1818.19		
2014	0.82	0.18	0.81	0.24	4759.73	1227.92	14336.21	2495.82		
2015	0.43	0.17	0.26	0.28	5942.95	1452.56	17601.30	2788.09		
2016	0.46	0.18	1.03	0.21	8319.04	2109.00	25413.25	4463.17		
2017	0.96	0.17	0.87	0.24	8283.05	1932.68	21785.09	3522.24		
2018	0.82	0.18	0.11	0.54	8140.04	1869.51	21274.52	3281.79		
2019	1.23	0.15	1.72	0.20	10646.64	2324.61	23572.33	3746.39		
2020	2.07	0.17	0.24	0.42	9976.62	2209.35	22344.60	3647.85		
2021					11657.57	2717.42	27340.41	4449.09		
2022					14452.41	3066.55	31439.67	4812.68		
2023										
2024										

Table 4. Revised indices for the East Atlantic and Mediterranean and West Atlantic for potential use in the MSE review.

East Atlantic and Mediterranean

series		MOR-POR TRAP		JPN LL NEAtI1		JPN LL NEAtI2		French Aerial survey 2	
age	10+	4 - 10		4 - 10		2-4			
indexing	Number	Number		Number		Number of schools			
area	East Atl and Med	NEast Atl		NEast Atl		West Med			
method	sdmTMB	VAST		VAST					
time of the year	Mid-year	Begin-year		Begin-year		Mid-year			
source	SCRS/2025/064	SCRS/2025/067		SCRS/2025/067		SCRS/2025/062			
Year	Std. CPUE	CV	Std. CPUE	CV	Std. CPUE	CV	Index	CV	
1970									
1971									
1972									
1973									
1974									
1975									
1976									
1977									
1978									
1979									
1980									
1981									
1982									
1983									
1984									
1985									
1986									
1987									
1988									
1989									
1990									
1991									
1992									
1993									
1994									
1995			541.56						
1996			1107.98						
1997			400.36						
1998			300.56						
1999			367.18						
2000			286.36						
2001			381.33						
2002			260.61						
2003			540.82						
2004			238.21						
2005			134.27						
2006			189.76						
2007			124.61						
2008	83.15	0.22	494.97						
2009	74.99	0.22	820.37				1.00	0.00	
2010	115.87	0.24			1512.34		0.55	0.16	
2011	93.15	0.22			1705.02		0.82	0.15	
2012	122.88	0.24			4498.85		0.63	0.15	
2013	143.34	0.24			3268.54				
2014	146.60	0.24			4890.56		1.72	0.13	
2015	154.15	0.22			3582.37		0.97	0.15	
2016	109.75	0.24			2859.69		3.31	0.13	
2017	176.09	0.22			2902.09		3.13	0.13	
2018	113.87	0.18			5186.77		2.08	0.14	
2019	138.33	0.19			3793.39		3.33	0.13	
2020	142.41	0.19			4028.53		3.63	0.12	
2021	176.88	0.19			3521.19		3.77	0.12	
2022	157.56	0.19			2606.65		1.31	0.14	
2023	159.68	0.18			1488.35		4.14	0.12	
2024	175.03	0.18			2332.99				

West Atlantic

series		US RR >177cm		JPN LL West1		JPN LL West2		CAN Acoustic survey	
age	>177cm	4 - 10		4 - 10		8+			
indexing	Number	Number		Number		Guif of St Lawrence			
area	West Atl	NEast Atl		NEast Atl					
method	VAST	VAST		VAST					
time of the year		Begin-year		Begin-year					
source	SCRS/2025/071	SCRS/2025/067		SCRS/2025/067		SCRS/P/2026/014			
Year	Std. index	CV	Std. index	CV	Std. index	CV	Std. index	CV	
1970									
1971									
1972									
1973									
1974									
1975									
1976									
1977				21.90					
1978				14.34					
1979				21.52					
1980				47.71					
1981				63.65					
1982				58.65					
1983				12.14					
1984				20.00					
1985				18.61					
1986				1.18					
1987				16.27					
1988				12.12					
1989				16.29					
1990				6.98					
1991				4.68					
1992				12.60					
1993				8.07					
1994				11.07			0.29	0.55	
1995				4.46			0.53	0.27	
1996				45.53			0.96	0.20	
1997				24.49			0.64	0.24	
1998				5.01			0.92	0.26	
1999				8.51			0.67	0.25	
2000				20.46			0.46	0.27	
2001				13.09			0.40	0.26	
2002	5484.29	799.50	11.73				0.36	0.30	
2003	4381.24	837.04	21.93				0.61	0.22	
2004	6771.00	1137.29	6.52				0.68	0.21	
2005	7739.50	1218.38	10.69				0.76	0.18	
2006	8731.63	1273.85	5.42				0.97	0.18	
2007	7034.35	1113.75	2.85				0.87	0.19	
2008	6559.49	1141.98	6.95				0.64	0.19	
2009	7125.70	1173.62					1.09	0.19	
2010	8301.85	1347.42			0.63	0.53	1.07	0.16	
2011	8131.71	1328.68			1.43	0.38	1.22	0.16	
2012	12913.06	2037.75			2.82	0.37	1.44	0.15	
2013	7866.26	1247.16			2.10	0.37	1.07	0.17	
2014	9576.48	1717.99			2.32	0.39	1.38	0.17	
2015	11658.35	1853.71			1.26	0.37	1.40	0.18	
2016	17094.20	3059.08			3.38	0.41	1.26	0.19	
2017	13502.04	2197.83			3.71	0.42	0.89	0.18	
2018	13134.47	1991.75			6.32	0.39	0.65	0.38	
2019	12925.69	2066.94			4.88	0.38	1.11	0.42	
2020	12367.97	2061.51			3.79	0.43	3.92	0.46	
2021	15682.85	2477.41			3.01	0.36			
2022	16987.26	2674.10			2.63	0.36	1.73	0.44	
2023					2.07	0.36			
2024					4.52	0.44			

* the value for 1986 in JPNLL1 was not used in Stock synthesis model in 2021

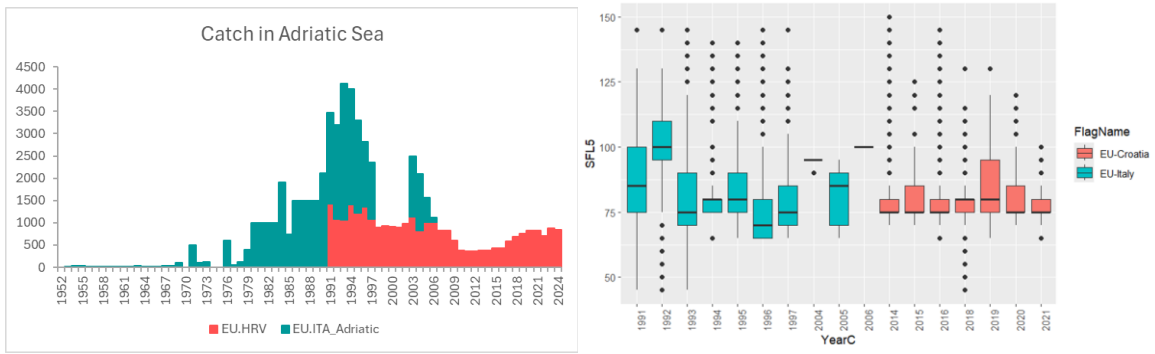


Figure 1. Catch and size composition by PS-Italy in Adriatic/Ionian Sea and PS-Croatia.

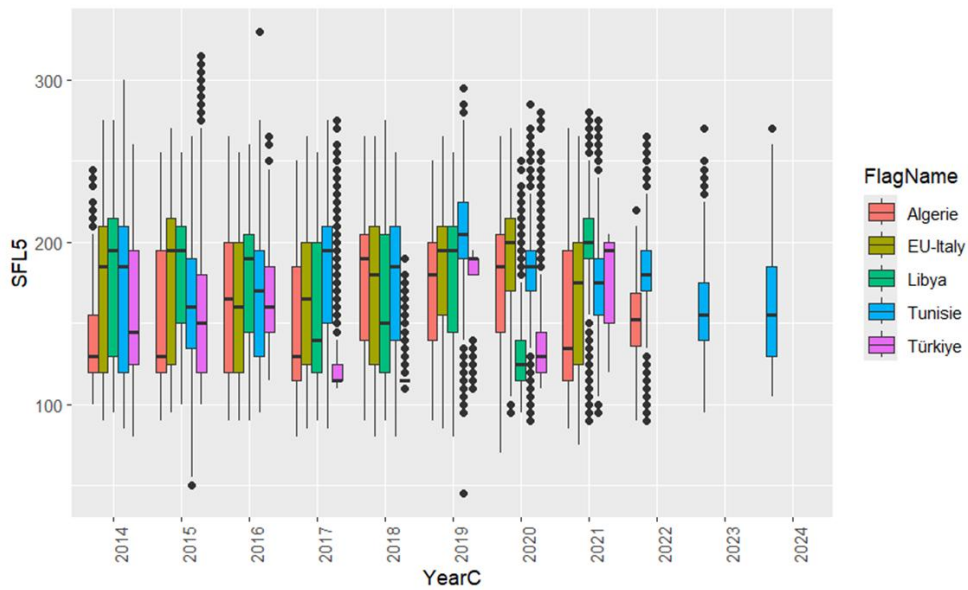
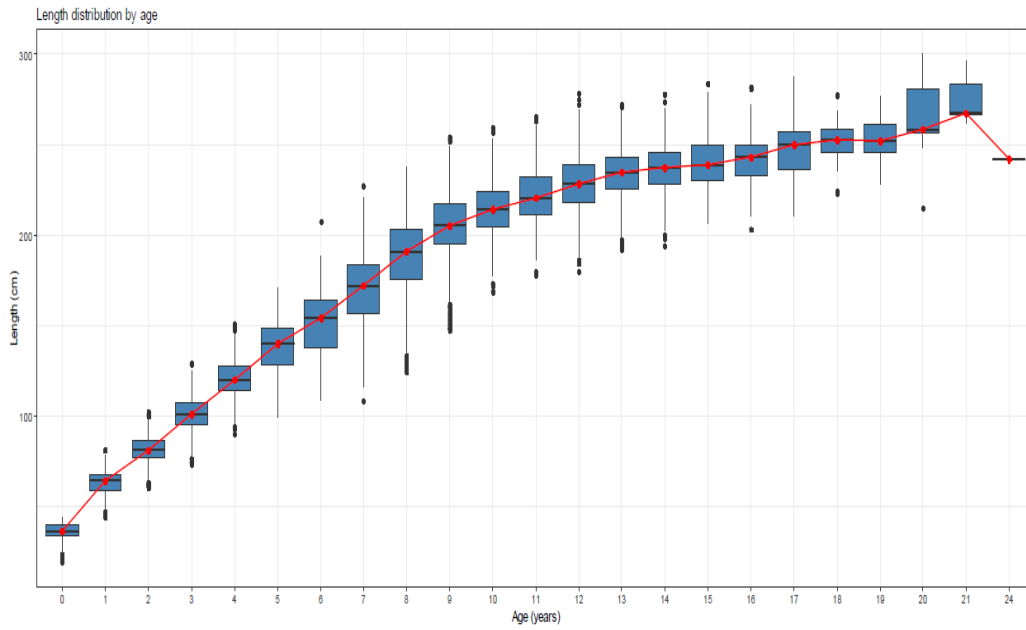


Figure 2. Comparison of size composition by main PS-OTH fleets in the Mediterranean Sea since 2014.

East (SCRS/P/2026/019)



West (SCRS/2026/024)

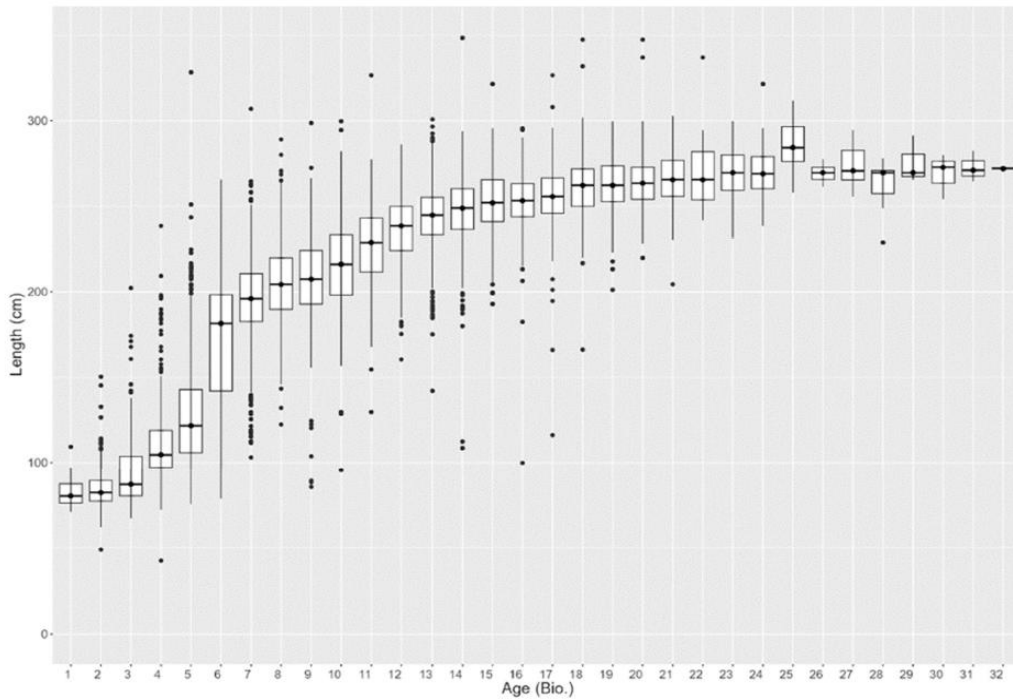


Figure 3. The observed size-at-age distributions in the East Atlantic and Mediterranean (top) and West Atlantic (bottom).

Agenda

1. Opening, adoption of the agenda and meeting arrangements
2. Status check modeling
 - 2.1 Data inputs
 - i. Size composition
 - ii. Age data
 - iii. Indices
 - iv. Catch
 - v. Biological data (natural mortality, reproduction, etc.)
 - 2.2 Review initial Continuity model runs: Stock Synthesis (East and West)
 - 2.3 New mixing models
3. Status check model revisions
 - 3.1 Include Close-Kin Mark-Recapture (CKMR) for the western stock
 - 3.2 Others (including index revisions)
4. Review new science (mixing/otolith/movement, etc.) data input in the current Operating Models
5. Critical review of catch per unit effort (CPUE) time series
 - 5.1 Strictly updated indices
 - 5.2 New/revised indices
6. Discussion on the 2026 Panel 2 intersessional meeting decisions
7. MSE review data scoping and recommendations
 - 7.1 Finalize alternative model structure(s)
 - 7.2 Draft for sensitivity “status assessment” model runs from MSE models
 - 7.3 Create Candidate Management Procedure (CMP) developer teams
8. Next steps
9. Recommendations
10. Other matters
11. Adoption of the report and closure

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List of papers and presentations

Number	Title	Authors
SCRS/2026/020	Bluefin tuna mixing rates in the western Atlantic Ocean based on genetic data: 2016-2021	Hanke A.R., Akia S., Lauretta M.
SCRS/2026/021	Preliminary results and model diagnostics of continuity run using Stock Synthesis 3 for a status check of Atlantic bluefin tuna in the West Atlantic Ocean	Tsukahara Y., Kimoto A., Ortiz M., Lauretta M., Walter J.
SCRS/2026/022	Alternative model settings for WBFT area-based stock assessment using Stock Synthesis 3	Tsukahara Y., Fukuda H.
SCRS/2026/023	Stock Synthesis continuity runs from the 2022 stock assessment for eastern Atlantic and Mediterranean bluefin tuna	Fernandez C., Carmona I., Kimoto A., Lauretta M., Ortiz M., Rouyer T., Tsukahara Y., Walter J.
SCRS/2026/024	Report on the collaborative ageing of western Atlantic bluefin tuna	Zipp K., Pacicco A., Busawon D., Nadeau S., Carlucci J., Rudnicki B., Koob E., Hanke A., Sée I., Alper B., Lauretta M., O'Donnell M., Allman R., Golet W.
SCRS/2026/025	Operational protocol for tuna size estimation with the Kongsberg M3 multibeam sonar	Uranga J., Boyra G., Martínez U., Lastra P., Lekanda A., Onandia I., Sobradillo B., Arrizabalaga H.
SCRS/2026/026	GBYP biobank: development of Biotuna visualization tool	Artetxe-Arrate I., Zudaire I., Lastra-Luque P., Diaz-Arce N., Rodríguez-Ezpeleta N., Alemany F., Fraile I.
SCRS/2026/027	Genetic and isotopic estimates of Atlantic bluefin tuna stock mixing	Fraile I., Artetxe-Arrate I., Rodríguez-Ezpeleta N., Lastra-Luque P., Arrizabalaga H., Alemany F., Díaz-Arce N.
SCRS/2026/028	Summary of input data (catch and size) used in the Atlantic bluefin tuna for stock status check and operating models in 2026	Kimoto A., Ortiz M., Deprez B., Mayor C.
SCRS/2026/030	Characterizing a decade of Atlantic bluefin tuna stock mixing in the Gulf of Maine	Berge K., Whitener Z., Golet W., Lauretta M., Kerr L.
SCRS/2026/031	Improved acoustic abundance index of bluefin tuna in the Bay of Biscay: A 2015–2025 time series	Uranga J., Sobradillo B., Onandia I., Boyra G., Martínez U., Melvin G., Arrizabalaga H.
SCRS/P/2026/005	Navigating future waters: the resilience of the Atlantic bluefin tuna under climate change	Erauskin-Extramiana M., Valle M., Cruz L., Muhling B., Fernandes-Salvador J.A., Buil M.P., Crespo G.O., Brodie S., Hazen E.L., Bograd S.J., Arrizabalaga H., Merino G., Lezama-Ochoa N.
SCRS/P/2026/014	Update to the southern Gulf of Saint Lawrence acoustic	Minch T., Akia S., Gillespie K., Hanke A.
SCRS/P/2026/015	Interbreeding between western and eastern Atlantic bluefin tuna in the Slope Sea	Diaz-Arce N., Richardson D.E., Glancy S., Fraile I., Artetxe-Arrate I., Rodríguez-Ezpeleta N.
SCRS/P/2026/016	Currently available e-tagging data for the MSE review	Rouyer T., Cabello de los Cobos M., Fromentin J-M., Onandia I., Lino P., Coelho R., Bjelland O., Nøttestad L., Ferter K., Maoiléidigh N-Ó., Maxwell H., Drumm A., Horton T., Witt M.,

		Hawkes L., Tičina V., Katavic I., Grubizic L., Godoy L., Addis P., Garibaldi F., Mariani A., Valastro M., Dell'Aquila M., Sundelöf A., Brodin T., Hellström G., Aarestrup K., Abid N., Cermenó P., Block B., Quilez-Badia G., Buzzi A., Di Natale A., Lutcavage M., Lam T., Tensek S., Pagá García A., Alemany F., Lauretta M., Arrizabalaga H.
SCRS/P/2026/017	Development of the next-generation, multi-stock assessment for Atlantic bluefin tuna	Huynh Q., Carruthers T.
SCRS/P/2026/019	Adapted SS3 length at age database of bluefin tuna from the eastern Atlantic and Mediterranean Sea stock	Quelle P., Chapela I., Busawon D., Rodríguez-Marín E.
SCRS/P/2026/020	Temperature effects on metabolism of tuna in natural environments	Trueman C.
SCRS/P/2026/022	Population size estimation from genetic mark recapture	Hauser L.

SCRS document and presentations abstracts as provided by the authors

SCRS/2026/020 - To optimize Atlantic bluefin tuna stock mixing estimates, this study compares Direct Maximum Likelihood (DML) and Generalized Linear Mixed Models (GLMM). Findings indicate that GLM models using SVM-based soft call data outperform hard calls by utilizing full probability densities and reducing Type I errors. Unlike DML, a Beta GLMM provides superior stability via partial pooling and shrinkage when cellwise data is sparse. Incorporating an AR1 component further ensures biological realism by linking sequential strata. We recommend a hybrid probabilistic framework (SVM soft calls within a Beta GLMM) to produce stable, biologically plausible estimates for robust population modeling.

SCRS/2026/021 - The stock assessment for Atlantic bluefin tuna in 2026 is a scheduled activity in the MSE roadmap as “status check” and is not for the calculation of TAC advice from the assessment result. This document presents the results and model diagnostics for western Atlantic bluefin tuna, using Stock Synthesis 3.3 and the almost same model development procedure as the 2021 stock assessment model with updated data, namely “continuity model”. The continuity models showed data inconsistency and instability of biomass scale estimation as well as the 2020 and 2021 assessment. The model specification may require the fundamental reform to be a good assessment model for reliable management advice.

SCRS/2026/022 - The stock assessment is scheduled in 2026 as a “status check” for Atlantic bluefin tuna. The previous assessment in 2021 was evaluated that biomass estimation was too unreliable to be a basis of management advice with the process of external review. This document presents the input data for Stock Synthesis 3 based on the different fleet structure from previous stock assessment to develop an alternative area-based assessment model for West Atlantic bluefin tuna. Additionally, some biological settings were discussed to be more appropriate for the area-based assessment. This model showed improvement in terms of the internal consistency among the data sources, while some problems still remain for further investigation.

SCRS/2026/023 - This document presents continuity runs from the stock assessment conducted in 2022 with Stock Synthesis and additional exploratory runs for the update assessment of eastern Atlantic and Mediterranean population of bluefin tuna using Stock Synthesis. The model covers years 1950-2024 and includes 16 fishing fleets. It fitted 11 indices of abundance, length composition data and conditional age-at-length from several fleets. Growth is modeled by a Richards function with L_{INF} fixed at 271 cm, the shape parameter fixed at the value estimated in the 2022 assessment, whereas the length at age 1 and the K parameter are estimated by the model. A Beverton-Holt stock recruitment relationship was assumed, with the steepness and σ_R fixed at 0.9 and 0.6, respectively, and R_0 freely estimated. Of the 24 exploratory runs conducted in this document, R_{20} is preliminarily suggested as a potential candidate for further development for the update assessment with Stock Synthesis. The diagnostics indicate important conflicts between the index data, length composition data and conditional age-at-length data. The model fits to length compositions were not good, but the model followed most of the indices fairly well. The results of R_{20} are generally in line with those of the 2022 assessment.

SCRS/2026/024 - This paper presents an update on Atlantic bluefin tuna (*Thunnus thynnus*) sagittal otolith ageing in the western Atlantic, based on the collaborative efforts of three independent research programs. Otoliths were processed according to the standardized best-practice approaches presented at the ICCAT GBYP International Workshop on Atlantic bluefin tuna growth (Rodríguez-Marín *et al.*, 2020). These data were integrated, standardized, and analyzed to provide age-composition distributions. The dataset includes ages from previous assessments (2008- 2018; $n = 7,340$) and ages for 2019-2024 ($n = 5,171$). Growth was modeled from length-at-age observations using Von Bertalanffy and Richards growth functions. Von Bertalanffy growth parameters showed strong agreement with prior literature, while Richard’s growth parameters were lower, potentially due to sample representation and parameterization. Growth parameters remain sensitive to the modeling approach, consistent with prior findings suggesting that continued internal estimation within Stock Synthesis best incorporates uncertainties.

SCRS/2026/025 - This study evaluates the capability of the Kongsberg M3 high-frequency multibeam sonar (500 kHz) to generate non-invasive fork length (FL) estimates of tunas across a wide range of operational scenarios. A standardized and fully reproducible processing protocol was developed to extract morphometric measurements from individual acoustic detections recorded during tropical tuna purse seine

operations around drifting FADs, fishery-independent surveys targeting Atlantic bluefin tuna and albacore, and controlled observations in tuna ranching facilities. Two acoustic proxies for fork length were assessed. Both proxies showed strong agreement with *in situ* fork length observations. The FL_along beam model explained 90.4% of the variance ($R^2 = 0.9036$) with an RMS error of ~ 0.08 m, while FL_athwart beam explained 85.3% ($R^2 = 0.8529$) with an RMS error of ~ 0.11 m. Range-dependent error analyses indicated greater stability in the longitudinal dimension and increased distortion in the transverse dimension. Overall, the results demonstrate that high-frequency multibeam sonars can provide reliable, transferable, and operationally meaningful size estimates for tunas. The validated protocol supports applications in scientific surveys, fishery-independent monitoring, and operational decision-making, reinforcing the potential of these systems to enhance assessment and management frameworks within ICCAT and across other tuna RFMOs.

SCRS/2026/026 - A central component of the ICCAT GBYP programme is the systematic collection, preservation, and management of high-quality biological samples, stored in a long-term tissue bank. This repository currently contains thousands of otoliths, spines, gonads, and muscle or fin samples, along with associated analytical results such as stock-of-origin assignments and age estimates. To manage this expanding dataset, the BioTuna information system was developed as an interactive Shiny application that integrates metadata, sample availability, and analytical outputs. The platform provides spatial aggregation, biometric relationships, population-mixing estimates, and distributional summaries driven by user-defined filters. While visualizations are publicly accessible, metadata is released only through a regulated request process aligned with ICCAT data-protection rules. BioTuna enhances data interoperability, transparency, and scientific utility, maximizing the research value of the GBYP tissue bank under FAIR principles.

SCRS/2026/027 - This study harmonizes historical datasets of genetic markers and otolith stable isotope analyses produced during all GBYP phases to quantify mixing proportions between the Mediterranean (MED) and Gulf of Mexico (GOM) spawning populations of Atlantic bluefin tuna (ABFT). Genetic assignments were conducted using both high-density SNP arrays and an 86-SNP targeted panel, while otolith $\delta^{13}\text{C}$ and $\delta^{18}\text{O}$ signatures were analysed using Random Forest classification with bootstrapping to estimate origin probabilities. Mixing proportions were estimated using a Maximum Likelihood framework that incorporated misclassification rates and probabilistic contributions of unassigned individuals. Results show consistently high MED contributions in the Mediterranean and eastern Atlantic and intermediate proportions in the western Atlantic. In the central and southern Atlantic, both techniques yielded broadly consistent results, with otolith chemistry indicating a slightly higher GOM contribution than genetics. These minor differences likely reflect variation in sample size and geographic coverage between the two datasets rather than true biological discrepancies. Stratified analyses by catch year, season, and age class reveal stable long-term patterns but highlight seasonal and regional variability linked to sampling distribution and migration dynamics. The combined genetic-isotopic approach offers a more comprehensive assessment of stock-origin and provides standardized inputs for refining Management Strategy Evaluation (MSE) operating models.

SCRS/2026/028 - The ICCAT SCRS planned to conduct stock status check on Atlantic bluefin tuna in 2026. The Atlantic Bluefin Tuna Species Group proposed to conduct them by Stock Synthesis by stocks and by a similar model to the current operating models by taking into account the mixing of the stocks. This document provides a summary of the input data (catch and size) up to 2024 as of January 31, 2026. The comparisons between the dataset for the stock assessment in 2021 and 2022 were included. The size data has been cleaned and less data compared to the ones in 2021 and 2022. The input data have been provided to the analysts before the BFT Data Preparatory Meeting in March 2026.

SCRS/2026/030 - BFT otoliths collected from over a decade of fishery landings in the Gulf of Maine were classified to their natal origin based on their stable isotope composition. This database consisted of more than 3,500 samples with stable isotope data from BFT collected through collaboration with industry in partnership with UMaine's Pelagic Fisheries Lab. The assignment results were used to characterize BFT stock composition and trends in the U.S. fishery in the Gulf of Maine. The majority of fish caught in the Gulf of Maine from 2010 to 2020 were of eastern origin. A greater proportion of younger and smaller fish were of eastern origin, while older and larger individuals were more likely to be of western origin. We also demonstrate how stock composition results can be used to modify key fishery-dependent indices of abundance that inform the stock assessment.

SCRS/2026/031 - The main objective of this survey is to develop an acoustics-based, fishery independent abundance index in the Bay of Biscay that continues the historical one, based on catch rates, used in the EBFT stock assessment, that stopped in 2015. An acoustic survey covering summer feeding area for bluefin tunas was conducted in the Bay of Biscay from July 2015 to 2021 on-board a baitboat fishing vessel, using a medium-range 90kHz sonar and a SIMRAD EK60 scientific echosounder working at three frequencies, of which 38 kHz was used for echointegration. The survey followed systematic transects defined according to historical baitboat catch locations. All bluefin detections by sonar and echosounder were recorded. In each aggregation, species identification and size-sampling were performed through no-kill fishing events, stereoscopic camera and/or multibeam sonar. The spatial distribution of detected bluefin schools is shown, as well as the estimated number and size/age of individuals in the detected schools.

SCRS/P/2026/005 - Atlantic bluefin tuna (ABFT) is an ecologically and economically valuable species. As global warming drives marine species toward cooler or deeper waters, ABFT distributions are expected to shift, potentially disrupting predator-prey dynamics and fisheries interactions. This study models future habitat suitability for ABFT, its primary prey (as a proxy for food availability), and the drifting longline fishery that targets adult ABFT under three climate scenarios (SSP1-2.6, SSP3-7.0, SSP5-8.5). Results indicate a poleward shift in ABFT distribution, with habitat losses in tropical regions and gains in boreal zones. Prey species show similar trends, increasing spatial overlap with ABFT in higher latitudes while decreasing in tropical areas. These boreal regions may act as climate refugia and bright spots, with a projected 15% increase in prey overlap by the century's end. However, ABFT key spawning grounds - the Mediterranean Sea and Gulf of Mexico - are projected to become significantly less suitable for adults, with habitat suitability declining by up to 27% and 73%, respectively, threatening reproductive success. Meanwhile, overlap with the drifting longline fishery may decline by 4%, unless fishing efforts also shift poleward. Regions such as Greenland and northern Europe may become increasingly important for ABFT persistence and expansion. These distributional changes could challenge current international agreements and quota systems, underscoring the need for adaptive, climate-resilient management strategies.

SCRS/P/2026/014 - For the most part the GSL acoustic time series has been consistent with BFT catch per unit effort (CPUE), however, recent updates suggest a significant decline in BFT abundance that is not consistent with CPUE. Previous SCRS reports have considered survey methodology, herring biomass and environmental factors but no analysis has incorporated all of these variables in a standardized model. This presentation provides an overview of the survey, updates to the index for 2020 and 2022 and outlines a path forward for index standardization. In 2020 bluefin tuna abundance was unusually high (0.098 BFT/km) while 2022 was much lower (0.024 BFT/km). Moving forward we aim to standardize the index using a spatio-temporal model that accounts for changes in methodology, environmental conditions, and herring biomass.

SCRS/P/2026/015 - The main objective of this work was to evaluate the genetic origin and structure of bluefin tuna larvae collected in the Slope Sea in 2025 and assess whether this area represents a zone of admixture between the other two main spawning components (Mediterranean Sea and the Gulf of Mexico). Genetic analyses were conducted using a high density ~7000 SNP genotyping tool (ABFT array). The dataset included reference samples (larvae, young of the year and spawning adults) from the Mediterranean Sea and the Gulf of Mexico and larval samples collected in the Slope Sea during a recent targeted sampling campaign (2025). Quality control procedures resulted in a high genotyping success rate (>97%). Kinship analyses identified multiple full and half sibling pairs among Slope Sea larvae. Genetic structure was explored using ancestry-based approaches assuming two ancestral populations, without pre-assigning individuals to stocks. The analyses confirmed clear genetic differentiation between Mediterranean Sea and Gulf of Mexico reference populations, with some overlap between their genetic profile distributions. Larvae collected in the Slope Sea consistently showed intermediate genetic profiles spanning the full range between the two reference populations, indicating admixture. Comparison between larvae collected in 2025 and those collected approximately ten years earlier revealed highly similar genetic patterns. The 2025 larval samples appeared more genetically homogeneous than earlier samples, a difference that may reflect increased sample size and/or changes in migration or mixing dynamics. In conclusion, the Slope Sea is a key area of genetic admixture between eastern and western Atlantic bluefin tuna; yet, because the observed patterns suggest that admixture in the Slope Sea may vary over time, continued multi-year sampling and analysis are required to quantify interannual variability and assess the demographic relevance of this connectivity.

SCRS/P/2026/016 - It presented an overview of the electronic tagging data currently available in the GBYP database. The presentation showed that the majority of the tags were currently not assigned to any stock and therefore not usable within the MSE. The analysis showed size-based dynamics and transitions between the Atlantic and the MED and GOM spawning grounds and detailed tracks obtained from the eastern, central and eastern MED spawning grounds.

SCRS/P/2026/017 - BFT otoliths collected from over a decade of fishery landings in the Gulf of Maine were classified to their natal origin based on their stable isotope composition. This database consisted of more than 3,500 samples with stable isotope data from BFT collected through collaboration with industry in partnership with UMaine's Pelagic Fisheries Lab. The assignment results were used to characterize BFT stock composition and trends in the U.S. fishery in the Gulf of Maine. The majority of fish caught in the Gulf of Maine from 2010 to 2020 were of eastern origin. A greater proportion of younger and smaller fish were of eastern origin, while older and larger individuals were more likely to be of western origin. We also demonstrate how stock composition results can be used to modify key fishery-dependent indices of abundance that inform the stock assessment.

SCRS/P/2026/019 - The presentation was based on the document *SCRS/2025/168* presented in September. The updated length at age database (DB) of Atlantic bluefin tuna from the East stock, obtained from readings of calcified structures (i.e. fin spines and otoliths), was described. Adjustment criteria and sample addition were the biggest improvements. It contained a total of 13 566 samples, ranging from 1984 to 2023. Preparation of calcified structures followed a standardized methodology and age estimates (calendar and biological age) and were derived using updated annuli count to age conversion factors. Data was enhanced with the addition of two new fields, creating a CAAL and enabling its integration into the Stock Synthesis model.

SCRS/P/2026/020 - The stable isotope composition of oxygen in fish otoliths reflects the temperature the fish encountered and the total metabolic rate expressed in response to ecological conditions, averaged over the timeframe of otolith growth sampled. Drawing on ABFT otolith core isotope data originally recovered for stock origin assignment we infer (Trueman *et al.*, 2023) that 28-29°C represents a limiting temperature for age 0 ABFT. Below c.28°C, warming induces a relatively constant increase in metabolism, implying that temperature is a principle driver of the thermal sensitivity of metabolism. Above c.28°C, tuna metabolism is suppressed, but the degree of metabolic suppression varies between individuals and regions, implying contributions of additional factors such as food and perhaps oxygen availability. The inferences above have been developed from opportunistic data and need further testing, ideally with dedicated sampling. Linking variations in realized field metabolic rate to variables such as growth or mortality could provide a mechanism to transfer environmental conditions into modelled tuna population dynamics. Furthermore, the otolith approach is applicable to all marine teleost fishes: the relative thermal sensitivity of metabolic rate of both prey and competitors may help constrain or predict wider ecosystem effects on tuna performance under scenarios of continued ecological change.

SCRS/P/2026/022 - Population size estimates of the western Atlantic bluefin tuna stock are a crucial component of sound management but are still relatively uncertain. This presentation introduces a project aimed at complementing current CKMR efforts to develop the framework for a genetic mark recapture (gene tagging) study. Specifically, we propose to develop a multiallelic marker panel based on microhaplotypes to 1) improve our understanding of stock structure, 2) reduce the proportion of individuals that cannot be assigned to population, 3) develop a marker panel for routine application, 4) develop and optimize a sampling method for high-throughput sampling and release, 5) verify the DNA quality and quantity and check for contamination in these samples, 6) screen available samples to set the groundwork for a genetic mark recapture study, 7) establish a statistical framework for the analysis. We will work directly with The Bluefin Collaborative and the associated fishing industry to design, implement and quality-control the sampling program.