Report of the 2025 ICCAT Atlantic Bigeye Tuna Data Preparatory Meeting
(hybrid, San Sebastian, Spain, 21-25 April 2025)

The results, conclusions and recommendations contained in this report only reflect the view of the Tropical Tunas Species Group (TT 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 and meeting arrangements

The meeting was held in hybrid format and the in-person meeting was hosted by the European Union in San Sebastian (Spain), from 21 to 25 April 2025. Dr Shannon Cass-Calay (United States), the Bigeye Tuna (BET) Species Group ("the Group") Rapporteur and meeting Chair, opened the meeting and welcomed participants. Mr Camille 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 presented at the meeting is attached as **Appendix 3.** The abstracts of all SCRS documents and presentations presented at the meeting are included in **Appendix 4**. The following participants served as rapporteurs:

Sections	*Rapporteur*
Items 1 and 11	M. Ortiz
Item 2	D. Angueko, F. Sow
Item 3	C. Mayor, J. García
Item 4	R. Sant'Ana, D. Die, A. Kimoto
Item 5	M. Lauretta, G. Merino, A. Urtizberea, R. Sant'Ana
Item 6	S. Miller
Item 7	S. Wright
Item 8	G. Díaz
Item 9	S. Cass-Calay
Item 10	M. Santos, C. Brown, S. Cass-Calay

2. Review of historical and new information on biology

As there was no new information on the following sub-items of the agenda item 2: 1) Atlantic Ocean Tropical Tuna Tagging Programme (AOTTP) update, 2) natural mortality, and 4) reproduction, the Group decided to continue discussions on these points and on the parameters to be used for stock assessment under agenda item 5 (see section 5 of this report).

Document SCRS/2025/082 presented the progress of the ITUNNES project, which aims to provide better scientific advice on the biology of tropical tunas. The project has made advances in biological sampling for the three main species, mainly from the eastern Atlantic Ocean. The authors reported size data gaps for each of the three species. Future plans include updating potentially the age/ growth parameters in 2025 and reproduction parameters for bigeye tuna in 2026. The authors highlighted the efforts made to extend this network to other research groups and continuing the standardization of methodologies.

The Group expressed concern that the project, which has similar objectives to the ICCAT Tropical Tuna Research and Data Collection Program (TTRaD), is funded by the same donor. The authors reassured the Group that they are promoting a complementary approach, in coordination with the TT SG to avoid duplication in terms of sampling efforts. Additionally, the authors confirmed that the non-EU partners participating in the program do not have a project budget allocation. During the discussions, the issue of sampling access was raised, and how this is addressed by the program by expanding the sources of information to include other research centers.

Following the discussions the Secretariat promoted a side meeting between several meeting participants, that included iTUNNES members and scientists responsible for ongoing studies related to tropical tunas age and growth studies. The Group was informed that an agreement was reached, which will ensure coordination and cooperation between the different teams involved, including sharing of samples and joint analysis.

Presentation SCRS/P/2025/029 included a report of the preliminary results on the estimation of bigeye tuna (BET) growth parameters based on age readings from otolith sections of 352 individuals from Côte d'Ivoire and Senegal. The data were collected as part of the current TTRaD, the AOTTP tagging programme (which ended in 2020) and the extended recovery activities. The method used to validate the increment deposition rate was based on oxytetracycline-mark detection on otolith using data from the AOTTP programme (Krusic-Golub and Ailloud, 2023).

The Group asked the authors how the *annuli* were validated, given the known difficulty in identifying annual rings in larger individuals. The authors acknowledged the difficulty in identifying otolith increments in large individuals.

The Group took note of a publication by Waterhouse *et al.* (2022) that presented an update growth model for Atlantic BET. The objective of the study was to produce the most comprehensive integrated growth curve model using tagging and otolith data from the AOTTP programme, the National Oceanic and Atmospheric Administration – South East Fisheries Science Center (NOAA SEFSC) Panama City laboratory (United States), and the University of Maine's pelagic fisheries laboratory, with historical tagging and otolith data from the AOTTP programme, the University of Maine along with historical tagging and otolith data from ICCAT and other sources. Among all the integrated models tested, the von Bertalanffy model was preferred.

The authors produced two growth curves, one based on otolith data with an asymptotic length ($L\infty$) of 161.21 cm fork length (FL), and a growth coefficient (K) of 0.392 and another combining otolith and tagging data that reports an asymptotic length ($L\infty$) of 185.78 cm FL and a growth coefficient (K) of 0.252, which is lower than the estimate by Hallier *et al.* (2005) (217.28 cm FL, K=0.180 yr^{-1}). The authors noted that their results are most consistent with the SS3 adjustments to the Hallier *et al.* (2005) data used by the 2018 ICCAT bigeye stock assessment (Anon., 2019). However, they highlighted a conflict in the integration of data sources, particularly between tagging and otolith data. Therefore, the authors concluded that the model based on otolith data provides the most realistic estimates of BET growth, because it predicts the size of old fish through the fitted value of $L\infty$ and it avoids patterns in the residuals from the tagging data.

Regarding the growth curve based only on otolith data, it was noted that this curve did not reflect observations from certain fisheries where large bigeye tuna individuals (up to 200 cm) were caught. Consequently, the Group recommended that the work of Waterhouse *et al.* (2022) should be revised and enhanced by incorporating new otolith data from largest individuals, as well as considering updated tagging data and available data from the ITUNNES project.

The Group held discussions on which curve would be most appropriate for use in the upcoming stock assessment and decided to retain the growth parameters used in the 2021 BET stock assessment. This decision, along with the underlying rationale, is detailed in section 5.

3. Review of fishery statistics and indicators

The Group reviewed the most recent fisheries statistics and biological information available in the ICCAT database system (ICCAT-DB) for BET and, to a minor extent, for yellowfin tuna (YFT) and skipjack (SKJ). The review of the fishery statistics included Task 1 data (T1NC Nominal Catches) and Task 2 data (T2CE: Catch and Effort, T2SZ: Size frequency observed samples, T2CS: Catch at Size estimations). The SCRS catalogue, presented in **Table 1**, summarises the existing Task 1 and Task 2 datasets for the bigeye tuna stock for the period 1994-2023. The BET catches in T1NC by major gear and year for the period 1950 to 2023 are presented in **Table 2**. The review of tagging information covered both conventional (CTAG) and electronic (ETAG) tagging. All the above datasets were updated with the Group adopted revisions made during the week.

The Secretariat presented SCRS/P/2025/028 that summarizes all available statistical information in ICCAT-DB for the Group on the three main tropical tuna species (BET, YFT and SKJ), with a major focus on BET. It includes a review of all the Task 1 and Task 2 datasets on tropical tunas, as well as the tools provided for easily visualizing and exploring this information. Additionally, it highlights the key issues requiring the Group's attention to facilitate decision-making.

3.1 Task 1 (catches) and discards data and spatial distribution of catches

Complementing the presentation describing T1NC, two Excel files were provided containing respectively, the nominal catches (landings and dead discards) and live discards. The T1NC dashboard, developed in line with the 2021 SCRS recommendation, was also updated and made available to the Group. This dashboard enables visual and interactive querying of the T1NC dataset, thereby facilitating its exploration.

While evaluating T1NC, the Group observed an increasing trend in the catches of three major tropical tuna species (BET, YFT, SKJ) between 2006 and 2023 (**Figure 1**), with approximately 70% of the total catches made using purse seine (PS) gear. In contrast, a declining trend was noted for bigeye tuna (BET) catches over the period 2016–2023 (**Figure 2**).

During the review, the Group identified a small number of minor potential data gaps in T1NC data series for BET fisheries (flag) of the total reported catches between 1995 and 2023 (Ref to Catalog BET table). Specifically, it requested a review of the 2003 purse seine and 2003–2015 longline data for Panama. In response, Panama indicated its intention to examine those series and provide any missing data to the Group. Updates provided during the meeting are indicated in subsection e) below. Other potential gaps included the 2002–2008 purse seine series for Belize and the 2004 purse seine data for Cabo Verde, for which size data exist but corresponding T1NC are currently unavailable. The Secretariat committed to contacting the relevant CPCs to clarify these issues. However, the Group acknowledged that recovering historical purse seine data for Belize prior to 2008 may be challenging, since this historical information has usually combined several flag CPC with PS activities in the tropical fisheries in the NEI-ETRO flag code. As many times discussed by the Group, only a vessel based exploratory analysis may solve this data discrimination and recovery.

The Secretariat also informed the Group on the consistent reduction of T1NC data reported without a gear associated (UNCL gear), which became residual after 2012. However, historical BET catches without gear discrimination (UNCL gear) still exist before 2012.

The Group was further informed that most of all landed catches from tropical tuna fisheries harvested by the PS industrial fleets are currently being monitored and reported, including the landings going to the local market (known as “faux poissons”), and also recognized that methodology to estimate the “faux poissons” component may vary across CPCs. In this context and following discussions at the most recent Yellowfin Tuna Data Preparatory Meeting, the Group agreed that for the “faux poissons” (LF) landings component recorded under the combined flag code “Mixed flags (EU tropical)”, the portions associated with EU-France, EU-Spain, and Cabo Verde should be excluded from the combined landings for the 2010–2020 period. This adjustment was deemed necessary to eliminate the existing double LF counting, as these fleets had maintained consistent sampling and reported their individual LF landing series component throughout that timeframe. Consequently, the Group endorsed applying the same approach as previously adopted during the Yellowfin Tuna Data Preparatory Meeting, for both BET and SKJ.

Document SCRS/2025/079 provided an update on BET catches in 2020 by the Spanish albacore fleet operating in the Northeast Atlantic. During preparatory work for the Bigeye Tuna Stock Assessment Meeting, an issue in the data transmission process was identified, resulting in the absence of reported catches in the ICCAT database for that year. A comparative review with records held by the Spanish Institute of Oceanography of the Spanish National Research Council (IEO-CSIC) revealed a total of 70 t of previously unreported landings - 36.4 t from the troll (TR) fleet and 33.7 t from the baitboat (BB) fleet. This correction was applied solely to T1NC, as no information was available on fishing effort or size composition for that year.

SCRS/2025/077 provided updated Task 1 and Task 2 estimates for Ghana's purse seine and baitboat fisheries for the year 2023, based on data collected through the AVDTH programme. In line with previous recommendations from the Tropical Tunas Species Group, the methodology combined logbook and sales data to estimate nominal catches and applied a stratified design to determine species and size composition. The estimates included the three main tropical tuna species (bigeye, skipjack, and yellowfin), with a detailed review of fishing effort, spatial and temporal catch distribution, and size data. The Group noted that sampling coverage and data quality have improved substantially since 2012 and considered the information presented suitable for use in the upcoming 2025 bigeye tuna stock assessment.

Document SCRS/2025/080 provided a detailed analysis of bigeye tuna bycatch in the albacore-targeted surface fishery conducted by the Spanish fleet based in the Cantabrian Sea, operating in the Northeast Atlantic from 2018 to 2023. Estimates of both Task 1 nominal catches and Task 2 size frequencies were presented, disaggregated by gear type (baitboat and troll) and year. The highest catch was reported in 2023, with 463 t, primarily from baitboats. Spatial data illustrate the broad distribution of bigeye bycatch across the fishing area, with larger individuals generally caught later in the season. A comparison with data from the Canary Islands baitboat fishery showed that the free school modality yielded the largest average sizes. The Group took note of these findings, which may be of relevance for future stock assessments, particularly in relation to potential shifts in bigeye tuna distribution.

3.2 Task 2 catch/effort

The ICCAT Secretariat presented the T2CE detailed catalogue to the Group, summarizing all available information on this matter within the ICCAT-DB (**Table 1**). The BET SCRS catalogue was also used to provide a summarized and comparative view alongside other Task 1 and Task 2 datasets. The tropical purse seine fleet was analysed in detail.

During the presentation of the T2CE catalogue, the Secretariat pointed out several aspects affecting data quality, including the cases of datasets with high time-area aggregation levels. One issue concerns the temporal resolution of some datasets, which were reported at the annual or quarterly level despite T2CE dataset being required by the SCRS to be reported with a monthly resolution. Another relates to the units used to report effort: while various formats are accepted depending on the gear type, some purse seine (PS) datasets do not include any effort type expressed in number of sets, which is the expected unit for this gear (**Table 3**). It was also noted that several datasets use large spatial grids (e.g. 5x10 and 10x10), that is, lower spatial resolutions outside the standard ones required by the SCRS for the different gear types (squares of 5x5 degrees or better for longline; squares of 1x1 degree or better for surface and the remainder gears).

In addition, Secretariat also recalled that the T2CE information related to the purse seine fleet targeting tropical tunas, some datasets still lack the discrimination of the catch and effort by fishing mode (FAD: fish aggregating devices; FSC: free schools), resulting in this category not being clearly identified in those datasets.

The importance of T2CE in generating CATDIS (estimation of T1NC standardized by trimester and 5x5 squares) was also emphasized. The most recent CATDIS estimation for BET (maps on catches by decade and major gear in **Figure 3**) covers the period 1950-2023 and contains the most recent information on T1NC and T2CE available until 31 January 2024.

The Group agreed with the observations presented by the Secretariat and encouraged CPCs to address these issues with the support of the Secretariat aiming to continuously improve the quality and completeness of the information stored in the ICCAT database.

3.3 Task 2 size data

The detailed T2SZ detailed catalogue (which also includes T2CS information) with important metadata to characterise each dataset, was provided to the Group. The Secretariat noted that no major improvements were made after the last SCRS annual meeting. It includes the lack of historical recoveries of missing datasets, the lack of revisions made using the SCRS required resolution of existing T2SZ datasets reported highly aggregated (by year/quarter, large geographical grids, more than 2 cm size class bins or more than 1 kg weight class bins).

SCRS/2025/085 presented a comprehensive review and preliminary analysis of size sampling data for Atlantic bigeye tuna, based on Task 2 submissions from CPCs and additional sources. The Secretariat standardized and aggregated over 10 million size measurements, covering the period 1965–2023, across the main gears (longline, purse seine, and baitboat) and the associated stock synthesis model fleets. The analysis evaluated the representativeness of size samples relative to catches, spatial and temporal coverage, and size distribution patterns. Notable differences in size structure were observed across gears and school types (FAD vs. free school sets), with longline providing the broadest spatial coverage and highest sampling volume. The study supports the refinement of input data for stock assessment models and responds to recommendations aimed at improving fleet structure definition and data input consistency for future MSE work.

3.4 Tagging data

The Secretariat presented SCRS/P/2025/027 which summarises the BET conventional tagging (CTAG) and the electronic tagging (ETAG) datasets available in ICCAT. For the CTAG dataset with BET information, a total of 35,703 individuals were tagged and 8,066 individuals were recovered, which indicates a recovery rate of about 23%. Notably, 93% of these recoveries occurred within the first year at sea. The AOTTP programme was the largest contributor, accounting for 68% of all tags deployed. In terms of tagging locations, more than 75% of the tags were deployed in the eastern Atlantic. Additionally, results of other studies carried out during the AOTTP programme such as double tagging, chemical tagging and tag seeding experiment were presented.

Table 4 shows the number of recoveries grouped by number of years at liberty. Three additional figures summarise geographically the Atlantic bigeye tuna conventional tagging available in ICCAT. The density of releases in 5x5 squares (**Figure 4**), the density of recoveries in 5x5 squares (**Figure 5**), the BET apparent movement (arrows from release to recovery locations) shown in **Figure 6**.

For both CTAG and ETAG data, the Secretariat has developed online datasets and specific dashboards to query and view the tag metadata. All the tagging public information is available on the ICCAT website under the "Statistics" tab (section "tagging" after choosing "Access to ICCAT statistical databases"). Furthermore, the Secretariat reports that thirty-three ICCAT-owned archival pop-up tags have been integrated into the electronic tagging database (ETAG), with the main objective being to integrate all the information obtained from electronics tags, including their metadata and tracks, in a centralized relational database.

3.5 Plan for intersessional work related to data improvements

During the meeting, the national scientists of Panama provided an update on the catches of PS Panama fleet for 2003, with a catch of 683 t. They also indicated that they would work on updating the longline time series for providing further updates. Because the relative percentage of catch for 2023 is minor (<1%) the Group agreed that it should be integrated into the ICCAT T1NC database and included in the updated tables for the assessment meeting.

Following the discussion of the Group on Task 1 reports, it was noted that the "faux poissons" represent the part of catch, in the industrial purse seine fishery targeting tropical tunas, not handled by canneries but landed with other bycatch species towards another commercial flow. The "faux poissons" are composed of bycatch species retained onboard and small size or damaged individual of tropical tuna species.

The "faux poissons" were historically estimated separately from the official catch because these fish were not included in the logbook declarations and were lacking sales notes. For this reason, CPCs have submitted in the past to ICCAT the additional catch (i.e. faux poissons estimates) of major tuna to the official reported catch. However, with the increased quality of monitoring and declaration, of the major tuna catches in the purse seine fisheries, the so-called "faux poissons" catches are reported with Task 1 NC and many CPCs do not need to submit or estimate "faux poissons" catch.

The Group recommends that national scientists further investigate the completeness of all catch removals in the current purse seine fisheries, as well all other gears. Therefore, the Group questioned the need to keep the "Faux poissons" nomenclature in the ICCAT databases, as it can be summed to Nominal Catches (Task 1) and Catches and Effort (Task 2). However, it was noted by scientists familiar with these fisheries that there is no evidence that all bycatch species, and in particular neritic tunas which are of great socio-economic interest, are well reported in the logbooks.

Other bycatch species are normally estimated from data collected by onboard observers and reported in domestic observer programmes data submissions (e.g. ST-09). Also, the term "faux poissons" refers to the name of the fish landed at the port of Abidjan (Côte d'Ivoire) which is sold on the local market or sent to other countries by cargo or road transport.

The Group recognised that the term "faux poissons" is misleading, as the fish are actually caught. A more appropriate word should therefore be found to designate the part of undeclared or missing declared catches that would be estimated in addition to the official declarations made by the vessels. The Group concluded that reports of "faux poissons" should be reported as part of the total catch removals for main tropical tunas.

4. Review of available indices of relative abundance

The Group reviewed six standardized indices of abundance presented for the 2025 Atlantic bigeye tuna stock assessment.

Document SCRS/2025/075 presented the size selectivity of bigeye tuna by two fishing strategies ("free school" and "a la Mancha") of the Canary Islands baitboat fishery for the period between 2011-2023. The new fishing strategy of "Pesca a la Mancha" began in the early 1990s and expanded to the entire fishery in the 2000s, resulting in a progressive increase in catches. The average size of the fish caught by "free school" was generally larger (70-170 cm) than those caught by "a la Mancha" (60-130 cm).

The Chair acknowledged the importance of this study to help the Group understand the Canary baitboat catch per unit effort (CPUE) index better with the fishery information.

Document SCRS/2025/076 provided a standardized CPUE index of the Spanish baitboat fleet around the Canary Islands in 2009-2023 applying GLMM. Various environmental covariates were included in the standardization, and the analyses were conducted using the Bycatch Estimation Tool (BYET) software.

The Group questioned if the standardization considered fishing strategy types (SCRS/2025/075), fleet operating area stratification, size of hooks, and different size ranges of BET caught by the two fishing strategies. The authors noted that it is not possible to take those components into standardization because hook sizes and environmental data associated with each fishing operation were not collected. The fishing areas are rather small in between 20° and 23° N, and the quarter information explained the model sufficiently than considering area stratification.

The Group was reminded that the Brazilian handline index has similar difficulties in standardizing the CPUE, and there is not yet a good standardization method for this fleet. This approach would be used for the Brazil handline index. The Group inquired if the BET zero catches were included in the analysis, assuming its importance for the standardization process. The authors clarified that original BET zero records were discarded due to inconsistencies, but the zero BET records used in the analysis were reconstructed. The criteria for introducing a zero BET record was a positive catch record of YFT or SKJ and no record of BET. The original BET zero catch proportions were about 1-5% between 2009 and 2012, and around 0% for the rest of the years. In contrast, the reconstructed proportions were 5-25%, and strictly greater than 0% for all years.

The Group noted that the unit of effort of this study can be improved, the available data for covariates might be limited, and it is questionable if the small-scale fishery can represent the entire stock, even if the standardization method was appropriate. Therefore, the Group decided not to use this index for the reference case but suggested using it as sensitivity analysis.

Document SCRS/2025/086 presented a novel approach to standardize the Moroccan longline CPUE based on the integration of delta-lognormal models and machine learning techniques. The analysis effectively accounted for operational characteristics that influence the success of fishing operations by incorporating catch and effort data. Considering the challenge posed by zero-inflated catch data, the study proposed a dual-model approach that not only predicts the probability of non-zero catches but also accurately estimates their magnitude when they occur.

The Group raised some concerns, particularly regarding the construction of uncertainty and the assessment of covariate effects in the standardization of an abundance index derived from the machine learning algorithms in comparison to the statistical model approach. The Group also expressed concern about the abrupt increase (e.g. a 16-fold increase) observed in the recent period, suggesting that such a strong increase would be biologically implausible and might not be directly linked to an actual increase in stock biomass. The authors noted the increase may indicate improvements in fishing efficiency, better fisheries data reporting, or an increase in fish abundance, all of which may have contributed to higher catch rates. They have been working closely with fishermen to improve the data available and the respective index estimation.

The Group recommended that this index not be included in the 2025 stock assessment; however, the Group suggested the authors continue developing this abundance index, given its potential relevance.

Document SCRS/2025/081 presented the Buoy-derived abundance index (BAI) for bigeye tuna in the Atlantic Ocean (2010-2024) that was derived from acoustic data collected by echosounder buoys attached to FADs. These buoys, deployed by Spanish tropical tuna purse seiners and associated fleets in the Atlantic since 2010, provide real-time data on fish aggregations. The index combines acoustic registers with fishery data (catch composition) to estimate tuna abundance and uses the 0.9 quantile to select the most representative biomass value for modeling tropical tuna abundance. A Generalized Linear Mixed Model (GLMM) using variables like year-quarter, area, buoy model, FADs densities, and environmental factors, standardizes the data, ensuring robust estimates.

The Group acknowledged the importance of having this abundance index available, as it is the only index that provides information independent of fishing activity. However, some remaining questions were raised. The Group expressed concern about the exclusion of the upper 20 meters from the density estimates based on data collected by the buoys, particularly regarding the potential loss of target organisms that may exhibit some degree of stratification in their distribution within this layer. The authors explained that, based on previous studies conducted using different methods, it was observed that this surface layer primarily contained bycatch species rather than the target species of the study.

Furthermore, while species composition is based on the composition observed in catches, the exclusions would lead to possible misalignment between the two. This could introduce bias in the abundance estimates, especially if there is a certain degree of stratification in the distribution of the three tropical tuna species in the shallow areas. The authors also clarified that these data were considered completely independent from the other index presented for the FADs fisheries.

The Group noted that the buoy index was derived using acoustic data from one buoy provider acknowledging the value of incorporating acoustic data from all buoy service providers in future analysis. This will assist future efforts to derive indices of abundance from data for the EU fleet, which has reduced its capacity and number of FAD buoys used. The authors noted that the drop in buoys does not seem to have influenced the results of this analysis.

The Group agreed applying the BAI year-quarterly index for juvenile fish only in the Stock Synthesis.

Document SCRS/2025/083 presented a biomass index for bigeye tuna in the Atlantic Ocean derived from the European purse seine catch and effort series (2010-2023) of fishing operations made on floating objects (FOB). The study employed a geostatistical spatiotemporal modeling approach to standardize CPUE using the *sdmTMB* R package (Anderson, 2024). To calculate the standardized CPUE index, the "predict-then-aggregate" approach was used as recommended as good practice (Hoyle *et al.*, 2024). The PS FOB index from this study exhibited a slight negative temporal trend, which may indicate a decline in recruitment over the last decade.

The presented results indicated a seasonal southward shift of the fleet during the first quarter, followed by a return northward in subsequent quarters. The Group highlighted that, similar to the BAI index, this index also reflects patterns in the relative biomass of juveniles. However, unlike the BAI index, it showed a declining trend in recent years. Finally, the Group acknowledged the quality of the analyses presented and encouraged the further development of spatio-temporal models for CPUE standardization.

The Group decided to use the PS FOB year-quarterly index for juvenile fish only in Stock Synthesis models separately from the BAI index.

Document SCRS/2025/084 summarizes the development of standardized multi-national (Japan, Chinese Taipei, Korea, United States, Brazil, China, EU-Portugal, and Uruguay) joint longline indices for Atlantic bigeye tuna caught between 1959 to 2023 based on the set-by-set data. After cluster analysis, relative abundance indices for three regions (North, Equatorial, and South Atlantic) were estimated with Generalized Linear Models (GLMs). CPUEs indicated a decreasing trend until around 2010, and increased after that.

The Group commended the work and highlighted the engagement of additional CPCs that were willing to share the set-by-set data for the analyses conducted during the in-person workshop in Japan and the subsequent analyses completed after the workshop. The Group also highlighted the importance of the contribution of the scientists from Japan and their government, who helped hosting the workshop and provided the computer resources to complete the work successfully. The current analyses are based on data from a broader set of fleets than in the past, increasing the likelihood that the estimated indices better represent the relative abundance of BET. Cluster analysis results helped the Group improve the understanding of the dynamics of the different longline fleets, the differences and similarities of fleet operations, and their spatiotemporal evolution.

The authors provided a possible explanation of the reasons why trends in relative abundance estimated in 2021 differ from those in 2018 and 2025 for the “continuity” index (**Figure 7**). It was commented that the 2021 index was derived from 5x5 aggregated data due to COVID-19, while the indices were estimated with set-by-set data in 2018 and 2025. Although the resolution of data could be a possible reason, the authors did not have enough time to further investigate.

The Group requested clarification on the setup of the analyses and more explanation of the reasons why some of the model runs were recommended to be better than others. The Group also requested that additional items be included in the document:

a. Trends in the proportion of positive sets by fleet, region and year;
b. Estimates of variance associated with the indices;
c. A minimum set of diagnostics for all models;
d. A full set of diagnostics for the recommended models;
e. Influence plots for the recommended models.

The Group recommended applying the joint longline index as follows:

a. Use models that include data for 1959-2023;
b. The Region 2 delta-lognormal model including data for Japan, and the United States for 1959-1978;
c. Use the Region 2 delta-lognormal model including data for Japan, Chinese Taipei, and the United States for 1979-2023 as a “continuity” index;
d. Use the Region 2 lognormal model for all fleets (Japan, Chinese Taipei, the United States, China, EU-Portugal, Brazil, and Uruguay) for 1979-2023 as reference case for the assessment.

Although the assessment may only use Region 2 indices, indices for Regions 1 and 3 are still valuable as fishery indicators that can inform about the relative biomass in different areas of the ocean. The Group recommended that future joint indices consider the inclusion of as many fleets willing to provide set-by-set data as possible, and for all three regions of the ocean. The experience of including more fleets showed that it led to increased complexity in statistical models, logistical complications and greater demands of analytical resources. The Group recommends a future and thorough review of the cost and benefit of including each fleet data in the joint index. It is possible that inclusion of data from additional fleets may not substantially increase the value of information to the final index, and therefore their inclusion of such data may not be required.

The Group congratulated the successful collaborative study, expressed gratitude to all CPCs for their efforts, and asked the member scientists to convey gratitude from the SCRS to their governments.

Document SCRS/2025/089 provided the standardized CPUE by Chinese Taipei longline fishery for the period between 1995 and 2023 in the Atlantic Ocean using the same data set provided for the joint longline index analysis. In the main fishing ground (tropical area, Region 2), the index increased from the late 1990s and decreased from 2005 but showed an obvious increasing trend in recent years.

The Group acknowledged the authors' efforts in providing supplemental information for the joint longline index (SCRS/2025/084), however, as this information has been already included in the joint longline index the author recommended, and the Group agreed, it should not be used in the stock assessment.

The Group discussed potential reasons for the increasing trend in recent years. During the meeting, longline CPUE comparison figures were provided that showed the similar increasing trend in recent years observed in the joint longline index which occurred in both the Chinese Taipei and Japanese longline indices. The authors explained that some of the fishing vessels were not able to go fishing for bigeye tuna due to the COVID-19 impact. When reaching quota limit on bigeye tuna, the longline vessels shifted to other fishing grounds, for example the albacore. However, even so, the fishing vessels operated with less fishing effort (hooks) than before, which led to an increase in the bigeye tuna CPUE. The Group suggested this should be further examined in the future analysis for CPUE standardization. It was questioned whether the number of vessels was used in the standardization. The authors clarified that the standardization included vessel ID, which may have information about the number of vessels.

Summary of abundance indices in the stock assessment

The Group reviewed the CPUE evaluation table for the available standardized CPUE series (**Table 5**) and discussed indices to be included in the 2025 Atlantic bigeye tuna stock assessment based on the above discussion on each index (**Tables 6** and **7**). Given the BAI and PS FOB indices represent juvenile fish abundance, the Group recommended using them only in Stock Synthesis models. These indices will not be used together in the model runs because both indices contain potentially similar information derived from FAD/FOB data. The longline indices will be applied in both Stock Synthesis and Surplus Production models. Furthermore, the Group suggested the following combinations of indices be used in each analysis (**Figure 8**).

For the Continuity run,

- Joint longline index in Region 2 by delta-lognormal model including data for Japan, and the United States for 1959-1978.
- Joint longline index in Region 2 by delta-lognormal model including data for Japan, Chinese Taipei, and the United States for 1979-2023.
- Year-quarterly BAI index in 2010-2023 (only Stock Synthesis).

Reference case,

- Joint longline index in Region 2 by delta lognormal model including data for Japan, and the United States for 1959-1978.
- Joint longline index in Region 2 by lognormal model for all fleets (Japan, Chinese Taipei, the United States, China, EU-Portugal, Brazil, and Uruguay) for 1979-2023.
- Year-quarterly BAI index in 2010-2023 (only Stock Synthesis, separate run from PS FOB index).
- Year-quarterly PS FOB index in 2010-2023 (only Stock Synthesis, separate run from BAI index).

Sensitivity run,

- Canary baitboat index in 2009-2023.

5. Review of assessment models for evaluation, specifications of data inputs and modelling options

The Group discussed the assumptions to be applied for the bigeye stock assessment models, and outlined the following protocols:

- A seasonal (quarterly), one-area, combined-sex model will be constructed in Stock Synthesis 3 (SS3) covering a timeframe from 1950 to 2023.
- Annual time-step biomass surplus production models may also be used for comparison, validation, and consideration for advice. These would be mpb, Surplus Production Model in Continuous Time (SpICT) and Just Another Bayesian Biomass Assessment (JABBA) models.
- Initial stock biomass in 1950 will be assumed to be in an unfished, virgin stock condition.
- Fleet structure will be comprised of 22 fleets, including five purse seine fleets, a Ghana baitboat and purse seine combined fleet, four baitboat fleets, nine longline fleets, two handline fleets, and one fleet for other gears combined (**Table 8**).
- The fleet structure definitions are similar to the 2021 bigeye assessment, and consistent with the stock assessments for Atlantic yellowfin and East Atlantic skipjack tunas to facilitate the multi-stock management strategy evaluation (MSE).

A continuity model will be updated following the assumptions of the previous assessment, and will be modified as outlined by the SCRS to integrate the alternative assumptions and configurations described below. The following sections list the primary data and parameterization assumptions for the SS3 and biomass surplus production models.

Indices of abundance

The indices of abundance and associated selectivity will be consistent with the prior assessment. Two abundance indices will be modeled as a starting (continuity) run for the Stock Synthesis models, 1) the joint-CPC longline index for the tropical Atlantic (region 2) broken into two periods 1959-1978 and 1979-2023 from SCRS/2025/084 (Delta-lognormal), and 2) the seasonal acoustic echosounder buoy index associated with FADs covering the period 2010-2023 from SCRS/2025/081. The joint LL index will be assumed to have a selectivity of older fish, equivalent to the Japan longline fleet in the tropical Atlantic (fleet 11, **Table 8**). The acoustic buoy index will be assumed to have the same selectivity as the purse seine fleet operating on FADs in the recent period season 1 (fleet 4, **Table 8**).

For the reference case model, two abundance indices will be modeled, 1) the joint-CPC longline index for the tropical Atlantic (region 2) broken into two periods 1959-1978 and 1979-2023 from SCRS/2025/084 (Lognormal), and 2) the seasonal acoustic echosounder buoy index associated with FADs covering the period 2010-2024 from SCRS/2025/081. An additional index to be considered in the uncertainty grid of models is the CPUE for EU purse seine fisheries operating on FADs for the period (2010-2023) from SCRS/2025/083 depending on model performance. The latter would represent an alternative indicator of abundance of juvenile bigeye and therefore, it would not be used in conjunction with the index developed from echosounder buoys.

For the biomass surplus production models, the Joint LL index for region 2 (Lognormal with all available data up to 2023) will be used.

The following sensitivity runs were recommended:

- Evaluate the effect of including the Canarian baitboat index (SCRS/2025/076) on the reference case model.
- An index jack-knife removing each index from the model

Index coefficients of variation (CVs) will initially be scaled to an average CV = 0.2 across the time series, while retaining the relative interannual variability estimated by the standardization models (i.e. CVs will be normalized to a mean = 0.2).

Length composition

Length data for each fleet, year, and season will be provided by the Secretariat after all CPC data updates are completed following the data preparatory meeting. Length compositions will be input as the number of fish observed per 4 cm SFL size bin. Other bin sizes (e.g. 2 cm SFL bins) may be considered as needed to facilitate growth estimation within SS3, if age-length data are provided. The effective sample sizes will be equal to the log10(number of observations), to reduce the effect of pseudo-replication in sampling and decrease weighting in the overall model likelihood. This approach is consistent with the treatment of size composition data for the other tropical tuna assessments and the prior assessments for bigeye.

Size and weight-at-age

The assumption of growth will remain unchanged from the 2021 assessment, modeled as a combined-sex Richards curve published by Hallier *et al*. (2005). Growth parameters were fixed in the previous assessment model and the reference case model will retain this assumption. Round weight will be estimated from straight fork lengths (SFL cm) function to weight assuming the length-weight relationship of Parks *et al*. (1982):

$$Wgt(kg) = (2.396E\text{-}05 * SFL^{2.9774})$$

Time-permitting, the technical modeling team may explore growth models published by Waterhouse *et al*. (2022) for comparison with the reference case model; however, the Group noted the growth analysis is being updated with additional data, including data from the AOTTP and ITUNNES projects.

Maturity and fecundity

Maturity and fecundity assumptions will remain unchanged from the previous assessment. Fecundity will be modeled as a direct relationship of female body weight. Maturity will be assumed a logistic function of fish body size, with an assumed 50% maturity at 100 to 110 cm straight fork length (Matsumoto and Miyabe, 2002).

Natural mortality (M)

Age-specific natural mortality will be modeled assuming a Lorenzen function to account for decreasing mortality with increased fish size (Lorenzen, 2000; Lorenzen *et al*., 2022).

The Group had extensive discussions regarding the treatment of natural mortality in the assessment. This was partially because it was recognized that many decisions needed to be made, and it was important that these were clearly discussed and documented. The key steps in determining the values of M to be considered in the reference case assessment model, and a summary of key group discussions, are provided in the table below:

Component	*Decision*	*Discussion*
Longevity (i.e. Maximum age)	17 years	The Group felt that this was the best available data on longevity, noting the relatively small sample sizes.
Average natural mortality of adult BET	0.32 ln(0.31, sd)	Based on Hamel and Cope (2022)
Ages to apply the average	Ages 4-10 Hallier *et al.* (2005) growth model (Unisex Richards GM)	This is based on the ages in the model for which 100% maturity is assumed. Personal communication (K. Lorenzen)
Functional form of M-at-age	Lorenzen (2000, 2022)	Considered current best-practice when no estimates of M-at-age are available

Further, the Group felt that it was important to include uncertainty in M-at-age in the assessment. It was decided that this should be done based on alternative values of the average natural mortality of adult BET from the predictive model of Hamel and Cope (2022). This was considered as a preferred approach to the 2021 assessment which implemented uncertainty through alternative longevity assumptions.

Hamel and Cope (2022) recommended the use of a standard deviation in the log-space of 0.31 when considering uncertainty in average M. This was based on an assumption that uncertainty in the relationship between A_{MAX} and M was split equally between estimation error and true variation in the relationship between A_{MAX} and M. The Group noted that alternative assumptions regarding the uncertainty were possible, but that there was no strong basis to consider another approach.

The next decision was to determine the alternative values of average adult M to use and how to weight them when combining the model results. The Group felt it was desirable to consider a range of plausible values, subject to selection by model performance and diagnostics. As a contingency to possible convergence or performance issues, the Group proposed two sets of alternative M values. The first set based on the 10th, 50th, and 90th quantiles of the lognormal probability distribution (**Figure 9**), and the second set based on the 25th, 50th, and 75th quantiles.

If the modeling team encounters problems with models using the broader range of Ms then they should move to the smaller range. The weighting for the different values of average M were calculated from the relative density function from the lognormal distribution. The Group noted that because a lognormal distribution was being used the lower value was closer to the median and had a higher weight compared to the higher value, which was further from the median but with lower weight. The two alternative sets of M values and weights are provided below. A comparison of model diagnostics across the five alternative assumptions is desirable, however the uncertainty grid should incorporate the median (0.32) and one set of intervals (50th or 80th percentiles), at a minimum. The overall derived Lorenzen mortality-at-age assumptions for the median and 80th percentile interval are shown in **Figure 10**.

Assumption	*Average adult M values*	*Weights*
80th quantiles (wider)	0.22, 0.32, 0.48	0.34, 0.51, 0.15
50th quantiles (narrower)	0.26, 0.32, 0.40	0.37, 0.38, 0.25

Fleet selectivity

The initial selectivity parameterization will follow the assumptions of the 2021 stock assessment. Selectivity will be estimated directly for all fleets, except the Brazilian HL which will be mirrored to the Rod and Reel-West fleet. A cubic spline function will be fit to compositions for fleets 1- 6, 21, and 22 to model multimodality of length observations. Fleets 7-16 19, and 20 will be modeled as double normal functions. Fleets 17 and 18 (CTP LL tropical and south regions) will be assumed to have asymptotic logistic selectivity. The fleet selectivity assumptions may be modified when necessary to improve model fit to length compositions, convergence, parsimony, or overall performance.

Stock recruitment

Stock-recruitment will be modeled with the Beverton-Holt function with virgin recruitment (R_0) and log-mean recruitment deviation (sigma *R*) freely estimated (note: sigma *R* may be fixed at 0.4 if not estimated, prior grid reference case value) across a range of fixed steepness (h = 0.7, 0.8, and 0.9), which will define the steepness axis of the uncertainty grid. Annual recruitment deviations will be initially estimated for the period 1974 to 2022, and modified when necessary, based on model diagnostics. The lognormal bias correction ($-0.5*\sigma^2$) for the mean stock recruitment will be applied following the recommendations of Methot and Taylor (2011).

Data weighting

The final model will explore a data reweighting procedure for the fleet length compositions, for example the method of Francis (2011) and others consistent with the approach of the 2021 assessment. Indices of abundance will be equally weighted.

Table 8 presents the Group's proposal for the uncertainty grid of the 2025 BET stock assessment to be evaluated by the modellers team.

6. Review progress toward tropical tunas management strategy evaluations

6.1 Progress of SKJ-W MSE

Document SCRS/2025/087 presented an update on the WSKJ MSE, including feedback received from the SCRS and Commission in November 2024 and the workplan for completion of the MSE in 2025.

The Group discussed the growth parameter uncertainties included in the operating models (OMs), noting that some scenarios are very optimistic, while others are very pessimistic. It was observed that the OM assumptions for L_{INF} are not consistent with the larger fish seen in the catch data. The authors clarified that the MSE's uncertainty grid comes directly from the 2022 SKJ stock assessment but that they had to increase the CV significantly on the growth parameters to better capture the reported size distribution of the catch. Each OM is run with 300 simulations, and the variability in results from these simulations gives a range of uncertainty considerably wider than what was considered in the stock assessment. Some of these results may not be biologically plausible.

The Group expressed appreciation to the authors for the work and noted that including a broad range of plausible scenarios is a key part of MSE testing of the robustness of management procedures (MPs), as compared to stock assessment, which is looking for a single best estimate. It was noted that considering such a broad range of uncertainties can make it difficult to achieve the Commission's specified management objectives and that the Group could consider whether to move some of the less plausible uncertainties into robustness tests.

It was also highlighted the importance of having an active MSE technical subgroup (i.e., the Tropical Tunas Technical Sub-group on MSE, in this case), which can make interim decisions to help the analysts advance the work intersessionally, pending review and reconsideration upon presentation to the SCRS.

Further discussion about the growth parameters noted that the assessment's growth parameters are based on the age structure used in SS3 and that a von Bertalanffy growth curve may not be appropriate for skipjack, which has very fast growth at young ages. This would be a topic for future study rather than something that could be changed in the MSE this year. Highlighting the correlation among growth parameters, it was suggested that it might be advisable to increase the CV on L_{INF} only for this MSE rather than increasing the CV on all of the growth parameters.

Given the influence of the growth parameters on the MSE results, the Group suggested that the authors could have the latitude to consider using values different from what was used in the 2022 stock assessment. There was concern expressed about restricting uncertainty and/or reducing the number of OMs, and the authors clarified that the intention is to consider potentially eliminating certain implausible OM simulations rather than modifying the current OMs in the reference set.

Document SCRS/2025/088 presented an update on the CPUE standardization for skipjack in the Venezuelan purse seine fishery. The Group thanked the authors for the well-done analyses.

6.2 Progress of Tropical Tunas Multi-stock MSE

Document SCRS/2025/068 presented a report on the outputs of the short-term contract for the tropical tunas multi-stock MSE process in 2024.

The Group thanked the authors for the work and suggested that the draft trial specifications document (TSD) would benefit from the inclusion of more details (See the 2024 North Atlantic swordfish MSE TSD as an example of the information to include). The Group also highlighted the value of the reviews and recommendations provided by Dr Ana Parma and The Pacific Community (SPC). The authors responded that the reviews do not call for any radical changes but expressed their intention to consider each recommendation as guidance for any methodological changes as they finalize the MSE.

Presentation SCRS/P/2025/026 shared updates on the MSE simulations for the multi-stock Atlantic tropical tunas fisheries, including hybrid harvest control rules (HCRs).

The Group noted that the OMs are conditioned from SS3 and that the MPs use SPiCT as the estimation model, which leads to a difference in the way biomass is calculated (spawning stock biomass (SSB) and exploitable biomass, respectively, for the OMs and MPs). It was clarified that this is common practice in MPs, which often use simpler production models like SPiCT, noting that difficulties in the ability of surplus production models to estimate biomass scale may be a bigger concern, especially when stability restrictions are included in MPs.

It was noted that skipjack was the only stock for which the SS3 assumptions were modified, and the authors justified that decision since the effect of the recruitment deviations in SKJ-E was much more impactful than for the other stocks.

The Group recommended that additional HCRs be developed and tested, including empirical rules and HCRs with other fishing mortality (F) targets (current HCRs use 0.8*F_{MSY} as F_{TARG}). The Group also noted that while current testing assumes bigeye is: a) caught by all fleets, and b) the less resilient stock and thus the limiting factor in catch and focus of the MPs, this may not always be the case. Therefore, it may become necessary to change the management framework in the future if yellowfin and/or skipjack require targeted management intervention. For example, it may be necessary to apply different HCRs to different fleets.

The Group endorsed the current OM conditioning, which was updated to be consistent with the 2024 yellowfin tuna assessment. Noting the importance of having data guillotines to prevent never-ending OM updates, it was agreed that the OMs will only be reconditioned on the results of the 2025 bigeye tuna assessment, only if the assessment results are considerably different from the 2021 stock assessment.

6.3 Plan for intersessional work related to the MSE

The Group discussed the MSE workplan for the remainder of 2025. It was agreed to prioritize meetings of the Tropical Tunas Technical Sub-group on MSE to advance the work. A new chair will need to be identified for the subgroup as soon as possible.

For the western skipjack MSE, draft results will be presented in June at a Meeting of the Tropical Tunas Technical Sub-group on MSE to solicit feedback before presenting the final draft at the Bigeye Tuna Stock Assessment Meeting in July 2025. Requested modifications will then be addressed in advance of the September SCRS species groups meetings, where the final results should be endorsed by the SCRS.

The SCRS Chair will work with the Secretariat and Chair of Panel 1 to schedule a half-day Panel 1 meeting for the week of 6 or 13 October 2025 where the final SKJ-W MSE results would be presented. This worked well for the North Atlantic swordfish MSE in 2024. If it is not possible to schedule a Panel 1 meeting, an ambassadors meeting will be scheduled for October instead, to provide an opportunity to present the MSE results, even if it is not a venue for formal input from the Commission.

For the multi-stock MSE, the lead analysts surmised that the ongoing work and development of additional candidate management procedure (CMPs) will take about 3 months to finish, so updated results will be presented in September 2025. At that point, it will be decided whether to recondition the OMs based on the bigeye tuna stock assessment.

Dialogue with the Commission will be important, specifically on the multi-stock nature of the MSE. The Group recalled that the Commission provided initial operational management objectives in the *Resolution by ICCAT on interim operational management objectives for Atlantic bigeye tuna, yellowfin tuna, and the eastern stock of skipjack tuna* (Res. 24-02) but that more input is needed on whether the Commission supports the approach to focus on the least productive stock (i.e. BET). Further input is also needed on how to analyze selectivity changes, for example.

The Group agreed that dialogue on the multi-stock MSE should ramp up in 2026 and that the SCRS should propose a schedule of dialogue meetings for 2026. It was noted that the *Recommendation by ICCAT replacing Recommendation 22-01 on a Multi-annual Conservation and Management Programme for Tropical Tunas* (Rec. 24-01) sets management through 2027, so it would not be an emergency if the multi-stock MP cannot be adopted next year.

7. Development and updates of the Tropical Tuna Research and Data Collection Program (TTRaD)

An overview was provided on current funded work including ongoing contracts, outstanding Terms of References (ToRs), and the strategy for making updates to the Tropical Tuna Research and Data Collection Program (TTRaD) in line with new funding rules.

7.1 Budget

The Secretariat presented a summary of the 2024 and 2025 spending to date including the remaining budget balance. After review, a number of areas were identified as ongoing or still requiring terms of reference (ToRs). The two outstanding ToRs relate to support for the analysis of tag data from AOTTP to estimate natural mortality for tropical tunas and to estimate skipjack exploitation. The Tropical Tunas Officers agreed to summarise the outstanding ToRs with an aim to get them circulated as soon as possible.

7.2 Tropical Tunas Research Plan

The Secretariat highlighted that the subcommittees, species and working groups were being asked to estimate funding required for two biennial cycles of the Commission regular budget, representing estimates for 2026 – 2029. The deadline for Rapporteurs to send these tentative activities and costs is June 2025 (see Section 10.1). The Group agreed to estimate costs according to the following steps: 1) review the activities in the TTRaD and update in line with ongoing and outstanding projects; 2) circulate the revised plan and costs to the wider Tropical Tunas Species Group and the Secretariat; 3) present and finalize the plan at the Bigeye Tuna Stock Assessment Meeting and species groups meetings including review of the strategic plan.

A request was made by the Group to contact the Tropical Tunas Coordinator if the person were willing to be part of the working group to develop the revised plan intersessionally. The Group also noted the need to standardize methods and analytical processes to estimate biological parameters (e.g. age/growth, reproduction) among different research programmes.

7.3 Research contracts updates

A presentation was provided on progress towards developing an agent-based model for the Atlantic (SCRS/2025/092). The POSEIDON-EAO project, which adapts the POSEIDON agent-based model from the eastern Pacific to the eastern Atlantic tropical tunas purse seine fishery, has been restructured to reflect Atlantic-specific conditions.

At present the project has access to anonymized vessel-level data from several key CPCs, which has allowed the project to make substantial progress in constructing the operating model. While the existing dataset provides a strong foundation for a proof of concept in the current year, expanded coverage would significantly enhance model reliability and robustness. Ideally, data at the 1°x1° daily scale offer the highest precision; however, the model can effectively work with aggregated data at the 5°x5° scale, provided that they are disaggregated by vessel and include observer or logbook information. It was confirmed that the highest priority remains to secure daily-scale inputs whenever possible to capture operational nuances, with a request for broader data-sharing to obtain more realistic emergent vessel behavior. Without high resolution observer/logbook data, the calibration of the model will be constrained.

In addition to vessel data, the project has compiled a preliminary set of cost and market price data which should be sufficiently robust for the current modeling objectives. These datasets enable the project to simulate economic behavior and to assess the profitability of different fleet strategies under various management scenarios.

The Group requested for the project to provide minimum standards regarding the type of data and resolution required for the model, with a view to potentially extending the POSEIDON framework to include additional fleet types beyond purse seiners (for example including longliners). While this was not stipulated in the current Terms of Reference issued by the Secretariat, the contractors acknowledged the potential value of a more comprehensive multi-fleet model, noting that such an expansion would require time and resources. The Group noted that the project will focus on the original objectives defined in the ToRs, with catches from other fleets included in the model as external inputs or aggregated values. However, the Group acknowledged that not extending this project to cover all relevant fisheries under the same data requirements may compromise the release of fine scale data for some purse seine fisheries.

8. Recommendations

The Group recommended that CPCs reviewed their Task 2 catch and effort (T2CE) to identify data gaps and to ensure that historical data are reported using the proper spatial and temporal stratification.

The Group recommended that future versions of the purse seine buoy acoustic index evaluate if the acoustic information from the top 20 meter layer could be included in the data analysis.

The Group recommended continuation studying the aggregation dynamics of tropical tunas in FADs to improve the adjustment of the buoy acoustic index to the characteristics of the Atlantic Ocean.

The Group recommended that future versions of the joint LL index of abundance provide more detailed information about the fleets considered in the joint index (e.g. areas of operation, changes in fishing practices over time).

The Group recommended that future versions of the joint LL index continue to include regions R1 and R3 in the estimation of the index for the whole Atlantic BET stock.

The Group recommended that Moroccan national scientists continue to update the Moroccan LL index which is an important fishery indicator even though will not be used as an input in the 2025 bigeye tuna stock assessment.

The Group emphasized that the results of any study fully or partially funded by ICCAT or using data from the ICCAT-DB be presented to the SCRS in a timely manner.

The Group recommended that an informal online (informal) meeting of the Tropical Tunas Species Group be held to discuss the current research plan and to develop a budget prior to the Meeting of the Standing Working Group on Dialogue between Fisheries Scientist and Managers (SWGSM) scheduled for 8 July 2025.

The Group recommended the CPCs, especially those with fleets that can provide the largest bigeye tuna (BET ≥ 180 cm SFL), collect key biological samples, including hard parts (i.e. otoliths and spines). This effort will substantially improve the estimates of critical biological parameters (e.g. L_{INF}) used in stock assessment models.

The Group recommended further updating BET growth curve (Waterhouse *et al*., 2022) by incorporating new otolith-based ageing data from underrepresented size classes (i.e. smallest <30 cm SFL and largest >180 cm SFL specimens) collected through ongoing research programmes (ITUNNES) and ICCAT. These data should be integrated with available tagging data (e.g. AOTTP, ICCAT) to update the growth curve.

The Group noted the need to standardize methods and analytical processes to estimate biological parameters (e.g. age/growth, reproduction) among different research programmes. Therefore, the Group recommended the organization of specific workshops to harmonize methodologies, either under the ICCAT research programme or supporting programmes like ITUNNES, where these are planned.

9. Responses to the Commission

The Group reviewed a list of outstanding responses to Commission (2025_PropRespCom_Control_vr3.xlsx) prepared by the Secretariat. Included are requests related to the tropical tunas MSEs, the efficacy of full closures, estimates of fishing capacity, historical FAD information, the impact of regulatory measures on mortality of juvenile bigeye and yellowfin tuna, the maximum acceptable number of FADs vessel and other topics.

The Secretariat reminded the Group that the list is subject to interpretation, may be incomplete and may include requests that have already been addressed. SCRS scientists were encouraged to review the proceedings of the Commission to ensure a more complete understanding of the various requests, and to provide guidance to their respective delegates to prevent requests that cannot be addressed with available data.

The Group expressed concerns about the large number of requests and their scope. Given the limited time available to prepare the necessary information, and the time constraints at the SCRS and Commission Meetings to evaluate the results, the Group agreed to focus efforts on requests that are feasible within the time given, and as needed, ask for prioritization of these requests from the Commission.

It was also noted that when data are not available to address a response, the SCRS has often attempted to provide analytical results obtained from theoretical models and simulation studies. It may be more effective to refrain from making a response to Commission until the necessary data are available. The SCRS Chair recommended that the Group characterize their responses as “no response, partial or full”, along with an explanation and he would circulate these characterizations to the Commission.

To address the responses to the Commission in 2025, the Group agreed to the following process:

1. The Tropical Tunas Officers, the SCRS Chair and Secretariat staff will meet before 15 May 2025 to review the list of potential responses and determine which are feasible to address this year;
2. If necessary, the SCRS Chair will circulate this list to the Chair of Panel 1 to determine their highest priorities;
3. The Tropical Tunas Officers will request an informal online meeting before 1 June 2025 to communicate the plan to the Group and establish appropriate points of contact to conduct the necessary work;
4. Draft responses should be circulated to the tropical tuna group by September 1st, 2025;
5. Responses will be finalized at the 2025 SCRS annual meeting.

10. Other matters

10.1 New rules regarding the requests related to science funding

The Secretariat provided the background for the new rules related to SCRS science funding requests that should be followed by the Group while drafting the Recommendations with financial implications. This included an overview of the available funding and use made between 2020 and 2024 within the Tropical Tunas Research and Data Collection Program (TTRaD). It was explained that the *Explanatory note on the draft ICCAT budget for financial year XXXX*, which is prepared annually by the Secretariat and discussed during the annual meeting of the Commission aiming the approval of the regular budget, shall now include much more information regarding the science budget, including among others: i) a general overview on the use of funds made available over the previous 5 years; ii) the balance of the science budget; iii) clear description and justification of the activities to be developed, together with thorough estimates of the associated funding requests; iv) the rationale for those activities that are planned for multi-years; and, v) that the funding requests to be estimated for the upcoming two biennial cycles of the Commission regular budget are compiled in the budget table template developed by the Secretariat.

Accordingly, a new template has been developed by the Secretariat to be filled by the SCRS subsidiary bodies, while drafting their Recommendations with financial recommendations (see below). However, since the first draft of the *Explanatory note on the draft ICCAT budget for financial year 2025* is due by late June, it would be essential that Chairs/Rapporteurs provide a tentative list of activities and estimates of associated cost by major line of activity, as detailed in the table below, in advance.

Working group	*2026*	*2027*	*2028*	*2029*	*Explanations*
Tagging					
Tag and tagging material purchases					
Rewarding, awareness and satellite					
Tagging campaign					
Biological studies:					
Reproduction					
Age and growth					
Genetic					
Other (sample bank)					
Sample collection and shipping					
Other fisheries related studies					
Consumables					
Workshops/meetings					
Modelling:					
MSE					
Stock assessment					
Other					
Science Coordination (e.g. GBYP, Steering Committee)					
TOTAL					

An EXCEL file has also been made available by the Secretariat to allow for more thorough estimates related to travel and subsistence costs, which should be used by the SCRS to estimate costs associated with the invitation of experts and/or instructors to meetings and workshops.

The Group was informed that the SCRS Science Strategic Plan Ad Hoc Drafting Group will be working intersessionally to advance the drafting of the 2026-2031 SCRS Science Strategic Plan for review at the SCRS Science Strategic Plan Meeting (9-11 July 2025). The SCRS Chair reminded the Group that all species groups have been asked to develop 6-year plans within their research programmes, in parallel with the Science Strategic Plan development, to encourage strategic research planning and facilitate collaborative efforts across species groups. He suggested that the budget table template could serve as a good format for 6-year research plan summary tables, as well, since the headings included are comprehensive, and new rows could be added under each heading for separate research projects. This would also greatly facilitate synchronizing the budget template for the funding requests with the strategic research plans.

10.2 New Executive Summary format

The Secretariat presented to the Group the new template for the Species Executive Summary that was adopted by the SCRS and endorsed by the Commission in 2024. This new format includes a maximum of two pages, although additional supporting information can be added as an Appendix to the Executive Summaries, as summarized in the table below:

Executive Summary Outline	**Maximum # pages** (2 pages)
Introduction	1/4
Summary table	1/2
Total catch table by gear, for the last 25 years Landings, discards (L, D)	1/4
Stock status	1/4 (Kobe plot including a pie chart representing the probabilities of stock in the different colour quadrants)
Outlook	1/4
Management recommendations	1/2 including HCR table or Exceptional Circumstances. Include Kobe II tables (climate conditioned when appropriate)
Additional supporting information	**Maximum # pages** (2 pages)
Summary table on biology aspects	1/2
Summary table on fisheries indicators	1/2 + 3 figures [Geographic distribution cumulative catch (t) by gear and year + Total annual catch by gear and flag + CPUE indices + 1 table (Total annual catch by gear and flag)]
Status of the stock (additional info)	1/2 + 2 figures (Estimates of relative abundance and fishing mortality per year from base case/combines models)
Outlook (additional info)	1/2+ 2 figures (projections of relative abundance and fishing mortality from base case/combined models)
Ecosystem and Climate Change Considerations	1/4 [if available…] suggested Exec. Sum. from ECO/BYC

Rapporteurs were requested to follow the appropriate format and current guidelines. In addition, it was suggested that Rapporteurs prepare the new Executive Summaries for the two tropical tuna species whose stocks are not assessed in 2025 and circulate those within the Group for possible comments and/or editorial suggestions, in advance of the September species group meeting.

10.3 Others

SCRS/P/2025/030 provided a presentation on the impact of fisheries management measures in Guinea (Rep.) on the proportion of tuna in annual catches from 2019 to 2024, by vessels targeting other fish species. This presentation indicated that such management measures, through their effect on fishing effort levels and strategies (e.g. gear use, fishing areas), influenced the catchability of small and large tuna as bycatch.

When asked, the presenter confirmed that the total catch per year of small tuna is known but noted that there is a lack of a national system/database to collect and maintain the associated size data. To address this situation, Guinea (Rep.) is seeking support through the ICCAT-Japan Capacity-building Assistance Project (JCAP). The Secretariat informed the Group of the current situation and indicated that it would continue to communicate with Guinea (Rep.) to assist in this matter.

The Group reviewed a report (SCRS/2025/093) that described the progress to date of SSfuture C++, a simulation tool that enables high-speed and flexible future projections while maintaining consistency with Stock Synthesis 3 (SS3).

The Group inquired about the specification of uncertainty in recruitment. The developer responded that, in the Beverton-Holt model, recruitment is subject to variability by being multiplied by an exponential random number generated based on sigma R. Furthermore, the developer noted that uncertainty in recruitment can be further addressed through methods such as resampling from historical recruitment data. The Group agreed that these approaches are useful, and recommended that they be applied to FLBEIA if possible

The Group also asked if the source code was available online. The developer noted that the software is not currently publicly available, but access to a GitHub repository containing the code can be provided upon request. The developer also aims to include the programme in the ICCAT software catalogue, as per the recommendation contained in the Report of the Meeting of the Working Group on Stock Assessment Methods (WGSAM).

11. Adoption of the report and closure

The report was adopted during the meeting. The Group agreed to have an intersessional informal online meeting(s) with the modeller's team to discuss progress and preliminary results before the start of the Bigeye Tuna Stock Assessment Meeting on 14 July 2025. The Chair via email will provide information of the meeting(s) schedule and invitation to all the participants of this meeting.

The Chair of the Group thanked all the participants for their efforts. The meeting was adjourned.

References

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Table 1. Bigeye tuna (BET) Atlantic and Mediterranean (A+M) standard SCRS catalogue on statistics (Task 1 and Task 2) by stock, major fishery (flag/gear combinations ranked by order of importance) and year (1994 to 2023). Only the most important fisheries (representing ±97.5% of Task 1 total catch) are shown. For each data series, Task 1 (DSet= “t1”, in t) is visualized against its equivalent Task 2 availability (DSet= “t2”) scheme. The Task 2 colour scheme has a concatenation of characters (“a”= T2CE exists; “b”= T2SZ exists; “c”=T2CS exists) that represents the Task 2 data availability in the ICCAT-DB.

Score: 6.825

Species	Stock	Status	FlagName	GearGrp	DSet	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Rank	%	%cum
				T1 Total		134932	128057	120767	110249	107948	121422	103434	91636	75801	87596	90043	67954	59192	69895	63172	76427	75750	76492	71317	66977	75308	79563	79190	78252	72599	74905	57554	47209	62644	59223			
BET	A+M	CP	Japan	LL	t1	38503	35477	33171	26490	24330	21833	24605	18087	15306	19572	18509	14026	15735	17993	16684	16395	15205	12306	15390	13397	13603	12390	10365	10994	9881	9341	8991	8696	12301	12268	1	21.0%	21%
BET	A+M	CP	Japan	LL	t2	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	ac	abc	abc	1		
BET	A+M	NCC	Chinese Taipei	LL	t1	19680	18023	21850	19242	16314	16837	16795	16429	18483	21563	17717	11984	2965	12116	10418	13252	13189	13732	10819	10316	13272	16453	13115	11845	11630	11288	9226	4093	8181	10274	2	16.5%	38%
BET	A+M	NCC	Chinese Taipei	LL	t2	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	abc	abc	abc	abc	abc	abc	abc	abc	abc	2		
BET	A+M	CP	EU-España	PS	t1	12700	9971	8970	6240	4863	5508	6901	5923	7038	6595	4187	3155	3416	3359	5456	8019	7910	8050	7485	6849	6464	5908	7206	6387	5141	5349	3068	3857	3907	3629	3	7.4%	45%
BET	A+M	CP	EU-España	PS	t2	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	a	abc	abc	abc	3		
BET	A+M	CP	China PR	LL	t1	428	476	520	427	1503	7347	6564	7210	5840	7890	6555	6200	7200	7399	5686	4973	5489	3720	3231	2371	2232	4942	5852	5514	4823	5718	3614	1638	3249	5415	4	5.4%	50%
BET	A+M	CP	China PR	LL	t2	b	b	b	-1	a	a	a	ab	ab	a	ab	ab	ab	a	ab	ab	ab	ab	ab	ab	abc	abc	abc	abc	abc	abc	abc	abc	abc	ab	4		
BET	A+M	CP	EU-España	BB	t1	9848	8073	6248	6260	2165	8563	4084	3897	3164	4158	3838	4417	3783	3007	1959	3868	2819	4506	2913	2389	3463	3508	3835	4811	2991	3631	2925	2611	2357	2074	5	4.9%	55%
BET	A+M	CP	EU-España	BB	t2	ac	ac	ac	abc	ac	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	a	abc	abc	abc	5		
BET	A+M	NCO	NEI (Flag related)	LL	t1	8964	10697	11862	16565	23484	22190	15092	7907	383																						6	4.7%	60%
BET	A+M	NCO	NEI (Flag related)	LL	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1																						6		
BET	A+M	CP	EU-France	PS	t1	11045	6975	7091	4646	4108	3936	4544	4172	3802	3735	2813	2136	2481	808	1040	2194	3320	3663	3766	3253	3817	2981	4623	3737	4095	5078	2192	2028	4186	2390	7	4.6%	65%
BET	A+M	CP	EU-France	PS	t2	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	7		
BET	A+M	CP	EU-Portugal	BB	t1	3036	9629	5810	5437	6334	3314	1498	1605	2420	1572	3161	3721	4626	4872	2738	5121	2872	6470	5986	5240	3737	3012	1677	2698	3870	2917	2810	2922	2895	2185	8	4.6%	69%
BET	A+M	CP	EU-Portugal	BB	t2	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	ab	ab	ab	ab	ab	ab	ab	8		
BET	A+M	CP	Ghana	PS	t1			1328	2970	3138	6648	3468	5621	5606	5330	6201	5444	2136	2369	2868	3558	5370	3030	4111	2503	3373	5336	4856	3524	3111	2729	2912	2219	3647	2369	9	4.3%	73%
BET	A+M	CP	Ghana	PS	t2			abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	ab	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	ab	ab	ab	ab	ab	ab	9		
BET	A+M	CP	Ghana	BB	t1	4738	5517	3423	7204	7509	5056	2164	4242	873	3731	11687	3416	171	190	504	957	883	511	358	460	802	582	338	314	525	188	248	2	25	2	10	2.7%	76%
BET	A+M	CP	Ghana	BB	t2	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	ab	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	ab	ab	ab	ab	ab	ab	10		
BET	A+M	CP	Curaçao	PS	t1			1893	2890	2919	3428	2359	2803	1879	2758	3343	13	441	272	1734	2465	2747	3488	2950	1998	2357	2573	3598	2844	3530	2787	1519	1758	824	143	11	2.5%	79%
BET	A+M	CP	Curaçao	PS	t2			ab	ab	ab	a	ab	ab	ab	ab	ab	b	ab	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	a	11		
BET	A+M	CP	Panama	PS	t1	5378	4304	1934	431	175	319	378	89	63		1521	2461	2521	3057	2360	2490	3085	3531	1736	2853	2341	1289	2022	1559	1664	2555	1183	940	1138	1174	12	2.2%	81%
BET	A+M	CP	Panama	PS	t2	ab	ab	ab	ab	ab	a	ab	ab	ab		ab	ab	ab	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	12		
BET	A+M	CP	Brazil	LL	t1	596	1935	1707	1237	644	2024	2762	2534	2582	2374	1453	1015	1423	927	785	1009	1055	1452	1165	1377	1966	2606	2322	2171	1595	1630	1705	1857	2556	2148	13	2.0%	83%
BET	A+M	CP	Brazil	LL	t2	ab	ab	a	a	a	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	a	a	a	a	ab	ab	ab	ab	ab	ab	ab	13		
BET	A+M	CP	Brazil	HL	t1													3	7	0	69	22	210	555	2012	4332	4967	5336	5086	3401	4563	4251	4339	3633	4192	14	1.9%	85%
BET	A+M	CP	Brazil	HL	t2													-1	-1	-1	-1	a	-1	-1	-1	a	-1	-1	ab	ab	a	ab	a	a	a	14		
BET	A+M	CP	Korea Rep	LL	t1	386	423	1250	796	163	124	43	1	87	143	629	770	2067	2136	2599	2134	2646	2762	1908	1151	1039	677	562	432	623	540	587	674	763	724	15	1.2%	86%
BET	A+M	CP	Korea Rep	LL	t2	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	ab	ab	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	ab	abc	15		
BET	A+M	CP	Philippines	LL	t1					1154	2113	975	377	837	855	1854	1743	1816	2368	1874	1880	1399	1267	532	1323	1964										16	1.0%	87%
BET	A+M	CP	Philippines	LL	t2					a	a	a	-1	-1	a	a	a	a	a	a	ab	ab	abc	abc	abc	abc										16		
BET	A+M	CP	Panama	LL	t1	7709	5623	2843	1667	1077		484	473	148													315	105	404	497	465	219	202	157		17	0.9%	88%
BET	A+M	CP	Panama	LL	t2	-1	-1	-1	-1	-1		a	-1	-1													-1	-1	-1	a	a	a	a	ab		17		
BET	A+M	CP	EU-France	BB	t1	2187	2000	2357	1746	1942	2001	1922	1590	795	760	572	595	571	507	141	269	156	238	175	25	74	45	135	127	171	195	80	15	135	27	18	0.9%	89%
BET	A+M	CP	EU-France	BB	t2	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	18		
BET	A+M	CP	Cape Verde	PS	t1												1151	1433	1283	482	605	655	1076	734	1377	2361	2921	1799	1144	1469	920	627	168			19	0.8%	89%
BET	A+M	CP	Cape Verde	PS	t2											b	ab	ab	abc	abc	abc	abc	abc	abc	abc	abc	abc	ab	ab	abc	ab	a	a			19		
BET	A+M	CP	Guatemala	PS	t1										736	831	1054	977	851	1024	922	1029	288	273	168	1007	340	1103	1602	1488	1623	906	791	868	601	20	0.7%	90%
BET	A+M	CP	Guatemala	PS	t2										ab	ab	ab	ab	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	20		
BET	A+M	CP	USA	LL	t1	943	982	713	795	696	930	532	682	536	284	310	312	521	381	428	430	443	603	582	509	584	574	386	568	389	580	495	668	668	700	21	0.7%	91%
BET	A+M	CP	USA	LL	t2	ab	ab	ab	ab	ab	ab	ab	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	ab	21		
BET	A+M	CP	Senegal	BB	t1	8	180	136	218	735	1372	915	1159	497	322	490	770	1318	1292	734	1143	954	455	432	599	359	501	577	287	159	222	513	184	92	161	22	0.7%	92%
BET	A+M	CP	Senegal	BB	t2	a	a	ac	a	a	ab	a	ab	ab	ab	ab	ac	ac	ac	ac	ac	ac	ac	ac	ac	ac	ac	ac	ac	ac	ac	ac	ac	c	ab	22		
BET	A+M	CP	Belize	PS	t1					195		87	96								186	246	704	1246	1274	1362	1654	1290	1366	1782	1986	839	473	764	803	23	0.7%	92%
BET	A+M	CP	Belize	PS	t2					a		ab	ab		b						abc	ab	ab	ab	ab	ab	ab	ab	abc	a	a	a	a	a	a	23		
BET	A+M	CP	El Salvador	PS	t1								3														992	1450	1826	2634	2464	1518	1492	1500	1397	24	0.6%	93%
BET	A+M	CP	El Salvador	PS	t2								a														abc	abc	abc	abc	abc	abc	abc	abc	abc	24		
BET	A+M	CP	Senegal	PS	t1																						429	895	2686	2707	1826	2188	518	645	994	25	0.5%	93%
BET	A+M	CP	Senegal	PS	t2																						abc	abc	ac	ac	ac	ac	ac	ac	ab	25		
BET	A+M	CP	EU-España	LL	t1	153	176	233	268	385	116	598	211	333	427	417	104	337	346	268	327	751	700	585	865	928	868	604	594	468	398	241	308	444	388	26	0.5%	94%
BET	A+M	CP	EU-España	LL	t2	ab	ab	ab	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	b	b	b	b	b	-1	b	b	b	ab	26		
BET	A+M	CP	Maroc	LL	t1						700	770	857	913	889	929	519	887	700	802	795	276	99	90	88	80	100	100	100	122	212	291	774	851	888	27	0.5%	94%
BET	A+M	CP	Maroc	LL	t2						-1	-1	-1	-1	b	abc	abc	abc	abc	ab	ab	-1	-1	-1	-1	b	ab	a	ab	a	-1	a	-1	-1	c	27		
BET	A+M	CP	St Vincent and Grenadines	LL	t1					1412	1870	1215	506	15	103	18		114	567	171	292	396	37	25	15	30	496	622	889	428	503	220	136	568		28	0.4%	95%
BET	A+M	CP	St Vincent and Grenadines	LL	t2					-1	-1	-1	-1	a	a	a		a	a	a	a	a	a	ab	a	ab	a	ab	ab	ab	abc	ab	abc	ab		28		
BET	A+M	CP	Guinée Rep	PS	t1		334	2394	885								72		60	20	22	402	525	1804	1674	1111								5	101	29	0.4%	95%
BET	A+M	CP	Guinée Rep	PS	t2		a	a	a								-1		-1	-1	-1	-1	-1	ac	ac	ac								a	a	29		
BET	A+M	CP	Namibia	LL	t1	708			3		286	482	280	196	150	133	276	228	26	112	48	133	26	196	35	186	371	236	48	14	41	562	1134	1993	619	30	0.3%	96%
BET	A+M	CP	Namibia	LL	t2	a			-1		a	-1	ab	a	-1	ab	ab	ab	ab	ab	ab	ab	ab	a	ab	a	a	a	abc	abc	abc	abc	abc	abc	abc	30		
BET	A+M	NCO	Vanuatu	PS	t1	2713	2610	2016	828		314																									31	0.3%	96%
BET	A+M	NCO	Vanuatu	PS	t2	a	a	a	a		a																									31		
BET	A+M	CP	USA	RR	t1	263	20	147	334	228	318	34	366	50	192	101	165	447	127	71	78	124	253	130	367	285	449	170	260	495	232	298	286	515	234	32	0.3%	96%
BET	A+M	CP	USA	RR	t2	ab	ab	b	ab	ab	ab	ab	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	ab	32		
BET	A+M	CP	Venezuela	PS	t1	140	140	131	205	214	75	181	513	1055	690	611	92	211	220	102	122	49	223	87	70	121	88	112	269	146	20	73	122	26	36	33	0.2%	96%
BET	A+M	CP	Venezuela	PS	t2	ab	ab	b	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	33		
BET	A+M	CP	Maroc	PS	t1	977	553	654	255	336	744	390	324	241	510	216	267	42														90	150	165	171	34	0.2%	97%
BET	A+M	CP	Maroc	PS	t2	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab														a	a	a	a	34		
BET	A+M	CP	EU-Portugal	LL	t1		33					1		170	83	42	332	443	633	619	484	527	273	133	100	131	112	500	431	332	184	196	101	52	70	35	0.2%	97%
BET	A+M	CP	EU-Portugal	LL	t2		a					-1		a	a	a	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	35		
BET	A+M	NCO	Mixed flags (EU tropical)	PS	t1	457	582	169	301	193	143	281	28	8	198	378	294	189	348	337	375						66	286	132	191	158	381				36	0.2%	97%
BET	A+M	NCO	Mixed flags (EU tropical)	PS	t2	-1	-1	-1	-1	b	b	-1	-1	-1	-1	-1	-1	-1	b	b	b	b	b	b	b	b	-1	-1	-1	-1	-1	-1				36		
BET	A+M	CP	Canada	LL	t1	111	147	133	161	109	244	285	220	265	161	135	169	172	137	107	107	97	121	155	190	186	249	166	208	233	193	95	247	321	341	37	0.2%	97%
BET	A+M	CP	Canada	LL	t2	a	a	a	a	a	ab	ab	abc	ab	ab	ab	ab	ab	ab	ab	ab	ab	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	37		

Table 2. Total bigeye tuna Task 1 nominal catches (t), landings and dead discards, by stock (Atlantic [ATL] and Mediterranean [M]) and gear group, 1950-2023.

ATL+M															
Year	Bait boat	Longline	Purse seine	Other surf.											TOTAL
	BB	LL	PS	GN	HL	HP	HS	RR	TL	TN	TP	TR	TW	UN	
1950	808														808
1951	1651														1651
1952	2018														2018
1953	2951														2951
1954	2932														2932
1955	4808														4808
1956	2769	10													2779
1957	8266	454													8720
1958	3837	453													4290
1959	6254	1478													7732
1960	6127	2986													9113
1961	5805	11255													17060
1962	7112	16020													23132
1963	10927	15112													26039
1964	5698	17928	5												23631
1965	9822	29572													39394
1966	5320	20046	20												25386
1967	11434	13726	92												25252
1968	3792	19683	436												23911
1969	9660	24149	2926												36735
1970	10296	28526	3058		0										41880
1971	11617	39904	3508		0										55029
1972	9296	33293	4383		0										46972
1973	13620	38453	4589		0										56662
1974	17922	39535	6246		0										63703
1975	14632	41347	4648		0										60627
1976	10380	27847	6441		0										44668
1977	13469	29531	11730		0			5							54735
1978	14708	28796	8837		0			22						68	52431
1979	9725	27560	8199		98			8						240	45830
1980	12350	41787	9204		1			9						246	63597
1981	10124	41658	15676	8	88		32	14						173	67773
1982	6950	51851	14512	2	79		43	44				52		24	73557
1983	9853	33757	15661	0	31	0		27				78		27	59435
1984	11480	43303	15947	111	39	3		19				2	0	72	70978
1985	17518	52595	7481	1	86			210				0	0	118	78010
1986	15661	39942	9279	2	103	0	15	300				16	0	113	65433
1987	13444	35570	7682	2	100	0	6	206				40	0	272	57323
1988	9747	47766	8392	4	159		7	135				13		151	66375
1989	12673	58420	7024	21	119	0	15	181				18	0	250	78722
1990	18280	56537	10160	21	48		6	50				7	0	154	85264
1991	17745	61655	17476	5	111	1	8	77				6	15	112	97211
1992	16248	62484	20852	4	126	0	35	114				17	79	147	100106
1993	16466	62890	33805	17	88		5	155				12	84	266	113789
1994	20352	78908	34699	88	161		9	272				34	156	252	134932
1995	25687	74882	26927	4	64		9	30	1			8	195	250	128057
1996	18342	74930	27132	3	31		9	157	11			8	0	144	120767
1997	21277	68306	20120	0	9		30	347	4			6	5	144	110249
1998	19173	71851	16479	0	0	0	13	247	9			31	0	144	107948
1999	22197	77224	21322	61	13		11	329	14			40	29	181	121422
2000	12141	72010	18823	49	8	0		53	31			142	17	159	103434
2001	14430	56123	20360	68	34			382	9			108	48	74	91636
2002	8460	47350	19766		16			67	2			40	45	57	75801
2003	11233	55356	20556	0	10			213	5			22	0	201	87596
2004	20238	49400	20113		7	0		109	6			54	1	115	90043
2005	13104	37961	16155		12			199	3			88	339	94	67954
2006	10605	34183	13852	0	31	1		490	6			5	11	8	59192
2007	10561	46231	12654	1	27	0		159	0			13	238	11	69895
2008	6307	41063	15582	0	76	4		115	2			3		20	63172
2009	11548	43533	21088	0	131	3		97	0			7	0	21	76427
2010	7842	42516	24904	7	32	2		138	1			14	1	292	75750
2011	12659	37900	24787	4	418	2		454	2			83	1	182	76492
2012	10459	34944	24903	1	782	6		186	0		0	29	0	8	71317
2013	9195	32245	22753	61	2257	4		389	0		0	66		6	66977
2014	8715	36770	24862	12	4587	9		312	7		0	29	0	5	75308
2015	7970	40381	25210	41	5335	3		498	1			123	0	1	79563
2016	6710	36345	29662	134	5611	4		249	0			238	235	1	79190
2017	8366	35191	27479	1026	5424	2		333	1	0		104	319	8	78252
2018	7932	32092	27959	3	4013	1		542				40	4	13	72599
2019	7341	33905	27606	512	5237	0	0	236				28	32	9	74905
2020	6848	27315	17897	50	5025	7	2	300		0		45	66	0	57554
2021	6141	21022	14706	37	4897	4	1	290	1	0		55	52	1	47209
2022	6861	32792	17823	360	4215			521		0		26	44	1	62644
2023	4677	35006	13957	4	5136			236	1			111	90	5	59223

Table 3. Summary table (total catches by year stratified by flag, square type, fishing mode, effort units) of T2CE datasets for the purse seine (PS) of tropical tuna fleets available in ICCAT and identified by the Group as having various issues (poor geographical resolution, absence of fishing mode (FAD/FSC) discrimination, absence of "NO.SETS" in the effort types provided) which may require a revision. The related T2CE datasets available in ICCAT but not shown here do satisfy the SCRS requirements. 2016 started the implementation of para 34 of Rec. 24-01 and para 31 of Rec. 22-01.

																					Issues (YES = require revision)		
GearCode	Flag	FleetCode	GeoStrataCode	FishMode	Eff1Type	Eff2Type	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	GeoStrata <> 1x1	FishingMode <> FAD/FSC	Effort(s) <> NO.SETS
PS	Belize	BLZ-BZ-ETRO	1x1	FAD	FISH.HOUR	HOURS.SEA	2309950	2117060		3066590	6113920	4564730	7070640										YES
				FSC	FISH.HOUR	HOURS.SEA	1906010	1487670		5246200	3251000	2947540	2068150										YES
				n/a	NO.SETS	D.FISH								17114897								YES	
			5x5	FAD	D.FISH	(blank)			13128008												YES		YES
			5x10	FAD	D.FISH	(blank)			454000												YES		YES
	Cape Verde	CPV-CV-ETRO	1x1	FAD	FISH.HOUR	HOURS.SEA	7139550	10201910	6332580	9865780	22122250	21945890	13255350	7392400	7679800	5728460	5081860						YES
				FSC	FISH.HOUR	HOURS.SEA	3208000	2999680	2245600	3760520	2854000	5163930	3235930	1391400	4757940	2609520	5438450						YES
	Côte d'Ivoire	CIV-CI-ETRO	1x1	FAD	D.AT SEA	(blank)			288383														YES
					FISH.HOUR	HOURS.SEA					2705050												YES
					-none-	(blank)			4456000														YES
				FSC	FISH.HOUR	HOURS.SEA					1990												YES
				n/a	NO.SETS	D.AT SEA				3742500												YES	
			10x10	n/a	D.AT SEA	(blank)		2205000													YES	YES	YES
	Curaçao	CUW-CW-ETRO	1x1	FAD	FISH.HOUR	HOURS.SEA	14830140	17574190	17564370	19292310	22340020	24331900											YES
				FSC	FISH.HOUR	HOURS.SEA	3282810	2457380	5159490	4672270	5095280	5320920											YES
	El Salvador	SLV-SV-ETRO	1x1	FAD	FISH.HOUR	HOURS.SEA						7864840											YES
				FSC	FISH.HOUR	HOURS.SEA						519190											YES
	EU-España	EU.ESP-ES-ETRO	1x1	FAD	FISH.HOUR	HOURS.SEA	42800860	44117320	56534170														YES
				FSC	FISH.HOUR	HOURS.SEA	22439530	12991820	17519440														YES
	Ghana	GHA-GH-ETRO	5x5	n/a	D.AT SEA	(blank)							55296000								YES	YES	YES
	Guatemala	GTM-GT-ETRO	1x1	FAD	FISH.HOUR	HOURS.SEA	3910710	3198390	4871310	5447390	6296000	10462760	8392690	11417350									YES
				FSC	FISH.HOUR	HOURS.SEA	2805320	2375700	2771150	3259170	3665000	1701930	3021750	3869030									YES
	Guinée Rep	GIN-GN-ETRO	1x1	FAD	D.FISH	(blank)												1364002					YES
					FISH.HOUR	D.FISH														4043000			YES
						HOURS.SEA			12882500	9415240	6680440												YES
					SUC.D.FI	(blank)													5880000				YES
				FSC	FISH.HOUR	D.FISH														307000			YES
						HOURS.SEA					763960												YES
					SUC.D.FI	(blank)													1201000				YES
			5x5	n/a	D.FISH	(blank)		5395005													YES	YES	YES
	NEI (ETRO)	NEI.001	1x1	FAD	FISH.HOUR	HOURS.SEA	347980																YES
				FSC	FISH.HOUR	HOURS.SEA	40000																YES
	Panama	PAN-PA-ETRO	1x1	FAD	FISH.HOUR	HOURS.SEA	13926990	19211830	13215120	18050800	18783220	11257080											YES
				FSC	FISH.HOUR	HOURS.SEA	3431980	1456360	4884570	3686880	3858020	2377290											YES
	Senegal	SEN-SN-ETRO	1x1	n/a	NO.SETS	FISH.HOUR														35696		YES	
				n/a	NO.SETS	FISH.HOUR							4839500									YES	

Table 4. Summary of bigeye tuna conventional tagging data: number of recoveries grouped by number of years at liberty in each release year. The last column shows the recovery rate (%) in each release year.

Number of tag Bigeye tuna (*Thunnus obesus*)											
			Years at liberty								
Year	Releases	Recaptures	< 1	1 - 2	2 - 3	3 - 4	4 - 5	5-6	6-7	Unk	% recapt*
1960	2	0									
1962	9	0									
1963	45	0									
1964	34	0									
1965	4	0									
1966	21	0									
1967	3	0									
1969	2	0									
1971	6	6	4	2							100.0%
1972	21	21	19							2	100.0%
1973	128	127	124	2						1	99.2%
1974	27	26	21	1						4	96.3%
1975	16	16	14	1						1	100.0%
1977	9	9	9								100.0%
1978	108	107	101	5		1					99.1%
1979	11	0									
1980	939	92	72	10						10	9.8%
1981	690	208	189	8	1					10	30.1%
1982	7	0									
1983	5	3	3								60.0%
1984	23	5	3	1						1	21.7%
1985	5	0									
1986	96	90	87							3	93.8%
1987	23	0									
1988	10	0									
1989	28	2	1	1							7.1%
1990	69	0									
1991	216	2		2							0.9%
1992	255	1	1								0.4%
1993	220	3		2	1						1.4%
1994	259	32	27	4						1	12.4%
1995	157	12	10	1				1			7.6%
1996	120	21	18	3							17.5%
1997	608	243	233	8	2						40.0%
1998	45	7	6	1							15.6%
1999	3659	1464	1381	58	9	1				15	40.0%
2000	1414	192	174	14	2	1				1	13.6%
2001	356	14	9	4						1	3.9%
2002	1212	138	129	6	1					2	11.4%
2003	273	46	43	3							16.8%
2004	4	0									
2005	24	1								1	4.2%
2006	11	0									
2007	3	0									
2008	3	1				1					33.3%
2009	12	0									
2010	29	0									
2011	24	2	1				1				8.3%
2012	32	0									
2013	74	0									
2014	21	1	1								4.8%
2015	10	0									
2016	9154	2560	2350	129	26	8	1		1	45	28.0%
2017	6417	1683	1557	74	9	1				42	26.2%
2018	5644	537	417	84	3	5	2	3		23	9.5%
2019	2004	304	286	8						10	15.2%
2020	1059	87	70	15	2						8.2%
2021	24	1	1								4.2%
2022	2	0									
2023	12	1	1								8.3%
(blank)	5	1	1								20.0%
Grand Total	35703	8066	7363	447	56	18	4	4	1	173	22.6%

Table 5. CPUE evaluation table for the available standardized CPUE series for the 2025 Atlantic bigeye tuna stock assessment.

Use for Model platform	**SS3 + SPM**	**NOT USE**	**SS3 only (juvenile)**	**SS3 only (juvenile, not in same run with BAI)**	**NOT USE**	**USE SENSITIVY RUN**
Use in stock assessment?	Adequate	None	Adequate	Adequate	Incomplete	Incomplete
SCRS Doc No.	SCRS/2025/084	SCRS/2025/089	SCRS/2025/081	SCRS/2025/083	SCRS/2025/086	SCRS/2025/076
Index Name:	2025 Joint LL	CTP LL	Buoy-derived Abundance Index	PS FOB	Morocco LL	Canary BB
Data Source (state if based on logbooks, observer data etc)	Logbooks and observer data	logbooks	Acoustic buoy data deployed by Spanish tropical tuna purse seiners and associated fleets in the Atlantic	logbooks	ONP sales data, VMS data, INRH surveys	logbooks
Do the authors indicate the percentage of total effort of the fleet the CPUE data represents?	No	Yes	No	Yes	Yes	NA
If the answer to 1 is yes, what is the percentage?		71-80%		91-100%	15% to 20%	
Are sufficient diagnostics provided to assess model performance??	Sufficient	Sufficient	Sufficient	Sufficient	Sufficient	Sufficient
How does the model perform relative to the diagnostics ?	Well	Well	Well	Well	Well	Well
Documented data exclusions and classifications?	Yes	Yes	No	Yes	Yes	Yes
Data exclusions appropriate?	Yes	Yes	Yes	Yes	Yes	Yes
Data classifications appropriate?	Yes	Yes	Yes	Yes	Yes	Yes
Geographical Area	Atlantic	Atlantic	Tropical	Tropical	Atl NE	Atl NE
Data resolution level	Set	Set	OTH	Set	Set	Set
Ranking of Catch of fleet in TINC database (use data catalogue)	1-5	1-5		1-5	11 or more	1-5
Length of Time Series	longer than 20 years	longer than 20 years	11-20 years	11-20 years	13 years	11-20 years
Are other indices available for the same time period?	None	Few	Few	Few	Few	Many
Are other indices available for the same geographic range?	None	Few	Few	Few	Few	Few
Does the index standardization account for Known factors that influence catchability/selectivity? (eg. Type of hook, bait type, depth etc.)	Yes	Yes	Yes	Yes	Yes	Yes
Estimated annual CV of the CPUE series	Variable	Low	Low	Low	Low	Low
Annual variation in the estimated CPUE exceeds biological plausibility	Unlikely	Unlikely	Unlikely	Unlikely	Unlikely	Unlikely
Is data adequate for standardization purposes	Yes	Yes	Yes	Yes	Yes	Yes
Is this standardised CPUE time series continuous?	No	Yes	Yes	Yes	No	Yes
For fisheries independent surveys: what is the survey type?			Other (explain below)		Non applicable	
For 19: Is the survey design clearly described?			Yes		Non applicable	
Other Comments	Index version. A) FY 2023 / Region 2 (delta lognormal, JP_TW_US) (continuity run) B) FY 2023 / Region 2 (lognormal, all CPCs) option for modeles (reference model)	1995-2023 2006-2023			CPUE trends: stable (2012–2018), rise to peak in 2022, slight decline; consistent with vessel size, seasonality, and square_id_6.0 influence.	

Table 6. Available annual abundance indices for Atlantic bigeye tuna in 2025.

series	2025 Joint LL_R1_early		2025 Joint LL_R2_early		2025 Joint LL_R3_early		2025 Joint LL_R1_Continuity		2025 Joint LL_R2_Continuity		2025 Joint LL_R3_Continuity		2025 Joint LL_R1_allCPCs		2025 Joint LL_R2_allCPCs		2025 Joint LL_R3_allCPCs		CTP LL_R2		Morocco LL		Canary BB	
indexing	Number		Number		Number		Number		Number		Number		Number		Number		Number		Number		Number			
area	Region 1		Region 2		Region 3		Region 1		Region 2		Region 3		Region 1		Region 2		Region 3		Region 2		Region 1		Region 1	
method	Delta-LogNormal JPN_USA		Delta-LogNormal JPN_USA		Delta-LogNormal JPN_USA		Delta-LogNormal JPN_USA_CTP		Delta-LogNormal JPN_USA_CTP		Delta-LogNormal JPN_USA_CTP		lognormal all CPCs		lognormal all CPCs		lognormal all CPCs		lognormal		Delta-lognormal model combined with Random Forest			
source	SCRS/2025/084		SCRS/2025/084		SCRS/2025/084		SCRS/2025/084		SCRS/2025/084		SCRS/2025/084		SCRS/2025/084		SCRS/2025/084		SCRS/2025/084		SCRS/2025/089		SCRS/2025/086		SCRS/2025/076	
Use in 2025 assessment	no		continuity run (SS3+SPM)		no		no		continuity run (SS3+SPM)		no		no		reference model (SS3+SPM)		no		no		no		sensitivity run	
Year	Std. CPUE	CV	Std. CPUE	CV	Std. CPUE	CV	Std. CPUE	CV	Std. CPUE	CV	Std. CPUE	CV	Std. CPUE	CV	Std. CPUE	CV	Std. CPUE	CV	Std. CPUE	CV	Std. CPUE	SE	Std. CPUE	CV
1950																										
1951																										
1952																										
1953																										
1954																										
1955																										
1956																										
1957																										
1958																										
1959			0.78	0.03	1.38	0.10																				
1960			0.85	0.02																						
1961			1.09	0.02	3.78	0.07																				
1962	0.89	0.09	0.95	0.02	3.31	0.06																				
1963	0.53	0.07	1.11	0.02	1.54	0.04																				
1964	0.78	0.04	1.09	0.01	1.26	0.03																				
1965	1.36	0.03	1.17	0.01	1.19	0.03																				
1966	1.27	0.04	1.02	0.02	0.93	0.03																				
1967	0.97	0.04	1.01	0.02	1.07	0.04																				
1968	1.68	0.05	1.14	0.02	1.01	0.04																				
1969	0.87	0.05	1.04	0.02	1.20	0.04																				
1970	1.12	0.03	0.92	0.02	0.97	0.05																				
1971	0.87	0.02	0.86	0.02	0.91	0.04																				
1972	0.62	0.03	0.90	0.03	0.83	0.05																				
1973	1.01	0.03	0.94	0.03	1.09	0.06																				
1974	1.01	0.03	0.88	0.04	1.00	0.07																				
1975	0.60	0.03	0.69	0.03	1.16	0.06																				
1976	0.67	0.03	0.72	0.03	1.56	0.07																				
1977	0.70	0.03	1.08	0.04	1.09	0.08																				
1978	0.64	0.03	0.91	0.04	1.31	0.07																				
1979	0.69	0.03	0.96	0.03	1.52	0.07	1.72	0.04	1.93	0.03	3.13	0.06	1.75	0.04	1.66	0.02	1.29	0.05						
1980							2.21	0.04	1.65	0.02	1.74	0.08	2.17	0.03	1.48	0.02	1.13	0.04						
1981							1.37	0.03	1.51	0.02	1.32	0.07	1.39	0.03	1.35	0.02	0.82	0.04						
1982							1.94	0.04	1.35	0.01	1.19	0.06	1.77	0.03	1.24	0.01	1.09	0.04						
1983							1.58	0.04	1.40	0.02	1.91	0.06	1.41	0.03	1.29	0.02	1.23	0.04						
1984							1.48	0.04	1.54	0.01	1.73	0.06	1.41	0.03	1.40	0.01	1.50	0.04						
1985							1.53	0.04	1.66	0.01	1.70	0.05	1.49	0.03	1.47	0.01	1.57	0.03						
1986							1.50	0.04	1.70	0.01	1.74	0.05	1.28	0.03	1.52	0.01	1.47	0.04						
1987							1.40	0.03	1.99	0.02	2.07	0.06	1.22	0.03	1.63	0.01	1.79	0.04						
1988							0.92	0.03	1.84	0.01	1.29	0.05	0.92	0.03	1.66	0.01	1.15	0.04						
1989							1.13	0.03	1.44	0.01	1.19	0.05	1.11	0.02	1.35	0.01	1.20	0.04						
1990							1.44	0.03	1.14	0.01	1.24	0.04	1.26	0.03	1.10	0.01	1.28	0.04						
1991							1.11	0.03	1.20	0.01	0.94	0.03	1.02	0.03	1.19	0.01	0.99	0.03						
1992							1.01	0.03	1.10	0.01	1.15	0.04	0.90	0.02	1.09	0.01	1.21	0.03						
1993							1.03	0.03	1.08	0.01	1.15	0.04	0.86	0.02	1.09	0.01	1.23	0.03						
1994							0.83	0.03	0.93	0.01	1.04	0.03	0.81	0.02	0.95	0.01	1.21	0.02						
1995							0.78	0.03	1.00	0.01	1.20	0.02	0.82	0.02	1.00	0.01	1.24	0.03	7.31	12.61				
1996							0.83	0.03	0.79	0.01	1.10	0.03	0.81	0.02	0.81	0.01	1.17	0.03	6.08	12.24				
1997							0.91	0.03	0.72	0.01	0.71	0.03	0.86	0.02	0.76	0.01	1.01	0.02	5.72	12.34				
1998							0.84	0.03	0.73	0.01	0.67	0.03	0.82	0.02	0.78	0.01	0.94	0.02	3.89	12.75				
1999							0.99	0.03	0.69	0.01	0.73	0.03	0.92	0.02	0.79	0.01	1.04	0.02	3.62	12.24				
2000							0.84	0.02	0.75	0.01	0.71	0.02	0.83	0.02	0.88	0.01	0.89	0.02	4.31	12.34				
2001							0.89	0.02	0.64	0.01	0.71	0.03	0.87	0.02	0.68	0.01	0.68	0.02	5.17	12.20				
2002							0.59	0.02	0.67	0.01	0.85	0.02	0.63	0.02	0.66	0.01	0.90	0.02	5.29	12.12				
2003							0.68	0.02	0.70	0.01	0.75	0.03	0.66	0.02	0.69	0.01	0.80	0.02	5.24	12.11				
2004							0.60	0.03	0.59	0.01	0.90	0.02	0.62	0.02	0.62	0.01	0.71	0.02	4.33	11.97				
2005							0.69	0.02	0.61	0.01	0.72	0.03	0.60	0.02	0.66	0.01	0.72	0.03	4.54	11.97				
2006							0.76	0.03	0.66	0.01	0.65	0.02	0.69	0.02	0.73	0.01	0.74	0.02	4.35	12.31				
2007							0.60	0.03	0.62	0.01	0.55	0.03	0.68	0.03	0.73	0.01	0.73	0.02	4.72	12.02				
2008							0.58	0.03	0.52	0.01	0.69	0.02	0.63	0.02	0.62	0.01	0.80	0.02	4.03	12.06				
2009							0.56	0.04	0.50	0.01	0.51	0.03	0.60	0.03	0.60	0.01	0.71	0.02	3.93	11.97			1.09	0.06
2010							0.51	0.04	0.48	0.01	0.50	0.03	0.56	0.03	0.59	0.01	0.68	0.02	3.96	11.98			0.57	0.06
2011							0.49	0.04	0.43	0.01	0.52	0.02	0.55	0.03	0.55	0.01	0.70	0.02	3.47	11.98			0.71	0.06
2012							0.46	0.04	0.48	0.01	0.73	0.02	0.55	0.03	0.60	0.01	0.81	0.02	3.00	12.03	3.46	0.24	1.20	0.06
2013							0.62	0.04	0.68	0.01	0.80	0.02	0.69	0.03	0.78	0.01	0.89	0.02	5.19	12.08	3.22	0.24	0.73	0.05
2014							0.75	0.04	0.66	0.01	0.63	0.02	0.81	0.03	0.75	0.01	0.79	0.02	4.82	12.05	4.36	0.24	0.97	0.05
2015							0.63	0.04	0.77	0.01	0.59	0.02	0.71	0.03	0.85	0.01	0.80	0.02	5.76	12.05	3.16	0.17	1.07	0.04
2016							0.58	0.04	0.64	0.01	0.61	0.02	0.60	0.03	0.73	0.01	0.79	0.02	4.76	12.06	4.21	0.30	1.10	0.05
2017							0.61	0.04	0.64	0.01	0.67	0.02	0.67	0.03	0.71	0.01	0.78	0.02	5.19	12.05	11.48	1.48	0.81	0.05
2018							0.71	0.04	0.53	0.01	0.62	0.02	0.77	0.03	0.63	0.01	0.74	0.02	4.39	12.03	4.40	0.16	1.07	0.05
2019							0.76	0.04	0.56	0.01	0.70	0.03	0.72	0.03	0.67	0.01	0.74	0.02	4.51	12.04	7.08	0.25	1.36	0.06
2020							0.72	0.04	0.61	0.01	0.62	0.02	0.67	0.03	0.70	0.01	0.79	0.02	4.97	12.08	11.95	0.43	1.16	0.05
2021							0.61	0.05	0.82	0.01	0.71	0.03	0.70	0.03	0.93	0.01	0.80	0.02	8.58	12.52	29.49	1.13	1.15	0.06
2022							0.67	0.04	0.94	0.01	0.85	0.03	0.79	0.03	0.97	0.01	0.89	0.02	8.57	12.23	62.09	2.85	1.17	0.06
2023							0.66	0.04	0.93	0.01	0.94	0.04	0.75	0.03	0.96	0.01	0.84	0.02	7.99	12.22	85.54	4.87	0.86	0.06
2024																					53.74	3.96		

Table 7. Available year-quarterly abundance indices for Atlantic bigeye tuna in 2025.

series		BAI index		PS FOB	
indexing area		Region 2		Region 2	
method					
source		SCRS/2025/081		SCRS/2025/083	
Use in 2025 assessment		only in Stock Synthesis		only in Stock Synthesis (not in same run as BAI index)	
Year	**Quarter**	**Index**	**CV**	**Index**	**CV**
2010	**1**	0.34	0.22	1.47	0.10
2010	**2**	0.18	0.21	0.84	0.10
2010	**3**	0.22	0.22	1.59	0.09
2010	**4**	0.39	0.19	1.26	0.09
2011	**1**	0.30	0.21	1.59	0.09
2011	**2**	0.18	0.22	0.88	0.10
2011	**3**	0.12	0.19	1.54	0.10
2011	**4**	0.12	0.19	1.37	0.07
2012	**1**	0.11	0.19	1.27	0.08
2012	**2**	0.12	0.19	0.65	0.08
2012	**3**	0.14	0.20	0.84	0.09
2012	**4**	0.13	0.19	1.13	0.08
2013	**1**	0.15	0.20	1.17	0.08
2013	**2**	0.12	0.17	0.82	0.08
2013	**3**	0.14	0.15	0.80	0.11
2013	**4**	0.22	0.15	1.24	0.07
2014	**1**	0.19	0.16	1.24	0.08
2014	**2**	0.14	0.16	0.86	0.08
2014	**3**	0.21	0.13	1.14	0.08
2014	**4**	0.20	0.11	1.27	0.06
2015	**1**	0.19	0.13	1.17	0.07
2015	**2**	0.13	0.14	1.01	0.07
2015	**3**	0.20	0.11	1.00	0.09
2015	**4**	0.21	0.09	0.99	0.07
2016	**1**	0.18	0.12	0.93	0.07
2016	**2**	0.15	0.17	0.88	0.08
2016	**3**	0.22	0.13	1.20	0.08
2016	**4**	0.21	0.11	1.40	0.06
2017	**1**	0.19	0.13	1.06	0.07
2017	**2**	0.18	0.15	1.04	0.07
2017	**3**	0.26	0.13	0.92	0.08
2017	**4**	0.32	0.10	1.09	0.06
2018	**1**	0.33	0.12	1.11	0.07
2018	**2**	0.34	0.13	0.92	0.07
2018	**3**	0.37	0.12	0.61	0.08
2018	**4**	0.36	0.11	0.88	0.06
2019	**1**	0.39	0.14	1.43	0.08
2019	**2**	0.29	0.17	0.70	0.07
2019	**3**	0.36	0.17	0.98	0.10
2019	**4**	0.33	0.15	0.62	0.07
2020	**1**	0.33	0.19	0.93	0.08
2020	**2**	0.32	0.16	1.09	0.08
2020	**3**	0.31	0.15	0.66	0.09
2020	**4**	0.31	0.13	0.81	0.06
2021	**1**	0.20	0.15		
2021	**2**	0.18	0.17	0.90	0.06
2021	**3**	0.21	0.19	0.77	0.08
2021	**4**	0.28	0.16	0.80	0.06
2022	**1**	0.18	0.21	0.92	0.11
2022	**2**	0.19	0.21	0.51	0.07
2022	**3**	0.29	0.20	0.76	0.08
2022	**4**	0.27	0.16	0.76	0.06
2023	**1**	0.12	0.22	0.75	0.11
2023	**2**	0.15	0.22	0.55	0.08
2023	**3**	0.21	0.20	0.92	0.10
2023	**4**	0.33	0.19	0.96	0.08
2024	**1**	0.17	0.22		
2024	**2**	0.29	0.22		
2024	**3**	0.24	0.21		
2024	**4**	0.30	0.21		

Table 8. Fleet structure for BET Stock Synthesis input model 2025 stock assessment.

N	*Name*	*Area*	*Year*	*Selectivity*	*Flags*	Remarks
1	PS early	2, 1	Before 1985	5KCS	*All except Ghana/USA/Venezuela*	
2	PS transition	2, 1	1986-1990	5KCS	*All except Ghana/USA/Venezuela*	
3	PS Free School	2, 1	After 1991	5KCS	*All except Ghana/USA/Venezuela*	
4	PS FAD	2, 3	All	5KCS	*All except Ghana/USA/Venezuela*	
5	BB+PS Ghana	2	All	5KCS	*Ghana*	
6	BB-South Dakar	2(S10N)	All	5KCS	*All except Ghana*	Size by South Africa is removed
7	BB-North Dakar early	2(N10N)	Before 1980	DN	*All except Ghana*	
8	BB-North Dakar late	2(N10N)	After 1981	DN	*All except Ghana*	
9	BB_North_Azores	1,3	All	DN	*All except Ghana*	
10	LL North Japan	1	All	DN	*Japan*	
11	LL Tropical Japan	2	All	DN	*Japan*	
12	LL South Japan	3	All	DN	*Japan*	
13	LL North Other	1	All	DN	*All except Japan and Chinese Taipei*	Now excluding Chinese Taipei LL (#16-18), and the catches from other gears have also been separated to a new fleet (#22) and two new fleets (#19 and 20).
14	LL Tropical Other	2	All	DN	*All except Japan and Chinese Taipei*	See note for #13
15	LL South other	3	All	DN	*All except Japan and Chinese Taipei*	See note for #13
16	LL North China Taipei	1	All	DN	*China Taipei*	New fleet prior was part of #13
17	LL Tropical China Tai-pei	2	All	ASY	*China Taipei*	New fleet prior was part of #14
18	LL South China Taipei	3	All	ASY	*China Taipei*	New fleet prior was part of #15
19	RR West Atlantic	1	All	DN	*USA/Canada/UK-Sta Helena*	New fleet prior was part of #13, use only size by USA RR, catch is "oth" in CATDIS
20	HL Brazil	2	All	Mirrored to fleet 8	*Brazil*	New fleet prior was part of #14. catch is "oth" in CATDIS
21	PS West Atlantic	1	All	5KCS	*USA/Venezuela*	New fleet prior was part of #13
22	Other	1,2,3	All	5KCS	*All others*	New fleet prior was part of #13-15

Table 9. Group's proposal for the uncertainty grid evaluation of 2025 BET stock assessment.

Uncertainty Grid Factor	**# Factors**	**Scenarios axis of uncertainty**
Natural Mortality	3	Average M on Ages 4-10+ = 0.22, 0.32, 0.48 (set 1) Average M on Ages 4-10+ = 0.26, 0.32, 0.40 (set 2)
Steepness	3	Steepness = 0.7, 0.8, 0.9
Juvenile Index of Abundance	2	a. Acoustic buoy, b. Purse Seine FOB
Total Uncertainty Grid Models	18	

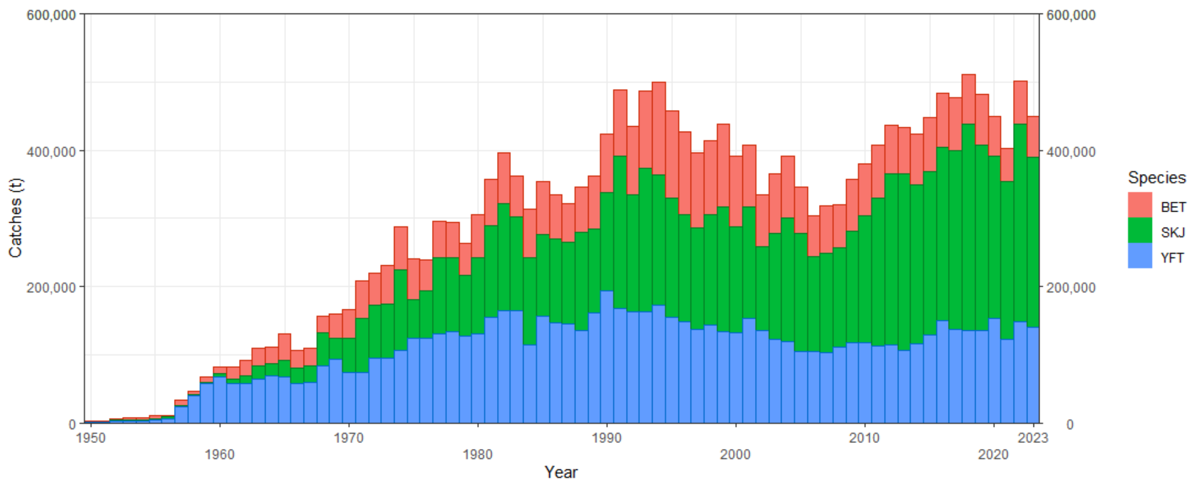


Figure 1. Cumulative T1NC catches (t) of the three main tropical tuna species (BET, YFT, SKJ) in the Atlantic and Mediterranean (A+M), 1950–2023.

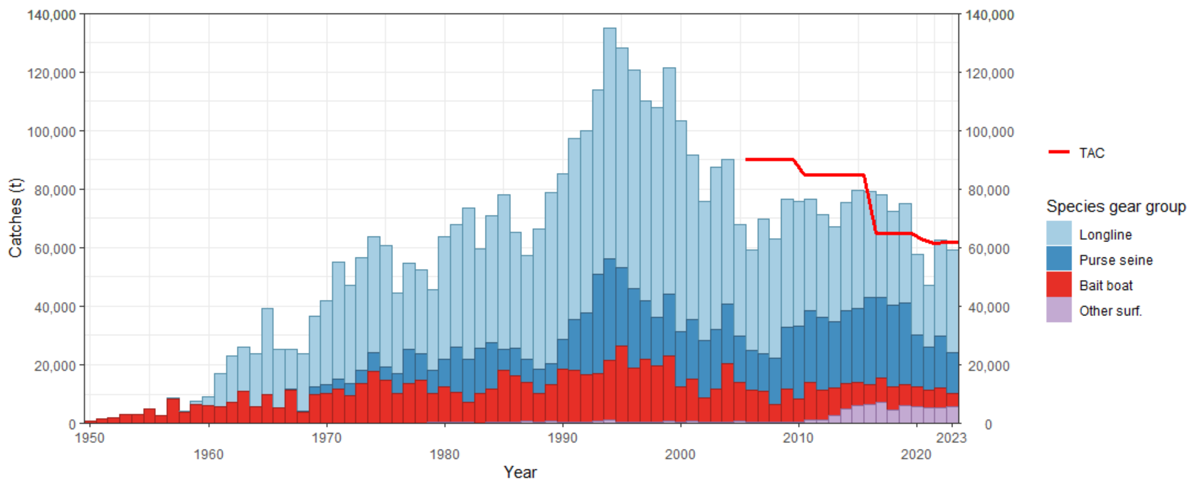
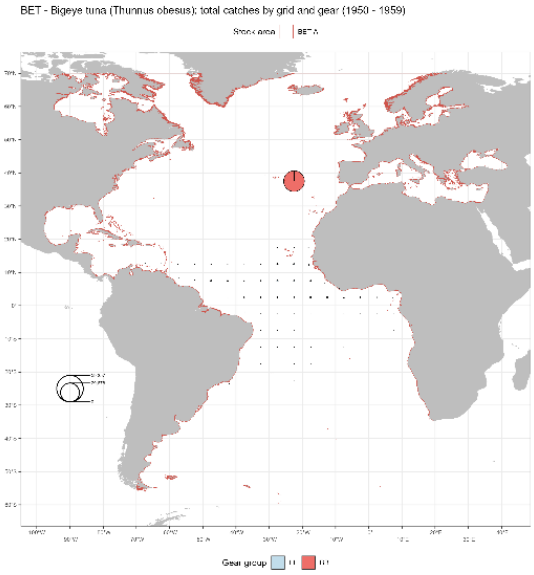
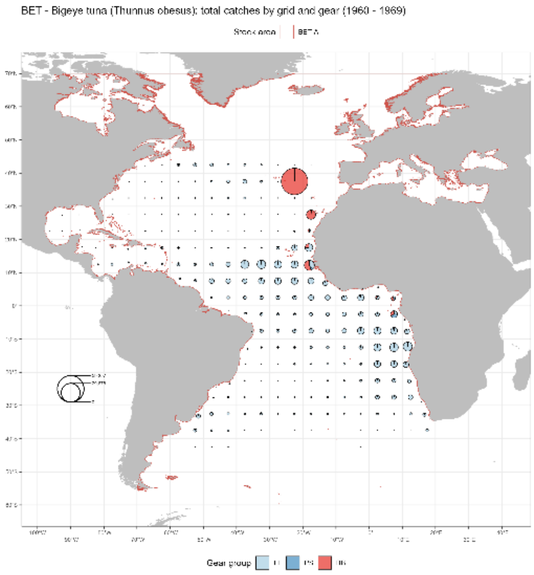
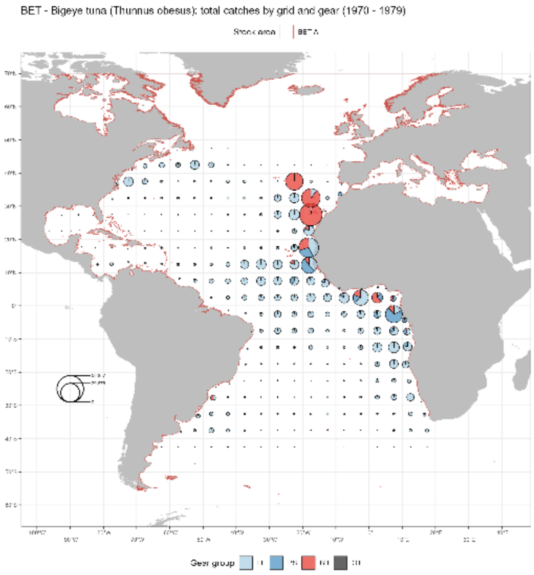
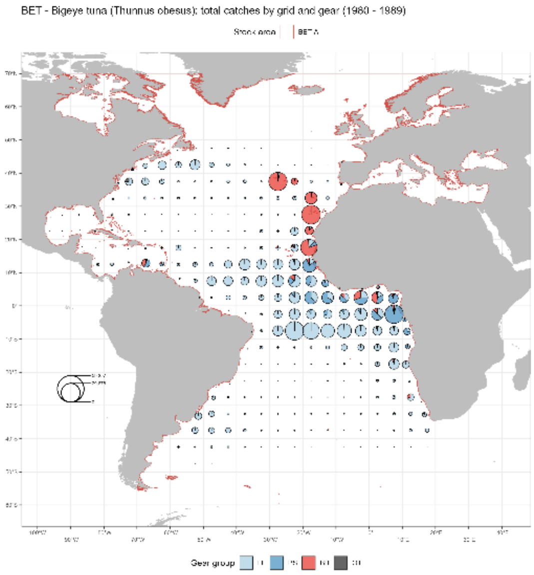


Figure 2. Cumulative BET T1NC catches (t) by major gear in the Atlantic and Mediterranean (A+M), 1950–2023.


BET - Bigeye tuna (Thunnus obesus): total catches by grid and gear (1950 - 1959)
Stock area
Gear group


BET - Bigeye tuna (Thunnus obesus): total catches by grid and gear (1960 - 1969)
Stock area
Gear group


BET - Bigeye tuna (Thunnus obesus): total catches by grid and gear (1970 - 1979)
Stock area
Gear group


BET - Bigeye tuna (Thunnus obesus): total catches by grid and gear (1980 - 1989)
Stock area
Gear group

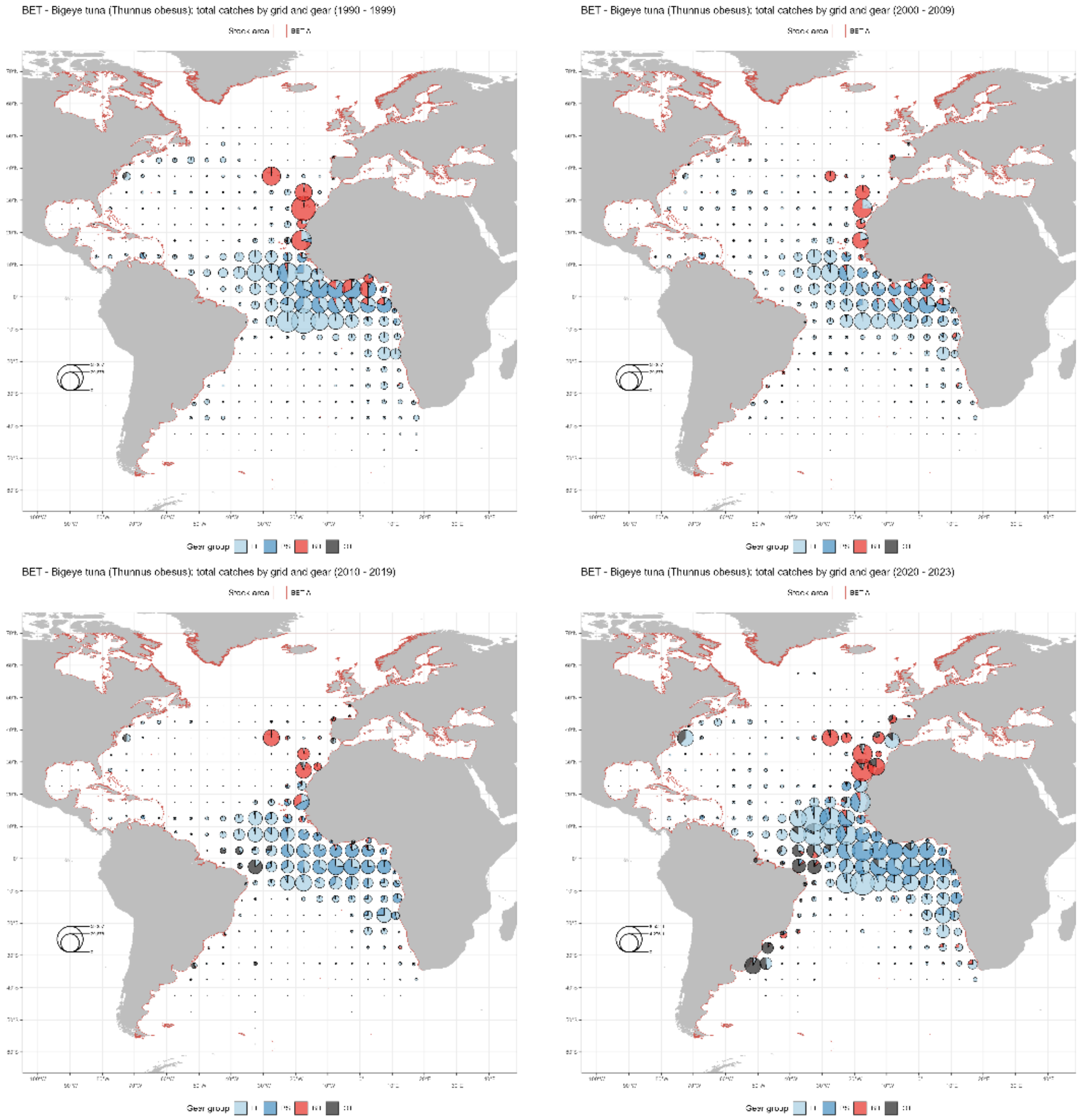


Figure 3. Bigeye tuna catch distribution (CATDIS) maps by decade for the period 1950-2020.

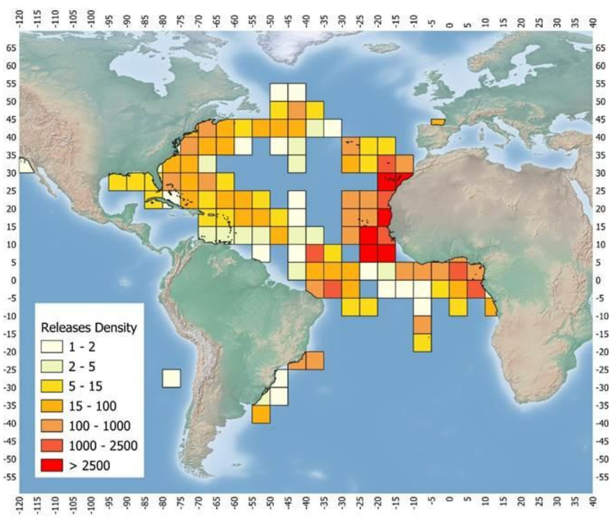


Figure 4. Density of BET conventional tags released in a 5x5 square grid, in the ICCAT area.

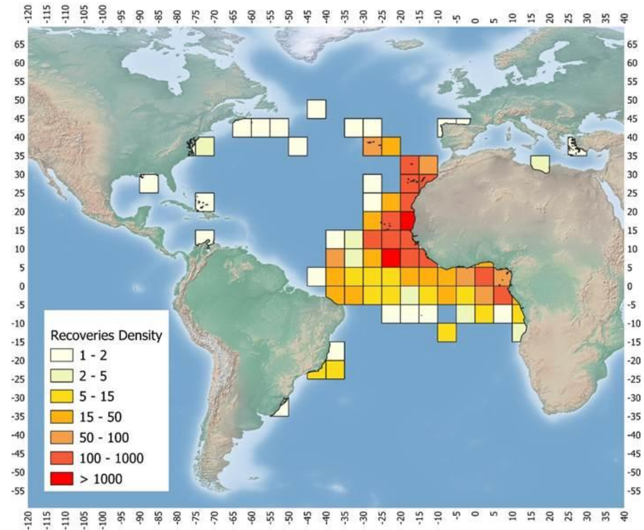


Figure 5. Density of BET conventional tags recovered in a 5x5 square grid, in the ICCAT area.

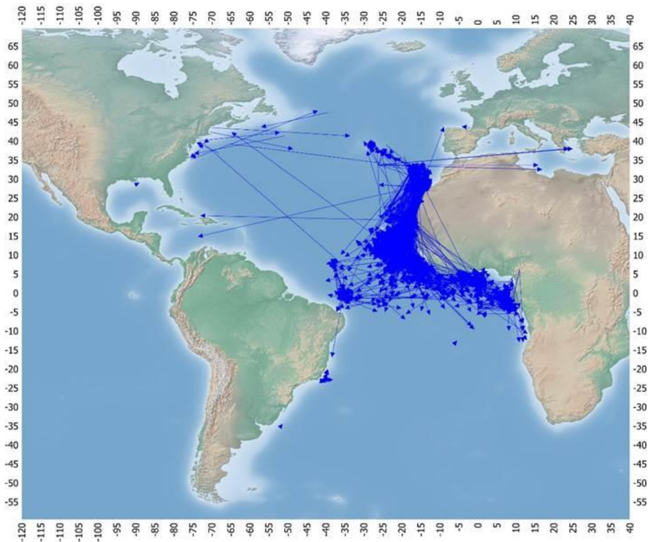


Figure 6. Apparent movement (arrows: release to recovery location) of the BET conventional tagging.

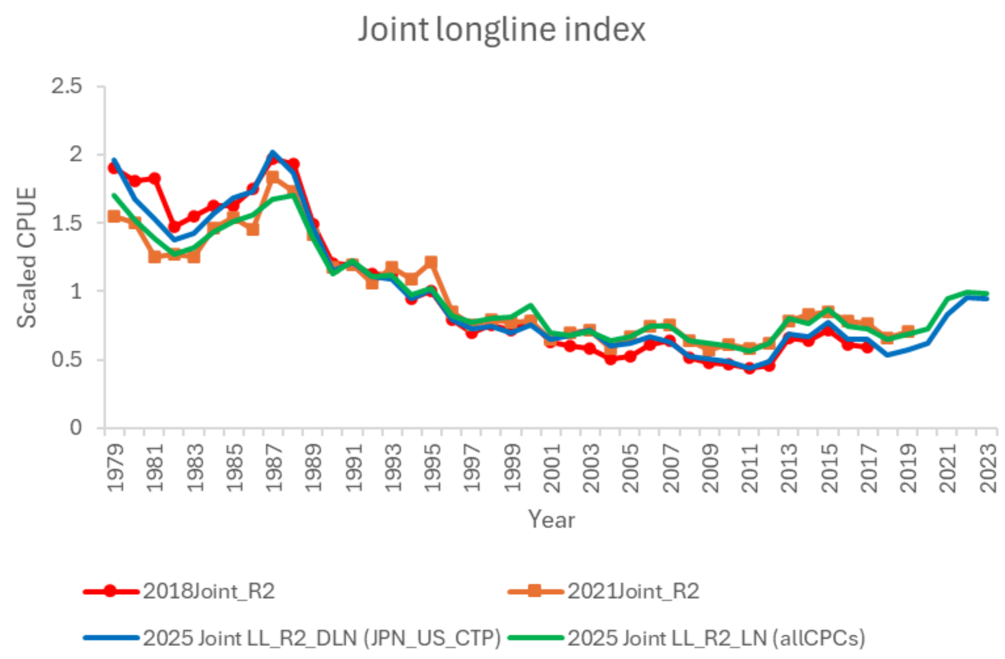


Figure 7. Comparisons of joint longline indices (Region 2) estimated in 2018, 2021 and 2025.

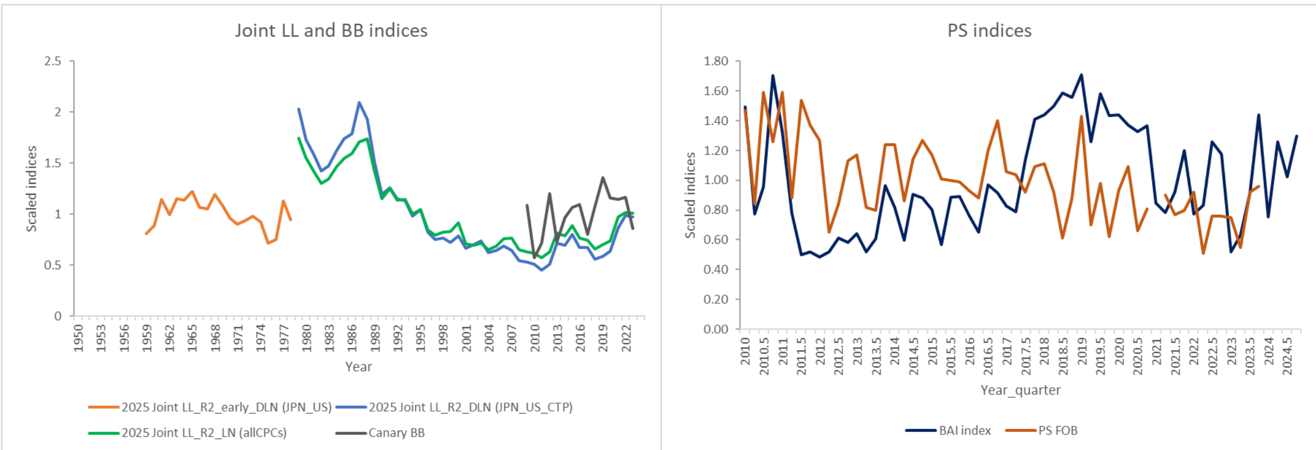


Figure 8. Standardized CPUEs to be used in the 2025 stock assessment of Atlantic bigeye tuna.

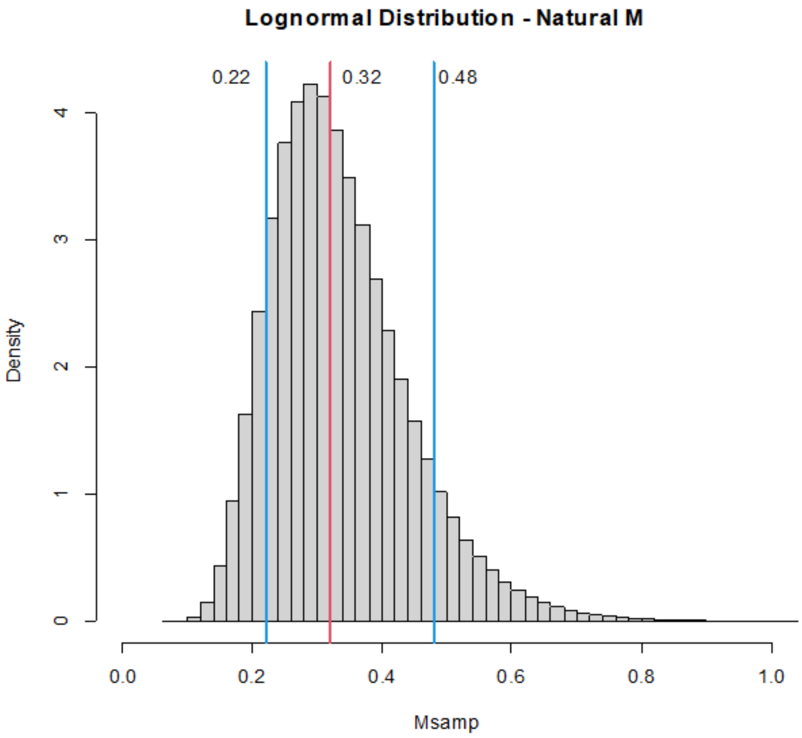


Figure 9. Monte Carlo estimation of median and 80th percentile of base natural mortality (lognormal distribution with mean=0.32 and cv=0.31).

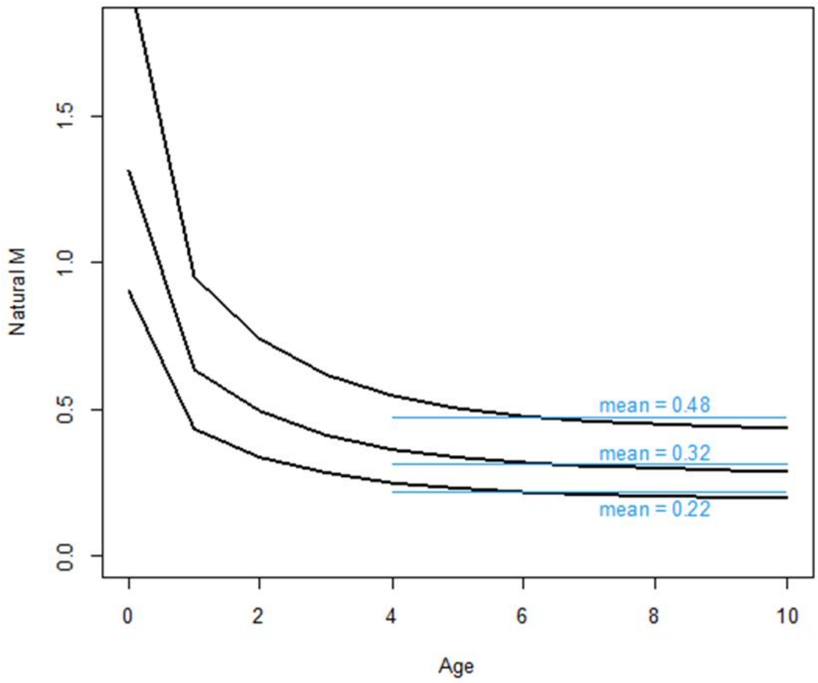


Figure 10. Derived natural mortality-at-age (Lorenzen model) assuming median and 80th percentile of base M on adults (ages 4 to 10+). Mean values indicated the average values of natural mortality for ages 4-10+ (median 0.32, 10th percentile 0.22, and 90th percentile 0.48).

Appendix 1

Agenda

1. Opening, adoption of the agenda, and meeting arrangements

2. Review of historical and new information on biology

   2.1 AOTTP programme update
   2.2 Natural mortality
   2.3 Age and growth
   2.4 Reproduction

3. Review of fishery statistics and indicators

   3.1 Task 1 (catches) and discards data and spatial distribution of catches
   3.2 Task 2 catch/effort
   3.3 Task 2 size data
   3.4 Tagging data
   3.5 Plan for intersessional work related to data improvements

4. Review of available indices of relative abundance

5. Review of assessment models for evaluation, specifications of data inputs, and modeling options

6. Review progress toward tropical tunas management strategy evaluations

   6.1 Progress of SKJ-W MSE
   6.2 Progress of Tropical Tunas Multi-stock MSE
   6.3 Plan for intersessional work related to the MSE

7. Development and updates of the Tropical Tuna Research Plan

   7.1 Budget
   7.2 Tropical Tuna Research Plan
   7.3 Research Contracts Updates

8. Recommendations

9. Review of the Responses to the Commission related to the tropical tunas

10. Other matters

    10.1 New Budget table format for Research request
    10.2 New Executive Summary format
    10.3 Others

11. Adoption of the report and closure

Appendix 2

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Appendix 3

List of papers and presentations

Number	Title	Authors
SCRS/2025/068	Modelling approaches: support to ICCAT tropical tunas multi-stock MSE process in 2024	Merino G., Urtizberea A., Giancarlo M. Correa G.M., Santiago J.
SCRS/2025/075	Analysis of fishing selectivity of bigeye tuna (*Thunnus obesus,* Lowe 1839) catches according to two fishing strategies of Canary Islands baitboat fleet (2011-2023)	Pascual-Alayón P., Déniz S., Abascal F.J., Ramos V.
SCRS/2025/076	Standardization of Atlantic bigeye (*Thunnus obesus*, Lowe 1869) tuna CPUE index of Canary Islands baitboat fleet (2009-2023)	Liniers G., Fernández C., Abascal F.J., Déniz S., Pascual-Alayón P. J.
SCRS/2025/077	Estimation of Ghana Tasks 1 and 2 purse seine and baitboat catch 2023: Data input 2025 bigeye stock assessment	Ortiz M., Ayivi S., Kwame E.D., Mayor C.
SCRS/2025/079	Update of bigeye tuna (*Thunnus obesus*) catches in 2020	Jaranay M., Quelle P.
SCRS/2025/080	Estimates of bigeye tuna (*Thunnus obesus*) catches from the Spanish albacore surface fishery in the northeast Atlantic: from 2018 to 2023	Quelle P., Jaranay M., Déniz S., Pascual-Alayón P.J.
SCRS/2025/081	Index of abundance of bigeye tuna in the Atlantic Ocean derived from echosounder buoys (2010-2024)	Uranga J.
SCRS/2025/082	Update on the iTUNES project: improving tropical tuna biological knowledge for end-users	Zudaire I., Luque P., Duparc A., Juan-Jordá M.J., Faucheux-Bourlot C., Manuzzi A., Erauskin-Extramiana M., Erkoreka O., Fraile I., Artetxe-Arrate I., Amate R., Melendez J., Cauquil P., Guerreiro A.G., Canha Â, Nunes A.M., Silva Sousa R.J., Mattlet A.F., Herrera M., Alzorriz N., Diaha C., Murua H., Salgado A., Ruiz J., Díaz-Arce N.
SCRS/2025/083	Standardized catch per unit effort of bigeye tuna in the Atlantic Ocean for the European purse seine fleet operating on floating objects	Correa G.M., Uranga J., Grande M., Kaplan D.M., Imzilen T., Merino G., Ramos-Alonso M.L.
SCRS/2025/084	Relative abundance estimates for Atlantic bigeye tuna obtained with data from multiple longline fleets	Matsumoto T., Ijima H., Su N.J., Lim J.H., Lin H., Lauretta M., Sant'Ana R., Coelho R., Forselledo R., Sung Y.F., Park H., Zhang S.F., Die D.J., Lino P., Jiménez S., Satoshi N., Lee S.I., Ji F., Mas F.
SCRS/2025/085	Review and preliminary analysis of size samples of Atlantic bigeye tuna (*Thunnus obesus*)	Ortiz M., Kimoto A.

SCRS/2025/086	Spatial analysis and standardization of CPUE for bigeye tuna (*Thunnus obesus*) from the Moroccan longline fishery operating South of the Moroccan Atlantic waters	Serghini M., Baibbat S.A., Bensbai J., Joumani M., Abid N., Ikkis A.
SCRS/2025/087	Status and future development on the management strategy evaluation for western skipjack tuna (*Katsuwonus pelamis*)	Sant'Ana R., Mourato B.L.
SCRS/2025/088	Update on CPUE standardization for skipjack tuna (K*atsuwonus pelamis*) from the Venezuelan purse seine fishery in the Caribbean Sea and adjacent waters of the western central Atlantic for the period of 1987-2024	Narváez M., Marín H., Evaristo E., Gutiérrez X., Marcano J.H., Arocha F.
SCRS/2025/089	CPUE standardization for bigeye tuna (*Thunnus obesus*) caught in the Chinese Taipei longline fishery in the Atlantic Ocean	Su N-J., Sung Y.F.
SCRS/2025/092	Progress in developing the preliminary Poseidon Atlantic model for purse seine tropical tuna fisheries	Powers B., Vert-Pre K.A., Norelli A., Grande M., Merino G., Moreno G., Die D., Murua H., Restrepo V.
SCRS/2025/093	Report on the development of SSfuture C++ (version 2.0.2): future projection software seamlessly connecting to SS3	Iijima H.
SCRS/P/2025/026	MSE simulations for multi-stock Atlantic tropical tuna fisheries using hybrid HCRs	Urtizberea A., Merino G., Laborda A., Correa G.M., Arrizabalaga H.
SCRS/P/2025/027	Tagging summary for bigeye tuna (BET)	ICCAT Secretariat
SCRS/P/2025/028	Summary of available bigeye tuna statistical data	ICCAT Secretariat
SCRS/P/2025/029	Preliminary results on growth parameters estimation of BET from Côte d'Ivoire and Sénégal	Constance, Sow F.N., Abekan E., Ba K., Apo-Aissan R., Sadio N., Djeneba C., Yao N. G.
SCRS/P/2025/030	Impact of management measures of the Fisheries of the Republic of Guinea on the proportion of tuna in the annual catches from 2019 to 2024 of vessels targeting other marine species	Lansana K.

Appendix 4

SCRS document and presentations abstracts as provided by the authors

SCRS/2025/068 - This Final report documents the work carried out in the second semester of 2024 for the Atlantic tropical tunas MSE under the SHORT-TERM CONTRACT FOR MODELLING APPROACHES: SUPPORT TO ICCAT TROPICAL TUNAS MULTI-STOCK MSE PROCESS. During this project, we have (i) provided and discussed a workplan for finalizing the MSE, (ii) proposed and discussed a series of options for operational management objectives for tropical tunas, (iii) conditioned the yellowfin Operating Models from the new assessment carried out in 2024, (iv) developed options to incorporate climate change impacts as robustness tests, (v) explored alternative candidate multistock harvest control rules (and MPs) and (vi) sought external guidance with regards to the approach, the methodology and the finalization of this MSE. All data, results and scripts developed for this project are available for the ICCAT Secretariat together with SCRS documents. This document summarizes the activities, deliverables and milestones carried out for this project.

SCRS/2025/075 - The main objective of this study is to carry out a detailed analysis of the fishing selectivity of bigeye tuna fishery (*Thunnus obesus*) in the Canary Islands during the period 2011 to 2023. Interannual variability is observed in the fishing ground and some times showing big latitudinal movements along the period under study. During the 1990s, BET fishing was concentrated primarily in the third quarter of the year. In that decade and the following two, a new fishing strategy known as "fishing a mancha" was introduced in addition to the fishing ground far from the islands. The sizes of the catch differs between free schools and associated schools (a mancha). The size distributions of bigeye tuna caught are presented for both fishing strategies throughout the study period. The largest specimens are caught in the "free school" fishing mode. In 2011, large sizes were recorded in southern waters, far from the archipelago. In the "free school" fishing mode, various monthly average and modal sizes - 70 cm, 90 cm, 110 cm, 130 cm, or larger were observed across different months throughout the study period. Likewise with a "a mancha" strategy, the largest individuals were generally caught during the second and third quarters. In 2022, the largest monthly sizes of the entire study period were caught. The largest monthly sizes occurred in 2022, in both fishing mode.

SCRS/2025/076 - This document shows the results of analyzing catch and effort data from the Spanish baitboat fleet around the Canary Islands, during the years 2009 to 2023. The family of Generalized Linear Mixed Models was chosen as an appropriate framework to standardize the Catch Per Unit Effort (CPUE) series. The following covariates were considered for standardization: year, quarter, vessel, whether or not there is catch of albacore and/or bluefin tuna on the same day, temperature, water current speed, zooplankton level, chlorophyll concentration, vessel length, salinity and mix layer depth. Variable and model selection, as well as index calculation, were conducted using the Bycatch Estimation Tool (BYET) software.

SCRS/2025/077 - Information from the AVDTH Ghana fisheries was used to estimate Task 1 and 2 fisheries statistics for the Ghanaian tuna baitboat and purse seine fisheries during 2023. Catch and landing data collected and managed by the Fisheries Scientific Survey Division (FSSD) of Ghana included landings and logbook information from 2005 to 2023. The estimation of total Ghana catches, catch composition, and quarterly-spatial (1°x1°) distribution followed the recommendations from the SCRS tropicals working group agreed at previous meetings. Sampling for species composition and size distribution were reviewed to determine appropriate sampling for the different components of the Ghana fleets by major gear type.

SCRS/2025/079 - During the preliminary work for the Bigeye Tuna Data Preparatory Meeting, an issue in the data transmission flow was detected. This document provides the corrected bigeye tuna data for the 2020 catches of the Spanish albacore fleets in the Northeast Atlantic Ocean.

SCRS/2025/080 - Bigeye tuna (*Thunnus obesus*) is a bycatch of the directed fishery for albacore (*Thunnus alalunga*) in the Cantabrian and Northeast Atlantic coasts. The annual bigeye tuna catch data by fleet (baitboat and troll) and size distribution of individuals sampled in the main ports during the 2018-2023 summer fishing season have been compiled. Estimates of Task 1 and Task 2 data are presented, as well as the geographical distribution of these catches in the last two years. In 2023, the maximum catch was reached with 463 t, being the highest catch by baitboats. Between the years 2018 and 2023, both fishing gears caught the largest sizes of bigeye tuna equally. Statistical data have been collected for the Canary Islands bigeye tuna fishery during the years mentioned above. Therefore, the comparisons between fishing gears showed that the “free school” gear displays the largest average catch size, followed by the North Atlantic baitboat.

SCRS/2025/081 - Collaboration between Spanish vessel-owner associations and buoy-providers companies has facilitated the retrieval of data from satellite-linked GPS tracking echosounder buoys deployed by Spanish tropical tuna purse seiners and associated fleets in the Atlantic since 2010. These buoys remotely relay precise geolocation information of Fish Aggregating Devices (FADs) and the presence of fish aggregations beneath them in real-time. Echosounder buoys serve as valuable platforms for assessing tuna and accompanying species abundances using catch-independent data. However, current buoys provide a generalized acoustic reading without distinguishing species or size composition of the fish beneath FADs. To address this limitation, the integration of echosounder buoy data with fishery information, including species composition and average size, is essential to generate specific indicators. This study introduces an updated index of juvenile bigeye tuna abundance in the Atlantic Ocean derived from echosounder buoy data spanning 2010 to 2024.

SCRS/2025/082 - ITUNNES aims to develop the best scientific advice on tropical tuna biology (YFT, SKJ and BET) to reduce single species and ecosystem models uncertainties, for fostering the implementation of effective management measures for tropical tunas at t-RFMOs notably at ICCAT and IOTC. ITUNNES has built a coordinated European sampling network upon existing national sampling structures and developed an efficient sampling scheme to collect biological samples that are non-targeted by the national DCF programs. Our strategy consists of i) developing and applying consistent and standardized methodologies for preparing and analysing region-wide biological samples, ii) maximizing the research opportunities from previous and current international collaborations to have access to a stock of previously collected samples to ensure the project´s objectives are met within the agreed timeline, iii) building research capacity among Consortium, and iv) engaging and participating in ongoing fishery and ecosystems assessment processes in t-RFMOs to ensure that the new biological knowledge produced are used by the End-Users. Ultimately the goal is to produce high-quality biological data and parameters, along with products that can be applied by End-Users.

SCRS/2025/083 - A biomass index for bigeye tuna (*Thunnus obesus*) in the Atlantic Ocean was derived from the European purse seine catch and effort series (2010-2023) of fishing operations made on floating objects (FOB). We used a geostatistical spatiotemporal modelling approach to conduct the CPUE standardization using the sdmTMB R package. Tweedie and delta families were tested. In addition, we tested several catchability and density covariates: time of set, mixing layer depth, depth-integrated net primary productivity, sea surface temperature, and covariates associated with the FOB features. Then, we made predictions on an extrapolation area for every time step (year-quarter). To calculate the standardized CPUE index, we aggregated the spatial predictions based on an area-weighting approach. We also presented influence plots to explore the impacts of the model components on the standardized CPUE index. The FOB index from this study showed a negative temporal trend. We tested the inclusion of this index in the last Atlantic bigeye stock assessment model and found an improvement in model fits. The index provided here can be incorporated into the 2025 bigeye stock assessment model to inform changes in biomass of small fish.

SCRS/2025/084 - Catch per unit of effort data from several longline fleets operating in the Atlantic Ocean were combined to estimate relative abundance indices of bigeye tuna. Japan, Brazil, Korea, China (P.R.), Chinese Taipei, USA, Portugal, and Uruguay provided set-by-set data for 1979-2023 for the joint analysis. Fleet operations clusters representing targeting of different species complexes were estimated for each country by ocean region. Bigeye relative abundance indices for three regions North, Equatorial, and South Atlantic) were estimated with a GLM incorporating spatio-temporal and fishing operations factors.

SCRS/2025/085 - Size sampling data of Atlantic bigeye tuna was reviewed, and preliminary analyses were performed for its use within the stock evaluation models. Size data is normally submitted to the Secretariat by CPCs under the Task 2 requirements; for the major fisheries, CPCs have also to submit Catch at Size. The size samples data was revised, standardized, and aggregated to size frequencies samples by main fishery/gear type, year, and quarter. Preliminary analyses indicated a minimum number of 50 fish measured per size-frequency sample, with size information since 1965 for the purse seine, baitboat, and longline fishing gears. For Atlantic bigeye tuna, the size sampling proportion among the major fishing gears is consistent with the proportion of the catch.

SCRS/2025/086 - This study contributes to refining the methodology for standardizing Catch Per Unit Effort (CPUE) for bigeye tuna (*Thunnus obesus*), by integrating Delta-lognormal modelling and advanced machine learning techniques, specifically Random Forest (RF) and Boosted Regression Trees (BRT). By incorporating detailed catch and effort data, the analysis effectively accounts for the operational characteristics influencing fishing operations success. Facing the challenge of zero-inflated catch data, the research utilizes a dual-model approach that not only predicts the likelihood of nonzero catches but also precisely estimates the magnitude of these catches when they occur. From 2012 to 2018, CPUE remained relatively low and stable, followed by a marked increase peaking in 2022 before a slight decline, with the Random Forest model revealing a consistent upward trend amid growing uncertainty during peak years. The application of spatial, temporal, and technical data inputs has not only enhanced the accuracy of CPUE estimates but also facilitated a nuanced analysis of temporal trends over the same period. Importantly, the findings indicate a significant improvement in the predictability and reliability of CPUE estimates, which are critical for the assessment and management of bigeye tuna stocks.

SCRS/2025/087 - This document summarizes the current status of the development of the western Atlantic skipjack tuna management strategy evaluation (SKJ-W MSE) and presents the 2025 workplan for the development of the all tasks that must be conducted during this year for a possible management procedure adoption by the ICCAT Commission in November.

SCRS/2025/088 - Utilizing a delta lognormal Generalized Linear Model, we estimated an updated standardized index of relative abundance for skipjack tuna (*Katsuwonus pelamis*) based on logbook data from 1987-2024. The model incorporated several categorical variables: year, season/quarter, area, associations with whales and whale sharks, seiner capacity, and fishing set assistance. Diagnostic plots confirmed the model's overall fit. Notably, the resulting standardized skipjack tuna catch rate index continues to show the declining trend since 2015.

SCRS/2025/089 - Tropical tunas, including bigeye tuna (*Thunnus obesus*) and yellowfin tuna (*Thunnus albacares*), are major target species for the Chinese Taipei distant-water tuna longline fishery, with the main fishing ground occurring in tropical waters of the Atlantic Ocean. Regional abundance indices of bigeye tuna were developed for this fishery using generalized linear models (GLMs). Data from 1995 to 2023 with targeting effect derived from a cluster analysis based on catch composition were used in the GLM analysis. Standardized CPUE (Catch Per Unit of Effort) of bigeye tuna showed diverse trends among the regions and the whole region. For the main fishing ground of bigeye tuna in the tropical area (Region 2), the trend was increased from the late 1990 and decreased from 2005, but showed an obvious increasing trend in recent years.

SCRS/2025/092 - This report presents the second progress update for the POSEIDON-Atlantic project, which adapts the POSEIDON model - originally developed for the eastern Pacific - to the Atlantic tropical tuna purse seine fishery. Targeting yellowfin (YFT), skipjack (SKJ), and bigeye (BET) tuna, the model has been restructured to reflect Atlantic-specific ecological, operational, and regulatory conditions, including fleet behavior, FAD usage, ICCAT management measures, and socioeconomic dynamics. POSEIDON is a modular, agent-based model structured around six components: Environment, Biology, Market, Management, Fleet, and FADs. It operates across three phases: spin-up (2021), calibration (2022), and management scenarios (2023+). Environmental and biological processes are informed by region-specific data, and vessel behaviors are driven by profit motives, regulation, and past performance. A two-step calibration using genetic and particle swarm algorithms aligns the model with observed metrics. While effective, the model is currently limited by scarce observer data in the Atlantic, covering only a small percentage of the fleet. The report calls for increased data-sharing to improve model precision and reinforce its role as a decision-support tool for sustainable FAD management in the region.

SCRS/2025/093 - This study reports the development of SSfuture C++, a C++-based simulation tool that enables high-speed and flexible future projections while maintaining consistency with Stock Synthesis 3 (SS3). The tool uses SS3 outputs to evaluate various management scenarios under both deterministic and stochastic recruitment conditions, and accounts for estimation uncertainty using methods such as MCMC, Bootstrap, and multivariate normal distribution (MVN). It also allows users to set initial values that account for structural uncertainties using a grid approach. Version 2.0.1 introduced flexible settings for spawning and recruitment timing, supporting continuous spawning and seasonal recruitment patterns. SSfuture C++estimates catch using Pope's approximation, a method used in SS3. However, detailed analysis revealed that accurately reproducing catch values requires weight-at-age data by fleet, quarter, and age. Version 2.0.2

will address this issue, enabling full reproduction of SS3 catch values and making the tool suitable for evaluating Total Allowable Catch (TAC) management. This development improves the speed, flexibility, and efficiency of future projections in stock assessments.

SCRS/P/2025/026 - The conditioning of the OM for the multi-stock tropical tuna fisheries was updated considering the results of the last assessment of YFT in 2024 and therefore, the uncertainty grid for the three species was also updated. The observation error model was implemented, and the historical period of the indices were simulated following the same methodology as the projection, by applying an error (autocorrelated for LL CPUE) to the estimated vulnerable biomass for each index. In the MP, SPiCT a surplus production model, was introduced as assessment model. A model based HCR based on the outputs of SPiCT and a hybrid HCR based on a combination of the outputs of SPiCT and the late-trend of the buoy echosounder index was tested combining with the Fcube approach, assuming that the effort of the fleet is ruled by the TAC advice of BET. The preliminary results showed that hybrid HCR perform better than the model based HCR and that this HCR allows the three species to be above the reference points with higher probability than 50%.

SCRS/P/2025/027 - It summarizes all available statistical tagging information in ICCAT-DB for the Working Group on Tropical Tunas. It includes conventional and electronic tagging datasets on bigeye tuna (BET), as well as the tools provided for easy visualization of this information, updated as of April 21, 2025.

SCRS/P/2025/028 - It summarizes all available statistical information in the ICCAT-DB for the Working Group on Tropical Tunas. It includes Task 1 and Task 2 datasets on tropical tunas, with a particular focus on BET, as well as the tools available for easy visualization of this information, updated as of April 18, 2025. Additionally, it highlights key issues requiring the Group's attention to facilitate decision-making.

SCRS/P/2025/029 - This study models the growth of 352 bigeye tuna (*Thunnus obesus*) from Côte d'Ivoire and Senegal using biological data (length, weight, sex, age from otoliths) through the von Bertalanffy growth curve with a Bayesian approach implemented in Stan and executed from R. The models were fitted using 3 parallelized Markov chains (30,000 iterations each with 15,000 retained) with specific prior distributions, while convergence was verified through trace plots and posterior predictive checks. The estimated growth curves, analyzed both globally and by sex, were visualized with Bayesian credibility intervals (50%, 80%, and 95%), illustrating the central tendency and uncertainty associated with the predictions. The results show harmonious growth; however, further verification is needed to improve the results.

SCRS/P/2025/030 - Summary not provided by the author.