

Report of the 2023 Intersessional Meeting of the Small Tunas Species Group
(*hybrid/ Madrid (Spain), 15-18 May 2023*)

1. Opening, adoption of the agenda and meeting arrangements

The meeting was held in a hybrid format between 15-18 May 2023. Constance Diaha (Côte d'Ivoire), the Species Group ("the Group") rapporteur and meeting Chair, opened the meeting and welcomed participants (The Group). Mr. Camille Manel (ICCAT Executive Secretary) welcomed the participants, noting that he was happy to report that the meeting would be held with interpreters so that discussion would be more readily understandable for non-native English speakers. The meeting's agenda was approved. The agenda is provided in **Appendix 1**, the list of participants in **Appendix 2**, the list of presentations and papers in **Appendix 3**. The authors' abstracts are provided in **Appendix 4**. Rapporteurs were assigned as follows:

Item 1.	Taylor, N.G, Neves dos Santos, M.
Item 2.	Palma, C., Mayor, C., García J., Taylor, N.G.
Item 3.	Ruben, Baibbat, Davy
Item 4.	Fredou, T.
Item 5.	Guelson
Item 6.	Lino P., Constance, D, and Neves dos Santos, M.
Item 7.	Diaha, C., and Neves dos Santos, M.
Item 8.	Taylor, N.G., Neves dos Santos, M.

2. Review of fisheries statistics

The Group reviewed the most up-to-date information available in the ICCAT database system (ICCAT-DB) for the 13 major small tuna species (**Table 1**), namely the fishery statistics (T1NC: Task 1 nominal catches; T2CE: Task 2 catch & effort; T2SZ: Task 2 size frequencies of the samples) and the conventional tagging (CTAG). Detailed statistics together with various catalogues (SCRS catalogues and detailed catalogues) and dashboards to explore and analyze the information were also presented, aiming to identify data weaknesses (gaps, inconsistencies, etc.) on small tuna species for further corrections. The SCRS catalogues on Task ½ data availability for the 13 small tuna species for the period 1993 to 2022 are presented in **Appendix 5**. The 2022 information is still incomplete and preliminary. In 2021 the species DOL (*Coryphaena hippurus*) was replaced by COM (*Scomberomorus commerson*) in the official list of small tuna species, in line with [Recommendation by ICCAT on fishes considered to be tuna and tuna-like species or oceanic, pelagic, and highly migratory elasmobranchs \[Rec. 19-01\]](#).

2.1 Task 1 (catches) data and spatial distribution of catches

Task 1 nominal catch estimates (T1NC) that have been adopted by the Group for the major small tuna species by year are presented in **Table 2** (cumulative catches by species in **Figure 1**). The ICCAT Secretariat informed the Group that a few small improvements were made over the last two years on: the reduction of unclassified gears (**Figure 2**); the replacement of the preliminary SCRS estimates (carryovers and others) by official statistics (**Figure 3**) and filling data gaps through historical recoveries. The small tuna species discrimination work (e.g., KGX code for genus group *Scomberomorus spp.* now with residual catches in T1NC and ongoing work on the species split of TUN/TUS species groups codes containing some small tunas combined catches) is a long-term process involving ICCAT CPCs and the ICCAT Secretariat.

The total catch in weight of the 13 small tuna species in T1NC between 1950 and 2021 (**Table 3**) represents, on average, about 16% of the total nominal catch of all species. By decade, there was a consistent decline in weight of the small tuna species as a percentage of the total nominal catch, from 31% in the 1950s, to 13% in the 2000s, and a slow increase to about 16% in the 2020s. This evidence can have two causes: a) the increase of the catches of major tuna and sharks (including historical recoveries); b) the slight reduction on small tuna official statistics reported in the last two decades (since 2007 no more carryovers were made). Overall, small tuna catch series are still incomplete and possibly underreported. The Group reiterated the need to continue catch series recovery work by the ICCAT CPCs and the need for the Secretariat's support, using the Small Tunas SCRS catalogue as a reference (**Appendix 5**).

Of the total 13 species included in the Small Tunas Species Group, the seven most important ones represent about 92% of the total small tuna catches in 1950-2021 T1NC dataset. By descending order of importance in weight these are: BON (*Sarda sarda*) with about 33% of the total catches, LTA (*Euthynnus alletteratus*) with 14%, FRI (*Auxis thazard*) with 13%, KGM (*Scomberomorus cavalla*) and SSM (*Scomberomorus maculatus*) both with 11%, and BRS (*Scomberomorus brasiliensis*) and BLT (*Auxis rochei*) with 5% each. The other six species BLF (*Thunnus atlanticus*), MAW (*Scomberomorus tritor*), WAH (*Acanthocybium solandri*), COM (*Scomberomorus commerson*), BOP (*Orcynopsis unicolor*), CER (*Scomberomorus regalis*) represents the remaining 8% of total small tuna catches. The Species Group KGX (*Scomberomorus spp.*) has residual catches of less than 0.12% of total small tuna catches.

Following the ICCAT Methods Working Group recommendation (Anon., 2019) to study the possibility of extending the “scoring” methodology on fisheries data availability (Palma *et al.*, 2019) to small tuna species, the ICCAT Secretariat presented the updated SCRS standard scorecard with the small tuna species for the period 1992-2021 (**Table 4**). Except for FRI and LTA in the Atlantic (with scores above 5 for the ten-year time series), the other 11 cases (species/stock-area combinations) have scores below 5. This indicates Task 2 datasets (both T2CE and T2SZ) are missing for the major fisheries for which Task 1 data exist.

The Group reiterated the proposal to split FRI and LTA Atlantic region into four regions currently considered stocks/management units (the MED region shall be maintained separate for all small tuna species). The ICCAT Secretariat informed the Group that the long-term objective of geographically reallocating into billfish sampling areas all the catches reported using the historical Task 1 areas was completed in 2022. In consequence, all 13 small tuna species can now be classified into the five major regions (section 4 of ICCAT geographical definitions: https://www.iccat.int/Data/ICCAT_maps.pdf).

The ICCAT Secretariat suggested that this be done in two steps due to the complex changes required to the existing code to manage this information. The first step (short-term) will cover only the differentiation of the Atlantic and the Mediterranean catches of all small tuna species: this work has started during the meeting and will be completed in the next three weeks. The second step (mid-term) will cover the classification into the five main regions: 4 for the Atlantic and 1 for the Mediterranean. This will apply to all small tuna species with some of the species not occurring in all the five regions. This work will be completed intersessionally and presented at the 2023 Meeting of the Standing Committee on Research and Statistics (SCRS). In addition, the small tunas SCRS catalogue and the SCRS small tuna scorecard will be adapted to accommodate those changes to the geographical classification of small tunas. Depending on the number of SCRS small tuna catalogues on small tunas with the new five region designations, the SCRS small tuna scores may be separated from the major tunas and sharks by creating a SCRS scorecard dedicated for small tunas.

The Group reiterated that small tuna fisheries statistics are still largely incomplete. They are particularly incomplete for the eastern Mediterranean and North Africa Mediterranean coast. Another cause of concern is the lack of provision of *Scomberomorus commerson* (COM, Lacepède 1800) fishery statistics, after its 2021 inclusion into the official small tunas list. No additional fisheries statistics have been reported to ICCAT since 2021 and 0 catches were reported in 2019, 2020 and 2021. The ICCAT Secretariat should continue its efforts to recover these missing data by directly contacting the related CPC’s statistical correspondents.

In term of updates and revisions made to T1NC during the meeting, only some minor corrections that included Italian catches between 2006 and 2016, and the inclusion of some Palestinian catch series (**Table 5**). They were adopted by the Group as preliminary estimates for final adoption by the SCRS. As recommended by the SCRS, such estimates should be revised by all CPCs involved.

No documents with fisheries statistics or conventional tagging were presented to the Group.

2.2 Task 2 catch/effort and size data

Task 2 catch and effort (T2CE) and Task 2 size information (T2SZ) availability for all the 13 species between 1993 and 2021, were presented on the SCRS catalogues (**Appendix 5**). Detailed catalogues and datasets for both T2CE and T2SZ were also made available during the meeting. The detailed catalogues with important metadata and characteristics allow CPC scientists to verify dataset characteristics like time stratification (month, trimester, year) and geographical stratification (1x1, 5x5, etc.). The catalogue therefore allows CPC scientists and the ICCAT Secretariat to identify and perform the replacement of the existing datasets with poor resolution. Accordingly, the quality of T2CE and T2SZ information can be improved.

The Group noted that many Task 2 gaps for both T2CE and T2SZ persist across all species. Small tuna scores (scorecard in **Table 4**) indicate the same weaknesses. Efforts should be made to recover those missing datasets. Overall, T2CE information is the most deficient Task 2 for the small tuna dataset.

2.3 Tagging data

The ICCAT Secretariat provided a presentation on the progress on small tunas conventional tagging which included results from the Atlantic Ocean Tropical tuna Tagging Programme (AOTTP). It also focused on tagging-related activities throughout the Atlantic Ocean including tag releases, tag recoveries, time at liberty and movements. It also presented an overview of ongoing activities for maintaining and developing the tagging database. The overall aim of this work was to disseminate the available data. Finally, information was provided about ongoing fieldwork i.e., the collaboration between the ICCAT Secretariat and U.S. tagging correspondents, to work on a full cross-validation of both conventional tagging databases.

The ICCAT Secretariat presented a dashboard on small tuna species to interactively view tagging data. The snapshot in **Figure 4** is for conventional tags. It shows a summary of tag releases and recoveries. The Group acknowledged the ICCAT Secretariat's work on the tagging dashboards and their utility.

The small tuna species conventional tagging summary information is presented in **Table 6** and **Figures 5(A), 5(B)** and **5(C)** (3 maps) following the standard formats normally presented to the SCRS. The same maps by species are presented in **Figure 6** (grid species and three map types: density releases, density recoveries and apparent movement).

2.4 Fisheries indicators (including length data analysis)

SCRS/2023/026 provided a description of fisheries of the narrow-barred Spanish mackerel (*Scomberomorus commerson*) on the Palestinian coast in the South-eastern Mediterranean Sea. The presence of Spanish mackerel has been known since 1935 and its fishery has been commonly carried out since at least 1984. Given the difficulty in collecting effort information, calculating CPUE is very difficult. Recent catches are due to large and medium purse-seines, small purse-seines, gillnets, trawlers, longlines and non-professional fishermen. Peak commercial landings were in 2009, with more than 154 tons; the average between 1995 and 2022 was 56.5 tons, while landings in 2022 reached 69.9 tons.

The Group discussed the paper and asked from which gears the size-composition data reported to ICCAT had come from. The response was that they had come from large and medium purse seiners.

SCRS/2023/027 described Palestinian bullet tuna fisheries in the South-eastern Mediterranean Sea. The spatial population dynamics of *Auxis rochei* in the Gaza Strip area is poorly understood, even if it is a common species for small-scale subsistence fisheries. Landings in recent years have been highly variable. Recent catches of *Auxis rochei* are from large and medium purse-seines, small purse-seines, gillnets, longlines and non-professional fishermen.

The Group noted that very small fish were not being reported. By way of a response, it was suggested that the smaller fish are sold together without any discrete species ID so that getting species specific size composition information was difficult. The Group also asked how effort had varied over the years and if surface longline was used. The answers were that effort was generally constant and that there was shallow longline fishing (and handline fishing) but using very small hook sizes. Finally, the Group asked if there were also sources of length composition information, for example from adjacent countries. The response was that there was very little information coming from other countries in the area, noting that the absence of such information made it difficult to determine stock status.

3. Review of available and new information on biology and other life-history information of small tunas

3.1 Age and growth (including a summary of the ageing workshop)

SCRS/P/2023/062 presented the report of the Workshop on Swordfish, Billfishes and Small Tuna Age Reading developed at IPMA, Olhão, Portugal, in February 2023. The workshop focused on three Species

Groups: small tunas (specifically *Euthynnus alletteratus*, *Sarda sarda*, and *Acanthocybium solandri*), swordfish (*Xiphias gladius*), and billfishes (with a specific emphasis on *Tetrapturus albidus*, *Makaira nigricans*, and *Istiophorus albicans*). These Species Groups have ongoing ICCAT SCRS biology research programs aimed at enhancing our understanding of their biology.

The main objectives of the workshop were to foster collaboration and knowledge exchange among ICCAT scientists working on these species, standardize methodologies, review completed work, and outline plans for advancing these research programs. The workshop aimed to enhance expertise and ensure progress in these important areas of study. The work pertaining to small tunas was to:

- Standardize the best methodology to process spines and otoliths for LTA, BON and WAH.
- Review results from calibration exercises and standardize readings among age readers.
- Plan the age validation work.

SCRS/2023/084 presented some biological parameters of the three species of small tunas: little tunny: *Euthynnus alletteratus* (Rafinesque, 1810); Atlantic bonito: *Sarda sarda* (Bloch, 1793) and bullet tuna: *Auxis rochei* (Risso, 1810) caught in the bay of Bou-Ismaïl (Tipaza) during the autumn of the year 2022. The study is based on a monthly sampling of the last three months of the year fished by small-scale fisheries in the central zone of Algeria. von Bertalanffy's growth parameters were determined by studying size structures: the asymptotic length (L_{∞}), the growth coefficient (K), and the theoretical age (t_0) at length zero for *Euthynnus alletteratus* and *Sarda sarda*. For the bullet tuna, due to small sample numbers, it was not possible to estimate von Bertalanffy growth parameters.

The analysis of the size structures of *Euthynnus alletteratus* leads to the following mathematical expressions of linear growth of Von Bertalanffy: $LF = 101.54 (1 - e^{-0.24+(t+0.5)})$. The growth coefficient (K) is estimated at 0.24. This value is like those found in works on the coasts of Tunisia (Hattour, 1984). The analysis of size structures of *Sarda sarda* leads to the following Von Bertalanffy linear growth mathematical expression: $LF = 66.85 (1 - e^{-0.62+(t+0.21)})$. The growth coefficient (K) is estimated at 0.62. This value is almost close to those found on the Spanish coasts (Valeiras *et al.*, 2008) and this is due to the absence of the largest and smallest individuals. For the bullet tuna, due small size samples, it was impossible to estimate von Bertalanffy growth parameters.

The Group discussed the possibility of collecting small and large sizes samples for both species that have appeared in the study area. Similarly, it has been noted that the limited range of sizes found in *Sarda sarda* indicates that the results should be approached with caution, as they may reflect a certain population bias. The author acknowledges that this analysis is preliminary due to the recent initiation of the sampling program and commented that additional information will be gathered and incorporated over time.

SCRS/P/2023/047 described an update on the age and growth of Atlantic bonito (BON) and little tunny (LTA) developed in the February 2023 Workshop on Swordfish, Billfish and Small tunas Age Reading. Methodologies applied in otoliths and spines were explained. A methodology for standardization and improvement in spine analysis for BON and LTA was presented. The results of the spines and otoliths analysis were presented, compared, and discussed.

In addition, training was carried out with sections of BON and LTA spines to perform age estimation. In the same way, a comparison was realized between age structures (otoliths and spines) of the same individual to compare and calibrate readings. The group of experts agreed on the use of spines for the annual ages since the resolution is better in these species. It was suggested to use the daily age in otoliths to estimate the 0+ age growth curve and the decimal age for the rest of annual samples. The Group recommended increasing the processing of otoliths from small individuals to calculate the daily age, since the samples processed so far are low.

The Group highlighted that caution should be exercised when interpreting certain parameters estimates for those areas where the size range is incomplete, for example small sizes of *Sarda sarda* in the Southeastern Atlantic, as the results may not be entirely accurate. Missing size samples were discussed for sampling in the future. However, it is worth noting that this study represents the most comprehensive research conducted to date across the Atlantic, despite the potential limitations in size or sample availability for different areas in both species.

SCRS/P/2023/055 presented an updated length weight relationship of small tuna caught in Tunisian waters. Length-weight relationships (LWR) were estimated for 2 small tuna species which are of economic relevance in the commercial fisheries caught in Tunisian waters. A total of 339 fish caught by purse seine were sampled from 2019 to 2022 as part of ICCAT Small Tunas Year Program (SMTYP). Significant length-weight relationships with high correlation coefficient were found for both species. LWRs indicated isometric growth for *Euthynnus alletteratus* and negative allometric growth for *Sarda sarda*.

With regard to length-weight samples and with the final objective of finishing updates to the calculation of length-weight relationships for these small tuna species, the Group requested that each CPC update their data and, above all, review the data that they have so far provided. Soon each country will receive an analysis of their data and proposals for checking or improving these data. The goal is that by all the results obtained will be presented by the 2023 September Meeting.

3.2 Reproduction and maturity

SCRS/P/2023/043 analyzed samples of little tunny acquired under Short-Terms Contracts from the SMTYP (2018 to 2021). The study presents the results on the reproductive biology of little tunny (LTA) using the stock/species delimitation published in Ollé *et al.*, 2020 (MED_NE ATL and NE_SE ATL). The study used a combined approach (Macro (153)/Micro (403) to the Gonad stage analysis. Results indicate that LTA spawn in both areas and show essential differences in spawning season - the MED_NE ATL stock Spawn from June to August, peaking in July. In contrast, the NE-SE ATL Stock has a protracted spawning season peaking in January and September. These results agree with previous papers in the Mediterranean. The L_{50} (sex combined) of the MED_NE ATL Stock is significantly Larger (50.1 cm SFL) than those of the NE_SE ATL stock (42.74 cm SFL).

The Group noted that the difference in the observed spawning periods between MED_NE ATL and NE_SE ATL may be due to the fact that most of the samples come from the Western Mediterranean and that more samples from the NE_ATL area are needed to fully understand and determine the beginning of the spawning period of LTA. The author confirmed the conclusions of the Group while indicating that the samples of the NE_ATL area come mainly from EU-Portugal.

SCRS/2023/087 analyzed wahoo (WAH) samples from the SMTYP (2018 to 2021). The study showed that WAH have a long spawning season from March to October, peaking in August and September. While it is a single species, spawning occurs in both locations.

The Group suggested that it would be better to analyze the maturity ogives by area, because the results show a split breeding pattern for the wahoo. The author explained that this analysis can be done easily and will be presented at the next meeting. However, the author indicated that the lack of data during March and the total absence of samples in April and May could be the cause of the anomalies observed in the results. The Group recommended that the author include estimates of L_{95} in the results, given its importance in data-limited stock assessment methods.

3.3 Genetics

Regarding stock structure, the Group prioritized the following activities in 2021 and 2022: i) to refine the stock structure analysis for WAH, BON, and LTA; ii) to complete the stock structure analysis for FRI and BLT; and iii) to investigate genetic species differentiation between FRI and BLT (ICCAT SMTYP, 2020). A summary of stock structure analyses done during the last few years was presented. The information was focused on three main priorities as follows below.

BON

As determined by mitochondrial markers and confirmed by genomic techniques, there is clear genetic differentiation in two areas: i) North Atlantic, and Mediterranean (PRT, ESP, TUN, and MLT) as one; ii) and the Tropical Atlantic (CIV, SEN, MRT, MAR) the other.

LTA

Deep genetic differentiation at the species level has been observed between two areas: i) the North Atlantic and Mediterranean (PRT, ESP, TUN, and MLT) as one; and the eastern central Atlantic (GAB, CIV, and SEN) as the other. This genetic differentiation has been confirmed using multiple unlinked markers, including

mitochondrial, nuclear, and genomic markers. Genetic differentiation has also been observed at the population level among CIV, SEN, and GAB areas. Within the Mediterranean region, MLT is slightly genetically differentiated from PRT, ESP, and TUN.

FRI and BLT

Genetic analysis revealed that 20% of purported FRI and BLT specimens were misidentified as belonging incorrectly to one or the other of these two species. No genetic structure was observed in either of the two species. Because of the small genetic sample size in some locations, these last results should be interpreted with caution.

The results of little tunny genetics studies show the possible presence of two (cryptic) species within the area. The Group noted that it is necessary to continue research on other fields such as physical examination, reproductive behavior, growth, etc. This work will require large samples from the waters off Morocco and Mauritania, including the Canary Islands. This aspect will be considered in the SMTYP.

The Group recognized that new information could have an impact on future stock assessments.

3.4 Other

SCRS/P/2023/048 presented a study on the use of otolith shape of *Euthynnus alleteratus* to differentiate between spatial subunits in the Eastern Atlantic. The shape of sagitta otoliths was utilized to compare harvested individuals of little tunny (*Euthynnus alleteratus*) from coastal areas spanning the Eastern Atlantic, including the Mediterranean Sea.

The Group congratulated the study authors and noted that it complements the genetics study conducted on stock structure. To improve bonito stock-structure information, the Group recommended that the range of sampling be extended to other regions.

SCRS/P/2023/053 presented the status of studies the Brazilian research group carried out as part of the PROTUNA project. The first step was reconstructing catch and size frequencies for seven species (BLF, BRS, FRI, KGM, LTA, WAH, and DOL). Three stocks (BRS, KGM and DOL) were then evaluated using length-based and Stock Synthesis methods (catch + size frequencies). Life-history parameters choices were critical for characterizing stock status because the models were highly sensitive to data inputs. The remaining stocks (WAH, LTA, FRI, BLF) should be assessed following a similar method in the next few months. Brazil has committed to develop a monitoring program for at least two species: king mackerel (KGM) and serra Spanish mackerel (BRS).

4. Update of Data Poor Methods and reviews of appropriate approaches for future development of management advice

SCRS/P/2023/053 addressed the assessment of 3 stocks (KGN, BRS and DOL) exploited by the Brazilian fishery using data-limited approaches. The datasets used were reconstructed catch statistics and reconstructed length frequencies. Length-based methods combined with catch methods were used with a range of different population parameters (M , K , L_{50} , L_{∞} , S_{50} , LB-SPR and SS-DL-tool). *Scomberomorus brasiliensis* (KGM) showed for all alternative scenarios a very depleted stock ($B/B_0 < 20\%$) in recent years while *Scomberomorus cavalla* (BRS) showed a moderately overfished status ($B/B_0 < 40\%$). For its part, *Coryphaena hippurus* (DOL) results varied, for both northern and southern stocks, according to the depletion input in the model - strong depletion led to overfished status.

SCRS/P/2023/069 provided an overview of the workshop on data-limited methods that was held at ICCAT in May 2023. The structure of the course was described.

The Group then discussed that this capacity building is important for the local scientists to understand the need to gather better information. The ICCAT Secretariat indicated that the scorecard system should be used to understand and determine a priority species list. The Group agreed that such an initiative should be continued. The Group suggested organizing a second training session focusing on the stock assessment of the main stock using the SS-DL tool.

5. SMTYP: achievements and programed activities for 2023

The Group reviewed the SMTYP's achievements and programed activities for 2023. This included the background and objectives for the target species. Then, it reviewed the program's organization, its sampling achievements by areas, and the participants involved. For species and area, the review identified the main gaps in size sampling that need to be filled. Finally, the Group reviewed the available biological samples for age and growth, reproduction, and genetics.

The Group noted that CPCs can continue to sample. But it reiterated that any invoice must be issued during the period of the signed contract.

The Group discussed the problems with shipping scientific samples and some potential solutions. The Group noted that it was becoming increasingly difficult to ship samples because of customs limitations citing the Nagoya protocol, and because samples preserved in ethanol are flammable and therefore problematic for shipping. The Group noted that the Nagoya Protocol establishes measures to avoid genetic piracy and should not impede shipping scientific samples as it does not apply to ICCAT's migratory species. About solving the problems posed by storing samples in ethanol, one proposed solution was to ensure that had been soaked in the alcohol for at least 24 hours before draining them just prior to shipping.

The Group also discussed the need to keep otoliths when collecting tissues (muscle or gonads). The Group was encouraged to continue collecting and storing them. It noted that once such structures are available, they can be used for multiple purposes; in addition to ageing, such purposes include otolith shape analysis, and microchemistry. The Group discussed who would process hard structures (otoliths and spines). Brazil's Federal University of the Semi-Arid Region team assumed responsibility for this.

6. Recommendations on research and statistics

General recommendations

The Group recommended that Statistical Correspondents and/or National scientists revise, update, complete, and submit their small tuna T1NC series to the ICCAT Secretariat. This revision should consider **Appendix 5** (SCRS catalogues), the split of "unclassified" gear catches to specific gear codes, and the completeness of Task 1 gaps identified. The Statistical Correspondent and/or National scientists of CPCs should correct inconsistencies identified in T2SZ series. For the 13 species of small tuna, the T2SZ revision should have as reference, the stratification of the samples by gear, month, 1°x1° or 5°x5° squares, and SFL size classes of 1 cm (lower limit). CPCs should further improve their estimates of total catches, as there are still important gaps in the basic data available. These data are required as inputs for most data-limited stock assessment methods. The ICCAT Secretariat should continue its work on the data recovery and making inventories of tagging data for small tuna species. This process will require active participation of the national scientists who hold such data.

The Workshop on Data-limited Assessment Methods for Small Tunas highlighted the minimum need for data from CPCs to allow for estimating stock status. The Group recommended always estimating the L_{95} (Length at Full Maturity) parameter in studies on maturity for all species, because it is essential for the stock assessment of data-limited species, such as the small tunas.

The Group recognizes that the Nagoya Protocol is not applicable to migratory fish species such as those under the management and mandate of ICCAT. ICCAT should be considered within the provision of Article 4, point 1 of the Protocol since it is based on a previously existing international agreement. Furthermore, all migratory fish species managed by ICCAT do not belong to any individual state (sovereign rights, as described in Article 6, point 1 of the Protocol) and therefore the Nagoya Protocol shall not be applied to ICCAT species (contained in *Recommendation by ICCAT on fishes considered to be tuna and tuna-like species or oceanic, pelagic, and highly migratory elasmobranchs [Rec. 19-01]*). Accordingly, CPCs that are experiencing some difficulties to ship samples within the SMTYP should clarify the non-applicability of the Nagoya Protocol with the relevant national authorities.

The Group recommended that CPCs from the northwest Atlantic area join SMTYP so that they provide samples for the current studied species (BON, LTA and WAH have landings in NW).

Recommendations with financial implications

The Group recommends completing the second part of the workshop for applying data-limited methods for small tuna stock assessment. Data-limited models include integrated, length, and catch based models. With such tools it is possible to estimate population status and depending on the method used, it is also possible to estimate fishery reference points. Such approaches require data and expert input from biologists and fisheries experts. As such, the Group recommended that the second part of the in-person workshop be held to advance research and application of data-limited methods to some small tuna species. Costs are estimated at €30,000, which would allow for the participation of 2 experts and the same National scientists who attended the first workshop.

The Group recommends doing a morphometric and morphological comparison between fresh/frozen specimens of *Euthynnus spp.* from the NETAM and the Eastern Tropical Atlantic to assess if physical characters can be used to discriminate the two genetically different species.

The Group recommends doing a workshop on the validation of the maturity scales.

7. Other matters

Juan-Jordá *et al.*, 2023 presented a summary of the main objectives and outcomes of a three-day online workshop entitled “Identification of regions in the ICCAT Convention area for supporting the implementation of ecosystem-based fisheries management” held in March 2022. This workshop established a framework and an iterative and adaptive process to delineate ecoregions in ICCAT. Regionalization of the ICCAT Convention area into areas that are ecologically meaningful, yet large enough to be practical, could provide a foundation for developing a wide range of integrated scientific and advice products. This workshop resulted in a proposal for eight candidate ecoregions within the ICCAT Convention area. The SCRS is currently being consulted on this ecoregion proposal to increase awareness of this planning, to increase awareness of this advice tool to guide Ecosystem Approach Fisheries Management (EAFM) implementation, and to receive further feedback to refine the ecoregion delineation process. In addition, the Subcommittee on Ecosystems and Bycatch is working to develop pilot studies of ecosystem-based advice products (e.g., Ecosystem and Fisheries Overviews) using ecoregions case study to show their applicability to the Commission.

The Group welcomed the presentation and thanked the presenter.

The Group noted that the distribution of some small tuna species overlap with multiple ecoregions. It further noted how the area off Mauritania, which is within the Tropical Atlantic Ecoregion, is known to be a geographic barrier delimiting temperate and tropical populations of small tunas (for example *Sarda sarda*). The Group asked about the implications of such features for setting ecoregions. It was explained that the ecoregions and their boundaries are not expected to fit the distributions of all tuna and tuna-like species managed in ICCAT. Instead, ecoregions aim to be a tool to support regional ecosystem planning and research. At this point in the development of ecoregions, it is important to check that the proposed ecoregions each exhibit relatively homogenous ecosystems within their boundaries in terms of oceanography, ICCAT fisheries/fleets, and species. This will justify the number of ecoregions and their boundaries, or it will determine if further refinements are needed. It was explained that it is an ongoing and iterative process and that probably several workshops will be needed to refine the proposed ecoregions. Moreover, it was mentioned that the pilot studies underway aim to characterize the main composition of fisheries, fleets, and species being targeted within each ecoregion to evaluate their similarity/dissimilarity. This will guide future iterations for adjusting the current number and boundaries of the current ecoregions.

The Group reflected on several considerations for interpreting and using ecoregions to support analysis and research. It was noted how the sampling areas/statistical areas in ICCAT currently used for the submission of fisheries statistics (for example Task 1 data) do not correspond with the ecoregion spatial boundaries. This will create difficulties when compiling and analyzing ICCAT fishery statistics by ecoregions. ICCAT georeferenced catch and effort statistics like Task 2 catch and effort data could be used to support spatial

analysis of fisheries data that are highly incomplete for many species including small tunas. The Group discussed some of the current limitations of the CATDIS dataset which are that they are at spatial resolution of 5x5 degrees and are especially problematic for historical data. The ICCAT Secretariat explained how there are plans to further process the CATDIS dataset to: 1. improve the spatial resolution from 5 to 1 degrees and temporal resolution from quarters to months, and 2. add other species (some shark species and southern bluefin tuna). This will require that CPCs revise their historical data and increase the spatial resolution of the data they currently submit. Due to a lack of spatial catch and effort information, there is no CATDIS dataset for sharks or small tunas. Accordingly, catch series for these species cannot not be assigned to ecoregions. The Group discussed the difficulties of including small tunas in the CATDIS dataset and emphasized the importance of recovering and improving fishery statistics with high temporal and spatial resolution across the full extent of their distribution.

8. Adoption of the report and closure

The report was adopted, and the meeting was closed. The summary for the SCRS Plenary meeting will be circulated by the Chair for adoption.

References

- Anonymous 2019. Report of the 2019 meeting of the ICCAT Working Group on Stock Assessment Methods (WGSAM). *Col. Vol. Sci. Pap. ICCAT*, 76(5): 1-43.
- Juan-Jorda, M., Nieblas A., Hanke A., Tsuji S., Andonegi E., Di Natale A., Kell L., Diaz G., Alvarez Berastegui D., Brown C., Die D., Arrizabalaga H., Yates O., Gianuca D., Niemeyer Fiedler F., Luckhurst B., Coelho R., Zador S., Dickey-Collas M., Pepin P., and Murua H. 2022. Report of the ICCAT workshop on identification of regions in the ICCAT Convention area for supporting the implementation of ecosystem-based fisheries management. *Col. Vol. Sci. Pap. ICCAT*, 79(5): 178-211.
- Ollé, J., Hajje, G., Macías, D., Saber, S., Lino, P.G., Muñoz-Lechuga, R., Pascual Alayón Pedro J., Angueko, D., Sow, F.N., Diaha, C.N., Lucena -Frédou, F., Viñas, J. 2020. Deep genetic differentiation in the little tunny from the Mediterranean and East Atlantic. *Col. Vol. Sci. Pap. ICCAT*, 77(9): 13-19.
- Oxenford, H.A., Murray, P.A., and Luckhursts, B.E. 2003. The Biology of Wahoo, (*Acanthocybium solandri*) in the Western Central Atlantic. *Gulf and Caribbean Research* 15 (1): 33-49.
<http://aquila.usm.edu/gcr/vol115/iss1/6>
- Valeiras, X., Macías, D., Gómez, M.J., Lema, L., Godoy, D., Ortiz de Urbina, J.M., de la Serna, J.M. Age and Growth of Atlantic Little Tuna (*Euthynnus alletteratus*) in the Western Mediterranean Sea. *Col. Vol. Sci. Pap. ICCAT*, 62(5): 1638-1648.

Table 1. List of small tuna species in ICCAT (changes: COM added; DOL removed).

Species code	ScieName	NameEN	NameFR	NameES	Author
BLF	<i>Thunnus atlanticus</i>	Blackfin tuna	Thon à nageoires noires	Atún des aletas negras	(Lesson 1831)
LTA	<i>Euthynnus alletteratus</i>	Little tunny	Thonine commune	Bacoreta	(Rafinesque 1810)
BON	<i>Sarda sarda</i>	Atlantic bonito	Bonite à dos rayé	Bonito del Atlántico	(Bloch 1793)
FRI	<i>Auxis thazard</i>	Frigate tuna	Auxide	Melva	(Lacepède 1800)
BOP	<i>Orcynopsis unicolor</i>	Plain bonito	Palomette	Tasarte	(Geoffroy St. Hilaire 1817)
WAH	<i>Acanthocybium solandri</i>	Wahoo	Thazard-bâtard	Peto	(Cuvier 1832)
SSM	<i>Scomberomorus maculatus</i>	Atlantic Spanish mackerel	Thazard atlantique	Carite atlántico	(Mitchill 1815)
KGM	<i>Scomberomorus cavalla</i>	King mackerel	Thazard barré	Carite lucio	(Cuvier 1829)
MAW	<i>Scomberomorus tritor</i>	West African Spanish mackerel	Thazard blanc	Carite lusitánico	(Cuvier 1832)
CER	<i>Scomberomorus regalis</i>	Cero	Thazard franc	Carite chinigua	(Bloch 1793)
BLT	<i>Auxis rochei</i>	Bullet tuna	Bonitou	Melvera (Melva)	(Risso 1810)
BRS	<i>Scomberomorus brasiliensis</i>	Serra Spanish mackerel	Thazard serra	Serra	(Collette, Russo & Zavala-Camin 1978)
COM	<i>Scomberomorus commerson</i>	Narrow-barred Spanish mackerel	Thazard rayé indo-pacifique	Carite estriado Indo-Pacífico	(Lacepède 1800)

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Table 2. Overall Task 1 nominal catches (T1NC, t) of major small tuna species, by species, area, and year.

Year	2-Tuna (small)													MED					TOTAL	
	ATL											Total		BLT	BON	BOP	COM	LTA		Total
	FRI	BLF	BLT	BON	BOP	BRS	CER	KGM	LTA	MAW	SSM	WAH	Total	BLT	BON	BOP	COM	LTA	Total	
1950	5527	300		1458	100	3000	100	961	3136	0	3583		18165	751	483			156	1390	19555
1951	3801	300		1727	100	3000	100	1645	669	0	4726		16068	424	413			251	1088	17156
1952	1900	300		3334	100	3000	100	1393	2539	0	4858		17524	212	327			14	553	18077
1953	9798	300		4486	400	2900	100	1506	3335	0	4251		27076	794	6795			44	7633	34709
1954	8734	400		2037	400	3200	100	1238	4936	0	3585		24630	689	18436			135	19260	43890
1955	6665	100		4270	400	3900	300	1617	4250	0	3845		25347	1072	56207			60	57339	82686
1956	2618	300		3166	200	2900	300	2090	2059	0	5127		18760	1392	58178			94	59664	78424
1957	5924	100		4799	100	2700	300	2022	2236	0	5410		23591	32	44127			22	44181	67772
1958	8640	500		4769	2700	3434	500	2313	3359	0	6811		33025	1729	28626			47	30402	63427
1959	6104	600		6331	1000	3742	700	2472	9660	0	6005		36614	90	11530			11	11631	48245
1960	7279	600		6366	1000	4479	800	2993	3000	0	7118		33635	1540	34361			13	35914	69549
1961	6453	400		4868	2200	4042	600	3199	2452	0	7672		31886	3609	45812			24	49445	81331
1962	4185	700		7285	3000	3842	600	3346	5089	0	8355		36402	3893	7527			31	11452	47854
1963	3568	788		5349	3100	3842	500	3770	3968	0	7835		32720	4310	22837			18	27164	59884
1964	4022	776		3342	2300	4496	600	3387	1653	0	6148		26724	2801	13489		102	48	16439	43163
1965	6888	712		4374	216	3796	600	3787	4078	0	8717		33168	2604	27004	1	804	42	30454	63622
1966	4477	662		7023	339	4205	600	3545	3274	0	10016		34141	2765	22113	1	504	27	25410	59551
1967	6972	896		7942	684	3813	600	4558	3978	0	9783		39226	4628	41206	48	303	38	46223	85449
1968	5500	683		5679	228	1667	600	6055	3003	1800	12012	100	37327	3139	26268	4	102	168	29681	67008
1969	13416	753		6065	1341	2926	500	6788	2599	2700	11180		48268	2793	55612	3	102	951	59461	107729
1970	8185	1952		8002	806	3368	500	6589	7676	200	12484	378	50140	3383	20681	3	102	960	25129	75269
1971	6209	1875		15692	683	3154	800	6520	4838	1300	10713	381	52165	4107	28230	7	31	866	33241	85406
1972	10180	1895		8754	310	4810	800	7465	2237	2100	11956	381	50888	3478	16225	6	223	904	20836	71724
1973	6641	936		6069	102	6946	780	9917	1542	1600	13093	280	47906	3569	6254	3	344	1061	11231	59137
1974	9582	1062		13679	143	8750	619	13789	4196	4713	12226	391	69150	4354	7693	7	181	1304	13539	82689
1975	7886	815		9571	84	5039	620	9290	7649	1140	13058	326	55478	2644	6033		140	1394	10211	65689
1976	6457	1026		9490	212	2272	565	8442	8373	1901	12307	379	51424	3290	6498		146	2028	11962	63386
1977	16611	1251		11977	321	3188	629	8960	5844	2572	12218	393	63964	3404	8697	135	239	2500	14975	78939
1978	4776	1341		7854	817	3484	698	6944	15129	6716	11528	452	59739	3567	9417	153	211	2504	15852	75591
1979	8868	1205		6485	464	3722	586	11593	11803	4167	10899	760	60552	3707	13485	28	688	2870	20778	81330
1980	16960	1175		12568	698	5617	604	15797	16440	4921	13945	610	89335	3952	18546	0	239	2774	25511	114846
1981	12759	1973		10879	1448	5841	628	18692	14160	2742	11164	2920	83206	3677	28167	0	332	1446	33622	116828
1982	19755	1941		13456	584	6019	687	18352	13723	5311	13633	2280	95742	6043	28937		296	2480	37756	133498
1983	16662	1738		6998	38	6632	677	14607	21018	4689	9574	2366	85000	5820	35552		305	1561	43238	128238
1984	19746	1908		6918	49	8129	680	13182	18410	4482	11362	2159	87026	6337	15058		11	1650	23056	110082
1985	17753	1403		7149	124	3501	574	9964	10625	3941	11590	920	67545	5240	17959	9	912	2040	26160	93705
1986	15478	2822		6163	86	6549	500	13990	11225	3180	14207	1151	75350	5057	15428	1	527	2166	23179	98528
1987	21193	3462		7370	538	6212	392	13792	18070	1721	14461	1235	88445	3739	22317	26	256	2424	28763	117208
1988	20573	3093	357	20733	1474	9510	219	14331	23836	3811	12671	1635	112244	6126	24028	8	681	2405	33248	145492
1989	16411	2834	723	17671	1109	10778	234	12153	28257	2808	13845	1527	108351	6387	11955	7	1577	2035	21961	130312
1990	16738	3888	3634	6811	436	7698	225	10420	12772	6629	12782	1498	83532	8360	22097	37	1393	2617	34504	118036
1991	19674	4202	2171	8079	507	8856	375	13241	9120	3746	15318	1721	87010	6606	25255	101	405	2315	34682	121693
1992	11425	4353	814	6881	465	6051	390	14691	20607	2423	16285	1835	86221	4900	15111	176	463	1755	22405	108627
1993	16797	3535	70	4531	378	8049	450	16331	11872	1723	16317	2671	82724	3350	25997	252	770	1258	31627	114352
1994	13332	2719	100	6037	615	7161	490	14777	13202	1278	14490	2143	76345	5200	15682	176	688	1197	22943	99288
1995	11816	4051	0	6030	588	7006	429	14930	10381	1953	13697	2408	73291	4301	15189	115	1081	1894	22581	95872
1996	13871	4488		7939	2064	8435	280	17782	9453	2910	16571	2516	86308	5909	17195	132	1398	2116	26750	113057
1997	13980	3258	0	10340	254	8004	251	19815	12804	1475	15403	3104	86889	3070	14078	227	1032	1601	20008	108696
1998	14332	3395	28	15523	47	7923	251	16394	12804	1496	8877	2497	83568	2281	29730	130	1164	2914	36218	119787
1999	10589	3203	263	9143	651	5754	1	17717	9407	971	9837	2972	70508	2383	28170	217	1110	2876	34756	105264
2000	8680	2483	902	5179	1062	4785	4	16342	11830	1321	8220	2035	62843	3010	21972	145	1007	3489	29623	92466
2001	10151	4034	1236	5400	858	4553	6	15408	13955	881	8383	2318	67184	4559	22237	154	1166	2988	31104	98288
2002	5742	4756	626	8208	786	7750	1	17258	14080	1393	9414	2226	72239	5416	15717	137	1941	2643	25853	98091
2003	6096	1303	353	3307	713	5137	2	15863	16327	646	9793	2067	61607	3441	11117	23	1769	684	17034	78641
2004	8832	1926	401	4584	573	3410	1	12830	14918	352	8119	2613	58559	5823	11248	8	1634	1439	20151	78710
2005	6154	1031	719	4391	215	3712	1	11766	10873	480	10472	2467	52281	3513	74376	2	1033	1042	79965	132246
2006	8429	1937	889	9648	32	3587	1	8252	8320	571	6308	1829	49802	3344	32303		1101	1808	38555	88358
2007	9789	1927	602	6381	875	2253	0	17936	16472	847	6118	2581	65782	5015	9247	172	1622	1911	17967	83749
2008	7861	1669	334	6772	426	3305	0	7344	11954	616	5900	2176	48357	6491	10042	107	1861	2259	20760	69117
2009	12384	1442	484	13691	442	2681	0	7826	14170	684	6199	2354	62359	5072	10019	6	1932	2957	19987	82346
2010	14215	1837	746	16338	273	1590	0	11697	20910	2384	11788	2381	84158	7206	12584	14	1670	2170	23643	107801
2011	15471	2083	507	22341	335	1055	2	10452	21679	1333	10916	2844	89018	8977	14442	42	987	3668	28115	117133
2012	18287	2849	515	8959	657	613	0	10151	16679	1128	10156	3729	73724	5719	39321	24	645	4186	49894	123618
2013	17597	2134	1158	6482	641	853	0	9712	17010	3016	12684	5235	76523	6494	18365	21	540	4633	30054	106577
2014	17149	1152	367																	

Table 3. Weight (%) of small tuna species in the total Task 1 nominal catches (T1NC) by decade. The 2020s decade (2020-2029) only contains two years (2020 and 2021).

Dimensions	Species group	Decade								TOTAL
		1950	1960	1970	1980	1990	2000	2010	2020	
Catch (t)	1-Tuna (major sp.)	1009169	2390392	3678554	4853097	6112522	5074372	5568825	1113216	29800147
	2-Tuna (small)	473941	685140	739160	1188736	1104672	902012	1130540	256154	6480355
	3-Tuna (other)	17657	64019	141970	104817	101846	66083	65377	15117	576886
	4-Sharks (major)	21500	43138	21413	51183	244776	510541	730555	124418	1747524
	5-Sharks (other)	126	236	337	3527	72455	211283	91619	3913	383495
	6-Other Species	1081	4091	3605	3570	6172	29158	163493	21258	232426
	TOTAL	1523473	3187015	4585039	6204930	7642443	6793449	7750408	1534076	39220833
Ratio (%)	1-Tuna (major sp.)	66	75	80	78	80	75	72	73	76
	2-Tuna (small)	31	21	16	19	14	13	15	17	17
	3-Tuna (other)	1	2	3	2	1	1	1	1	1
	4-Sharks (major)	1	1	0	1	3	8	9	8	4
	5-Sharks (other)	0	0	0	0	1	3	1	0	1
	6-Other Species	0	0	0	0	0	0	2	1	1

Table 4. Overall ICCAT scorecard on Task 1/2 data availability with small tuna species included and already with the split into Atlantic and Mediterranean regions. Ongoing work to further split the Atlantic in four into four regions (AT-NE, AT-SE, AT-SW, AT-NE).

SCORECARD on Task 1/2 availability for the main ICCAT fisheries (terminal year: 2021)

FisheryID	Spc. Group	Species	Species/stock	SCORES (by time series)			N. flag fisheries ranked			Change (%) against 1991-20 (30 yrs)
				30 years (1992-21)	20 years (2002-21)	10 years (2012-21)	30 years (1992-21)	20 years (2002-21)	10 years (2012-21)	
1	Temperate tunas	ALB	ALB-N stock	7.22	8.31	7.92	12	12	10	-1%
2			ALB-S stock	5.98	6.26	6.60	10	10	8	3%
3			ALB-M stock	2.51	3.98	5.70	12	10	7	0%
4		BFT	BFT-E stock (ATE region)	5.93	7.52	8.74	11	8	8	-3%
5			BFT-E stock (MED region)	3.81	4.87	6.26	26	21	16	6%
6			BFT-W stock	8.67	8.94	9.70	9	8	6	0%
7	Tropical tunas	BET	BET-A stock (AT + MD)	6.57	7.38	7.48	29	28	28	1%
8			YFT	YFT-E region	6.69	7.60	7.82	22	19	17
9			YFT-W region	4.81	5.28	5.50	25	24	22	2%
10		SKJ	SKJ-E stock	7.01	7.73	7.66	18	16	15	-1%
11			SKJ-W stock	4.01	4.64	4.20	5	5	4	0%
12	SWO & billfish	SWO	SWO-N stock	8.08	8.69	8.64	11	11	11	0%
13			SWO-S stock	7.20	7.39	7.46	9	9	7	0%
14			SWO-M stock	4.86	5.44	7.38	10	10	8	6%
15		BUM	BUM-A stock (AT + MD)	3.91	3.81	3.38	33	32	34	-2%
16		WHM	WHM-A stock (AT + MD)	5.35	5.36	4.79	17	17	14	-1%
17		SAI	SAI-E stock	3.06	3.46	3.26	15	13	12	-1%
18			SAI-W stock	3.76	3.70	4.04	18	16	12	3%
19		SPF	SPF-E stock	4.20	5.67	3.92	4	3	3	5%
20			SPF-W stock	3.21	3.82	2.57	6	6	5	0%
21		Major shark species	BSH	BSH-N region	4.33	5.52	5.93	6	5	5
22	BSH-S region			5.37	6.90	6.93	6	7	6	5%
23	POR		POR-ANE stock	0.45	0.82	0.54	9	12	11	3%
24			POR-ANW stock	3.18	3.04	2.25	5	7	7	0%
25			POR-ASE stock	0.70	1.13	2.00	4	3	2	0%
26			POR-ASW stock	0.44	0.78	0.00	6	4	0	0%
27	SMA		SMA-N region	4.31	5.76	6.55	6	7	7	5%
28			SMA-S region	5.01	7.30	6.76	7	7	6	5%
29	Small tuna species	BLF	ATL	3.16	3.55	3.80	16	12	10	4%
30			BLT	ATL	1.51	1.92	1.68	7	7	8
31			MED	0.70	1.12	2.49	18	16	13	
32		BON	ATL	2.17	2.65	2.52	32	27	19	1%
33			MED	0.81	1.18	1.15	9	9	8	3%
36		BRS	ATL	0.92	1.38	1.00	3	3	2	0%
38		COM	MED	0.00	0.00	0.00	2	2	2	
39		FRI	ATL	4.68	5.35	5.73	26	23	20	-1%
40		KGM	ATL	0.97	1.46	1.75	7	6	4	5%
41		LTA	ATL	3.95	4.83	4.87	31	24	21	1%
42			MED	0.76	1.05	1.55	17	14	11	36%
43		MAW	ATL	1.21	1.22	1.02	16	12	9	-7%
44		SSM	ATL	0.00	0.00	0.00	4	3	2	
45		WAH	ATL	0.95	1.32	1.46	35	25	16	3%

Table 5. Task 1 nominal catches (T1NC, t) of small tuna species adopted as preliminary by the Group, by year, and flag. All the Italian catches (species/gear corrections) and the Palestinian catches (data recovery) stored as landings (Catch type = L) in the Mediterranean Sea (Sampling Area = BIL95).

YearC	EU-Italy														Palestine		
	BIL95														BIL95		
	BLT					BON			LTA						BLT		COM
	GILL	LL	PS	TN	TRAW	GILL	LL	PS	GILL	LL	PS	TRAW	UNCL		PS	UNCL	UNCL
1995																	45
1996																	50
1997																	81
1998																	77
1999																	73
2000																	54
2001																	38
2002																	43
2003																	27
2004																	39
2005																	32
2006			10	133				40	512		15	188					14
2007	100		11	47			386	44	181	142	16	66					58
2008																	51
2009										657	180	15	2	3			154
2010																	45
2011																	9
2012																	17
2013																	20
2014																	43
2015																	38
2016	136		76	731	49	726											82
2017																	70
2018															19	8	64
2019															91	39	83
2020															57	24	68
2021															15	6	135
2022															73	31	71

Table 6. Number of small tunas' specimens on the ICCAT conventional tagging database (ICCAT historical and AOTTP program) released and recovered. The table shows those carried out in recent years as part of the AOTTP project separately.

	RELEASES			RECOVERIES		
	ICCAT	AOTTP	TOTAL	ICCAT	AOTTP	TOTAL
FRI (<i>Auxis thazard</i>)	97	1	98		1	1
BLF (<i>Thunnus atlanticus</i>)	1925	7	1932	92	2	94
BLT (<i>Auxis rochei</i>)	17		17	3		3
BON (<i>Sarda sarda</i>)	514	10	524	46		46
CER (<i>Scomberomorus regalis</i>)	10		10	1		1
KGM (<i>Scomberomorus cavalla</i>)	24185		24185	1268		1268
LTA (<i>Euthynnus alletteratus</i>)	871	7933	8804	28	715	743
SSM (<i>Scomberomorus maculatus</i>)	1928		1928	2		2
WAH (<i>Acanthocybium solandri</i>)	158	282	440		3	3
TOTAL	29705	8233	37938	1440	721	2161

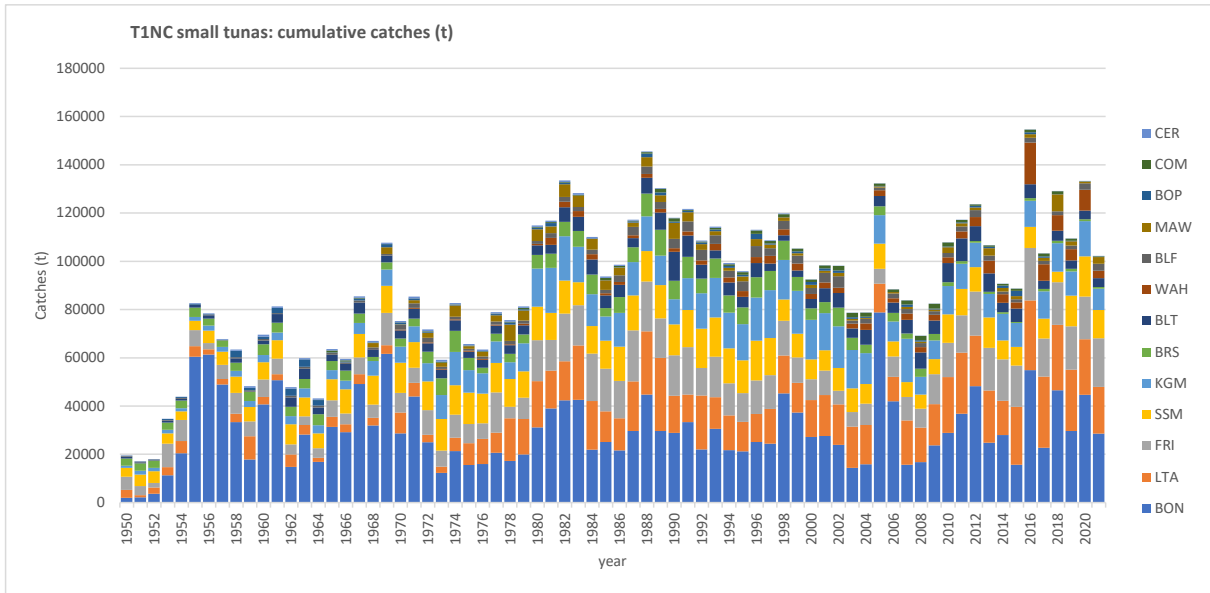


Figure 1. Cumulative small tuna catches (t) in Task 1 (T1NC) by species and year.

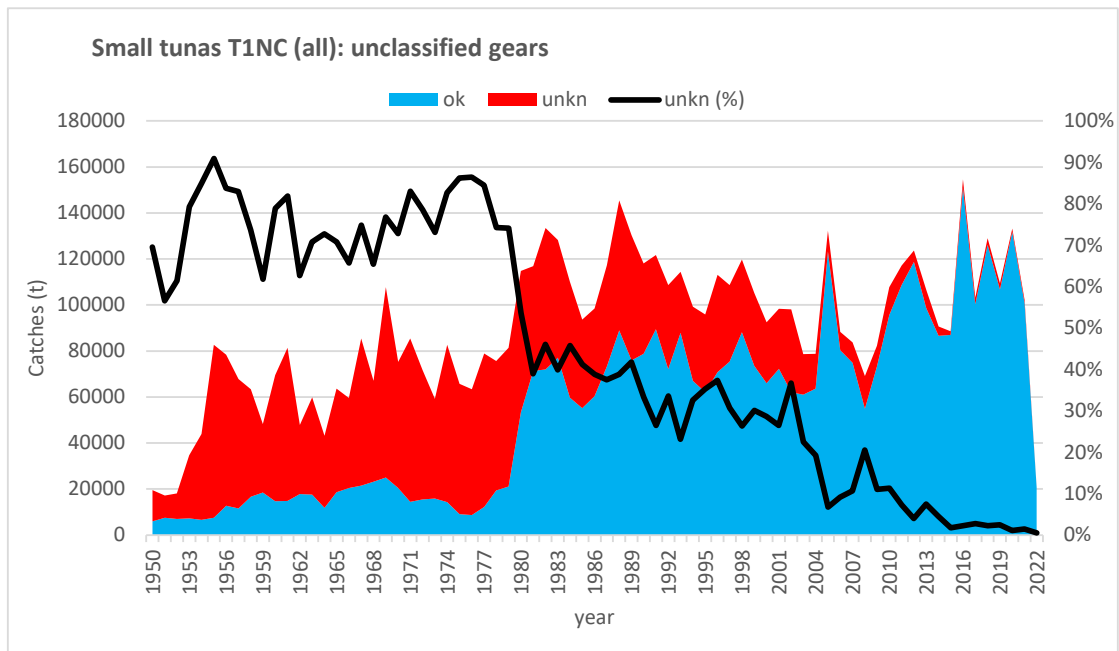


Figure 2. Total small tuna catches (t) with and without gear (UN: unclassified/unknown) by year. The ratio (%) of unclassified gears is shown in the right axis (black line series).

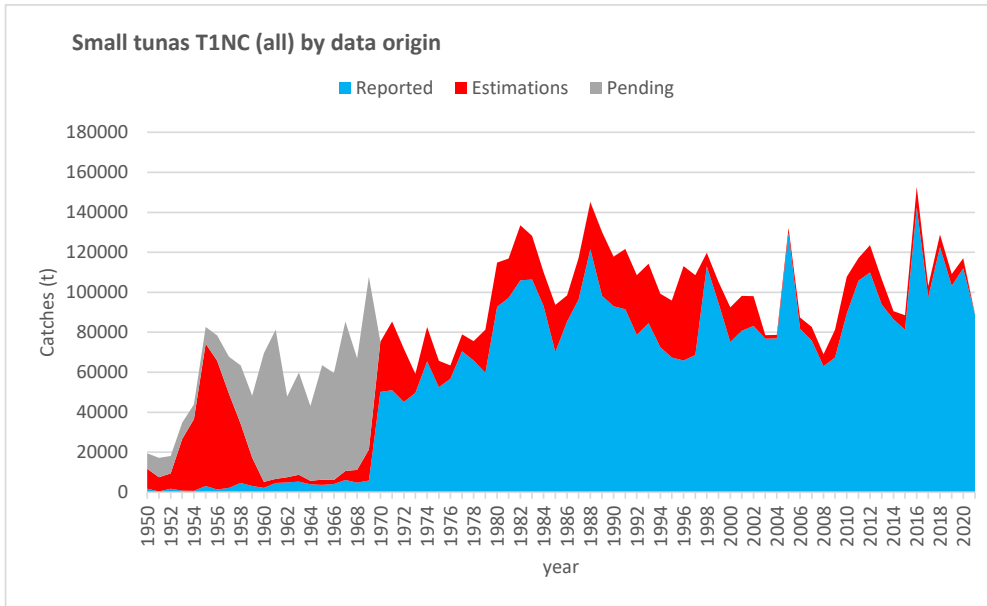


Figure 3. Total small tuna catches (t) in Task 1 (T1NC) by data origin and year. The data origin was classified in three main categories: reported by CPCs, SCRS estimations (including carry overs), and pending identification (ongoing work on identifying the data sources).

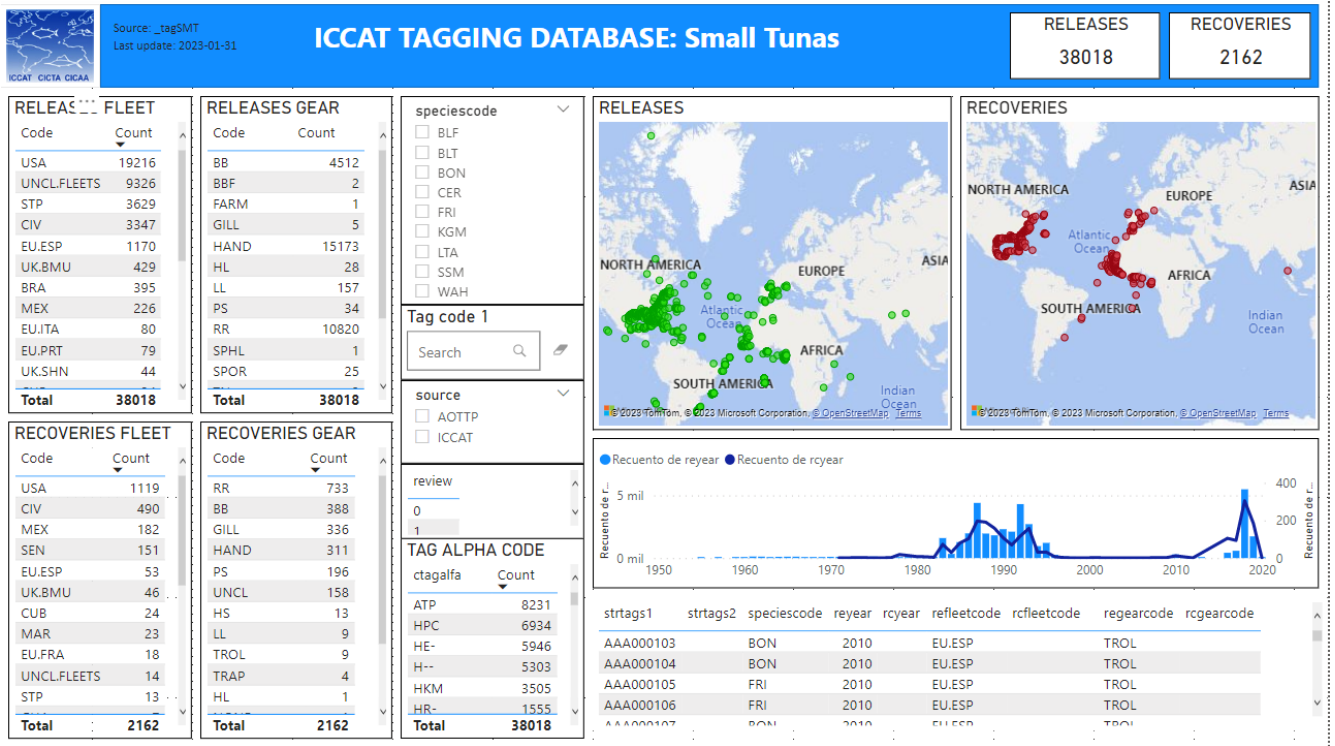


Figure 4. Screenshot of the conventional tagging dashboard.

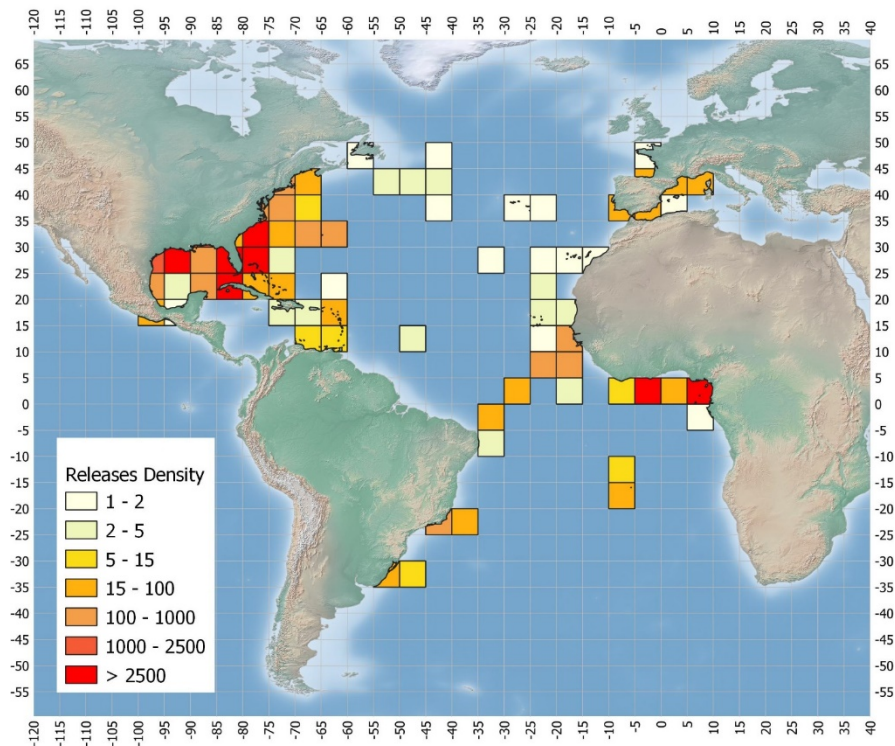


Figure 5 (A). Density of the release positions at 5x5 lat lon grids (A) in ICCAT conventional tagging on small tunas (including ICCAT AOTTP).

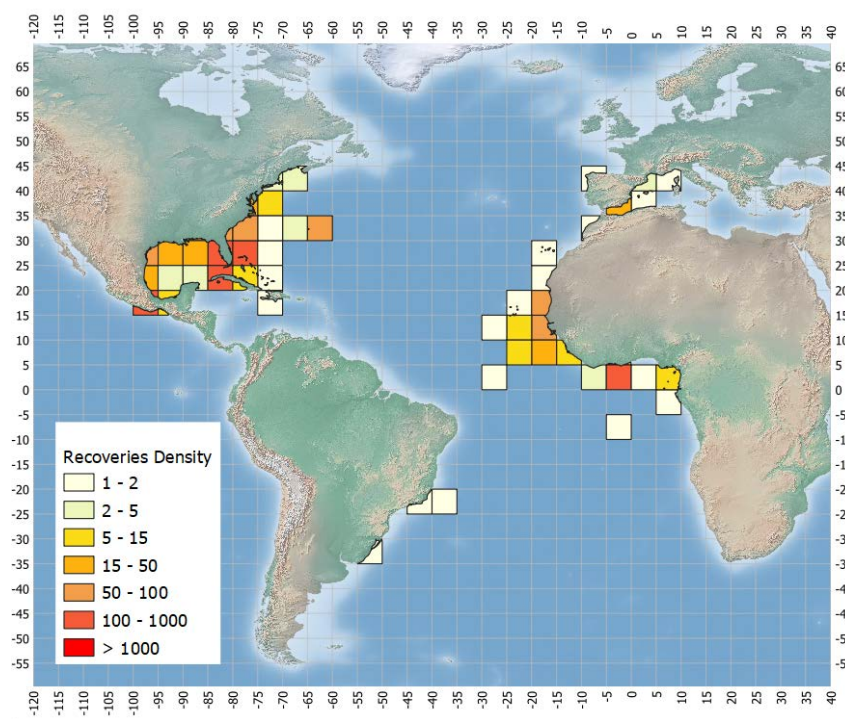


Figure 5 (B). Density of the recovery positions at 5x5 lat lon grids in ICCAT conventional tagging on small tunas (including ICCAT AOTTP).

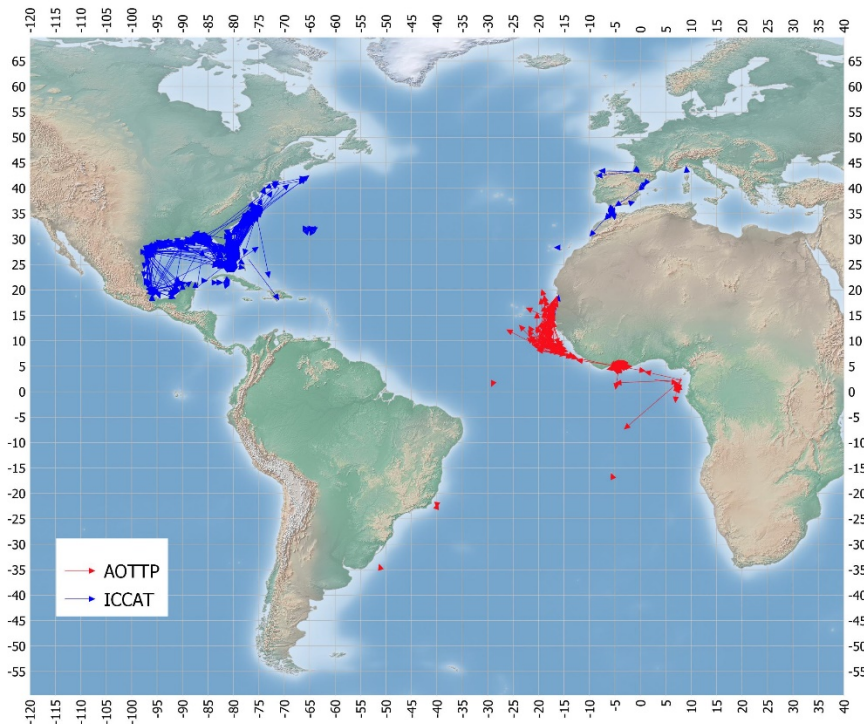
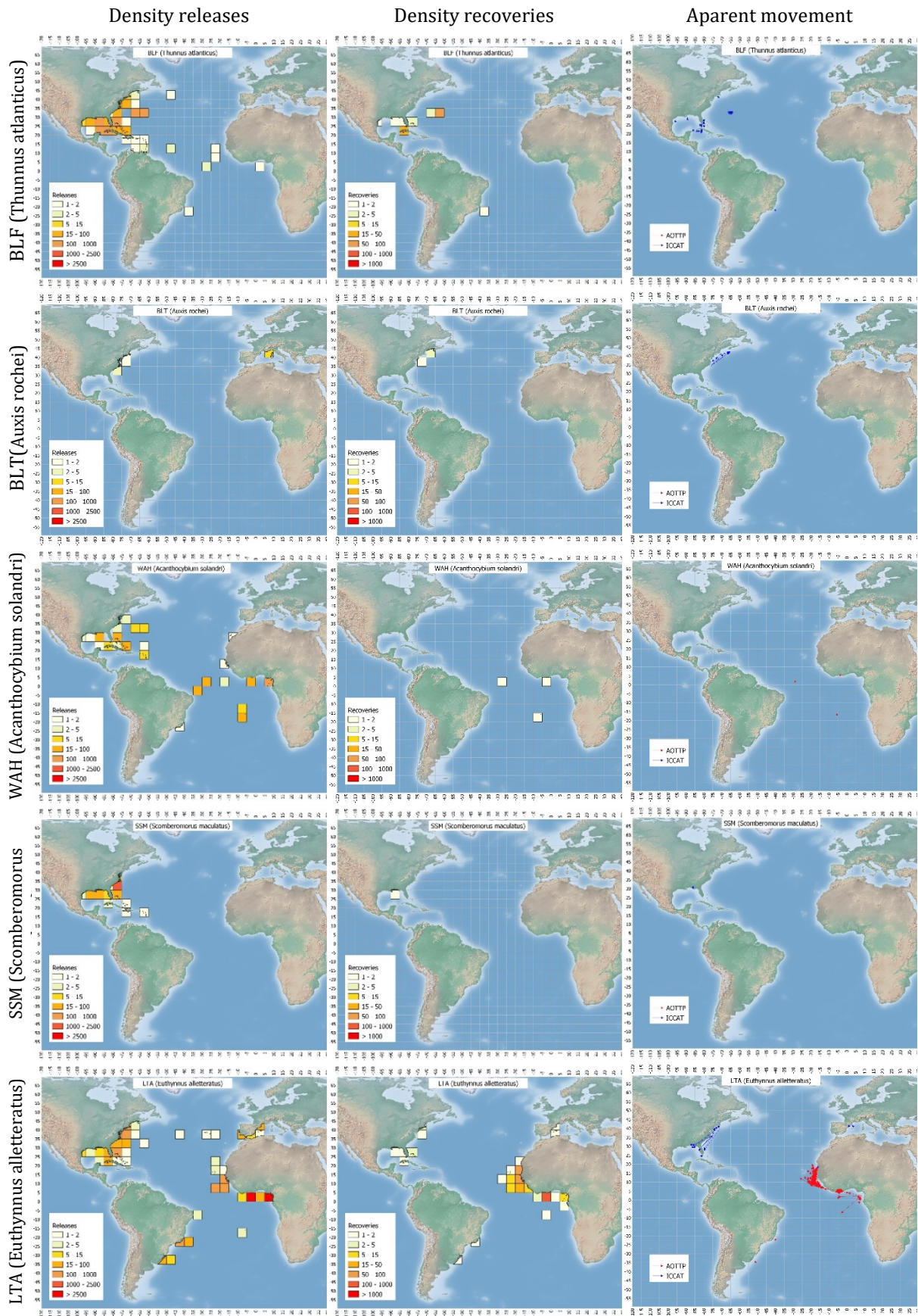


Figure 5 (C). Straight displacement from the release to the recovery position of the recaptured specimens in ICCAT conventional tagging on small tunas (including ICCAT AOTTP).



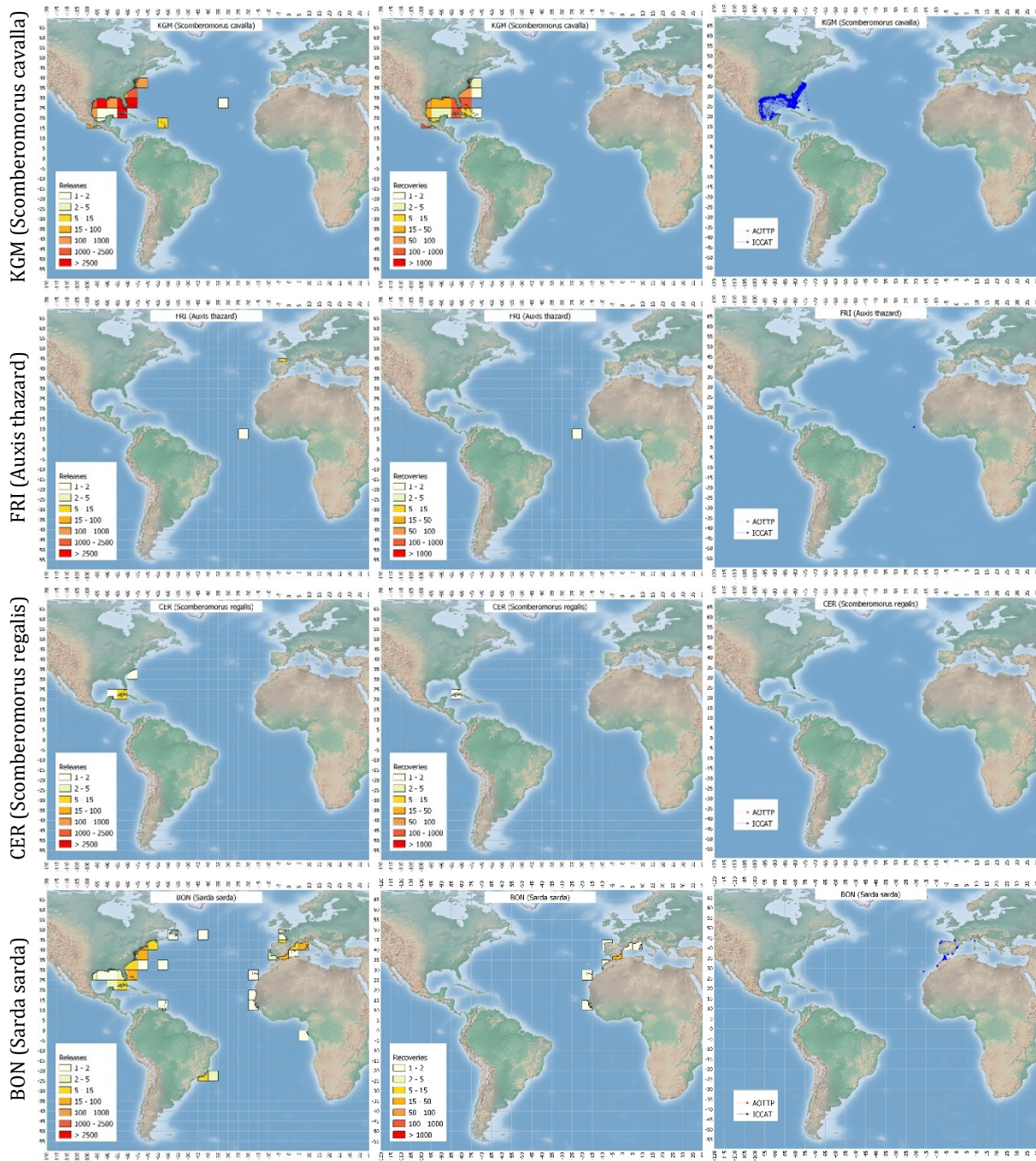


Figure 6. Maps which show the density of the release positions at 5x5 lat lon grids, density of the recovery positions at 5x5 degree strata, and a map with the straight displacement from the release to the recovery position of the recaptured specimens, respectively for each species of the group of small tunas.

Intersessional Meeting of Small Tunas Species Group

(Madrid, Spain/Hybrid – 15-18 May 2023)

Objectives

The workplan for the Small Tunas Species Group for 2023 included a four-day intersessional meeting. The objectives of the meeting are: organize all the data and information that have been obtained to date; to organize the size and catch composition information; to present new life-history information; and, to review data-limited assessments that might be applied to small tunas.

Tentative Agenda

1. Opening, adoption of Agenda and meeting arrangements
2. Review of fisheries statistics
 - 2.1 Task 1 (catches) data and spatial distribution of catches
 - 2.2 Task 2 catch/effort and size data
 - 2.3 Tagging data
 - 2.4 Fisheries indicators (including length data analysis)
3. Review of available and new information on biology and other life-history information of small tunas
 - 3.1 Age and growth (including a summary of the ageing workshop)
 - 3.2 Reproduction and maturity
 - 3.3 Genetics (species and stock differentiations)
 - 3.4 Other
4. Update of Data Poor Methods and reviews of appropriate approaches for future development of management advice
5. Small Tunas Year Programme (SMTYP): achievements and programmed activities for 2023
6. Recommendations on research and statistics
7. Other matters
8. Adoption of the report and closure

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List of Papers and Presentations

DocRef	Title	Authors
SCRS/2023/026	Fisheries of the narrow-barred Spanish mackerel (<i>Scomberomorus commerson</i> , Lacépède, 1800) in the Palestinian area (South-eastern Mediterranean Sea)	Di Natale A., Salah J., Tair M.A., Zava B., Di Natale A.
SCRS/2023/027	Fisheries of the bullet tuna (<i>Auxis rochei</i> , Risso, 1810) in the Palestinian area (South-eastern Mediterranean Sea)	Di Natale A., Salah J., Tair M.A., Zava B., Di Natale A.
SCRS/2023/084	Quelques paramètres biologiques des trois espèces des thonidés mineurs ; la thonine commune : <i>Euthynnus alletteratus</i> (Rafinesque, 1810) ; la bonite à dos rayé : <i>Sarda sarda</i> (Bloch, 1793) et le bounitou : <i>Auxis rochei</i> (Risso, 1810) pêchés dans la zone centre d'Algérie	Benounnas K., Latreche M.
SCRS/2023/087	Reproductive biology of wahoo (<i>Acanthocybium solandri</i>) of eastern Atlantic	Puerto M.A., Gómez-Vives M.J., Pascual-Ayalón J.P., Diaha C.N'. G., Angueko D., Ortiz de Urbina J., and Macías D.
SCRS/P/2023/043	Results on little tunny (<i>Euthynnus alletteratus</i>) reproduction under the Short-term Contract for ICCAT SMTYP for the biological samples collection for growth, maturity and genetics studies	Macias D., Puerto M.A., Gómez-Vives M.J., Hajje G., Lino P.G., Muñoz-Lechuga R., Angueko D., Ngom Sow F.N., N'Guessan C.D., Lucena F., Silva G., Saber S., and Ortiz de Urbina, J.
SCRS/P/2023/047	Update of growth studies of little tunny (<i>Euthynnus alletteratus</i>) and Atlantic bonito (<i>Sarda sarda</i>) after the Workshop of age reading	Muñoz-Lechuga R., Muñoz-Lechuga R., Lino P.G., Silva G., Macias D., Sow F.N., Diaha N.C., Angueko D., Hajje G., Massa-Gallucci A., and Baibbat S.
SCRS/P/2023/048	Using otolith shape analysis for spatial units differentiation of Genus <i>Euthynnus</i> in the Eastern Atlantic	Muñoz-Lechuga R., Muñoz-Lechuga R., Silva G., Lino P.G., Diaha N.C., Angueko D., Sow F.N., Macias D., and Massa-Gallucci A.
SCRS/P/2023/053	Small tunas studies in Brazil: AN update	Frédou T., Lourenço M., Barreto T., and Lucena-Frédou F.
SCRS/P/2023/054	Summary of Activities of the Small Tuna Year Program	Silva G.
SCRS/P/2023/055	Mise à jour de la relation Taille-masse des thonidés mineurs capturés dans les eaux tunisiennes	Ghailen H.
SCRS/P/2023/056	Update the length-weight relationships and relative condition factor of the wahoo <i>Acanthocybium solandri</i> (Cuvier, 1832), little tunny <i>Euthynnus alletteratus</i> (Rafinesque 1810), frigate tuna <i>Auxis thazard</i> (Lacepède, 1800), bullet tuna <i>Auxis rochei</i> (Risso, 1810) and Atlantic Bonito <i>Sarda sarda</i> (Bloch 1793) Fish of the Atlantic Ocean	Pascual-Alayón P., Déniz S., Chanto D., Abascal F.J., and Casañas I
SCRS/P/2023/057	Overview workshop on data limited assessment methods for small tunas	Fredou T.
SCRS/P/2023/069	An overview of the workshop on data-limited methods	Fredou T.

SCRS Documents and Presentation Abstracts as provided by the authors

SCRS/2023/026 reported the very first data available on the narrow-barred Spanish mackerel (*Scomberomorus commerson*) in the Palestinian area, where this species is present since 1935. The document presented a general overview of the fishing area and the fleets concerned, pointing out high concentration of vessels in a very small fishing area. The species is fished mostly by trawlers, but catches are reported also by purse-seiners, gillnets and longlines. The landings for this species are available since 1995, showing peaks in 2009 (159.5 t) and 2021, with a general average of about 59 tons per year. Catch size is ranging from 20 to 120 cm, with a peak of young-of-the-year, showing the presence of a spawning area in front of the Gaza Strip. The data are particularly important, because this Lessepsian species is a top-predator and should be better followed for understanding its ecological aspects. Information about the biology of this species in that area is not available.

SCRS/2023/027 reported the very first data available on the bullet tuna (*Auxis rochei*) in the Palestinian area, where this species is commonly present but where previous data are not available. The document presented a general overview of the fishing area and the fleets concerned. The species is fished mostly by purse-seiners, but also by many other gear types and it is a common target for the small-scale fishery for subsistence purposes. Due to the difficulties for disentangling the catches of bullet tuna from those of other small tuna species which are often reported together, the landings for this species are available only since 2018, showing a negative peak in 2021, with a general average of about 72.8 tons per year. Catch size is available only from the purse-seiners in 2022, ranging from 23 to 42 cm; it is important to note that young-of-the-year are clearly present, showing the presence of a spawning area in front of the Gaza Strip. Information about the biology of this species in that area is not available.

SCRS/2023/084 Ce travail a fourni des informations sur quelques paramètres de croissance de la thonine commune (*Euthynnus alletteratus*), de la bonite à dos rayé (*Sarda sarda*) et du bounitou (*Auxis rochei*) captures dans la baie de Bou-Ismaïl (Tipaza) en période d'automne de l'année 2022. L'étude est fondée sur un échantillonnage mensuel des trois derniers mois de l'année pêchées par les petits métiers de la zone centre d'Algérie. Selon les données présentes, les relations calculées mettent en évidence, une allométrie minorante entre la longueur à la fourche et le poids pour *Euthynnus alletteratus* et *Sarda sarda*. Cela exprime que la longueur à la fourche (LF) croît moins vite que le poids total (Wt). Les paramètres de croissance de Von Bertalanffy, ont été déterminés par l'étude des structures de taille : La longueur asymptotique (L_{∞}) et le coefficient de croissance (K) et l'âge théorique (t_0) des individus lorsque leur taille est nulle chez *Euthynnus alletteratus* et *Sarda sarda*.

SCRS/2023/087 - This study analyses samples of wahoo acquired under three Short-Terms Contracts from the ICCAT Small Tuna Year Program (SMTYP 2018 to 2021). The study presents the results on the reproductive biology of Wahoo (WAH) from East Atlantic (AT-NE/BIL94B and AT-SE/BIL97). Our results indicate that the WAH spawn in both areas and have a Protracted spawning season (from March to October), peaking in August-September. These results agree with those offshore of Florida's coast and the northern Bahamas. The L50 for Females was estimated at 94.78 cm SFL. Our results on L50 agree with those in Oxenford *et al.*, 2003 and are slightly lower than other studies on the western Atlantic Ocean.

SCRS/P/2023/043 - This study analyses samples of Little Tunny acquired under Short-Terms Contracts from the ICCAT Small Tuna Year Program (SMTYP 2018 to 2021). The study presents the results on the reproductive biology of Little Tunny (LTA) using the stock/species delimitation published in Ollé *et al.*, 2020 (MEDI_NE ATL and NE_SE ATL). The study used a combined approach (Macro (153)/Micro (403) to the Gonad stage analysis. Results indicate that the WAH spawn in both areas and show essential differences in spawning season—the MEDI_NE ATL stock Spawn from June to August, peaking in July. In contrast, the NE-SE ATL Stock has a protracted spawning season peaking in January and September. These results agree with previous papers in the Mediterranean. The L50 (sex combined) of the MEDI_NE ATL Stock is significantly Larger (50.1 cm SFL) than those of the NE_SE ATL stock (42.74 cm SFL).

SCRS/P/2023/047 - This presentation described an update in age and growth of Atlantic bonito (BON) and little tunny (LTA) developed in the last Workshop of age and growth in February 2023. Methodologies applied in otoliths and spines were explained. A methodology for standardization and improvement in spine analysis for BON and LTA was presented. The results of the spines and otoliths analysis were presented, compared and discussed. In addition, training was carried out with cuts of BON and LTA spines to perform age readings. There was a consensus on the spine readings among experts. In the same way, a comparison was realized between age structures (otoliths and spines) of the same individual to compare and calibrate readings

SCRS/P/2023/048 - This presentation described the use of otolith shape of *Euthynnus alleteratus* for spatial units differentiation in the Eastern Atlantic. The shape of sagitta otoliths was utilized to compare harvested individuals of the little tunny (*Euthynnus alleteratus*) from coastal areas spanning the Eastern Atlantic, including the Mediterranean Sea. Preliminary analyses were carried out comparing otolith shapes collected in coastal waters of different countries, including Malta, Portugal, Spain, Senegal, Côte d'Ivoire, and Gabon. Significant differences between two groups were identified. The first group comprised samples from the coastal areas in the Northeast Temperate Atlantic and Mediterranean Sea (NETAM Area), while the second group encompassed coastal areas off the Eastern Tropical Atlantic coast of Africa (ETA Area). Notably, the degree of divergence along the rostrum, postrostrum, and excisura of the generated otolith outlines was even more pronounced between these two groups. Remarkably, this study stands as the pioneering work employing otolith shape analysis to differentiate tunas originating from separate spatial units. The implications of these findings extend to the re-classification of previously collected samples and the necessary correction of data time series.

SCRS/P/2023/069 - A training course Data Limited Assessment Methods for Small Tunas was held at ICCAT headquarters on 9-12 May 2023. This course provided a broad overview of the fundamentals and assumptions of data-limited stock assessment methods that can be applied to small tunas. The second part considered the practical application of catch-based and length-based stock assessment methods within the data-limited stock assessment framework. Three applications were highlighted (1) a risk analysis: Productivity-Susceptibility Analysis (PSA), (2) a length-based model: LB-SPR and (3) a catch and length approach: Stock Synthesis SS-DL.

SCRS Tables for Small Tunas

Table 1. [a-q] Small tuna species standard SCRS catalogues on statistics (Task 1 and Task 2) of the major ICCAT small tuna species by stock/area, major fishery (flag/gear combinations ranked by order of importance) and year (1993 to 2022). Only the most important fisheries (representing about 95 % of Task 1 total catch) are shown. For each data series, Task 1 (DSet= 't1', in tonnes) is visualised 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'= CAS exists) that represents the Task 2 data availability in the ICCAT-DB. See the legend for the colour scheme pattern definitions. An overall score for the last 30 years (1 score per catalogue) is also shown in all catalogues. Shaded blue cells (DSet= "t1" only) could indicate missing catches.

Table	Species	Scie. Name	% weight in Task I of Small tunas (1950-2021)	Order (#)	Stock/area	Legend (t2)
1.a	BLF	Thunnus atlanticus		2.0	9 AT	
1.b	BLT	Auxis rochei		4.6	7 AT	a t2ce
1.c	BLT	Auxis rochei			MD	b t2sz
1.d	BON	Sarda sarda		33.4	1 AT	c cas
1.e	BON	Sarda sarda			MD	
1.f	BOP	Orcynopsis unicolor		0.8	11 AT	
1.g	BOP	Orcynopsis unicolor			MD	
1.h	BRS	Scomberomorus brasiliensis		4.8	6 AT	
1.i	CER	Scomberomorus regalis		0.4	13 AT	
1.j	COM	Scomberomorus commerson		0.7	12 MD	
1.k	FRI	Auxis thazard		12.7	3 AT	
1.l	KGM	Scomberomorus cavalla		11.0	5 AT	
1.m	LTA	Euthynnus alletteratus		14.5	2 AT	
1.n	LTA	Euthynnus alletteratus			MD	
1.o	MAW	Scomberomorus tritor		2.0	10 AT	
1.p	SSM	Scomberomorus maculatus		11.2	4 AT	
1.q	WAH	Acanthocybium solandri		2.1	8 AT	

-1	no T2 data
a	t2ce only
b	t2sz only
c	cas only
bc	t2sz + cas
ab	t2ce + t2sz
ac	t2ce + cas
abc	all

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Table 1.a SCRS catalogue: BLF[AT] (*Thunnus atlanticus*).

Score:		3.033		TOTAL	3535	2719	4051	4488	3258	3395	3203	2483	4034	4756	1303	1926	1031	1937	1927	1669	1442	1837	2083	2849	2134	1152	1306	1920	1368	1557	1472	2569	2786	0					
Species	Stock	Status	FlagName	GearGrp	DSet	1993	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	Rank	%	%cum	
BLF	ATL	CP	USA	RR	t1	389	482	518	388	469	647	568	288	420	287	365	638	191	806	402	631	594	888	946	1893	1301	551	725	1224	904	1025	701	1588	1002	1	30%	30%		
BLF	ATL	CP	USA	RR	t2	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	1				
BLF	ATL	CP	EU-France	UN	t1	1140	1330	1370	1040	1040	1040	1040	1040	1040	1040	1040													14	0	0	1			2	16%	46%		
BLF	ATL	CP	EU-France	UN	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1													-1	a	-1	b			2					
BLF	ATL	CP	Venezuela	PS	t1	1007	13	621	691	415	907	844	472	891	324	204	605	121	165	742	202	291	238	416	195	155	69	76	161	25	33			2	3	14%	60%		
BLF	ATL	CP	Venezuela	PS	t2	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	ab	ab	3			
BLF	ATL	CP	Grenada	TR	t1	253	189	123	164	126	233	94	164	223	255	335	268	306	371	291	290	291	291	291	291	291	291					62	43		4	7%	67%		
BLF	ATL	CP	Grenada	TR	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1					-1	-1		4				
BLF	ATL	CP	Brazil	UN	t1		6		382	297	55	55	38	149	1518					240		248	0						31	33					5	4%	71%		
BLF	ATL	CP	Brazil	UN	t2		-1		-1	-1	-1	-1	-1	-1	-1				-1		-1	-1						-1	-1						5				
BLF	ATL	CP	Venezuela	BB	t1	214			64	60	108		224	859	821	107	127	104	71	34	29	1	92	13	25	25	4	3	35	4		0	0		6	4%	76%		
BLF	ATL	CP	Venezuela	BB	t2	ab	ab	ab	ab	b	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	a	ab	ab		ab	ab		6				
BLF	ATL	NCO	Dominican Republic	UN	t1	133	239	892	892	231	158	18	19																						7	4%	79%		
BLF	ATL	NCO	Dominican Republic	UN	t2	-1	-1	-1	-1	-1	-1	-1	-1																							7			
BLF	ATL	NCO	Sta Lucia	TR	t1									96	169	96	126	182	151	179	165	203	229	192	147	104	80	156	119			127			8	4%	83%		
BLF	ATL	NCO	Sta Lucia	TR	t2									-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1		-1				8				
BLF	ATL	CP	Brazil	BB	t1	20	31	153	265	93				151	1	118	90			233	18	10	8	40	56	18	130	0		100	50	244	532		9	3%	86%		
BLF	ATL	CP	Brazil	BB	t2	-1	-1	-1	-1	-1				-1	a	-1	-1		ab	-1	-1	a	-1	a	a	a	-1	a	a	a	a	a	a	a	9				
BLF	ATL	CP	Brazil	LL	t1	2	1		2	28								1	2	0	0		1	1	68	92	111	262	158	119	159	121	261	530	10	3%	89%		
BLF	ATL	CP	Brazil	LL	t2	-1	-1		-1	-1							a	a	a	a	a	a	a	ab	-1	a	a	a	a	a	a	a	a	a	a	10			
BLF	ATL	CP	Brazil	HL	t1																			5			58	63	38	40	133	239	315	225	11	2%	91%		
BLF	ATL	CP	Brazil	HL	t2																														11				
BLF	ATL	NCO	Cuba	BB	t1	54	223	156	287	287																										12	1%	92%	
BLF	ATL	NCO	Cuba	BB	t2	-1	-1	-1	-1	-1					b																					12			
BLF	ATL	CP	USA	LL	t1	87	10	55	49	62	43	27	24	28	22	14	13	13	10	5	4	8	10	9	10	7	11	11	8	15	16	11	9	15		13	1%	93%	
BLF	ATL	CP	USA	LL	t2	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	b	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	13		
BLF	ATL	CP	USA	HL	t1	29	0	7	9	8	8	20	12	22	24	32	24	20	15	15	14	15	13	11	16	17	21	23	28	25	30	43	29	36		14	1%	94%	
BLF	ATL	CP	USA	HL	t2	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	14			
BLF	ATL	CP	Venezuela	LL	t1	3	8	3	3	23	19	348		38	66	9																				15	1%	95%	
BLF	ATL	CP	Venezuela	LL	t2	a	a	a	-1	ab	ab	ab		-1	-1	a				a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	15			
BLF	ATL	CP	Curaçao	UN	t1	65	60	50	45	45	45	45	45	45	45	45																				16	1%	95%	
BLF	ATL	CP	Curaçao	UN	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1																				16			

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Table 1.b SCRS catalogue: BLT[AT] (*Auxis rochei*).

Score:		1.512		TOTAL		70	100	0	0	0	28	263	902	1236	626	353	401	719	889	602	334	484	746	507	515	1158	367	755	467	232	228	215	184	209	14						
Species	Stock	Status	FlagName	GearGrp	DSet	1993	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	Rank	%	%cum			
BLT	ATL	CP	Russian Federation	TW	t1																	23	48	67	119	366	703	352	345	336	62	125	75	134	64	1	40%	40%			
BLT	ATL	CP	Russian Federation	TW	t2								-1	-1	-1	-1	-1	-1				-1	-1	a	a	a	a	a	a	a	a	a	a	a	a	a	1				
BLT	ATL	CP	EU-Portugal	TP	t1						28	0	313	65	48	83	296	580	510	582	168		479	363										52	24	125	2	29%	70%		
BLT	ATL	CP	EU-Portugal	TP	t2						-1	a	a	a	a	a	a	-1	-1	-1	-1		a	a											a	a	a	2			
BLT	ATL	CP	EU-Portugal	UN	t1							239	177	142	117	148	1					143	436	175	21	38	25								4	2	1	3	13%	83%	
BLT	ATL	CP	EU-Portugal	UN	t2							a	a	a	a	a	a	a				a	-1	a	a	-1	-1								a	a	a	3			
BLT	ATL	CP	Brazil	LL	t1																				5	117			56	131	34	59						4	3%	86%	
BLT	ATL	CP	Brazil	LL	t2																				-1	-1			-1	-1	-1	-1						4			
BLT	ATL	CP	EU-Portugal	LL	t1						20	0	0	2	1					357	20		1			0								0	0	0	5	3%	90%		
BLT	ATL	CP	EU-Portugal	LL	t2						a	-1	a	a			a	a	a	a			a			-1								a	a	a	5				
BLT	ATL	CP	Brazil	BB	t1																					74	289											6	3%	93%	
BLT	ATL	CP	Brazil	BB	t2																					-1	a											6			
BLT	ATL	CP	Côte d'Ivoire	GN	t1																																	7	2%	94%	
BLT	ATL	CP	Côte d'Ivoire	GN	t2																							a	a	a		-1	a	-1				7			
BLT	ATL	CP	Russian Federation	PS	t1	70	100																															8	1%	96%	
BLT	ATL	CP	Russian Federation	PS	t2	-1	-1																															8			
BLT	ATL	CP	EU-Germany	TW	t1																																	9	1%	97%	
BLT	ATL	CP	EU-Germany	TW	t2																																	9			
BLT	ATL	CP	EU-Lithuania	TW	t1																						1											10	1%	98%	
BLT	ATL	CP	EU-Lithuania	TW	t2																																	10			
BLT	ATL	CP	Brazil	UN	t1																																		11	1%	98%
BLT	ATL	CP	Brazil	UN	t2																					0													11		
BLT	ATL	CP	EU-España	UN	t1																																		12	0%	99%
BLT	ATL	CP	EU-España	UN	t2																																		12		
BLT	ATL	CP	EU-Portugal	PS	t1																																		13	0%	99%
BLT	ATL	CP	EU-Portugal	PS	t2																																		13		

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Table 1.c SCRS catalogue: BLT[MD] (*Auxis rochei*).

Score:		TOTAL																																							
0.682		TOTAL	3350	5200	4301	5909	3070	2281	2383	3010	4559	5416	3441	5823	3513	3344	5015	6491	5072	7206	8977	5719	6494	3549	4816	5253	3116	3855	3218	3347	3475	104	Rank	%	%cum						
Species	Stock	Status	FlagName	GearGrp	DSet	1993	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	Rank	%	%cum			
BLT	MED	CP	EU-España	UN	t1	493	702	1233	1962	408	221	527	411	750	317	495	1009	828	1027	2979	3265	607	3748	3099	1463	2418	600	165	113	27	54	1	22%	22%							
BLT	MED	CP	EU-España	UN	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	a	a	a	a	a	a	a	b	-1	a	a	1							
BLT	MED	CP	Türkiye	PS	t1	324	77				316	316	316	316			284	1020	1031	993	836	1873	1081	2552	907	863	562	476	407	474	367	441	1064	730	2	13%	35%				
BLT	MED	CP	Türkiye	PS	t2	-1	-1				-1	-1	-1	-1			-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	2						
BLT	MED	CP	Algerie	PS	t1	267	247	188	202	156	245	149	178	166	306		153	201	472	437		219	109	986	983	443	914	1846	1563	192	778	362	667	1707	3	11%	46%				
BLT	MED	CP	Algerie	PS	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1		-1	-1	-1	-1		-1	-1	a	a	a	a	a	-1	-1	-1	a	a	a	3						
BLT	MED	CP	EU-Italy	UN	t1	379	531	531	229	229	229	462	462	462	2328	974	1309	627				74		74	37	55	849								4	7%	54%				
BLT	MED	CP	EU-Italy	UN	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	4					
BLT	MED	CP	Maroc	GN	t1	47	1532	566	1673	555	629	463	536	232	621	246	96	5			1	7	8	6											5	6%	59%				
BLT	MED	CP	Maroc	GN	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	5					
BLT	MED	CP	EU-Greece	UN	t1	1400	1400	1400	1400	1400																										6	5%	65%			
BLT	MED	CP	EU-Greece	UN	t2	-1	-1	-1	-1	-1																										6					
BLT	MED	CP	EU-España	PS	t1																							912	881	1978	523	793	879	417	7	5%	69%				
BLT	MED	CP	EU-España	PS	t2																							ab	b	b	ab	ab	a	ab	7						
BLT	MED	CP	Tunisie	UN	t1	20	13	14	13	32	93	45	15	2300	932	989	1760																			8	5%	74%			
BLT	MED	CP	Tunisie	UN	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	8				
BLT	MED	CP	EU-Greece	PS	t1				26	26			196	125	120	246	226	180	274	157	620	506	169	129	118	155	108	311	207	181	294	513	262	139		9	4%	78%			
BLT	MED	CP	EU-Greece	PS	t2				-1	-1			-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	9				
BLT	MED	CP	EU-España	TP	t1	155	422	239	334	196	266	142	612	111	176			18	74	104	124	120	39	128	156	236	135	114	87	120	224	180	71	81		10	4%	82%			
BLT	MED	CP	EU-España	TP	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	abc	abc	a	ac	ab	ab	ab	b	ab	ab	ab	a	ab		10				
BLT	MED	CP	Tunisie	PS	t1																			940	935	938	920	13	23	26	136	67	91	139		11	3%	85%			
BLT	MED	CP	Tunisie	PS	t2																			-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	11				
BLT	MED	CP	Algerie	UN	t1	19	14	11	10	5	15	9	17	22	27		41																			12	2%	87%			
BLT	MED	CP	Algerie	UN	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	12				
BLT	MED	CP	EU-Italy	GN	t1																																13	2%	89%		
BLT	MED	CP	EU-Italy	GN	t2																																13				
BLT	MED	CP	EU-Italy	PS	t1																																14	2%	90%		
BLT	MED	CP	EU-Italy	PS	t2																																14				
BLT	MED	CP	Algerie	LL	t1																			99	156	111	39										15	1%	92%		
BLT	MED	CP	Algerie	LL	t2																			-1	-1	-1	-1	a	a	a	a	a	-1	-1	-1	a	a	a	15		
BLT	MED	CP	Maroc	HL	t1																			78	9	9	5	10	10	16	4	11	17	97	723	155		16	1%	93%	
BLT	MED	CP	Maroc	HL	t2																																16				
BLT	MED	CP	Maroc	TP	t1	123	194	55			7	478	210	227	24																						17	1%	94%		
BLT	MED	CP	Maroc	TP	t2	-1	-1	-1			-1	-1	-1	-1	-1																						17				
BLT	MED	CP	Maroc	LL	t1																																18	1%	95%		
BLT	MED	CP	Maroc	LL	t2																																18				

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Table 1.e SCRS catalogue: BON[MD] (*Sarda sarda*).

Score:		0.800		TOTAL		25997	15682	15189	17195	14078	29730	28170	21972	22237	15717	11117	11248	74376	32303	9247	10042	10019	12584	14442	39321	18365	23352	8993	43938	11798	35491	5745	27160	6728	0											
Species	Stock	Status	FlagName	GearGrp	DSet	1993	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	Rank	%	%cum								
BON	MED	CP	Türkiye	PS	t1	19548	10093	8944	10284	7810	24000	17900	12000	13460	6286	6000	5701	70797	29690	5965	6448	7036	9401	10019	35764	13158	19032	4573	39460	7578	30920	660	16701	1490	1	74%	74%									
BON	MED	CP	Türkiye	PS	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	1										
BON	MED	CP	EU-Italy	UN	t1	1238	1828	1512	2233	2233	2233	4159	4159	4159	4579	1067	1112	814		740	76	602	543		1039	442	69	110	28	220	3			2	6%	79%										
BON	MED	CP	EU-Italy	UN	t2	b	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	b	b	b	b		-1	-1	abc	a		abc	ab	-1	-1	-1	-1	-1			2										
BON	MED	CP	EU-Greece	PS	t1	2690	1581	2116	1752	1559	945	2135	1914	1550	1420	1538	1321	1390	845	1123	587	476	531	798	733	960	678	691	700	399	641	422	342	269			3	5%	85%							
BON	MED	CP	EU-Greece	PS	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	3									
BON	MED	CP	Tunisie	PS	t1																			1425	1415	1413	1407	867	1290	1993	1986	2079	2612	2498			4	3%	88%							
BON	MED	CP	Tunisie	PS	t2																			-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	4									
BON	MED	CP	Tunisie	UN	t1	792	305	413	560	611	855	1350	1528	1183	1112	848	1251																					5	2%	89%						
BON	MED	CP	Tunisie	UN	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1																					5								
BON	MED	CP	EU-España	UN	t1	200	341	624	681	619	313	419	321	327	448	544	272	202	420	508	453	225	457	539	420	807	520	173	103		101			0			6	2%	91%							
BON	MED	CP	EU-España	UN	t2	a	a	a	a	a	a	-1	a	a	a	-1	-1	-1	a	a	a	a	a	a	a	ab	a	a	ab		a		a				6									
BON	MED	CP	Algerie	PS	t1	342	332	377	219	284	389	376	346	292	361		317	298	340	585		293	146	213	218	392	351	427	300	395	527	208	214	404			7	1%	93%							
BON	MED	CP	Algerie	PS	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	a	a	a	a	a	-1	-1	-1	a	a	a			7								
BON	MED	CP	Egypt	PS	t1		697	985	725	724	1442	1442	1128	1128																								8	1%	94%						
BON	MED	CP	Egypt	PS	t2		-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	8								
BON	MED	CP	Türkiye	GN	t1																										915	5932	1098				9	1%	95%							
BON	MED	CP	Türkiye	GN	t2																																	9								
BON	MED	CP	EU-Italy	LL	t1										995	874	523	40	44	243	909	160	420		206	118	60	18	68	38	20	61	24				10	1%	96%							
BON	MED	CP	EU-Italy	LL	t2									b		-1	b	-1	b	-1	-1	-1	-1	abc	-1	abc	ab	ab	ab	ab	b	ab	ab	ab				10								
BON	MED	CP	EU-Italy	PS	t1																					494	283	215	204	119	169	152	98					11	1%	97%						
BON	MED	CP	EU-Italy	PS	t2										b	b	b	-1	-1	abc	-1	abc		abc		-1	-1	-1	ab	b	ab	ab	ab				11									
BON	MED	CP	Algerie	LL	t1																					126	111	310	292		146	73	140	126	216	152	278	150	193	282	93	96	76	12	0%	97%
BON	MED	CP	Algerie	LL	t2																																		12							

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Table 1.f SCRS catalogue: BOP[AT] (*Orcynopsis unicolor*).

Score:		TOTAL																																						
1.000		378	615	588	2064	254	47	651	1062	858	786	713	573	215	32	875	426	442	273	335	657	641	939	1161	743	522	104	119	63	193	0	Rank	%	%cum						
Species	Stock	Status	FlagName	GearGrp	DSet	1993	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	Rank	%	%cum		
BOP	ATL	CP	Maroc	PS	t1	345	595	523	1992	215	28	595	995	813	776	705	300	116		54	33	50	60	40	120	95	13	183	14	70	6	8	9	26	1	54%	54%			
BOP	ATL	CP	Maroc	PS	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1		a	-1	a	a	a	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	1	16%	89%		
BOP	ATL	CP	Maroc	LL	t1										201	13			578	357	220	135	114	345	320	167	198	286	130	11	15	18	49	2	19%	73%				
BOP	ATL	CP	Maroc	LL	t2			a			a		a	a	a	a	a	a	a	a	a	a	a	-1	-1	a	-1	-1	-1	-1	-1	-1	-1	-1	3	3%	98%			
BOP	ATL	CP	Maroc	HL	t1													2	1					59	177	140	687	732	365	250	21	30	35	95	3	16%	89%			
BOP	ATL	CP	Maroc	HL	t2													-1	-1					-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	4	6%	95%		
BOP	ATL	CP	Senegal	GN	t1	10	9	30	53	1	3	6	4	5	4	4	14	57	27	235	29	148	40	112	13	61	63	29							22	4	6%	95%		
BOP	ATL	CP	Senegal	GN	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	a	a						-1	4	3%	98%		
BOP	ATL	CP	Senegal	HL	t1	19	7	33	7	4	10	18	10	19	1	1	55	16	1	4	4	10	13	1	1	23	9	19	78	72	66	66			0	5	3%	98%		
BOP	ATL	CP	Senegal	HL	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	a	a	-1	-1	-1	-1	-1	-1	5	1%	99%		
BOP	ATL	CP	Maroc	GN	t1	3	3	1	11	31		31	53	17	4	1					2	1	3	4												6	1%	99%		
BOP	ATL	CP	Maroc	GN	t2	-1	-1	a	a	a	a	a	a	-1	a	a	a	a	a	a	a	a	a	a	a	a	a									6	0%	100%		
BOP	ATL	CP	EU-Portugal	LL	t1														5	3	1			10	20	4	1	1					0	0	0	7	0%	100%		
BOP	ATL	CP	EU-Portugal	LL	t2														a	a	a					-1	-1							a	a	a	7	0%	100%	
BOP	ATL	CP	Senegal	TR	t1		0	0				0	3	0	1	1	5	0	0																		8	0%	100%	
BOP	ATL	CP	Senegal	TR	t2		-1	-1				-1	-1	-1	-1	-1	-1	-1	-1						2			a									8	0%	100%	
BOP	ATL	NCO	Benin	HS	t1	1	1	1	3	1	1																										9	0%	100%	
BOP	ATL	NCO	Benin	HS	t2	-1	-1	-1	-1	-1	-1																											9	0%	100%
BOP	ATL	CP	EU-Portugal	UN	t1																0	2	1		3		1							0	1	1	10	0%	100%	
BOP	ATL	CP	EU-Portugal	UN	t2															a	a	a	a	a	a	a		-1					a	a	a	10	0%	100%		

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Table 1.g SCRS catalogue: BOP[MD] (*Orcynopsis unicolor*).

Score:		TOTAL																											Rank	%	%cum									
0.000		252	176	115	132	227	130	217	145	154	137	23	8	2	0	172	107	6	14	42	24	21	13	1078	62	38	22	52	43	27	0									
Species	Stock	Status	FlagName	GearGrp	DSet	1993	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	Rank	%	%cum		
BOP	MED	CP	Algerie	GN	t1	128	108	78	91	197	109	179	122	130	113																					1	36%	36%		
BOP	MED	CP	Algerie	GN	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1																						1			
BOP	MED	CP	Tunisie	PS	t1																			2	2	2	2	1068	27	33	14	45	7	17			2	35%	72%	
BOP	MED	CP	Tunisie	PS	t2																			-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1			2			
BOP	MED	CP	Maroc	LL	t1															168	104	4	10	10	5	5	2	2	7	1	1	1	6	2			3	10%	82%	
BOP	MED	CP	Maroc	LL	t2															-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1			3			
BOP	MED	CP	Algerie	UN	t1	70	45	14	28	27	19	37	13	15	15																						4	8%	90%	
BOP	MED	CP	Algerie	UN	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1																							4		
BOP	MED	CP	Maroc	GN	t1	14	23	23	13	3	2	1	10	9	9	9	4																					5	3%	93%
BOP	MED	CP	Maroc	GN	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1																						5		
BOP	MED	CP	Maroc	HL	t1																			2														6	3%	96%
BOP	MED	CP	Maroc	HL	t2																			-1														6		
BOP	MED	CP	Maroc	PS	t1																		11	1	1													7	2%	98%
BOP	MED	CP	Maroc	PS	t2																			-1	-1	-1												7		
BOP	MED	CP	Libya	PS	t1	40																																8	1%	99%
BOP	MED	CP	Libya	PS	t2	-1																																8		
BOP	MED	CP	Algerie	LL	t1																			8	7	3	2	1	0	1	0	1	0					9	1%	100%
BOP	MED	CP	Algerie	LL	t2																			a	a	a	a	a	-1	-1	-1	-1	a				9			

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Table 1.h SCRS catalogue: BRS[AT] (*Scomberomorus brasiliensis*).

Score:		TOTAL		8049	7161	7006	8435	8004	7923	5754	4785	4553	7750	5137	3410	3712	3587	2253	3305	2681	1590	1055	613	853	698	389	1124	1032	1010	1118	773	707	0							
Species	Stock	Status	FlagName	GearGrp	DSet	1993	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	Rank	%	%cum		
BRS	ATL	CP	Trinidad and Tobago	UN	t1	2130	2130	1816	1568	1699	2130	1328	1722	2207	2472	1867	2103	2720	1778	1414	1472	1498	1498	926	475	695	695		695	695	695	695	695	695	1	39%	39%			
BRS	ATL	CP	Trinidad and Tobago	UN	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	a	a	a	a	a	-1	a	a	a	a	a		-1	-1	-1	-1	-1	-1	2	29%	68%				
BRS	ATL	CP	Venezuela	UN	t1	5077	3882	3882	3609	3609	3651	1766	1766	1766	1766																									
BRS	ATL	CP	Venezuela	UN	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1																									
BRS	ATL	CP	Brazil	UN	t1	842	1149	1308	3047	2125	1516	1516	988	229	3071	2881	814	471	1432	563	1521	1042																		
BRS	ATL	CP	Brazil	UN	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1														
BRS	ATL	NCC	Guyana	GN	t1				211	571	625	1143	308	329	441	389	494	521	377	277	312	141	92	116	124	151		387	399	308	313									
BRS	ATL	NCC	Guyana	GN	t2				-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1		-1	-1	-1	-1										
BRS	ATL	NCC	Suriname	TW	t1																																			
BRS	ATL	NCC	Suriname	TW	t2																																			
BRS	ATL	CP	Brazil	BB	t1																																			
BRS	ATL	CP	Brazil	BB	t2																																			
BRS	ATL	NCC	Chinese Taipei	LL	t1																																			
BRS	ATL	NCC	Chinese Taipei	LL	t2																																			
BRS	ATL	CP	Brazil	LL	t1																																			
BRS	ATL	CP	Brazil	LL	t2																																			
BRS	ATL	CP	Trinidad and Tobago	LL	t1																																			
BRS	ATL	CP	Trinidad and Tobago	LL	t2																																			
BRS	ATL	CP	Brazil	PS	t1																																			
BRS	ATL	CP	Brazil	PS	t2																																			
BRS	ATL	CP	Brazil	HL	t1																																			
BRS	ATL	CP	Brazil	HL	t2																																			

Table 1.i SCRS catalogue: CER[AT] (*Scomberomorus regalis*).

Score:		TOTAL		450	490	429	280	251	251	1	4	6	1	2	1	1	1	0	0	0	0	2	0	0	1	1	0	1	1	0	0	0								
Species	Stock	Status	FlagName	GearGrp	DSet	1993	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	Rank	%	%cum		
CER	ATL	CP	EU-France	UN	t1	400	400	400	250	250	250																													
CER	ATL	CP	EU-France	UN	t2	-1	-1	-1	-1	-1	-1																													
CER	ATL	NCO	Dominican Republic	UN	t1	50	90	29	29																															
CER	ATL	NCO	Dominican Republic	UN	t2	-1	-1	-1	-1																															
CER	ATL	NCO	Sta Lucia	HL	t1																																			
CER	ATL	NCO	Sta Lucia	HL	t2																																			
CER	ATL	NCO	Sta Lucia	TR	t1																																			
CER	ATL	NCO	Sta Lucia	TR	t2																																			
CER	ATL	CP	St Vincent and Grenadines	UN	t1	0	0		1	1	1	1	1	0																										
CER	ATL	CP	St Vincent and Grenadines	UN	t2	-1	-1		-1	-1	-1	-1	-1	-1																										
CER	ATL	NCO	Dominica	UN	t1																																			
CER	ATL	NCO	Dominica	UN	t2																																			
CER	ATL	CP	St Vincent and Grenadines	TR	t1																																			
CER	ATL	CP	St Vincent and Grenadines	TR	t2																																			
CER	ATL	NCO	Dominica	TR	t1																																			
CER	ATL	NCO	Dominica	TR	t2																																			

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Table 1.j SCRS catalogue: COM[MD] (*Scomberomorus commerson*).

Score:		TOTAL		770	688	1081	1398	1032	1164	1110	1007	1166	1941	1769	1634	1033	1101	1622	1861	1932	1670	987	645	540	752	828	1089	1183	1192	880	68	135	71					
Species	Stock	Status	FlagName	GearGrp	DSet	1993	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	Rank	%	%cum
COM	MED	CP	Egypt	UN	t1	299	270	530	1071	594	576	562	548	778	1301	903	986	426	1087	1564	1810	1689	1578	939	494	478	658	699	895	1019	1017	696	1	73%	73%			
COM	MED	CP	Egypt	UN	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	1			
COM	MED	CP	Algerie	UN	t1	471	418	506	277	357	511	475	405	350	597	839	609	575																	2	20%	92%	
COM	MED	CP	Algerie	UN	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1																	2			
COM	MED	NCO	Palestine	UN	t1			45	50	81	77	73	54	38	43	27	39	32	14	58	51	154	45	9	17	20	43	38	82	70	64	83	68	135	71	3	5%	97%
COM	MED	NCO	Palestine	UN	t2			-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	3			
COM	MED	NCO	Israel	UN	t1																	89	47	39	134	42	42	42	45	42	42	42				4	2%	99%
COM	MED	NCO	Israel	UN	t2																	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	4			
COM	MED	NCO	Lebanon	UN	t1																						9	49	67	52	69	58.6			5	1%	100%	
COM	MED	NCO	Lebanon	UN	t2																						-1	-1	-1	-1	-1	-1	-1	5				

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Table 1.I SCRS catalogue: KGM[AT] (*Scomberomorus cavalla*).

Score: 0.964			TOTAL																												0								
Species	Stock	Status	FlagName	GearGrp	DSet	1993	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	Rank	%	%cum	
KGM	ATL	CP	USA	RR	t1	7046	5878	5246	4731	5933	4732	3660	4448	4358	3952	4619	4619	4619	4619	4619	4619	4619	4574	3913	4289	3694	4063	4114	4455	4541	4755	3262	8508	3482	1	31%	31%		
KGM	ATL	CP	USA	RR	t2	-1	-1	-1	-1	a	a	a	a	a	a	a	a	a	a	a	a	a	-1	a	a	a	a	-1	a	a	a	a	a	-1	a	2	27%	58%	
KGM	ATL	CP	Mexico	LL	t1	3289	3097	3214	4661	4661	3583	4121	3688	4200	4453	4369	4564	3447	4201	3526	3113	3186	3040	3130	3090	3335	3019	3281	3130	3233	3825	3231	2505	1821	3	17%	74%		
KGM	ATL	CP	Mexico	LL	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	4	7%	81%	
KGM	ATL	CP	USA	HL	t1	769	928	1105	1297	1532	1335	1363	1436	1370	1402	1680	1672	1487	1823	12506	2063	3058	2635	2318	2034	1691	2179	1853	2145	2495	2311	2309	2006	1822	5	5%	86%		
KGM	ATL	CP	USA	HL	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	6	2%	94%	
KGM	ATL	CP	Brazil	UN	t1	1380	1365	1328	2887	2398	3595	3595	2344	200	2316	3311	247	201	315	33	0																7	2%	96%
KGM	ATL	CP	Brazil	UN	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	8	1%	97%	
KGM	ATL	CP	Venezuela	UN	t1	800	2484	2485	2139	2139	340	2424	2424	2424	2424																						9	1%	98%
KGM	ATL	CP	Venezuela	UN	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	10	0%	99%
KGM	ATL	CP	Trinidad and Tobago	UN	t1	1192	471	1029	875	746	447	432	410	1457	801	577	747	661	566	1043	1001	1001	720	391	494	494		494	494	494	494	494	494	494	494	494	11	0%	99%
KGM	ATL	CP	Trinidad and Tobago	UN	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	12		
KGM	ATL	CP	USA	GN	t1	646	75	280	415	353	340	486	244	240	194	195	281	422	315	309	376	451	345	272	230	253	323	287	289	288	287	324	288	307					
KGM	ATL	CP	USA	GN	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1			
KGM	ATL	CP	USA	TR	t1	740	544	371	281	540	431	447	596	561	343	375	478	559	665	655	557																		
KGM	ATL	CP	USA	TR	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1			
KGM	ATL	NCC	Guyana	GN	t1					270	440	398	214	239	267	390	312	245	168	326	174	91	59	75	90	99		358	314	192	143								
KGM	ATL	NCC	Guyana	GN	t2					-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1			
KGM	ATL	CP	USA	UN	t1	409	403	344	333	358	531	494	38	37	94	74	48	27	16	6	11	32	26	19	14	3	1	1	0	0		7	4	5					
KGM	ATL	CP	USA	UN	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1			
KGM	ATL	NCO	Dominican Republic	UN	t1	52				589	288	230	226	226	226																								
KGM	ATL	NCO	Dominican Republic	UN	t2	-1				-1	-1	-1	-1	-1	-1																								

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Table 1.n SCRS catalogue: LTA[MD] (*Euthynnus alletteratus*).

Score:		TOTAL																												Rank	%	%cum														
0.771		1258	1197	1894	2116	1601	2914	2876	3489	2988	2643	684	1439	1042	1808	1911	2259	2957	2170	3668	4186	4633	3605	6574	9788	15147	7886	9743	7346	5293	0															
Species	Stock	Status	FlagName	GearGrp	DSet	1993	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	Rank	%	%cum								
LTA	MED	CP	Tunisie	PS	t1																															1	38%	38%								
LTA	MED	CP	Tunisie	PS	t2																																	1								
LTA	MED	CP	Türkiye	PS	t1						500	750	750	750	750		568	507	1230	785	1074	1309	1046	1437	1645	1386	682	326	184	480	617	439	334	453			2	16%	54%							
LTA	MED	CP	Türkiye	PS	t2						-1	-1	-1	-1	-1		-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1			2							
LTA	MED	CP	Tunisie	UN	t1	242	204	696	824	333	1113	752	1453	1036	960	657	633																						3	8%	62%					
LTA	MED	CP	Tunisie	UN	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1																							3						
LTA	MED	CP	EU-Italy	PS	t1														188	66	334	181	250	209	459	168	211		658	588	664	1217	733	534			4	6%	67%							
LTA	MED	CP	EU-Italy	PS	t2																																		4							
LTA	MED	CP	EU-Greece	PS	t1																																		5	5%	73%					
LTA	MED	CP	EU-Greece	PS	t2																																			5						
LTA	MED	CP	Syria	UN	t1	161	156	155	270	350	417	390	370	370	330																									6	4%	76%				
LTA	MED	CP	Syria	UN	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1																									6					
LTA	MED	CP	Algerie	PS	t1	295	290	343	341	301	252	335	321	269	79																										7	3%	80%			
LTA	MED	CP	Algerie	PS	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1																										7				
LTA	MED	CP	Egypt	PS	t1																																				8	2%	82%			
LTA	MED	CP	Egypt	PS	t2																																				8					
LTA	MED	CP	EU-Italy	LL	t1																																				9	2%	84%			
LTA	MED	CP	EU-Italy	LL	t2																																					9				
LTA	MED	CP	EU-España	TP	t1																																					10	2%	86%		
LTA	MED	CP	EU-España	TP	t2																																					10				
LTA	MED	CP	Algerie	LL	t1																																					11	2%	87%		
LTA	MED	CP	Algerie	LL	t2																																					11				
LTA	MED	CP	EU-España	UN	t1																																					12	2%	89%		
LTA	MED	CP	EU-España	UN	t2																																					12				
LTA	MED	CP	Libya	PS	t1																																					13	1%	90%		
LTA	MED	CP	Libya	PS	t2																																					13				
LTA	MED	CP	EU-España	PS	t1																																						14	1%	91%	
LTA	MED	CP	EU-España	PS	t2																																						14			
LTA	MED	NCO	NEI (MED)	UN	t1	200	200	200	200	200	200	200																															15	1%	92%	
LTA	MED	NCO	NEI (MED)	UN	t2	-1	-1	-1	-1	-1	-1	-1																															15			
LTA	MED	CP	EU-Italy	GN	t1																																						16	1%	94%	
LTA	MED	CP	EU-Italy	GN	t2																																						16			
LTA	MED	NCO	Israel	UN	t1	119	119	215	119	119	119	119	119	119	119																													17	1%	95%
LTA	MED	NCO	Israel	UN	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1																												17		

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Table 1.o SCRS catalogue: MAW[AT] (*Scomberomorus tritor*).

Score:			1.161			TOTAL																																				1723 1278 1953 2910 1475 1496 971 1321 881 1393 646 352 480 571 847 616 684 2384 1333 1128 3016 1460 1242 1489 1286 7066 1784 731 2785 381		
Species	Stock	Status	FlagName	GearGrp	DSet	1993	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	Rank	%	%cum						
MAW	ATL	CP	Senegal	GN	t1	888	868	1477	1240	776	429	320	718	364	543	447	156	253	116	286	279	110	109	321	358	968	205	612	599			89	85	1	28%	28%								
MAW	ATL	CP	Senegal	GN	t2	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	-1	a	a	-1	1							
MAW	ATL	CP	Senegal	HL	t1	77	57	114	52	27	64	134	29	34	34	61	96	63	59	145	50	167	221	424	252	444	663	37	200	870	961	961	0	6	2	14%	41%							
MAW	ATL	CP	Senegal	HL	t2	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	2								
MAW	ATL	CP	Côte d'Ivoire	TW	t1															66																	3	13%	54%					
MAW	ATL	CP	Côte d'Ivoire	TW	t2															a						a		-1	a	a	-1						3							
MAW	ATL	CP	Mauritania	GN	t1															198	304	172	192	209	148	143	110	432	438	221	69	81	33	87	860	159	4	8%	63%					
MAW	ATL	CP	Mauritania	GN	t2																-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	4						
MAW	ATL	NCO	Benin	HS	t1	214	194	188	188	362	511	205	205	205	205																							5	5%	68%				
MAW	ATL	NCO	Benin	HS	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1																							5					
MAW	ATL	CP	Mauritania	LL	t1															9	11	3	11	10	43	8	0	2	55	303	95	110	46	119	1176	218	6	5%	73%					
MAW	ATL	CP	Mauritania	LL	t2																-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	6					
MAW	ATL	CP	Angola	TP	t1																																		7	4%	77%			
MAW	ATL	CP	Angola	TP	t2																																		7					
MAW	ATL	CP	Côte d'Ivoire	GN	t1																2		0		0													8	4%	81%				
MAW	ATL	CP	Côte d'Ivoire	GN	t2																a		a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	8					
MAW	ATL	CP	Senegal	PS	t1																																			9	3%	84%		
MAW	ATL	CP	Senegal	PS	t2																																			9				
MAW	ATL	CP	Senegal	UN	t1	0	0	1	1317	4	1	14	9	3	5	5	1	3	0	0																				10	3%	87%		
MAW	ATL	CP	Senegal	UN	t2	a	a	a	-1	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	10				
MAW	ATL	CP	S Tomé e Príncipe	PS	t1																																				11	2%	89%	
MAW	ATL	CP	S Tomé e Príncipe	PS	t2																																				11			
MAW	ATL	CP	Gabon	TW	t1																																				12	2%	90%	
MAW	ATL	CP	Gabon	TW	t2																																				12			
MAW	ATL	CP	Angola	GN	t1																																				13	1%	92%	
MAW	ATL	CP	Angola	GN	t2																																				13			
MAW	ATL	CP	Gabon	GN	t1																																				14	1%	93%	
MAW	ATL	CP	Gabon	GN	t2																																				14			
MAW	ATL	CP	Gabon	UN	t1																																				15	1%	94%	
MAW	ATL	CP	Gabon	UN	t2																																				15			
MAW	ATL	CP	Angola	HL	t1																																				16	1%	95%	
MAW	ATL	CP	Angola	HL	t2																																				16			
MAW	ATL	CP	Angola	PS	t1																																				17	1%	96%	
MAW	ATL	CP	Angola	PS	t2																																				17			
MAW	ATL	CP	Senegal	TR	t1	55	14	22	26	30	29	23	22	7	3	19	9	113	22	4	0	1	1	5																18	1%	97%		
MAW	ATL	CP	Senegal	TR	t2	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	18			

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Table 1.p SCRS catalogue: SSM[AT] (*Scomberomorus maculatus*).

Score:		TOTAL																																							
0.000		16317 14490 13697 16571 15403 8877 9837 8220 8383 9414 9793 8119 10472 6308 6118 5900 6199 11788 10916 10156 12684 7798 7741 8669 8332 4332 12651 16691 11763		0																																					
Species	Stock	Status	FlagName	GearGrp	DSet	1993	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	Rank	%	%cum			
SSM	ATL	CP	Mexico	LL	t1	10066	8300	7673	11050	11050	5483	6431	4168	3701	4350	5242	3641	5723	3856	3955	4155	4251	4128	4026	3321	3581	3857	4077	3820	3701	4321	3870	2968	2157	1	49%	49%				
SSM	ATL	CP	Mexico	LL	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	1				
SSM	ATL	CP	USA	RR	t1	1887	1471	1084	1364	1871	1452	1920	2335	2634	2944	2356	2356	2356						5793	4976	4965	7211	3922	3652	4825	4611	6	6620	11882	7311	2	31%	80%			
SSM	ATL	CP	USA	RR	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	2				
SSM	ATL	CP	USA	GN	t1	3028	2779	2094	1354	1416	1350	1163	1208	1260	976	1117	801	1265	1295	1201	971	1086	1029	1059	1044	1051									1378	1133	1498	3	11%	91%	
SSM	ATL	CP	USA	GN	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	3			
SSM	ATL	CP	USA	UN	t1	128	84	75	67	141	72	75	195	439	478	887	1044	738	725	602	363	483	423	454	433	441									123	53	82	4	3%	94%	
SSM	ATL	CP	USA	UN	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	4			
SSM	ATL	NCO	Dominican Republic	UN	t1	739	1330	2042	2042	231	191	125	158	158	158																							5	2%	96%	
SSM	ATL	NCO	Dominican Republic	UN	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	5		
SSM	ATL	CP	USA	HL	t1	41	28	103	74	70	82	109	151	181	211	188	273	384	326	339	407	373	390	383	387	385									656	651	711	6	2%	99%	
SSM	ATL	CP	USA	HL	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	6			
SSM	ATL	NCO	Cuba	TR	t1	310	409	548	613	613	236																												7	1%	100%
SSM	ATL	NCO	Cuba	TR	t2	-1	-1	-1	-1	-1	-1																												7		
SSM	ATL	CP	Gabon	TW	t1										256																							8	0%	100%	
SSM	ATL	CP	Gabon	TW	t2										a																							8			
SSM	ATL	NCO	Colombia	UN	t1	58	69	69																															9	0%	100%
SSM	ATL	NCO	Colombia	UN	t2	-1	-1	-1																															9		
SSM	ATL	CP	USA	TW	t1	6	7	3	4	6	3	2	1	1	2	2	1	0	76	1	1	1	1												1	0	2	10	0%	100%	
SSM	ATL	CP	USA	TW	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	10		

