REPORT OF THE 2019 ICCAT SMALL TUNAS SPECIES GROUP INTERSESSIONAL MEETING
(Olhão, Portugal 24-27 June 2019)

The results, conclusions and recommendations contained in this Report only reflect the view of the Small Tunas Species Group. Therefore, these should be considered preliminary until the SCRS adopts them at its annual Plenary meeting and the Commission revise them at its Annual meeting.

Accordingly, ICCAT reserves the right to comment, object and endorse this Report, until it is finally adopted by the Commission.

1. Opening, adoption of Agenda and meeting arrangements

The meeting was held in Olhão, 24-27 June 2019. Flávia Lucena (Brazil), the Species Group ("the Group") rapporteur and meeting Chair, opened the meeting and welcomed participants. Dr Miguel Neves dos Santos (Assistant Executive Secretary) addressed the Group on behalf of the ICCAT Executive Secretary, welcomed the participants and thanked IPMA for hosting the meeting. The Chair proceeded to review the Agenda, which was adopted without changes (**Appendix 1**).

The List of Participants is included in **Appendix 2**. The List of Documents presented at the meeting is attached as **Appendix 3**. The abstracts of all SCRS documents presented at the meeting are included in **Appendix 4**. The following served as rapporteurs:

Sections	*Rapporteur*
Items 1, 8, 9	M. Neves dos Santos
Item 2	C. Palma, M. Ortiz, R. Coelho
Item 3	J. Viñas, S. Saber, R. Lechuga
Item 4	P. Lino, S. Baibat
Item 5	T. Frédou, F. Lucena, S. Baibat
Item 6	M. Neves dos Santos, F. Lucena
Item 7	F. Lucena, R. Coelho, M. Neves dos Santos

2. Review of fishery statistics

The Small Tunas Species Group (hereafter Group) revised 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 I nominal catches; T2CE: Task II catch & effort; T2SZ: Task II size frequencies of the samples) and the conventional tagging. The SCRS catalogues on Task I/II data availability for the 13 small tuna species for the period 1988 to 2017 are presented in **Appendix 5**.

2.1 Task I (catches) data

The final Task I nominal catch (T1NC) estimations adopted by the Group, for the major small tuna species by year are presented in **Table 1** (cumulative catches by species in **Figure 1**). No major updates were made at the meeting. The Secretariat informed that very little improvements were made over the last year on the reduction of unclassified gears, on the replacement of the SCRS carryovers by official statistics, on data gaps completion, and on historical recoveries. The small tuna species discrimination work (SMT discontinued, and, KGX having now only residual catches, split TUN/TUS codes by species) is as a long-term process, where the progress made is always reported by the Secretariat to the Group.

A brief study was made trying to evaluate the weight of the 13 small tuna species in the total catches (T1NC) of ICCAT over time (**Table 2**). On average, the Small Tunas Species Group represents around 20% of the totals in T1NC. By decade, there is a consistent tendency for a reduction of the weight of the small tuna species, from 31% in the 50s, to 19% in the 80s, and ending with 14% in 2000s. This evidence can have two combined 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, several small tunas catch series are still incomplete. The Group reiterated the need to continue the catch series recovery work, using as a reference the SCRS catalogues (**Appendix 5**).

The Secretariat has informed that, the U.S. has undergone a revision of KGM (*Scomberomorus cavalla*) and SSM (*Scomberomorus maculatus*) catch series in the Atlantic Northeast. In addition, Brazil, Mexico, EU-Spain and Senegal also foresee future revisions of their small tuna T1NC catch series, if required with the support of the Secretariat.

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 tunas, the Secretariat presented the preliminary scores of small tuna species (overall scorecard presented in **Table 3**, containing all the major ICCAT species already scored). With the exception of FRI and LTA in the Atlantic (with scores above 5) all the other 11 cases (species/stock-area combinations) have scores below 4, which could indicate absence of Task II datasets from the major fisheries. The retrospective score study (scores of various time series over time) are presented in **Figures 2**. The Group, after acknowledging the work, proposed to split FRI and LTA in the 5 regions currently considered as stocks by the Group, and to identify BLF as an Atlantic only stock, replacing the suffix "A+M" by "AT". This was done as there are currently no BLF catches reported from the Mediterranean. The Secretariat informed that, these changes have to be made at the database level, and committed to present a revised version for the SCRS annual meeting.

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 T1NC, between 1950 and 2017. These are (by descending order of importance in weight): BON (*Sarda sarda*) with about 34% 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 6 species (BLF: *Thunnus atlanticus*; MAW: *Scomberomorus tritor*; WAH: *Acanthocybium solandri*; DOL: *Coryphaena hippurus*; BOP: *Orcynopsis unicolor*; CER: *Scomberomorus regalis*) represent the remainder 8% of the total small tuna catches. The species group KGX (*Scomberomorus* spp.) is a residual catch (less than 0.15% of total small tuna catches).

It was noted that catches (both historical and recent periods) of small tuna species (KGM, SSM, LTA, WAH, DOL) are missing from the Gulf of Mexico, North America Atlantic coast and the Caribbean. These missing catches (together with the respective size frequencies) should be provided to ICCAT. A similar situation exists for the eastern Mediterranean and North Africa Mediterranean coast (BON, BLT, and, LTA). The ICCAT Secretariat should continue its efforts to recover these missing data by directly contacting the related CPCs statistical correspondents.

Various documents with revisions of Task I catches were presented to the Group. Tunisie (SCRS/2019/118) presented a revision of BON and LTA catch series (2015 to 2017) from small purse seines. EU-Spain (SCRS/2019/114) presented a revision of WAH catch series from the Canary Islands baitboat fishery. WAH bycatch from Spanish tropical tuna purse seine fishing activity (2013-2018) is still pending revision. The Secretariat proposed that the Spanish Task I nominal catches (currently reported as generic EU.ESP) in 2011 to 2012 be reallocated to the Spanish Canary BB fleet (ESP-ES-CANARY).

2.2 Task II (catch-effort and size samples) data

Task II catch and effort (T2CE) and Task II size information (T2SZ) availability were presented to the Group in the form of the standard SCRS catalogues on statistics (**Appendix 5**) of the major ICCAT small tuna species by stock/area, major fishery. The detailed catalogues and datasets of both T2CE and T2SZ were also made available in the meeting. The Group noted that many Task II gaps (missing T2CE and T2SZ) persist in these datasets across all species. The preliminary scores indicate the same weaknesses. Efforts should be made to recover those missing datasets. Overall, T2CE information is the most deficient in Task II data.

Various documents presented new size information to the Group: Tunisie (SCRS/2019/119) with BON and LTA new T2SZ data for 2017; Uruguay (SCRS/P/2019/040) with DOL and WAH in South Atlantic for the period 1998-2013. All these datasets shall later on be reported to ICCAT.

2.3 Other information (tagging)

The Secretariat presented a brief summary of the current conventional tagging information available in ICCAT-DB. It includes some tags from AOTTP. **Table 4** summarizes the releases and recoveries by species. It was noted also, that the Secretariat can provide to CPCs and scientific institutions conventional tags for their scientific tagging programs. The Secretariat reiterated the request for registering tag series in the ICCAT conventional tag inventory.

Presentation SCRS/P/2019/036 provided a brief overview of the AOTTP activities regarding small tuna tagging and recovery activities. The AOTTP project includes an objective to tag 10,000 'coastal' tunas, in addition to the three main tropical species, which tend to be more interesting in developing Atlantic coastal States where they are actually more important for human consumption. There are, however, many potential 'coastal' species that could be targeted. At the start of the project it was agreed therefore, together with this Group, to focus on only 2 species, i.e. little tunny (*Euthynnus alletteratus*) and wahoo (*Acanthocybium solandri*) to avoid diluting effort. A total of nearly 8000 little tunny were tagged off West Africa and Western Atlantic between August 2016 and April 2019, with nearly 600 tags being recovered. This converts to a 7% tag recovery rate. Both tag-releases and recoveries of little tunny have occurred in 'coastal' waters between Mauritania and Cote d'Ivoire. The longest 'time at liberty' observed was 700 days and it migrated 929 NMs. Growth data are also available, including ageing validation using chemically tagged fish.

The Group commented that the results of the conventional tagging are much related with the population genetics work. At this stage the movements of the specimens tagged in West Africa seem to remain mostly in that region and there are no observed movements to the temperate NE Atlantic. This is in line with the preliminary population genetics results at this stage, as there seems to be genetic differentiation between the tropical (West Africa) and temperate regions (NE Atlantic).

The Group also noted some limitations of using conventional tagging, as the absence of recoveries does not necessary mean that there are no movements. There is the need for efforts to advertise the project close to the fishing communities in regions outside the areas of the conventional tagging deployments, to assure reporting in case of recapture fish. In this specific case, there is the need to advertise in areas further North, to assure that any eventual recaptures in the NE Atlantic are reported.

The Secretariat clarified that there are still opportunities to deploy conventional tags within this project. CPCs and research teams that have the possibility to deploy such tags should contact the Secretariat. The Secretariat further clarified that information on recapture and rewards is available on the ICCAT website and it is possible to print and distribute posters to disseminate the information locally.

2.4 Fishery indicators (including length data analysis)

Paper SCRS/2019/118 presented the distribution of two main species of small tunas, landings in the Tunisian ports during the years 2015-2017. The catches of the little tunny reach their maximum in the governorate of Medenine while bonito is abundant in the governorate of Nabeul. The annual distribution of size frequencies of little tunny catches by purse seiners showed a wide range of sizes. In 2017, the size classes (40-50 cm) were the most dominant in the catches. As regards bonito, the demographic structure covers sizes between 22 and 47.5 cm, and showed a predominance of sizes between 40 and 45 cm.

The Group noted that the size distribution of bonito presented was composed of relatively small sized specimens and asked if this could be a gear selectivity issue. The authors clarified that the captures from this study came from the purse seine fleet targeting small pelagics like sardine, and that larger bonito specimens are not usually captured in the area by that fleet.

Document SCRS/2019/114 presented data on the wahoo fishery in El Hierro island (Canary Islands), data landing, size distributions and biological parameters of the species in the East Atlantic Ocean. Wahoo has been fished in the Canary Islands for many years, and handline, trolling with plastic lures, poles and hooks are used. Trolling and "Vara de Peto" (big hook-harpoon hand operated) are the main gears used to fish wahoo. The relative importance of the different resources exploited on the island is analyzed. Wahoo fishing occurs throughout the year, but it is during the winter months when catches are most significant. The annual average catch of wahoo is around 30 t, with more than 3 t being taken per month throughout the year. The catches made in El Hierro represent more than 70% of all the landings of the Canary Islands and the total Spanish catches in the Atlantic Ocean.

The sizes captured in this local fishery are clearly adult specimens of population, very different from the sizes captured in the equatorial zone by industrial fisheries such as the industrial Spanish purse seiner, where all segments of the population are captured. A new length-weight relationship for this species from the eastern central Atlantic is presented.

The Group commented that there is in general a lack of reproductive information for wahoo. The Group also emphasized the need for the various CPCs to join observed L/W datasets to estimate regional relationships that are representative of the stocks. In addition, the Group also noted that the need to combine observed datasets and carry out joint collaborative regional studies applies not only for L/W relationships, but also for other biological parameters. This applies to all SMT tunas and priorities for joint biological studies were added to the SMT workplan.

SCRS/P/2019/040 presented information related to the biology and fishery of dolphinfish (*Coryphaena hippurus*) and wahoo (*Acanthocybium solandri*) captured by two pelagic longline fisheries (shallow sets vs. deep fishing sets) in the southwestern Atlantic Ocean. Preliminary results suggest that dolphinfish CPUE is lower in deep fishing sets compared to shallow fishing sets, and no differences were observed for wahoo. CPUE of both species are related to SST, and mainly for wahoo. Captures of both species are composed by adults. For both species, females were more abundant than males. Also, the species identification confusion between *C. hippurus* and *C. equiselis* was discussed, which raises questions on what could be the effect of fisheries on this population.

The Group noted that this is an important time series that covers a relatively long period and that CPUE standardization could be explored in the future. As the information comes exclusively from observers providing such series in the future would be important.

The Group further noted that there are difficulties in species identification between DOL (*Coryphaena hippurus*) and CFW (*Coryphaena equiselis*). As such, logbook data are likely unreliable. It is also likely that for such reason the currently reported catches of CFW are underreported and/or mixed with DOL.

The Group discussed the inclusion of this second species (*C. equiselis*) in the list of species that compose small tunas. The Secretariat explained that both species are in the ICCAT list of species and therefore CPCs can report those species. However, they are not listed in the new ICCAT Convention amendment. Given the importance of those species to many CPCs and their significant catches within ICCAT fisheries, the Group reiterated its recommendation that CPCs should continue to collect and report data on those species, so that the Group continues the biological studies aiming to provide scientific advice.

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

In total, seven papers and two presentations were submitted to the Group.

SCRS/2019/108 presented growth parameters of little tunny *Euthynnus alletteratus* fished in Algeria, based on age and size structures. The values of the growth parameters determined from the age-length key obtained from the seasonal decomposition of the size frequency distributions were: $L\infty = 107.21$, $K = 0.25$. Those estimated by size structure analysis were: $L\infty = 110.5$ cm, $K = 0.237$ and $t0 = -0.494$.

SCRS/2019/109 proposed an estimation of the exploitation indices of *Euthynnus alletteratus* caught on the Algerian coasts, based on the growth parameters. The results obtained revealed a total mortality (Z) equal to 0.654 year-1, a natural mortality (M) equal to 0.278 year-1, a fishing mortality (F) equal to 0.376 year-1, an exploitation rate (E) equal to 0.575, a recruitment size (Lr) estimated at 41 cm corresponding to a mean age of 2 years and a size of selection (Lc50) estimated at 83.78 cm corresponding to a mean age of VI.

SCRS/2019/116 presented the estimates of life history parameters for *Auxis thazard* calculated with data from Russian research in the Northeast Atlantic (Morocco, Mauritania, Senegal and Guinea-Bissau waters) for period 2010-2018. Estimates of L-W relationship, and length in which 50% and 95% fish are mature (L50 and L95) were assessed. The study based on total length data. This is the first estimation of L50 for the Atlantic NE area.

SCRS/P/2019/042 described preliminary advances in age and growth of small tunas *Auxis rochei*, *Sarda sarda* and *Euthynnus alletteratus*. More than 600 samples were collected between 2016 and 2019 in Portugal mainly from tuna trap gear. Different works on age and growth have been published, but there is no specific protocol for these species. For this reason, it is essential to create a specific methodology for age structure analysis in order to develop new studies. In addition, other aspects were proposed to improve the knowledge about stocks and biological parameters.

SCRS/2019/111 presented the issues in stating gonads using visual methods (macroscopic) and histological examination of gonads (microscopic), as well as a large amount of detailed photographs (macro and micrographs) of the different gonads stages of *Sarda sarda*, *Auxis rochei* and *Euthynnus alletteratus*.

SCRS/2019/119 presented the estimation of the spawning period for *Auxis rochei* in the Gulf of Guinea using both the macroscopic maturity data and, monthly trend of the gonadosomatic index and levels of atresia (alfa and beta) within ovaries. The author clarified that gaps in sampling are because fish were not available to the fishery.

The Group noted that two spawning peaks can occur for *Auxis rochei* in this area. In addition, the Group recommended that organizing a workshop to homogenize the sampling collection and analysis of samples could help to improve the growth and reproductive biology studies on small tunas species.

SCRS/2019/113 presented a genetic analysis of little tunny of 175 individuals captured in the localities of Portugal, Tunisia, Senegal and Côte d´Ivoire. The results showed strong population structure at level of species between two areas: Portugal and Tunisia, and Senegal and Côte d´Ivoire.

The Group noted that sampling should be increased in the tropical area.

SCRS/P/2019/041 presented a genetic analysis of Atlantic bonito of 361 individuals from six locations distributed in three areas: MD; BIL95, Tunisia and Spain; AT-NE; BIL94, Portugal and Morocco; and AT-SE; BIL97, Senegal and Côte d'Ivoire. Clear genetic structure was detected, being the location of Côte d'Ivoire the most genetically differentiated location.

The Group noted that these results could have a clear impact in the possible new classification of fishery stock areas. However, to really validate the results an improved sampling of detected areas is proposed.

SCRS/2019/112 reviewed the current state of knowledge of the Group in the Atlantic Ocean focusing on 1) historical catches and their spatio-temporal distribution; 2) length distributions by species, gears and areas; 3) life history parameters and main gaps of information; 4) current knowledge about stock status; and 5) the applicability of different data-poor stock assessment. There are high uncertainties in many life history parameters for small tunas and, for some of them, these data are missing or outdated. There is also high uncertainty related to the catch data available; catch increases might be associated with an increase in reporting.

4. Update on the development status of the small tunas meta-database

The table with life history parameters of small tuna species (**Table 5**) was updated to reflect new publications with updated or missing values. Seven new species were added, namely *Thunnus atlanticus* (BLF), *Coryphaena hippurus* (DOL), *Orcynopsis unicolor* (BOP), *Scomberomorus brasiliensis* (BRS), *Scomberomorus maculatus* (SSM), *Scomberomorus regalis* (CER) and *Scomberomorus tritor* (MAW). The Group was split by region of expertise and revised and proposed new values whenever an appropriate new publication was available.

In order to make it clear for future updates, the Group should decide, in addition to the criteria already explained in the table notes, which criteria should be used in the future for replacing existing values.

The new references will be added to the shared reference database in Zotero created from the initial data set and the resulting file will be shared on the Owncloud.

Based on the previous table, a second table (**Table 6**) using a simple 3 color classification was created to provide a quick view of the missing parameters and the species and areas where most effort should be invested in order to cover the gaps. Grey squares represent the area where the species does not occur or is not exploited.

5. Update of data poor methods and review appropriate approaches for future development of management advice for the different species

Two scientific documents were presented on data limited approaches for small tunas.

SCRS/2019/112 presented a review of different approaches for the stock assessment of Atlantic and Mediterranean small tunas conducted by Semiquantitative Productivity-Susceptibility Analysis (PSA), catch-based assessment models (Depletion Based Stock Reduction Analysis (DBSRA) and Simple Stock Synthesis (SSS)), Length based models (Length-based Spawning potential ratio (LSPR) and Length-based integrated mixed effects model (LIME)). A data-limited Management Strategy Evaluation (MSE) was also performed as preliminary exercise for WAH_NW only. Only LTA_SE and WAH_NW are showing signs of overfishing for most of the models applied. The authors considered that the length-based methods were more promising for small tunas. However, representative length distributions are still limited for some stocks.

The Group highlighted the importance of the work developed, noting that the limited availability of catch statistics hampers the confidence use of some of the methods applied. The Group further noted that PSA, Length-based model and, mainly MSE are good options in a data limited framework, however data of higher quality should be collected to improve the quality of the estimates.

SCRS/2019/117 presented a Length-based Spawning potential ratio (LBSPR) model applied to the size frequency data from catches of coastal longliners operating along the South Atlantic coast of Morocco. Although most of the individuals caught were mature the model results indicated stock may be overexploited.

The authors pointed out to the Group that the fish sampled came from the gillnet fishery and its selectivity might be affecting the output of the model. The authors suggested that a size limit could be a management procedure (MP). The Group suggested to the author to conduct a Management Strategy Evaluation (MSE) for this stock, with some candidate MP.

The overall stock assessment currently available for SMT were compiled in **Table 7**.

6. Review status of SMTYP program to improve collaboration among scientists and obtain the information required for assessment

The Secretariat provided a brief explanation on the procedures to fund the activities to be conducted within the Small Tunas Year Programme (SMTYP) in 2019, since a contract recently ended 31 March 2019 and funds are available to enhance the collection of samples and analysis until 31 March 2020. In addition, the Secretariat noted the difficulties faced by some of the members of the working teams responsible for collecting small tunas samples in both the eastern and western Atlantic, and emphasized the need to overcome the administrative issues and enhance coordination.

The science budget proposed for SMTYP in 2019 amounts to €60,000, which represents an increase of 20% compared to the funds available in 2018. Most of these funds were provided by the EU (80%), through a grant agreement for strengthening the scientific basis for decision-making in ICCAT. The available funds are distributed as follows:

Activity	Amount (€)
Reproductive biology study	12,000
Age and growth study	12,000
Genetics study for stock differentiation	30,000
Sampling collection and shipping	6,000
Total	**€60,000**

Two possible approaches were suggested to move forward the collection of samples and analysis in 2019: 1) launch a new call for tenders; or 2) sign a new contract with the consortium led by University of Girona, and give the opportunity for other teams to join and current teams to choose their status as a partner or sub-contractor/collaborator.

The Group stressed the importance of ensuring financial support to SMTYP, namely as regards the collection of samples on small tunas artisanal fisheries and the difficulty to achieve such goals without a multi-annual program, as these activities have to be carried out over a period exceeding the bi-annual timeframe of the ICCAT science budget.

The Group highlighted the importance of the ongoing studies and the work carried out over the past 12 months, and reiterated the need for such activities to be maintained. The Group also recognized the difficulties faced over the past 12 months and the need to further enhance coordination and the possible engagement of new teams that could help with the collection of samples to conclude the different studies more rapidly. Finally, the Group suggested that the best and fastest approach would be for the Secretariat to sign a new contract with the Consortium, once new and old partners/sub-contractors can agree to join this cooperative study.

SCRS/2019/105 summarized the main results of the consortium led by the University of Girona. The consortium collected biological samples for estimating growth parameters, assessing the maturity and stock structure analysis (populations genetics) of three small tuna species (LTA, BON and WAH); and provided preliminary analysis of the stock structure for two of the three species, which suggested that there are probably two different populations of BON and LTA in the East Atlantic.

In order to maximize the sampling for the next year, the Group revised all the available samples (**Table 8** and **Figure 3**) and agreed on the level of sampling aiming to fill the gaps by species and geographical areas (**Table 9**). The Group also agreed that the University of Girona (EU-Spain) will coordinate the project and be responsible for the genetics analysis; IEO (EU-Spain) will be responsible for storing, processing and analyzing the gonads; whereas, IPMA/CCMAR (EU-Portugal) will be responsible for storing and analyzing the hard structures. Processing the latter samples might be done externally by a private company.

7. Recommendations

The Group recommended the following to the SCRS:

- To consider requesting the Commission to develop a process which could support funding of research programs for periods longer than usual biannual budget period, since SMTYP, as well as other ICCAT research programs, require multiannual and multiregional initiatives that are difficult to handle based on annual budgets. The ICCAT Strategic Research Plan recognizes that such long-term commitment is essential for improving scientific advice.

Recommendations with financial implications

Continuing support to the SMTYP: The Group recommends continuing with the ICCAT SMTYP research program activities in 2020 to further improve the biological information (growth, maturity and stock identification) for the species/areas prioritized. The requested budget is presented below:

Activity	*Amount (€)*
Reproductive biology processing and analysis	40,000
Age and growth processing and analysis	35,000
Genetics study for stock differentiation	20,000
Sampling collection and shipping	5,000
Total	**€100,000**

Workshop for ageing and reproduction: The Group recommended that a workshop is planned for the 1st trimester of 2020 (tentatively in EU-Spain), with the main objectives to create ageing and reproduction reference sets and provide training to the teams involved in these studies. To accomplish the objectives of such workshop, there is the need to have already some processed samples of spines and gonads, in order to use those for the reference sets. Costs are estimated at €20,000, which would allow for participation by 1-2 external experts and 8-10 national scientists.

Regional workshop for small tunas data-limited MSE: Data limited MSE approaches are potentially good tools for managing data-limited stocks. With such tools it is possible to generate simulated data that include uncertainties around biological and fisheries parameters, and then test options for management procedures that are robust to such uncertainties. Such approaches require inputs from biologists and fisheries experts. As such, the Group recommended a workshop be planned to advance with the data-limited MSE tools applied for small tunas. The regions to be prioritized should be the NE and/or SE Atlantic regions. Such workshop could be held immediately after (back-to-back) the 2021 intersessional meeting of the Small Tunas Species Group. Costs are estimated at €20,000 per workshop, which would allow for participation of 1-2 experts and 8-10 national scientists (regional level).

AOTTP funding for additional tagging of wahoo and little tunny: The Group recommends that within the AOTTP program, financial support be provided for additional inexpensive tagging of wahoo in the Canary Islands and little tunny in the Gulf of Cadiz and Alboran Sea (Portugal and Spain). The Group estimates that the costs to conduct such work would be €20,000.

Revision of the ICCAT manual for small tunas species: The Group recommends to extend the species description chapter(s) of the ICCAT Manual for other small tuna species including wahoo (*Acanthocybium solandri*), serra Spanish mackerel (*Scomberomorus brasiliensis*), West African Spanish mackerel (*Scomberomorus tritor*), dolphinfish (*Coryphaena hippurus*), BOP (Sinopsis unicolor) and CER (*Scomberomorus regalis*), and update all other species chapters which were last updated in 2006, except for *Thunnus atlanticus*, which was updated in 2013. The Group estimates that the costs to conduct such work would be €5,000.

Other recommendations

In addition, the Group recommended:

- Although the participation of national scientists has increased in recent years, other CPCs should make the necessary arrangements to ensure increased participation of their national scientists (particularly from the western Atlantic) in the Group meetings.

- That CPCs provide indices of abundance and size frequency samples data preferably from fishery independent surveys and/or other national programs, which would substantially improve assessments.

- Statistical Correspondent and/or national scientists should revise, update, complete and submit their small tuna T1NC series to the Secretariat. This revision should take into account **Appendix 5** (SCRS catalogues), the split of "unclassified" gear catches to specific gear codes, and the completeness of Task I 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 inputs for most of the data limited stock assessment methods. The Secretariat should continue its work on the data recovery and inventory process of tagging data for small tuna species. This process will require active participation of the national scientists that hold such data.

- The application or update of data-limited assessment models and MSE for species considered of high priority, giving special attention to the input data availability and of their quality.

As regards AOTTP:

In light of the limited but very positive initial results of the tagging of small tunas accomplished by the AOTTP, and following the recommendation from 2018, the Group reiterate the need for the AOTTP to:

- Ensure additional tagging of a wider size range of little tunas, as a way to increase the number of days at liberty of the tagged fish and obtain more comprehensive information on growth. In addition, the Group also urges the ICCAT AOTTP to ensure that sufficient LTA and especially WAH are tagged and that the numbers of fish released reach the original objectives of the program.

- Increase the number of awareness campaigns aimed at artisanal fisheries, in particular, gillnet, small purse seine, longline and handline, in order to increase the information collected on recaptures of tagged fish.

8. Other matters

8.1 FAO Common Oceans/ABNJ Tuna Project

The FAO delegate informed on the FAO's position regarding the activities being developed by the Group. It was noted that, considering the importance of small tunas stocks in terms of catches and socio-economics, particularly for developing coastal States, FAO is supportive of the Small Tunas Species Group activities included in the Workplan to improve the knowledge of the biological and fishery characteristics of these stocks. FAO Common Oceans/ ABNJ Tuna Project will be considering future activities aimed at improving the data and information of small tuna stocks as well as capacity building for data-limited assessment and management approaches in the ICCAT regions and elsewhere.

8.2 Workplan and SMT Executive Summary

The Group revised the workplan for 2019 and discussed the workplan for 2020, which is included as **Appendix 6** to this report.

The Group also revised and made limited updates to the Small Tunas Executive Summary. Due to time limitations, the Group agreed that the rapporteur will further update the Executive Summary, which will be circulated for adoption before the SCRS plenary meeting.

9. Adoption of the report and closure

The report was adopted by the Group and the meeting was adjourned.

References

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

	BON		LTA		FRI	KGM	SSM	BRS	BLT	BLF	MAW	WAH	DOL	BOP		CER	TOTAL
Year	ATL	MED	ATL	MED	ATL	A+M	A+M	A+M	A+M	ATL	A+M	A+M	A+M	ATL	MED	A+M	
1950	1458	483	3136	156	5527	961	3583	3000	751	300				100		100	19555
1951	1727	413	669	251	3801	1645	4726	3000	424	300				100		100	17156
1952	3334	327	2539	14	1900	1393	4858	3000	212	300				100		100	18077
1953	4486	6795	3335	44	9798	1506	4251	2900	794	300				400		100	34709
1954	2037	18436	4936	135	8734	1238	3585	3200	689	400			191	400		100	44081
1955	4270	56207	4250	60	6665	1617	3845	3900	1072	100			151	400		300	82838
1956	3166	58178	2059	94	2618	2090	5127	2900	1392	300			140	200		300	78564
1957	4799	44127	2236	22	5924	2022	5410	2700	32	100			101	100		300	67873
1958	4769	28626	3359	47	8640	2313	6811	3434	1729	500			237	2700		500	63664
1959	6331	11530	9660	11	6104	2472	6005	3742	90	600			260	1000		700	48505
1960	6366	34361	3000	13	7279	2993	7118	4479	1540	600			306	1000		800	69855
1961	4868	45812	2452	24	6453	3199	7672	4042	3609	400			341	2200		600	81671
1962	7285	7527	5089	31	4185	3346	8355	3842	3893	700			560	3000		600	48413
1963	5349	22837	3968	18	3568	3770	7835	3842	4310	788			588	3100		500	60472
1964	3342	13489	1653	48	4022	3387	6148	4496	2801	776			403	2300		600	43465
1965	4374	27004	4078	42	6888	3787	8717	3796	2604	712			381	216	1	600	63199
1966	7023	22113	3274	27	4477	3545	10016	4205	2765	662			411	339	1	600	59458
1967	7942	41206	3978	38	6972	4558	9783	3813	4628	896			514	684	48	600	85660
1968	5679	26268	3003	168	5500	6055	12012	1667	3139	683	1800	100	391	228	4	600	67297
1969	6065	55612	2599	951	13416	6788	11180	2926	2793	753	2700		197	1341	3	500	107824
1970	8002	20681	7676	960	8185	6589	12484	3368	3383	1952	200	378	276	806	3	500	75443
1971	15692	28230	4838	866	6209	6520	10713	3154	4107	1875	1300	381	294	683	7	800	85669
1972	8754	16225	2237	904	10180	7465	11956	4810	3478	1895	2100	381	229	310	6	800	71730
1973	6069	6254	1542	1061	6641	9917	13093	6946	3569	936	1600	280	440	102	3	780	59233
1974	13679	7693	4196	1304	9582	13789	12226	8750	4354	1062	4713	391	477	143	7	619	82985
1975	9571	6033	7649	1394	7886	9290	13058	5039	2644	815	1140	326	422	84		620	65971
1976	9490	6498	8373	2028	6457	8442	12307	2272	3290	1026	1901	379	493	212		565	63733
1977	11977	8697	5844	2500	16611	8960	12218	3188	3404	1251	2572	393	370	321	135	629	79071
1978	7854	9417	15129	2504	4776	6944	11528	3484	3567	1341	6716	452	235	817	153	698	75615
1979	6485	13485	11803	2870	8868	11593	10899	3722	3707	1205	4167	760	369	464	28	586	81011
1980	12568	18546	16440	2774	16960	15797	13945	5617	3952	1175	4921	610	249	698		604	114856
1981	10879	28167	14160	1446	12759	18692	11164	5841	3677	1973	2742	2920	177	1448		628	116673
1982	13456	28937	13723	2480	19755	18352	13633	6019	6043	1941	5311	2280	402	584		687	133603
1983	6998	35552	21018	1561	16662	14607	9574	6632	5820	1738	4689	2366	441	38		677	128374
1984	6918	15058	18410	1650	19746	13182	11362	8129	6337	1908	4482	2159	566	49		680	110637
1985	7149	17959	10625	2040	17753	9964	11590	3501	5240	1403	3941	920	464	124	9	574	93257
1986	6163	15428	11225	2166	15478	13990	14207	6549	5057	2822	3180	1151	361	86	1	500	98362
1987	7370	22317	18070	2424	21193	13792	14461	6212	3739	3462	1721	1235	286	538	26	392	117238
1988	20733	24028	23836	2405	20573	14331	12671	9510	6483	3093	3811	1635	264	1474	8	219	145075
1989	17671	11955	28257	2035	16411	12153	13845	10778	7110	2834	2808	1527	306	1109	7	234	129041
1990	6811	22097	12772	2617	16738	10420	12782	7698	11994	3888	6629	1498	260	436	37	225	116903
1991	8079	25255	9133	2315	19674	13241	15318	8856	8777	4202	3746	1721	291	507	101	375	121591
1992	6881	15111	20607	1755	11425	14691	16285	6051	5714	4353	2423	1835	188	465	176	390	108351
1993	4531	25997	11872	1258	16797	16331	16317	8049	3420	3535	1723	2671	174	378	252	450	113756
1994	6037	15682	13202	1197	13332	14777	14490	7161	5300	2719	1278	2143	334	615	176	490	98934
1995	6030	15189	10381	1894	11816	14930	13697	7006	4301	4051	1953	2408	334	588	115	429	95125
1996	7939	17195	9453	2116	13871	17782	16571	8435	5909	4488	2910	2516	307	2064	132	280	111966
1997	10340	14078	12804	1601	13968	19815	15403	8004	3070	3258	1415	3104	295	254	227	251	107887
1998	15523	29730	12804	2914	14332	16394	8877	7923	2309	3395	1496	2497	363	47	130	251	118986
1999	9143	28170	9405	2876	10589	17717	9837	5754	2646	3203	909	2972	349	651	217	1	104440
2000	5179	21972	11830	3489	8680	16205	8220	4785	3912	2483	1219	2035	234	1062	145	4	91454
2001	5400	22237	13955	2988	10151	15408	8383	4553	5796	4034	828	2318	303	858	154	6	97371
2002	8208	15717	14080	2643	5738	17258	9414	7750	6041	4756	1345	2226	347	786	137	1	96446
2003	3307	11117	16313	684	5936	15863	9793	5137	3794	1303	565	2067	564	713	23	2	77181
2004	4584	11248	14918	1439	8832	12830	8119	3410	6223	1926	352	2613	2632	573	8	1	79708
2005	4391	74376	10873	1042	6154	11766	10470	3712	4231	1031	480	2467	2772	215	2	1	133983
2006	9648	31751	8320	1605	8429	8185	6282	3587	4090	1937	571	1829	1295	32		1	87561
2007	6381	8637	16472	1687	9789	17936	6102	2253	5459	1927	847	2581	4753	875	172	0	85872
2008	6772	10042	11954	2259	7861	7344	5900	3305	6825	1669	616	2176	1042	426	107	0	68297
2009	13691	10019	14166	2100	12384	12533	6197	2681	5557	1442	684	2354	5381	442	6	0	89638
2010	16337	12584	20258	2170	14215	9742	5974	1590	7952	1548	2384	2086	4798	273	14	0	101924
2011	22219	14442	21005	3668	15471	10868	5931	1055	9484	1533	1333	2500	7187	335	42	2	117073
2012	8911	39321	15389	4186	18284	12766	5185	613	6234	1529	1128	3716	3647	657	24	0	121589
2013	6458	18365	15868	4633	17597	12132	5459	853	7653	1226	3016	5396	5005	641	21	0	104324
2014	4620	23352	9212	3605	17030	4432	3858	698	3916	913	1460	2979	5381	939	13	1	82407
2015	6665	8993	17451	6574	19426	3642	4079	389	5571	1172	1242	2157	5915	1161	1078	1	85518
2016	10936	43938	21318	9788	23631	3943	3829	1124	4003	1611	3206	16508	4665	743	62	0	149304
2017	9409	11798	15438	15147	15323	3926	3712	1032	3348	1042	1086	1960	6438	522	38	0	90220

Table 2. Weight (%) of small tuna species in the total Task I nominal catches(T1NC) by decade.

		Decade							
Dimension	Species group	1950	1960	1970	1980	1990	2000	2010	
Catch (t)	1-Tuna (major sp.)	1009169	2390392	3640417	4835164	6113025	5067512	4623003	
	2-Tuna (small)	475021	687314	740460	1187115	1097938	907511	859800	
	3-Tuna (other)	17657	64019	141970	104817	101629	69079	50552	
	4-Sharks (major)	21500	43138	21413	50293	244634	504217	576255	
	others	126	236	337	3527	72171	211286	98057	
	TOTAL	1523473	3185098	4544596	6180916	7629398	6759605	6207666	Average
ratio (%)	1-Tuna (major sp.)	66%	75%	80%	78%	80%	75%	74%	76%
	2-Tuna (small)	31%	22%	16%	19%	14%	13%	14%	19%
	3-Tuna (other)	1%	2%	3%	2%	1%	1%	1%	2%
	4-Sharks (major)	1%	1%	0%	1%	3%	7%	9%	3%
	others	0%	0%	0%	0%	1%	3%	2%	1%

Table 3. Overall ICCAT scorecard on data availability with small tuna species included.

				SCORES (by time series)			N. flag fisheries ranked		
FisheryID	Spc. Group	Species	Species/stock	10 yr (2008-17)	20 yr (1998-17)	30 yr (1988-17)	10 yr (2008-17)	20 yr (1998-17)	30 yr (1988-17)
1	Temperate tunas	ALB	ALB-N stock	7.77	7.13	7.05	12	14	12
2			ALB-S stock	5.81	6.01	5.49	10	9	10
3			ALB-M stock	5.75	2.82	1.89	6	9	12
4		BFT	BFT-E stock (ATE region)	9.32	6.63	5.71	6	9	10
5			BFT-E stock (MED region)	5.87	4.15	3.12	18	21	29
6			BFT-W stock	9.76	8.77	8.49	7	8	9
7	Tropical tunas	BET	BET-A stock (AT + MD)	8.09	7.29	6.49	26	27	27
8		YFT	YFT-E region	8.79	7.47	6.46	16	21	24
9			YFT-W region	5.00	4.73	4.36	23	25	26
10		SKJ	SKJ-E stock	8.62	7.86	7.05	15	17	18
11			SKJ-W stock	4.61	4.60	4.37	3	4	5
12	SWO & billfish	SWO	SWO-N stock	8.75	8.41	7.48	10	11	12
13			SWO-S stock	6.83	7.22	6.52	11	10	11
14			SWO-M stock	6.51	4.89	3.90	9	10	12
15		BUM	BUM-A stock (AT + MD)	3.84	4.02	4.11	28	28	29
16		WHM	WHM-A stock (AT + MD)	5.23	5.21	5.08	16	18	18
17		SAI	SAI-E stock	3.92	3.61	2.93	10	12	14
18			SAI-W stock	4.18	3.74	3.62	13	16	18
19		SPF	SPF-E stock	5.25	4.70	2.03	3	4	3
20			SPF-W stock	4.00	4.00	3.37	6	6	6
21	Major sharks	BSH	BSH-N region	6.58	4.58	3.30	3	4	5
22			BSH-S region	6.91	5.40	3.70	7	6	6
23		POR	POR-N region	3.30	2.16	1.24	13	11	8
24			POR-S region	2.85	1.58	0.93	4	4	5
25		SMA	SMA-N region	5.80	3.52	2.47	7	6	5
26			SMA-S region	7.32	5.50	3.25	7	8	7
27	Small tunas	BLF	ATL	3.92	3.84	3.17	11	14	14
28		BLT	A+M	2.06	1.25	0.74	17	20	21
29		BON	ATL	3.27	2.48	1.79	23	30	37
30			MED	1.53	0.94	0.86	8	7	8
31		BRS	A+M	2.00	1.38	0.92	2	3	3
32		DOL	A+M	2.69	1.81	1.27	19	18	17
33		FRI	ATL	6.29	5.49	4.25	21	26	28
34		KGM	A+M	0.60	1.10	1.10	4	7	7
35		LTA	ATL	5.63	4.59	3.46	21	27	33
36			MED	0.93	0.77	0.44	12	16	18
37		MAW	A+M	2.06	2.11	2.24	12	15	19
38		SSM	A+M	0.00	0.00	0.71	3	3	5
39		WAH	A+M	2.08	1.94	1.58	26	36	37

Table 4. Summary of small tuna species conventional tags (releases and recoveries) available in the ICCAT-DB system (includes some AOTTP tagging events, 2017-2019).

Year	TOTAL	Released & NOT recovered												Released & Recovered										
(release)	tagged	BLF	BLT	BON	CER	DOL	FRI	KGM	LTA	SSM	WAH	MAC	Total	BLF	BLT	BON	CER	DOL	FRI	KGM	LTA	SSM	WAH	MAC	Total
1940	11	1							1				2	1						8					9
1955	2								2				2												
1957	12					11			1				12												
1959	2			1					1				2												
1960	16	8		3		1			4				16												
1961	183	24		13		58		27	57		1		180					3							3
1962	169	19		16		55		5	74				169												
1963	57	11		7		5		3	26		4		56					1							1
1964	130	76		1		29		2	18		3		129					1							1
1965	219	85		1		110		3	14		6		219												
1966	164	86		6		54		2	12		4		164												
1967	60	19				19			21		1		60												
1968	82	34		4		25			17		1		81					1							1
1969	53	29		3		4		1	2	2	12		53												
1970	110	37		23		9			38		3		110												
1971	122	87		3		19			10		2		121	1											1
1972	58	27		7		3			20				57								1				1
1973	101	68		11		5			12		2		98	3											3
1974	83	51		16		2		3	4		5		81	2											2
1975	121	53		13		3		9	39		2		119	1				1							2
1976	83	43		13		2		12	9		4		83												
1977	73	43		5		2		1	11		9		71			2									2
1978	61	19		6		10		2	3		1		41			20									20
1979	30	20		5		4				1			30												
1980	77	34		1				5	27		2		69	1		5				1	1				8
1981	72	52		3					8		2		65	6		1									7
1982	50	33		1		1			8		3		46	2							2				4
1983	1597	83		2		1		1432	5		1		1524	23						50					73
1984	336	74		5		4		200	19	4			306	12		2				15	1				30
1985	1286	59				15		1108	24				1206	11		1				65	3				80
1986	1982	55		4	1	10		1557	21	231			1879	9						88	6				103
1987	4408	49		2		5		2608	7	1540			4211	1						195	1				197
1988	1968	38				12		1672	24	30	1		1777							191					191
1989	1833	45		9	3	15		1592	8	1			1673	2				1		157					160
1990	2326	49		6		20		2079	30	28	6		2218	2						103	3				108
1991	2176	76		6	1	66		1895	24	33	2		2103	3				3		65		2			73
1992	4447	44		2	1	137		4044	64	28	8		4328	3				2		113	1				119
1993	2917	76		1	2	204		2431	23	16			2753	4			1	6		151	2				164
1994	1102	34	14	18		144		832	11	9	5		1067	2				4		29					35
1995	1244	14		48		32		1112	2	1	2		1211		1	2				30					33
1996	264	20		1		7		221		1	6		256		2					6					8
1997	126	26				7		31	53	1	5		123		1					1	1				3
1998	119	6		2		10		12	83		3		116		2						1				3
1999	46	12				16		11			5		44		1			1							2
2000	35	19				5		3			6		33		2										2
2001	32	24		2		1		2					29	2	1										3
2002	34	23			1	5					3		32		2										2
2003	30	26									2		28		2										2
2004	63	22				3					36		61	1				1							2
2005	7	2				5							7												
2006	24						23						23		1										1
2009	4																				3			1	4
2010	290			183			95						278			12									12
2011	15			14					1				15												
2012	2			1									1			1									1
2013	166			54		30			82				166												
2016	426					2			318		1		321								105				105
2017	587	5		10		5			433		40		493						1		92		1		94
2018	5338	1							4866		180		5047								290		1		291
2019	1389								1304		24		1328								61				61
Unk	2						1						1								1				1
TOTAL	38822	1841	14	532	9	1192	119	22917	7841	1926	403	0	36794	92	15	46	1	25	1	1268	575	2	2	1	2028

Table 5. Available biological information. NOTE: Parameters for Females, except *a* and *b* for WL relationship (sexes combined). Length: Fork Length, FL; Weight: eviscerated weight, WL; Linf, K, t_0 from same study.

Species	Parameter	MED	(source)	NE Atl	(source)	SE Atl	(source)	NW Atl	(source)	SW Atl	(source)
Thunnus atlanticus (BLF)	Lmax							68	Doray, 2004	90	Frota *et al*., 2004
	Linf							71.4	Doray, 2004	91	Freire, 2009
	k							0.22	Doray, 2004	0.62	Freire, 2009
	t_o							-0.22	Doray, 2004	-0.22	Freire, 2009
	Tmax										
	Lm_{50}							53	Headley, 2005	51	Freire, 2009
	Tm_{50}										
	Fmeanbatch										
	WL_a							0.00007	Headley, 2005	0.0255	Vieira, 2005
	WL_b							2.6988	Headley, 2005	2.8438	Vieira, 2005
Auxis rochei (BLT)	Lmax	50	Collette and Nauen, 1983	39	Grudtsev, 1992 (spines)						
	Linf	49.238	Kahraman *et al*., 2011	41.4	Grudtsev, 1992 (spines)						
	k	0.312	Kahraman *et al*., 2011	0.32	Grudtsev, 1992 (spines)						
	t_o	-0.3011	Kahraman *et al*., 2011	-0.83	Grudtsev, 1992 (spines)						
	T_{max}	5	Kahraman *et al*., 2011	5	Grudtsev, 1992 (spines)						
	Lm_{50}	32,6-34,81	Hattour, 2000; Saber *et al*., 2017			25.5	Edoukou *et al*., 2018				
	Tm_{50}	1.02	Kahraman *et al*., 2011								
	Fmeanbatch	31000-130000	Collette and Aadland, 1996								
	WL_a	0,0025-0,003483	Ferhani and Kouadri Krim, 2018; Saber *et al*., 2017	0.03582	Grudtsev, 1992 (spines)						
	WL_b	3,432-3,527	Ferhani and Kouadri Krim, 2018; Saber *et al*., 2017	3.435	Grudtsev, 1992 (spines)						

Table 5. Continued.

Species	Parameter	MED	(source)	NE Atl	(source)	SE Atl	(source)	NW Atl	(source)	SW Atl	(source)
Auxis thazard (FRI)	Lmax			48.5	Diouf, 1988					31.7	Frota *et al.*, 2004
	Linf					51.47	Grudtsev and Korolevich, 1986				
	k					0.32	Grudtsev and Korolevich, 1986				
	t_o					-0.83	Grudtsev and Korolevich, 1986				
	T_{max}					4	Grudtsev and Korolevich, 1986				
	Lm_{50}			31.7	SCRS/2019/116 (TL)						
	Tm_{50}										
	Fmeanbatch										
	WL_a			2.25E-05	Diouf, 1988					0.0089	Frota *et al.*, 2004
	WL_b			2.97	Diouf, 1988					3.17	Frota *et al.*, 2004
Euthynnus alletteratus (LTA)	Lmax	122	Claro, 1994	82.6	Cayré and Diouf, 1980 (spines)			106.68	IGFA,2011		
	Linf	117-130,8	Hattour, 2009; Hajjej *et al.*, 2012	112	Cayré and Diouf, 1980 (spines)			86	Cabrera *et al.*, 2005		
	k	0,131-0,19	Hattour, 2009; Hajjej *et al.*, 2012	0.126	Cayré and Diouf, 1980 (spines)			0.26	Cabrera *et al.*, 2005		
	t_o	-2,22 - -1,13	Hattour, 2009; Hajjej *et al.*, 2012	---	Cayré and Diouf, 1980 (spines)			-0.32	Cabrera *et al.*, 2005		
	T_{max}	7-10	Hattour, 2009; Hajjej *et al.*, 2012	8	Cayré and Diouf, 1980 (spines)						
	Lm_{50}	44,8-51,13	Hattour, 2009; Hajjej *et al.*, 2012	42	Diouf, 1980			39.7	Ramirez-Arredondo, 1993		
	Tm_{50}	1,89-2	Hattour, 2000, 2009								
	Fmeanbatch	451484	Hajjej *et al.*, 2017								
	WL_a	0,01242-0,0329	Hajjej *et al.*, 2011; Saber *et al.*, 2017	0.0138	Diouf, 1980			0.0000205	Ramirez-Arredondo *et al.*, 1996, W in g and FL in mm	0.0089	Frota *et al.*, 2004
	WL_b	2,8101-3,058	Hajjej *et al.*, 2011; Saber *et al.*, 2017	3.035	Diouf, 1980			2.96	Ramirez-Arredondo *et al.*, 1996, W in g and FL in mm	3.17	Frota *et al.*, 2004

Table 5. Continued.

Species	Parameter	MED	(source)	NE Atl	(source)	SE Atl	(source)	NW Atl	(source)	SW Atl	(source)
Sarda sarda (BON)	L_{max}	91.4	Collette and Nauen, 1983	65.3	Baibbat *et al.*, 2016					70.085912	Hansen, 1987
	L_{inf}	69.565	Kahraman *et al.*, 2014	73.01	Baibbat *et al.*, 2016					67.892128	Hansen, 1987
	k	0.439	Kahraman *et al.*, 2014	0.3075	Baibbat *et al.*, 2016					0.225	Hansen, 1987
	t_o	-1.327	Kahraman *et al.*, 2014	2.4469	Baibbat *et al.*, 2016					-2.74	Hansen, 1987
	T_{max}	5	Cayré *et al.*, 1993	4.89	Baibbat *et al.*, 2016						
	Lm_{50}	36,6-39,93	Hattour, 2000; Saber *et al.*, 2017	42,6-48,96	Baibbat *et al.*, 2016; Diagne *et al.*, 2017	38.56	Angui *et al*, 2018				
	Tm_{50}	0.71	Kahraman *et al.*, 2014								
	Fmeanbatch	79432	Macias *et al.*, 2005			44620 - 446530	Angui *et al*, 2018				
	WL_a	0,006321-0,0082	Sinovcic *et al.*, 2004; Saber *et al.*, 2017	0,00005-0,0066	Baibbat *et al.*, 2016; Diagne *et al.*, 2017					0.0135	Hansen, 1987
	WL_b	3,13-3,21	Sinovcic *et al.*, 2004; Saber *et al.*, 2017	2,7852-3,085	Baibbat *et al.*, 2016; Diagne *et al.*, 2017					2.952	Hansen, 1987
Orcynopsis unicolor (BOP)	Lmax	79	Hattour, 2000	130	Collette, 1983						
	Linf	93	Hattour, 2000								
	k	0.38	Hattour, 2000								
	t_o	-0.3	Hattour, 2000								
	T_{max}	4	Hattour, 2000								
	Lm_{50}	43.5	Hattour, 2000								
	Tm_{50}	2	Hattour, 2000								
	Fmeanbatch										
	WL_a	0.01064	Hattour, 2000								
	WL_b	3.0559	Hattour, 2000								

Table 5. Continued.

Species	Parameter	MED	(source)	NE Atl	(source)	SE Atl	(source)	NW Atl	(source)	SW Atl	(source)
Acanthocybium solandri (WAH)	L_{max}			179	Santana, 1993			200	Hogarth, 1976	197	Viana *et al.*, 2013
	L_{inf}							179.7	McBride *et al.*, 2008		
	k							317	McBride *et al.*, 2008		
	t_o							-1911	McBride *et al.*, 2008		
	T_{max}							9	McBride *et al.*, 2008		
	Lm_{50}							92.5	Jenkins and McBride, 2009	110	Viana *et al.*, 2013
	Tm_{50}							0.64	Jenkins and McBride, 2009		
	Fmeanbatch							1055000	Jenkins and McBride, 2009	1.32	Viana *et al.*, 2013
	WL_a			0.02749	Santana *et al.*, 1993 (Size distribution)			6.1E-10	McBride *et al.*, 2008, W in kg and FL in mm	0.0016	Frota *et al.*, 2004
	WL_b			2.72252	Santana *et al.*, 1993 (Size distribution)			3.3298	McBride *et al.*, 2008, W in kg and FL in mm	3.275	Frota *et al.*, 2004
Scomberomorus brasiliensis (BRS)	L_{max}							118	Bashirullah, 1990	80	Chellappa *et al.*, 2010
	L_{inf}							83	Sturm, 1978	109.18	Nóbrega and Lessa, 2009
	k							0.23	Sturm, 1978	0.114	Chellappa *et al.*, 2010
	t_o							-0.74	Sturm, 1978	-0.414	Chellappa *et al.*, 2010
	T_{max}							7	Sturm, 1978	8	Chellappa *et al.*, 2010
	Lm_{50}							38	Bashirullah, 1990	41.9	Chellappa *et al.*, 2010
	Tm_{50}							3	Sturm, 1978		
	Fmeanbatch										
	WL_a							0.0147	Sturm, 1978	0.00001	Lessa *et al*, 2004
	WL_b							2.853	Sturm, 1978	2.9465	Lessa *et al*, 2004

Table 5. Continued.

Species	Parameter	MED	(source)	NE Atl	(source)	SE Atl	(source)	NW Atl	(source)	SW Atl	(source)
Scomberomorus cavalla (KGM)	L_{max}							180.2	Manooch *et al*., 1987	136	Nóbrega and Lessa, 2009
	L_{inf}							121,6-132,8	Ortiz and Palmer, 2008, range: Southeast coast of USA_Gulf of Mexico USA	132.7	Nóbrega and Lessa, 2009
	k							0,228-0,17	Ortiz and Palmer, 2008, range: Southeast coast of USA_Gulf of Mexico USA	0.159	Nóbrega and Lessa, 2009
	t_o							-1,692_-2,464	Ortiz and Palmer, 2008, range: Southeast coast of USA_Gulf of Mexico USA	0.387	Nóbrega and Lessa, 2009
	T_{max}							26_24	Ortiz and Palmer, 2008, range: Southeast coast of USA_Gulf of Mexico USA	15	Nóbrega and Lessa, 2009
	Lm_{50}							58.5	Figuerola-Fernández *et al*., 2007	70	Lessa *et al*, 2009
	Tm_{50}									15	Nóbrega and Lessa, 2009
	Fmeanbatch							560000-1644805	SEDAR, 2014		
	WL_a							0.0000528	Aguilar-Salazar *et al*., 1990, W in g and FL in mm	0.00001	Lessa *et al*., 2004
	WL_b							2.7	Aguilar-Salazar *et al*., 1990, W in g and FL in mm	2.9554	Lessa *et al*., 2004

Table 5. Continued.

Species	Parameter	MED	(source)	NE Atl	(source)	SE Atl	(source)	NW Atl	(source)	SW Atl	(source)
Scomberomorus maculatus (SSM)	L_{max}							76	Finucane, 1986		
	L_{inf}							72.3	Schmidt, 1993		
	k							0.24	Schmidt, 1993		
	t_o							-1.8	Schmidt, 1993		
	T_{max}							11	Schmidt, 1993		
	Lm_{50}							35.8	Schmidt, 1993		
	Tm_{50}							1	Schmidt, 1993		
	Fmeanbatch										
	WL_a							0.000025	Medina-Quej, 1997		
	WL_b							2.83	Medina-Quej, 1997		
Scomberomorus regalis (CER)	L_{max}							80.9	Figuerola-Fernandez, 2007		
	L_{inf}										
	k										
	t_o										
	T_{max}										
	Lm_{50}							41.3	Figuerola-Fernandez, 2007		
	Tm_{50}										
	Fmeanbatch										
	WL_a							0.0000202	DeLeon, 1984		
	WL_b							2.601	DeLeon, 1984		

Table 5. Continued.

Species	Parameter	MED	(source)	NE Atl	(source)	SE Atl	(source)	NW Atl	(source)	SW Atl	(source)
Scomberomorus tritor (MAW)	L_{max}			97.5	IFGA, 2011	95	IFGA, 2011				
	L_{inf}			100	Postel, 1955						
	k			0.311	Postel, 1955						
	t_o										
	T_{max}										
	Lm_{50}			33.5	Kromer, 1994						
	Tm_{50}										
	Fmeanbatch										
	WL_a			0,0089 – 0,0157	Postel, 1955 ; Diouf,1980						
	WL_b			3 – 2,8	Postel, 1955 ; Diouf,1980						
Coryphaena hippurus (DOL)	L_{max}									183	Lessa *et al*., 2009
	L_{inf}	126.6	Gatt, *et al*., 2015			156.1	Torres and Pauly, 1991	125	Schwenke and Buckel, 2008	194.1	Lessa and Santana, 2016
	k	1.54	Gatt, *et al*., 2015			-0.456	Torres and Pauly, 1991	1.24	Schwenke and Buckel, 2008	0.912	Lessa and Santana, 2016
	t_o	-0.019	Gatt, *et al*., 2015					-0.059	Schwenke and Buckel, 2008	0.081	Lessa and Santana, 2016
	T_{max}	2	Gatt, *et al*., 2015							3.9	Lessa and Santana, 2016
	Lm_{50}	62.5	Gatt, *et al*., 2015					47.5	Schwenke and Buckel, 2008	114.6	Lessa *et al*, 2004
	Tm_{50}									0.33	Lessa *et al*., 2009
	Fmeanbatch										
	WL_a	0.022	Gatt, *et al*., 2015	0.001	Castro, *et al*., 1999			0.0120342	Rivera and Appeldoorn, 2000		
	WL_b	2.79	Gatt, *et al*., 2015	3.53	Castro, *et al*., 1999			2.78	Rivera and Appeldoorn, 2000		

Table 6. Traffic light color to identify the knowledge gaps by species and geographical area. Grey squares represent geographical the area where the species does not occur or is not exploited.

Species	Species code	Areas				
		MED	NE Atl	SE Atl	NW Atl	SW Atl
Thunnini (Tunas)	BLF	Out of range	Out of range	Out of range	Miss Tmax, T50 and Fmb	Miss Tmax, T50 and Fmb
	BLT	Have all	Miss L50, T50 and Fmb	Miss all except L50	Miss all	Miss all
	FRI	Out of range	Miss everything except Lmax and a,b,	Miss Lmax, L50, T50 and Fmb, a e b	Miss all	Miss: Linf, K, t0, Tmax, T50, L50, Fmb
	LTA	Have all	Miss T50, fmb	Miss all	Miss T50, fmb	Miss: Lmax, Linf, K, t0, Tmax, T50, L50, Fmb
Sardini (Bonitoes)	BON	Have all	Miss T50, fmb	Miss all	Miss all	Miss: Lmax, Linf, K, t0, Tmax, T50, L50, Fmb
	BOP	Miss Fmb	Miss: Linf, K, t0, Tmax, T50, L50, Fmb, a e b	Miss all	Out of range	Out of range
	WAH	Out of range	Miss: Lmax, Linf, K, t0, Tmax, T50, L50, Fmb	Miss all	Have all	miss: Linf, K, t0, Tmax, T50
	BRS	Out of range	Out of range	Out of range	Miss Fmb	Miss Fmb and T50
	KGM	Out of range	Out of range	Out of range	Have all	Miss Fmb
	SSM	Out of range	Out of range	Out of range	Miss Fmb	Miss all
	CER	Out of range	Out of range	Out of range	miss: Linf, K, t0, Tmax, T50, Fmb	Miss all
	MAW	Miss all	miss: t0, Tmax, T50, Fmb	Miss all except Lmax	Out of range	Out of range
	DOL	Miss Lmax, T50 and Fmb	Miss all except a and b	Miss all except Linf and k	Miss Lmax, T50 and Fmb	Miss L50, a,b, max, T50 and Fmb
Dolphinfish	DOL	Miss Lmax, T50 and Fmb	Miss all except a and b	Miss all except Linf and k	Miss Lmax, T50 and Fmb	Miss L50, a,b, max, T50 and Fmb

Table 7. Summary of the current state of knowledge on the current stock status for small tunas in the Atlantic Ocean. Results taken from Pons *et al.*, 2019a,b and SEDAR, 2014. Red indicates values below reference levels (overfished) and green above reference values (not overfished).

Data limited assessments							
		Length based			Catch based		Catch+Length
Species/area	Last year assessed	LBSPR	LIME	LBSPR	DBSRA	SSS	LIME
		Pons *et al.* 2019a		SCRS/2019/117	Pons *et al.* 2019b		
		SPR	SPR		B/B_{MSY}	B/B_{MSY}	B/B_{MSY}
LTA_SE	2014-2016	0.13	0.27	---	0.69	0.94	1.83
BON_NE	2014-2017	0.23	0.71	0.34	1.63	1.98	2.02
WAH_NW	2014-2018	0.37	0.29	---	1.02	1.34	0.86
WAH_NE	2014-2019	0.55	0.38	---	---	---	---
BON_Med	2014-2020	0.59	0.22	---	---	---	---
LTA_Med	2014-2021	0.66	0.62	---	1.88	2.33	1.08
LTA_NW	2014-2022	0.66	0.48	---	---	---	---
FRI_SE	2014-2023	0.79	0.53	---	1.79	2.65	1.10
FRI_NE	2014-2024	0.83	0.46	---	1.64	2.50	1.29
LTA_NE	2014-2025	0.90	1.00	---	---	---	---

Full assessments					
SEDAR assessments in the US					
		SPR	SSB/SSB_{MSY}	F/F_{MSY}	Notes
KGM_NW	2010	---	2.10	0.50	Gulf of Mexico
KGM_NW	2012	---	1.24	0.37	US south Atlantic
SSM_NW	2011	---	1.50	0.60	US south Atlantic
SSM_NW	2010	0.60	---	---	Gulf of Mexico

Table 8. Number of samples collected within SMTYP between June 2018 and March 2019, by species and region.

Species	MU.code	Month	N_individuals	N_Genetics	Min	Max	N_Spine	N_Otoliths	N_Head	N_Hard.Part	N_Gonads
BON	AT-NE	jan	60	60	42.9	67.8	60	50	0	60	10
BON	AT-NE	feb	51	51	43.9	59	51	34	0	51	16
BON	AT-NE	mar	22	22	44.4	59	22	0	0	22	22
BON	AT-NE	may	35	35	36.8	57.5	20	0	35	35	35
BON	AT-NE	jun	15	15	51.3	60.4	0	0	15	15	15
BON	AT-NE	jul	10	10	52.8	56.5	0	0	10	10	10
BON	AT-NE	ago	15	15	42.1	62.1	15	0	4	15	15
BON	AT-NE	sep	51	51	35.6	50.6	51	0	42	51	51
BON	AT-NE	oct	47	47	40.8	66.1	47	0	0	47	7
BON	AT-NE	nov	46	46	45	59.3	46	33	0	46	12
BON	AT-NE	dec	27	27	41.8	55.7	27	0	0	27	27
BON	AT-SE	feb	8	8	43.2	57	0	0	0	0	8
BON	AT-SE	mar	23	23	40	57.3	0	0	0	0	23
BON	AT-SE	ago	28	28	38.6	47.7	28	25	0	28	28
BON	AT-SE	sep	32	32	40.2	56	32	24	0	32	32
BON	AT-SE	oct	16	16	43	58	16	0	0	16	16
BON	AT-SE	nov	11	11	40.8	54	11	0	0	11	11
BON	MD	mar	41	40	39	43.5	40	0	41	41	41
BON	MD	may	10	10	42.3	54	10	10	0	10	10
BON	MD	jun	23	23	41.2	57.6	23	23	0	23	23
BON	MD	jul	20	20	39.2	45.3	20	16	4	20	20
BON	MD	ago	41	41	13.8	33.5	41	7	41	41	36
BON	MD	sep	52	52	32.5	51.8	50	52	0	52	52
BON	MD	oct	13	13	36.5	39.5	13	0	13	13	13
BON	MD	dec	20	20	37	42	20	0	20	20	20
BON	MD	(Missing)	60	0	NA	NA	0	0	0	0	0
LTA	AT-NE	ago	68	68	26.7	62.5	68	64	18	68	48
LTA	AT-NE	sep	14	14	21.9	57.8	14	14	14	14	14
LTA	AT-NE	oct	48	48	36.3	46.9	48	48	48	48	48
LTA	AT-NE	(Missing)	5	0	NA	NA	0	0	0	0	0
LTA	AT-SE	feb	23	23	41.4	54.3	23	0	23	23	23
LTA	AT-SE	jul	70	70	34.6	87.2	24	25	0	25	25
LTA	AT-SE	ago	37	37	34	77	13	13	0	13	13
LTA	AT-SE	sep	53	53	28	56	53	51	0	53	53
LTA	AT-SE	oct	23	23	36	55	0	0	0	0	0
LTA	AT-SE	nov	17	17	29	56	17	17	0	17	17
LTA	MD	jan	13	13	22.9	31.5	13	13	0	13	2
LTA	MD	feb	46	46	8.5	47	46	25	21	46	21
LTA	MD	mar	20	20	10.8	19.6	20	20	0	20	0
LTA	MD	jun	18	18	43.3	67.3	18	0	18	18	18
LTA	MD	jul	7	7	53.5	72	7	0	7	7	7
LTA	MD	ago	12	12	14.1	84.5	12	1	11	12	11
LTA	MD	sep	31	31	19	30	31	0	31	31	31
LTA	MD	oct	9	9	35	43.5	9	0	9	9	9
LTA	MD	nov	18	18	12.6	18.2	18	18	0	18	7
LTA	MD	dec	10	10	13.9	27.1	10	10	0	10	0
LTA	MD	(Missing)	36	0	18	18	1	1	0	1	1
WAH	AT-NE	jun	5	5	86	110	5	0	0	5	5
WAH	AT-NE	ago	21	21	118	152	21	21	21	21	5
WAH	AT-NE	sep	88	88	77	158.5	88	61	61	88	32
WAH	AT-NE	oct	47	47	93	159.5	47	40	40	47	7
WAH	AT-SE	mar	50	50	69.9	113.2	50	0	50	50	25
WAH	AT-SE	ago	2	2	80.5	82.2	2	2	0	2	2
WAH	AT-SE	sep	10	10	75.2	97.9	10	10	0	10	10
WAH	AT-SE	out	16	16	78.6	111.7	16	16	0	16	16
WAH	AT-SE	nov	7	7	78	93.4	7	7	0	7	7
WAH	AT-SE	dec	5	5	96.1	103.2	5	5	0	5	5
WAH	AT-SE	(Missing)	56	56	74	139	35	0	0	35	35
WAH	AT-SW	jan	6	6	93	135	0	0	0	0	0
WAH	AT-SW	feb	4	4	116	147	0	0	0	0	0
WAH	AT-SW	apr	20	20	105	130	0	0	0	0	0

Table 9. The detailed information on the research activities to be carried out by species for 2019 - March 2020 under the ICCAT SMTYP.

Species	Research line	Area	CPCs involved	No. samples
Little Tunny (LTA)	Aging and growth	NE Atlantic	Senegal, EU-Spain, EU-Portugal, Mauritania, Maroc	250
		SE Atlantic	Cote d'Ivoire, Gabon, EU-Spain	150
		Med	Tunisia, EU-Spain	200
	Reproduction	NE Atlantic	Senegal, EU-Spain, EU-Portugal, Mauritania, Maroc	250
		SE Atlantic	Cote d'Ivoire, Gabon, EU-Spain	150
		Med	Tunisia, EU-Spain	200
	Stocks structure/ delimitation	NE Atlantic	Senegal, EU-Spain, EU-Portugal, Mauritania, Maroc	250
		SE Atlantic	Cote d'Ivoire, Gabon, EU-Spain	150
		Med	Tunisia, EU-Spain	200
Atlantic Bonito (BON)	Aging and growth	NE Atlantic	Senegal, EU-Spain, EU-Portugal, Mauritania, Maroc	250
		SE Atlantic	Cote d'Ivoire, Gabon, EU-Spain	150
		Med	Tunisia, EU-Spain	200
	Reproduction	NE Atlantic	Senegal, EU-Spain, EU-Portugal, Mauritania, Maroc	250
		SE Atlantic	Cote d'Ivoire, Gabon, EU-Spain	150
		Med	Tunisia, EU-Spain	200
	Stocks structure/ delimitation	NE Atlantic	Senegal, EU-Spain, EU-Portugal, Mauritania, Maroc	250
		SE Atlantic	Cote d'Ivoire, Gabon, EU-Spain	150
		Med	Tunisia, EU-Spain	200
Wahoo (WAH)	Aging and growth	NE Atlantic	EU-Spain	250
		SW Atlantic	Brazil	100
		SE Atlantic	Cote d'Ivoire, Gabon, EU-Spain	50
	Reproduction	NE Atlantic	EU-Spain	250
		SE Atlantic	Cote d'Ivoire, Gabon, EU-Spain	50
	Stocks structure/ delimitation	NE Atlantic	EU-Spain	50
		SW Atlantic	Brazil	100
		SE Atlantic	Cote d'Ivoire, Gabon, EU-Spain	50

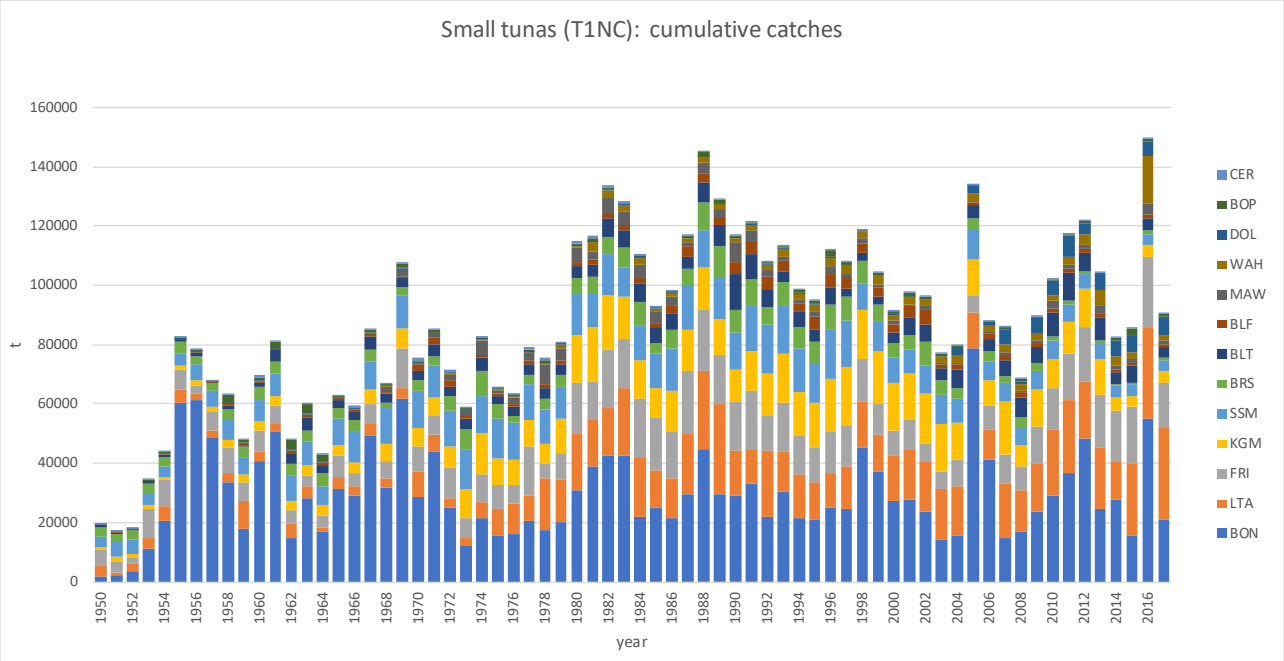

Figure 1. Small tuna species cumulative catches (T1NC) by year, between 1950 and 2017 (2018 still very incomplete).

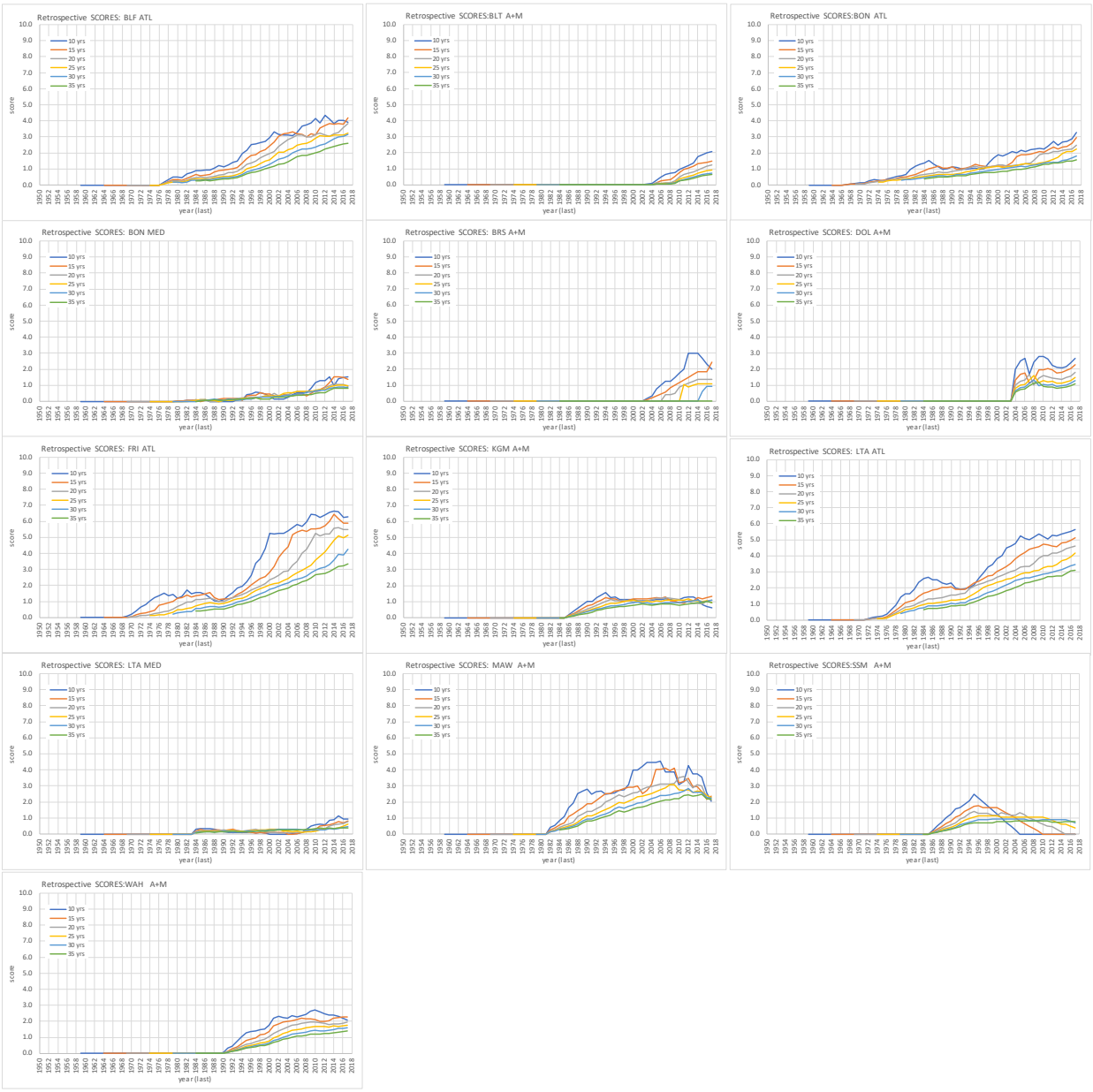

Figure 2. Retrospective scores of the 13 small tuna species/stocks combinations, using several time series scenarios (10, 15, 20, 25, 30, and 35 years) obtained across the entire period 1950-2017. The reference year is always the last one in each series (e.g. the score in 2017 for a 10-year scenario is obtained using years 2008 to 2017, for a 20 years scenario using years 1998-2017, etc.).

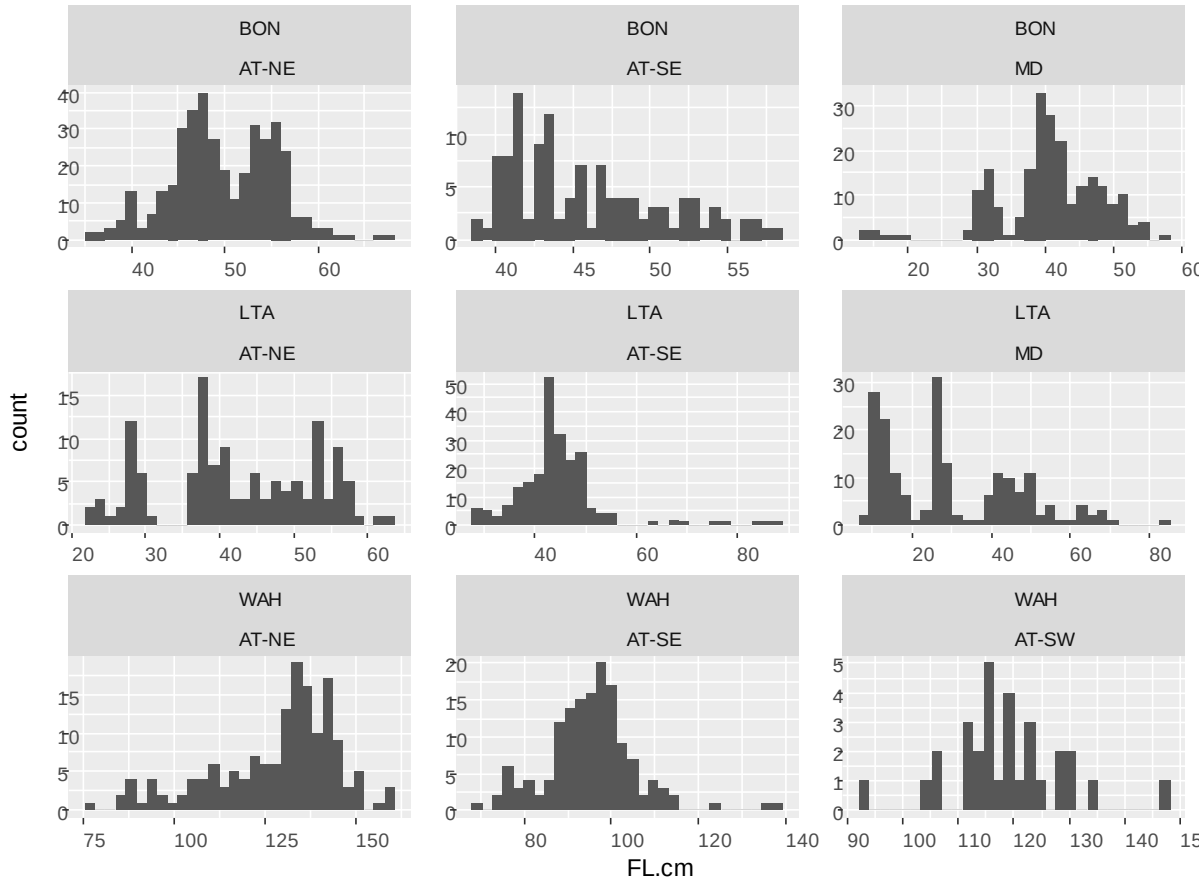

Figure 3. Size (Straight Fork Length, cm) distribution of the specimens sampled within SMTYP between June 2018 and March 2019, by species and region.

Appendix 1

Agenda

1. Opening, adoption of Agenda and meeting arrangements
2. Review of fishery statistics
   - 2.1 Task I (catches) data
   - 2.2 Task II (catch-effort and size samples) data
   - 2.3 Other information (tagging)
   - 2.4 Fishery indicators (including length data analysis)
3. Review of available and new information on biology and other life-history information of small tunas such as stock structure
4. Update on the development status of the small tunas meta-database
5. Update of Data Poor Methods and review appropriate approaches for future development of management advice for the different species
6. Review status of SMTYP program to improve collaboration among scientists and obtain the information required for assessment
7. Recommendations
8. Other matters
9. Adoption of the report and closure

Appendix 2

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Appendix 3

List of Papers and Presentations

Reference	Title	Authors
SCRS/2019/105	Report for the short-term contract for ICCAT SMTYP for the biological samples collection for growth, maturity and genetics studies	Viñas *et al*.
SCRS/2019/108	Estimation des paramètres de croissance de la thonine commune *Euthynnus alletteratus* (Rafinesque, 1810) capturée sur les côtes algériennes	Labidi-Neghli N., Neghli L., Ouadah S., and Nouar A.
SCRS/2019/109	Indices d'exploitation de la thonine commune *Euthynnus alletteratus* (Rafinesque, 1810) des côtes algériennes	Labidi-Neghli N., Neghli L., and Nouar A.
SCRS/2019/111	Macroscopic and microscopic maturity stages. Living Working Document for Small Tuna Species	Saber S., Lino P.G., Ciércoles C., Gómez-Vives M.J., Lechuga R., Godoy D., Ortiz de Urbina J., Coelho R., and Macías D.
SCRS/2019/112	Small tunas in the Atlantic Ocean: synthesis of knowledge	Lucena-Frédou F., Pons M., Frédou T., Soares A., and Mourato B.
SCRS/2019/113	Two species within little tunny (*Euthynnus alletteratus*) fishery	Ollé J., Vilà L., and Viñas J.
SCRS/2019/114	The wahoo *Acanthocybium solandri* (Cuvier, 1832) fishery in el Hierro island (Canary Islands, Spain) and biology in the East Atlantic Ocean	Pascual-Alayón P.J., Casañas-Machin I., Báez-Barrionuevo J.C., Ramos M.L., and Abascal F.J.
SCRS/2019/116	Life history parameters for frigate tuna *Auxis thazard* in the northeast Atlantic	Petukhova N. G.
SCRS/2019/117	A length-based assessment for Atlantic bonito (*Sarda sarda*) exploited in the Moroccan Atlantic coast	Baibbat S.A., Pons M., Chattou E.M.A., Abid N., Bensbai J., and Houssa R.
SCRS/2019/118	Analise des captures des thonidés mineurs dans les eaux Tunisiennes	Hajjej G., Missaoui H., and Jarboui O.
SCRS/2019/119	Evolution de la stratégie de reproduction chez *Auxis rochei* (Risso, 1810) dans le Golfe de Guinée	Diaha N.C., Amandé M.J., Konan K.J., Bahou L., and Edoukou A.
SCRS/P/2019/036	AOTTP: Preliminary observations on little tunny	AOTTP coordination
SCRS/P/2019/040	Catch, size and sex distribution of dolphinfish (*Coryphaena hippurus*) and wahoo (*Acanthocybium solandri*) caught by longliners in the southwestern Atlantic Ocean	Forselledo R., Mas F., and Domingo A.
SCRS/P/2019/041	Population genetics of Atlantic bonito	Ollé J., Pérez-Bielsa N., Allaya H., Saber S., Macías D., and Viñas J.
SCRS/P/2019/042	Age and growth of small tunas *Auxis rochei*, *Sarda sarda* and *Euthynnus alletteratus* from Portugal	Muñoz-Lechuga R., Coelho R., and Lino P.G.

Appendix 4

SCRS Documents and Presentations - Abstracts as provided by the authors

SCRS/2019/105 - The small tuna year program (SMTYP) has implemented a strategy for improving data about biological data: In particular data about growth, maturity and stock structure are still unreliable. These three parameters are key for implementing correct fishery management strategies. In particular, the Small Tuna Species Group decided to prioritize three species based on their economic importance and the lack of knowledge of their biology: Little tunny (LTA) (Euthynnus alletteratus), Atlantic Bonito (BON) (Sarda sarda) and Wahoo (WAH) (Acanthocybium solandri). Accordingly, ICCAT and University of Girona (UdG) and with the participation of up 15 Institutions representing 12 distinct CPCs signed a short-term contract in order to improve the biological knowledge. The two objectives were: i) Collect biological samples for estimating growth parameters, assessing the maturity and stock structure analysis (populations genetics) of three small tuna species (LTA, BON and WAH); and ii) Provide preliminary analysis of the stock structure for one of the three species. The final aim is to provide scientific base management and conservation measures for these species. In this document, we present the report of this contract.

SCRS/2019/108 – The aim of this study is to estimate the Von Bertalanffy growth parameters of the little tunny *Euthynnus alletteratus* fished in Algeria, with an analysis of age structures by the Bhattacharya method and a size structure analysis by the Powell Wetherall method. For reasons related to sampling and lack of sexual dimorphism in this species, the application of the methods for the study of linear growth is performed at both sexes. A total of 600 specimens were collected between November 2011 and April 2016. Fishes ranged in fork length and total weight from 30.9 to 103 cm and from 415.12 to 15200 respectively. The values of the growth parameters determined from the age-length key obtained from the seasonal decomposition of the size frequency distributions are the following: L_∞ = 107.21, K = 0.25 and t_0 = 0. Those estimated by size structure analysis are as follows: L_∞ = 110.5 cm, K = 0.237 and t_0 = -0.494.

SCRS/2019/109 – This paper proposes an estimation of the exploitation indices of the little tunny *Euthynnus alletteratus* caught on the Algerian coasts, based on the growth parameters determined from the analysis of the size structures, presented in the report (SRS / 2019 /). The results obtained reveal a total mortality (Z) equal to 0.654 $year^{-1}$, a natural mortality (M) equal to 0.278 $year^{-1}$, a fishing mortality (F) equal to 0.376 $year^{-1}$, an exploitation rate (E) equal to 0.575, a recruitment size (Lr) estimated at 41 cm corresponding to a mean age of 2 years and a size of selection (Lc_{50}) estimated at 83.78 cm corresponding to a mean age of VI.

SCRS/2019/111 – Maturity ogives are usually estimated using different methods, including macroscopical and microscopical maturity data. Differences in maturity ogives estimations are found for species and by area/stock. So those differences may be a consequence of the use of different methodological techniques (criteria) or due to different spawning tactics. Taking this into account is essential to guarantee that the maturity criteria for each species are consistent across the laboratories and countries involved in stock assessment. The objective of this document is to show a large amount of detailed photos (macro and microphotographs) of the different gonads stages of *Auxis rochei*, *Sarda sarda* and *Euthynnus alletteratus*, for females and males, which will be an enhancement to the descriptions of maturity stages given in the maturity tables.

SCRS/2019/112 – We reviewed the current state of knowledge of the small tuna species group in the Atlantic Ocean focusing on 1) historical catches and their spatio-temporal distribution; 2) length distributions by species, gears and areas; 3) life history parameters and main gaps of information; 4) current knowledge about stock status; and 5) the applicability of different data-poor stock assessment. There are high uncertainties in many life history parameters for small tunas and, for some of them, these data are missing or outdated. There is also high uncertainty related to the catch data available; catch increases might be associated with an increase in reporting. In terms of stock status, a Productivity-Susceptibility analysis (PSA) identified that the top three stocks at risk in the Atlantic Ocean were LTA, WAH and KGM. Based on catch data, only LTA in the Southeast was found as overfished and based on length information, both LTA in the Southeast and WAH in the Northwest showed signs of overfishing. Currently, the time series of catch for small tuna are incomplete, hampering the use of catch-based methods. At the moment, length-based methods show a more promising applicability for small tunas, although representative length distributions are still limited for some stocks.

SCRS/2019/113 – With the aim to determine whether Euthynnus alletteratus fishery present population structure, in this study we genetically analyzed up to 175 individuals captured in the localities of Portugal, Tunisia, Senegal and Ivory Coast. The results of the analyses of three unlinked molecular markers (mitochondrial DNA, rhodopsin and calmodulin) showed strong population structure and separated in two clades the individuals from Portugal and Tunisia regarding the individuals from Senegal and Ivory Coast. The high levels of genetic differentiation are comparable with the levels that we found comparing two different species. These findings suggest that E. alletteratus fishery is actually composed by two different species distributed in separated areas within the Atlantic Ocean.

SCRS/2019/114 – Data on the fishing activity of the island of El Hierro are presented. The wahoo download data is compared in El Hierro and in the rest of the archipelago. The relative importance of the different resources exploited on the island of El Hierro is analyzed. Landing data by quarter are presented throughout the 2007-2018 period. The seasonality of landing is analyzed. The size distribution of the artisanal fishery landing from the BB of the Canary Islands is presented and compared with the distribution of wahoo by-catch of Purse Seiner fishery. A new length-weight relationship for this species from the eastern central Atlantic is presented.

SCRS/2019/116 – The small tunas stock assessment implies data limited methods using due to insufficient data for perform traditional models. Data are limited by a lack of fisheries statistics and life history parameters. According to Report of the 2019 ICCAT Working Group on Stock Assessment Methods Meeting for assessment small tunas exploitation status is suggested two main quantitative approaches: catchbased or length-based models (ICCAT, 2019). Small Tunas Species Group in 2018 selected most reliable life history parameters by region and species for running the Data Poor Models (Linf, Lmax, k, t0, Tmax, Lm50, Tm50, WL_a, WL_b, Fmeanbatch) (ICCAT, 2018) for each of the five Atlantic areas. Parameters for Frigate tuna Auxis thazard in the Northeast Atlantic are missing. This study presents the estimates of life history parameters for Frigate tuna Auxis thazard calculated with data from Russian research in the Northeast Atlantic (Morocco, Mauritania, Senegal and Guiné-Bissau waters). New estimates of length-weight relationship (WL_a, WL_b), and length values for 50% and 95% fish maturation (Lm50 и Lm95) were assessed.

SCRS/2019/117 – Based on size frequency series, an approach described by Hordick called Length-based Spawning potential ratio LBSPR was used to assess the stock status of Atlantic bonito exploited in the southern Atlantic coast of Morocco. The results showed that most of the fish are caught before they achieve their maximum growth rate and after they reach their maximum sustainable yield. In the light of these results this population might be experiencing overfishing.

SCRS/2019/118 – Le présent document donne une idée de l'évolution des captures des thonidés mineurs débarquées par les sardiniers utilisant la senne tournante au niveau des ports tunisiens pour la période allant de 2015 à 2017. Deux espèces ont été rencontrées et identifiées, il s'agit de Euthynnus alletteratus et Sarda sarda. Les longueurs mesurées sont traitées en histogrammes de fréquences de taille afin de bien dégager aisément la gamme de taille la plus pêchée.

SCRS/2019/119 – L'étude de la reproduction chez *Auxis rochei* a été menée sur les individus débarqués au quai piroguier par les pêcheurs artisans. Un échantillonnage a été effectué chaque jour, à l'arrivée des pirogues, pour des analyses au laboratoire. Ainsi ont été traitées des gonades pour des lectures au microscope. Il a été question de mettre en évidence l'évolution des différents stades microscopique de maturité au cours de l'année en vue de confirmer ou d'infirmer la période de ponte.

SCRS/P/2019/036 – not provided by the authors.

SCRS/P/2019/040 – The objective of this contribution is to present information related to the biology and fishery of Dolphinfish (*Coryphaena hippurus*) and Wahoo (*Acanthocybium solandri*) in the southwestern Atlantic Ocean. Data used was gathered by the Uruguayan National observer Program. Two pelagic longline fisheries were considered in this study: the Uruguayan pelagic longline fishery (shallow fishing sets) in the period 1998 – 2012, and the Japanese pelagic longline fishery (deep fishing sets) that operated in the UEEZ between 2009 and 2011 with an experimental fishing licence, and under a leasing agreement in 2013.The total number of fishes captured was 3,886 Dolphinfish and 684 Wahoo. Preliminary results suggest that Dolphinfish CPUE is lower in deep fishing sets compared to shallow fishing sets, and no differences were observed for Wahoo. CPUE of both species are related to SST, Latitude and Bottom depth (used as a proxy

of the fishing area), being SST the most important, and mainly for Wahoo, with an increasing trend in the captures of this species in SST higher than 24°C. Captures of Dolphinfish in the UEEZ presents seasonality, with highest CPUE values during austral spring, probably related to the seasonality of the oceanographic conditions that characterize the area. Average FL was 92.7 cm for Dolphinfish and 131 cm for Wahoo, with captures of both species composed by adults. Males of Dolphinfish were large than females, while for Wahoo females were larger, and for both species' females were a little more abundant than males (1:1.3 DOL; 1:1.6 WAH). No obvious size differences, for any of the two species and sex, were observed between fleets for any of the two species and sex. It was observed that Wahoo size was related to SST and Latitude, with slightly larger individuals occurring in lower SST and higher latitudes.

SCRS/P/2019/041 – When a species is exploited by commercial or traditional fisheries, the knowledge of population boundaries or stocks is essential form implementing accurate management directives. Of particular concern are those commercial species most vulnerable to overfishing. These exploited fish populations can undergo a loss of genetic variability that ultimately may lead the loss of regional small populations. This situation could occur in the Atlantic bonito (*Sarda sarda*), which have a high commercial value and in some locations are heavily targeted by artisanal and commercial fisheries. In this study, we analyzed the genetic variability of the mitochondrial control region (mtDNA-CR) an extensive sampling of Atlantic bonito (n = 316) distributed in six locations: two in the Mediterranean (MED, BIL95), Tunis (n = 49) and Iberian Peninsula (n = 108); two in the North east Atlantic (AT-NE, BIL94), Portugal (n = 65) and Morocco (n = 40); and two in the South east Atlantic (AT-SE, BIL97), Senegal (n = 49) and Côte D'Ivoire (n = 40). As expected the mitochondrial genetic variability is organized in two clearly distinct clades, but these clades are heterogenous distributed along the locations ($\chi 2 = 41.25$; df = 4; P-value < 0.0001). In addition, a clear population differentiation is also observed with at least three distinct genetic pools ($\phi ST = 0.256$; P-value < 0.0001): (i) the location of Côte D'Ivoire is clear differentiated from the rest of locations; (ii) Senegal and Morocco seem to be an intermediate population, and (iii) Portugal, Iberian Peninsula and Tunis share the same genetic pool. This population genetic structure differs from the management areas proposed by ICCAT. Thus, if these results are confirmed, for the Atlantic Bonito is probably needed a reconsideration of the ICCAT management areas.

SCRS/P/2019/042 – This work describes preliminary advances in age and growth of Small Tunas *Auxis rochei*, *Sarda sarda* and *Euthynnus alletteratus*. More than 600 samples were collected between 2016 and 2019 in Portugal mainly from tuna trap gear. Different works on age and growth have been published, but there is no specific protocol for these species. For this reason, it is essential to create a specific methodology for age structure analysis in order to develop new studies. In addition, other aspects were proposed to improve the knowledge about stocks and biological parameters.

Appendix 5

SCRS catalogues on Task I/II data availability for the 13 small tuna species for the period 1988 to 2017

TableA5-[a-m]. Small tuna species standard SCRS catalogues on statistics (Task-I and Task-II) of the major ICCAT small tuna species by stock/area, major fishery (flag/gear combinations ranked by order of importance) and year (1985 to 2014).Only the most important fisheries (representing about 90 to 95 % of Task-I total catch) are shown. For each data series, Task I (DSet= 't1', in tonnes) is visualised against its equivalent Task II availability (DSet= 't2') scheme. The Task-II colour scheme, has a concatenation of characters ('a'= T2CE exists; 'b'= T2SZ exists; 'c'= CAS exists) that represents the Task-II data availability in the ICCAT-DB. See the legend for the colour scheme pattern definitions.

Table	Species	Scie. Name	% weight in Task I (1950-2017)	Order (#)	Stock/area
A5-a	BLF	Thunnus atlanticus	2.0	8	ATL
A5-b	BLT	Auxis rochei	4.7	7	A+M
A5-c	BON	Sarda sarda	33.6	1	AT
A5-d	BON	Sarda sarda		1	MD
A5-e	BRS	Scomberomorus brasiliensis	5.1	6	A+M
A5-f	DOL	Coryphaena hippurus	1.3	11	A+M
A5-g	FRI	Auxis thazard	12.7	3	AT
A5-h	KGM	Scomberomorus cavalla	10.9	4	A+M
A5-i	LTA	Euthynnus alletteratus	14.1	2	AT
A5-j	LTA	Euthynnus alletteratus		2	MD
A5-k	MAW	Scomberomorus tritor	1.9	9	A+M
A5-l	SSM	Scomberomorus maculatus	10.8	5	A+M
A5-m	WAH	Acanthocybium solandri	1.8	10	A+M
(not enough data)	BOP	Orcynopsis unicolor	0.9	11	A+M
(not enough data)	CER	Scomberomorus regalis	0.4	12	A+M
(not enough data)	KGX	Scomberomorus spp	0.1	13	A+M

Legend (t2)

a	t2ce
b	t2sz
c	cas

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

Table A5-a. SCRS catalogue: BLF[AT] (*Thunnus atlanticus*).

						TOTAL	3093	2834	3888	4202	4353	3535	2719	4051	4488	3258	3395	3203	2483	4034	4756	1303	1926	1031	1937	1927	1669	1442	1548	1533	1529	1226	913	1172	1611	1042			
Species	Stock	Status	FlagName	GearGrp	DSet		1988	1989	1990	1991	1992	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	Rank	%	%cum
BLF	A+M	CP	EU.France	UN	t1		816	855	865	1210	1170	1140	1330	1370	1040	1040	1040	1040	1040	1040	1040													12	14	0	1	21%	21%
BLF	A+M	CP	EU.France	UN	t2		-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1													-1	-1	a	1		
BLF	A+M	CP	Venezuela	PS	t1		929	450	935	1241	1905	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	2	20%	41%
BLF	A+M	CP	Venezuela	PS	t2		b	b	a	a	a	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	2		
BLF	A+M	CP	U.S.A.	RR	t1		95			0		389	482	518	388	469	647	568	288	420	287	365	638	191	806	402	631	594	598	395	574	393	312	591	914	611	3	17%	58%
BLF	A+M	CP	U.S.A.	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	b	3		
BLF	A+M	CP	Grenada	TR	t1		220	134	293	195	146	253	189	123	164	126	233	94	164	223	255	335	268	306	371	291	290	291	291	291	291	291	291				4	8%	66%
BLF	A+M	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	-1	-1	-1				4		
BLF	A+M	CP	Venezuela	BB	t1		311	201	215	357	243	214			64	60	108		224	859	821	107	127	104	71	34	29	1	92	13	25	25	4	3	35	4	5	6%	72%
BLF	A+M	CP	Venezuela	BB	t2		ab	ab	a	-1	a	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	5		
BLF	A+M	NCO	Dominican Republic	UN	t1		4	564	520	536	110	133	239	892	892	231	158	18	19																		6	6%	77%
BLF	A+M	NCO	Dominican Republic	UN	t2		-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1																		6		
BLF	A+M	CP	Brazil	UN	t1		107	66	317	74	12		6		382	297	55	55	38	149	1518				240		248	0							31	33	7	5%	82%
BLF	A+M	CP	Brazil	UN	t2		-1	-1	-1	-1	-1		-1		-1	-1	-1	-1	-1	-1	-1				-1		-1	-1							-1	-1	7		
BLF	A+M	NCO	Cuba	BB	t1		332	318	487	318	196	54	223	156	287	287																					8	3%	85%
BLF	A+M	NCO	Cuba	BB	t2		b	-1	-1	-1	-1	-1	-1	-1	-1	-1					b																8		
BLF	A+M	NCO	Sta. Lucia	TR	t1																96	169	96	126	182	151	179	165	203	229	192	147	104	80	156	119	9	3%	89%
BLF	A+M	NCO	Sta. Lucia	TR	t2																-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	9		
BLF	A+M	CP	Brazil	BB	t1		122	53	16	56	35	20	31	153	265	93					151	1	118	90		233	18	10	8	40	56	18	130	0			10	2%	91%
BLF	A+M	CP	Brazil	BB	t2		a	a	-1	a	a	-1	-1	-1	-1	-1					-1	a	-1	-1		ab	-1	-1	a	-1	a	a	a	-1	a	a	10		
BLF	A+M	CP	U.S.A.	LL	t1		49	78	51	108	123	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	11	1%	92%
BLF	A+M	CP	U.S.A.	LL	t2		ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	b	b	ab	ab	ab	ab	ab	ab	ab	11		
BLF	A+M	CP	Brazil	LL	t1			1	2		2	2	1		2	28								1	2	0	0		1	1	68	92	111	262	158	119	12	1%	93%
BLF	A+M	CP	Brazil	LL	t2			-1	-1		-1	-1	-1		-1	-1						a	a	a	a	a	a	a	ab	-1	a	a	a	a	a	a	12		
BLF	A+M	CP	Curaçao	UN	t1		70	70	70	60	60	65	60	50	45	45	45	45	45	45	45																13	1%	94%
BLF	A+M	CP	Curaçao	UN	t2		-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1																13		
BLF	A+M	CP	Venezuela	LL	t1			1				3	8	3	3	23	19	348		38	66	9			1	0		0	1	2	1	0	1	1	1	4	14	1%	95%
BLF	A+M	CP	Venezuela	LL	t2		b	-1				a	a	a	-1	ab	ab	ab		-1	-1	a			a	a	a	a	a	a	a	a	a	a	a	a	14		
BLF	A+M	NCO	Dominica	UN	t1		1	4	19	10	14	15	19	30				79	83	54	78	42			0	0	0	0	0	1	1		2	3	4		15	1%	96%
BLF	A+M	NCO	Dominica	UN	t2		-1	-1	-1	-1	-1	-1	-1	-1				-1	-1	-1	-1	-1			-1	a	a	a	-1	a	-1		-1	-1	-1		15		

Table A5-b. SCRS catalogue: BLT[A+M] (*Auxis rochei*).

						TOTAL	6483	7110	11994	8777	5714	3420	5300	4301	5909	3070	2309	2646	3912	5796	6041	3794	6223	4231	4090	5459	6825	5557	7952	9484	6234	7653	3916	5571	4003	3348			
Species	Stock	Status	FlagName	GearGrp	DSet		1988	1989	1990	1991	1992	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	Rank	%	%cum
BLT	A+M	CP	EU.España	UN	t1		1327	432	855	855	570	493	702	1233	1962	408	221	527	411	750	317	495	1009	828	1027	2979	3265	607	3749	3099	1464	2418	612	213	113		1	20%	20%
BLT	A+M	CP	EU.España	UN	t2		-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	a	a	a	a	a	ab	a	b		1		
BLT	A+M	CP	Turkey	PS	t1					35		324	77					316	316	316	316		284	1020	1031	993	836	1873	1081	2552	907	863	562	476	407	474	2	9%	29%
BLT	A+M	CP	Turkey	PS	t2					-1		-1	-1					-1	-1	-1	-1		-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	2		
BLT	A+M	CP	EU.Greece	UN	t1		1400	1400	1400	1400	1400	1400	1400	1400	1400	1400																						3	8%	37%
BLT	A+M	CP	EU.Greece	UN	t2		-1	-1	-1	-1	-1	-1	-1	-1	-1	-1																						3		
BLT	A+M	CP	Maroc	GN	t1		811	1107	2058	868	1157	47	1532	566	1673	555	629	463	536	232	621	246	96	5		1	7	8	6									4	8%	45%
BLT	A+M	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									4		
BLT	A+M	CP	EU.Italy	UN	t1		609	509	494	432	305	379	531	531	229	229	229	462	462	462	2328	974	1309	627			74		74	37	55	849					5	7%	52%
BLT	A+M	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					5		
BLT	A+M	CP	EU.España	TP	t1		1342	2149	2130	1371	640	155	422	239	334	196	266	142	612	111	176			18	74	104	124	120	63	128	156	236	137	114	87	120	6	7%	59%
BLT	A+M	CP	EU.España	TP	t2		-1	-1	-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	6		
BLT	A+M	CP	Algerie	PS	t1					148	220	267	247	188	202	156	245	149	178	166	306		153	201	472	437		219	109	986	983	443	914	1846	1563	192	7	7%	66%
BLT	A+M	CP	Algerie	PS	t2					-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	7		
BLT	A+M	CP	Tunisie	UN	t1		330	564	883	883	31	20	13	14	13	32	93	45	15	2300	932	989	1760													8	5%	71%
BLT	A+M	CP	Tunisie	UN	t2		-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1														8		
BLT	A+M	CP	Russian Federation	TW	t1					2171	814								408	1028	460	122	102	139	22		23	48	67	119	366	703	352	345	336	62	9	5%	76%
BLT	A+M	CP	Russian Federation	TW	t2					-1	-1								-1	-1	-1	-1	-1	-1	-1		-1	-1	abc	abc	abc	abc	abc	ab	ab	ab	9		
BLT	A+M	CP	Tunisie	PS	t1		258	96	102	102	4																			940	935	938	920	13	23	26	10	3%	78%
BLT	A+M	CP	Tunisie	PS	t2		-1	-1	-1	-1	-1																			-1	-1	-1	-1	-1	-1	-1	10		
BLT	A+M	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	11	2%	81%
BLT	A+M	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	11		
BLT	A+M	CP	U.S.S.R.	TW	t1			528	3436																												12	2%	83%
BLT	A+M	CP	U.S.S.R.	TW	t2			-1	-1																												12		
BLT	A+M	CP	EU.España	PS	t1																													914	881	1980	13	2%	86%
BLT	A+M	CP	EU.España	PS	t2																													ab	b	b	13		
BLT	A+M	CP	EU.Portugal	TP	t1												28	0	313	65	48	83	296	580	510	582	168		479	363							14	2%	88%
BLT	A+M	CP	EU.Portugal	TP	t2									b	b	b	b	a	ab	a	ab	ab	ab	b	b	b	b	b	ab	ab	b	b	b	b	b	b	14		
BLT	A+M	CP	Algerie	UN	t1					9	14	19	14	11	10	5	15	9	17	22	27		41				1134	567	851								15	2%	89%
BLT	A+M	CP	Algerie	UN	t2					-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1		-1				-1	-1	-1								15		
BLT	A+M	CP	Maroc	TP	t1			70	394	421	487	123	194	55		7	478	210	227	24																	16	2%	91%
BLT	A+M	CP	Maroc	TP	t2			-1	-1	-1	-1	-1	-1	-1		-1	-1	-1	-1	-1																	16		
BLT	A+M	CP	EU.Italy	GN	t1																							693	346	520	433						17	1%	92%
BLT	A+M	CP	EU.Italy	GN	t2																							-1	-1	-1	-1						17		
BLT	A+M	CP	EU.Portugal	UN	t1													239	177	142	117	148	1				143	436	175	21	38	25					18	1%	93%
BLT	A+M	CP	EU.Portugal	UN	t2													a	a	a	a	a	a	a			a	-1	a	a	-1	-1					18		
BLT	A+M	CP	EU.Italy	HL	t1																124	463	481	217													19	1%	94%
BLT	A+M	CP	EU.Italy	HL	t2																-1	-1	-1	-1													19		
BLT	A+M	CP	Maroc	LL	t1																		97	20	188	28	60	104	187	143	113	160	6	52	30		20	1%	95%
BLT	A+M	CP	Maroc	LL	t2																		-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1		20		

Table A5-c. SCRS catalogue: BON[AT] (*Sarda sarda*).

						TOTAL	20733	17671	6811	8079	6881	4531	6037	6030	7939	10340	15523	9143	5179	5400	8208	3307	4584	4391	9648	6381	6772	13691	16337	22219	8911	6458	4620	6665	10936	9409				272833
Species	Stock	Status	FlagName	GearGrp	DSet		1988	1989	1990	1991	1992	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	Rank	%	%cum	Σ(1990-14)
BON	ATL	CP	Mauritania	TW	t1																				1296	818	1823	2363	6861	9432	3159	488	1022	2487	4790		1	13%	13%	34539
BON	ATL	CP	Mauritania	TW	t2																				-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1		1			
BON	ATL	CP	Mexico	LL	t1		356	338	215	200	657	779	674	1144	1312	1312	1632	1861	1293	1113	1032	1238	1066	654	1303	1188	1113	1063	1046	1080	1447	1534	1115	1110	1188	1361	2	12%	24%	31426
BON	ATL	CP	Mexico	LL	t2		-1	-1	-1	-1	-1	-1	-1	-1	-1	a	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	2			
BON	ATL	CP	Senegal	GN	t1		276	329	112	456	218	77	395	397	862	617	689	850	183	417	435	112	134	330	707	480	700	2854	1505	2555	998	429	999	1372	473	300	3	7%	32%	20259
BON	ATL	CP	Senegal	GN	t2		b	b	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	a	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	b	ab	ab	b	b	3			
BON	ATL	CP	Maroc	PS	t1				385	729	937	1167	561	659	861	1224	1479	1334	1987	1610	1936	863	936	67	102	81	120	945	61	12	24	11	1	9	170	317	4	7%	38%	18588
BON	ATL	CP	Maroc	PS	t2				-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	a	-1	-1	-1	-1	-1	-1	a	a	-1	-1	-1	-1	-1	-1	4			
BON	ATL	CP	U.S.S.R.	TW	t1		8882	7363	706																												5	6%	45%	16951
BON	ATL	CP	U.S.S.R.	TW	t2		-1	-1	-1																												5			
BON	ATL	CP	Venezuela	UN	t1		1153	1783	1514	1514	1443		1646	1646	1348	1348	1647	1596																			6	6%	51%	16638
BON	ATL	CP	Venezuela	UN	t2		-1	-1	-1	-1	-1		-1	-1	-1	-1	-1	-1																			6			
BON	ATL	CP	Russian Federation	TW	t1					948	29						4960			574	1441	461	16	79	316	259	52	368	1042	2293	848	125	416	308	850	666	7	6%	57%	16051
BON	ATL	CP	Russian Federation	TW	t2					-1	-1						-1			-1	-1	-1	-1	-1	-1	-1	-1	-1	abc	abc	abc	abc	abc	ab	ab	ab	7			
BON	ATL	CP	Senegal	TR	t1		127	370	305	132	89	66	353	307	130	584	743	1610	71	103	155	76	30	137	1575	498	634	1138	105	213	221		33		350	209	8	4%	60%	10364
BON	ATL	CP	Senegal	TR	t2		-1	b	ab	a	ab	ab	ab	ab	a	ab	a	a	ab	a	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	b	ab	b	b	b	8			
BON	ATL	NCO	Ukraine	TW	t1		1385	985			25				342	2786	1918	1114	399	231	656	30															9	4%	64%	9871
BON	ATL	NCO	Ukraine	TW	t2		-1	-1			-1				-1	-1	-1	-1	-1	-1	-1	-1															9			
BON	ATL	NCO	Argentina	UN	t1		2794	1327	1207	1794	1559	434	4	138	103			0		0	1		0	100													10	3%	67%	9461
BON	ATL	NCO	Argentina	UN	t2		-1	-1	-1	-1	-1	-1	-1	-1	-1			-1		-1	-1		-1	-1													10			
BON	ATL	CP	EU.France	UN	t1		395	427	430	820	770	1052	990	990	610	610	610	24								42	33	4	17	6	10	1	170	5	10	6	11	3%	70%	8032
BON	ATL	CP	EU.France	UN	t2		-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1								-1	-1	-1	-1	-1	-1	-1	ab	-1	-1	a	11			
BON	ATL	CP	EU.Latvia	TW	t1											887	318		416	396	639								1019	2231	34	48	29				12	2%	73%	6017
BON	ATL	CP	EU.Latvia	TW	t2											-1	-1		-1	-1	-1								-1	-1	-1	-1	-1				12			
BON	ATL	CP	Maroc	LL	t1																			535	996	538	806	909	22	88	140	60	62	102	420	650	13	2%	75%	5328
BON	ATL	CP	Maroc	LL	t2													a			a	a	a	a	a	a	a	a	a	ab	b	bc	abc	b	b	b	13			
BON	ATL	NCO	Togo	GN	t1																		1583	1215	2298												14	2%	76%	5096
BON	ATL	NCO	Togo	GN	t2																		-1	-1	-1												14			
BON	ATL	CP	EU.Netherlands	TW	t1																					344	539	539		2047	104	1075	54	11	124	79	15	2%	78%	4915
BON	ATL	CP	EU.Netherlands	TW	t2																					a	-1	a		-1	a	-1	a	-1	a	-1	15			
BON	ATL	CP	Angola	TP	t1		148	115	127	99		47	20	9	10	16		2	118	118	118					0		1458	1484	97	198	8	2				16	2%	80%	4195
BON	ATL	CP	Angola	TP	t2		-1	-1	-1	-1		-1	-1	-1	-1	-1		-1	-1	-1	-1					-1		-1	-1	-1	-1	-1	-1				16			
BON	ATL	CP	Senegal	HL	t1		37	75	108	10	38	29	65	27	20	88	781	96	31	24	31	8	19	17	22	42	38	38	66	109	234	85	184	339	758	717	17	2%	81%	4135
BON	ATL	CP	Senegal	HL	t2		b	b	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	a	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	b	ab	ab	b	b	17			
BON	ATL	CP	Côte d'Ivoire	GN	t1													0	0	0			3		2		3	13	0	3		17	3	4	6	3510	18	1%	83%	3563
BON	ATL	CP	Côte d'Ivoire	GN	t2													a	a	a			a			a	a	a	a	ab	ab		ab	ab	ab	a	ab	18			
BON	ATL	CP	Trinidad and Tobago	UN	t1							17	703	169	266	220	30	117	117	56	452	188	280	81	7	16	38	68	68	14	9	16	16		16	16	19	1%	84%	2978
BON	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	19			
BON	ATL	CP	EU.Latvia	UN	t1		1191	1164	221	7	4		3	19	301																					20	1%	85%	2910
BON	ATL	CP	EU.Latvia	UN	t2		-1	-1	-1	-1	-1		-1	-1	-1																					20			
BON	ATL	CP	EU.Lithuania	UN	t1		1041	762	162	11	10										793															21	1%	86%	2779
BON	ATL	CP	EU.Lithuania	UN	t2		-1	-1	-1	-1	-1										-1															21			
BON	ATL	NCO	Togo	UN	t1		400	256	177	172	107	311	254	145	197	197	197	197																		22	1%	87%	2610
BON	ATL	NCO	Togo	UN	t2		-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1																		22			
BON	ATL	CP	Maroc	HL	t1																			246	239	178	282	478	16	16	71	18	27	63	260	450	23	1%	88%	2344
BON	ATL	CP	Maroc	HL	t2																	a		-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	23			
BON	ATL	CP	Maroc	GN	t1				95	65	129	77	19	26	29	30	78	41	150	84	81	64	47	400	309	142	204	185	1								24	1%	88%	2256
BON	ATL	CP	Maroc	GN	t2				-1	-1	-1	-1	-1	a	a	a	a	a	a	a	a	a	a	a	a	a	ab	a	a	a	b						24			
BON	ATL	CP	EU.Portugal	PS	t1		221	32	148	181	88	57	3	22	21	3	9	22	38	20	2	2	8	3	101	64	60	28	166	195	213	123			213	209	25	1%	89%	2252
BON	ATL	CP	EU.Portugal	PS	t2		a	a	a	a	a	a	ab	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	-1	-1			a	a	25			
BON	ATL	CP	Curaçao	TW	t1																								539	539	539	539					26	1%	90%	2154
BON	ATL	CP	Curaçao	TW	t2																								-1	-1	-1	-1					26			
BON	ATL	CP	EU.Portugal	UN	t1		133	16		64	20	63	21	35	31	11	24	19	67	20	13	6	19			0	112	80	226	216	97	45			325	144	27	1%	91%	1807
BON	ATL	CP	EU.Portugal	UN	t2		a	a	abc	abc	abc	a	a	a	a	a	a	a	a	a	a	a	a	a		a	a	a	a	a	-1	-1			a	a	27			
BON	ATL	CP	EU.Estonia	UN	t1		668	859	187	8																											28	1%	91%	1722
BON	ATL	CP	EU.Estonia	UN	t2		-1	-1	-1	-1																											28			
BON	ATL	CP	S. Tomé e Príncipe	PS	t1																							145	147	149	153	158	162	267	207	211	29	1%	92%	1599
BON	ATL	CP	S. Tomé e Príncipe	PS	t2																							-1	-1	-1	-1	-1	-1	-1	-1	-1	29			
BON	ATL	CP	Brazil	UN	t1		214	273	226	71	86	142	142	122															171								30	1%	92%	1447
BON	ATL	CP	Brazil	UN	t2		-1	-1	-1	-1	-1	-1	-1	-1															-1								30			

Table A5-d. SCRS catalogue: BON[MD] (*Sarda sarda*).

						TOTAL	24028	11955	22097	25255	15111	25997	15682	15189	17195	14078	29730	28170	21972	22237	15717	11117	11248	74376	31751	8637	10042	10019	12584	14442	39321	18365	23352	8993	43938	11798			
Species	Stock	Status	FlagName	GearGrp	DSet		1988	1989	1990	1991	1992	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	Rank	%	%cum
BON	MED	CP	Turkey	PS	t1		17613	4667	14737	19151	8863	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	1	73%	73%
BON	MED	CP	Turkey	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		2242	1369	1244	1087	1288	1238	1828	1512	2233	2233	2233	4159	4159	4159	4579	1067	1112	814			740	76	602	543		1039	442	69	110	28	2	7%	80%
BON	MED	CP	EU.Italy	UN	t2		-1	-1	-1	-1	-1	b	-1	-1	-1	-1	-1	-1	-1	-1	-1	b	b	b	b		-1	-1	abc	a		abc	ab	-1	-1	-1	2		
BON	MED	CP	EU.Greece	PS	t1		1254	2534	2534	2690	2690	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	3	7%	87%
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	3		
BON	MED	CP	Tunisie	UN	t1		600	422	488	305	643	792	305	413	560	611	855	1350	1528	1183	1112	848	1251													4	2%	89%
BON	MED	CP	Tunisie	UN	t2		-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1														4		
BON	MED	CP	EU.España	UN	t1		893	524	672	672	218	200	341	624	681	619	313	419	321	327	448	544	272	202	420	508	453	225	457	539	420	807	520	173	103		5	2%	91%
BON	MED	CP	EU.España	UN	t2		-1	-1	a	-1	a	a	a	a	a	a	a	-1	a	a	a	-1	-1	-1	a	a	a	a	a	a	a	ab	a	a	ab		5		
BON	MED	CP	Tunisie	PS	t1																									1425	1415	1413	1407	867	1290	1993	6	2%	92%
BON	MED	CP	Tunisie	PS	t2																									-1	-1	-1	-1	-1	-1	-1	6		
BON	MED	CP	Egypt	PS	t1									697	985	725	724	1442	1442	1128	1128																7	1%	94%
BON	MED	CP	Egypt	PS	t2									-1	-1	-1	-1	-1	-1	-1	-1																7		
BON	MED	CP	Algerie	PS	t1					209	244	342	332	377	219	284	389	376	346	292	361		317	298	340	585		293	146	213	218	392	351	427	300	395	8	1%	95%
BON	MED	CP	Algerie	PS	t2					-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	8		
BON	MED	CP	EU.Italy	LL	t1																	995	874	523			243	909	160	420		206	118	60	18	68	9	1%	96%
BON	MED	CP	EU.Italy	LL	t2															b		-1	b	-1	b		-1	-1	abc	-1		abc	ab	ab	ab	ab	9		

Table A5-e. SCRS catalogue: BRS[A+M] (*Scomberomorus brasiliensis*).

						TOTAL	9510	#####	7698	8856	6051	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			
Species	Stock	Status	FlagName	GearGrp	DSet		1988	1989	1990	1991	1992	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	Rank	%	%cum
BRS	A+M	CP	Trinidad and Tobago	UN	t1		2704	2864	2471	2749	2130	2130	2130	1816	1568	1699	2130	1328	1722	2207	2472	1867	2103	2720	1778	1414	1472	1498	1498	926	475	695	695		695	695	1	35%	35%
BRS	A+M	CP	Trinidad and Tobago	UN	t2		-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	a	a	a	a	a	-1	a	a	a	a	a	a		-1	-1	1		
BRS	A+M	CP	Venezuela	UN	t1		1743	1987	2460	4670	2772	5077	3882	3882	3609	3609	3651	1766	1766	1766	1766																2	31%	66%
BRS	A+M	CP	Venezuela	UN	t2		-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1																2		
BRS	A+M	CP	Brazil	UN	t1		5063	5927	2767	1437	1149	842	1149	1308	3047	2125	1516	1516	988	229	3071	2881	814	471	1432	563	1521	1042									3	28%	95%
BRS	A+M	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									3		
BRS	A+M	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	4	5%	100%
BRS	A+M	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	4		
BRS	A+M	NCC	Chinese Taipei	LL	t1																											2	1	1	29	29	5	0%	100%
BRS	A+M	NCC	Chinese Taipei	LL	t2																											-1	-1	-1	-1	-1	5		
BRS	A+M	CP	Trinidad and Tobago	LL	t1																									9	14	0					6	0%	100%
BRS	A+M	CP	Trinidad and Tobago	LL	t2																									-1	-1	-1					6		
BRS	A+M	CP	Brazil	PS	t1															22																	7	0%	100%
BRS	A+M	CP	Brazil	PS	t2															-1																	7		

Table A5-f. SCRS catalogue: DOL[A+M] (*Coryphaena hippurus*).

						TOTAL	264	306	260	291	188	174	334	334	307	295	363	349	234	303	347	564	2632	2772	1295	4753	1042	5381	4798	7187	3647	5005	5381	5915	4665	6438			
Species	Stock	Status	FlagName	GearGrp	DSet	1988	1989	1990	1991	1992	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	Rank	%	%cum
DOL	A+M	CP	Brazil	UN	t1																	2081		696	3621	441	4374	2800	2142	18			11	197	206	1	25%	25%
DOL	A+M	CP	Brazil	UN	t2																	-1		-1	-1	-1	-1	-1	-1	-1			-1	-1	-1	1		
DOL	A+M	CP	EU.Malta	PS	t1	264	306	260	291	188	174	334	334	307	295	363	349	234	303	347	507	473	447	506	257	387	387	516	342	175	372	196	328	231	230	2	15%	40%
DOL	A+M	CP	EU.Malta	PS	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	a	a	a	-1	b	ab	ab	ab	ab	ab	ab	ab	bc	b	b	b	b	b	2		
DOL	A+M	CP	EU.France	LL	t1																						372	819	1737	1360	1474	1473	1566	1	0	3	13%	53%
DOL	A+M	CP	EU.France	LL	t2																						-1	-1	-1	-1	-1	-1	-1	-1	ab	3		
DOL	A+M	CP	Brazil	LL	t1																2	78	2311	65	475	31	25	24	1401	578	235	392	1141	725	528	4	12%	65%
DOL	A+M	CP	Brazil	LL	t2																a	a	a	-1	a	a	ab	a	-1	a	a	a	a	a	a	4		
DOL	A+M	CP	EU.Italy	PS	t1																										416	256	881	888	433	5	4%	70%
DOL	A+M	CP	EU.Italy	PS	t2																										abc	-1	ab	ab	ab	5		
DOL	A+M	CP	U.S.A.	LL	t1																							340	305	419	220	505	334	492	233	6	4%	74%
DOL	A+M	CP	U.S.A.	LL	t2															b	b	b						-1	a	a	a	a	ab	ab	ab	6		
DOL	A+M	CP	Brazil	BB	t1																				174			74	128	9	499	341	33	183	858	7	3%	78%
DOL	A+M	CP	Brazil	BB	t2															a					a		a	a	-1	-1	a	a	a	a	a	7		
DOL	A+M	NCO	Sta. Lucia	TR	t1																											407	505	435	403	8	3%	80%
DOL	A+M	NCO	Sta. Lucia	TR	t2																											-1	-1	-1	-1	8		
DOL	A+M	CP	Côte d'Ivoire	GN	t1																											199	32	24	1482	9	3%	83%
DOL	A+M	CP	Côte d'Ivoire	GN	t2																										b	ab	ab	a	ab	9		
DOL	A+M	CP	Brazil	HL	t1																				0				680	35	41	30	33	357	404	10	2%	85%
DOL	A+M	CP	Brazil	HL	t2																				-1			a	-1	-1	-1	a	-1	-1	a	10		
DOL	A+M	NCC	Chinese Taipei	LL	t1																									596	533	426				11	2%	88%
DOL	A+M	NCC	Chinese Taipei	LL	t2																									-1	-1	-1				11		
DOL	A+M	CP	U.S.A.	HL	t1																							135	194	146	121	130	102	121	58	12	2%	89%
DOL	A+M	CP	U.S.A.	HL	t2															b	b	b						-1	-1	-1	-1	-1	b	b	b	12		
DOL	A+M	CP	EU.España	LL	t1																				54	73	73		85	166	113	102	161	64	71	13	1%	91%
DOL	A+M	CP	EU.España	LL	t2																				-1	-1	b		-1	a	ab	ab	ab	b	b	13		
DOL	A+M	CP	Tunisie	PS	t1																													426	482	14	1%	92%
DOL	A+M	CP	Tunisie	PS	t2																													-1	-1	14		

Table A5-g. SCRS catalogue: FRI[AT] (*Auxis thazard*).

						TOTAL	20573	16411	16738	19674	11425	16797	#####	11816	#####	#####	14332	10589	8680	10151	5738	5936	8832	6154	8429	9789	7861	12384	#####	15471	18284	17597	17030	19426	23631	15323			
Species	Stock	Status	FlagName	GearGrp	DSet		1988	1989	1990	1991	1992	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	Rank	%	%cum
FRI	ATL	CP	EU.España	PS	t1		3801	1570	1680	10426	6199	8731	4244	4274	5440	4020	3698	3773	3385	4286	1498	2533	2450	1451	1430	2847	2237	3696	4017	3891	7292	3958	4447	4004	4842	1564	1	29%	29%
FRI	ATL	CP	EU.España	PS	t2		-1	-1	b	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	1		
FRI	ATL	CP	EU.France	PS	t1		3392	3008	3872	2900	3063	5431	4146	2423	2906	1662	1794	1836	2333	2175	865	1059	1464	1185	644	684	222	708	1301	962	1426	1694	1628	1737	2474	849	2	15%	44%
FRI	ATL	CP	EU.France	PS	t2		-1	-1	-1	b	abc	abc	abc	abc	abc	abc	abc	b	abc	abc	abc	abc	abc	abc	b	abc	b	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	2		
FRI	ATL	CP	Venezuela	UN	t1		2212	2062	1969				2597	2597	2758	2578	1926	1524		19																	3	5%	49%
FRI	ATL	CP	Venezuela	UN	t2		-1	-1	-1				-1	-1	-1	-1	-1	-1		-1																	3		
FRI	ATL	NCO	Mixed flags (EU tropical)	PS	t1		1525	1350	1728																									4014	5117	4231	4	4%	53%
FRI	ATL	NCO	Mixed flags (EU tropical)	PS	t2		-1	-1	-1								b	b								b	b	b	b	b	b	b	b	-1	-1	-1	4		
FRI	ATL	CP	Curaçao	PS	t1										590	1157	1030	1159	1122	989	710	505	474	29	205	135	521	589	233	374	452	630	1680	1151	1124	1576	5	4%	57%
FRI	ATL	CP	Curaçao	PS	t2										ab	ab	ab	a	ab	ab	ab	ab	ab	b	ab	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	5		
FRI	ATL	CP	Panama	PS	t1					243	57	118	341	328	240	91							394	1249	1200	1600	708	699	582	569	621	738	997	292	1356	1572	6	3%	61%
FRI	ATL	CP	Panama	PS	t2				b	ab	a	ab	ab	ab	ab	ab	b		b	b	b		ab	ab	ab	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	abc	6		
FRI	ATL	CP	Ghana	PS	t1												33	221	118	39	31		3		1410	1344	878	1901	2580	1462	1840	1651					7	3%	64%
FRI	ATL	CP	Ghana	PS	t2					b						b	ab	a	ab	ab	ab	b	ab		b	b	b	ab	b	b	b	b	b	b	b	b	7		
FRI	ATL	CP	Cape Verde	PS	t1												36			160	97	215	344	435	400	572	735	1482	1138	978	2077	1522	2491	362	293	146	8	3%	68%
FRI	ATL	CP	Cape Verde	PS	t2							a				a	a	a	b	ab	a	ab	ab	ab	ab	abc	abc	abc	abc	abc	abc	abc	abc	abc	ab	ab	8		
FRI	ATL	CP	U.S.S.R.	TW	t1		5549	4985	2198																												9	3%	71%
FRI	ATL	CP	U.S.S.R.	TW	t2		-1	-1	-1																												9		
FRI	ATL	CP	Maroc	PS	t1				412	21	30	102	69	510	592	2653	1716	690	539	449	347	194	352	173	11	11	42	3	3	302	230	30	8	18	40	50	10	2%	73%
FRI	ATL	CP	Maroc	PS	t2				-1	ab	-1	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	-1	-1	-1	a	a	-1	-1	-1	-1	-1	-1	10		
FRI	ATL	CP	Venezuela	PS	t1		440	599	1067	1710	322	881			295	235	201	97	210	394	11	104	182	42	151	50	48	30	201	447	81	128	43	64	70	115	11	2%	75%
FRI	ATL	CP	Venezuela	PS	t2		ab	ab	a	a	a	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	11		
FRI	ATL	CP	Côte d'Ivoire	GN	t1												3	0	1	821	2	31	1356	4	354	541	14	813	161	297	38	2832	261	131	310	81	12	2%	77%
FRI	ATL	CP	Côte d'Ivoire	GN	t2												a	a	a	a	a	-1	a	ab	ab	ab	a	a	ab	ab	a	ab	ab	ab	a	ab	12		
FRI	ATL	CP	Cape Verde	HL	t1							28	4	1		7	18		9	11	181	49		5	2	6	28	18	1	5	5	1195	3195	3195			13	2%	79%
FRI	ATL	CP	Cape Verde	HL	t2							ab	a	ab	ab	ab	ab	ab	a	a	a	a	a	a	a	ab	a	a	a	a	a	a	a	-1			13		
FRI	ATL	CP	Brazil	BB	t1		202	128	230	288	209	300	322	300	524	102	120	166	106	64	292	860	339	299	410	174	134	207	204	278	179	88	120	121	169	325	14	2%	81%
FRI	ATL	CP	Brazil	BB	t2		a	a	a	a	a	-1	a	a	a	a	a	a	-1	a	a	a	a	a	a	ab	a	a	a	a	a	-1	a	a	a	-1	14		
FRI	ATL	CP	Mauritania	TW	t1																				268	169	377	489	1420	1951	654	101	211	515	991		15	2%	83%
FRI	ATL	CP	Mauritania	TW	t2																				-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1		15		
FRI	ATL	CP	Ghana	BB	t1																				1167	790	618	885	1024	833	629	731					16	2%	84%
FRI	ATL	CP	Ghana	BB	t2											b			b						b	-1	b	b	b	b	b	b	b	b	b	b	16		
FRI	ATL	CP	Russian Federation	TW	t1					647	277						1501	477	12	25	308	56	56	63	6	5	12	113	270	912	113	217	139	249	545	389	17	2%	86%
FRI	ATL	CP	Russian Federation	TW	t2					-1	-1						-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	abc	abc	abc	abc	abc	ab	ab	ab	17		
FRI	ATL	CP	Senegal	PS	t1		810	702	990	307	201	309	309	309		101																		1098	862	328	18	2%	87%
FRI	ATL	CP	Senegal	PS	t2		-1	-1	-1	-1	-1	-1	-1	-1		-1																		abc	abc	ac	18		
FRI	ATL	CP	Brazil	UN	t1		1702	572	362	458	82	308	584	258		2	7				770			148	186					0				1	1	19	1%	89%
FRI	ATL	CP	Brazil	UN	t2		-1	-1	-1	-1	-1	-1	-1	-1		-1	-1				-1			-1	-1					-1				-1	-1	19		
FRI	ATL	CP	S. Tomé e Príncipe	PS	t1														200	200	200	200	234	215	290		275	149	153	298	307	315	324	636	536	467	20	1%	90%
FRI	ATL	CP	S. Tomé e Príncipe	PS	t2														-1	-1	-1	-1	-1	-1	-1		-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	20		
FRI	ATL	CP	Guinée Rep.	PS	t1										7									168		24	37		270	612	874	1174	677				21	1%	91%
FRI	ATL	CP	Guinée Rep.	PS	t2										a									-1		-1	-1		-1	-1	ac	ac	ac				21		
FRI	ATL	CP	Cape Verde	HS	t1							5																							2031	1648	22	1%	92%
FRI	ATL	CP	Cape Verde	HS	t2							-1																	a	a	a	a	ab		a	-1	22		
FRI	ATL	CP	Russian Federation	PS	t1					431	350	150	405	456	46	500	932									1											23	1%	93%
FRI	ATL	CP	Russian Federation	PS	t2					-1	b	-1	-1	-1	-1	-1	-1									a											23		
FRI	ATL	CP	Belize	PS	t1												33		115	87								100	154	71	86	78	143	266	824	586	24	1%	93%
FRI	ATL	CP	Belize	PS	t2												a		ab	ab		b						ab	b	b	b	b	ab	ab	ab	abc	24		
FRI	ATL	CP	Maroc	GN	t1				273	703	181	84	50	40	104	9	512	74	90	27	56	38	90	13	4	1	4										25	1%	94%
FRI	ATL	CP	Maroc	GN	t2				-1	-1	-1	-1	-1	-1	-1	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a							25		
FRI	ATL	CP	El Salvador	PS	t1																													435	793	895	26	1%	94%
FRI	ATL	CP	El Salvador	PS	t2																													abc	abc	abc	26		

Table A5-h. SCRS catalogue: KGM[A+M] (*Scomberomorus cavalla*).

						TOTAL	14331	12153	10420	13241	14691	16331	14777	14930	17782	19815	16394	17717	16205	15408	17258	15863	12830	11766	8185	17936	7344	12533	9742	10868	#####	12132	4432	3642	3943	3926			
Species	Stock	Status	FlagName	GearGrp	DSet		1988	1989	1990	1991	1992	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	Rank	%	%cum
KGM	A+M	CP	Mexico	LL	t1		3100	2300	2689	2147	3014	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	1	27%	27%
KGM	A+M	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		
KGM	A+M	CP	U.S.A.	RR	t1		5040	4026	1931	6385	7073	7046	5878	5246	4731	5933	4732	3660	4448	4358	3952	4619	4619	4619													2	23%	51%
KGM	A+M	CP	U.S.A.	RR	t2		b	b	b	b	b	b	b	b	-1	a	a	a	a	a	a	a	a	a	a	a				a	a	a	a		ab	ab	2		
KGM	A+M	CP	U.S.A.	HL	t1		125	108	167	696	620	769	928	1105	1297	1532	1335	1363	1436	1370	1402	1680	1672	1487	1823	12506	2063	7285	4674	5982	8038	7010					3	18%	69%
KGM	A+M	CP	U.S.A.	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					3		
KGM	A+M	CP	Brazil	UN	t1		2029	2102	2069	959	940	1380	1365	1328	2887	2398	3595	3595	2344	200	2316	3311	247	201	315	33	0										4	9%	78%
KGM	A+M	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										4		
KGM	A+M	CP	Venezuela	UN	t1		1330	1500	1069	1228	1307	800	2484	2485	2139	2139	340	2424	2424	2424	2424																5	7%	85%
KGM	A+M	CP	Venezuela	UN	t2		-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1																5		
KGM	A+M	CP	Trinidad and Tobago	UN	t1		716	535	424	657		1192		471	1029	875	746	447	432	410	1457	801	577	747	661	566	1043	1001	1001	720	391	494	494		494	494	6	5%	90%
KGM	A+M	CP	Trinidad and Tobago	UN	t2		-1	-1	-1	-1		-1		-1	-1	-1	-1	-1	-1	-1	-1	a	a	a	a	a	-1	a	a	a	a	a	a		-1	-1	6		
KGM	A+M	CP	U.S.A.	TR	t1		1245	1163	1731	830	974	740	544	371	281	540	431	447	596	561	343	375	478	559	665	655	557	606	581	597	782	692					7	5%	94%
KGM	A+M	CP	U.S.A.	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					7		
KGM	A+M	CP	U.S.A.	GN	t1		636	373	294	37	178	646	75	280	415	353	340	486	244	240	194	195	281	422	315	309	376	342	359	353	356	356					8	2%	96%
KGM	A+M	CP	U.S.A.	GN	t2		b	b	ab	ab	ab	b	b	b	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1					8		

Table A5-i. SCRS catalogue: LTA[AT] (*Euthynnus alletteratus*).

						TOTAL	23836	28257	12772	9133	20607	11872	13202	10381	9453	12804	12804	9405	11830	13955	14080	16313	14918	10873	8320	16472	11954	14166	20258	21005	15389	15868	9212	17451	21318	15438			
Species	Stock	Status	FlagName	GearGrp	DSet		1988	1989	1990	1991	1992	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	Rank	%	%cum
LTA	ATL	CP	Senegal	GN	t1		2705	3721	3040	2362	2552	2903	2912	2577	1096	1572	2146	414	2718	4405	1752	3287	2168	1401	1360	1240	2395	4667	5244	3575	2052	5360	2864	4271	2115	1010	1	18%	18%
LTA	ATL	CP	Senegal	GN	t2		b	b	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	b	ab	ab	b	b	1		
LTA	ATL	CP	Ghana	UN	t1		11299	11299			11299																										2	8%	26%
LTA	ATL	CP	Ghana	UN	t2		-1	-1			-1																										2		
LTA	ATL	CP	U.S.A.	RR	t1		42	29	21	48	30	872	1093	1237	2005	1530	1255	1145	988	1057	931	813	1141	517	1018	1051	661	836	663	880	1127	915	967	1030	1117	925	3	6%	32%
LTA	ATL	CP	U.S.A.	RR	t2		ab	ab	ab	ab	ab	ab	ab	ab	b	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	b	b	b	b	ab	ab	ab	ab	ab	ab	ab	3		
LTA	ATL	CP	Ghana	BB	t1		289	1212	323	201	309	359	994	513	85	1396	250	169	255	296	2346	4099	5533	3437	451	564	312	651	401	245	589	417						4	6%	37%
LTA	ATL	CP	Ghana	BB	t2		-1	-1	-1	a	a	a	a	a	ab	ab	a	a	ab	a	a	a	a	a	b	b	a	-1	b	b	b	b	b	b	b	b	4		
LTA	ATL	CP	EU.España	PS	t1					361	188	707	1127	464	339	380	394	199	751	1197	209	656	997	206	213	1253	944	1181	1411	2232	1173	775	1285	2474	2542	185	5	5%	43%
LTA	ATL	CP	EU.España	PS	t2				b	ab	b	b	b	abc	abc	abc	abc	abc	b	b	b	b	b	b	b	b	b	abc	abc	abc	abc	abc	abc	abc	abc	abc	5		
LTA	ATL	CP	Senegal	TR	t1		737	765	577	423	393	708	653	593	511	873	818	556	297	210	759	896	993	650	1936	2397	2543	646	668	492	455		306		945	890	6	5%	48%
LTA	ATL	CP	Senegal	TR	t2		-1	-1	ab	-1	-1	-1	b	a	a	a	a	a	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	b	ab	b	b	b	6		
LTA	ATL	NCO	Mixed flags (EU tropical)	PS	t1		1017	900	1152																									5722	7187	6536	7	5%	53%
LTA	ATL	NCO	Mixed flags (EU tropical)	PS	t2		-1	-1	-1								b	b							b	b	b	b	b	b	b	b	b	-1	-1	-1	7		
LTA	ATL	CP	Côte d'Ivoire	GN	t1		38	4900	2800	100	142	339	251	253	250	155	136	9	123	1	0		153	287	426	2159	1791	1446	1631	50	1062	1426	152	89	110	1880	8	5%	58%
LTA	ATL	CP	Côte d'Ivoire	GN	t2		-1	-1	-1	-1	a	-1	-1	-1	-1	a	a	a	a	a	a		a	a	ab	ab	a	a	ab	ab	a	ab	ab	ab	a	ab	8		
LTA	ATL	CP	Venezuela	UN	t1		1236	1374	1294						1840	1840	2815	2247	2247	2247	2247																9	4%	62%
LTA	ATL	CP	Venezuela	UN	t2		-1	-1	-1						-1	-1	-1	-1	-1	-1	-1																9		
LTA	ATL	CP	Ghana	PS	t1										28	629	109	137	452	434	2422	4442	1527	2301	332	771	433	1041	1064	756	685	721						10	4%	66%
LTA	ATL	CP	Ghana	PS	t2										ab	ab	ab	a	ab	ab	ab	a	a	a	b	b	ab	b	b	b	b	b	b	b	b	b	10		
LTA	ATL	CP	Mauritania	TW	t1																				670	423	943	1222	3549	4878	1634	252	529	1287	2478			11	4%	70%
LTA	ATL	CP	Mauritania	TW	t2																				-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1			11		
LTA	ATL	CP	EU.France	PS	t1			195		244	424	853	1204	327	413	540	777	595	823	1192	396	710	1058	367	215	262	122	241	913	1066	705	720	571	900	1385	464	12	4%	74%
LTA	ATL	CP	EU.France	PS	t2			-1		ac	abc	abc	abc	abc	abc	b	b	abc	abc	b	b	b	b	b	abc	b	b	b	abc	abc	abc	abc	abc	abc	abc	abc	12		
LTA	ATL	CP	Senegal	HL	t1		550	821	566	170	192	302	668	389	364	288	408	427	320	353	148	208	337	643	530	178	168	365	376	824	224	526	519	667	1792	1791	13	3%	78%
LTA	ATL	CP	Senegal	HL	t2		b	b	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	b	ab	ab	b	b	13		
LTA	ATL	CP	Brazil	UN	t1		103	72	680	777	931	985	1225	1059	834	507	920	920	605	615	615										4						14	2%	80%
LTA	ATL	CP	Brazil	UN	t2		-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1										-1						14		
LTA	ATL	CP	Senegal	PS	t1		2182	460	180	528	874	811	299			1440	1340	207	207	207	207														2	150	15	2%	82%
LTA	ATL	CP	Senegal	PS	t2		-1	-1	-1	-1	-1	-1	-1			-1	-1	-1	-1	-1	-1													b	abc	ac	15		
LTA	ATL	CP	Angola	TP	t1		629	724	186	267		164	90	59	144	36	241	87	69	132	132					227		94	1306	2566	1414	46	10	1	1		16	2%	84%
LTA	ATL	CP	Angola	TP	t2		-1	-1	-1	-1		-1	-1	-1	-1	-1	-1	-1	-1	-1	-1					-1		b	-1	-1	-1	-1	-1	b	b		16		
LTA	ATL	CP	Venezuela	PS	t1					1342	958	1002	1121	1121																							17	1%	86%
LTA	ATL	CP	Venezuela	PS	t2					-1	-1	-1	-1	-1																							17		
LTA	ATL	CP	Angola	HL	t1																			1		4085		4	50	99	54	323			0	4	18	1%	87%
LTA	ATL	CP	Angola	HL	t2																			-1		-1		-1	-1	-1	-1	-1			-1	-1	18		
LTA	ATL	CP	Cape Verde	PS	t1											2	70	26	273	145	53	141	137	112	182	543	451	540	437	354	274	438	178		163	65	19	1%	88%
LTA	ATL	CP	Cape Verde	PS	t2							a		a	a	-1	a	a	ab	ab	a	ab	ab	ab	ab	b	ab	b	b	b	b	b	b	b	ab	ab	19		
LTA	ATL	CP	Venezuela	BB	t1					621	451	887	994	994																							20	1%	88%
LTA	ATL	CP	Venezuela	BB	t2					-1	-1	-1	-1	-1										b													20		
LTA	ATL	CP	Liberia	UN	t1		229	246	237	237	237																		673	256	176	101	78	151	212	21	1%	89%
LTA	ATL	CP	Liberia	UN	t2		-1	-1	-1	-1	-1																		-1	-1	-1	-1	-1	-1	-1	21		
LTA	ATL	CP	U.S.A.	HL	t1		13	32	0	6	20	28	0		7	5	1	53	37	52	80	66	85	94	139	134	165	210	212	233	199	158	163	149	225	239	22	1%	90%
LTA	ATL	CP	U.S.A.	HL	t2		-1	-1	-1	-1	-1	-1	-1		-1	-1	b	b	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	b	-1	-1	b	b	-1	-1	b	22		
LTA	ATL	CP	Maroc	PS	t1				289	27	370	34	43	230	588	194	189	67	89	69	253	70	90	33		1		60	5	20	4	5	2	0	3	4	23	1%	90%
LTA	ATL	CP	Maroc	PS	t2				-1	b	-1	ab	b	b	b	b	-1	-1	b	b	b	b	b	b		-1		-1	-1	-1	-1	-1	-1	-1	-1	-1	23		
LTA	ATL	CP	Guinée Rep.	PS	t1																			15		21	2		358	260	666	1186	202				24	1%	91%
LTA	ATL	CP	Guinée Rep.	PS	t2																			-1		-1	-1		-1	-1	-1	-1	-1				24		
LTA	ATL	CP	S. Tomé e Príncipe	PS	t1														33	33	33	33	178	182	179		183	188	193	198	203	209	214	182	122	249	25	1%	92%
LTA	ATL	CP	S. Tomé e Príncipe	PS	t2														-1	-1	-1	-1	-1	-1	-1		-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	25		
LTA	ATL	CP	EU.France	UN	t1													610	610	610	610								0				0		0	0	26	1%	92%
LTA	ATL	CP	EU.France	UN	t2													-1	-1	-1	-1								-1				a		-1	a	26		
LTA	ATL	CP	U.S.A.	GN	t1		48	32	44	46	51	90	44		46	161	107	118	119	107	97	82	64	36	42	68	49	60	44	45	82	97	103	148	164	182	27	1%	93%
LTA	ATL	CP	U.S.A.	GN	t2		-1	-1	-1	-1	-1	-1	-1		-1	-1	-1	-1	b	b	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	27		
LTA	ATL	CP	Russian Federation	TW	t1																74	13							268	11	208	399	255	136	547	433	28	1%	93%
LTA	ATL	CP	Russian Federation	TW	t2																-1	-1							abc	a	abc	abc	abc	ab	ab	ab	28		

Table A5-j. SCRS catalogue: LTA[MD] (*Euthynnus alletteratus*).

						TOTAL	2405	2035	2617	2315	1755	1258	1197	1894	2116	1601	2914	2876	3489	2988	2643	684	1439	1042	1605	1687	2259	2100	2170	3668	4186	4633	3605	6574	9788	15147			
Species	Stock	Status	FlagName	GearGrp	DSet		1988	1989	1990	1991	1992	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	Rank	%	%cum
LTA	MED	CP	Tunisie	PS	t1		1381	847																						810	800	803	798	5165	6323	12434	1	31%	31%
LTA	MED	CP	Tunisie	PS	t2		-1	-1																						-1	-1	-1	-1	-1	-1	-1	1		
LTA	MED	CP	Turkey	PS	t1												500	750	750	750	750		568	507	1230	785	1074	1309	1046	1437	1645	1386	682	326	184	480	2	17%	48%
LTA	MED	CP	Turkey	PS	t2			b									-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		330	564	1911	1249	617	242	204	696	824	333	1113	752	1453	1036	960	657	633														3	14%	62%
LTA	MED	CP	Tunisie	UN	t2		-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1														3		
LTA	MED	CP	Syria	UN	t1		99	121	127	110	156	161	156	155	270	350	417	390	370	370	330					193	133	163	148	155	304	230					4	5%	68%
LTA	MED	CP	Syria	UN	t2		-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1					-1	-1	-1	-1	-1	-1	-1					4		
LTA	MED	CP	Algerie	PS	t1					332	374	295	290	343	341	301	252	335	321	269	79		83	70	83					54	2	100	232	104	121	56	5	5%	72%
LTA	MED	CP	Algerie	PS	t2					-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1		-1	-1	-1					a	a	a	a	a	-1	-1	5		
LTA	MED	CP	EU.Greece	PS	t1														195	125	132			112	69	72	183	148	165	301	276	363	289	271	501	299	6	4%	76%
LTA	MED	CP	EU.Greece	PS	t2														-1	-1	-1			-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	6		
LTA	MED	CP	EU.Italy	PS	t1																						334	167	250	209	459	168	211		658	588	7	3%	79%
LTA	MED	CP	EU.Italy	PS	t2																						-1	-1	-1	-1	-1	-1	-1		-1	-1	7		
LTA	MED	NCO	NEI (MED)	UN	t1		200	200	200	200	200	200	200	200	200	200	200	200																			8	3%	82%
LTA	MED	NCO	NEI (MED)	UN	t2		-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1																			8		
LTA	MED	NCO	Israel	UN	t1		135	124	129	108	126	119	119	215	119	119	119	119	119	119	119																9	2%	84%
LTA	MED	NCO	Israel	UN	t2		-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1																9		
LTA	MED	CP	EU.España	UN	t1									14	7	6	11		8	14	28		40	36	39	96	68	35	134	237	298	136	178	71	112		10	2%	85%
LTA	MED	CP	EU.España	UN	t2									a	a	a	a		a	a	a		-1	-1	a	a	a	a	a	a	a	a	a	a			10		
LTA	MED	CP	Egypt	PS	t1																											849	712				11	2%	87%
LTA	MED	CP	Egypt	PS	t2																											-1	-1				11		
LTA	MED	CP	EU.España	TP	t1		5							1	11	3	4			67	3			225	73	50	125	47	125	177	64	78	82	140	53	82	12	1%	89%
LTA	MED	CP	EU.España	TP	t2		-1							a	a	a	-1			a	a			-1	-1	-1	ab	abc	abc	a	abc	ab	ab	ab	ab	ab	12		
LTA	MED	CP	Algerie	TP	t1					130	139	144	123	121	154	106	98	139	116	102	29																13	1%	90%
LTA	MED	CP	Algerie	TP	t2					-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1																13		
LTA	MED	CP	Libya	PS	t1											24	32																	102	1100	48	14	1%	91%
LTA	MED	CP	Libya	PS	t2											-1	-1																	-1	-1	-1	14		
LTA	MED	CP	EU.Italy	LL	t1																	10	13	18			87	44	65	55	120	327	193		69	202	15	1%	93%
LTA	MED	CP	EU.Italy	LL	t2																	-1	b	-1			-1	-1	-1	-1	-1	-1	-1		-1	ab	15		
LTA	MED	CP	Algerie	LL	t1																		27	18	57	96		48	24	43	4	56	105	96	144	385	16	1%	94%
LTA	MED	CP	Algerie	LL	t2																		-1	-1	-1	-1		-1	-1	a	a	a	a	a	-1	-1	16		
LTA	MED	CP	Tunisie	TP	t1		197	155	202	94	47																										17	1%	95%
LTA	MED	CP	Tunisie	TP	t2		b	b	b	b	b																										17		
LTA	MED	CP	Algerie	UN	t1					40	45	35	28	51	37	22	18	27	14	9	17		11				142	71	107								18	1%	95%
LTA	MED	CP	Algerie	UN	t2					-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1		-1				-1	-1	-1								18		

Table A5-k. SCRS catalogue: MAW[A+M] (*Scomberomorus tritor*).

						TOTAL	3811	2808	6629	3746	2423	1723	1278	1953	2910	1415	1496	909	1219	828	1345	565	352	480	571	847	616	684	2384	1333	1128	3016	1460	1242	3206	1086			
Species	Stock	Status	FlagName	GearGrp	DSet		1988	1989	1990	1991	1992	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	Rank	%	%cum
MAW	A+M	CP	Senegal	GN	t1		1881	423	870	421	1027	888	868	1477	1240	776	429	320	718	364	543	447	156	253	116	286	279	110	109	321	358	968	205	612	599		1	32%	32%
MAW	A+M	CP	Senegal	GN	t2		b	b	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	-1	ab	a	b		1		
MAW	A+M	CP	Senegal	HL	t1		120	129	154	80	151	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	2	9%	41%
MAW	A+M	CP	Senegal	HL	t2		b	b	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	-1	ab	a	b	-1	2		
MAW	A+M	CP	Ghana	UN	t1		1457	1457	1500																												3	8%	50%
MAW	A+M	CP	Ghana	UN	t2		-1	-1	-1																												3		
MAW	A+M	CP	Ghana	GN	t1					2778	899	466																									4	8%	57%
MAW	A+M	CP	Ghana	GN	t2					-1	-1	-1																									4		
MAW	A+M	NCO	Benin	HS	t1		13	334	211	214	202	214	194	188	188	362	511	205	205	205	205																5	6%	64%
MAW	A+M	NCO	Benin	HS	t2		-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1																5		
MAW	A+M	CP	Senegal	UN	t1		0		1215	0	0	0	0	1	1317	4	1	14	9	3	5	5	1	3	0	0		0	0	0			0				6	5%	69%
MAW	A+M	CP	Senegal	UN	t2		-1		-1	a	a	a	a	a	-1	a	a	a	a	a	a	a	a	a	a	a	a	a	-1	a			a				6		
MAW	A+M	CP	Mauritania	GN	t1																				198	304	172	192	209	148	143	110	432	438	221		7	5%	73%
MAW	A+M	CP	Mauritania	GN	t2																				-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1		7		
MAW	A+M	CP	Angola	TP	t1																							64	1227	185	164	224					8	3%	77%
MAW	A+M	CP	Angola	TP	t2																							-1	-1	-1	-1	-1					8		
MAW	A+M	CP	U.S.S.R.	TW	t1		143	195	1240																												9	3%	80%
MAW	A+M	CP	U.S.S.R.	TW	t2		-1	-1	-1																												9		
MAW	A+M	CP	Senegal	PS	t1											209	356	209	209	209	209																10	3%	82%
MAW	A+M	CP	Senegal	PS	t2											-1	-1	-1	-1	-1	-1																10		
MAW	A+M	CP	U.S.S.R.	UN	t1		143	195	1032																												11	3%	85%
MAW	A+M	CP	U.S.S.R.	UN	t2		a	a	-1																												11		
MAW	A+M	CP	Senegal	TR	t1		48	70	193	19	47	55	14	22	26	30	29	23	22	7	3	19	9	113	22	4	0	1	1	5		14	1		56		12	2%	87%
MAW	A+M	CP	Senegal	TR	t2		b	b	a	ab	a	a	ab	ab	ab	a	ab	ab	ab	ab	a	a	ab	ab	ab	ab	ab	ab	ab	ab	ab		-1	ab		b		12		
MAW	A+M	CP	S. Tomé e Príncipe	PS	t1														6	6	6	6	21	12	13		91	93	96	98	100	102	105	13	11	37	13	2%	88%
MAW	A+M	CP	S. Tomé e Príncipe	PS	t2														-1	-1	-1	-1	-1	-1	-1		-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	13		
MAW	A+M	CP	EU.Italy	PS	t1																														731		14	1%	89%
MAW	A+M	CP	EU.Italy	PS	t2																														-1		14		
MAW	A+M	CP	EU.Italy	TW	t1																														726		15	1%	91%
MAW	A+M	CP	EU.Italy	TW	t2																														-1		15		
MAW	A+M	CP	Gabon	TW	t1										41								67	37	87	93	17	22	30	34	46	42	13	37	21	56	16	1%	92%
MAW	A+M	CP	Gabon	TW	t2										-1								-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	16		
MAW	A+M	CP	Angola	GN	t1																							1	16	2	2	598			0	2	17	1%	93%
MAW	A+M	CP	Angola	GN	t2																							-1	-1	-1	-1	-1			-1	-1	17		
MAW	A+M	CP	Angola	HL	t1																							2	47	7	6	424			1		18	1%	94%
MAW	A+M	CP	Angola	HL	t2																							-1	-1	-1	-1	-1			-1		18		

Table A5-l. SCRS catalogue: SSM[A+M] (*Scomberomorus maculatus*).

						TOTAL	12671	13845	12782	15318	16285	16317	14490	13697	16571	15403	8877	9837	8220	8383	9414	9793	8119	10470	6282	6102	5900	6197	5974	5931	5185	5459	3858	4079	3829	3712			
Species	Stock	Status	FlagName	GearGrp	DSet		1988	1989	1990	1991	1992	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	Rank	%	%cum
SSM	A+M	CP	Mexico	LL	t1		5246	7242	8194	8360	9181	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	1	61%	61%
SSM	A+M	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		
SSM	A+M	CP	U.S.A.	GN	t1		2429	2715	2227	2961	2704	3028	2779	2094	1354	1416	1350	1163	1208	1260	976	1117	801	1265	1295	1201	971	1086	1029	1059	1044	1051					2	15%	75%
SSM	A+M	CP	U.S.A.	GN	t2		b	b	b	b	b	b	b	b	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1					2		
SSM	A+M	CP	U.S.A.	RR	t1		2412	1366	106	2349	2686	1887	1471	1084	1364	1871	1452	1920	2335	2634	2944	2356	2356	2356							0						3	12%	88%
SSM	A+M	CP	U.S.A.	RR	t2		b	b	b	b	b	b	b	b	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1							-1						3		
SSM	A+M	NCO	Dominican Republic	UN	t1		1415	1401	1290	728	735	739	1330	2042	2042	231	191	125	158	158	158																4	5%	92%
SSM	A+M	NCO	Dominican Republic	UN	t2		-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1																4		
SSM	A+M	CP	U.S.A.	UN	t1		127	126	120	181	224	128	84	75	67	141	72	75	195	439	478	887	1044	738	725	602	363	483	423	454	433	441					5	3%	95%
SSM	A+M	CP	U.S.A.	UN	t2		b	b	b	b	b	b	b	b	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1					5		
SSM	A+M	CP	U.S.A.	HL	t1		27	23	21	86	22	41	28	103	74	70	82	109	151	181	211	188	273	384	326	339	407	373	390	383	387	385					6	2%	97%
SSM	A+M	CP	U.S.A.	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					6		
SSM	A+M	NCO	Cuba	TR	t1		75	82	538	538	611	310	409	548	613	613	236																				7	2%	99%
SSM	A+M	NCO	Cuba	TR	t2		-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1																				7		

Table A5-m. SCRS catalogue: WAH[A+M] (*Acanthocybium solandri*).

						TOTAL	1635	1527	1498	1721	1835	2671	2143	2408	2516	3104	2497	2972	2035	2318	2226	2067	2613	2467	1829	2581	2176	2354	2086	2500	3716	5396	2979	2157	#####	1960			
Species	Stock	Status	FlagName	GearGrp	DSet	1988	1989	1990	1991	1992	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	Rank	%	%cum
WAH	A+M	CP	Mauritania	PS	t1																							20			10	1532			#####		1	17%	17%
WAH	A+M	CP	Mauritania	PS	t2																							-1			-1	-1			-1		1		
WAH	A+M	CP	U.S.A.	RR	t1			2	3	9	199	334	624	542	615	498	733	535	549	763	695	601	473		1032	415	436	321	175	309	134	396	707	1180	493	2	15%	32%
WAH	A+M	CP	U.S.A.	RR	t2	b	b	b	b	b	b	b	b	b	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	b	b	b	ab	ab	ab	b	b	b	b	2		
WAH	A+M	CP	Cape Verde	HL	t1													415	534	341	340	365	445	552	520	337	448	431	467	437	443	443	443	490	228	3	9%	41%
WAH	A+M	CP	Cape Verde	HL	t2						ab	ab	ab	ab	ab	ab	ab	ab	ab	a	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	ab	-1	a	-1	3		
WAH	A+M	CP	Cape Verde	TR	t1	327	600	380	331	338	316	299	370	473	517	330	499																			4	6%	46%
WAH	A+M	CP	Cape Verde	TR	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1																			4		
WAH	A+M	CP	Venezuela	UN	t1	136	100	159	302	331	505	538	538	479	479	340	448																			5	5%	51%
WAH	A+M	CP	Venezuela	UN	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1																			5		
WAH	A+M	CP	Curaçao	UN	t1	280	280	280	250	260	270	250	230	230	230	230	230	230	230	230																6	4%	56%
WAH	A+M	CP	Curaçao	UN	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1																6		
WAH	A+M	NCC	Chinese Taipei	LL	t1																									1236	1120	896				7	4%	59%
WAH	A+M	NCC	Chinese Taipei	LL	t2																									-1	-1	-1				7		
WAH	A+M	CP	U.S.A.	LL	t1	95	85	54	118	180	604	56	120	53	117	104	90	79	59	60	64	79	64	68	64	63	64	19	40	62	50	60	27	35	36	8	3%	63%
WAH	A+M	CP	U.S.A.	LL	t2	ab	b	ab	ab	ab	ab	ab	b	b	b	b	b	ab	ab	ab	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	8		
WAH	A+M	CP	S. Tomé e Príncipe	PS	t1													52	52	52	52	94	88	76		131	235	241	247	254	260	266	100	70	172	9	3%	65%
WAH	A+M	CP	S. Tomé e Príncipe	PS	t2													-1	-1	-1	-1	-1	-1	-1		-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	9		
WAH	A+M	CP	Brazil	LL	t1	4	4	11	41	71	33	3		2	22	40				0	355	175	447	50	6	26	19	19	48	51	225	110	260	203	127	10	3%	68%
WAH	A+M	CP	Brazil	LL	t2	-1	-1	-1	-1	a	a	a	a	a	-1	a				-1	a	a	a	a	a	a	ab	a	a	a	a	a	a	a	a	10		
WAH	A+M	NCO	Sta. Lucia	TR	t1															217	169	238	169	187		171	195	199			148	155	87	147	110	11	3%	71%
WAH	A+M	NCO	Sta. Lucia	TR	t2															-1	-1	-1	-1	-1		-1	-1	-1			-1	-1	-1	-1	-1	11		
WAH	A+M	CP	UK.Bermuda	RR	t1	61	63	74	67	80	58	50	93	99	105	108	104	61	56	91	87	88	83	86	124	117	101	81								12	2%	73%
WAH	A+M	CP	UK.Bermuda	RR	t2	-1	-1	-1	-1	-1	-1	-1	b	b	-1	a	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	b	b	b	b						12		
WAH	A+M	CP	Panama	LL	t1																			91	240	120	86	111	99	210	373	228		109		13	2%	75%
WAH	A+M	CP	Panama	LL	t2																			a	a	a	a	-1	-1	-1	a	a		-1		13		
WAH	A+M	NCO	Sta. Lucia	UN	t1			77	79	150	141	98	80	221	223	223																				14	1%	76%
WAH	A+M	NCO	Sta. Lucia	UN	t2			-1	-1	-1	-1	-1	-1	-1	-1	-1																				14		
WAH	A+M	CP	Brazil	UN	t1	54	88	41	23	0		23	1			1						345		61	62	49	51		130	73				108	114	15	1%	78%
WAH	A+M	CP	Brazil	UN	t2	-1	-1	-1	-1	-1		-1	-1			-1						-1		-1	-1	-1	-1		-1	-1				-1	-1	15		
WAH	A+M	CP	EU.España	BB	t1	32	18	23	28	32	22	20	15	25	25	29	28	32	38	46	48	47	214	55	65	38	70	48				47	33	29	35	34	16	1%	79%
WAH	A+M	CP	EU.España	BB	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	16		
WAH	A+M	CP	EU.España	PS	t1																			92	63	44	224	262	136	240	56					17	1%	80%
WAH	A+M	CP	EU.España	PS	t2																		-1	-1	-1	-1	-1	-1	-1	-1						17		
WAH	A+M	CP	Grenada	TR	t1	137	57	54	77	104	96	46	49	56	56	59	82	51	71	59	44															18	1%	82%
WAH	A+M	CP	Grenada	TR	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1															18		
WAH	A+M	NCC	Suriname	LL	t1																									588	415					19	1%	83%
WAH	A+M	NCC	Suriname	LL	t2																									-1	-1					19		
WAH	A+M	NCO	Aruba	UN	t1	80	80	70	60	50	50	125	40	50	50	50	50	50	50	50																20	1%	84%
WAH	A+M	NCO	Aruba	UN	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1																20		
WAH	A+M	CP	Mauritania	LL	t1																				0			16	240	28	29	36	100	346		21	1%	85%
WAH	A+M	CP	Mauritania	LL	t2																				-1			-1	-1	-1	-1	-1	-1	-1		21		
WAH	A+M	CP	Barbados	UN	t1	332	51	51	60	51	91	82	42	35																						22	1%	86%
WAH	A+M	CP	Barbados	UN	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1																						22		
WAH	A+M	NCO	Sta. Lucia	HL	t1												310	243	213																	23	1%	87%
WAH	A+M	NCO	Sta. Lucia	HL	t2												-1	-1	-1																	23		
WAH	A+M	CP	Brazil	HL	t1									14	36						49									92	45	253	44	52	93	81	24	1%	87%
WAH	A+M	CP	Brazil	HL	t2									-1	-1						-1									-1	-1	-1	a	-1	-1	a	24		
WAH	A+M	CP	Cape Verde	BB	t1	13	31	78	20	12	10	62	38	30	86	99	88	72	41												2	2	2	2			25	1%	88%
WAH	A+M	CP	Cape Verde	BB	t2	-1	-1	-1	-1	-1	a	-1	a	-1	-1	a	a	a	-1						a						a	a	a	-1			25		
WAH	A+M	CP	Cape Verde	PS	t1														3	159	3	93	96	12	59	74	46	68	29	11							26	1%	89%
WAH	A+M	CP	Cape Verde	PS	t2														a	a	a	ab	a	a	b	ab	-1	-1	-1	-1							26		
WAH	A+M	NCO	Dominica	UN	t1			38	43	59	59	59	58	58	58	58	50	46	11	37	10				0	0						1	1	2			27	1%	90%
WAH	A+M	NCO	Dominica	UN	t2			-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1				a	a						-1	-1	-1			27		
WAH	A+M	CP	St. Vincent and Grenadines	LL	t1														255						200	26					5	4	3	0	11	117	28	1%	90%
WAH	A+M	CP	St. Vincent and Grenadines	LL	t2														-1						-1	a					a	a	a	a	a	a	28		
WAH	A+M	NCO	Dominican Republic	UN	t1	1	3	6	9	13	7				325	112	31	35	35	35																	29	1%	91%
WAH	A+M	NCO	Dominican Republic	UN	t2	-1	-1	-1	-1	-1	-1				-1	-1	-1	-1	-1	-1																	29		
WAH	A+M	CP	U.S.A.	HL	t1	6	2	6	3	5	5	1	8	4	8	1	35	25	25	21	30	32	22	21	28	18	21	18	25	27	21	22	21	35	33	30	1%	92%
WAH	A+M	CP	U.S.A.	HL	t2	-1	-1	-1	-1	-1	b	b	b	b	b	b	b	b	b	b	-1	b	b	b	b	b	b	b	b	b	b	b	b	b	b	30		
WAH	A+M	CP	S. Tomé e Príncipe	TW	t1	23	20	28	34	27	36	39	46	80	52	56	62																			31	1%	92%
WAH	A+M	CP	S. Tomé e Príncipe	TW	t2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1																			31		
WAH	A+M	CP	Venezuela	LL	t1	5	1			1	9	4	2	7	8	17	18	4	6	10	5	7	13	9	27	4	22	25	19	32	30	21	30	64	51	32	1%	93%
WAH	A+M	CP	Venezuela	LL	t2	-1	-1			a	a	a	ab	a	ab	ab	ab	a	-1	-1	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	32		

Appendix 6

Small tunas workplan for 2020

This workplan foresees both short and long-term objectives (see specific timeframes).

Progress on the Small Tunas Year Programme (SMTYP):

- ***Background/objectives:*** The SMTYP started in 2016-2017 with the initial aim of recovering small tunas historical data (statistical and biological data) from the main ICCAT fishing areas. The programme is ongoing and currently lists various activities in terms of sampling and biological works.
- ***Priority:*** High
- ***Leader/Participation:*** A consortium led by Spain (Univ. Girona) was set in 2018 for the collection of samples aiming biological studies (reproduction and aging) and stock differentiation.
- ***Timeframe:*** Ongoing work with annual updates scheduled to be provided to the SMT Species Group.

Revision of small tunas L/W relationships at stock level:

- ***Background/objectives:*** There are several L/W equations available for small tunas at local level, and several more are being currently developed by various CPCs/national scientists. The Group recommends that joint analyses are carried out using detailed observed data, so that L/W relations representative of the stocks at regional level can be presented and adopted by ICCAT.
- ***Priority:*** High
- ***Leader/Participation:*** EU-Spain, with collaboration of CPCs willing to participate/share observed L/W data from observer and sampling programmes. EU-Portugal, Maroc, Brazil has already committed to participate.
- ***Timeframe:*** The leader will circulate data template by September 2019. CPCs should submit data up to May 2020. A SCRS paper will be presented to the Species Groups in September 2020.

Updating the biological meta-database:

- ***Background/objectives:*** The SMT Group started in 2016 a biological meta-database. The Group recognized the importance to continuously update this database as new biological information becomes available, also developing criteria for replacing existing parameters when available. Such information is then provided to update the SMT executive summaries and will eventually be used for both qualitative and quantitative assessments.
- ***Priority:*** High
- ***Leader/Participation:*** EU.PRT, with collaboration of CPCs willing to participate, will continue to update the meta-database and provide updated information (in the form of SCRS papers) to the Species Group. The next update is planned for 2020 Species Group September meeting. Scientists that have access to recent literature on SMT biology that can inform this database are encouraged to send that information to the coordinator and the SMT chair
- ***Timeframe:*** A SCRS paper will be presented annually to the Species Groups or Intersessional meeting.

Updating and/or apply the Data-Limit Models:

- ***Background/objectives:*** The SMT Group started applying Data Limited methods in 2016 and, although the Group has improved in applying a range of models, the robustness still need to be evaluated before they can be used to provide management advice.
- ***Priority:*** High
- ***Leader/Participation:*** Brazil and Maroc will continue to update the application of Data-Limited methods to SMT, with collaboration of CPCs willing to participate.
- ***Timeframe:*** SCRS paper to be presented annually to species Group meetings or Intersessional meeting