

## REPORT OF THE 2017 SMALL TUNAS SPECIES GROUP INTERSESSIONAL MEETING (Miami, United States, 24-28 April 2017)

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

The Meeting was held at the University of Miami, Rosenstiel School of Marine and Atmospheric Science, in Miami from April 24 to 28, 2016. Dr Noureddine Abid (Morocco), the meeting Chairperson, opened the meeting and welcomed the participants (“the Group”). Dr Miguel Neves dos Santos, the ICCAT Scientific Coordinator, highlighted the importance of the work to be carried out by the Group during the meeting which aimed to provide management advice to the Commission. A significantly higher number of participants attended the meeting compared with previous years. He also thanked Dr David Die for hosting the meeting and all the arrangements made. The Chair proceeded to review the Agenda, which was adopted without modifications (**Appendix 1**).

The List of Participants is included in **Appendix 2**. The List of Documents and Presentations 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 participants served as rapporteurs:

| <i>Section</i>   | <i>Rapporteur</i>                    |
|------------------|--------------------------------------|
| Items 1, 8 and 9 | M. Neves dos Santos                  |
| Items 2.1 to 2.3 | L. Kell                              |
| Item 2.4         | W. Ingram                            |
| Item 3           | D. Macias                            |
| Item 4           | L. Kell and R. Sharma                |
| Item 5           | R. Sharma and M. Pons                |
| Item 6           | N. Abid, D. Die, M. Neves dos Santos |
| Item 7           | D. Die and N. Abid                   |

### 2. Review of fishery statistics

#### 2.1 Task I (catches) data

The Task I nominal catch (T1NC) statistics for small tuna by stock, flag and gear, are presented in **Table 1** and the cumulative catches are shown in **Figure 1**. The Secretariat informed the Group that these data were updated by incorporating the official catches for 2015 into T1NC. The Group revised the T1NC catches by species and noted that, despite the important progress made over recent years (i.e. by historical data recovery projects, special programs, work of national scientists, etc.), the majority of the species still have highly incomplete catch series (levels varying depending on the species) in the official ICCAT statistics. Continuing efforts are underway to recover some of these historical data under the SMTYP, however, these data need to be reviewed by SubComStat before they are officially incorporated into the T1NC statistics.

Of the total 13 species included in the small tuna species group, the seven most important ones represent more than 90% of Task I catches between 1950 and 2015. 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 12%, KGM (*Scomberomorus cavalla*) and SSM (*Scomberomorus maculatus*) both with 11%, and, BRS (*Scomberomorus brasiliensis*) and BLT (*Auxis rochei*) with 5% each. The remaining species (BLF: *Thunnus atlanticus*; MAW: *Scomberomorus tritor*; WAH: *Acanthocybium solandri*; DOL: *Coryphaena hippurus*; BOP: *Orcynopsis unicolor*; CER: *Scomberomorus regalis*) represent only 7% of the total catch. The unclassified small tuna species (SMT: small tunas; KGX: *Scomberomorus* spp.) represent less than 1% of total catches.

**Table 2** show the comparison between the previously available Task I information and the set revised using the most recent data obtained prior to the meeting.

The Secretariat reiterated the need to continue the work (minor improvements during the last year) of eliminating the major weaknesses of the T1NC statistics in relation to small tuna. Particularly due to incomplete T1NC data and the effect of the *carry overs* (provisional SCRS estimations – based on carrying forward the means obtained from catches from previous years – which aim to provide temporary overall estimates of biomass removals) on the official data. **Figure 2a** and **b** show the combined carry overs in Task I and the carry over ratios (%) by species respectively.

As shown in **Table 3**, in recent years (2009 to 2015) the ratio of T1NC *carry overs* in the catches of small tuna represent on average about 17% of the total Task I data. By species, this ratio is even higher (e.g. FRI with 21%, BLF with 35%, BRS with 28%), the situation was similar from 1992 to 2002. A further weakness is related to the lack of provision of a specific “fishing gear” code (i.e. UNCL and SURF in T1NC data source) for a large portion of T1NC. Before 1980 (small tuna catches were provided without gear from the FAO Yearbook and from joint ICCAT/GFCM meetings). T1NC catches with “unclassified” gears varies between 70% and 90% (**Figure 1**) before 1980. In the eighties and nineties, the ratio of “unknown” gear in T1NC catches dropped to about 50%. Only in recent years these ratio reached levels of less than 20%. This missing element in the T1NC catch series indicates a poor knowledge of the fleet structure (*métier* components) of a large portion of the ICCAT CPCs, and, could impose large limitations in future stock assessments. The details are presented in **Table 4** (cumulative catches in **Figure 3**).

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

Task II catch and effort (T2CE) and Task II size information (T2SZ) were presented to the Group and are presented in **Tables 5** and **6**, respectively. **Tables 5a** to **m** present the 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% 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. The Group noted that many gaps exist in these datasets and this is problematic for stock assessment purposes. The Group noted, however, that much observer data regarding size information exist and these data are being compiled by national scientists.

**Table 6** summarises all the T2SZ samples available in the ICCAT-DB in relation to small tuna species, i.e. number of fish and class range limits (min-max) by species, frequency type, flag and class interval. Values shaded in yellow show the samples recovered during 2015 (31% of the total of 3.1 million fish sampled).

## 2.3 Other information (tagging)

There are about 31,000 records (i.e. specimens) on conventional tagging for small tuna species registered in the ICCAT-DB system. The current situation is very similar (with only minor corrections made) to that presented at the 2016 small tuna intersessional meeting (Anon., 2016). Additional information has recently been made available as a result of the ongoing AOTTP tagging activities. Such information is provided under item 8.

## 2.4 Fishery indicators

Document SCRS/2017/047 presented updates on BLF catch, effort and size distribution from Venezuelan fisheries. Catches of BLF were reviewed from 1986 to 2015 for the Venezuelan industrial surface fleets (baitboat, purse seine) and the small scale fisheries (drift gillnet from “Playa Verde” and artisanal off-shore pelagic longline). The review included comparison on the statistics from different sources. Trends on catch and effort were analyzed by gear, month and year; the spatial and seasonal distribution of catches of large (mature) and small (immature) fish was also presented.

Document SCRS/2017/089 presented small tuna fishing in the west central Atlantic. WECAFC countries are poorly represented at the meetings of ICCAT Small Tuna Species Group (SMT). Yet a review of FAO's official statistics shows that of the 21 large pelagic species caught by these countries 11 of these are small tuna species. The small tuna harvests represent 60% of the pelagic landings in the WECAFC countries. Offshore pelagics are an important resource especially for small islands where they account for 23% of total landings and 10% for only small tunas. The landings of these species over the last decade are in decline and primarily in developing countries. Six species of small tuna are mainly landed by WECAFC countries. But in general, their exploitation results from 2 or 3 countries. On the other hand, dolphinfish and blackfin tuna are exploited by a large number of countries. The increase in landings of these two species over the last decade is likely the result of the recent development of the fishery associated with anchored FADs. In order to evaluate these resources at risk of increasing exploitation, it seems highly desirable for ICCAT to support the countries of the zone with the collaboration of regional and sub-regional fisheries organizations (WECAFC, CRFM, OSPESCA).

Document SCRS/2017/088 presented fishing techniques used in Martinique for the exploitation of large pelagic fish. In Martinique, there are two main techniques for fishing large pelagics: 1) those operating on free schools or around floating woods and 2) those carried out near anchored fish aggregating devices. The vessels that target them use several fishing gears during the same trip. These two techniques can also be implemented during the same trip. They can also be interrupted to capture offshore pelagics, such as flying fish, thus indicating the flexibility of the fleets. Each gear is used to target a group of species. However, the data currently collected at the landing points do not allow the catch to be attributed to each gear used during the trip. At present, the variety of gears used cannot be described from the ICCAT codes as well as the type of school exploited (driftwoods, free schools and anchored FADs). Therefore, consideration to review the ICCAT codes as relevant to describing the pelagic fisheries of the WECAFC region is noted. The results are disconnects of statistical declarations between neighboring Caribbean countries where the same fisheries are practiced. It is recommended to regularly carryout studies to enable the evolution of the fishing operations to be fully characterized.

Document SCRS/2017/090 presented annual indices of spawning biomass of little tunny and dolphinfish based on larval surveys in the Gulf of Mexico (1982-2015). Indices for little tunny were developed using catch rates of larvae sampled with both neuston and bongo gear, while those for dolphinfish were developed using catch rates of larvae sampled with only neuston gear. A delta-lognormal modeling approach was utilized, including the following covariates: time of day, season, area sampled, year, and gear. Model development details are covered in the document. CVs are relatively small (e.g. 0.1-0.3 on average for both species). However, the residuals for the lognormal submodels deviated some from a normal distribution. The Group recommended more research be conducted to investigate this issue. After investigation, the author found a coding problem that resulted in the non-normally distributed residuals. The issue was corrected, and the residuals for the lognormal submodels are now approximately normally distributed.

Documents SCRS/2017/094 and SCRS/2017/095 presented abundance indices of Atlantic Spanish mackerel and king mackerel larvae, respectively. The data were collected during SEAMAP Fall Plankton Surveys from 1986 to 2014 in the U.S. Gulf of Mexico. A delta-lognormal modeling approach was utilized, including the following covariates: time of day, season, region (east and west Gulf of Mexico), year, and water depth. Model development details are covered in the documents. CVs are relatively small (e.g. 0.2-0.4 for Atlantic Spanish mackerel and 0.1-0.3 on average for king mackerel) for larval indices. Year to year variability in spatial coverage during the Fall Plankton Survey was addressed by limiting observations to samples taken at SEAMAP stations that were sampled during at least 66% (14) of all years (21) for which there was consistent spatial coverage. Therefore, samples from 1988, 1989, 2002 and 2004 were dropped from further analyses; and only samples taken during the 1986-1987, 1990-1991, 1993-1997, 1999-2001, 2003, 2006-2007 and 2009-2014 surveys were used to calculate the Atlantic Spanish mackerel and king mackerel larval indices. The Group requested that those data dropped from the analyses to be included and the generalized linear models be allowed to account for missing coverage for those years as to provide indices contiguous in time. Also, the Group requested the inclusion of data from the other sampling seasons in the model development.

Document SCRS/2017/098 presented annual indices of spawning biomass of the genus *Auxis* based on larval surveys in the Gulf of Mexico (1982-2015). Indices were developed using catch rates of larvae sampled with both neuston and bongo gear. A delta-lognormal modeling approach was utilized, including the following covariates: time of day, season, area sampled, year, and gear. Model development details are covered in the document. CVs are relatively small (e.g. 0.1-0.3 on average). However, the residuals for the lognormal sub-model indicated a normal distribution. The Group indicated the importance of this index for future use in stock assessment.

The purpose of Presentation SCRS/P/2017/010 was to provide additional information on large pelagics including small tunas (*Thunnus obesus*, *Acanthocybium solandri*, *Katsuwonus pelamis*, *Euthynnus alletteratus*) fisheries in São Tomé e Príncipe. These tuna fisheries are mainly done by small artisanal and semi-industrial fishing vessels, due to the lack of industrial vessels. Additionally, an industrial fleet is operating in the national waters under contractual arrangements (EU, Japan and Chinese-Taipei).

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

Within this item of the agenda, seven documents and two presentations were provide to the Group.

Document SCRS/2017/060 presents the demographic structure of *Sarda sarda* in the southern part of the Atlantic coast of Morocco and determine the spawning season of the species in the area. The study concludes, based on monthly evolution of GSI and the monthly proportion of mature fish that the reproductive season of the species in the area was between May and July peaking in June. The minimum maturity size was estimated at 42 cm FL. The size at first maturity ( $L_{50}$ ) will need more extensive sampling in the future.

Document SCRS/2017/085 presents results on reproduction of *Thunnus atlanticus* in Martinique waters. As a results  $L_{50}$  was estimated to be 46 cm FL for female and 45 cm FL for male; sex-ratio was 1.7:1 male:female; and the reproductive season extends from March to August with a peak in June. The Group asked for the details of the maturity estimates which were promptly provided by the author. The comparison of these results with those of another (SCRS/2017/047) paper showed differences in the estimated  $L_{50}$ . The Group discussed the importance of using standardized methodologies so that the reproductive estimated parameters can be comparable between areas and/or stocks.

Document SCRS/2017/087 presents some preliminary aspects of the reproduction of *Auxis rochei* in the Gulf of Guinea. The author provided an easy key for differentiating the two species of the genus *Auxis*. Sex-ratio was dominated by males (71%), and the reproductive season in the area extends from July to September peaking in August. A more extensive sampling allow the authors improving these preliminary results in the future. The Group asked for methodological details which were provided by the author.

Document SCRS/2017/017 presents results on diet composition and feeding habits of *Euthynnus alletteratus* based on the study of stomach contents of 622 individuals caught in Tunisian waters. Among the stomachs examined, 287 were empty (%VI = 46.14). There were no significant variations in the vacuity index (%VI) depending on sex. A total of 22 prey taxa belonging to 14 families were identified: 15 fish species, 3 crustaceans, 3 molluscs and 1 vegetal species (*Posidonia oceanica*). This study was based mainly on the evolution of the index of relative importance (IRI) with respect to sex, fish size and season. According to the study the diet of the species is dominated by fish, mainly *Sardinella aurita*, followed by crustaceans. The presence of molluscs and vegetables in the stomach contents was anecdotic. Some differences were found in the diet related to sex, size, and season. As the main conclusion, little tunny is a carnivorous fish that feeds opportunistically on the more abundant prey. The Group discussed the seasonal differences in feed behavior and its possible relation to reproductive season. Also, the Group suggest that the increase of crustaceans in the diet of larger little tunny could be related to the major capacity to perform vertical migrations of older individuals.

Document SCRS/2017/018 provided Length-Weight Relationships (LWR) for three small tuna species (*Auxis rochei*, *Euthynnus alletteratus*, and *Sarda sarda*) of relevance in the commercial fisheries of Gulf of Gabes (southern Tunisia). A total of 574 fish caught by purse seine were sampled from January to December 2016. Significant length-weight relationships with high correlation coefficient were found for all species. The value of the parameter  $b$  varied between 2.792 to 2.885 for *Euthynnus alletteratus*; 3.035 to 3.296 for *Sarda sarda* and 3.304 to 3.678 for *Auxis rochei*. The Group asked for sample size for the LWR which were promptly provided by the author. The Group suggest that the author discuss these results comparing them with other LWR in the area. The Group also discussed how environmental, geographical, and seasonal related variables can affect the LWR parameters estimates.

Presentation SCRSP/2017/009 provided preliminary results on reproduction and growth of small tunas obtained in the framework of the SMTYP by the consortium Côte d'Ivoire-Senegal. Authors present a maturity ogive for *Sarda sarda*, growth parameters for *Euthynnus alletteratus* based on microstructure of otoliths, and fecundity estimates for frigate tuna, Atlantic bonito, and little tunny. The Group discussed several methodological issues and the authors remarked that these are preliminary results will be improved in the future.

Document SCRS/2017/096 presents some biological result on biology of *Sarda sarda* from Mauritanian coast obtained in the framework of the SMTYP. Regarding reproduction: Sex ratios were dominated by female, the  $L_{50}$  was estimated at 47.4 cm for female, and 51.4 cm for male, and minimum maturity size was also provided for male and female. Size distributions, length weight relationship and age estimates were also presented. Finally, results on diet composition indicated that the species feed mainly on fish: horse Mackerel as main prey and *Myctophidae* as secondary preys. The Group discussed that the analysis of the different estimates of size at first maturity show significant differences among countries. The estimated  $L_{50}$  varies from 38 cm in Senegal and Côte d'Ivoire to 49 cm in Mauritania and 42 cm in Moroccan Atlantic waters. These differences could be due in part to the size ranges analyzed that are dominated by small individuals in Senegal, and by large individuals in Mauritania and Morocco.

Presentation SCRS/P/2017/011 summarized the main results of a study on genetic structure of blackfin tuna in the western Atlantic Ocean using microsatellite markers. The study concludes that there were very weak levels of divergence among geographic samples, and that the species in the area is possibly structured according to an isolation by distance pattern. Regarding assessing population structure and estimating demographic parameters the dataset is still limited. Future improvements in the methodological approach could help to better understand the genetic structure of *Thunnus atlanticus* in the area. The Group discussed the weak genetic variability in small tuna species, and the few studies on stock structure in the small tuna species.

Document SCRS/2017/084 presents results on genetic structure of bullet tuna in the west Mediterranean and discuss their possible implications in fishery management. This study is based on the analysis of the mtDNA control region, of extensive sampling (n = 431) of bullet tuna caught along the north and south coast of the west Mediterranean and a location in the east Atlantic close to the Strait of Gibraltar. Population genetics results showed a clear heterogeneity across samples with genetic differentiation between Iberian Peninsula and Algerian and Tunisian samples, but the fish caught along the Iberian Peninsula coast failed to show genetic heterogeneity. This result suggests that the population structure of the species in the Mediterranean is more complex than initially expected. The study also revealed the presence of 7 individuals caught in Strait of Gibraltar (Ceuta) genetically identified as *Auxis thazard*. This result should be taken into consideration in the future conservation and management strategies. The Group highlighted the importance of these results that suggest the complexity in the structure in the stock. The Group suggested that this may indicate that research should be more localized for species with this type of complex stock structure. This could occur not only for bullet tuna but also for other small tuna. These results were similar to earlier research with bonito, which suggest the complexity of small tuna stock structure.

#### 4. Update on Ecological Risk Assessment

The ERA conducted in 2016 was updated to include gear interactions in SCRS/2017/086. This paper assessed the vulnerability of small tuna caught in the tuna longline and purse seine fisheries of the Atlantic Ocean. To do this life history traits for 10 stocks exploited in the Atlantic were compiled to estimate the productivity. Most of the life history traits values displays high variability and are also strongly correlated. The estimates of productivity ranged from 1.35 to 2.35. *Scomberomorus cavalla* and *Euthynnus alleteratus* were the least productive stocks while *Auxis rochei* was the most productive. *E. alleteratus* was the most susceptible and vulnerable stock in the purse seine fishery, whilst *Acanthocybium solandri* was the most susceptible and vulnerable stock in the longline fishery. Conversely, *A. rochei* and *A. thazard* were the less vulnerable stocks for the purse seine and longline fishery respectively. When the effect of multiple gears was accounted for, the top 3 stocks at risk in the Atlantic Ocean that should be prioritized for management action were *E. alleteratus*, *A. solandri* and *S. cavalla*.

The Group noted that wahoo and little tunny are the most susceptible species. This confirms previous conclusions of the Group about what stocks should be given high priority. The updated analysis using purse seine provides similar results to the longline results. The Group noted that susceptibility was based on overlaying the distribution of fleets by gear with species distribution maps, however, due to the scale of the aggregation of the data compared to the scale of fishing activity the actual interactions may be poorly estimated (e.g. Rijnsdorp, 1998), especially as a reporting bias may be evident in the analysis presented. Little tunas are seen primarily in the longline/purse-seine fleets.

The Group asked for clarification on where the growth rate came from i.e. the literature or from studies done in Atlantic. The authors noted that the data came from the meta-database that the Group has developed during recent years, and when data were missing a regression was used to estimate the missing values, however this will underestimate the uncertainty and hence the risk. The most important life history parameter is k (the growth coefficient of the Von Bertalanffy growth equation), therefore if k is not available for a stock it is strongly recommended to collect appropriate information, particularly as it is related to natural mortality (M).

The Group also noted that tagging data could be used to calculate k and selection patterns and could be used as part of the PSA. The Group noted that the proportion of the distribution vulnerable to a fishery should be based on data that mirrors the life stage distributions. The Group noted that they would use this approach to identify species to work on, and what data poor methods would be applicable. When doing so, the resolution of data is an important consideration, and currently the data are maybe too coarse to come up with detailed conclusions.

Management actions may vary depending on whether a stock at risk scored highly for productivity or susceptibility. In the former case for a stock with low productivity it will be important to implement appropriate assessment and monitoring procedures to identify overfishing and to implement mitigation measures since once overfished such stocks may take a long time to recover. While if a stock scores highly for susceptibility then it is important to identify the gears, areas and or season where the interactions occur, e.g. purse seiners fishing on FADs, so that appropriate mitigation measures can be put in place.

The next steps are to improve stock assessment and management advice frameworks, and requires: i) maintaining and improving the database of basic life history and fisheries attributes (FISHBASE); ii) improving Task II data, e.g. as length and CPUE data are required by many data poor methods; iii) replacing the carry overs with actual data in the Task I datasets since total removals are important inputs for many stock assessment methods (see **Table 7**) and management may require that catches are monitored and enforced; and iv) to extend the PSA to gillnets which is one of the main gears targeting small tuna stocks.

Once the Risk Analysis has identified priority stocks, the next steps are to evaluate appropriate assessment and management procedures.

## 5. Review of appropriate approaches for future assessment of small tuna stocks

Document SCRS/2017/076 summarized considerations related to conducting data-limited status determination for small tuna stocks in the ICCAT region. For data-limited fish stocks, there are many existing approaches to status determination. Some examples of these approaches were presented ranging from simple empirical approaches, which rely on changes in different fishery indicators, to more traditional approaches such as yield-per-recruit (YPR) analyses which enable the determination of biological reference points. Discussions centered on the need to evaluate data quality as a precursor to identifying viable data-limited methods. Simulation testing, through a variety of approaches, including management strategy evaluation, was suggested as a means to help demonstrate the usefulness of data-limited approaches and to evaluate the robustness of methods for application to small tunas.

The Group noted the Caribbean experience, i.e. the use of data limited tools to assess different management objectives. The Group needed to assess data quality and what approaches are feasible before pursuing the approach. If catch data are incomplete, then some of the methods presented would not work. The Group noted that selection of data limited methods is dependent on data availability and quality.

The Group noted that the catch rates or mean length data could be used for the provision of management advice. Indicators can be used to evaluate stock status relative to appropriate reference points. Incremental steps towards assessments of these stocks are suggested. The Group noted that there needs to be a process for identifying appropriate methods to assess stocks. These are the processes that will help improve the research programs to assess small tunas.

The Group discussed that the advice/methods to use were dependent on the quality of the data available. For example “How do we define the depletion levels for Catch – MSY methods?” Assumptions of the procedure are important, and guidelines for that needed to be established. The Group noted that data rich methods also rely implicitly on many assumptions. Two issues were noted by the Group: i) methods; and ii) the implementation of the methods, i.e. how to use the methods. Stock Assessment Methods Working Group should give guidance on implementation of these methods.

MSE could be used to evaluate robust empirical HCR. For example The CCSBT management Procedure (MP) is based on indices, i.e. an empirical harvest control rule. The Group noted that the empirical rules could be tested using the ALB MSE and assess what data can be used to work on a simple HCR and use it in management. While the ICCAT Commission is aware of empirical harvest control rules, these have not yet been tested and the ALB operating Model (OM) would be an ideal case to test this.

The best way to do this is to conduct Management Strategy Evaluation to determine the best combination of data, assessment and control measures. MSE can also be used to determine the benefits of improving data collection and the value of new information. Therefore **Table 7** summaries stock assessment methods for data poor stocks by data and information needs, and summaries the quantities estimated by each the stock assessment model. This can be used to design appropriate MSE studies. First, however, it is proposed to develop a generic MSE framework for data poor stocks then can then be applied on a case specific basis.

## **6. Develop strategies within the SMTYP program to improve collaboration among scientists and obtain the information required for assessment**

In 2015 the ICCAT Commission approved the budget requested by the Group for the SMTYP, this research programme included activities related to recovering statistical data for fleets that have not provided them to ICCAT. The provision of data on ICCAT Tasks I and II is part of the obligations of the Contracting Parties under the ICCAT Convention. The Group agreed that such research activity related to basic fishery data is of lower priority than the activity related to improving knowledge of biological parameters including size data which are necessary for small tunas' stock assessment.

In order to properly conduct stock assessment it is important to characterize and define stock boundaries for small tunas. Conducting such work at present would require a considerable period of time as well as monetary resources, much greater than those currently available. The Group therefore agreed that research effort under the current SMTYP should continue aiming at extending knowledge of key biological processes and parameters. The Group also agreed, however, that until the time substantial resources are made available to deeply investigate stock structure of small tunas, all available data that can be used to characterize stock structure should be reviewed and summarized to preliminarily define stock structure for each small tuna species. The biological sampling program takes opportunity to collect genetic samples along with biological samples for future analyses. The five major statistical areas (NE, SE, NW, SW and MED) defined by the SCRS should also be used for analyses purposes (e.g. data limited stock assessment methods).

In 2015, the Group established priorities as regards the biological parameters to be investigated for key species. In order to facilitate such priorities, the Group prepared a table summarizing information gaps for each species. During the 2016 SMT intersessional meeting, the Group updated this summary table with new information made available to the Group (see Table 2 to the Executive Summary – SMT in the *Report for Biennial Period 2016-2017, Part I (2016), Vol. 2*).

The Group reiterated that SMTYP should be a collaborative process, increasingly involving more scientists from all nations with major small tuna fisheries. Any additional CPCs that are interested in participating and can provide relevant samples/data and/or expertise in the projects are welcome. It is therefore of utmost importance that major activities are prioritized, aiming at a more efficient use of the available funds and promoting capacity building and synergies between research teams. Accordingly, it was also agreed that an effective manner to accomplish the objectives of the SMTYP would be to define specific research lines of activities, and for each of these a coordinator should be assigned. The coordinator should ensure that CPC scientists that have expressed willingness to be involved will work in a cooperative and coordinated manner on prioritized species of small tunas and one or more possible stock areas and involve as many CPCs as possible. For those species assigned as of high priority for each major area (West and East of the Atlantic, as well as the Mediterranean), and for which knowledge gaps have been clearly identified, specific activities/research lines shall be developed (including collection of historical data aiming revision of Task I and II data). It was emphasized that this mode of collaboration may not always focus on species that are of the highest priority to a given CPC, however, it is a way of building trust between research teams and should always lead to increases in the research capacity of the Working Group. It is hoped that, as trust is built through this process, the Group can more effectively address other species/stocks. It was also agreed that leaders of each research activity/research line should be as inclusive as possible in their selection of collaborators to make sure all that are interested in participating in the research are considered in the collaboration.

### ***Ongoing activities on 2017***

Following circular #0706/2017 call for tenders *ICCAT SMTYP data recovery plan and biological samples collection for growth and maturity studies*, the Secretariat informed the Group that in 2017 ICCAT received 6 bids, noting that the contents included in each of the offers were for different regions and therefore the bids were not considered to be competitive but rather complimentary. As a result 4 contracts were awarded for a total amount of about €42,000, which cover different aspects of the biology (growth and maturity) and genetic studies for key species, as well as the recovery of historical fisheries time series.

### ***Plan for 2018-2019***

After a brief review of the overall activities developed within SMTYP (projects), the Group discussed the new plans for the program and the motivation for continuation of this program for the following years (2018-2019). This was done based on the new framework defined above in terms of major research lines and identification of leading scientists.

The main activities that are planned within SMTYP for the years 2018-2019 are provided as **Appendix 5** to this report.

## 7. Recommendations

### 7.1 Recommendations with financial implications

- Continue with the ICCAT SMTYP research program activities in 2018-2019 to further improve the biological information (growth and maturity) for the priority species (the details of this program are given in the Small Tunas Work Plan for 2018-2019 attached as **Appendix 5**).
- The CPCs should make the necessary arrangements to ensure a large participation of their national scientists in small tunas species group meetings (both intersessional and species group meetings).
- Extend the species description chapter (ICCAT manual) for other SMT species such as wahoo (*Acanthocybium solandri*), serra Spanish mackerel (*Scomberomorus brasiliensis*), West African Spanish mackerel (*Scomberomorus tritor*) and dolphinfish (*Coryphaena hippurus*), and if possible update all other species chapters which were last updated in 2006, except for *Thunnus atlanticus*, which was updated in 2013.

### 7.2 Other recommendations

- 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, the replacement of the carry overs (**Table 4**), the split of “unclassified” gears by 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. These inconsistencies include, among others, outliers in size measurements (**Table 6**), heterogeneity in frequency types (FL, CFL, WGT, HGTW, etc.) and class types (1 cm, 2 cm and 5 cm; 1 kg, 2 kg and 5 kg), and heterogeneity in time (by year, by quarter) and geographical (1x1, 5x5, ICCAT sampling areas, “unknown”) strata. 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, FL 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 Group requests the help of the WGSAM in order to implement simulations to evaluate the robustness of candidate data-poor methods being proposed for providing management advice for small tunas. The Group is also interested in using simulations to evaluate how to reduce uncertainty by improving specific fishery and biological data on small tunas. The WGSAM should also investigate the benefits and constraints of an approach based on multiple data poor methods, including providing guidance on how to provide statistical weights to the results of different methods for the purposes of combining all results into one. Furthermore the Group seeks the help of the WGSAM and the Secretariat in providing guidance about the reliability of the algorithms used in the R-framework used for data poor methods. Specifically, the Group wants to know whether the WGSAM thinks that these algorithms have been sufficiently tested and reviewed, in spite of the fact they are not currently part of the ICCAT software catalog.
- The Commission and the SCRS have recognized the importance of assessing the impacts of purse seine fishing associated with FADs on non-target species of fish such as small tunas. Given the current focus on research on LTA the Group recommends to use this species as an indicator species to assess such impacts and the effects of Commission recommendations related to FAD management on the status of LTA.
- To extend the PSA to gillnets which is one of the main gears targeting small tuna stocks.



- The Secretariat should continue its work on the data recovery and inventory process of tagging data for small tuna. This process will require active participation of the national scientists that hold such data.
- In light of the very positive initial results of the tagging of small tunas accomplished by the AOTTP, the Group recommends to the AOTTP that, when possible, it should attempt to tag and release a wider size range of little tuna; this may allow increasing the number of days at liberty of the tagged fish and obtain more comprehensive information on growth. The Group also urges the AOTTP to ensure that sufficient LTA and WAH are tagged and that the numbers of fish released reach the original objectives of the program.
- The Group recommends that in order to increase the probability of collecting information on recaptures of tagged fish that the AOTTP pays special attention to enhancement of recovery efforts: for little tuna, focus should be on artisanal gillnets and purse seine fisheries. For wahoo, recovery efforts should focus on longline and handline fisheries.

## **8. Other matters**

### **8.1 Atlantic Tropical tuna Tagging Program (AOTTP)**

Presentation SCRS/P/2017/012 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 Small Tunas Species Group, to focus on only 2 species, i.e. little tunny (*Euthynnus alletteratus*) and wahoo (*Acanthocybium solandri*) to avoid diluting effort. AOTTP tagging activities began in the Azores and have so far covered the Canary Islands, West and South Africa and Brazil. A total of 704 little tunny were tagged off West Africa between August 2016 and March 2017, with 92 tags being recovered so far. This converts to a 14% 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 (241 days) is an individual tagged at 14.02 (Lat.) and -17.55 (Long.) on 11 July 2016, which grew from 50 to 55 cm and migrated 104 NMs. Thus far only a single wahoo has been tagged by AOTTP, but as activities transfer to the western Atlantic it is anticipated that this will increase. Data will be available for detailed analyses after approval by ICCAT in September 2017.

The Group noted the tagging activities related to the little tunny off the West African coast and expects that since tagging on the western Atlantic has started it will allow for an important increase of wahoo tagging. The Group also noted the relevance of some of the other information gathered from the recovery activities for little tunny; this will help fulfil some of the key knowledge gaps for this species, namely regarding input data for the ongoing ecological risk assessment work.

A discussion was held on how AOTTP activities could assist the Group in fulfilling their research priorities, noting that AOTTP major activities relate to tropical tuna species. Specific requests were discussed and included under item 7.

### **8.2 Small tunas Executive Summary**

The Small Tuna Executive Summary was reviewed, updated and adopted by the Group. However, catch tables and figures by species will be updated by the Secretariat prior to the Species Groups meeting in September.

### **8.3 Workplan**

During the meeting, the Group also discussed and adopted the workplan for the period 2018-2019 (**Appendix 5**).

## **9. Adoption of the report and closure**

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

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

|      | BON   |       | LTA   |      | FRI   | KGM   | SSM   | BRS   | BLT   | BLF  | MAW  | WAH  | DOL  | KGX  | BOP  |      | CER | SLT |
|------|-------|-------|-------|------|-------|-------|-------|-------|-------|------|------|------|------|------|------|------|-----|-----|
| Year | ATL   | MED   | ATL   | MED  | ATL   | A+M   | A+M   | A+M   | A+M   | A+M  | A+M  | A+M  | A+M  | A+M  | ATL  | MED  | A+M | A+M |
| 1950 | 1458  | 483   | 3136  | 156  | 5527  | 741   | 2803  | 3000  | 751   | 300  |      |      |      | 1100 | 100  |      |     |     |
| 1951 | 1727  | 413   | 669   | 251  | 3801  | 1425  | 3946  | 3000  | 424   | 300  |      |      |      | 1100 | 100  |      |     |     |
| 1952 | 3334  | 327   | 2539  | 14   | 1900  | 1064  | 3687  | 3000  | 212   | 300  |      |      |      | 1600 | 100  |      |     |     |
| 1953 | 4486  | 6795  | 3335  | 44   | 9798  | 1177  | 3080  | 2900  | 794   | 300  |      |      |      | 1600 | 400  |      |     |     |
| 1954 | 2037  | 18436 | 4936  | 135  | 8734  | 909   | 2414  | 3200  | 689   | 400  |      |      | 191  | 1600 | 400  |      |     |     |
| 1955 | 4270  | 56207 | 4250  | 60   | 6665  | 1178  | 2284  | 3900  | 1072  | 100  |      |      | 151  | 2300 | 400  |      |     |     |
| 1956 | 3166  | 58178 | 2059  | 94   | 2618  | 1651  | 3566  | 2900  | 1392  | 300  |      |      | 140  | 2300 | 200  |      |     |     |
| 1957 | 4799  | 44127 | 2236  | 22   | 5924  | 1539  | 3693  | 2700  | 32    | 100  |      |      | 101  | 2500 | 100  |      |     |     |
| 1958 | 4769  | 28626 | 3359  | 47   | 8640  | 1485  | 5172  | 3000  | 1729  | 500  |      |      | 237  | 3400 | 2700 |      |     |     |
| 1959 | 6331  | 11530 | 9660  | 11   | 6104  | 1575  | 4444  | 3200  | 90    | 600  |      |      | 260  | 3700 | 1000 |      |     |     |
| 1960 | 6366  | 34361 | 3000  | 13   | 7279  | 2672  | 7118  | 4100  | 1540  | 600  |      |      | 306  | 1500 | 1000 |      |     |     |
| 1961 | 4868  | 45812 | 2452  | 24   | 6453  | 2741  | 7672  | 3500  | 3609  | 400  |      |      | 341  | 1600 | 2200 |      |     |     |
| 1962 | 7285  | 7527  | 5089  | 31   | 4185  | 2888  | 8355  | 3300  | 3893  | 700  |      |      | 560  | 1600 | 3000 |      |     |     |
| 1963 | 5349  | 22837 | 3968  | 18   | 3568  | 3312  | 7835  | 3300  | 4310  | 788  |      |      | 588  | 1500 | 3100 |      |     |     |
| 1964 | 3342  | 13489 | 1653  | 48   | 4022  | 2783  | 6148  | 3900  | 2801  | 776  |      |      | 403  | 1800 | 2300 |      |     |     |
| 1965 | 4374  | 27004 | 4078  | 42   | 6888  | 3183  | 8717  | 3200  | 2604  | 712  |      |      | 381  | 1800 | 216  | 1    |     |     |
| 1966 | 7023  | 22113 | 3274  | 27   | 4477  | 2950  | 10016 | 3500  | 2765  | 662  |      |      | 411  | 1900 | 339  | 1    |     |     |
| 1967 | 7942  | 41206 | 3978  | 38   | 6972  | 3871  | 9783  | 3000  | 4628  | 896  |      |      | 514  | 2100 | 684  | 48   |     |     |
| 1968 | 5679  | 26268 | 3003  | 168  | 5500  | 5322  | 12012 | 800   | 3139  | 683  | 1800 | 100  | 391  | 2100 | 228  | 4    | 100 |     |
| 1969 | 6065  | 55612 | 2599  | 951  | 13416 | 5414  | 11180 | 1300  | 2793  | 753  | 2700 |      | 197  | 3400 | 1341 | 3    | 100 |     |
| 1970 | 8002  | 20681 | 7676  | 960  | 8185  | 6489  | 12484 | 3368  | 3383  | 1952 | 200  | 378  | 276  | 500  | 806  | 3    | 500 |     |
| 1971 | 15692 | 28230 | 4838  | 866  | 6209  | 6420  | 10713 | 3154  | 4107  | 1875 | 1300 | 381  | 294  | 400  | 683  | 7    | 800 |     |
| 1972 | 8754  | 16225 | 2237  | 904  | 10180 | 7365  | 11956 | 4810  | 3478  | 1895 | 2100 | 381  | 229  | 300  | 310  | 6    | 800 |     |
| 1973 | 6069  | 6254  | 1542  | 1061 | 6641  | 9717  | 13093 | 6946  | 3569  | 936  | 1600 | 280  | 440  | 500  | 102  | 3    | 780 |     |
| 1974 | 13679 | 7693  | 4196  | 1304 | 9582  | 13644 | 12226 | 8750  | 4354  | 1062 | 4713 | 391  | 477  | 508  | 143  | 7    | 619 |     |
| 1975 | 9571  | 6033  | 7657  | 1386 | 7886  | 9048  | 13058 | 5039  | 2644  | 815  | 1140 | 326  | 422  | 838  | 84   |      | 620 |     |
| 1976 | 9490  | 6498  | 8373  | 2028 | 6457  | 8293  | 12307 | 2272  | 3290  | 1026 | 1901 | 379  | 493  | 502  | 212  |      | 565 |     |
| 1977 | 11977 | 8697  | 5845  | 2499 | 16611 | 8732  | 12218 | 3188  | 3404  | 1251 | 2572 | 393  | 370  | 471  | 321  | 135  | 629 |     |
| 1978 | 7854  | 9417  | 15138 | 2495 | 4776  | 6769  | 11528 | 3484  | 3567  | 1341 | 6716 | 452  | 235  | 424  | 817  | 153  | 698 |     |
| 1979 | 6485  | 13485 | 11803 | 2870 | 8868  | 11450 | 10899 | 3722  | 3707  | 1205 | 4167 | 760  | 369  | 197  | 464  | 28   | 586 |     |
| 1980 | 12568 | 18546 | 16440 | 2774 | 16960 | 15656 | 13945 | 5617  | 3952  | 1175 | 4921 | 610  | 249  | 214  | 698  |      | 604 |     |
| 1981 | 10879 | 28167 | 14160 | 1446 | 12759 | 18513 | 11164 | 5841  | 3677  | 1973 | 2742 | 2920 | 177  | 339  | 1448 |      | 628 |     |
| 1982 | 13456 | 28937 | 13723 | 2480 | 19755 | 18149 | 13633 | 6019  | 6043  | 1941 | 5311 | 2280 | 402  | 283  | 584  |      | 687 |     |
| 1983 | 6998  | 35545 | 21018 | 1561 | 16662 | 14607 | 9574  | 6632  | 5820  | 1738 | 4689 | 2366 | 441  | 20   | 38   |      | 677 |     |
| 1984 | 6918  | 15058 | 18410 | 1650 | 19746 | 13182 | 11362 | 8129  | 6337  | 1908 | 4482 | 2159 | 566  | 485  | 49   |      | 680 |     |
| 1985 | 7149  | 17959 | 10625 | 2040 | 17753 | 9964  | 11590 | 3501  | 5240  | 1403 | 3941 | 920  | 464  | 22   | 124  | 9    | 574 |     |
| 1986 | 6163  | 15428 | 11225 | 2166 | 15478 | 13990 | 14207 | 6549  | 5057  | 2822 | 3180 | 1151 | 361  | 149  | 86   | 1    | 500 |     |
| 1987 | 7370  | 22317 | 18070 | 2424 | 21193 | 13792 | 14461 | 6212  | 3739  | 3462 | 1721 | 1235 | 286  | 261  | 538  | 26   | 392 |     |
| 1988 | 20727 | 24028 | 23607 | 2405 | 20573 | 14331 | 12671 | 9510  | 6483  | 3322 | 3811 | 1635 | 264  | 491  | 1474 | 8    | 219 |     |
| 1989 | 17671 | 11955 | 28011 | 2035 | 16411 | 12153 | 13845 | 10778 | 7110  | 2834 | 2808 | 1527 | 306  | 105  | 1109 | 7    | 234 |     |
| 1990 | 6811  | 22097 | 12535 | 2617 | 16738 | 10420 | 12782 | 7698  | 11994 | 3888 | 6629 | 1498 | 260  | 131  | 436  | 37   | 225 |     |
| 1991 | 8079  | 25255 | 10771 | 2315 | 10356 | 13241 | 15318 | 8856  | 8777  | 4202 | 3652 | 1721 | 291  | 225  | 507  | 101  | 375 |     |
| 1992 | 6881  | 15111 | 22447 | 1755 | 6367  | 14691 | 16285 | 6051  | 5714  | 4353 | 2423 | 1835 | 188  | 266  | 465  | 176  | 390 |     |
| 1993 | 4531  | 25997 | 15296 | 1258 | 12678 | 16331 | 16317 | 8049  | 3420  | 3535 | 1723 | 2671 | 174  | 301  | 378  | 252  | 450 |     |
| 1994 | 6037  | 15682 | 12978 | 1197 | 8407  | 14777 | 14490 | 7161  | 5300  | 2719 | 1138 | 2143 | 334  | 508  | 615  | 176  | 490 |     |
| 1995 | 6030  | 15189 | 10934 | 1894 | 7535  | 14930 | 13697 | 7006  | 4301  | 4051 | 1808 | 2408 | 334  | 512  | 588  | 115  | 429 |     |
| 1996 | 7939  | 17195 | 12138 | 2116 | 13809 | 17782 | 16571 | 8435  | 5909  | 4488 | 2831 | 2515 | 307  | 824  | 2064 | 132  | 279 |     |
| 1997 | 10340 | 14078 | 14746 | 1601 | 15055 | 19660 | 15403 | 8004  | 3070  | 3258 | 1415 | 3085 | 295  | 156  | 254  | 227  | 250 |     |
| 1998 | 15523 | 29730 | 14668 | 2914 | 15872 | 16394 | 8641  | 7923  | 2309  | 3395 | 1482 | 2488 | 363  | 251  | 47   | 130  | 250 |     |
| 1999 | 9143  | 28170 | 12515 | 2876 | 13004 | 17717 | 9837  | 5754  | 2646  | 3203 | 909  | 2957 | 349  | 1    | 651  | 217  |     | 2   |
| 2000 | 5179  | 21972 | 15003 | 3294 | 12918 | 16161 | 8220  | 4785  | 3912  | 2483 | 1219 | 2020 | 234  | 229  | 1062 | 145  | 3   | 1   |
| 2001 | 5400  | 22237 | 15804 | 2863 | 12788 | 15360 | 8383  | 4553  | 5796  | 4034 | 828  | 2296 | 303  | 48   | 858  | 154  | 5   | 0   |
| 2002 | 8864  | 15717 | 16810 | 2643 | 11635 | 17258 | 9414  | 7750  | 6041  | 4756 | 1345 | 2202 | 347  |      | 786  | 137  | 1   | 0   |
| 2003 | 3307  | 11117 | 16029 | 684  | 4527  | 15863 | 9793  | 5137  | 3794  | 1303 | 550  | 2049 | 564  | 15   | 713  | 23   | 2   |     |
| 2004 | 4584  | 11248 | 14500 | 1439 | 6446  | 12830 | 8119  | 3410  | 6223  | 1926 | 285  | 2596 | 2632 |      | 573  | 8    | 1   |     |
| 2005 | 4391  | 74376 | 10461 | 1042 | 4905  | 11766 | 10470 | 3712  | 4231  | 1031 | 443  | 2456 | 2772 | 1    | 215  | 2    | 1   |     |
| 2006 | 8345  | 31751 | 7642  | 1605 | 6606  | 8185  | 6282  | 3587  | 4090  | 1937 | 276  | 1809 | 1295 | 93   | 32   |      | 1   |     |
| 2007 | 5542  | 8637  | 15191 | 1687 | 6786  | 17936 | 6102  | 2253  | 5459  | 1927 | 435  | 2568 | 4753 | 16   | 875  | 172  | 0   |     |
| 2008 | 4922  | 10042 | 11256 | 2259 | 6773  | 7344  | 5900  | 3305  | 6825  | 1669 | 422  | 2158 | 1042 | 0    | 426  | 107  | 0   |     |
| 2009 | 11162 | 10019 | 12961 | 2100 | 10465 | 12533 | 6197  | 2681  | 5557  | 1442 | 460  | 2354 | 5381 | 2    | 442  | 6    | 0   |     |
| 2010 | 8281  | 12584 | 16728 | 2170 | 10809 | 9742  | 5974  | 2871  | 7952  | 1548 | 2079 | 2032 | 9889 | 20   | 273  | 14   | 0   |     |
| 2011 | 10524 | 14442 | 14945 | 3668 | 11134 | 10868 | 5931  | 2214  | 9483  | 1533 | 1106 | 2237 | 7187 | 114  | 335  | 42   | 1   |     |
| 2012 | 5684  | 39321 | 13650 | 4186 | 11897 | 12762 | 5185  | 613   | 6188  | 1529 | 930  | 3667 | 3647 | 110  | 657  | 24   | 0   |     |
| 2013 | 5861  | 18365 | 15619 | 4633 | 14570 | 12248 | 5459  | 847   | 7247  | 1243 | 2865 | 3530 | 5162 | 117  | 641  | 21   | 0   |     |
| 2014 | 3538  | 23352 | 8071  | 3605 | 12850 | 4432  | 3857  | 698   | 3916  | 874  | 1009 | 2912 | 5103 | 127  | 939  | 13   | 0   |     |
| 2015 | 4119  | 8288  | 7596  | 6472 | 7411  | 3642  | 4078  | 389   | 8707  | 954  | 712  | 1844 | 5026 | 68   | 1161 | 1078 | 1   |     |

## SMALL TUNAS SPECIES GROUP INTERSESSIONAL MEETING – MIAMI 2017

**Table 2.** Task I (t) of small tuna species: Reported data (official) versus SCRS estimations (carry overs) and respective carry over ratio (%) by year and species.

[illegible]

## SMALL TUNAS SPECIES GROUP INTERSESSIONAL MEETING – MIAMI 2017

**Table 3.** Task I catches (t) of small tuna species: Information with gear versus information without gear (UNCL), and respective ratio (%) of catches with UNCL gear, by species and year.

| Year | Catches (t) with gear |     |      |       |     |     |     |     |       |     |      |     |       |     |       | Catches (t) without gear (UNCL) |      |      |       |      |      |     |     |     |       |      |       |      |       |       | Ratios (%) of Task I without gear (UNCL) |     |     |     |     |     |     |     |     |     |     |     |     |     |       |    |    |
|------|-----------------------|-----|------|-------|-----|-----|-----|-----|-------|-----|------|-----|-------|-----|-------|---------------------------------|------|------|-------|------|------|-----|-----|-----|-------|------|-------|------|-------|-------|------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|----|----|
|      | FRI                   | BLF | BLT  | BON   | BOP | BRS | CER | DOL | KGM   | KGX | LTA  | MAW | SSM   | WAH | total | FRI                             | BLF  | BLT  | BON   | BOP  | BRS  | CER | DOL | KGM | KGX   | LTA  | MAW   | SSM  | WAH   | total | FRI                                      | BLF | BLT | BON | BOP | BRS | CER | DOL | KGM | KGX | LTA | MAW | SSM | WAH | total |    |    |
| 1950 | 27                    |     | 751  | 341   |     |     |     |     | 741   |     | 292  |     | 2803  |     | 4955  | 5500                            | 300  |      | 1600  | 100  | 3000 |     |     |     | 1100  | 3000 |       |      | 14600 | 100   | 100                                      | 0   | 82  | 100 | 100 |     | 0   | 100 | 91  |     | 0   |     | 75  |     |       |    |    |
| 1951 | 1                     |     | 424  | 240   |     |     |     |     | 1425  |     | 420  |     | 3946  |     | 6456  | 3800                            | 300  |      | 1900  | 100  | 3000 |     |     |     | 1100  | 500  |       |      | 10700 | 100   | 100                                      | 0   | 89  | 100 | 100 |     | 0   | 100 | 54  |     | 0   |     | 62  |     |       |    |    |
| 1952 |                       |     | 212  | 161   |     |     |     |     | 1064  |     | 353  |     | 3687  |     | 5477  | 1900                            | 300  |      | 3500  | 100  | 3000 |     |     |     | 1600  | 2200 |       |      | 12600 | 100   | 100                                      | 0   | 96  | 100 | 100 |     | 0   | 100 | 86  |     | 0   |     | 70  |     |       |    |    |
| 1953 | 198                   |     | 794  | 381   |     |     |     |     | 1177  |     | 79   |     | 3080  |     | 5709  | 9600                            | 300  |      | 10900 | 400  | 2900 |     |     |     | 1600  | 3300 |       |      | 29000 | 98    | 100                                      | 0   | 97  | 100 | 100 |     | 0   | 100 | 98  |     | 0   |     | 84  |     |       |    |    |
| 1954 | 134                   |     | 689  | 773   |     |     |     | 191 | 909   |     | 166  |     | 2414  |     | 5276  | 8600                            | 400  |      | 19700 | 400  | 3200 |     |     |     | 1600  | 4905 |       |      | 38805 | 98    | 100                                      | 0   | 96  | 100 | 100 |     | 0   | 100 | 97  |     | 0   |     | 88  |     |       |    |    |
| 1955 | 165                   |     | 1072 | 677   |     |     |     | 151 | 1178  |     | 106  |     | 2284  |     | 5633  | 6500                            | 100  |      | 59800 | 400  | 3900 |     |     |     | 2300  | 4204 |       |      | 77204 | 98    | 100                                      | 0   | 99  | 100 | 100 |     | 0   | 100 | 98  |     | 0   |     | 93  |     |       |    |    |
| 1956 | 1482                  |     | 1392 | 650   |     |     |     | 140 | 1651  |     | 2003 |     | 3566  |     | 10884 | 1136                            | 300  |      | 60694 | 200  | 2900 |     |     |     | 2300  | 150  |       |      | 67680 | 43    | 100                                      | 0   | 99  | 100 | 100 |     | 0   | 100 | 7   |     | 0   |     | 86  |     |       |    |    |
| 1957 | 603                   |     | 32   | 1262  |     |     |     | 101 | 1539  |     | 2204 |     | 3693  |     | 9434  | 5321                            | 100  |      | 47664 | 100  | 2700 |     |     |     | 2500  | 54   |       |      | 58439 | 90    | 100                                      | 0   | 97  | 100 | 100 |     | 0   | 100 | 2   |     | 0   |     | 86  |     |       |    |    |
| 1958 | 1899                  |     | 1700 | 981   |     |     |     | 237 | 1485  |     | 3345 |     | 5172  |     | 14819 | 6741                            | 500  | 29   | 32414 | 2700 | 3000 |     |     |     | 3400  | 61   |       |      | 48845 | 78    | 100                                      | 2   | 97  | 100 | 100 |     | 0   | 100 | 2   |     | 0   |     | 77  |     |       |    |    |
| 1959 | 1511                  |     | 72   | 636   |     |     |     | 260 | 1575  |     | 9385 |     | 3274  |     | 16713 | 4593                            | 600  | 18   | 17225 | 1000 | 3200 |     |     |     | 3700  | 286  |       | 1170 | 31792 | 75    | 100                                      | 20  | 96  | 100 | 100 |     | 0   | 100 | 3   |     | 26  |     | 66  |     |       |    |    |
| 1960 | 1726                  |     | 923  | 774   |     |     |     | 306 | 1672  |     | 3004 |     | 3581  |     | 11986 | 5553                            | 600  | 617  | 39953 | 1000 | 4100 |     |     |     | 1000  | 1500 | 9     | 3537 | 57869 | 76    | 100                                      | 40  | 98  | 100 | 100 |     | 0   | 37  | 100 | 0   |     | 50  |     | 83  |       |    |    |
| 1961 | 2794                  |     | 35   | 491   |     |     |     | 341 | 1741  |     | 2430 |     | 3372  |     | 11204 | 3659                            | 400  | 3574 | 50189 | 2200 | 3500 |     |     |     | 1000  | 1600 | 46    | 4300 | 70468 | 57    | 100                                      | 99  | 99  | 100 | 100 |     | 0   | 36  | 100 | 2   |     | 56  |     | 86  |       |    |    |
| 1962 | 1868                  |     | 57   | 851   |     |     |     | 560 | 1888  |     | 4866 |     | 4355  |     | 14445 | 2317                            | 700  | 3836 | 13961 | 3000 | 3300 |     |     |     | 1000  | 1600 | 254   | 4000 | 33969 | 55    | 100                                      | 99  | 94  | 100 | 100 |     | 0   | 35  | 100 | 5   |     | 48  |     | 70  |       |    |    |
| 1963 | 987                   |     | 611  | 1707  |     |     |     | 588 | 2312  |     | 3752 |     | 3535  |     | 13492 | 2581                            | 788  | 3699 | 26479 | 3100 | 3300 |     |     |     | 1000  | 1500 | 234   | 4300 | 46980 | 72    | 100                                      | 86  | 94  | 100 | 100 |     | 0   | 30  | 100 | 6   |     | 55  |     | 78  |       |    |    |
| 1964 | 1281                  |     | 480  | 1177  |     |     |     | 403 | 1583  |     | 1413 |     | 2748  |     | 9085  | 2741                            | 776  | 2321 | 15654 | 2300 | 3900 |     |     |     | 1200  | 1800 | 288   | 3400 | 34379 | 68    | 100                                      | 83  | 93  | 100 | 100 |     | 0   | 43  | 100 | 17  |     | 55  |     | 79  |       |    |    |
| 1965 | 3659                  |     | 705  | 1110  | 1   |     |     | 381 | 2083  |     | 2900 |     | 3634  |     | 14473 | 3229                            | 712  | 1899 | 30268 | 216  | 3200 |     |     |     | 1100  | 1800 | 1220  | 5083 | 48726 | 47    | 100                                      | 73  | 96  | 100 | 100 |     | 0   | 35  | 100 | 30  |     | 58  |     | 77  |       |    |    |
| 1966 | 2535                  |     | 741  | 2766  |     |     |     | 411 | 2050  |     | 2852 |     | 4296  |     | 15651 | 1942                            | 662  | 2024 | 26370 | 340  | 3500 |     |     |     | 900   | 1900 | 449   | 5720 | 43807 | 43    | 100                                      | 73  | 91  | 100 | 100 |     | 0   | 31  | 100 | 14  |     | 57  |     | 74  |       |    |    |
| 1967 | 2624                  |     | 760  | 2058  |     |     |     | 514 | 2771  |     | 3800 |     | 3576  |     | 16103 | 4348                            | 896  | 3868 | 47090 | 732  | 3000 |     |     |     | 1100  | 2100 | 216   | 6207 | 69557 | 62    | 100                                      | 84  | 96  | 100 | 100 |     | 0   | 28  | 100 | 5   |     | 63  |     | 81  |       |    |    |
| 1968 | 3664                  |     | 1040 | 1206  |     |     |     | 591 | 2822  |     | 2699 |     | 5342  |     | 17164 | 1836                            | 683  | 2099 | 30741 | 232  | 800  | 100 |     |     | 2500  | 2100 | 472   | 1800 | 6670  | 100   | 100                                      | 67  | 96  | 100 | 100 | 100 | 0   | 47  | 100 | 15  | 100 | 56  | 100 | 74  |       |    |    |
| 1969 | 4513                  |     | 630  | 3680  |     |     |     | 197 | 2814  |     | 2006 |     | 4951  |     | 18791 | 8903                            | 753  | 2163 | 57997 | 1344 | 1300 | 100 |     |     | 2600  | 3400 | 1544  | 2700 | 6229  | 89033 | 66                                       | 100 | 77  | 94  | 100 | 100 | 100 |     | 0   | 48  | 100 | 43  | 100 | 56  |       | 83 |    |
| 1970 | 4687                  |     | 250  | 5112  |     |     |     | 276 |       |     | 3738 |     | 900   |     | 14963 | 3498                            | 1952 | 3133 | 23571 | 809  | 3368 | 500 |     |     | 6489  | 500  | 4898  | 200  | 11584 | 378   | 60880                                    | 43  | 100 | 93  | 82  | 100 | 100 | 100 |     | 0   | 100 | 57  | 100 | 93  | 100   | 80 |    |
| 1971 | 1556                  |     | 390  | 4321  |     |     |     | 294 | 3     |     | 2701 |     | 500   | 3   | 9768  | 4653                            | 1875 | 3717 | 39601 | 690  | 3154 | 800 |     |     | 6417  | 400  | 3003  | 1300 | 10213 | 378   | 76201                                    | 75  | 100 | 91  | 90  | 100 | 100 |     | 0   | 100 | 53  | 100 | 95  | 99  | 89    |    |    |
| 1972 | 2526                  |     | 421  | 3754  |     |     |     | 229 |       |     | 1111 |     | 500   | 3   | 8544  | 7654                            | 1895 | 3057 | 21225 | 316  | 4810 | 800 |     |     | 7365  | 300  | 2030  | 2100 | 11456 | 378   | 63386                                    | 75  | 100 | 88  | 85  | 100 | 100 | 100 |     | 0   | 100 | 65  | 100 | 96  | 99    | 88 |    |
| 1973 | 2891                  |     | 402  | 1911  |     |     |     | 440 |       |     | 967  |     | 700   | 2   | 7313  | 3750                            | 936  | 3167 | 10412 | 105  | 6946 | 780 |     |     | 9717  | 500  | 1636  | 1600 | 12393 | 278   | 52220                                    | 56  | 100 | 89  | 84  | 100 | 100 | 100 |     | 0   | 100 | 63  | 100 | 95  | 99    | 88 |    |
| 1974 | 1555                  | 21  | 830  | 2841  |     |     |     | 477 |       |     | 1282 |     | 600   | 9   | 7615  | 8027                            | 1041 | 3524 | 18531 | 150  | 8750 | 619 |     |     | 13644 | 508  | 4218  | 4713 | 11626 | 382   | 75733                                    | 84  | 98  | 81  | 87  | 100 | 100 | 100 |     | 0   | 100 | 100 | 77  | 100 | 95    | 98 | 91 |
| 1975 | 456                   | 16  | 136  | 461   |     |     |     | 422 | 26    |     | 741  |     | 601   | 21  | 2880  | 7430                            | 799  | 2508 | 15143 | 84   | 5039 | 620 |     |     | 9022  | 838  | 8302  | 1140 | 12457 | 305   | 63687                                    | 94  | 98  | 95  | 97  | 100 | 100 | 100 |     | 0   | 100 | 100 | 92  | 100 | 95    | 94 | 96 |
| 1976 | 314                   | 10  | 463  | 1335  |     |     |     | 493 | 466   |     | 391  |     | 500   | 29  | 4001  | 6143                            | 1016 | 2827 | 14653 | 212  | 2272 | 565 |     |     | 7827  | 502  | 10010 | 1901 | 11807 | 350   | 60085                                    | 95  | 99  | 86  | 92  | 100 | 100 | 100 |     | 0   | 94  | 100 | 96  | 100 | 96    | 92 | 94 |
| 1977 | 408                   | 9   | 568  | 2848  |     |     |     | 370 | 988   |     | 1152 |     | 400   | 49  | 6788  | 16203                           | 1242 | 2836 | 17826 | 456  | 3188 | 629 |     |     | 7744  | 471  | 7192  | 2572 | 11818 | 349   | 72526                                    | 98  | 99  | 83  | 86  | 100 | 100 | 100 |     | 0   | 89  | 100 | 86  | 100 | 97    | 89 | 91 |
| 1978 | 1690                  | 7   | 366  | 3260  |     |     |     | 235 | 1914  |     | 6429 |     | 5738  | 33  | 19672 | 3086                            | 1334 | 3201 | 14011 | 970  | 3484 | 698 |     |     | 4855  | 424  | 11204 | 6716 | 5790  | 491   | 56192                                    | 65  | 99  | 90  | 81  | 100 | 100 | 100 |     | 0   | 72  | 100 | 64  | 100 | 50    | 93 | 74 |
| 1979 | 1499                  | 7   | 257  | 2529  | 1   |     |     | 269 | 8530  |     | 2007 | 23  | 6151  | 44  | 21417 | 7369                            | 1198 | 3450 | 17441 | 491  | 3722 | 586 |     |     | 2920  | 197  | 12666 | 4144 | 4748  | 716   | 59648                                    | 63  | 99  | 93  | 87  | 100 | 100 | 100 |     | 0   | 26  | 100 | 86  | 99  | 44    | 94 | 74 |
| 1980 | 6360                  | 6   | 64   | 18525 | 2   |     |     | 249 | 12623 |     | 3689 | 35  | 11915 | 82  | 53549 | 10600                           | 1169 | 3888 | 12589 | 697  | 5617 | 604 |     |     | 3033  | 214  | 15525 | 4886 | 2030  | 528   |                                          |     |     |     |     |     |     |     |     |     |     |     |     |     |       |    |    |

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**Table 4.** Carry overs (SCRS estimations) in Task I catches (t) of small tuna species, requiring CPCs revision.

| a) Prior to 1980 |             |         | 1950 |      |      |      |      | 1960 |      |      |      |      | 1970 |      |      |      |      |      |      |      |      |      |      |
|------------------|-------------|---------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Status           | Flag        | Species | 1951 | 1953 | 1954 | 1956 | 1957 | 1961 | 1962 | 1965 | 1966 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 |
| CP               | Curaçao     | BLF     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 5    |
|                  |             | WAH     |      |      |      |      |      |      |      |      |      |      |      | 178  | 178  | 178  | 178  | 178  | 178  | 178  |      |      | 21   |
|                  | EU.Bulgaria | BON     |      |      |      |      |      |      |      |      |      |      |      |      | 100  |      |      |      |      |      |      |      |      |
|                  | EU.Cyprus   | LTA     |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 6    |      |      | 7    |      |      |      |
|                  | Maroc       | BON     | 900  |      |      |      | 2500 |      | 700  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|                  | Mauritania  | BOP     |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 100  | 100  |      |      |      | 90   | 9    |
|                  |             | LTA     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 50   | 9    |
|                  | Mexico      | KGM     |      |      |      |      |      | 1000 | 1000 |      |      |      |      | 50   | 50   | 50   | 50   | 50   | 50   | 50   | 50   | 50   | 5    |
|                  |             | KGX     | 1000 | 1500 | 1500 | 2000 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| NCO              | Aruba       | WAH     |      |      |      |      |      |      |      |      |      |      |      | 100  | 100  | 100  | 100  | 100  | 100  | 100  | 100  |      | 11   |
|                  | Grenada     | BLF     |      |      |      |      |      |      |      |      |      |      |      | 100  | 100  | 100  |      |      |      |      |      |      |      |
|                  |             | BON     |      |      |      |      |      |      |      | 100  | 100  | 200  | 200  | 200  | 200  | 200  | 200  |      |      |      |      | 100  |      |
|                  |             | KGX     |      |      |      |      |      |      |      | 100  |      |      |      |      |      |      |      |      |      |      |      |      |      |
|                  |             | LTA     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|                  | Israel      |         |      |      |      |      |      |      |      |      |      |      |      | 100  | 100  | 100  |      |      |      |      | 300  |      |      |

[illegible]

**Table 5[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 2015). Only the most important fisheries (representing at least 90% of Task I total catch) are shown<sup>1</sup>.

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.

Summary of tables:

| Table            | Species | Scie. Name                        | % weight in Task I<br>(1950-2015) | Order<br>(#) | Stock/area | Legend (t2) |     |             |
|------------------|---------|-----------------------------------|-----------------------------------|--------------|------------|-------------|-----|-------------|
| 2.5a             | BLF     | <i>Thunnus atlanticus</i>         |                                   | 2.0          | 8          | A+M         | a   | t2ce        |
| 2.5b             | BLT     | <i>Auxis rochei</i>               |                                   | 4.8          | 7          | A+M         |     |             |
| 2.5c             | BON     | <i>Sarda sarda</i>                | 33.7                              | 1            | AT         |             |     |             |
| 2.5d             | BON     | <i>Sarda sarda</i>                |                                   |              | 1          | MD          | b   | t2sz        |
| 2.5e             | BRS     | <i>Scomberomorus brasiliensis</i> |                                   | 5.4          | 6          | A+M         | c   | cas         |
| 2.5f             | DOL     | <i>Coryphaena hippurus</i>        |                                   | 1.0          | 11         | A+M         | -1  | no T2 data  |
| 2.5g             | FRI     | <i>Auxis thazard</i>              |                                   | 11.6         | 3          | AT          | a   | t2ce only   |
| 2.5h             | KGM     | <i>Scomberomorus cavalla</i>      |                                   | 11.2         | 4          | A+M         | b   | t2sz only   |
| 2.5i             | LTA     | <i>Euthynnus alletteratus</i>     |                                   | 13.6         | 2          | AT          | c   | cas only    |
| 2.5j             | LTA     | <i>Euthynnus alletteratus</i>     |                                   |              | 2          | MD          | bc  | t2sz + cas  |
| 2.5k             | MAW     | <i>Scomberomorus tritor</i>       |                                   | 1.9          | 9          | A+M         | ab  | t2ce + t2sz |
| 2.5l             | SSM     | <i>Scomberomorus maculatus</i>    |                                   | 11.2         | 5          | A+M         | ac  | t2ce + cas  |
| 2.5m             | WAH     | <i>Acanthocybium solandri</i>     |                                   | 1.4          | 10         | A+M         | abc | all         |
| (no enough data) | BOP     | <i>Orcynopsis unicolor</i>        |                                   | 0.9          | 13         | A+M         |     |             |
| (no enough data) | KGX     | <i>Scomberomorus spp</i>          |                                   | 0.9          | 12         | A+M         |     |             |
| (no enough data) | SMT     | <i>Small Tuna</i>                 |                                   | 0.0          | 15         | A+M         |     |             |
| (no enough data) | CER     | <i>Scomberomorus regalis</i>      |                                   | 0.3          | 14         | A+M         |     |             |
| (no enough data) | SLT     | <i>Allothunnus fallai</i>         |                                   | 0.0          | 16         | A+M         |     |             |

<sup>1</sup> Full catalogues by species are available at the Secretariat (on request).



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**Table 5a.** SCRS catalogue: BLF [A+M] (*Thunnus atlanticus*).

|         |       |        |                    |         |      | TOTAL | 1403 | 2822 | 3462 | 3322 | 2834 | 3888 | 4202 | 4353 | 3535 | 2719 | 4051 | 4488 | 3258 | 3395 | 3203 | 2483 | 4034 | 4756 | 1303 | 1926 | 1031 | 1937 | 1927 | 1669 | 1442 | 1548 | 1533 | 1529 | 1243 | 874  | 954  |     |      |     |
|---------|-------|--------|--------------------|---------|------|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|------|-----|
| Species | Stock | Status | FlagName           | GearGrp | DSet | 1985  | 1986 | 1987 | 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 | Rank | %   | %cum |     |
| BLF     | A+M   | CP     | EU.France          | UN      | t1   | 755   | 729  | 669  | 816  | 855  | 865  | 1210 | 1170 | 1140 | 1330 | 1370 | 1040 | 1040 | 1040 | 1040 | 1040 | 1040 | 1040 |      |      |      |      |      |      |      |      |      |      |      |      | 12   | 1    | 22% | 22%  |     |
| 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   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | 1    |     |      |     |
| BLF     | A+M   | CP     | Venezuela          | PS      | t1   | 737   | 1179 | 929  | 929  | 450  | 935  | 1241 | 1905 | 1007 | 13   | 621  | 691  | 415  | 907  | 844  | 472  | 891  | 323  | 204  | 605  | 121  | 165  | 742  | 202  | 291  | 238  | 416  | 195  | 155  | 69   | 76   | 2    | 21% | 43%  |     |
| BLF     | A+M   | CP     | Venezuela          | PS      | t2   | b     | -1   | -1   | 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   | 2   |      |     |
| BLF     | A+M   | CP     | U.S.A.             | RR      | t1   | 1     | 1    |      | 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  | 3    | 14% | 57%  |     |
| BLF     | A+M   | CP     | U.S.A.             | RR      | t2   | -1    | ab   | 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    | ab   | 3    |     |      |     |
| BLF     | A+M   | CP     | Venezuela          | BB      | t1   |       | 210  | 269  | 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    | 4    | 6%  | 63%  |     |
| BLF     | A+M   | CP     | Venezuela          | BB      | t2   |       | -1   | -1   | 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   | ab   | a    | 4   |      |     |
| BLF     | A+M   | NCO    | Dominican Republic | UN      | t1   | 90    | 123  | 199  | 4    | 564  | 520  | 536  | 110  | 133  | 239  | 892  | 892  | 231  | 158  | 18   | 19   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 5    | 6%  | 69%  |     |
| BLF     | A+M   | NCO    | Dominican Republic | UN      | t2   | -1    | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | 5    |     |      |     |
| BLF     | A+M   | NCO    | Cuba               | BB      | t1   | 157   | 486  | 634  | 332  | 318  | 487  | 318  | 196  | 54   | 223  | 156  | 287  | 287  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 6    | 5%  | 74%  |     |
| BLF     | A+M   | NCO    | Cuba               | BB      | t2   | -1    | bc   | -1   | b    | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   |      |      | b    |      |      |      |      |      |      |      |      |      |      |      |      |      | 6    |     |      |     |
| BLF     | A+M   | CP     | Brazil             | UN      | t1   | 1     | 24   | 72   | 107  | 66   | 317  | 74   | 12   |      |      | 6    | 382  | 297  | 55   | 55   | 38   | 149  | 1518 |      |      |      |      |      |      |      |      |      |      |      |      | 131  | 7    | 5%  | 78%  |     |
| 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   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | 7    |     |      |     |
| BLF     | A+M   | NCO    | Grenada            | UN      | t1   | 193   | 256  | 141  | 220  | 134  | 293  | 195  | 146  | 253  | 189  | 123  | 164  | 126  | 233  | 94   | 164  | 223  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 8   | 4%   | 82% |
| BLF     | A+M   | NCO    | Grenada            | UN      | t2   | -1    | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | 8    |     |      |     |
| BLF     | A+M   | NCO    | Grenada            | TR      | t1   |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 335  | 268  | 306  |      |      |      |      |      |      |      |      |      |      | 9    | 4%  | 86%  |     |
| BLF     | A+M   | NCO    | Grenada            | TR      | t2   |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | 9    |     |      |     |
| BLF     | A+M   | CP     | Brazil             | BB      | t1   | 132   | 148  | 182  | 122  | 53   | 16   | 56   | 35   | 20   | 31   | 153  | 265  | 93   |      |      |      |      | 151  | 1    | 118  | 90   |      | 233  | 18   | 10   | 8    | 40   | 56   | 18   | 130  | 0    | 10   | 3%  | 88%  |     |
| BLF     | A+M   | CP     | Brazil             | BB      | t2   | a     | a    | a    | a    | a    | -1   | a    | a    | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | a    | -1   | ab   | -1   | -1   | a    | -1   | a    | a    | a    | a    | -1   | 10   |     |      |     |
| BLF     | A+M   | NCO    | Sta. Lucia         | TR      | t1   |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 169  | 96   | 126  | 182  | 151  | 179  | 165  | 203  | 229  | 192  | 147  | 104  | 80   | 11   | 2%  | 91%  |     |
| BLF     | A+M   | NCO    | Sta. Lucia         | TR      | t2   |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | 11  |      |     |
| BLF     | A+M   | CP     | Curaçao            | UN      | t1   | 55    | 60   | 60   | 70   | 70   | 70   | 60   | 60   | 65   | 60   | 50   | 45   | 45   | 45   | 45   | 45   | 45   | 45   |      |      |      |      |      |      |      |      |      |      |      |      |      | 12   | 1%  | 92%  |     |
| BLF     | A+M   | CP     | Curaçao            | UN      | t2   | -1    | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | 12   |     |      |     |
| BLF     | A+M   | CP     | U.S.A.             | LL      | t1   | 10    | 21   | 12   | 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   | 13   | 1%  | 93%  |     |
| BLF     | A+M   | CP     | U.S.A.             | LL      | t2   | -1    | -1   | ab   | ab   | ab   | ab   | ab   | ab   | ab   | ab   | ab   | ab   | ab   | ab   | ab   | ab   | ab   | ab   | ab   | ab   | ab   | ab   | ab   | ab   | ab   | ab   | ab   | ab   | ab   | ab   | ab   | ab   | 13  |      |     |
| BLF     | A+M   | NCO    | Grenada            | LL      | t1   |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 255  |      |      | 371  |      |      |      |      |      |      |      |      |      | 14   | 1%  | 94%  |     |
| BLF     | A+M   | NCO    | Grenada            | LL      | t2   |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | -1   |      | a    | a    | -1   | a    | a    |      |      |      |      |      |      | 14   |     |      |     |
| BLF     | A+M   | CP     | Venezuela          | LL      | t1   |       |      |      |      | 1    |      |      |      |      | 3    | 8    | 3    | 3    | 23   | 19   | 348  |      | 38   | 66   | 9    |      | 1    | 0    |      |      |      |      |      |      |      |      | 15   | 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    | 15   |     |      |     |
| 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    | 16   | 1%   | 95% |      |     |
| BLF     | A+M   | NCO    | Dominica           | UN      | t2   |       |      |      | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   |      |      |      |      | -1   | -1   | -1   | -1   | -1   |      | -1   | a    | a    | a    | -1   | a    | -1   | 16   |      |      |     |      |     |
| BLF     | A+M   | CP     | U.S.A.             | HL      | t1   | 0     | 0    | 25   | 9    | 7    | 10   | 1    | 1    | 29   | 0    | 7    | 9    | 8    | 8    | 20   | 12   | 22   | 24   | 32   | 24   | 20   | 15   | 15   | 14   | 15   | 13   | 11   | 16   | 17   | 21   | 23   | 17   | 1%  | 96%  |     |
| BLF     | A+M   | CP     | U.S.A.             | HL      | t2   | -1    | -1   | -1   | -1   | -1   | -1   | -1   | -1   | b    | b    | b    | b    | b    | b    | b    | b    | b    | b    | b    | b    | b    | b    | b    | b    | b    | b    | b    | b    | b    | b    | b    | b    | 17  |      |     |
| BLF     | A+M   | NCO    | Sta. Lucia         | HL      | t1   |       |      |      | 2    | 1    | 1    | 17   | 14   | 13   | 16   | 82   | 47   |      |      |      |      |      | 60   |      |      | 45   | 108  |      |      |      |      |      |      |      |      |      | 18   | 1%  | 96%  |     |
| BLF     | A+M   | NCO    | Sta. Lucia         | HL      | t2   |       |      |      | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   |      |      |      |      | -1   |      | -1   | -1   |      |      |      |      |      |      |      |      |      |      |      | 18   |     |      |     |

## SMALL TUNAS SPECIES GROUP INTERSESSIONAL MEETING – MIAMI 2017

Table 5b. SCRS catalogue: BLT [A+M] (*Auxis rochei*).

|         |       |        |                    |         |      | TOTAL | 5240 | 5057 | 3739 | 6483 | 7110 | 11994 | 8777 | 5714 | 3420 | 5300 | 4301 | 5909 | 3070 | 2309 | 2646 | 3912 | 5796 | 6041 | 3794 | 6223 | 4231 | 4090 | 5459 | 6825 | 5556 | 7952 | 9483 | 6187 | 7246 | 3916 | 8707 |     |      |     |     |     |
|---------|-------|--------|--------------------|---------|------|-------|------|------|------|------|------|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|------|-----|-----|-----|
| Species | Stock | Status | FlagName           | GearGrp | DSet | 1985  | 1986 | 1987 | 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 | Rank | %   | %cum |     |     |     |
| BLT     | A+M   | CP     | EU.España          | UN      | t1   | 3     |      |      | 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  | 1    | 19% | 19%  |     |     |     |
| 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   | -1   | a    | a    | a    | a    | a    | ab   | a    | 1    |     |      |     |     |     |
| BLT     | A+M   | CP     | EU.Greece          | UN      | t1   | 1419  | 1400 | 1400 | 1400 | 1400 | 1400 | 1400  | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 2   | 10%  | 29% |     |     |
| BLT     | A+M   | CP     | EU.Greece          | UN      | t2   | -1    | -1   | -1   | -1   | -1   | -1   | -1    | -1   | -1   | -1   | -1   | -1   | -1   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 2   |      |     |     |     |
| BLT     | A+M   | CP     | EU.Italy           | UN      | t1   | 1344  | 1344 | 906  | 609  | 509  | 494  | 432   | 305  | 379  | 531  | 531  | 229  | 229  | 229  | 462  | 462  | 462  | 2328 | 974  | 1309 | 627  |      |      | 74   |      | 74   | 37   | 55   | 849  |      |      | 3    | 9%  | 38%  |     |     |     |
| 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   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | 3   |      |     |     |     |
| 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  |      | 4   | 8%   | 46% |     |     |
| 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   | 4   |      |     |     |     |
| BLT     | A+M   | CP     | Maroc              | GN      | t1   | 48    | 150  | 151  | 811  | 1107 | 2058 | 868   | 1157 | 47   | 1532 | 566  | 1673 | 555  | 629  | 463  | 536  | 232  | 621  | 246  | 96   | 5    |      | 1    | 7    | 8    | 6    |      |      |      |      |      |      |     | 5    | 8%  | 53% |     |
| 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   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | 5   |      |     |     |     |
| BLT     | A+M   | CP     | EU.España          | TP      | t1   | 613   | 256  | 631  | 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  |     | 6    | 7%  | 61% |     |
| 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   | -1   | -1   | -1   | -1   | -1   | abc  | abc  | a    | ac   | ab   | ab   | ab   | ab   | 6   |      |     |     |     |
| BLT     | A+M   | CP     | Tunisie            | UN      | t1   | 253   | 492  | 330  | 330  | 564  | 883  | 883   | 31   | 20   | 13   | 14   | 13   | 32   | 93   | 45   | 15   | 2300 | 932  | 989  | 1760 |      |      |      |      |      |      |      |      |      |      |      |      | 7   | 6%   | 66% |     |     |
| BLT     | A+M   | CP     | Tunisie            | UN      | t2   | -1    | -1   | -1   | -1   | -1   | -1   | -1    | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | 7   |      |     |     |     |
| 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 |      | 8   | 5%   | 72% |     |     |
| 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   | -1   | -1   | a    | a    | a    | a    | a    | a    | 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  |      | 9   | 4%   | 76% |     |     |
| BLT     | A+M   | CP     | Russian Federation | TW      | t2   |       |      |      |      |      |      | -1    | -1   |      |      |      |      |      |      |      | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | abc  | abc  | abc  | abc  | abc  | ab   |      | 9   |      |     |     |     |
| BLT     | A+M   | CP     | Tunisie            | PS      | t1   | 114   | 46   | 276  | 258  | 96   | 102  | 102   | 4    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 940  | 935  | 938  | 920  | 13   | 10   | 3%  | 78%  |     |     |     |
| BLT     | A+M   | CP     | Tunisie            | PS      | t2   | -1    | -1   | -1   | -1   | -1   | -1   | -1    | -1   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | -1   | -1   | -1   | -1   | -1   | -1   | 10  |      |     |     |     |
| BLT     | A+M   | CP     | U.S.S.R.           | TW      | t1   |       |      |      |      |      | 528  | 3436  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 11  | 2%   | 81% |     |     |
| BLT     | A+M   | CP     | U.S.S.R.           | TW      | t2   |       |      |      |      |      | -1   | -1    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 11  |      |     |     |     |
| 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  | 12  | 2%  | 83% |
| BLT     | A+M   | CP     | EU.Greece          | PS      | t2   |       |      |      |      |      |      |       |      |      |      |      |      |      |      |      |      |      |      |      | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1  | 12   |     |     |     |
| BLT     | A+M   | CP     | EU.España          | PS      | t1   | 1392  | 1297 |      |      |      |      |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 914  |     | 13   | 2%  | 85% |     |
| BLT     | A+M   | CP     | EU.España          | PS      | t2   | -1    | -1   |      |      |      |      |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | ab   |     | 13   |     |     |     |
| BLT     | A+M   | CP     | EU.Portugal        | TP      | t1   |       |      |      |      |      |      |       |      |      |      |      |      |      |      |      | 28   | 0    | 313  | 65   | 48   | 83   | 296  | 580  | 510  | 582  | 168  |      | 479  | 363  |      |      |      |     | 14   | 2%  | 87% |     |
| BLT     | A+M   | CP     | EU.Portugal        | TP      | t2   |       |      |      |      |      |      |       |      |      |      |      |      |      |      |      | b    | b    | b    | b    | a    | ab   | a    | ab   | ab   | b    | b    | b    | b    | ab   | ab   | b    | b    | b   | b    | 14  |     |     |
| BLT     | A+M   | CP     | Cape Verde         | HS      | t1   |       |      |      |      |      |      |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 3190 |     | 15   | 2%  | 89% |     |
| BLT     | A+M   | CP     | Cape Verde         | HS      | t2   |       |      |      |      |      |      |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     | 15   |     |     |     |
| BLT     | A+M   | CP     | Algerie            | UN      | t1   |       |      |      |      |      |      | 9     | 14   | 19   | 14   | 11   | 10   | 5    | 15   | 9    | 17   | 22   | 27   |      | 41   |      |      |      |      | 1134 | 567  | 851  |      |      |      |      |      |     | 16   | 2%  | 90% |     |
| BLT     | A+M   | CP     | Algerie            | UN      | t2   |       |      |      |      |      |      | -1    | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1  | 16   |     |     |     |
| BLT     | A+M   | CP     | Maroc              | TP      | t1   | 25    | 27   |      | 70   | 394  | 421  | 487   | 123  | 194  | 55   |      |      |      |      | 7    | 478  | 210  | 227  | 24   |      |      |      |      |      |      |      |      |      |      |      |      |      |     | 17   | 2%  | 92% |     |
| BLT     | A+M   | CP     | Maroc              | TP      | t2   | -1    | -1   |      | -1   | -1   | -1   | -1    | -1   | -1   | -1   | -1   |      |      |      | -1   | -1   | -1   | -1   | -1   |      |      |      |      |      |      |      |      |      |      |      |      |      | 17  |      |     |     |     |
| BLT     | A+M   | CP     | EU.Italy           | GN      | t1   |       |      |      |      |      |      |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 693  | 346  | 520  | 433  |      |      |      |     | 18   | 1%  | 93% |     |
| BLT     | A+M   | CP     | EU.Italy           | GN      | t2   |       |      |      |      |      |      |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | -1   | -1   | -1   | -1   | -1   |      |      | 18  |      |     |     |     |
| BLT     | A+M   | CP     | EU.Portugal        | UN      | t1   |       |      |      |      |      |      |       |      |      |      |      |      |      |      |      | 239  | 177  | 142  | 117  | 148  | 1    |      |      |      | 143  | 436  | 175  | 21   | 38   | 25   |      |      | 19  | 1%   | 94% |     |     |
| BLT     | A+M   | CP     | EU.Portugal        | UN      | t2   |       |      |      |      |      |      |       |      |      |      |      |      |      |      |      | a    | a    | a    | a    | a    | a    | a    |      |      | a    | -1   | a    | a    | -1   | -1   |      |      | 19  |      |     |     |     |
| BLT     | A+M   | CP     | EU.Italy           | HL      | t1   |       |      |      |      |      |      |       |      |      |      |      |      |      |      |      |      |      | 124  | 463  | 481  | 217  |      |      |      |      |      |      |      |      |      |      |      |     | 20   | 1%  | 95% |     |
| BLT     | A+M   | CP     | EU.Italy           | HL      | t2   |       |      |      |      |      |      |       |      |      |      |      |      |      |      |      |      |      |      | -1   | -1   | -1   | -1   |      |      |      |      |      |      |      |      |      |      | 20  |      |     |     |     |
| BLT     | A+M   | CP     | Maroc              | LL      | t1   |       |      |      |      |      |      |       |      |      |      |      |      |      |      |      | 97   | 20   | 188  | 28   | 60   | 104  | 187  | 143  | 113  | 160  | 6    | 52   |      |      |      |      |      | 21  | 1%   | 95% |     |     |
| BLT     | A+M   | CP     | Maroc              | LL      | t2   |       |      |      |      |      |      |       |      |      |      |      |      |      |      |      |      |      |      | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   |      |      |      |      |     |      |     |     |     |

## SMALL TUNAS SPECIES GROUP INTERSESSIONAL MEETING – MIAMI 2017

**Table 5c.** SCRS catalogue: BON [AT] (*Sarda sarda*).

|         |       |        |                     | TOTAL   |      | 7149 | 6163 | 7370 | 20727 | 17671 | 6811 | 8079 | 6881 | 4531 | 6037 | 6030 | 7939 | 10340 | 15523 | 9143 | 5179 | 5400 | 8864 | 3307 | 4584 | 4391 | 8345 | 5542 | 4922 | 11162 | 8281 | 10524 | 5684 | 5861 | 3538 | 4119 |      |    |      |     |     |    |     |
|---------|-------|--------|---------------------|---------|------|------|------|------|-------|-------|------|------|------|------|------|------|------|-------|-------|------|------|------|------|------|------|------|------|------|------|-------|------|-------|------|------|------|------|------|----|------|-----|-----|----|-----|
| Species | Stock | Status | FlagName            | GearGrp | DSet | 1985 | 1986 | 1987 | 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 | Rank | %  | %cum |     |     |    |     |
| BON     | ATL   | CP     | Mexico              | LL      | t1   | 212  | 241  | 391  | 356   | 338   | 215  | 200  | 657  | 779  | 674  | 1144 | 1312 | 0     | 0     | 0    | 0    | 0    | 1032 | 1238 | 1066 | 654  | 1303 | 1188 | 1113 | 1063  | 1046 | 1080  | 1447 | 1534 | 1115 | 1110 | 1    | 9% | 9%   |     |     |    |     |
| BON     | ATL   | CP     | Mexico              | LL      | t2   | -1   | -1   | -1   | -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  |      |     |     |    |     |
| BON     | ATL   | CP     | Senegal             | GN      | t1   | 203  | 271  | 221  | 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 | 2    | 8% | 18%  |     |     |    |     |
| BON     | ATL   | CP     | Senegal             | GN      | t2   | b    | b    | b    | 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   | 2    |    |      |     |     |    |     |
| BON     | ATL   | CP     | Venezuela           | UN      | t1   | 774  | 1401 | 1020 | 1153  | 1783  | 1514 | 1514 | 1443 |      | 1646 | 1646 | 1348 | 1348  | 1647  | 1596 |      |      |      |      |      |      |      |      |      |       |      |       |      |      |      |      |      | 3  | 8%   | 26% |     |    |     |
| BON     | ATL   | CP     | Venezuela           | UN      | t2   | -1   | -1   | -1   | -1    | -1    | -1   | -1   | -1   |      | -1   | -1   | -1   | -1    | -1    | -1   |      |      |      |      |      |      |      |      |      |       |      |       |      |      |      |      |      | 3  |      |     |     |    |     |
| BON     | ATL   | CP     | Maroc               | PS      | t1   | 268  | 246  |      |       |       | 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    | 4    | 8% | 34%  |     |     |    |     |
| BON     | ATL   | CP     | Maroc               | PS      | t2   | -1   | -1   |      |       |       | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1    | -1    | -1   | -1   | -1   | -1   | a    | -1   | -1   | -1   | -1   | -1   | -1    | -1   | a     | a    | -1   | -1   | -1   | -1   | 4  |      |     |     |    |     |
| BON     | ATL   | CP     | U.S.S.R.            | TW      | t1   |      |      |      | 8882  | 7363  | 706  |      |      |      |      |      |      |       |       |      |      |      |      |      |      |      |      |      |      |       |      |       |      |      |      |      |      | 5  | 7%   | 41% |     |    |     |
| BON     | ATL   | CP     | U.S.S.R.            | TW      | t2   |      |      |      | -1    | -1    | -1   |      |      |      |      |      |      |       |       |      |      |      |      |      |      |      |      |      |      |       |      |       |      |      |      |      |      | 5  |      |     |     |    |     |
| BON     | ATL   | CP     | Russian Federation  | TW      | t1   |      |      |      |       |       | 948  | 29   |      |      |      |      |      |       | 4960  |      |      |      |      |      |      |      |      |      |      |       |      |       |      |      |      |      |      | 6  | 6%   | 47% |     |    |     |
| BON     | ATL   | CP     | Russian Federation  | TW      | t2   |      |      |      |       |       | -1   | -1   |      |      |      |      |      |       | -1    |      |      |      |      |      |      |      |      |      |      |       |      |       |      |      |      |      |      | 6  |      |     |     |    |     |
| BON     | ATL   | NCO    | Argentina           | UN      | t1   | 1399 | 699  | 1607 | 2794  | 1327  | 1207 | 1794 | 1559 | 434  | 4    | 138  | 103  |       |       |      | 0    | 1    |      |      |      | 0    | 100  |      |      |       |      |       |      |      |      |      |      | 7  | 5%   | 52% |     |    |     |
| BON     | ATL   | NCO    | Argentina           | UN      | t2   | -1   | -1   | -1   | -1    | -1    | -1   | -1   | -1   | -1   | -1   | -1   | -1   |       |       | -1   |      |      |      |      |      |      |      |      |      |       |      |       |      |      |      |      |      | 7  |      |     |     |    |     |
| BON     | ATL   | NCO    | Ukraine             | TW      | t1   |      |      |      | 1385  | 985   |      |      | 25   |      |      |      |      | 342   | 2786  | 1918 | 1114 | 399  | 231  | 1312 | 30   |      |      |      |      |       |      |       |      |      |      |      |      |    | 8    | 4%  | 57% |    |     |
| BON     | ATL   | NCO    | Ukraine             | TW      | t2   |      |      |      | -1    | -1    |      |      | -1   |      |      |      |      | -1    | -1    | -1   | -1   | -1   | -1   | -1   | -1   |      |      |      |      |       |      |       |      |      |      |      |      | 8  |      |     |     |    |     |
| BON     | ATL   | CP     | Senegal             | TR      | t1   |      | 480  | 175  | 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   |      | 9  | 4%   | 61% |     |    |     |
| BON     | ATL   | CP     | Senegal             | TR      | t2   |      | -1   | -1   | -1    | b     | ab   | a    | ab   | ab   | ab   | a    | ab   | a     | ab    | a    | ab   | a    | ab   | ab   | ab   | ab   | ab   | ab   | ab   | ab    | ab   | ab    | ab   | b    | ab   | b    |      | 9  |      |     |     |    |     |
| BON     | ATL   | CP     | EU.France           | UN      | t1   | 492  | 431  | 331  | 395   | 427   | 430  | 820  | 770  | 1052 | 990  | 990  | 610  | 610   | 610   | 24   |      |      |      |      |      |      |      |      |      |       |      |       |      |      |      |      |      | 10 | 4%   | 65% |     |    |     |
| 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   | -1   | -1   | -1   | -1   | -1   | -1    | -1   | -1    | -1   | -1   | ab   | -1   | 10   |    |      |     |     |    |     |
| BON     | ATL   | CP     | Mexico              | UN      | t1   |      |      |      |       |       |      |      |      |      |      |      |      |       | 1312  | 1631 | 1861 | 1293 | 1113 |      |      |      |      |      |      |       |      |       |      |      |      |      |      | 11 | 3%   | 68% |     |    |     |
| BON     | ATL   | CP     | Mexico              | UN      | t2   |      |      |      |       |       |      |      |      |      |      |      |      |       | -1    | -1   | -1   | -1   | -1   | -1   |      |      |      |      |      |       |      |       |      |      |      |      | 11   |    |      |     |     |    |     |
| BON     | ATL   | NCO    | Togo                | GN      | t1   |      |      |      |       |       |      |      |      |      |      |      |      |       |       |      |      |      |      |      |      |      |      |      |      |       |      |       |      |      |      |      |      | 12 | 2%   | 70% |     |    |     |
| BON     | ATL   | NCO    | Togo                | GN      | t2   |      |      |      |       |       |      |      |      |      |      |      |      |       |       |      |      |      |      |      |      |      |      |      |      |       |      |       |      |      |      |      |      | 12 |      |     |     |    |     |
| BON     | ATL   | CP     | EU.Netherlands      | TW      | t1   |      |      |      |       |       |      |      |      |      |      |      |      |       |       |      |      |      |      |      |      |      |      |      |      |       |      |       |      |      |      |      |      | 13 | 2%   | 72% |     |    |     |
| BON     | ATL   | CP     | EU.Netherlands      | TW      | t2   |      |      |      |       |       |      |      |      |      |      |      |      |       |       |      |      |      |      |      |      |      |      |      |      |       |      |       |      |      |      |      |      | 13 |      |     |     |    |     |
| BON     | ATL   | CP     | Angola              | TP      | t1   | 63   | 56   |      | 148   | 115   | 127  | 99   |      |      | 47   | 20   | 9    | 10    | 16    |      |      | 2    | 118  | 118  | 118  |      |      |      |      |       |      |       |      |      |      |      |      | 14 |      |     |     |    |     |
| BON     | ATL   | CP     | Angola              | TP      | t2   | -1   | -1   |      | -1    | -1    | -1   | -1   |      |      | -1   | -1   | -1   | -1    | -1    |      |      | -1   | -1   | -1   | -1   |      |      |      |      |       |      |       |      |      |      |      | 14   |    |      |     |     |    |     |
| BON     | ATL   | CP     | Maroc               | LL      | t1   |      |      |      |       |       |      |      |      |      |      |      |      |       |       |      |      |      |      |      |      |      |      |      |      |       |      |       |      |      |      |      |      | 15 | 2%   | 76% |     |    |     |
| BON     | ATL   | CP     | Maroc               | LL      | t2   |      |      |      |       |       |      |      |      |      |      |      |      |       |       |      | a    |      |      |      |      |      | 535  | 996  | 538  | 806   | 909  | 22    | 88   | 140  | 60   | 62   | 102  |    | 15   |     |     |    |     |
| BON     | ATL   | CP     | U.S.S.R.            | UN      | t1   | 2073 | 1085 | 1083 |       |       |      |      |      |      |      |      |      |       |       |      |      |      |      |      |      |      |      |      |      |       |      |       |      |      |      |      |      | 16 | 2%   | 77% |     |    |     |
| BON     | ATL   | CP     | U.S.S.R.            | UN      | t2   | a    | a    | a    | a     | a     | a    | a    |      |      |      |      |      |       |       |      |      |      |      |      |      |      |      |      |      |       |      |       |      |      |      |      |      | 16 |      |     |     |    |     |
| BON     | ATL   | NCO    | Togo                | UN      | t1   | 254  | 138  | 245  | 400   | 256   | 177  | 172  | 107  | 311  | 254  | 145  | 197  | 197   | 197   | 197  |      |      |      |      |      |      |      |      |      |       |      |       |      |      |      |      |      | 17 | 1%   | 79% |     |    |     |
| BON     | ATL   | NCO    | Togo                | UN      | t2   | -1   | -1   | -1   | -1    | -1    | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1    | -1    | -1   | -1   | -1   | -1   | -1   |      |      |      |      |      |       |      |       |      |      |      |      |      | 17 |      |     |     |    |     |
| BON     | ATL   | CP     | Senegal             | HL      | t1   | 289  | 30   | 42   | 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  |      | 18 | 1%   | 80% |     |    |     |
| BON     | ATL   | CP     | Senegal             | HL      | t2   | b    | b    | b    | b     | b     | ab   | ab   | ab   | ab   | ab   | ab   | ab   | ab    | ab    | ab   | a    | ab   | ab   | ab   | ab   | ab   | ab   | ab   | ab   | ab    | ab   | ab    | ab   | ab   | ab   | ab   | ab   | 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  | 19  | 1% | 81% |
| BON     | ATL   | CP     | Trinidad and Tobago | UN      | t2   |      |      |      |       |       |      |      |      |      |      |      |      |       | -1    | -1   | -1   | -1   | -1   | -1   | -1   | a    | a    | a    | a    | a     | a    | -1    | a    | a    | a    | a    | a    | -1 | 19   |     |     |    |     |
| BON     | ATL   | CP     | EU.Latvia           | UN      | t1   |      |      |      | 1191  | 1164  | 221  | 7    | 4    |      |      | 3    | 19   | 301   |       |      |      |      |      |      |      |      |      |      |      |       |      |       |      |      |      |      |      |    | 20   | 1%  | 82% |    |     |
| 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   |      |      |      |      |       |       |      |      |      |      |      |      |      |      |      |      |       |      |       |      |      |      |      |      |    | 21   | 1%  | 84% |    |     |
| BON     | ATL   | CP     | EU.Lithuania        | UN      | t2   |      |      |      | -1    | -1    | -1   | -1   | -1   |      |      |      |      |       |       |      |      |      |      |      |      |      |      |      |      |       |      |       |      |      |      |      |      |    | 21   |     |     |    |     |
| BON     | ATL   | CP     | EU.Latvia           | TW      | t1   |      |      |      |       |       |      |      |      |      |      |      |      |       | 887   | 318  |      |      |      |      |      |      |      |      |      |       |      |       |      |      |      |      |      |    | 22   | 1%  | 85% |    |     |
| BON     | ATL   | CP     | EU.Latvia           | TW      | t2   |      |      |      |       |       |      |      |      |      |      |      |      |       | -1    | -1   |      |      |      |      |      |      |      |      |      |       |      |       |      |      |      |      |      | 22 |      |     |     |    |     |
| BON     | ATL   | CP     | Brazil              | UN      | t1   | 179  | 523  | 341  | 214   | 273   | 226  | 71   | 86   | 142  | 142  | 122  |      |       |       |      |      |      |      |      |      |      |      |      |      |       |      |       |      |      |      |      |      | 23 | 1%   | 86% |     |    |     |
| BON     | ATL   | CP     | Brazil              | UN      | t2   | -1   | -1   | -1   | -1    | -1    | -1   | -1   | -1   | -1   | -1   | -1   | -1   |       |       |      |      |      |      |      |      |      |      |      |      |       |      |       |      |      |      |      |      | 23 |      |     |     |    |     |
| BON     | ATL   | CP     | Maroc               | GN      | t1   |      |      |      |       |       |      |      |      |      |      |      |      |       |       |      |      |      |      |      |      |      |      |      |      |       |      |       |      |      |      |      |      | 24 | 1%   | 87% |     |    |     |
| BON     | ATL   | CP     | Maroc               | GN      | t2   |      |      |      |       |       |      |      |      |      |      |      |      |       |       |      |      |      |      |      |      |      |      |      |      |       |      |       |      |      |      |      |      | 24 |      |     |     |    |     |
| BON     | ATL   | CP     | EU.Portugal         | PS      | t1   |      |      |      |       |       |      |      |      |      |      |      |      |       |       |      |      |      |      |      |      |      |      |      |      |       |      |       |      |      |      |      |      | 25 | 1%   | 88% |     |    |     |
| BON     | ATL   | CP     | EU.Portugal         | PS      | t2   |      |      |      |       |       |      |      |      |      |      |      |      |       |       |      |      |      |      |      |      |      |      |      |      |       |      |       |      |      |      |      |      | 25 |      |     |     |    |     |
| BON     | ATL   | CP     | Curaçao             | TW      | t1   |      |      |      |       |       |      |      |      |      |      |      |      |       |       |      |      |      |      |      |      |      |      |      |      |       |      |       |      |      |      |      |      | 26 | 1%   | 89% |     |    |     |
| BON     | ATL   | CP     | Curaçao             | TW      | t2   |      |      |      |       |       |      |      |      |      |      |      |      |       |       |      |      |      |      |      |      |      |      |      |      |       |      |       |      |      |      |      |      | 26 |      |     |     |    |     |
| BON     | ATL   | CP     | EU.Estonia          | UN      | t1   |      |      |      |       |       |      |      |      |      |      |      |      |       |       |      |      |      |      |      |      |      |      |      |      |       |      |       |      |      |      |      |      |    |      |     |     |    |     |

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**Table 5d.** SCRS catalogue: BON [MD] (*Sarda sarda*).

|         |       | TOTAL  |           | 17959   | 15428 | 22317 | 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 | 8288  |       |      |      |     |      |  |
|---------|-------|--------|-----------|---------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|-----|------|--|
| Species | Stock | Status | FlagName  | GearGrp | DSet  | 1985  | 1986  | 1987  | 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 | Rank | %   | %cum |  |
| BON     | MED   | CP     | Turkey    | PS      | t1    | 12281 | 10756 | 16793 | 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 | 1    | 72%  | 72% |      |  |
| 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    | 1437  | 1437  | 2148  | 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    | 2    | 7%   | 79% |      |  |
| BON     | MED   | CP     | EU.Italy  | UN      | t2    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | b     | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | b     | b     | b     | b     | -1    | -1    | abc   | a     |       | abc   | ab    | -1    | 2    |      |     |      |  |
| BON     | MED   | CP     | EU.Greece | PS      | t1    | 1321  | 1027  | 1848  | 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  | 3    | 7%  | 86%  |  |
| 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    | 482   | 504   | 500   | 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    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | 4    |      |     |      |  |
| BON     | MED   | CP     | EU.España | UN      | t1    | 50    | 6     |       | 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  | 5    | 2%  | 91%  |  |
| BON     | MED   | CP     | EU.España | UN      | t2    | b     | a     | a     | -1    | -1    | a     | -1    | a     | a     | a     | a     | a     | a     | -1    | a     | a     | a     | -1    | -1    | -1    | a     | a     | a     | a     | a     | a     | a     | a     | ab    | a     | a    | 5    |     |      |  |
| 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  | 6    | 1%  | 92%  |  |
| 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    | 6    |     |      |  |
| BON     | MED   | CP     | Tunisie   | PS      | t1    |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | 1425  | 1415  | 1413  | 1407  | 867   |       | 7    | 1%   | 93% |      |  |
| BON     | MED   | CP     | Tunisie   | PS      | t2    |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | -1    | -1    | -1    | -1    | -1    | -1    | 7    |      |     |      |  |
| BON     | MED   | CP     | Egypt     | PS      | t1    |       |       |       |       |       |       |       | 697   | 985   | 725   | 724   | 1442  | 1442  |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      | 8    | 1%  | 94%  |  |
| BON     | MED   | CP     | Egypt     | PS      | t2    |       |       |       |       |       |       |       | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1    |       |       |       |       |       |       |       |       |       |       |       |       |       |      | 8    |     |      |  |
| BON     | MED   | CP     | Egypt     | UN      | t1    | 62    | 68    | 35    | 17    | 358   | 598   | 574   | 518   | 640   | 648   |       |       |       |       |       |       |       | 1128  | 1128  |       |       |       |       |       |       |       |       |       |       |       |      | 9    | 1%  | 95%  |  |
| BON     | MED   | CP     | Egypt     | UN      | t2    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1    |       |       |       |       |       |       |       | -1    | -1    |       |       |       |       |       |       |       |       |       |       |       |      | 9    |     |      |  |
| BON     | MED   | CP     | Algerie   | TP      | t1    | 880   | 459   | 203   | 625   | 1528  | 1307  |       |       |       |       |       |       |       |       |       |       |       | 56    |       |       |       |       |       |       |       |       |       |       |       |       |      | 10   | 1%  | 95%  |  |
| BON     | MED   | CP     | Algerie   | TP      | t2    | -1    | -1    | -1    | -1    | -1    | -1    |       |       |       |       |       |       |       |       |       |       |       | -1    |       |       |       |       |       |       |       |       |       |       |       |       |      | 10   |     |      |  |
| BON     | MED   | CP     | Turkey    | UN      | t1    |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | 4573 | 11   | 1%  | 96%  |  |
| BON     | MED   | CP     | Turkey    | UN      | t2    |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      | 11   |     |      |  |
| BON     | MED   | CP     | EU.Italy  | LL      | t1    |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | 995   | 874   | 523   |       | 243   | 909   | 160   | 420   |       | 206   | 118   | 60    |       |      | 12   | 1%  | 97%  |  |
| BON     | MED   | CP     | EU.Italy  | LL      | t2    |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | b     |       | -1    | b     | -1    | b     |       | -1    | -1    | abc   | -1    |       | abc   | ab    | ab   | 12   |     |      |  |
| BON     | MED   | NCO    | NEI (MED) | UN      | t1    | 359   | 359   | 537   | 561   | 342   | 311   | 311   | 311   | 300   | 300   | 300   | 300   | 75    |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      | 13   | 1%  | 98%  |  |
| BON     | MED   | NCO    | NEI (MED) | UN      | t2    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1    |       |       |       |       |       |       |       |       |       |       |       |       |       |      |      | 13  |      |  |

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**Table 5e.** SCRS catalogue: BRS [A+M] (*Scomberomorus brasiliensis*).

|         |       |        |                     |         | TOTAL | 3501 | 6549 | 6212 | 9510 | 10778 | 7698 | 8856 | 6051 | 8049 | 7161 | 7006 | 8435 | 8004 | 7923 | 5754 | 4785 | 4553 | 7750 | 5137 | 3410 | 3712 | 3587 | 2253 | 3305 | 2681 | 2871 | 2214 | 613  | 847  | 698  | 389  |      |     |      |     |      |      |
|---------|-------|--------|---------------------|---------|-------|------|------|------|------|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|------|-----|------|------|
| Species | Stock | Status | FlagName            | GearGrp | DSet  | 1985 | 1986 | 1987 | 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 | Rank | %   | %cum |     |      |      |
| BRS     | A+M   | CP     | Brazil              | UN      | t1    | 1504 | 5011 | 4741 | 5063 | 5927  | 2767 | 1437 | 1149 | 842  | 1149 | 1308 | 3047 | 2125 | 1516 | 1516 | 988  | 229  | 3071 | 2881 | 814  | 471  | 1432 | 563  | 1521 | 1042 | 1281 | 1162 |      |      | 0    | 1    |      | 34% | 34%  |     |      |      |
| 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   | -1   | -1   | -1   | -1   | -1   |      |      | -1   | 1    |      |     |      |     |      |      |
| BRS     | A+M   | CP     | Venezuela           | UN      | t1    | 1997 | 1538 | 1471 | 1743 | 1987  | 2460 | 4670 | 2772 | 5077 | 3882 | 3882 | 3609 | 3609 | 3651 | 1766 | 1766 | 1766 | 1766 |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 2   |      | 31% | 65%  |      |
| BRS     | A+M   | CP     | Venezuela           | UN      | t2    | -1   | -1   | -1   | -1   | -1    | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   |      |      |      |      | 2   |      |     |      |      |
| 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  |      |      | 3   |      | 31% | 96%  |      |
| 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    | -1   | a    | a    | a    | a    | a    | a    | a    |      |      | 3   |      |     |      |      |
| BRS     | A+M   | NCC    | Guyana              | UN      | t1    |      |      |      |      |       |      |      |      |      |      |      | 211  | 571  | 625  | 1143 | 308  | 329  | 441  | 389  |      |      |      |      |      |      |      |      |      |      |      |      |      | 4   |      | 3%  | 98%  |      |
| BRS     | A+M   | NCC    | Guyana              | UN      | t2    |      |      |      |      |       |      |      |      |      |      |      | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   |      |      |      |      |      |      |      |      |      |      |      |      |      | 4   |      |     |      |      |
| BRS     | A+M   | NCC    | Guyana              | GN      | t1    |      |      |      |      |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 494  | 521  | 377  | 277  | 312  | 141  | 92   | 116  | 124  | 151  |      |      | 387  | 5   |      | 2%  | 100% |      |
| BRS     | A+M   | NCC    | Guyana              | GN      | t2    |      |      |      |      |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      | -1   | -1   | -1   | -1   | -1   | -1   | -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   |      |     |      |      |
| BRS     | A+M   | NCC    | Chinese Taipei      | LL      | t1    |      |      |      |      |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 2    | 1    | 1    |      | 8   |      | 0%  | 100% |      |
| BRS     | A+M   | NCC    | Chinese Taipei      | LL      | t2    |      |      |      |      |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | -1   | -1   | -1   |      | 8   |      |     |      |      |
| BRS     | A+M   | NCO    | Grenada             | UN      | t1    |      |      |      |      |       |      |      |      |      |      |      |      |      |      | 1    | 1    | 1    | 0    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     | 9    |     | 0%   | 100% |
| BRS     | A+M   | NCO    | Grenada             | UN      | t2    |      |      |      |      |       |      |      |      |      |      |      |      |      |      | -1   | -1   | -1   | -1   |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 9   |      |     |      |      |
| BRS     | A+M   | CP     | Brazil              | LL      | t1    |      |      |      |      |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 2    | 0    |      | 10  |      | 0%  | 100% |      |
| BRS     | A+M   | CP     | Brazil              | LL      | t2    |      |      |      |      |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | -1   | -1   |      | 10  |      |     |      |      |
| BRS     | A+M   | CP     | Trinidad and Tobago | RR      | t1    |      |      |      |      |       |      |      |      |      |      |      |      |      |      |      |      |      |      | 0    | 0    |      |      | 0    | 0    | 0    | 1    | 0    | 0    | 0    |      |      |      | 11  |      | 0%  | 100% |      |
| BRS     | A+M   | CP     | Trinidad and Tobago | RR      | t2    |      |      |      |      |       |      |      |      |      |      |      |      |      |      |      |      |      |      | -1   | a    |      |      | a    | a    | a    | -1   | a    | a    | a    | a    |      |      |     | 11   |     |      |      |
| BRS     | A+M   | CP     | EU.France           | TW      | t1    |      |      |      |      |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 0    |      |      |      | 12  |      | 0%  | 100% |      |
| BRS     | A+M   | CP     | EU.France           | TW      | t2    |      |      |      |      |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | -1   |      |      |      | 12  |      |     |      |      |
| BRS     | A+M   | CP     | EU.France           | TN      | t1    |      |      |      |      |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 0    |      |      |      | 13  |      | 0%  | 100% |      |
| BRS     | A+M   | CP     | EU.France           | TN      | t2    |      |      |      |      |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | -1   |      |      |      | 13  |      |     |      |      |

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**Table 5f.** SCRS catalogue: DOL [A+M] (*Coryphaena hippurus*).

|         |       |        |                            |         | TOTAL | 464  | 361  | 286  | 264  | 306  | 260  | 291  | 188  | 174  | 334  | 334  | 307  | 295  | 363  | 349  | 234  | 303  | 347  | 564  | 2632 | 2772 | 1295 | 4753 | 1042 | 5381 | 9889 | 7187 | 3647 | 5162 | 5103 | 5026 |      |     |      |
|---------|-------|--------|----------------------------|---------|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|------|
| Species | Stock | Status | FlagName                   | GearGrp | DSet  | 1985 | 1986 | 1987 | 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 | Rank | %   | %cum |
| DOL     | A+M   | CP     | Brazil                     | UN      | t1    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 2081 | 696  | 3621 | 441  | 4374 | 2800 | 2142 | 18   |      |      | 562  | 1    | 28%  | 28% |      |
| DOL     | A+M   | CP     | Brazil                     | UN      | t2    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   |      |      | -1   | 1    |      |     |      |
| DOL     | A+M   | CP     | Brazil                     | LL      | t1    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 2    | 78   | 2311 | 65   | 475  | 31   | 25   | 5115 | 1401 | 578  | 209  | 392  | 28   | 2    | 18% | 46%  |
| DOL     | A+M   | CP     | Brazil                     | LL      | t2    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | a    | a    | a    | -1   | a    | a    | ab   | a    | -1   | a    | a    | a    | a    | 3    |     |      |
| DOL     | A+M   | CP     | EU.Malta                   | PS      | t1    | 464  | 361  | 286  | 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  | 3    | 17% | 63%  |
| DOL     | A+M   | CP     | EU.Malta                   | PS      | t2    | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | a    | a    | a    | -1   | b    | ab   | ab   | ab   | ab   | ab   | ab   | bc   | -1   | b    | b    | b    | 3    |     |      |
| DOL     | A+M   | CP     | EU.France                  | LL      | t1    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 4    | 15% | 78%  |
| DOL     | A+M   | CP     | EU.France                  | LL      | t2    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 4    |     |      |
| DOL     | A+M   | CP     | U.S.A.                     | LL      | t1    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 5    | 4%  | 81%  |
| DOL     | A+M   | CP     | U.S.A.                     | LL      | t2    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | b    | b    | b    |      |      |      |      |      |      |      |      |      |      | 5    |     |      |
| DOL     | A+M   | NCC    | Chinese Taipei             | LL      | t1    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 6    | 3%  | 84%  |
| DOL     | A+M   | NCC    | Chinese Taipei             | LL      | t2    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 6    |     |      |
| DOL     | A+M   | CP     | EU.Italy                   | PS      | t1    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 7    | 3%  | 87%  |
| DOL     | A+M   | CP     | EU.Italy                   | PS      | t2    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 7    |     |      |
| DOL     | A+M   | CP     | Brazil                     | HL      | t1    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 8    | 2%  | 89%  |
| DOL     | A+M   | CP     | Brazil                     | HL      | t2    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 8    |     |      |
| DOL     | A+M   | NCO    | Sta. Lucia                 | TR      | t1    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 9    | 2%  | 90%  |
| DOL     | A+M   | NCO    | Sta. Lucia                 | TR      | t2    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 9    |     |      |
| DOL     | A+M   | CP     | U.S.A.                     | HL      | t1    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 10   | 1%  | 92%  |
| DOL     | A+M   | CP     | U.S.A.                     | HL      | t2    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 10   |     |      |
| DOL     | A+M   | CP     | EU.España                  | LL      | t1    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 11   | 1%  | 93%  |
| DOL     | A+M   | CP     | EU.España                  | LL      | t2    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 11   |     |      |
| DOL     | A+M   | CP     | Brazil                     | BB      | t1    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 12   | 1%  | 95%  |
| DOL     | A+M   | CP     | Brazil                     | BB      | t2    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 12   |     |      |
| DOL     | A+M   | CP     | St. Vincent and Grenadines | TR      | t1    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 13   | 1%  | 96%  |
| DOL     | A+M   | CP     | St. Vincent and Grenadines | TR      | t2    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 13   |     |      |
| DOL     | A+M   | NCC    | Suriname                   | LL      | t1    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 14   | 1%  | 96%  |
| DOL     | A+M   | NCC    | Suriname                   | LL      | t2    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 14   |     |      |
| DOL     | A+M   | CP     | EU.Italy                   | LL      | t1    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 15   | 1%  | 97%  |
| DOL     | A+M   | CP     | EU.Italy                   | LL      | t2    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 15   |     |      |

## SMALL TUNAS SPECIES GROUP INTERSESSIONAL MEETING – MIAMI 2017

Table 5g. SCRS catalogue: FRI [AT] (*Auxis thazard*).

|         |       | TOTAL  | 17753                     | 15478   | 21193 | 20573 | 16411 | 16738 | 10356 | 6367 | 12678 | 8407 | 7535 | 13809 | 15055 | 15872 | 13004 | 12918 | 12788 | 11635 | 4527 | 6446 | 4905 | 6606 | 6786 | 6773 | 10465 | 10809 | 11134 | 11897 | 14570 | 12850 | 7411 |      |      |      |      |     |      |     |     |
|---------|-------|--------|---------------------------|---------|-------|-------|-------|-------|-------|------|-------|------|------|-------|-------|-------|-------|-------|-------|-------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|------|------|------|------|------|-----|------|-----|-----|
| Species | Stock | Status | FlagName                  | GearGrp | DSet  | 1985  | 1986  | 1987  | 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 | Rank | %   | %cum |     |     |
| FRI     | ATL   | NCO    | Mixed flags (FR+ES)       | UN      | t1    |       |       |       |       |      |       |      |      | 5174  |       |       | 5269  | 4458  | 4502  | 5772  | 6768 | 6768 | 6768 |      |      |      |       |       |       |       |       |       |      |      | 1    | 13%  | 13%  |     |      |     |     |
| FRI     | ATL   | NCO    | Mixed flags (FR+ES)       | UN      | t2    |       |       |       |       |      |       |      |      | -1    |       |       | -1    | -1    | -1    | -1    | -1   | -1   | -1   |      |      |      |       |       |       |       |       |       |      |      |      | 1    |      |     |      |     |     |
| FRI     | ATL   | NCO    | Mixed flags (FR+ES)       | PS      | t1    | 117   | 227   | 1526  | 1525  | 1350 | 1728  | 3633 | 4017 | 4500  | 3107  | 1919  | 1908  | 1605  | 1840  | 2240  | 3096 | 2336 | 980  | 1623 | 1722 |      |       |       |       |       |       |       |      |      |      |      | 2    | 11% | 24%  |     |     |
| FRI     | ATL   | NCO    | Mixed flags (FR+ES)       | PS      | t2    | -1    | -1    | -1    | -1    | -1   | -1    | -1   | -1   | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1   | -1   | -1   | -1   | -1   |      |       | b     | b     | b     | b     | b     | b    | b    | b    |      | 2    |     |      |     |     |
| FRI     | ATL   | CP     | EU.España                 | PS      | t1    | 3586  | 3074  | 4361  | 3801  | 1570 | 1680  | 375  | 68   | 305   | 254   | 371   | 945   | 571   | 544   | 11    |      | 706  | 425  | 591  |      | 389  | 199   | 370   | 1215  | 1926  | 1789  | 1576  | 2098 | 1721 | 1744 | 1609 | 3    | 10% | 34%  |     |     |
| FRI     | ATL   | CP     | EU.España                 | PS      | t2    | -1    | -1    | -1    | -1    | -1   | -1    | abc  | abc  | abc   | abc   | abc   | abc   | abc   | abc   | abc   | abc  | abc  | abc  | abc  | abc  | abc  | abc   | abc   | abc   | abc   | abc   | abc   | abc  | abc  | abc  | abc  | ac   | 3   |      |     |     |
| FRI     | ATL   | CP     | Venezuela                 | UN      | t1    | 1712  | 1614  | 1441  | 2212  | 2062 | 1969  |      |      |       |       |       | 2597  | 2597  | 2758  | 2578  | 1926 | 1524 | 19   |      |      |      |       |       |       |       |       |       |      |      |      |      | 4    | 7%  | 41%  |     |     |
| FRI     | ATL   | CP     | Venezuela                 | UN      | t2    | -1    | -1    | -1    | -1    | -1   | -1    |      |      |       |       |       | -1    | -1    | -1    | -1    | -1   | -1   | -1   |      |      |      |       |       |       |       |       |       |      |      |      |      | 4    |     |      |     |     |
| FRI     | ATL   | CP     | EU.France                 | PS      | t1    | 416   | 1904  | 3392  | 3392  | 3008 | 3872  |      |      | 120   | 63    | 105   | 126   | 161   | 135   | 146   |      | 91   | 109  | 90   |      | 168  | 491   | 217   | 166   | 151   | 288   | 643   | 647  | 849  | 749  | 363  | 395  | 5   | 6%   | 47% |     |
| FRI     | ATL   | CP     | EU.France                 | PS      | t2    | -1    | -1    | -1    | -1    | -1   | -1    | b    | abc  | abc   | abc   | abc   | abc   | abc   | abc   | abc   | b    | abc  | abc  | abc  | abc  | abc  | abc   | abc   | abc   | abc   | abc   | abc   | abc  | abc  | abc  | abc  | ac   | 5   |      |     |     |
| 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 | 6    | 4%  | 51%  |     |     |
| FRI     | ATL   | CP     | Curaçao                   | PS      | t2    |       |       |       |       |      |       |      |      |       |       |       | -1    | -1    | -1    | -1    | -1   | -1   | -1   | -1   | -1   | -1   | a     | ac    | ac    | ac    | ac    | ac    | ac   | ac   | ac   | a    | 6    |     |      |     |     |
| FRI     | ATL   | CP     | Ghana                     | PS      | t1    |       |       |       |       |      |       |      |      |       |       |       |       |       |       |       |      |      |      |      |      |      |       | 1410  | 1344  | 878   | 1901  | 2580  | 1462 | 1840 | 1651 |      | 7    | 4%  | 55%  |     |     |
| FRI     | ATL   | CP     | Ghana                     | PS      | t2    |       |       |       |       |      |       |      |      |       |       |       |       |       |       |       |      |      |      |      |      |      |       | -1    | -1    | -1    | -1    | -1    | -1   | -1   | -1   |      | 7    |     |      |     |     |
| FRI     | ATL   | CP     | Cape Verde                | PS      | t1    |       |       |       |       |      |       |      |      |       |       |       |       | 36    |       |       |      |      |      |      |      |      |       |       |       |       |       |       |      |      |      |      | 8    | 4%  | 58%  |     |     |
| FRI     | ATL   | CP     | Cape Verde                | PS      | t2    |       |       |       |       |      |       |      |      |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |      |      |      |      | 8    |     |      |     |     |
| FRI     | ATL   | CP     | U.S.S.R.                  | TW      | t1    |       |       |       | 5549  | 4985 | 2198  |      |      |       |       |       |       | a     | a     | a     | a    | b    | ab   | a    |      | ab   | ab    | ab    | ab    | abc   | abc   | abc   | ac   | ac   | ac   | ac   | ac   | ac  | 9    | 4%  | 62% |
| FRI     | ATL   | CP     | U.S.S.R.                  | TW      | t2    |       |       |       | -1    | -1   | -1    |      |      |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |      |      |      |      |      | 9   |      |     |     |
| FRI     | ATL   | CP     | Ghana                     | UN      | t1    | 4500  | 3256  | 4689  |       |      |       |      |      |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |      |      |      |      |      | 10  | 3%   | 65% |     |
| FRI     | ATL   | CP     | Ghana                     | UN      | t2    | -1    | -1    | -1    |       |      |       |      |      |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |      |      |      |      |      | 10  |      |     |     |
| FRI     | ATL   | CP     | Panama                    | PS      | t1    |       |       |       |       |      |       |      |      |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |      |      |      |      |      | 11  | 3%   | 68% |     |
| FRI     | ATL   | CP     | Panama                    | PS      | t2    |       |       |       |       |      |       |      |      |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |      |      |      |      |      | 11  |      |     |     |
| FRI     | ATL   | CP     | U.S.S.R.                  | UN      | t1    | 4441  | 3321  | 2723  |       |      |       |      |      |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |      |      |      |      |      | 12  | 3%   | 71% |     |
| FRI     | ATL   | CP     | U.S.S.R.                  | UN      | t2    | a     | a     | a     |       |      |       |      |      |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |      |      |      |      |      | 12  |      |     |     |
| FRI     | ATL   | CP     | Venezuela                 | PS      | t1    | 34    | 490   | 817   | 440   | 599  | 1067  | 1710 | 322  | 881   |       |       | 295   | 235   | 201   | 97    | 210  | 394  | 9    | 104  | 182  | 42   | 151   | 50    | 48    | 30    | 201   | 447   | 81   | 128  | 43   | 64   | 13   | 3%  | 74%  |     |     |
| FRI     | ATL   | CP     | Venezuela                 | PS      | t2    | b     | -1    | -1    | 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   | 13  |      |     |     |
| FRI     | ATL   | CP     | Maroc                     | PS      | t1    | 45    | 292   | 151   |       |      |       | 412  | 20   | 30    | 70    | 1     | 448   | 419   | 2550  | 1538  | 420  | 492  | 381  | 197  | 142  | 198  | 7     | 11    | 11    | 42    | 3     | 302   | 230  | 30   | 8    | 18   | 14   | 2%  | 76%  |     |     |
| FRI     | ATL   | CP     | Maroc                     | PS      | t2    | -1    | -1    | -1    |       |      |       | -1   | -1   | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1   | -1   | -1   | -1   | -1   | -1   | a     | a     | -1    | -1    | -1    | -1    | -1   | -1   | -1   | -1   | 14   | 15% | 78%  |     |     |
| FRI     | ATL   | CP     | Brazil                    | BB      | t1    | 241   | 214   | 331   | 202   | 128  | 230   | 288  | 209  | 300   | 322   | 300   | 524   | 102   | 120   | 166   | 106  | 64   | 292  | 860  | 339  | 299  | 410   | 174   | 134   | 207   | 204   | 278   | 210  | 238  | 120  | 121  | 15   |     |      |     |     |
| FRI     | ATL   | CP     | Brazil                    | 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    | a    | 15   |     |      |     |     |
| FRI     | ATL   | CP     | Brazil                    | UN      | t1    | 382   | 727   | 929   | 1702  | 572  | 362   | 458  | 82   | 308   | 584   | 258   |       | 2     | 7     |       |      |      |      |      |      |      |       |       |       |       |       |       |      |      |      |      | 16   | 2%  | 80%  |     |     |
| FRI     | ATL   | CP     | Brazil                    | UN      | t2    | -1    | -1    | -1    | -1    | -1   | -1    | -1   | -1   | -1    | -1    | -1    |       | -1    | -1    |       |      |      |      |      |      |      |       |       |       |       |       |       |      |      |      |      | 16   |     |      |     |     |
| FRI     | ATL   | CP     | Ghana                     | BB      | t1    |       |       |       |       |      |       |      |      |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |      |      |      |      | 17   | 2%  | 82%  |     |     |
| FRI     | ATL   | CP     | Ghana                     | BB      | t2    |       |       |       |       |      |       |      |      |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |      |      |      |      | 17   |     |      |     |     |
| FRI     | ATL   | CP     | Côte d'Ivoire             | GN      | t1    |       |       |       |       |      |       |      |      |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |      |      |      |      | 18   | 2%  | 84%  |     |     |
| FRI     | ATL   | CP     | Côte d'Ivoire             | GN      | t2    |       |       |       |       |      |       |      |      |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |      |      |      |      | 18   |     |      |     |     |
| FRI     | ATL   | CP     | Russian Federation        | TW      | t1    |       |       |       |       |      |       |      |      |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |      |      |      |      | 19   | 2%  | 85%  |     |     |
| FRI     | ATL   | CP     | Russian Federation        | TW      | t2    |       |       |       |       |      |       |      |      |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |      |      |      |      | 19   |     |      |     |     |
| FRI     | ATL   | CP     | Senegal                   | PS      | t1    |       |       |       | 810   | 702  | 990   | 307  | 201  | 309   | 309   | 309   |       | 101   |       |       |      |      |      |      |      |      |       |       |       |       |       |       |      |      |      |      | 20   | 1%  | 87%  |     |     |
| FRI     | ATL   | CP     | Senegal                   | PS      | t2    |       |       |       | -1    | -1   | -1    | -1   | -1   | -1    | -1    | -1    |       | -1    |       |       |      |      |      |      |      |      |       |       |       |       |       |       |      |      |      |      | 20   |     |      |     |     |
| FRI     | ATL   | CP     | Cape Verde                | HS      | t1    |       |       |       |       |      |       |      |      |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |      |      |      |      | 21   | 1%  | 88%  |     |     |
| FRI     | ATL   | CP     | Cape Verde                | HS      | t2    |       |       |       |       |      |       |      |      |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |      |      |      |      | 21   |     |      |     |     |
| FRI     | ATL   | CP     | Guinée Rep.               | PS      | t1    |       |       |       |       |      |       |      |      |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |      |      |      |      | 22   | 1%  | 89%  |     |     |
| FRI     | ATL   | CP     | Guinée Rep.               | PS      | t2    |       |       |       |       |      |       |      |      |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |      |      |      |      | 22   |     |      |     |     |
| FRI     | ATL   | NCO    | NEI (ETRO)                | PS      | t1    |       |       |       |       |      |       |      |      |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |      |      |      |      | 23   | 1%  | 90%  |     |     |
| FRI     | ATL   | NCO    | NEI (ETRO)                | PS      | t2    |       |       |       |       |      |       |      |      |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |      |      |      |      | 23   |     |      |     |     |
| FRI     | ATL   | CP     | Russian Federation        | PS      | t1    |       |       |       |       |      |       |      |      |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |      |      |      |      | 24   | 1%  | 91%  |     |     |
| FRI     | ATL   | CP     | Russian Federation        | PS      | t2    |       |       |       |       |      |       |      |      |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |      |      |      |      | 24   |     |      |     |     |
| FRI     | ATL   | CP     | S. Tomé e Príncipe        | PS      | t1    |       |       |       |       |      |       |      |      |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |      |      |      |      | 25   | 1%  | 92%  |     |     |
| FRI     | ATL   | CP     | S. Tomé e Príncipe        | PS      | t2    |       |       |       |       |      |       |      |      |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |      |      |      |      | 25   |     |      |     |     |
| FRI     | ATL   | NCO    | Mixed flags (EU tropical) | PS      | t1    |       |       |       |       |      |       |      |      |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |      |      |      |      | 26   | 1%  | 92%  |     |     |
| FRI     | ATL   | NCO    | Mixed flags (EU tropical) | PS      | t2    |       |       |       |       |      |       |      |      |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |      |      |      |      | 26   |     |      |     |     |
| FRI     | ATL   | CP     | U.S.S.R.                  | PS      | t1    | 1614  | 144   | 182   | 89    | 69   | 541   |      |      |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |      |      |      |      | 27   | 1%  | 93%  |     |     |
| FRI     | ATL   | CP     | U.S.S.R.                  | PS      | t2    | a     | a     | a     | a     | a    | a     |      |      |       |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |      |      |      |      |      |     |      |     |     |

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**Table 5h.** SCRS catalogue: KGM [A+M] (*Scomberomorus cavalla*).

|         |       | TOTAL  |                     | 9964    | 13990 | 13792 | 14331 | 12153 | 10420 | 13241 | 14691 | 16331 | 14777 | 14930 | 17782 | 19660 | 16394 | 17717 | 16161 | 15360 | 17258 | 15863 | 12830 | 11766 | 8185 | 17936 | 7344  | 12533 | 9742 | 10868 | 12762 | 12248 | 4432 | 3642 |      |      |      |     |      |     |     |     |
|---------|-------|--------|---------------------|---------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|-------|-------|-------|------|-------|-------|-------|------|------|------|------|------|-----|------|-----|-----|-----|
| Species | Stock | Status | FlagName            | GearGrp | DSet  | 1985  | 1986  | 1987  | 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 | Rank | %   | %cum |     |     |     |
| KGM     | A+M   | CP     | Mexico              | LL      | t1    | 2303  | 2643  | 3067  | 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 | 1    | 26% | 26%  |     |     |     |
| 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   | -1   | 2   | 25%  | 51% |     |     |
| KGM     | A+M   | CP     | U.S.A.              | RR      | t1    | 5453  | 4869  | 5172  | 5040  | 4026  | 1931  | 6385  | 7073  | 7046  | 5878  | 5246  | 4731  | 5933  | 4732  | 3660  | 4448  | 4358  | 3952  | 4619  | 4619 | 4619  |       |       |      |       |       |       |      |      |      |      |      | 2   |      |     |     |     |
| KGM     | A+M   | CP     | U.S.A.              | RR      | t2    | -1    | b     | b     | b     | b     | b     | b     | b     | b     | b     | b     | -1    | a     | a     | a     | a     | a     | a     | a     | a    | a     | a     | a     |      |       |       |       |      |      |      |      |      |     | 2    |     |     |     |
| KGM     | A+M   | CP     | U.S.A.              | HL      | t1    | 268   | 167   | 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   | 17%  | 68% |     |     |
| 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    | -1    | -1   | -1   | -1   | -1   | -1   | -1  | 3    |     |     |     |
| KGM     | A+M   | CP     | Brazil              | UN      | t1    | 806   | 2890  | 2172  | 2029  | 2102  | 2069  | 959   | 940   | 1380  | 1365  | 1328  | 2887  | 2398  | 3595  | 3595  | 2344  | 200   | 2316  | 3311  | 247  | 201   | 315   | 33    | 0    |       |       |       |      |      |      |      |      |     | 4    | 10% | 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    | -1    | -1    | -1   | -1    | -1    | -1    | -1   | -1   | -1   | -1   | -1   | -1  | 4    |     |     |     |
| KGM     | A+M   | CP     | Venezuela           | UN      | t1    | 833   | 933   | 940   | 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    | -1    | -1    | -1    | -1    | -1   | -1    | -1    | -1    | -1   | -1    | -1    | -1    | -1   | -1   | -1   | -1   | -1   | -1  | 5    |     |     |     |
| KGM     | A+M   | CP     | U.S.A.              | TR      | t1    | 1634  | 1659  | 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  |      |      |      |      |     | 6    | 5%  | 90% |     |
| 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    | -1    | -1   | -1   | -1   | -1   | -1   | -1  | 6    |     |     |     |
| 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  |      |      |     |      | 7   | 4%  | 94% |
| 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     | a    | -1    | a     | a     | a    | a    | a    | a    | a    | a   | 7    |     |     |     |
| KGM     | A+M   | CP     | U.S.A.              | GN      | t1    | 512   | 695   | 530   | 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%  | 97% |     |
| KGM     | A+M   | CP     | U.S.A.              | GN      | t2    | -1    | b     | b     | b     | 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   | -1   | -1   | -1  | 8    |     |     |     |
| KGM     | A+M   | CP     | U.S.A.              | UN      | t1    | 41    | 0     | 0     | 0     | 0     | 0     | 265   | 498   | 409   | 403   | 344   | 333   | 358   | 531   | 494   | 38    | 37    | 94    | 74    | 48   | 27    | 16    | 6     | 11   | 8     | 9     | 7     | 8    | 4    |      |      |      |     | 9    | 1%  | 98% |     |
| KGM     | A+M   | CP     | U.S.A.              | UN      | t2    | -1    | b     | b     | b     | 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   | -1   | -1   | -1  | 9    |     |     |     |
| KGM     | A+M   | NCC    | Guyana              | UN      | t1    |       |       |       |       |       |       |       |       |       |       |       |       | 270   | 440   | 398   | 214   | 239   | 267   | 390   |      |       |       |       |      |       |       |       |      |      |      |      |      |     | 10   | 1%  | 98% |     |
| KGM     | A+M   | NCC    | Guyana              | UN      | t2    |       |       |       |       |       |       |       |       |       |       |       |       | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1   | -1    | -1    | -1    | -1   | -1    | -1    | -1    | -1   | -1   | -1   | -1   | -1   | -1  | 10   |     |     |     |



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**Table 5i.** SCRS catalogue: LTA [AT] (*Euthynnus alletteratus*).

|         |       |        |                     | TOTAL   | 10625 | 11225 | 18070 | 23607 | 28011 | 12535 | 10771 | 22447 | 15296 | 12978 | 10934 | 12138 | 14746 | 14668 | 12515 | 15003 | 15804 | 16810 | 16029 | 14500 | 10461 | 7642 | 15191 | 11256 | 12961 | 16728 | 14945 | 13650 | 15619 | 8071 | 7596 |      |      |     |      |     |     |     |
|---------|-------|--------|---------------------|---------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|-------|-------|------|------|------|------|-----|------|-----|-----|-----|
| Species | Stock | Status | FlagName            | GearGrp | DSet  | 1985  | 1986  | 1987  | 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 | Rank | %   | %cum |     |     |     |
| LTA     | ATL   | CP     | Senegal             | GN      | t1    | 2022  | 5049  | 1790  | 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 | 1    | 19% | 19%  |     |     |     |
| LTA     | ATL   | CP     | Senegal             | GN      | t2    | b     | b     | b     | 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   | 2    | 9%  | 28%  |     |     |     |
| LTA     | ATL   | CP     | Ghana               | UN      | t1    | 32    | 5199  | 11299 | 11299 |       |       |       | 11299 |       |       |       |       |       |       |       |       |       |       |       |       |      |       |       |       |       |       |       |       |      |      |      | 3    | 6%  | 34%  |     |     |     |
| LTA     | ATL   | CP     | Ghana               | UN      | t2    | -1    | -1    | -1    | -1    | -1    |       |       | -1    |       |       |       |       |       |       |       |       |       |       |       |       |      |       |       |       |       |       |       |       |      |      |      |      | 4   |      |     |     |     |
| LTA     | ATL   | NCO    | Mixed flags (FR+ES) | PS      | t1    | 78    | 151   | 1017  | 1017  | 900   | 1152  | 2422  | 2678  | 3000  | 2071  | 1279  | 1272  | 1070  | 1226  | 1494  | 2064  | 1557  | 653   | 1082  | 1148  |      |       |       |       |       |       |       |       |      |      |      |      | 5   | 3%   |     |     |     |
| LTA     | ATL   | NCO    | Mixed flags (FR+ES) | PS      | t2    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | b     | b     | -1    | -1    | -1    | -1    | -1    |      |       | b     | b     | b     | b     | b     | b     | b    | b    | b    |      | 6   |      |     |     |     |
| LTA     | ATL   | CP     | Ghana               | BB      | t1    | 748   | 524   | 318   | 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  |      |      |      | 7   | 4%   | 61% |     |     |
| LTA     | ATL   | CP     | Ghana               | BB      | t2    | -1    | -1    | -1    | a     | a     | -1    | a     | a     | a     | a     | a     | ab    | ab    | a     | a     | a     | a     | a     | a     | a     | a    | -1    | b     | a     | -1    | -1    | -1    | -1    | -1   | -1   |      |      | 8   | 6%   | 41% |     |     |
| LTA     | ATL   | CP     | U.S.A.              | RR      | t1    | 11    | 27    |       | 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 | 5    | 5%  | 46%  |     |     |     |
| LTA     | ATL   | CP     | U.S.A.              | RR      | t2    | -1    | ab    | ab    | 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   |      | 6   | 5%   | 51% |     |     |
| LTA     | ATL   | CP     | Venezuela           | UN      | t1    | 1050  | 1123  | 1467  | 1236  | 1374  | 1294  |       |       |       |       |       |       | 1840  | 1840  | 2815  | 2247  | 2247  | 2247  | 2247  |       |      |       |       |       |       |       |       |       |      |      |      |      | 7   |      |     |     |     |
| LTA     | ATL   | CP     | Venezuela           | UN      | t2    | -1    | -1    | -1    | -1    | -1    | -1    |       |       |       |       |       |       | -1    | -1    | -1    | -1    | -1    | -1    | -1    |       |      |       |       |       |       |       |       |       |      |      |      |      | 8   | 5%   | 56% |     |     |
| LTA     | ATL   | CP     | Senegal             | TR      | t1    | 500   | 370   | 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  |      |      | 9   | 7%   |     |     |     |
| LTA     | ATL   | CP     | Senegal             | TR      | t2    | -1    | -1    | -1    | -1    | ab    | -1    | -1    | -1    | -1    | b     | a     | a     | a     | a     | a     | a     | ab    | ab    | ab    | ab    | ab   | ab    | ab    | ab    | ab    | ab    | ab    | ab    | b    | ab   | b    |      |     | 10   | 8%  | 61% |     |
| 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   |      |      | 11  | 5%   | 61% |     |     |
| LTA     | ATL   | CP     | Côte d'Ivoire       | GN      | t2    | -1    | -1    | -1    | -1    | -1    | a     | -1    | -1    | -1    | -1    | -1    | a     | a     | a     | a     | a     | a     | a     |       | a     | a    | a     | ab    | ab    | a     | a     | ab    | ab    | a    | ab   | ab   | ab   |     | 12   | 3%  | 75% |     |
| LTA     | ATL   | CP     | Ghana               | PS      | t1    | 153   | 93    | 34    |       |       |       |       |       |       |       |       |       | 28    | 629   | 109   | 137   | 452   | 434   | 2422  | 4442  | 1527 | 2301  | 332   | 771   | 433   | 1041  | 1064  | 756   | 685  | 721  |      |      | 13  | 4%   | 65% |     |     |
| LTA     | ATL   | CP     | Ghana               | PS      | t2    | -1    | -1    | -1    |       |       |       |       |       |       |       |       |       | ab    | ab    | a     | a     | a     | a     | a     | a     | a    | a     | -1    | b     | a     | -1    | -1    | -1    | -1   | -1   | -1   |      |     | 14   |     |     |     |
| LTA     | ATL   | NCO    | Mixed flags (FR+ES) | UN      | t1    |       |       |       |       |       |       |       |       | 1975  |       |       |       | 2087  | 1766  | 1710  | 2352  | 2681  | 2681  | 2681  |       |      |       |       |       |       |       |       |       |      |      |      |      |     | 15   | 4%  | 69% |     |
| LTA     | ATL   | NCO    | Mixed flags (FR+ES) | UN      | t2    |       |       |       |       |       |       |       |       | -1    |       |       |       | -1    | -1    | -1    | -1    | -1    | -1    | -1    |       |      |       |       |       |       |       |       |       |      |      |      |      | 16  |      |     |     |     |
| LTA     | ATL   | CP     | Senegal             | HL      | t1    | 1039  | 500   | 558   | 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  |      |     | 17   | 1%  | 83% |     |
| LTA     | ATL   | CP     | Senegal             | HL      | t2    | b     | b     | b     | 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   |      |     | 18   | 1%  | 85% |     |
| LTA     | ATL   | CP     | Brazil              | UN      | t1    | 738   | 402   | 131   | 103   | 72    | 680   | 777   | 931   | 985   | 1225  | 1059  | 834   | 507   | 920   | 920   | 605   | 615   | 615   |       |       |      |       |       |       |       |       |       |       | 4    |      |      |      | 19  | 3%   | 72% |     |     |
| LTA     | ATL   | CP     | Brazil              | UN      | t2    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1   | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1   | -1   | -1   |      |     | 20   | 2%  | 77% |     |
| LTA     | ATL   | CP     | Senegal             | PS      | t1    | 1196  | 773   |       | 2182  | 460   | 180   | 528   | 874   | 811   | 299   |       |       | 1440  | 1340  | 207   | 207   | 207   | 207   |       |       |      |       |       |       |       |       |       |       |      |      |      |      |     | 21   | 3%  | 75% |     |
| LTA     | ATL   | CP     | Senegal             | 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   |     |      | 22  | 3%  |     |
| LTA     | ATL   | CP     | Angola              | TP      | t1    | 142   | 31    | 58    | 629   | 724   | 186   | 267   |       | 164   | 90    | 59    | 144   | 36    | 241   | 87    | 69    | 132   | 132   |       |       |      |       |       |       |       |       |       |       |      |      |      |      |     | 23   | 2%  | 79% |     |
| LTA     | 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   | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1   | -1   | -1   | -1   |     |      | 24  | 2%  | 79% |
| LTA     | ATL   | CP     | EU.España           | PS      | t1    | 1     |       |       |       |       |       | 26    |       |       |       | 10    | 55    | 27    | 99    | 5     |       |       |       |       | 489   | 41   | 126   | 208   | 844   | 970   | 1121  | 1261  | 645   | 626  | 976  | 378  |      |     | 25   | 2%  | 81% |     |
| LTA     | ATL   | CP     | EU.España           | PS      | t2    | -1    |       |       |       |       |       | ab    | b     | b     | b     | abc   | abc   | abc   | abc   | abc   | abc   | b     | b     | b     | b     | b    | b     | b     | b     | b     | abc   | abc   | abc   | abc  | abc  | ac   |      |     | 26   | 1%  | 82% |     |
| LTA     | ATL   | CP     | EU.France           | PS      | t1    |       |       |       | 195   |       |       | 32    | 11    | 8     | 35    | 55    | 22    |       | 54    | 3     |       |       |       | 102   | 155   | 141  | 103   | 207   | 707   | 999   | 1384  | 747   | 371   | 227  |      |      | 27   | 1%  | 82%  |     |     |     |
| LTA     | ATL   | CP     | EU.France           | PS      | t2    |       |       |       | -1    |       |       | ac    | abc   | abc   | abc   | abc   | abc   | abc   | b     | b     | abc   | abc   | b     | b     | b     | b    | b     | abc   | b     | b     | b     | abc   | abc   | abc  | abc  | abc  | abc  |     |      | 28  |     |     |
| LTA     | ATL   | CP     | Venezuela           | PS      | t1    |       |       |       |       |       | 1342  | 958   | 1002  | 1121  | 1121  |       |       |       |       |       |       |       |       |       |       |      |       |       |       |       |       |       |       |      |      |      |      |     | 29   | 1%  | 86% |     |
| LTA     | ATL   | CP     | Venezuela           | PS      | t2    |       |       |       |       |       | -1    | -1    | -1    | -1    | -1    | -1    |       |       |       |       |       |       |       |       |       |      |       |       |       |       |       |       |       |      |      |      |      |     | 30   |     |     |     |
| LTA     | ATL   | CP     | Côte d'Ivoire       | UN      | t1    | 20    | 5300  |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |       |       |       |       |       |       |       |      |      |      |      |     | 31   | 1%  | 88% |     |
| LTA     | ATL   | CP     | Côte d'Ivoire       | UN      | t2    | -1    | -1    |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |       |       |       |       |       |       |       |      |      |      |      |     | 32   |     |     |     |
| LTA     | ATL   | CP     | Angola              | BB      | t1    | 1255  | 1129  | 1267  | 501   | 408   | 99    | 39    | 14    | 11    | 31    | 58    | 91    | 39    | 130   | 31    | 63    |       |       |       |       |      |       |       |       |       |       |       |       |      |      |      |      |     | 33   | 1%  | 89% |     |
| LTA     | ATL   | CP     | Angola              | BB      | t2    | ab    | -1    | a     | -1    | a     | a     | -1    | -1    | a     | a     | a     | ab    | ab    | a     | a     | -1    |       |       |       |       |      |       |       |       |       |       |       |       |      |      |      |      |     | 34   | 1%  | 90% |     |
| LTA     | ATL   | CP     | Angola              | HL      | t1    |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |       |       |       |       |       |       |       |      |      |      |      |     | 35   |     |     |     |
| LTA     | ATL   | CP     | Angola              | HL      | t2    |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |       |       |       |       |       |       |       |      |      |      |      |     | 36   |     |     |     |
| LTA     | ATL   | CP     | Cape Verde          | PS      | t1    |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |       |       |       |       |       |       |       |      |      |      |      |     | 37   | 1%  | 88% |     |
| LTA     | ATL   | CP     | Cape Verde          | PS      | t2    | a     |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |       |       |       |       |       |       |       |      |      |      |      |     | 38   |     |     |     |
| LTA     | ATL   | CP     | Venezuela           | BB      | t1    |       |       |       |       |       | 621   | 451   | 887   | 994   | 994   |       |       |       |       |       |       |       |       |       |       |      |       |       |       |       |       |       |       |      |      |      |      |     | 39   | 1%  | 89% |     |
| LTA     | ATL   | CP     | Venezuela           | BB      | t2    |       |       |       |       |       | -1    | -1    | -1    | -1    | -1    | -1    |       |       |       |       |       |       |       |       |       |      |       |       |       |       |       |       |       |      |      |      |      |     | 40   |     |     |     |
| LTA     | ATL   | CP     | Maroc               | PS      | t1    | 447   | 47    |       |       | 289   | 27    | 370   | 26    | 43    | 230   | 588   | 194   | 189   | 67    | 89    | 69    | 253   | 70    | 90    | 33    |      |       |       |       |       |       |       |       |      |      |      |      |     | 41   | 1%  | 89% |     |
| LTA     | ATL   | CP     | Maroc               | 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   |     | 42   |     |     |     |
| LTA     | ATL   | CP     | U.S.S.R.            | PS      | t1    | 901   | 271   | 61    | 757   | 543   | 667   |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |       |       |       |       |       |       |       |      |      |      |      |     | 43   | 1%  | 90% |     |
| LTA     | ATL   | CP     | U.S.S.R.            | PS      | t2    | a     | a     | a     | a     | a     | a     |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |       |       |       |       |       |       |       |      |      |      |      |     | 44   |     |     |     |
| LTA     | ATL   | CP     | Guinée Rep.         | PS      | t1    |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |       |       |       |       |       |       |       |      |      |      |      |     |      |     |     |     |

SMALL TUNAS SPECIES GROUP INTERSESSIONAL MEETING – MIAMI 2017

**Table 5j.** SCRS catalogue: LTA [MD] (*Euthynnus alletteratus*).

|         |       |        |           |         | TOTAL | 2040 | 2166 | 2424 | 2405 | 2035 | 2617 | 2315 | 1755 | 1258 | 1197 | 1894 | 2116 | 1601 | 2914 | 2876 | 3294 | 2863 | 2643 | 684  | 1439 | 1042 | 1605 | 1687 | 2259 | 2100 | 2170 | 3668 | 4186 | 4633 | 3605 | 6472 |      |     |      |     |     |
|---------|-------|--------|-----------|---------|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|------|-----|-----|
| Species | Stock | Status | FlagName  | GearGrp | DSet  | 1985 | 1986 | 1987 | 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 | Rank | %   | %cum |     |     |
| LTA     | MED   | CP     | Turkey    | PS      | t1    |      |      |      |      |      |      |      |      |      |      |      |      |      | 500  | 750  | 750  | 750  | 750  |      | 568  | 507  | 1230 | 785  | 1074 | 1309 | 1046 | 1437 | 1645 | 1386 | 682  | 1    | 20%  | 20% |      |     |     |
| LTA     | MED   | CP     | Turkey    | PS      | t2    |      |      |      |      | b    |      |      |      |      |      |      |      |      | -1   | -1   | -1   | -1   | -1   |      | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | 1    |      |     |      |     |     |
| LTA     | MED   | CP     | Tunisie   | UN      | t1    | 253  | 492  | 330  | 330  | 564  | 1911 | 1249 | 617  | 242  | 204  | 696  | 824  | 333  | 1113 | 752  | 1453 | 1036 | 960  | 657  | 633  |      |      |      |      |      |      |      |      |      |      | 2    | 19%  | 39% |      |     |     |
| LTA     | MED   | CP     | Tunisie   | UN      | t2    | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   |      |      |      |      |      |      |      |      |      |      |      | 2    |     |      |     |     |
| LTA     | MED   | CP     | Tunisie   | PS      | t1    | 1144 | 1048 | 1333 | 1381 | 847  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 3    | 19% | 58%  |     |     |
| LTA     | MED   | CP     | Tunisie   | PS      | t2    | -1   | -1   | -1   | -1   | -1   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 3    |     |      |     |     |
| LTA     | MED   | CP     | Syria     | UN      | t1    | 95   | 73   | 121  | 99   | 121  | 127  | 110  | 156  | 161  | 156  | 155  | 270  | 350  | 417  | 390  | 370  | 370  | 330  |      |      |      | 193  | 133  | 163  | 148  |      | 810  | 800  | 803  | 798  | 5165 | 4    | 7%  | 65%  |     |     |
| 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   | -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  | 5   | 6%   | 70% |     |
| 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    | 5    |     |      |     |     |
| LTA     | MED   | NCO    | NEI (MED) | UN      | t1    | 200  | 200  | 200  | 200  | 200  | 200  | 200  | 200  | 200  | 200  | 200  | 200  | 200  | 200  | 200  | 200  | 200  | 200  |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 6   | 4%   | 74% |     |
| LTA     | MED   | NCO    | NEI (MED) | UN      | t2    | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 6   |      |     |     |
| LTA     | MED   | NCO    | Israel    | UN      | t1    | 259  | 284  | 273  | 135  | 124  | 129  | 108  | 126  | 119  | 119  | 215  | 119  | 119  | 119  | 119  | 119  | 119  | 119  |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 7   | 4%   | 78% |     |
| LTA     | MED   | NCO    | Israel    | UN      | t2    | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 7   |      |     |     |
| LTA     | MED   | CP     | EU.Greece | PS      | t1    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 112  | 69   | 72   | 183  | 148  | 165  | 301  | 276  | 363  | 289  | 271  | 8    | 3%  | 81%  |     |     |
| LTA     | MED   | CP     | EU.Greece | PS      | t2    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | 8    |     |      |     |     |
| LTA     | MED   | CP     | EU.Italy  | PS      | t1    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 9    | 2%  | 83%  |     |     |
| LTA     | MED   | CP     | EU.Italy  | PS      | t2    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 9    |     |      |     |     |
| LTA     | MED   | CP     | Egypt     | PS      | t1    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 10   | 2%  | 85%  |     |     |
| LTA     | MED   | CP     | Egypt     | PS      | t2    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 10   |     |      |     |     |
| LTA     | MED   | CP     | EU.España | UN      | t1    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 11  | 2%   | 87% |     |
| LTA     | MED   | CP     | EU.España | UN      | t2    | b    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | -1   | -1   | a    | a    | a    | a    | a    | a    | a    | a    | a    | a    | a    | 11  |      |     |     |
| LTA     | MED   | CP     | Algerie   | TP      | t1    |      |      |      |      |      |      | 130  | 139  | 144  | 123  | 121  | 154  | 106  | 98   | 139  | 116  | 102  | 29   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     | 12   | 2%  | 89% |
| LTA     | MED   | CP     | Algerie   | TP      | t2    |      |      |      |      |      |      | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 12  |      |     |     |
| LTA     | MED   | CP     | EU.España | TP      | t1    | 2    | 5    |      | 5    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 13  | 2%   | 91% |     |
| LTA     | MED   | CP     | EU.España | TP      | t2    | -1   | -1   |      | -1   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | -1   | -1   | -1   | ab   | abc  | abc  | a    | abc  | ab   | ab   | ab   | ab   | 13  |      |     |     |
| LTA     | MED   | CP     | EU.Italy  | LL      | t1    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 10   | 13   | 18   |      |      |      |      |      |      |      |      |      |      | 14  | 1%   | 92% |     |
| LTA     | MED   | CP     | EU.Italy  | LL      | t2    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | -1   | b    | -1   |      |      |      |      |      |      |      |      |      |      | 14  |      |     |     |
| LTA     | MED   | CP     | Tunisie   | TP      | t1    | 44   | 50   | 140  | 197  | 155  | 202  | 94   | 47   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 15  | 1%   | 93% |     |
| LTA     | MED   | CP     | Tunisie   | TP      | t2    | -1   | -1   | -1   | b    | b    | b    | b    | b    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     | 15   |     |     |
| LTA     | MED   | CP     | Algerie   | UN      | t1    |      |      |      |      |      |      | 40   | 45   | 35   | 28   | 51   | 37   | 22   | 18   | 27   | 14   | 9    | 17   |      | 11   |      |      |      |      |      |      |      |      |      |      |      |      | 16  | 1%   | 94% |     |
| LTA     | MED   | CP     | Algerie   | UN      | t2    |      |      |      |      |      |      | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   |      | -1   |      |      |      |      |      |      |      |      |      |      |      |      | 16  |      |     |     |
| LTA     | MED   | CP     | Algerie   | LL      | t1    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 27   | 18   | 57   | 96   |      |      |      |      |      |      |      |      |     | 17   | 1%  | 95% |
| LTA     | MED   | CP     | Algerie   | LL      | t2    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | -1   | -1   | -1   | -1   |      |      |      |      |      |      |      |      |      |     | 17   |     |     |
| LTA     | MED   | NCO    | Palestine | UN      | t1    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 18  | 1%   | 96% |     |
| LTA     | MED   | NCO    | Palestine | UN      | t2    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     | 18   |     |     |
| LTA     | MED   | CP     | EU.Italy  | UN      | t1    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     | 19   | 1%  | 96% |
| LTA     | MED   | CP     | EU.Italy  | UN      | t2    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     | 19   |     |     |
| LTA     | MED   | CP     | Algerie   | GN      | t1    |      |      |      |      |      |      | 20   | 27   | 21   | 18   | 37   | 22   | 19   | 16   | 61   | 43   | 27   | 23   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     | 20   | 1%  | 97% |
| LTA     | MED   | CP     | Algerie   | GN      | t2    |      |      |      |      |      |      | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   |      | -1   | -1   | -1   |      |      |      |      |      |      |      |      |      |      |     | 20   |     |     |
| LTA     | MED   | CP     | EU.España | LL      | t1    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     | 21   | 1%  | 97% |
| LTA     | MED   | CP     | EU.España | LL      | t2    |      |      |      |      |      |      | a    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     | 21   |     |     |
| LTA     | MED   | CP     | EU.Cyprus | UN      | t1    | 32   | 13   | 25   | 41   | 20   | 23   | 25   | 21   | 11   | 23   | 10   | 19   | 19   | 19   | 19   | 16   | 19   | 19   |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 22  | 1%   | 98% |     |
| LTA     | MED   | CP     | EU.Cyprus | UN      | t2    | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     | 22   |     |     |
|         |       |        |           |         |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     | 22   |     |     |

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**Table 5k.** SCRS catalogue: MAW [A+M] (*Scomberomorus tritor*).

|         |       |        |                    | TOTAL   |      | 3941 | 3180 | 1721 | 3811 | 2808 | 6629 | 3652 | 2423 | 1723 | 1138 | 1808 | 2831 | 1415 | 1482 | 909  | 1219 | 828  | 1345 | 550  | 285  | 443  | 276  | 435  | 422  | 460  | 2079 | 1106 | 930  | 2865 | 1009 | 712  |      |     |      |  |
|---------|-------|--------|--------------------|---------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|------|--|
| Species | Stock | Status | FlagName           | GearGrp | DSet | 1985 | 1986 | 1987 | 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 | Rank | %   | %cum |  |
| MAW     | A+M   | CP     | Senegal            | GN      | t1   | 485  | 1150 | 1255 | 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  | 1    | 36% | 36%  |  |
| MAW     | A+M   | CP     | Senegal            | GN      | t2   | b    | b    | b    | 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    | 2    | 16% | 52%  |  |
| MAW     | A+M   | CP     | Ghana              | UN      | t1   | 3000 | 1453 |      | 1457 | 1457 | 1500 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |      |  |
| MAW     | A+M   | CP     | Ghana              | UN      | t2   | -1   | -1   |      | -1   | -1   | -1   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |      |  |
| MAW     | A+M   | CP     | Senegal            | HL      | t1   | 199  | 211  | 359  | 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   | 3    | 9%  | 60%  |  |
| MAW     | A+M   | CP     | Senegal            | HL      | t2   | b    | b    | b    | 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    | 3    |     |      |  |
| MAW     | A+M   | CP     | Ghana              | GN      | t1   |      |      |      |      |      |      | 2778 | 899  | 466  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |      |  |
| MAW     | A+M   | CP     | Ghana              | GN      | t2   |      |      |      |      |      |      | -1   | -1   | -1   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |      |  |
| MAW     | A+M   | NCO    | Benin              | HS      | t1   | 50   | 104  | 17   | 13   | 334  | 211  | 214  | 202  | 214  | 194  | 188  | 188  | 362  | 511  | 205  | 205  | 205  | 205  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |      |  |
| MAW     | A+M   | NCO    | Benin              | HS      | t2   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1  |      |  |
| MAW     | A+M   | CP     | Senegal            | UN      | t1   |      | 0    |      | 0    |      | 1215 | 0    | 0    | 0    | 0    | 1    | 1317 | 4    | 1    | 14   | 9    | 3    | 5    | 5    |      |      |      |      |      | 0    | 0    | 0    |      |      |      | 0    |      |     |      |  |
| MAW     | A+M   | CP     | Senegal            | UN      | t2   |      | -1   |      | -1   |      | -1   | a    | a    | a    | a    | a    | -1   | a    | a    | a    | a    | a    | a    | a    | a    | a    | a    | a    |      | a    | -1   | a    |      |      | a    |      |      |     |      |  |
| MAW     | A+M   | CP     | Angola             | TP      | t1   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 64   | 1227 | 185  | 164  | 224  |      |      |      |     |      |  |
| MAW     | A+M   | CP     | Angola             | TP      | t2   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | -1   | -1   | -1   | -1   | -1   |      |      |     |      |  |
| MAW     | A+M   | CP     | U.S.S.R.           | UN      | t1   | 202  | 219  | 24   | 143  | 195  | 1032 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |      |  |
| MAW     | A+M   | CP     | U.S.S.R.           | UN      | t2   | a    | a    | a    | a    | a    | -1   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |      |  |
| MAW     | A+M   | CP     | U.S.S.R.           | TW      | t1   |      |      |      | 143  | 195  | 1240 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |      |  |
| MAW     | A+M   | CP     | U.S.S.R.           | TW      | t2   |      |      |      | -1   | -1   | -1   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |      |  |
| MAW     | A+M   | CP     | Senegal            | PS      | t1   |      |      |      |      |      |      |      |      |      |      |      | 209  | 356  | 209  | 209  | 209  | 209  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |      |  |
| MAW     | A+M   | CP     | Senegal            | PS      | t2   |      |      |      |      |      |      |      |      |      |      |      | -1   | -1   | -1   | -1   | -1   | -1   | -1   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |      |  |
| MAW     | A+M   | CP     | Senegal            | TR      | t1   | 0    | 43   | 62   | 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    |      |      |     |      |  |
| MAW     | A+M   | CP     | Senegal            | TR      | t2   | -1   | b    | b    | b    | b    | a    | ab   | a    | a    | ab   | ab   | ab   | a    | ab   | ab   | ab   | ab   | ab   | a    | a    | ab   | ab   | ab   | ab   | ab   | ab   | ab   | ab   | -1   | ab   |      |      |     |      |  |
| MAW     | A+M   | CP     | S. Tomé e Príncipe | PS      | t1   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 12   | 13   |      |      |      |      |      |      |      |      |      |      |      |     |      |  |
| MAW     | A+M   | CP     | S. Tomé e Príncipe | PS      | t2   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | -1   | -1   |      |      | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1  | -1   |  |
| MAW     | A+M   | CP     | Angola             | GN      | t1   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 1    | 16   | 2    | 2    | 598  |      |      |      |     |      |  |
| MAW     | A+M   | CP     | Angola             | GN      | t2   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | -1   | -1   | -1   | -1   | -1   | -1   |      |      |     |      |  |
| MAW     | A+M   | CP     | Angola             | HL      | t1   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 2    | 47   | 7    | 6    | 424  |      |      |      |     |      |  |
| MAW     | A+M   | CP     | Angola             | HL      | t2   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | -1   | -1   | -1   | -1   | -1   |      |      |      |     |      |  |
| MAW     | A+M   | CP     | Angola             | PS      | t1   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |      |  |
| MAW     | A+M   | CP     | Angola             | PS      | t2   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | -1   | -1   | -1   | -1   |      |      |      |      |     |      |  |
| MAW     | A+M   | CP     | Angola             | PS      | t2   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | -1   | -1   | -1   | -1   |      |      |      | -1   |     |      |  |
| MAW     | A+M   | CP     | EU.Lithuania       | UN      | t1   |      |      |      |      |      | 52   | 4    |      |      |      |      |      |      |      |      |      |      |      | 298  |      |      |      |      |      |      |      |      |      |      |      |      |      |     |      |  |
| MAW     | A+M   | CP     | EU.Lithuania       | UN      | t2   |      |      |      |      |      | -1   | -1   |      |      |      |      |      |      |      |      |      |      |      | -1   |      |      |      |      |      |      |      |      |      |      |      |      |      |     |      |  |

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**Table 51.** SCRS catalogue: SSM [A+M] (*Scomberomorus maculatus*).

|         |       |        |                    | TOTAL   | 11590 | 14207 | 14461 | 12671 | 13845 | 12782 | 15318 | 16285 | 16317 | 14490 | 13697 | 16571 | 15403 | 8641  | 9837 | 8220 | 8383 | 9414 | 9793 | 8119 | 10470 | 6282 | 6102 | 5900 | 6197 | 5974 | 5931 | 5185 | 5459 | 3857 | 4078 |      |      |     |      |     |  |
|---------|-------|--------|--------------------|---------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|------|------|------|------|------|-----|------|-----|--|
| Species | Stock | Status | FlagName           | GearGrp | DSet  | 1985  | 1986  | 1987  | 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 | Rank | %   | %cum |     |  |
| SSM     | A+M   | CP     | Mexico             | LL      | t1    | 5789  | 6170  | 6461  | 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 | 1    | 58% | 58%  |     |  |
| 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   | 1    |     |      |     |  |
| SSM     | A+M   | CP     | U.S.A.             | GN      | t1    | 2740  | 2989  | 2795  | 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   | 16%  | 74% |  |
| SSM     | A+M   | CP     | U.S.A.             | GN      | t2    | -1    | b     | b     | 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   | -1   | -1   | -1   | 2   |      |     |  |
| SSM     | A+M   | CP     | U.S.A.             | RR      | t1    | 1068  | 2880  | 1890  | 2412  | 1366  | 106   | 2349  | 2686  | 1887  | 1471  | 1084  | 1364  | 1871  | 1452 | 1920 | 2335 | 2634 | 2944 | 2356 | 2356  | 2356 |      |      |      |      |      |      |      |      |      |      |      | 3   | 13%  | 87% |  |
| SSM     | A+M   | CP     | U.S.A.             | RR      | t2    | -1    | b     | b     | b     | b     | b     | b     | b     | b     | b     | b     | -1    | -1    | -1   | -1   | -1   | -1   | -1   | -1   | -1    | -1   |      |      |      |      |      |      |      |      |      |      |      | 3   |      |     |  |
| SSM     | A+M   | NCO    | Dominican Republic | UN      | t1    | 1267  | 1271  | 1321  | 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   | -1   | -1   | -1   | -1   |       |      |      |      |      |      |      |      |      |      |      |      |      | 4   |      |     |  |
| SSM     | A+M   | CP     | U.S.A.             | UN      | t1    | 164   | 34    | 128   | 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    | -1    | b     | b     | 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   | -1   | -1   | -1   | 5   |      |     |  |
| SSM     | A+M   | CP     | U.S.A.             | HL      | t1    | 0     | 15    | 107   | 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   | -1   | -1   | -1   | -1   | -1   | -1   | 6   |      |     |  |
| SSM     | A+M   | NCO    | Cuba               | TR      | t1    | 44    | 53    | 444   | 75    | 82    | 538   | 538   | 611   | 310   | 409   | 548   | 613   | 613   |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |      |      |      |      | 7   | 2%   | 98% |  |
| SSM     | A+M   | NCO    | Cuba               | TR      | t2    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1    | -1   |      |      |      |      |      |       |      |      |      |      |      |      |      |      |      |      |      |      | 7   |      |     |  |
| SSM     | A+M   | NCO    | Cuba               | GN      | t1    | 339   | 486   | 672   | 516   | 463   |       |       |       |       |       |       |       |       |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |      |      |      |      | 8   | 1%   | 99% |  |
| SSM     | A+M   | NCO    | Cuba               | GN      | t2    | -1    | -1    | -1    | -1    | -1    | -1    |       |       |       |       |       |       |       |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |      |      |      |      |     | 8    |     |  |

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**Table 5m.** SCRS catalogue: WAH [A+M] (*Acanthocybium solandri*).

|         |       | TOTAL  |                    |         |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |      |     |     |
|---------|-------|--------|--------------------|---------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|------|-----|-----|
|         |       | 920    | 1151               | 1235    | 1635 | 1527 | 1498 | 1721 | 1835 | 2671 | 2143 | 2408 | 2515 | 3085 | 2488 | 2957 | 2020 | 2296 | 2202 | 2049 | 2596 | 2456 | 1809 | 2568 | 2158 | 2354 | 2032 | 2237 | 3667 | 3530 | 2912 | 1844 |      |      |      |      |      |     |      |     |     |
| Species | Stock | Status | FlagName           | GearGrp | Dset | 1985 | 1986 | 1987 | 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 | Rank | %   | %cum |     |     |
| WAH     | A+M   | CP     | U.S.A.             | RR      | t1   | 5    | 8    |      |      |      | 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  | 1    | 16% | 16%  |     |     |
| WAH     | A+M   | CP     | U.S.A.             | HR      | t2   | -1   | b    | b    | b    | b    | b    | b    | b    | b    | b    | b    | b    | ab   | ab   | ab   | ab   | ab   | ab   | ab   | ab   | ab   | ab   | ab   | b    | b    | ab   | ab   | ab   | b    | b    |      | 2    | 10% | 26%  |     |     |
| WAH     | A+M   | CP     | Cape Verde         | HL      | t1   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 415  | 534  | 341  | 340  | 365  | 445  | 552  | 520  | 337  | 448  | 431  | 467  | 437  | 437  | 437  |      | 2    |     |      |     |     |
| WAH     | A+M   | CP     | Cape Verde         | HL      | t2   |      |      |      |      |      |      |      |      |      | ab   | ab   | ab   | ab   | ab   | ab   | ab   | ab   | a    | ab   | ab   | ab   | ab   | ab   | ab   | ab   | ab   | ab   | ab   | ab   | ab   | ab   | -1   | 3   | 8%   | 34% |     |
| WAH     | A+M   | CP     | Cape Verde         | TR      | t1   | 119  | 193  | 279  | 327  | 600  | 380  | 331  | 338  | 316  | 299  | 370  | 473  | 517  | 330  | 499  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 3   |      |     |     |
| WAH     | A+M   | CP     | Cape Verde         | TR      | t2   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | 4    |     |      |     |     |
| WAH     | A+M   | CP     | Venezuela          | UN      | t1   | 147  | 113  | 103  | 136  | 100  | 159  | 302  | 331  | 505  | 538  | 538  | 479  | 479  | 340  | 448  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 4   | 7%   | 41% |     |
| WAH     | A+M   | CP     | Venezuela          | UN      | t2   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | 5    |     |      |     |     |
| WAH     | A+M   | CP     | Curçaço            | UN      | t1   | 245  | 250  | 260  | 280  | 280  | 280  | 250  | 260  | 270  | 250  | 230  | 230  | 230  | 230  | 230  | 230  | 230  | 230  | 230  | 230  |      |      |      |      |      |      |      |      |      |      |      |      | 5   | 7%   | 48% |     |
| WAH     | A+M   | CP     | Curçaço            | UN      | t2   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | 6    |     |      |     |     |
| WAH     | A+M   | NCC    | Chinese Taipei     | LL      | t1   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 1236 | 1120 | 896  |      | 6    | 5%  | 52%  |     |     |
| WAH     | A+M   | NCC    | Chinese Taipei     | LL      | t2   |      | b    | b    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | -1   | -1   | -1   |      | 7    |     |      |     |     |
| WAH     | A+M   | CP     | U.S.A.             | LL      | t1   | 6    | 3    | 27   | 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   | 7    | 4%  | 56%  |     |     |
| WAH     | A+M   | CP     | U.S.A.             | LL      | t2   | -1   | -1   | b    | ab   | b    | ab   | ab   | ab   | ab   | ab   | 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     | UK Bermuda         | RR      | t1   | 46   | 65   | 43   | 61   | 63   | 74   | 67   | 80   | 58   | 50   | 93   | 99   | 105  | 108  | 104  | 61   | 56   | 91   | 87   | 88   | 83   | 86   | 124  | 117  | 101  | 81   |      |      |      |      |      |      | 8   | 3%   | 59% |     |
| WAH     | A+M   | CP     | UK Bermuda         | RR      | t2   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | b    | -1   | a    | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | b    | b    | b    | b    |      | 9    |     |      |     |     |
| WAH     | A+M   | NCO    | Sta. Lucia         | UN      | t1   |      |      |      |      |      | 77   | 79   | 150  | 141  | 98   | 80   | 221  | 223  | 223  | 310  |      |      | 217  |      |      |      | 187  |      |      |      |      |      |      |      |      |      |      | 9   | 3%   | 62% |     |
| WAH     | A+M   | NCO    | Sta. Lucia         | UN      | t2   |      |      |      |      |      | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | 9    |     |      |     |     |
| WAH     | A+M   | CP     | Brazil             | LL      | t1   | 2    | 5    | 4    | 4    | 4    | 11   | 41   | 71   | 33   | 3    |      | 2    | 22   | 40   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 10   | 2%  | 64%  |     |     |
| WAH     | A+M   | CP     | Brazil             | LL      | t2   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | a    | a    | a    | a    | a    | -1   | a    |      |      | -1   | a    | a    | a    | a    | a    | a    | a    | a    | a    | a    | a    | a    | a    | 10   |     |      |     |     |
| WAH     | A+M   | CP     | Panama             | LL      | t1   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 11   | 2%  | 67%  |     |     |
| WAH     | A+M   | CP     | Panama             | LL      | t2   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 11   |     |      |     |     |
| WAH     | A+M   | NCO    | Sta. Lucia         | TR      | t1   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 12   | 2%  | 69%  |     |     |
| WAH     | A+M   | NCO    | Sta. Lucia         | TR      | t2   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 12   |     |      |     |     |
| WAH     | A+M   | CP     | Brazil             | UN      | t1   | 18   | 135  | 128  | 54   | 88   | 41   | 23   | 0    |      | 23   | 1    |      |      | 1    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 13   | 2%  | 71%  |     |     |
| WAH     | 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   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | 13   |     |      |     |     |
| WAH     | A+M   | NCO    | Aruba              | UN      | t1   | 115  | 120  | 90   | 80   | 80   | 70   | 60   | 50   | 50   | 125  | 40   | 50   | 50   | 50   | 50   | 50   | 50   | 50   | 50   |      |      |      |      |      |      |      |      |      |      |      |      | 14   | 2%  | 73%  |     |     |
| WAH     | A+M   | NCO    | Aruba              | UN      | t2   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | 14   |     |      |     |     |
| WAH     | A+M   | CP     | Barbados           | UN      | t1   | 120  | 138  | 159  | 332  | 51   | 51   | 60   | 51   | 91   | 82   | 42   | 35   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 15  | 2%   | 75% |     |
| WAH     | A+M   | CP     | Barbados           | UN      | t2   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | 15   |     |      |     |     |
| WAH     | A+M   | NCO    | Grenada            | UN      | t1   | 51   | 82   | 54   | 137  | 57   | 54   | 77   | 104  | 96   | 46   | 49   | 56   | 56   | 59   | 82   | 51   | 71   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 16  | 2%   | 76% |     |
| WAH     | A+M   | NCO    | Grenada            | UN      | t2   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | 16   |     |      |     |     |
| WAH     | A+M   | CP     | EU.España          | BB      | t1   | 4    | 9    | 9    | 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  | 17   | 2%  | 78% |
| 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    | a    | 17   |     |      |     |     |
| WAH     | A+M   | CP     | S. Tomé e Príncipe | PS      | t1   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 18   | 2%  | 80%  |     |     |
| WAH     | A+M   | CP     | S. Tomé e Príncipe | PS      | t2   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 18   |     |      |     |     |
| WAH     | A+M   | CP     | EU.España          | PS      | t1   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 19   | 2%  | 81%  |     |     |
| WAH     | A+M   | CP     | EU.España          | PS      | t2   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 19   |     |      |     |     |
| WAH     | A+M   | NCC    | Suriname           | LL      | t1   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 20   | 1%  | 83%  |     |     |
| WAH     | A+M   | NCC    | Suriname           | LL      | t2   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 20   |     |      |     |     |
| WAH     | A+M   | CP     | S. Tomé e Príncipe | UN      | t1   |      |      |      | 23   | 20   | 28   | 34   | 27   | 36   | 39   | 46   | 80   | 52   | 56   | 62   | 52   | 52   | 52   | 52   | 94   |      |      |      |      |      |      |      |      |      |      |      | 21   | 1%  | 84%  |     |     |
| WAH     | A+M   | CP     | S. Tomé e Príncipe | UN      | t2   |      |      |      | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | 21   |     |      |     |     |
| WAH     | A+M   | CP     | Cape Verde         | BB      | t1   | 23   | 12   | 27   | 13   | 31   | 78   | 20   | 12   | 10   | 62   | 38   | 30   | 86   | 99   | 88   | 72   | 41   |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 22   | 1%  | 85%  |     |     |
| WAH     | A+M   | CP     | Cape Verde         | BB      | t2   | a    | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | a    | -1   | a    | -1   | -1   | a    | a    | a    | -1   |      |      |      |      |      |      |      |      |      |      |      |      |      | 22   |     |      |     |     |
| WAH     | A+M   | CP     | Cape Verde         | PS      | t1   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 3    | 159  | 3    | 93   | 96   | 12   | 59   | 74   | 46   | 68   | 29   | 11   |      |      |      | 23   | 1%  | 86%  |     |     |
| WAH     | A+M   | CP     | Cape Verde         | PS      | t2   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 23   |     |      |     |     |
| WAH     | A+M   | NCO    | Dominica           | UN      | t1   |      |      |      | 38   | 43   | 59   | 59   | 59   | 58   | 58   | 58   | 58   | 50   | 46   | 11   | 37   | 10   |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 24   | 1%  | 87%  |     |     |
| WAH     | A+M   | NCO    | Dominica           | UN      | t2   |      |      |      | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | 24   |     |      |     |     |
| WAH     | A+M   | NCO    | Dominican Republic | UN      | t1   |      |      |      | 1    | 3    | 6    | 9    | 13   | 7    |      |      |      |      |      |      |      | 325  | 112  | 31   | 35   | 35   |      |      |      |      |      |      |      |      |      |      | 25   | 1%  | 88%  |     |     |
| WAH     | A+M   | NCO    | Dominican Republic | UN      | t2   |      |      |      | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | -1   | 25   |     |      |     |     |
| WAH     | A+M   | CP     | S. Tomé e Príncipe | TR      | t1   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 26   | 1%  | 89%  |     |     |
| WAH     | A+M   | CP     | S. Tomé e Príncipe | TR      | t2   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 26   |     |      |     |     |

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**Table 6.** Summary of all the T2SZ samples available in the ICCAT-DB in relation to small tuna species. Number of fish and class range limits (min-max) by species, frequency type, flag and class interval.

|             |                          |           |          | Number (n) of fish in T2SZ (sampled) |        |       |        |      |        |        |        |       |        |        |         | Class ranges by species |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |  |
|-------------|--------------------------|-----------|----------|--------------------------------------|--------|-------|--------|------|--------|--------|--------|-------|--------|--------|---------|-------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|--|
|             |                          |           |          | FRI                                  | BLF    | BLT   | BON    | BRS  | DOL    | KGM    | LTA    | MAW   | SSM    | WAH    | TOTAL   | FRI                     | BLF | BLT | BON | BRS | DOL | KGM | LTA | MAW | SSM | WAH |     |     |     |     |     |     |     |  |  |
| Freq. group | Flag                     | Freq type | Interval | n                                    | n      | n     | n      | n    | n      | n      | n      | n     | n      | n      | n       | min                     | max | min | max | min | max | min | max | min | max | min | max | min | max |     |     |     |     |  |  |
| size (cm)   | Angola                   | FL        | 1        | 745                                  |        |       |        |      |        |        |        |       |        |        | 2417    | 21                      | 45  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |  |
|             |                          |           | 2        | 4462                                 |        |       | 5422   |      |        |        |        | 17496 |        |        |         | 27380                   | 24  | 52  |     |     |     |     | 30  | 76  |     |     |     |     | 30  | 60  |     |     |     |  |  |
|             |                          | TL        | 1        | 5727                                 |        |       |        |      |        |        |        | 1259  |        |        |         | 6986                    | 23  | 36  |     |     |     |     |     |     |     |     |     |     | 26  | 58  |     |     |     |  |  |
|             | Brazil                   | FL        | 1        | 18                                   | 1085   |       |        |      |        |        |        |       |        |        | 1103    | 42                      | 51  | 13  | 163 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |  |
|             |                          |           | 2        | 216                                  | 219    |       |        |      |        | 54     |        |       |        | 20     | 509     | 32                      | 50  | 42  | 80  |     |     |     |     | 68  | 130 |     |     |     |     |     | 104 | 140 |     |  |  |
|             | Cape Verde               | FL        | 1        | 3711                                 |        |       |        | 1441 |        |        | 3553   |       |        | 21701  | 30406   | 21                      | 138 |     |     | 74  | 180 |     |     | 21  | 85  |     |     |     |     | 46  | 194 |     |     |  |  |
|             |                          |           | 2        | 1146                                 |        |       |        |      |        | 495    |        |       |        | 5450   | 7091    | 18                      | 60  |     |     |     |     |     |     | 22  | 92  |     |     |     |     | 50  | 180 |     |     |  |  |
|             | Côte d'Ivoire            | FL        | 1        | 19641                                |        |       | 4478   |      | 7839   | 25096  | 18372  |       |        | 1479   | 76905   | 13                      | 189 |     |     | 20  | 85  |     | 17  | 197 |     |     | 15  | 125 |     |     | 17  | 187 |     |  |  |
|             | Cuba                     | FL        | 1        |                                      | 21642  |       |        |      |        |        |        |       |        |        |         | 21642                   |     |     | 20  | 77  |     |     |     |     |     |     |     |     |     |     |     |     |     |  |  |
|             |                          |           | 2        |                                      | 1434   |       |        |      |        |        |        |       |        | 222    | 1656    |                         |     | 11  | 66  |     |     |     |     |     |     |     |     |     |     | 94  | 174 |     |     |  |  |
|             | EU.España                | FL        | 1        | 146899                               |        | 17184 | 31908  |      | 273    |        | 66584  |       |        |        | 262848  | 19                      | 73  |     |     | 14  | 56  | 20  | 75  |     |     | 46  | 122 |     | 24  | 115 |     |     |     |  |  |
|             |                          |           | 2        | 306                                  |        |       |        |      |        |        | 509    |       |        |        | 815     | 38                      | 60  |     |     |     |     |     |     |     |     | 30  | 58  |     |     |     |     |     |     |  |  |
|             | EU.France                | FL        | 1        | 128121                               |        |       |        |      |        |        |        |       |        |        | 183450  | 21                      | 63  |     |     |     |     |     |     |     |     |     |     | 28  | 77  |     |     |     |     |  |  |
|             |                          |           | 2        |                                      |        |       | 4367   |      |        |        |        |       |        |        | 4367    |                         |     |     |     | 16  | 78  |     |     |     |     |     |     |     |     |     |     |     |     |  |  |
|             | EU.Italy                 | FL        | 1        | 166                                  |        |       | 3326   |      |        |        |        | 854   |        |        | 4346    | 35                      | 46  |     |     |     |     | 30  | 102 |     |     |     |     | 68  | 155 |     |     |     |     |  |  |
|             |                          |           | 2        |                                      |        | 6096  |        | 1045 |        |        |        |       |        |        | 7141    |                         |     |     |     | 26  | 76  |     |     |     |     | 22  | 152 |     |     |     |     |     |     |  |  |
|             | EU.Malta                 | FL        | 1        |                                      |        | 160   | 18     |      | 5882   |        | 87     |       |        |        | 6147    |                         |     |     |     | 40  | 75  |     |     |     |     |     |     |     |     |     |     |     |     |  |  |
|             |                          |           | 5        |                                      |        | 105   |        |      |        |        |        |       |        |        | 105     |                         |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |  |
|             | EU.Portugal              | FL        | 1        | 50                                   |        | 9521  | 11319  |      |        |        | 806    |       |        |        | 21696   | 40                      | 45  |     |     | 21  | 39  | 34  | 67  |     |     | 10  | 148 |     | 12  | 135 |     |     |     |  |  |
|             | FR.St Pierre et Miquelon | FL        | 1        |                                      |        |       |        |      | 32     |        |        |       |        |        | 32      |                         |     |     |     | 23  | 65  | 30  | 86  |     |     |     |     | 63  | 104 |     |     |     |     |  |  |
|             | Ghana                    | FL        | 1        | 420                                  |        |       |        |      |        |        | 5247   |       |        |        | 5667    | 33                      | 52  |     |     |     |     |     |     |     |     |     |     |     | 30  | 61  |     |     |     |  |  |
|             | Japan (foreign obs.)     | CFL       | 1        |                                      |        |       |        |      |        |        | 10     |       |        | 4      | 14      |                         |     |     |     |     |     |     |     |     |     |     |     |     | 67  | 160 |     | 118 | 165 |  |  |
|             | Maroc                    | FL        | 1        | 2                                    | 19     |       |        |      |        | 49     | 26     |       |        | 1      | 58      | 155                     | 190 | 300 | 60  | 185 |     |     |     |     |     |     | 20  | 167 | 50  | 185 |     | 127 | 127 |  |  |
|             |                          |           | 2        |                                      |        |       | 2841   |      |        |        |        |       |        |        | 2841    |                         |     |     |     | 31  | 92  |     |     |     |     |     |     |     |     |     |     | 35  | 200 |  |  |
|             | Mexico                   | FL        | 1        |                                      |        |       | 1343   |      |        |        |        |       |        |        | 1343    |                         |     |     |     | 36  | 70  |     |     |     |     |     |     |     |     |     |     |     |     |  |  |
|             |                          |           | 2        |                                      |        |       |        |      |        |        |        |       |        |        |         |                         |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |  |
|             | Mixed flags (FR+ES)      | FL        | 1        |                                      | 1910   |       |        |      |        |        |        |       |        | 1125   | 3035    |                         |     | 22  | 107 |     |     |     |     |     |     |     |     |     |     |     | 59  | 191 |     |  |  |
|             | Mixed flags (KR+PA)      | FL        | 2        | 87052                                |        |       |        |      |        |        | 34634  |       |        |        | 121686  | 20                      | 58  |     |     |     |     |     |     |     |     |     |     | 21  | 70  |     |     |     |     |  |  |
|             | NEI (ETRO)               | FL        | 1        | 110747                               |        |       |        |      |        |        |        |       |        |        | 242     | 242                     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 134 | 156 |  |  |
|             | Panama                   | FL        | 2        |                                      |        |       |        |      |        |        | 34120  |       |        |        | 144867  | 22                      | 73  |     |     |     |     |     |     |     |     |     |     | 23  | 79  |     |     |     |     |  |  |
|             | Russian Federation       | FL        | 2        |                                      |        |       |        |      |        |        |        |       |        | 148    | 148     |                         |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 130 | 164 |  |  |
|             | Senegal                  | FL        | 1        | 6721                                 |        | 8729  | 12340  |      |        |        | 3811   |       |        |        | 31601   | 20                      | 49  |     |     | 19  | 46  | 19  | 75  |     |     |     |     | 25  | 71  |     |     |     |     |  |  |
|             |                          |           | 2        | 2038                                 |        |       | 67899  |      |        |        | 192105 | 40676 |        |        | 302718  | 21                      | 52  |     |     |     |     |     | 14  | 87  |     |     |     | 10  | 100 | 10  | 98  |     |     |  |  |
|             | Turkey                   | FL        | 1        |                                      | 20     |       |        |      |        | 4      |        | 870   |        |        | 8509    |                         |     |     |     |     |     |     |     |     |     |     |     |     | 24  | 96  |     |     |     |  |  |
|             |                          |           | 2        |                                      |        |       |        |      |        |        |        |       |        |        | 894     | 38                      | 46  |     |     |     |     |     |     |     |     |     |     | 47  | 91  |     |     |     |     |  |  |
|             | U.S.A.                   | CFL       | 1        | 2                                    | 2645   |       | 1222   |      |        |        | 7035   |       |        | 3614   | 14518   | 27                      | 44  |     |     | 28  | 173 |     | 23  | 91  |     |     |     |     | 22  | 102 |     | 30  | 225 |  |  |
|             |                          |           | 1        |                                      | 12273  | 5     | 1041   |      | 22     | 159946 | 14012  |       | 136022 | 4193   | 327514  |                         |     | 30  | 130 | 264 | 290 |     | 30  | 272 |     |     | 58  | 120 | 13  | 176 | 25  | 110 |     |  |  |
|             | UK.Bermuda               | FL        | 2        |                                      | 25     |       |        |      |        |        |        |       |        |        | 293     |                         |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |  |
|             |                          |           | 5        |                                      |        |       |        |      |        |        |        |       |        |        | 136     |                         |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |  |
|             | UK.Sta Helena            | FL        | 1        |                                      |        |       |        |      |        |        |        |       |        |        | 212     |                         |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 14  | 177 |     |  |  |
|             | Venezuela                | FL        | 1        | 836598                               | 541406 |       |        |      |        |        |        |       |        |        | 266     | 1378270                 | 15  | 66  |     |     |     |     |     |     |     |     |     |     |     |     |     | 70  | 195 |  |  |
|             |                          |           | 1        | 1312                                 | 1734   |       |        |      |        |        |        |       |        |        | 3046    | 17                      | 66  |     |     | 21  | 75  |     |     |     |     |     |     |     |     |     |     |     |     |  |  |
|             | Chinese Taipei           | FL        | 2        |                                      |        |       |        |      |        |        |        |       |        |        | 970     |                         |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 120 | 160 |  |  |
|             | Japan                    | FL        | 2        |                                      |        |       |        |      |        |        |        |       |        |        | 123     |                         |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 134 | 150 |  |  |
| Korea Rep.  | FL                       | 1         |          |                                      |        |       |        | 245  |        |        |        |       |        | 61     |         |                         |     |     |     |     |     |     |     |     |     |     |     |     |     | 82  | 161 |     |     |  |  |
| weight (kg) | U.S.A.                   | HGTW      | 1        |                                      | 4348   |       | 42     |      | 291    |        | 93     |       |        | 4357   | 9131    |                         |     | 1   | 34  |     |     | 1   | 49  |     |     | 1   | 88  |     | 1   | 13  |     | 1   | 63  |  |  |
|             |                          | WGT       | 1        |                                      | 23805  |       | 3576   |      | 92547  |        | 596    |       |        | 70843  | 191367  |                         |     | 1   | 84  |     |     | 1   | 30  |     |     | 1   | 103 |     | 1   | 14  |     | 1   | 136 |  |  |
| TOTAL       |                          |           |          | 1356120                              | 612545 | 35599 | 157343 | 1441 | 108521 | 159995 | 474808 | 59048 | 136023 | 115567 | 3217010 | 13                      | 300 | 1   | 185 | 14  | 290 | 1   | 272 | 74  | 180 | 1   | 197 | 13  | 176 | 1   | 185 | 10  | 125 |  |  |

**Table 7.** Data poor Stock Assessment based approaches and LH parameters needed.

| Category             |                                                                                                                                                               | Fishery data needed |                         |                       | Life history data needed (priors) for: |      |                           |         |   |    |      |   |      |    |      |     |   |   |           |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-------------------------|-----------------------|----------------------------------------|------|---------------------------|---------|---|----|------|---|------|----|------|-----|---|---|-----------|
|                      |                                                                                                                                                               | Catch               | Length-Comps<br>or Prop | Index of<br>abundance | Lmax                                   | Amax | Selectivity<br>(S50; S95) | K or B0 | r | Lc | Lopt | k | Linf | to | Lm50 | A50 | M | h | alpha-B-H |
| Life history only    | Utilizing B-H invariants (Beddington and Kirkwood 2005)                                                                                                       |                     |                         |                       |                                        |      |                           |         |   | X  |      | X | X    |    |      |     |   |   | X         |
| Life history only    | Life-history based (Le Quesne and Jennings 2012)                                                                                                              |                     |                         |                       | X                                      |      |                           |         |   |    |      |   |      |    |      |     |   |   |           |
| Life history only    | YPR                                                                                                                                                           |                     |                         |                       |                                        |      | X                         |         |   |    |      |   |      |    |      |     | X | X |           |
| Catch only methods   | COM-SIR (Vasconcellos and Cochrane 2005)                                                                                                                      | X                   |                         |                       |                                        |      |                           | X       | X |    |      |   |      |    |      |     |   |   |           |
| Catch only methods   | SS-COM: State-space-Catch-Only-method (Thorson et al. 2013)                                                                                                   | X                   |                         |                       |                                        |      |                           |         | X |    |      | X |      |    |      |     |   |   |           |
| Catch only methods   | DCAC: Depletion corrected average catch (MacCall 2009)                                                                                                        | X                   |                         |                       |                                        |      |                           |         |   |    |      |   |      |    |      |     |   |   | X         |
| Catch only methods   | DB-SRA: Depletion-based Stock reduction analysis (Dick and MacCall 2011)                                                                                      | X                   |                         |                       |                                        |      |                           |         |   |    |      |   |      |    |      |     | X | X |           |
| Catch only methods   | Catch-MSY (Martel and Froese 2013)                                                                                                                            | X                   |                         | optional              |                                        |      |                           |         | X |    |      | X |      |    |      |     |   |   |           |
| Catch only methods   | SSS: "Traditional" catch-at-age (Cope 2013)                                                                                                                   | X                   | optional                | optional              |                                        | X    |                           |         |   |    |      | X | X    |    | X    |     | X | X |           |
| Catch only methods   | Indicator based: C/Cmax ratio (Froese and Kesner-Reyes 2002)                                                                                                  | X                   |                         |                       |                                        |      |                           |         |   |    |      |   |      |    |      |     |   |   |           |
| Catch only methods   | Indicator based: smoothed C/Cmax ratio (Anderson et al. 2012)                                                                                                 | X                   |                         |                       |                                        |      |                           |         |   |    |      |   |      |    |      |     |   |   |           |
| Catch only methods   | ORCS: Only reliable Catch Stocks (Restrepo et al. 1998)                                                                                                       | X                   |                         |                       |                                        |      | X                         |         |   |    |      |   |      |    |      |     |   |   |           |
| Catch only methods   | Modified panel regression (Costello et al. 2012)                                                                                                              | X                   |                         |                       |                                        |      |                           |         | X |    |      | X |      |    |      |     |   |   |           |
| Catch only methods   | Ensamble method: (Rosenberg et al. 2017)                                                                                                                      | X                   |                         |                       |                                        |      |                           |         |   |    |      |   |      |    |      |     |   |   |           |
| Catch only           | Feasible stock trajectories (Bentley and Langley 2012)                                                                                                        | X                   |                         |                       |                                        |      |                           |         |   |    |      | X | X    |    | X    |     |   | X | X         |
| Catch only           | Stochastic SRA (Lombardi and Walters, User Guide)                                                                                                             | X                   |                         |                       |                                        |      |                           |         |   |    |      | X | X    |    | X    |     |   | X |           |
| Length-based methods | Indicator based: Length proportions in catch (Froese 2004)                                                                                                    |                     | X                       |                       |                                        | X    |                           |         |   |    | X    |   |      |    | X    |     |   |   |           |
| Length-based methods | Catch curves                                                                                                                                                  |                     | X                       |                       |                                        |      |                           |         |   |    |      | X | X    | X  |      |     |   | X |           |
| Length-based methods | LBRP: Indicator based-Decision tree based on Length proportions in catch (Cope and Punt 2009)                                                                 |                     | X                       |                       |                                        |      |                           |         |   |    |      | X | X    | X  | X    |     |   | X |           |
| Length-based methods | LBSRP: Life-history and length distribution based (Hordyk et al. 2015)                                                                                        |                     | X                       |                       |                                        |      | X                         |         |   |    |      |   | X    |    | X    |     |   |   |           |
| Length-based methods | Mean length at equilibrium (Beverton and Holt 1957)                                                                                                           |                     | X                       |                       |                                        |      |                           |         |   | X  |      | X | X    |    |      |     |   |   |           |
| Length-based methods | Mean Lengths non_equilibrium (Gedamke and Hoenig 2006)                                                                                                        |                     | X                       |                       |                                        |      |                           |         |   | X  |      | X | X    |    |      |     |   |   |           |
| Length-based methods | LIME: Accounting for variable recruitment and fishing mortality in length-based stock assessments for data-limited fisheries (Rudd and Thorson, under review) | optional            | X                       | optional              |                                        |      |                           |         |   |    |      | X | X    | X  | X    |     |   | X |           |
| Length-based methods | Fractional Lifetime Egg Production (FLEP); O'Farrell and Botsford 2005                                                                                        |                     | X                       |                       |                                        |      |                           |         |   |    |      | X | X    |    | X    |     |   | X |           |
| Length-based methods | Utilizing B-H invariants and catches as a function of size (Kokkalis et al. 2015)                                                                             |                     | X                       |                       |                                        |      |                           |         |   |    |      |   |      |    |      |     |   |   |           |
| Catch and lengths    | CC-SRA: Catch curve stock-reduction analysis (Thorson and Cope 2015)                                                                                          | X                   | X                       |                       |                                        |      |                           |         |   | X  |      | X | X    | X  |      |     | X | X | X         |
| Index of abundance   | Life-history and abundance indices based (Brooks et al. 2010)                                                                                                 |                     |                         | X                     |                                        |      |                           |         |   |    |      |   |      |    |      |     | X | X |           |

\* SSS and LIME can also include an index of abundance

Assessments on expert judgment and MPA analysis have been not included yet. Also, more methods using empirical rules need to be added. This table is still in progress and it has not been reviewed.

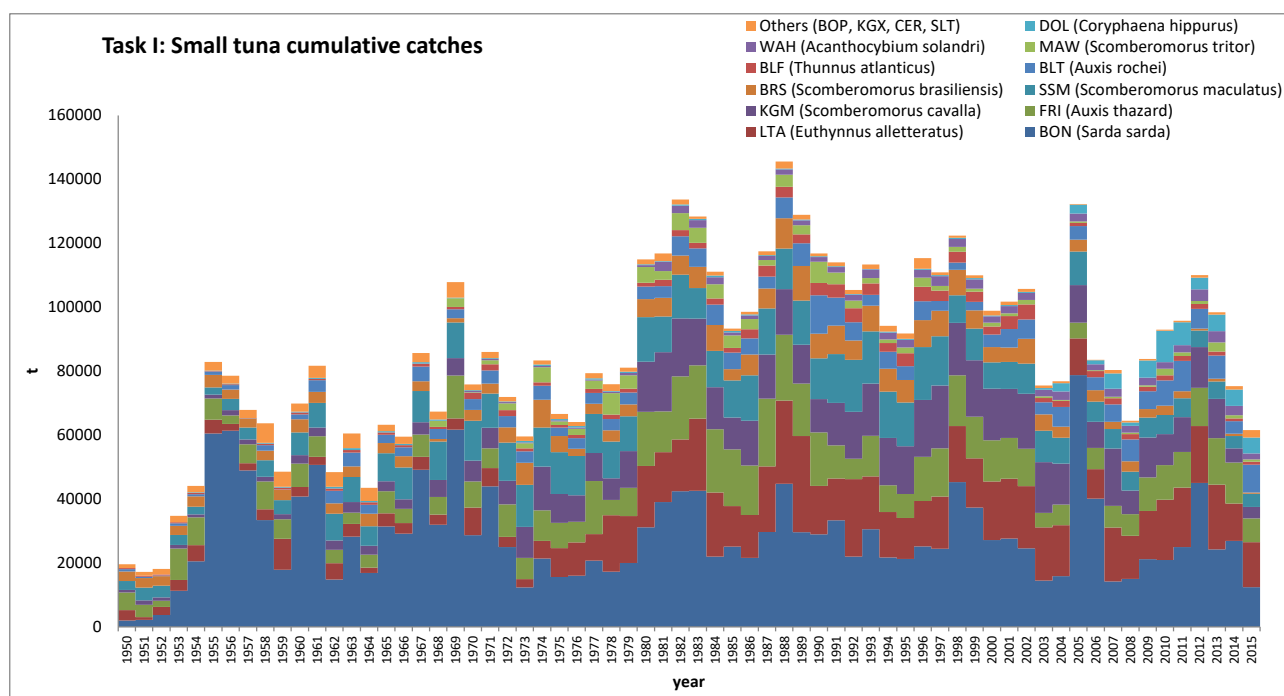
**Table 7.** (Continued).

| Category             | Method                                                                                                                                                        | Life history data needed (priors) for: |        |        |                |           |                         |                            | Output                                                                                                                |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|--------|--------|----------------|-----------|-------------------------|----------------------------|-----------------------------------------------------------------------------------------------------------------------|
|                      |                                                                                                                                                               | M/K                                    | Fmsy/M | Fmsy/K | Bmsy/K (or B0) | Depletion | Fecundity at age/length | Length-weight relationship |                                                                                                                       |
| Life history only    | Utilizing B-H invariants (Beddington and Kirkwood 2005)                                                                                                       |                                        |        |        |                |           |                         |                            | MSY and Fmax                                                                                                          |
| Life history only    | Life-history based (Le Quesne and Jennings 2012)                                                                                                              |                                        |        |        |                |           |                         |                            | F0.1, F40, Fmax                                                                                                       |
| Life history only    | YPR                                                                                                                                                           |                                        |        |        |                |           | X                       | X                          | MSY, Bmsy and Umsy                                                                                                    |
| Catch only methods   | COM-SIR (Vasconcellos and Cochrane 2005)                                                                                                                      |                                        |        |        |                |           |                         |                            | parameter a and x of a harvest dynamics model<br>Biomass, catch level                                                 |
| Catch only methods   | SS-COM: State-space-Catch-Only-method (Thorson et al. 2013)                                                                                                   |                                        |        |        |                |           |                         |                            | parameter a and x of harvest dynamics model and process<br>Biomass, effort, MSY                                       |
| Catch only methods   | DCAC: Depletion corrected average catch (MacCall 2009)                                                                                                        |                                        | X      |        | X              | X         |                         |                            | Cfmsy                                                                                                                 |
| Catch only methods   | DB-SRA: Depletion-based Stock reduction analysis (Dick and MacCall 2011)                                                                                      |                                        | X      |        | X              | X         |                         |                            | K or B0, Bmsy, Fmsy, MSY, and Cfmsy                                                                                   |
| Catch only methods   | Catch-MSY (Martel and Froese 2013)                                                                                                                            |                                        |        |        | X              | X         |                         |                            | MSY, Bmsy, Fmsy                                                                                                       |
| Catch only methods   | SSS: "Traditional" catch-at-age (Cope 2013)                                                                                                                   |                                        | X      |        | X              | X         |                         | X                          | depletion and OFL                                                                                                     |
| Catch only methods   | Indicator based: C/Cmax ratio (Froese and Kesner-Reyes 2002)                                                                                                  |                                        |        |        |                |           |                         |                            | Defines a fishery as: underdeveloped, developing, fully exploited, overexploited, collapsed                           |
| Catch only methods   | Indicator based: smoothed C/Cmax ratio (Anderson et al. 2012)                                                                                                 |                                        |        |        |                |           |                         |                            | Defines a fishery as: underdeveloped, developing, fully exploited, overexploited, collapsed                           |
| Catch only methods   | ORCS: Only reliable Catch Stocks (Restrepo et al. 1998)                                                                                                       |                                        |        |        |                | X         |                         |                            | Assign stock to exploitation category, OFL                                                                            |
| Catch only methods   | Modified panel regression (Costello et al. 2012)                                                                                                              |                                        |        |        |                |           |                         |                            | Fishing history parameters?<br>B/Bmsy                                                                                 |
| Catch only methods   | Ensamble method: (Rosenberg et al. 2017)                                                                                                                      |                                        |        |        |                |           |                         |                            | B/Bmsy                                                                                                                |
| Catch only           | Feasible stock trajectories (Bentley and Langley 2012)                                                                                                        |                                        |        |        |                | X         |                         | X                          | Rec. de<br>Biomass trajectories                                                                                       |
| Catch only           | Stochastic SRA (Lombardi and Walters, User Guide)                                                                                                             |                                        |        |        |                |           |                         |                            | U/Umsy, B/B0                                                                                                          |
| Length-based methods | Indicator based: Length proportions in catch (Froese 2004)                                                                                                    |                                        |        |        |                |           |                         |                            | Indirect notion of stock status or proxy fishing mortality: Pmat, Popt, Pmega                                         |
| Length-based methods | Catch curves                                                                                                                                                  |                                        |        |        |                |           | X                       |                            | F                                                                                                                     |
| Length-based methods | LBRP: Indicator based–Decision tree based on Length proportions in catch (Cope and Punt 2009)                                                                 |                                        |        |        |                |           |                         |                            | Decision tree for management based on Pobj = Pmat + Popt + Pmega, and determination of SSB status (below or above RP) |
| Length-based methods | LBSPR: Life-history and length distribution based (Hordyk et al. 2015)                                                                                        | X                                      |        |        |                |           |                         | X                          | F/M, selectivity-at length, SPR                                                                                       |
| Length-based methods | Mean length at equilibrium (Beverton and Holt 1957)                                                                                                           |                                        |        |        |                |           |                         |                            | Z (total mortality), if we know M, F can be estimated                                                                 |
| Length-based methods | Mean Lengths non-equilibrium (Gedamke and Hoenig 2006)                                                                                                        |                                        |        |        |                |           |                         |                            | Z (total mortality), if we know M, F can be estimated                                                                 |
| Length-based methods | LIME: Accounting for variable recruitment and fishing mortality in length-based stock assessments for data-limited fisheries (Rudd and Thorson, under review) |                                        |        |        |                |           |                         | X                          | Recruitment variation<br>F, selectivity-at-length, SPR and rec. devs                                                  |
| Length-based methods | Fractional Lifetime Egg Production (FLEP); O'Farrell and Botsford 2005                                                                                        |                                        |        |        |                |           | X                       |                            | Time series of fractional lifetime egg production: FLEP (~SPR or stock status)                                        |
| Length-based methods | Utilizing B-H invariants and catches as a function of size (Kokkalis et al. 2015)                                                                             | X                                      |        |        |                |           |                         |                            | F/Fmsy                                                                                                                |
| Catch and lengths    | CC-SRA: Catch curve stock-reduction analysis (Thorson and Cope 2015)                                                                                          |                                        |        |        |                |           |                         | X                          | F, Selectivity and recruitment parameters                                                                             |
| Index of abundance   | Life-history and abundance indices based (Brooks et al. 2010)                                                                                                 |                                        |        |        |                |           | X                       |                            | Mat at age<br>SPRmer, ~FMSY and SMER/S0 (Depletion)                                                                   |

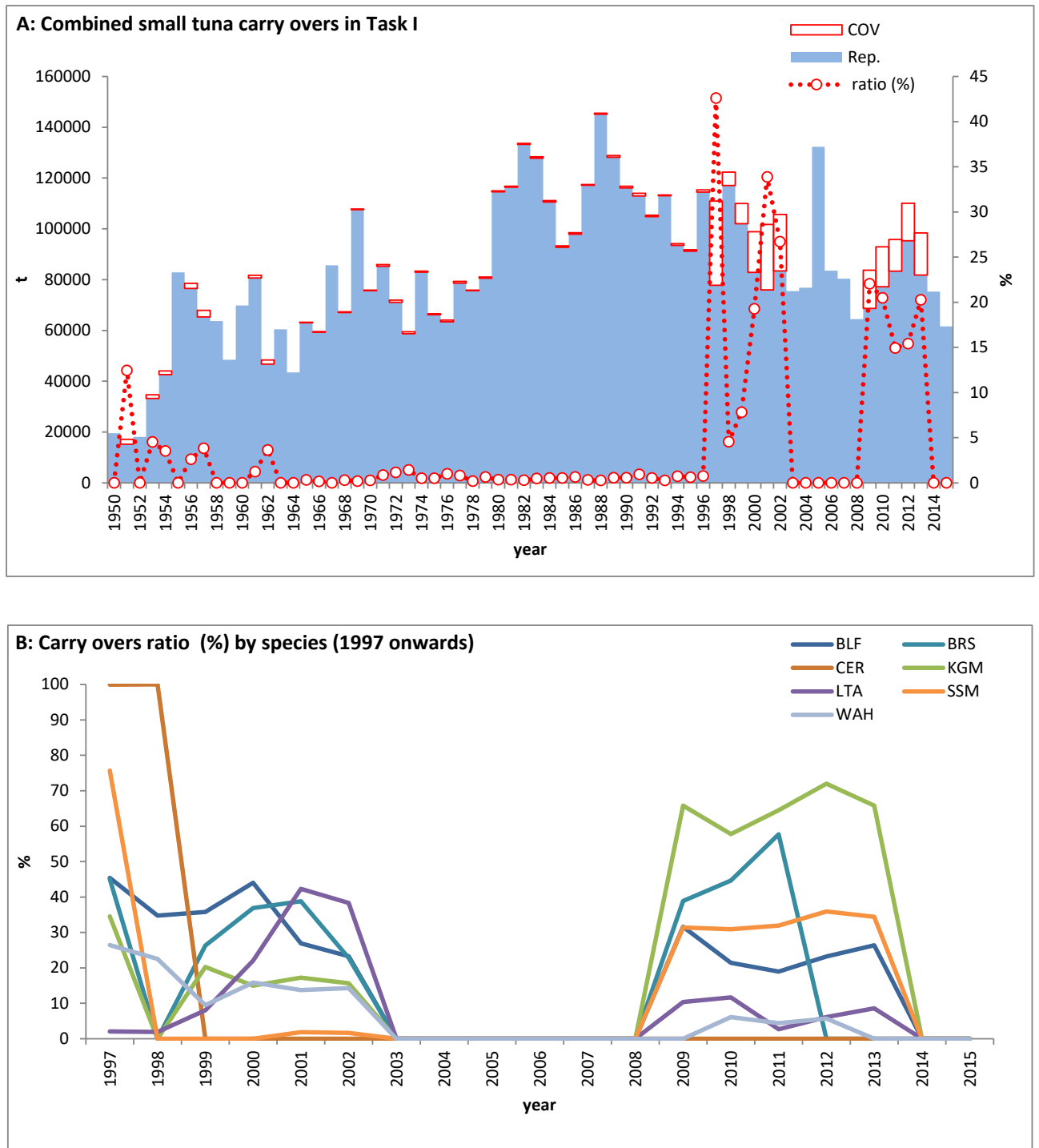
\* SSS and LIME can also include an index of abundance

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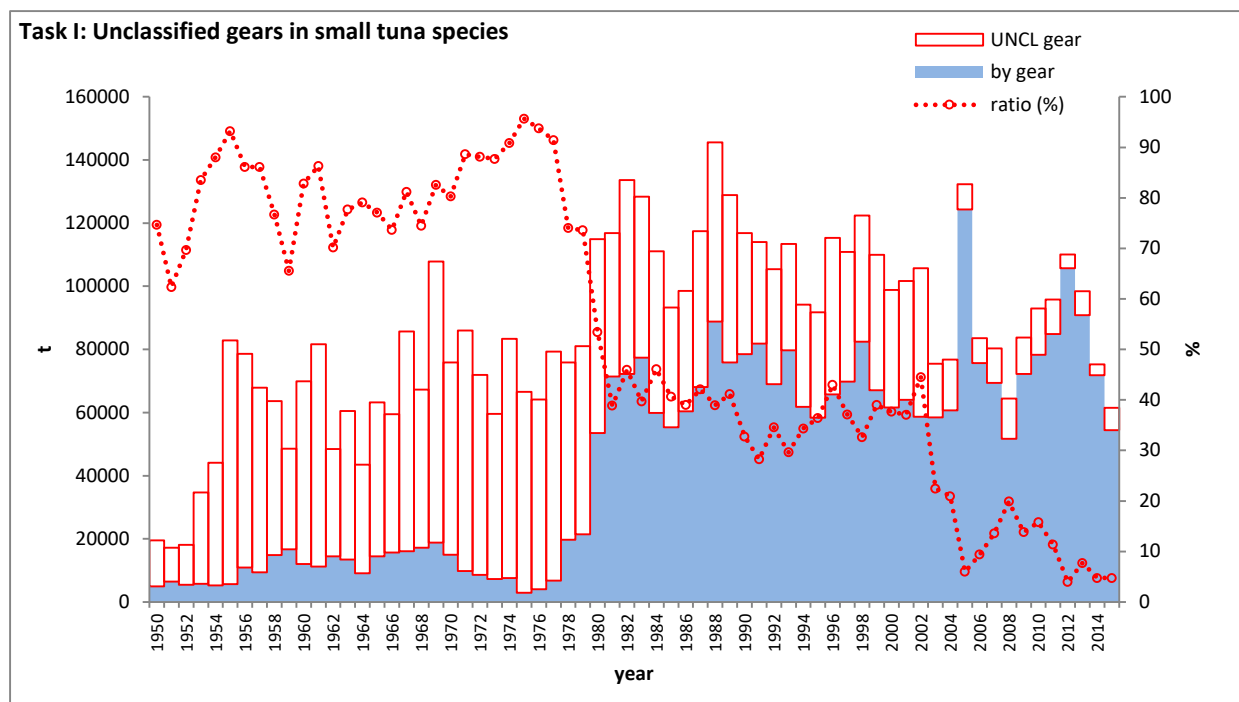




**Figure 1.** Task I nominal catches (t) of small tuna between 1950 and 2015 accumulated by species.



**Figure 2.** Weight of the “carry overs” (SCRS estimations) on the small tuna species. Panel A shows the overall effect (all small tuna species combined). Panel B shows the ratio of each species between 1996 and 2015.



**Figure 3.** Cumulative small tuna species (all combined) Task I catches (t) between 1950 and 2014, comparing the catch series with a fishing gear associated against the unclassified gear (UNCL) catch series. The relative weight (%) over time of the unclassified gears catch series is also shown.

**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 Ecological Risk Assessment
5. Review appropriate approaches for future assessment of small tuna stocks
6. Review status of SMTYP program to improve collaboration among scientists and obtain the information required for assessment
7. Recommendations
8. Other matters
  - 8.1. Atlantic Tropical tuna Tagging Program (AOTTP)
  - 8.2. Small tunas Executive Summary
  - 8.3. Workplan
9. Adoption of the report and closure

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## List of Documents and Presentations

| Reference     | Title                                                                                                                                                                                            | Authors                                                                                                                                                                   |
|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SCRS/2017/017 | Food composition and feeding habits of little tunny ( <i>Euthynnus alletteratus</i> ) from the Tunisian Mediterranean coast                                                                      | Hajjej G., Hattour A., Missaoui H. and Jarbouli O.                                                                                                                        |
| SCRS/2017/018 | Length-weight relationship for small tunas species caught by purse seine in the gulf of Gabes (Ionian sea-Mediterranean)                                                                         | Hajjej G., Hattour A., Missaoui H. and Jarbouli O.                                                                                                                        |
| SCRS/2017/047 | Blackfin tuna ( <i>Thunnus atlanticus</i> ) updates on catch, effort and size distribution from Venezuelan fisheries                                                                             | Narváez M., Ariza L., Evaristo E., Bermudez R., Marciano J.H., Gutierrez X. and Arocha F.                                                                                 |
| SCRS/2017/060 | Reproduction of Atlantic bonito ( <i>Sarda sarda</i> ) South of the Moroccan Atlantic waters                                                                                                     | Baibbat S.A., Malouli I., Abid N., Kell L., Lucena F. and Benazzouz B.                                                                                                    |
| SCRS/2017/076 | A framework for assessing highly migratory species using Data-Limited Methods                                                                                                                    | Smith M.W., Isely J.J., Sagarese S.R., Harford W.J., Cass-Calay S.L. and Cummings N.J.                                                                                    |
| SCRS/2017/084 | Implications for fisheries management in small tunas. The case study of bullet tuna in the West Mediterranean                                                                                    | Ollé J., Pérez-Bielsa N., Allaya H., Saber S., Macías D. and Viñas J.                                                                                                     |
| SCRS/2017/085 | Reproduction du thon à nageoires noires ( <i>Thunnus atlanticus</i> ) autour des DCP ancrés de la Martinique                                                                                     | Pau C., Fauvel C. and Reynal L.                                                                                                                                           |
| SCRS/2017/086 | Estimating vulnerability of small tunas captured by longline and purse seine of the Atlantic Ocean                                                                                               | Frédou F.L., Kell L., Frédou T., Beare D., Abid N. and Andrade H.                                                                                                         |
| SCRS/2017/087 | Etude préliminaire de quelques paramètres de reproduction de <i>Auxis rochei</i> captures dans le golfe de Guinée par les pêcheurs artisans                                                      | Diaha N.C., Amandé M.J., Konan K.J., Abekan E. and Bahou L.                                                                                                               |
| SCRS/2017/088 | Techniques de pêche utilisées en Martinique pour l'exploitation des grands poissons pélagiques du large                                                                                          | Flament M., Monet N., Pau C. and Reynal L.                                                                                                                                |
| SCRS/2017/089 | Pêche des thonidés mineurs de l'Atlantique Centre Ouest                                                                                                                                          | Reynal L. and Bealey R.                                                                                                                                                   |
| SCRS/2017/090 | Annual indices of spawning biomass of little tunny ( <i>Euthynnus alletteratus</i> ) and common dolphin ( <i>Coryphaena hippurus</i> ) based on larval surveys in the Gulf of Mexico (1982-2015) | Ingram W.G.                                                                                                                                                               |
| SCRS/2017/094 | Spanish mackerel ( <i>Scomberomorus maculatus</i> ) larval indices of relative abundance from seaplan fall plankton surveys in the Gulf of Mexico, 1986 to 2014                                  | Hanisko D.S., Pollack A.G., Zapfe G. and Ingram G.W.                                                                                                                      |
| SCRS/2017/095 | King mackerel ( <i>Scomberomorus cavalla</i> ) larval indices of relative abundance from seaplan fall plankton surveys in the Gulf of Mexico, 1986 to 2014                                       | Hanisko D.S., Pollack A.G., Zapfe G. and Ingram G.W.                                                                                                                      |
| SCRS/2017/096 | Contribution à la biologie et la croissance de la bonite ( <i>Sarda sarda</i> ) des côtes Mauritanienes                                                                                          | Diagne A., Djimera L., Dia M. and Beyah M.                                                                                                                                |
| SCRS/2017/097 | Studies of the genetic structure of blackfin tuna in the West Atlantic Ocean using microsatellite markers                                                                                        | Saillant E.A., Antoni L., Short E., Luque P., Franks J.S., Reynal L., Pau C., Cummings N., Arocha F., Roque P., Hazin F., Falterman B., Hanke M., Sullivan K. and Duke A. |



|                 |                                                                                                           |                                                                                                                                                                           |
|-----------------|-----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SCRS/2017/098   | Abundance indices of genus <i>Auxis</i> based on larval surveys In the Gulf of Mexico (1982-2015)         | Ingram G.W.                                                                                                                                                               |
| SCRS/P/2017/009 | Prélèvement des échantillons biologiques aux fins d'études sur la croissance et la maturité               | Ngom F. and Diaha C.N'G.                                                                                                                                                  |
| SCRS/P/2017/010 | Tuna fisheries in São Tomé e Príncipe                                                                     | Conceição I. and Costa G.                                                                                                                                                 |
| SCRS/P/2017/011 | Studies of the genetic structure of blackfin tuna in the West Atlantic Ocean using microsatellite markers | Saillant E.A., Antoni L., Short E., Luque P., Franks J.S., Reynal L., Pau C., Cummings N., Arocha F., Roque P., Hazin F., Falterman B., Hanke M., Sullivan K. and Duke A. |
| SCRS/P/2017/012 | AOTTP – Preliminary observations on little tunny                                                          | Secretariat                                                                                                                                                               |

**SCRS Documents and Presentations abstracts as presented by the authors**

*SCRS/2017/017* – The stomach contents of 622 little tunny *Euthynnus alletteratus*, sampled between January 2008 and December 2009, were examined. Fish size ranged from 19.2 to 97.8 cm fork length, and all fish were captured in the coastal areas of Tunisian waters. Among 622 stomachs examined, 287 were empty (%VI = 46.14). There were no significant variations in the vacuity index (%VI) depending on sex. After the stomach contents analysis, 22 prey taxa belonging to 14 families were identified: 15 fish species, 3 crustaceans, 3 mollusks and 1 vegetal species (*Posidonia oceanica*). This study was based mainly on the evolution of the index of relative importance (IRI) with respect to sex, fish size and season. Little tunny are carnivorous fish that feed opportunistically. Teleosts were found in the majority of stomachs, with a total relative importance (%IRI) of 97.3% and *Sardinella aurita* was the most important prey species (%IRI = 17.56) followed by *Boops boops* (%IRI = 0.87) and *Sardina pilchardus* (%IRI = 0.77). All other prey (crustaceans and molluscs) are secondary or incidental.

*SCRS/2017/018* – Length-weight relationships (LWR) were estimated for 3 small tuna species which are of economic relevance in the commercial fisheries of the Gulf of Gabes (southern Tunisia). A total of 574 fish caught by purse seine were sampled from January to December 2016. Significant length-weight relationships with high correlation coefficient were found for all species. The value of the parameter b varied between 2.792 to 2.885 for *Euthynnus alletteratus*; 3.035 to 3.296 for *Sarda sarda* and 3.304 to 3.678 for *Auxis rochei*.

*SCRS/2017/047* – Catches of blackfin tuna (*Thunnus atlanticus*) were reviewed from 1986 to 2015 for the Venezuelan industrial surface fleets (baitboat, purse seine) and the small scale fisheries (drift gill-net from “Playa Verde” and artisanal off-shore pelagic longline). Information on catch and effort was analyzed by gear, month and year; spatial and seasonal distribution of mature and immature fish was discussed. Regional annual catch trends were reviewed and discussed.

*SCRS/2017/060* – The demographic structures of Atlantic bonito, *Sarda sarda* (Block, 1793), in the South Atlantic coast of Morocco were studied from the biological sampling data collected from coastal units targeting this species, between 2012 and 2015. In total, 2688 individuals were measured for size frequency analysis and 158 individuals for biological parameters determination. The season of reproduction was determined by analysis of the monthly evolution of the gonado-somatic index and the percentage of sexual maturity. The demographic structure of the Atlantic bonito landings is dominated by sizes between 45 and 52 cm. The analysis of the monthly evolution of the gonado-somatic index showed that this species reproduces between May and July.

*SCRS/2017/076* – Analyses of fisheries stocks using traditional models employing age and/or length inputs require substantial data and significant analytical support, and can be challenging where severe data limitations persist. We present multiple approaches that have been used to develop catch recommendations for data-limited species throughout the world. The complexity of data-limited methods ranges from simple empirical approaches, which rely on changes in indicator data, to more traditional approaches such as yield-per-recruit analyses which enable the determination of biological reference points. Data requirements for each model type are discussed as are assumptions of each method. In addition, a useful implementation framework that incorporates method feasibility, method selection, and development of catch advice that has recently been applied successfully in the Southeast US is described. The Data-Limited Methods Toolkit (DLMtool) facilitates the evaluation of performance of multiple data-limited assessment models and management procedures in a simulation environment. The DLMtool framework incorporates information content on the stock and fleet dynamics via operating models in addition to information on uncertainty and bias, and relies heavily upon detailed input from stakeholders including managers, fishermen, and scientists.

*SCRS/2017/084* – Previous to establish correct management regulations of any species it is crucial to know the population structure. A particular concern is in commercial species that in most of the cases are overfished. These exploited fish populations can undergo a loss of genetic variability that ultimately may lead to loss of regional small populations. This situation could occur in the small tuna species, where some locations they have a high commercial value and are heavily targeted by artisanal fisheries. In this study, we focalized in the Bullet tuna (*Auxis rochei*) with an extensive sampling (n = 431) along the north and south coast of the west Mediterranean and a location in the east Atlantic close of the Strait of Gibraltar. The analysis of the mtDNA control region revealed that sixteen (about 6%) individuals were not identified as Bullet tuna suggesting a misidentification with possible implications in stock assessment. Population genetics results showed a clear heterogeneity across samples with genetic differentiation between Iberian Peninsula and North African location but a large area along the Mediterranean Peninsula coast that failed to show genetic heterogeneity. This result has a clear impact in the conservation and management strategies, and if it is confirmed in other small pelagic species the pattern of population structure in the Mediterranean is more complex than initially expected.

SCRS/2017/085 – La reproduction de *Thunnus atlanticus* a été étudiée en Martinique sur 486 échantillons, de 28 et 76 cm de longueur à la fourche (LF), capturés lors de 40 sorties entre le 28 février 2013 et le 25 juin 2014. Les gonades ont été mesurées et la position géographique et l'heure de capture relevées. Les gonades ont été photographiées et leurs stades de maturité déterminés. La reproduction a été décrite avec le sex-ratio, les indices gonado-somatiques (GSI), les variations de maturité suivant les tailles, les périodes et les heures de capture. Sur la durée de l'étude le sex-ratio est 1,7♂ pour 1 ♀, variant au cours de l'année. Les tailles de première maturité (LF<sub>50</sub>) sont de 46 cm pour les femelles et 45 cm pour les mâles. La période de reproduction se situe entre mars et août avec un pic en juin. Les gonades femelles ont un développement maximal au début de la saison de reproduction. Les mâles sont en maturation avancée sur l'ensemble de la période de reproduction alors que les femelles accomplissent des pontes multiples et ponctuelles. Les adultes semblent quitter la Martinique en dehors de la saison de reproduction contrairement aux juvéniles qui y restent la première année.

SCRS/2017/086 – *Auxis rochei* est une espèce de thonidés mineur qui a longtemps été confondu à *Auxis thazard*. Dans le souci d'avoir plus d'information sur ses paramètres de reproduction, un échantillonnage mensuel a été effectué de juillet 2016 à janvier 2017 lors des débarquements des pêcheurs artisans dans la zone d'Abidjan. Un effectif total de 224 poissons a été collecté et le sexe ratio était en faveur des mâles. Tous les stades matures et les stades post ponte également observés pourraient signifier que cette espèce se reproduirait dans les eaux ivoirienne de juillet à octobre. Cependant il serait souhaitable de réaliser cette étude sur une période plus longue pour délimiter les différentes variations.

SCRS/2017/087 – La pêche artisanale de thonidés mineurs est un secteur d'activité qui occupe une place capitale dans l'économie ivoirienne. Parmi les différentes espèces figure *Auxis rochei* qui a longtemps été confondu à *Auxis thazard*. Dans le souci d'avoir plus d'information sur les paramètres de reproduction de cette espèce, un échantillonnage mensuel a été effectué de juillet 2016 à janvier 2017 lors des débarquements des pêcheurs artisans dans la zone d'Abidjan. Un effectif total de 224 poissons a été collecté et le sexe ratio était en faveur des mâles. Tous les stades matures et les stades post ponte également observés pourraient signifier que cette espèce se reproduirait dans les eaux ivoirienne de juillet à octobre. Cependant il serait souhaitable de réaliser cette étude sur une période plus longue pour délimiter les différentes variations.

SCRS/2017/088 – Dans les Antilles, les unités artisanales exploitant les poissons pélagiques du large utilisent, au cours de la même sortie, plusieurs engins de pêche, rendant impossible leur codification à l'aide du référentiel de l'ICCAT. Ce papier décrit les techniques de pêche déployées en Martinique pour l'exploitation des pélagiques hauturiers. Une distinction est faite entre deux métiers, la pêche des grands pélagiques sur bancs libres ou autour de bois flottés et celle réalisées à proximité de dispositifs de concentration de poissons ancrés. Ces deux métiers peuvent être mis en œuvre au cours de la même sortie. Ils peuvent également être interrompus pour capturer des petits pélagiques hauturiers comme les poissons volants. Chaque engin utilisé permet de cibler un groupe d'espèces. Cependant, les collectes de données réalisées sur les points de débarquement ne permettent pas d'attribuer les prises à chaque engin mis en œuvre au cours de la sortie.

SCRS/2017/089 – Les pays de la COPACO exploitant l'Atlantique Centre Ouest sont peu représentés aux réunions du groupe d'espèces sur les thonidés mineurs. Pourtant, l'analyse des statistiques officielles de la FAO montre que sur les 21 espèces de grands pélagiques pêchées par ces pays il y a 11 thonidés mineurs. Ceux-ci représentent 60 % des débarquements des grands pélagiques hauturiers. Les pélagiques du large constituent une ressource importante en particulier pour les petites îles pour lesquelles ils représentent 23 % des débarquements totaux et 10 % pour les seuls thonidés mineurs. Six espèces de thonidés mineurs sont débarquées majoritairement par les pays de la COPACO. Mais en général, leur exploitation est le fait de 2 ou 3 pays. La dorade coryphène et le thon noir sont par contre exploités par un grand nombre de pays. L'augmentation des débarquements de ces 2 espèces au cours de la dernière décennie est probablement le résultat du développement de la pêche associée aux DCP ancrés. Afin d'évaluer ces ressources menacées par une exploitation de plus en plus importante, il paraît hautement souhaitable que l'ICCAT apporte son soutien aux pays de la zone avec la collaboration des organisations régionales et sous régionales des pêches (COPACO, CRFM, OSPESCA).

SCRS/2017/090 – Fishery-independent indices of spawning biomass of little tunny (*Euthynnus alletteratus*) and common dolphin (*Coryphaena hippurus*) in the Gulf of Mexico are presented utilizing NOAA Fisheries ichthyoplankton survey data collected from 1982 through 2015 in the Gulf of Mexico. Indices for little tunny were developed using catch rates of larvae sampled with both neuston and bongo gear, while those for dolphin were developed using catch rates of larvae sampled with only neuston gear. A delta-lognormal modeling approach was utilized, including the following covariates: time of day, season, area sampled, year, and gear.

SCRS/2017/094 – The occurrence and abundance of Spanish mackerel (*Scomberomorus maculatus*) larvae collected during SEAMAP Fall Plankton Surveys from 1986 to 2014 were used to examine their distribution and abundance and to develop an annual index of relative abundance. Spanish mackerel larvae were captured throughout the survey area but occurred 3.2 times more often and at 8.2 times greater CUPA in the western Gulf of Mexico (GOM) than in the eastern GOM. Larval abundance was highest over the inner U.S. continental shelf. Delta-lognormal modeling methods were used to estimate an index of relative abundance as a proxy for adult spawning stock. The index indicated increasing catch per unit area (CPUA) of Spanish mackerel larvae over the time period from 1986 to 2011. In 2012, CPUA sharply declined to its lowest level since 1996 and then increased to levels near the time series mean by 2014. However, there was a high degree of uncertainty around the annual estimates.

SCRS/2017/095 – The occurrence and abundance of king mackerel larvae captured during Southeast Area Monitoring and Assessment Program (SEAMAP) resource surveys in the Gulf of Mexico (GOM) have been used to reflect trends in the relative spawning stock size of king mackerel since 2000. Indices of relative abundance based on larval catch from SEAMAP summer and fall plankton sampling were first incorporated into the king mackerel Southeast Data, Assessment and Review (SEDAR 5) stock assessment in 2003. These indices were re-formulated using new methods and data solely from SEAMAP Fall Plankton Surveys for the SEDAR 16 stock assessment in 2000, and updated for SEDAR 38. The larval indices presented in this document are an update to the SEDAR 38 indices using similar methodology and the most recent data available from the 1986 to 2014 SEAMAP Fall Plankton Surveys.

SCRS/2017/096 – Small tuna species are caught in the North West African zone, which constitutes an important catch in the landings. These catches consist mainly of the bonito (*Sarda sarda*, BON) whose exploitation status and biological knowledge remain unknown because it has never been the subject of biological work in Mauritania. In April 2016, IMROP signed a six-month, short-term contract with ICCAT to carry out a program for collection of biological samples for the purpose of studying the growth and maturity of small tunas. This contract is part of ICCAT's Small Tuna Year Research Program (ICCAT-SMTYP). This research activity, carried out between May and October 2016, provided answers to landed size ranges, breeding biology and preliminary results on the growth of the species. In addition, the analysis of the BON diet composition in Mauritanian waters during the period of May-October 2016 revealed the preference of horse mackerel primarily and Myctophidae secondarily as prey. The study will continue, at least until April 2017, to cover an annual cycle of data to better complement biological analyses and obtain enough samples for reading spines.

SCRS/2017/098 – Fishery-independent indices of spawning biomass of genus *Auxis* in the Gulf of Mexico are presented utilizing NOAA Fisheries ichthyoplankton survey data collected from 1982 through 2015 in the Gulf of Mexico. Indices were developed using catch rates of larvae sampled with both neuston and bongo gear. A delta-lognormal modeling approach was utilized, including the following covariates: time of day, season, area sampled, year, and gear.

SCRS/P/2017/009 - This presentation presents the results obtained in the ICCAT SMTYP framework. This is an estimate of the first riparian bonito size of 38.56 cm, 38.41 and 38.10 cm for females, males and the population, respectively. Absolute fertility for the three species is 100-203 to 1,090,165 oocytes for little tunny, 82,331 to 471,324 oocytes for frigate tuna and 44,620 to 446,550 oocytes for Atlantic bonito. The parameters of daily growth of the little tunny by the otolith reading over the first 2 months are:  $L_{\infty} = 88,6096$  mm,  $K = 0.0047$  and  $t_0 = -18,766$  day<sup>-1</sup>.

SCRS/P/2017/010 - À São Tomé-et-Príncipe, la pêche au thon se fait principalement par les petits bateaux de pêche artisanale et semi-industrielle, puisque nous ne disposons pas des navires industriels. Les petites tunides, *Thunnus obesus*, *T. albacares*, *Acanthocybium solandri*, *Katsuwonus pelamis*, *Euthynnus alletteratus*, and *Auxis thazard* observés dans les débarquements ont de 26 à 40 cm. Ils sont généralement capturés à la (PSS). La période de la plus grande capture est de mois de Mai à Juillet et de Septembre à Novembre. Finalement, les capacités doivent être renforcées aux niveaux national, régional et continental sur statistiques de pêche pour mises à disposition de plus grandes quantités et qualités de données.

### Small Tunas Work Plan for 2018-2019

The following actions should be taken into account for improving statistical and biological data as well as the structure of small tuna populations. A substantial improvement in the data within SMTYP would allow conducting assessment in the near future based on the data poor stocks assessment methods in order to provide ICCAT with appropriate management advice for fisheries targeting small tuna:

- National scientists should develop and analyze simple fisheries indicators on small tunas (e.g. CPUE, mean size, proportion of juveniles, estimating fishing mortality, etc.), which should be presented at the 2018 Small Tunas Species Group Intersessional Meeting;
- Select the most appropriate methods and data and knowledge requirements. This work should be electronically by the group;
- Hold an intersessional meeting in 2018 with the aim to provide management advice for WAH, BON, and LTA, using the data limited assessment methods (**see details below and Table 7**);
- Update the life history metadata base of SMT, with new information collated during the recent years under the SMTYP;
- Collaborate, as much as possible through joint working groups, with other RFMOs to improve and exchange basic fisheries data and data poor stock assessment methods for small tunas.

### ICCAT Small Tunas Year Program (SMTYP)

#### Overview

The status of small tuna stocks in the ICCAT Convention area is generally unknown. Nevertheless, these species have a high socio-economic relevance for a considerable number of local communities at the regional level which depend on landings of these species for their livelihoods.

Fisheries statistics and biological data, which can provide a basis for assessing these resources and thus providing the Commission with appropriate scientific advice for their sustainable exploitation, are generally unavailable for these species.

To deal with this issue and to achieve the objectives established by the 2008 Joint ICCAT GFCM Working Group, an ICCAT Year Research Program for Small Tunas (SMTYP) was adopted by ICCAT in 2012.

The main objective of the first phase of this program is the recovery of historical T1 and T2 data and biological samples collection for growth and maturity studies in the priority species identified by the Group. This program has a wide geographical sampling coverage:

- Mediterranean and Black Sea: Bullet tuna, Atlantic bonito, little tunny and plain bonito;
- North East Atlantic: Atlantic bonito, little tunny, West African Spanish mackerel, frigate tuna, wahoo;
- Caribbean area and south-west Atlantic: Blackfin tuna, king mackerel, serra Spanish mackerel, wahoo and dolphinfish.

#### Planned activities for 2018-2019

During the period 2018-2019, the Group plans to continue collecting biological samples for priority species as the first priority to further improve growth and maturity parameters estimates. The SMTYP programme aims also to launch genetic studies to improve the information on the stocks structure as a second priority.

Nevertheless, these objectives could not be achieved without financial support from ICCAT. **Tables 1 and 2** give the detailed information on research activities to be conducted by species and research line and the corresponding estimated costs for 2018-2019.

**Table 1.** The detailed information on the research activities to be carried out by species for 2018-2019 under the ICCAT SMTYP.

| Species         | Research line                 | Geographical area   | CPCs                                                                                                | Coordinator      |
|-----------------|-------------------------------|---------------------|-----------------------------------------------------------------------------------------------------|------------------|
| Little tuna     | Aging and growth              | North East Atlantic | Senegal, Cote d'Ivoire, EU-Spain, EU-Portugal, Mauritania, São Tomé e Príncipe, Cabo Verde          | To be identified |
|                 |                               | South Atlantic      | Angola, South Africa                                                                                |                  |
|                 |                               | Mediterranean Sea   | Tunisia, EU-Spain                                                                                   |                  |
|                 | Reproduction                  | North East Atlantic | Senegal, Cote d'Ivoire, EU-Spain, EU-Portugal, Mauritania, São Tomé e Príncipe, Cabo Verde          | D. Macias        |
|                 |                               | South Atlantic      | Angola, South Africa                                                                                |                  |
|                 |                               | Mediterranean Sea   | Tunisia, EU-Spain                                                                                   |                  |
|                 | Stocks structure/delimitation | North East Atlantic | Senegal, Cote d'Ivoire, EU-Spain, EU-Portugal, Mauritania, São Tomé e Príncipe, Cabo Verde, Morocco | J. Vinas         |
|                 |                               | South Atlantic      | Angola, South Africa                                                                                |                  |
|                 |                               | Mediterranean Sea   | Tunisia, EU-Spain                                                                                   |                  |
| Atlantic Bonito | Aging and growth              | North East Atlantic | Senegal, Cote d'Ivoire, EU-Spain, EU-Portugal, Mauritania, São Tomé e Príncipe, Cabo Verde, Morocco | To be identified |
|                 |                               | South Atlantic      | Angola, South Africa                                                                                |                  |
|                 |                               | Mediterranean Sea   | Tunisia, EU-Spain                                                                                   |                  |
|                 | Reproduction                  | North East Atlantic | Senegal, Cote d'Ivoire, EU-Spain, EU-portugal, Mauritania, Sao-Tome, Cabo Verde, Morocco            | D. Macias        |
|                 |                               | South Atlantic      | Angola, South Africa                                                                                |                  |
|                 |                               | Mediterranean Sea   | Tunisia, EU-Spain                                                                                   |                  |
|                 | Stocks structure/delimitation | North East Atlantic | Senegal, Cote d'Ivoire, EU-Spain, EU-Portugal, Mauritania, São Tomé e Príncipe, Cabo Verde, Morocco | J. Vinas         |
|                 |                               | South Atlantic      | Angola, South Africa                                                                                |                  |
|                 |                               | Mediterranean Sea   | Tunisia, EU-Spain                                                                                   |                  |
| Wahoo           | Aging and growth              | North East Atlantic | São Tomé e Príncipe, Cabo Verde                                                                     | To be identified |
|                 | Reproduction                  |                     |                                                                                                     | D. Macias        |
|                 | Stocks structure/delimitation |                     |                                                                                                     | J. Vinas         |

**Table 2.** Estimated budget for biological and genetic studies in the framework of SMTYP for 2018-2019.

| <b>Tasks for 2018</b>         | <b>Budget</b>   | <b>Observations</b>                                                                                                                |
|-------------------------------|-----------------|------------------------------------------------------------------------------------------------------------------------------------|
|                               |                 | First year focused on the sampling effort and analysis of 1 species (LTA) for the 3 lines of research                              |
| Sampling                      | €30,000         | 3 species, 1 year (total of 30 localities). 60 individuals per locality. About 1800 individuals. Possible increase of new location |
| Growth analysis               | €15,000         | 1 year, 1 species LTA, all locations. About 150 individuals. 2 growth structures to be analyzed                                    |
| Reproduction analysis         | €15,000         | 1 year, 1 species LTA, all localities, all individuals. 600 individuals                                                            |
| Stock Structure analysis      | €30,000         | 1 year, 1 species LTA, all localities. 50 individuals for locality. About 500 individuals                                          |
| <b>TOTAL for year 2018</b>    | <b>€90,000</b>  |                                                                                                                                    |
| <b>Tasks for 2019</b>         | <b>Budget</b>   | <b>Observations</b>                                                                                                                |
|                               |                 | Complete Sampling. Analysis of the other species WAH, BON                                                                          |
| Sampling                      | €10,000         | Resampling for further needs                                                                                                       |
| Growth analyses               | €30,000         | 1 year. Finish LTA. All analysis of WAH, BON. 2 structures                                                                         |
| Reproduction analyses         | €30,000         | 1 year. Size of first maturity for WAH and BON                                                                                     |
| Stock Structure analysis      | €50,000         | 1 year, 2 species WAH and BON, all localities, about 750 individuals                                                               |
| <b>TOTAL for year 2019</b>    | <b>€120,000</b> |                                                                                                                                    |
| <b>TOTAL BUDGET 2018-2019</b> | <b>€210,000</b> |                                                                                                                                    |

### 2018 Small Tuna Species Group Meeting

#### Context

In order to provide the Commission with management advice based on the data limited methods (DLM-tool), the Group recommends that an intersessional meeting be held during 2018.

#### Objectives

The main objectives of this meeting are as follows:

- Review statistics Task I and II
- Review and update the fisheries indicators
- Review and update the life history metadata base for small tuna species with the new available biological information
- Review information on the purse seine catches of small tunas, especially little tuna, caught in association with FADs
- Identify potential management procedures and management performance measures for high-priority small tuna stocks in preparation for the start of the development of management strategy evaluation for these species