Appendix 9

2018 REPORT OF THE MEETING OF THE SUB-COMMITTEE ON STATISTICS
(ICCAT Secretariat, 24-25 September 2018)

1. Opening, adoption of Agenda and meeting arrangements

The Sub-committee on Statistics met at the ICCAT Secretariat (Madrid, Spain) on 24-25 September 2018. The ICCAT Executive Secretary, Mr. Camille Jean Pierre Manel welcomed the Sub-committee and highlighted the importance of its work and the commitment of the Secretariat to support the work of SCRS and the Commission. The meeting was chaired by Dr. Guillermo Diaz (USA). The Agenda was discussed and adopted without any modifications (see **Addendum 1**).

2. Review of fisheries and biological data submitted during 2018

The Secretariat presented information contained in the 2018 Secretariat Report on Statistics and Coordination of Research (SCI-08) related to fisheries and biological data submitted for 2017 including revisions to historical data.

The activities and information included in this report refer to the period between 1 October 2017 and 13 September 2018 (the reporting period). All the basic fisheries and biological statistics have been presented by the Secretariat to the SCRS Working Groups during SCRS inter-sessional meetings. The Secretariat continues to note the improvements in terms of data submission using the ICCAT electronic forms. Regarding the activities conducted by the Secretariat, in the most recent years, in addition to the normal activities developed on statistics, publications, data funds management and others, the Secretariat is dedicating (apart from the usual preparation of the majority of the datasets required by each stock assessment) a lot of additional work to stock assessment activities, whether participating actively in the assessment or coordinating and managing external support to the SCRS work. In addition, the statistical work requested to the Secretariat in the last six years, together with some lack of adherence to deadlines established for data submission, continues to constitute an enormous amount of work for the Secretariat which is not sustainable. This situation was particularly difficult during 2018 due to the increased number of SCRS and Commission meetings.

To the 2017 datasets reported, the Secretariat applied the SCRS filtering criteria to accept/reject statistical forms (2013 Report of the Sub-Committee on Statistics, Addendum 2 to Appendix 8, Filters 1 & 2) adopted in 2013. The results are based on a total of 75 flag related CPCs (50 CP + 1 CP [16 EU Member States] + 1 CP [4 UK Overseas Territories Member States] + 5 NCC) with possibly reporting obligations. The forms submitted with errors that the Secretariat was unable to correct were considered unreported data.

2.1 Basic Task I (T1FC and T1NC) and Task II (T2CE and T2SZ) statistics

The Secretariat presented 2017 data reporting status (SCI-08 - Table 1 and 2) of the two datasets of Task I statistics (T1FC: fleet characteristics; T1NC: nominal catches). The Secretariat reminded the Sub-committee once again of the new structure of the T1FC electronic form (ST01) used to collect information on individual vessels (sub-form ST01A) and summarized information for vessels less than 20 m LOA (sub-form ST01B). The overall reporting of ST01 increased slightly from 72% in 2017 to 75% in 2018 (56 flags). Four flags reported after the submission deadline. The Secretariat made corrections to the information reported by 10 flags CPCs, and, 5 invalid forms should be completely revised.

The T1NC (nominal catches) dataset was presented for the major ICCAT species (major tunas, major sharks, 13 species of small tunas and dolphin fish). The Secretariat once again reminded the Sub-committee that the ST02-T1NC electronic form has 2 sub-forms: ST02A used to report positive catches (landings, dead discards, and live releases) and ST02B used to report "zero" catches. The T1NC 2017 report card is presented in SCI_08 - Table 2. Like the T1FC reporting, 2017 reports showed a slight decrease in reporting (62 flags corresponding to 83%) compared to 2016 (85%). Five flags reported late and the Secretariat made corrections to 5 datasets. Thirteen CPCs (17%) have yet to report their T1NC data.

The T2CE (catch and effort) report card is presented in SCI_08 - Table 3. A total of 51 flags (68%), including 4 late reporting-flags, reported T2CE. This represents a significant decrease in T2CE reporting compared to 2017 (76% reporting). Twenty four flag CPCs have yet to report T2CE data.

The Secretariat presented the Task II size data (combining T2CS and T2SZ) card report in SCI_08 - Table 4. The submission of 2017 size data also showed a significant decrease in reporting. A total of 47 flag CPCs (63%), including 4 late reports, submitted 2017 size data compared to 52 flags (70%) for 2016. Some of the submitted data are pending review and corrections by the Secretariat. A total of 27 CPCs have yet to submit 2017 size data.

2.2 Tagging

The different laboratories and scientific institutions conducting electronic tagging in the ICCAT Convention area reported a total of 274 releases and 80 recoveries made in late 2017 and during 2018. With respect to conventional tagging, a total of 93,972 were tagged and 13,398 tags were recovered during the same period. From September 2017 to September 2018, the Secretariat distributed about 3,225 conventional tags. These figures do not include any tags deployed and recovered by the AOTTP.

2.3 Complementary data obtained within ICCAT data collection and research programmes (GBYP, AOTTP, EPBR, SMTYP and SRDCP)

The data recovery activities made within ICCAT research programmes (GBYP, AOTTP, EPBR, SMTYP and SRDCP) have been important sources of improvements on fisheries statistics.

During 2018, the GBYP worked on three main bluefin data recovery tasks. The first two, already finalized, are the new and improved estimates of annual catches (historical and recent years) of 5 Italian tuna traps, and, the recovery the landings of some flags reported at ICES meetings (in paper) in the period 1962-1978 (incomplete or not available in ICCAT-DB). This work, presented in document SCRS/2018/176, should be evaluated and approved by the SCRS. The third task is currently ongoing and consists of the provision of datasets of 41 electronic tag deployed in 2016-2017 by Dr. Barbara Block.

Under the SMTYP research programme, during 2018, several historical data recoveries of catches series were also made by Mauritania (2006-2018), S. Tomé e Principe (2009-2017) and Liberia (2011-2017). These catch series were evaluated and adopted by the Small tunas Working Group (report).

2.4 Other relevant statistics (observer data, VMS, BCDs, ISSF, etc.)

The Secretariat indicated that for 2017, 21 CPCs reported observer data using the revised ST09 form (an increase of 5 from 2017). As was the case in previous years, several forms were submitted with very little information. The Secretariat also summarized the reported data on seabirds and sea turtles which are extremely limited and sparse. As has already been recognized by the Sub-committee on Ecosystems, this Sub-committee once again reminds CPCs of their obligations to report by-catch data collected by their observer programmes. The limited available data so far has precluded the SCRS to advance the assessment of the efficacy of seabird mitigation measures as required by [Rec. 11-09].

The Sub-committee reiterated the utility of VMS data for assessing fishing activity in the Atlantic Ocean. It was noted that the ICCAT Ad Hoc Working Group on FADs had also stressed the need to access VMS data in order to better characterize fishing effort of purse seiners and therefore improve the corresponding CPUE indices. The Sub-committee noted that scientists should have access to this data to improve their analyses.

The Secretariat indicated once again that the data that has been provided by the ISSF are not in a standardized format and, therefore, they can't be easily included into the ICCAT-DB. The Secretariat and the ISSF will continue to work together to solve this pending issue.

3. Review of Secretariat's standard (yearly based) datasets estimations

3.1 CATDIS and EFFDIS

The Secretariat continues to improve the CATDIS estimations in two main fronts, the level of detail and the automation process aiming to reduce the time to estimate it. A full revision of CATDIS was made available in August 2018 for the nine-main species and includes all the historical revisions of T2CE catch series, and changes in Task I catches. The resulting maps were published in the ICCAT Statistical Bulletin Vol. 44 (1): www.iccat.int/sbull/SB44-1-2018/index.html.

With regard to EFFDIS, the Sub-committee noted that the version posted in the ICCAT website might not be the latest one that incorporates the recent updates of the catch-and-effort data. This is because it was noted that there is a mismatched between CATDIS and EFFDIS where some cells with estimated catches have no effort in the EFFDIS file. As such, the Sub-committee requested the Secretariat to investigate this issue and make the necessary corrections to the EFFDIS estimations.

3.2 CAS (catch-at-size) and CAA (catch-at-age)

The Secretariat informed the Sub-committee that the CAS database is now complete and functional and it has an active connection between the size data and the substitution tables used for the CAS estimations. As required, the Secretariat also provided updated CAS and CAA matrices for the 2018 Bigeye stock assessment.

4. Evaluation of data deficiencies pursuant to Rec. 05-09

4.1 2017 Report Cards applying SCRS validation criteria (Filters 1 and 2)

For the fifth consecutive year, the Secretariat applied, the SCRS filtering criteria (Filter 1 and 2, described in Addendum 2 to Appendix 8 of 2013 SCRS report, updated by the SCRS in 2016) to validate and accept Task I (form ST01 and ST02) and Task II (forms ST03, ST04 and ST05) statistics received under those official forms. The filtering criteria are also embedded (most updated SCRS version) in each one of these forms.

For 2017 data, Filter 1 was effectively applied and the results are presented in the SCRS Report Cards (SCI_08 - Tables 1, 2, 3, 4, and 5, with a summary in Figure 1). The "orange" cells indicate the datasets that have not passed Filter 1. However, the majority of the Task I forms rejected, were corrected by the Secretariat and provisionally (marked for revision) integrated into the ICCAT database system (ICCAT-DB). Task II forms not passing Filter 1 were not corrected (left for posterior revisions with the respective CPCs). Filter 2 was used for testing purposes and the results presented to the SCRS. Both filters were used on every Task I and Task II dataset received (scenario 2, methodology described in Palma and Gallego, 2015[1]).

Over these last five years, the Sub-committee and the Secretariat have observed continuous improvements in the level of reporting (CPCs reporting ratios), in the reduction of "late-reporting", and also some progress in the level of completeness of the forms (less errors) and level of detail of some information (in particular Task II). This tool has proven to be very effective in imposing strict reporting obligations and minimum data quality standards that will benefit the work of ICCAT in the future.

4.2 Standard catalogues of major ICCAT species (1990-2017)

The Secretariat presented the Task I/Task II data SCRS catalogues for the major ICCAT species (1996 to 2017) in SCI_08 - Appendix 1. The Sub-committee acknowledged improvements in data submissions. However, major deficiencies still exist for some ICCAT stocks particularly for the historical data. Once again, the Sub-committee agreed that this information should be reviewed by the Species Groups, in particular by those that are scheduled to conduct stock assessments in 2019.

[1] Palma C. and Gallego J.L. 2015. Results of applying Filters 1 and 2 to the 2013 statistical data reported during 2014. ICCAT Col. Vol. Sci. Pap. 71(6): 3070-3084.

Rec. 05-09 recognized the need to establish a clear process and procedures to identify data gaps, particularly those that limit the ability of SCRS to conduct robust stock assessments and to find appropriate means to address those gaps and evaluate the effectiveness of the ICCAT conservation and management measures. Management Strategy Evaluations (MSE) could be used to conduct cost benefit analyses. Particularly to evaluate how reducing uncertainty can help reduce the risk of failing to meet management objectives.

The Sub-committee continues to express particular concerns regarding the very limited data that so far has been provided from coastal fisheries (*i.e.*, coastal longlines and gillnets) on vulnerable by-catch such as seabirds and sea-turtles. The Sub-committee on Ecosystems, in particular, continues to be concerned that this is limiting its ability to assess the impacts of the ICCAT fisheries on the status of those populations. In addition, the reporting of total dead discards and live releases (see *Section 2.1*) continue to be very poor which impact the estimates of total removal and total mortality needed to conduct stock assessments.

4.3 Report on data recovery activities, new plans, and improvements on national data collections systems

The Secretariat informed the Sub-committee that major revisions were made during the bigeye and the blue marlin data preparatory meetings, which improved the tropical species and the billfish species fisheries statistics, respectively. Some gaps were also completed and the unclassified gears properly discriminated. Many CPC scientists were involved with the Secretariat in these revisions. This joint effort has greatly contributed to improvements in Task I and Task II related to these species. For T2CE, the largest revision was presented by EU-France which splits the FIS (FRA+CIV+SEN) combined BB and PS fleets (1980 to 1990) into three flag independent series. The Ghanaian BB and PS series of T2CE (1996 to 2005), estimated during the 2014 Intersessional meeting of the Tropical tunas Species Groups, held in Tenerife (see report) was finally adopted by the Group. The major T2SZ revisions were from Chinese Taipei longline fishery (1981-2007 on bigeye tuna), and, a full revision of the size samples of the European associated BB and PS fisheries (fleets: ESP, FRA, PAN, GTM, SEN, CPV, etc.) from 1980 to 2017 and for the three major tropical tuna species and the by-catch of albacore tuna, frigate tuna and little tuna.

5. Review of existing practices for data submission and validation

5.1 Formats (eFORMS), codes, and deadlines

The Sub-committee indicated that no changes have been made to the deadlines to report Task I and Task II data. However, the Sub-committee continues to recommend that CPCs make their utmost effort to report their data in advance of the 31 July deadline to help the Secretariat with its workload. With respect to providing data for intersessional meetings, the Sub-committee recommends that CPCs continue to make an effort to provide the requested data by the provided deadlines. However, for compliance purposes the data submission deadline continues to be 31 July.

The Secretariat also informed the Sub-committee on the advancements made in the improvement of the ICCAT coding system. The details can be found in SCI-08.

The Secretariat also proposed changes to the statistical forms to better indicate if the new reported data is partial or full. The Sub-committee agreed with the proposed changes, but it requested that the Secretariat provide a more detailed explanation of the each term to help CPCs to better interpret them. In addition, the Secretariat also proposed some changes to the ST03-T2CE form that will allow indicating the product type being reported for each species, in the place of the fishing operations mode (FAD and free school), that will be moved to the detail section. The Sub-committee also approved these changes to the ST03 form.

5.2 Progress on the work to develop an ICCAT Online Reporting System

Following the 2017 recommendations of the SCRS and the Commission's Online Reporting Technology Working Group, the Secretariat has started the merge of the ICCAT Statistical Online Reporting System ("ICCAT forms", a web application developed by the Secretariat during 2017 to integrate, validate, and store statistical forms online) and the FORS study (Fisheries Online Reporting, financed by ABNJ). The merging process (adding to ICCAT forms project many of the FORS design concepts, technologies, approaches,

models, etc.) will continue in the future. The Secretariat is now working on improving the resulting web application by including technologies (e.g. REST API web-services implementation, using Angular 6 to implement the client side of the web application).

Meanwhile, as recommended by the SCRS in 2017, the Secretariat has deployed in the ICCAT Cloud infrastructure, a Cloud server (http://162.13.143.167:8080/prototype) having a prototype of the "ICCAT forms" web application. This prototype is online since April 2018 and with only a few users registered (mostly ICCAT Statistical Correspondents) aiming to collect the initial impressions of the system. The Sub-committee recommends extending the testing period and encourages all CPCs to participate.

6. Progress on the work developed by the ICCAT Online Reporting Technology Working Group

The Sub-committee briefly discussed the meeting of the ICCAT Online Reporting Technology Working Group that met in March 2018 and that was attended by the Chair of this Sub-committee. The Sub-committee continues to fully support the efforts to develop the ICCAT Integrated Online Management System (IOMS) and it reiterates that the Commission should provide full support to the Secretariat (including financial) to advance and complete this task.

7. Review of the ICCAT relational database system (ICCAT-DB)

A detailed description of all the work involving the various parts of the ICCAT-DB (databases, applications, specific code, documentation, etc.) is presented in the Secretariat report (SCI_08). In addition, the Secretariat also did a presentation summarizing the current status of the ICCAT-DB (SCRS/P/2018/058), the progress made during 2018 (improvements, ongoing projects, documents, etc.), and the pending work that should continue in the future (ongoing and postponed tasks). This Sub-committee expressed its satisfaction and congratulated the Secretariat for the effort, dedication, and continuous commitment regarding the improvement of the ICCAT-DB system.

7.1 Improvements, ongoing work, and documentation work

Since 2017, the Secretariat has continuously worked on smoothly adapting the ICCAT-DB system foreseeing the "online reporting" process. A similar approach was adopted to document the ICCAT-DB system. The full documentation associated with the ICCAT-DB is composed of various elements including database manuals, "javadocs" for JAVA documentation, user guides, and REST API documentation. This work is now continuously being merged and updated in parallel with the improvements made to the ICCAT-DB.

7.2 Plans to publish some ICCAT-DB data in the ICCAT Cloud infrastructure

No major progress was made in this field, once most of the effort was directed to put online the ICCAT Statistical Online Reporting System (a web application developed by the Secretariat during 2017 to integrate, validate, and store statistical forms online). Following the SCRS recommendation, in April 2018, this web application was deployed online (as a prototype) for tests to be made by ICCAT Statistical Correspondents during 2018. Only three users did some testing over the last three months. The Secretariat recommends extending the testing period and encourages CPCs to participate.

8. International and inter-agency cooperation on statistical activities (FAO, CWP, FIRMS, CLAV)

The Secretariat continues to collaborate with several organizations for support of scientific dissemination of SCRS conclusions and recommendations of its activities in 2018. In this regard, the Secretariat provided results of the latest assessments of yellowfin, albacore, sailfish and Mediterranean swordfish stocks to the Fishery and Resources Monitoring System (FIRMS) and, participated in the Mediterranean Advisory Council (MEDAC) meeting (September 2017) providing a summary of the status of ICCAT species in the Mediterranean Sea. The Secretariat continues to provide regular updates of the ICCAT vessel registration to the CLAV database, and submitted the summary of the ICCAT Collect. Vol. of Sci. Pap., Volume 69, Issues 2, 3, and 4 to the ASFA - Proquest Database in 2018. The Secretariat has also participated on the annual meeting of the Coordinating Working Party on Fishery Statistics (CWP), Rome, Italy, March 2018, and the

meeting of iMarine, an open collaborative support system for Ecosystem Approach for Fisheries Management (EAFM). The Secretariat also maintains active collaboration with ISSF, ICES, and GEF Common Oceans ABNJ Tuna Project on several research, statistics and scientific tasks in support of the SCRS work.

In 2017 the Secretariat also chaired the Second Joint t-RFMOS MSE Technical Working Group (Seattle, June 2018), and participated in the CCSBT preliminary MSE Technical Working Group (San Sebastian, September 2018). Important recommendations for the ICCAT MSE process were raised at this meetings.

9. Review of the Report of the short-term contract: *Comprehensive study of strategic investments related to artisanal fisheries data collection in ICCAT fisheries of the Caribbean/Central American region*

The abovementioned report was introduced as document SCRS/2018/114. The major recommendations of the report were as follows:

- SCRS would need to prioritize the level of investment for data enhancement programmes for artisanal/small-scale fisheries within the Caribbean/Central America Region.

    1. Decisions are required to define what the priorities are, such as, based on the major ICCAT species (under current management recommendations, and/or under rebuilding programme) or of least concern. However, all ICCAT species caught by artisanal fisheries in the region should be included in any data enhancement programme.

    2. Decisions need to be made on the duration of the investments.

- Countries with artisanal/small-scale fisheries in the Caribbean/Central America Region that catch species of great concern in ICCAT (e.g., billfishes and sharks) should be encouraged to declare their interest in data enhancement programmes on capacity building by presenting a scientific document at any of the SCRS Species Group meetings.

    1. It is important that the SCRS Chair and Species Groups Chairs reach out to scientists from countries that are of major interest based on their catches of ICCAT species in their artisanal/small-scale fisheries as noted in the study.

    2. The reach out should encourage participation in Species Groups meetings in order to share recorded information on statistical data from artisanal fisheries indicating limitations and procedures on how to correct them.

    3. Reiterate that funding is available for participation at the Species Groups meetings so their results can be presented and shared with the rest of the Species Groups.

- Investments on capacity building of data collection and reporting, and species identification workshops caught by artisanal/small-scale fisheries for all countries within the scope of the study are required urgently considering the deficiencies in the catch matrix for several ICCAT species of interest caught by those fisheries.

    1. One or two workshops on data collection and reporting, and species identification should be planned for the region. Ideally, the first workshop should focus on training, and the second workshop should be follow-up of any information gaps as well as any corrections required.

- Medium to long term data enhancement programmes for artisanal/small-scale fisheries in countries with major catches of species of great concern in ICCAT (e.g., billfishes and sharks).

    1. This recommendation depends on the decisions made on the first Recommendation above. It should be noted that for some countries with limited capabilities for data recording in artisanal fisheries that catch substantial catches of ICCAT species.

- Harmonization between TFPs are strongly encouraged and needed, particularly with WECAFC/FAO since all countries in the region are members of the Organization and the synergy to be created between ICCAT and WECAFC will likely facilitate cooperation and enhancement in data collection of ICCAT species of concern within the region.

    1. It seems critical to find ways to establish a level of cooperation between WECAFC and ICCAT that would make it possible to encourage countries that are not ICCAT member countries to participate in ICCAT in any possible way.

The Sub-committee inquired if there is an estimate of what percentage of the total catches in the region corresponds to artisanal fisheries. The author of the report indicated that it is difficult to know because of the heterogeneity of the artisanal fisheries and the data collection programme among the assessed countries. The Sub-committee also wanted to know if the observed shark by-catch is retained or discarded, it was informed that all shark catches are retained and that there is full utilization of the carcasses, in addition shark finning does not seem to be a prevalent practice in these fisheries. The report mentioned that FADs are being used to catch ICCAT species. After further inquire, the author of the report indicated that the Dominican Republic is the only country the uses moored FADs to catch ICCAT species, but these FADs are 'homemade' and completely unregulated. It was discussed that it would be important to obtain information in the addition of total catches information on the size structure of the artisanal catches. The author also explained that some countries were unaware of some of the reporting obligations for ICCAT species, particularly for DOL (dolphinfish). The Sub-committee discussed the need to make some of these countries aware that ICCAT has funds available for scientists to attend SCRS meetings and it further discussed the need for capacity building in the region. Finally, a collaboration between ICCAT and WECAFC was discussed

The Sub-committee commended the author of the report for his comprehensive work.

10. Considerations on the Sub-committee on Statistics recommendations (past and 2017)

10.1 Progress with prior year Recommendations of theSub-Committee

- The Sub-committee reminds CPCs of their obligation to report total discards and live releases. The Sub-committee also recommends that the SCRS explores ways to provide capacity building to those CPCs that need it to comply with the discard reporting requirements.

The Sub-committee continuous to note that the reporting of dead discards and live releases continue to be poor and no improvements have been made in this area.

- The Sub-committee again reiterates that CPCs should report their observer data and any other information needed to advance the assessment of the efficacy of seabird mitigation measures as well as the impact assessment of ICCAT fisheries on sea turtles.

Only 21 CPCs reported observer data using the newly adopted ST-09 form. Although this is a very slight increase compared to the submission of 2016 data (2 CPCs), it is still unclear how many CPCs that have observer programmes are not reporting their data. In general, the reported data is still insufficient to advance the assessment of the efficacy of seabird mitigation measures.

- The Sub-committee recommended that CPCs revise their historical series of Catch-and-Effort and Catch-at-Size.

In general, CPCs tend to revise their historical series of C&E and CAS in preparation for particular stock assessments. Therefore, it is expected that the response to this recommendation will be positive over time.

- The Sub-committee reiterates previous recommendations that submission of T2CE data should be done for all species at once. When CPCs report T2CE data for several species separately, the Secretariat cannot interpret the effort data and, therefore, it is not possible to combine de different data sets.

The Secretariat informed the Sub-committee that even though improvements have been made on the reporting of T2CE data, there are still occasions when CPCs report this information in more than one submission.

- The Sub-Committee recommended that the Secretariat change the start of the 'reporting period' to 1 October from the current date of 1 December.

Following this recommendation from the Sub-committee, the Secretariat changed the start of the reporting period to 1 October.

- The Sub-committee endorsed the ongoing work by the Secretariat to develop an online reporting system for statistical data. The Sub-committee recommends that Statistical Correspondents interested in helping in the testing of this new system to work with the Secretariat.

The Secretariat contacted 13 Statistical Correspondents and invited them to participate in the testing of the online reporting system. Unfortunately, only three statistical correspondents replied and participated in the preliminary tests.

- The Sub-committee recommends that the Commission provides the Secretariat with all the support needed to complete the online reporting system. In addition, the Sub-committee recommends that the Commission 'Online Reporting Working Group' be expanded to include members of the SCRS and Statistical Correspondents.

The Commission expanded the 'Online Reporting Working Group' to include members of the SCRS. As such, the Chair of this Sub-committee participated in the March 2018 meeting of the 'Online Reporting Working Group'. In order for the Commission to provide full support for this effort, the 'Online Reporting Working Group' requested the Secretariat to prepare a budget to present to the Commission.

- The Sub-committee recommended that the Secretariat modifies the ST04-T2SZ and ST05-T2CS (renamed from ST05-CAS) form to allow the reporting of data only by month and for several years in the same form. Moreover, form ST04-T2SZ should drop geographical grids of type "20x20" and "10x20". These modifications should be made for the 2018 forms version (to report 2017 data). In addition, the Sub-committee also recommended that the Secretariat explores the possibility of further modifying these forms to allow the reporting of data for several species in the same form (study to be presented at the 2018 Annual meeting).

The Secretariat informed the Sub-committee that it continues to find ways to modify the ST04 and ST05 forms to accommodate the Sub-committee's request with regard to these forms.

- The Sub-committee recommended that the ST08-FadsDep be revised by the Tropical Tunas Working Group taking into consideration the results presented in document Báez et al. 2017. The revised form should be presented at the next meeting of this Sub-committee.

The Sub-committee was informed that this work by the Tropical Tunas Working Group is ongoing and an update will be provided at the 2019 meeting of the Sub-committee.

10.2 Review of Recommendations from 2018 inter-sessional meetings

The following recommendations for statistics from the 2018 inter-sessional meetings were reviewed and endorsed by the Sub-committee.

Billfish

- The SCRS recommends that countries that are engaged in fishing on moored FADs should report on their Annual Reports the prevalence of such mode of fishing and whenever possible the evolution of such fishing practice, including the number of moored FADs being used, the gear used around them and the species caught in them.

- The ICCAT Secretariat has again started to receive reports of billfish unclassified catches from some CPCs.

The Group reminds the CPCs that they should report these catches by species to facilitate the assessments and compliance on billfish recommendations on catch limits [Rec. 15-05]. The Group noted that reports of Task I billfish catches in the Mediterranean and from many sport fishing fleets are not being provided on a regular basis.

The SCRS should investigate billfish catches reported to FAO by non-member countries in ICCAT and not included in ICCAT statistics with a view of improving the ICCAT Task I and Task II databases.

It is recommended that the Sub-committee on Statistics considers:

(a) adding a moored FAD fishing mode to the ICCAT codes;

(b) requesting that countries fishing on moored FADs report catch and effort of Task II by specifying a fishing mode: FAD or non-FAD.

- The Group recognizes that the most significant source of uncertainty in the blue marlin assessment is in the landings data. Furthermore, the number of dead discards and fate of the live discards is also not well known and a large contributor to uncertainty. As has been recommended in the past, data on landings as well as dead and live discards need to be more complete and accounted for.

- SCRS should develop an inventory of sport fishing activities that may interact with billfish through collaboration with organizations such as the IGFA and The Billfish Foundation. Such inventory should seek to establish a list of countries, and where possible, ports within the ICCAT Convention area, where sport fishing activities are known to be interacting with billfish. Activities should include, established charter companies and tournaments. This inventory will help the SCRS and CPCs in the design of data collections and sampling programmes.

- Commission should continue to support the initiatives that seek to improve data collection for billfishes in the Caribbean and West African regions through activities that implement the most important recommendations provided by the initial fact finding projects conducted by ICCAT in recent years.

Sharks

- CPCs should comply with the requirement to report discards (both dead and alive) of all sharks and especially for blue shark, shortfin mako, and porbeagle in Task I because data on these discards are generally not provided to the Secretariat.

- CPCs should also report on the estimation protocols for dead discards and live releases, and whether what is reported is totally observed or fleet-level estimates.

Small tunas

The Group recommends that Statistical Correspondents 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, the split of "unclassified" gear catches to specific gear codes, and the completeness of Task I gaps identified. The Statistical Correspondents and/or National scientists of CPCs should correct inconsistencies identified in T2SZ series. For the 13 species of small tuna, the T2SZ revision should have as reference, the stratification of the samples by gear, month, 1°x1°or 5°x5° squares, and, 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 Secretariat should continue its work on the data recovery and inventory process of tagging data for small tuna species. This process will require active participation of the National scientists that have such data.

Bigeye

- Consider establishing a database of raw data used to establish conversion factors used in stock assessments: length-weight, length-length, weight–weight and age-length, to facilitate the improvement and re-estimation of such relationships as new data becomes available. If the SCRS were to agree it should:
    - Develop a template so that such data could be stored at the Secretariat.
    - Engage in a data recovery project by either:
        - hiring an expert to compile all possible historical data for all ICCAT species or;
        - asking each Working Group to compile the historical information for their respective species.
    - Request that all subsequent papers presented to the SCRS regarding conversion factors and age-length relationships provide the raw data for incorporation in the ICCAT biological databases.
    - Request that data used to calculate conversion factors is regularly reviewed, especially when the fishery evolves and the spatio-temporal distribution or the operation of the fleet changes significantly.
    - Consider whether some of these measurements should be part of the list of requirements for data provision issued by the Commission.
    - All data use and publications derived from ICCAT AOTTP data will have to follow the publication policy included in the ICCAT AOTTP webpage.
    - ICCAT AOTTP conventional tagging data should be shared according to the following conditions:
        - raw data (not yet quality controlled) can be released to ICCAT AOTTP capacity building Working Groups and Tropical tuna Working Group meetings;
        - raw data will be periodically updated (every six months) and quality controlled before widely released;
        - quality controlled data will be made available publically through the ICCAT webpage. The process of quality control will be described in the webpage and data sets made available will have information on individual fish data quality that can facilitate a broad set of analyses;
        - users of data will be encouraged to try to involve scientists from developing countries in their analysis of the ICCAT AOTTP data. This will be facilitated by providing, in the ICCAT AOTTP webpage, a list of interested scientists from developing countries that have requested to participate in these analyses and by listing all scientists that have participated in the ICCAT AOTTP training workshops.
    - Access to other data collected by AOTTP (otolith reference sets, electronic tagging data) will have to be requested directly to the ICCAT AOTTP Coordinator and access and use of these data will be governed by the following rules:
        - ICCAT AOTTP Steering Committee will decide on the release of such data considering, first the objectives of the ICCAT AOTTP programme, second the priority research needs established by the Tropical tuna Working Group in their work plan and third the state of progress in the collection of these data sets.
        - Requesters of such data should make sure their request for use of such data is consistent with ICCAT AOTTP objectives and research needs. The ICCAT AOTTP webpage provides the list of research objectives for the programme. The annual work plan of the Group in the annual SCRS report provides the list of research priorities for the Tropical tuna Working Group.
        - Requests for data analysis that do not fulfill such priorities and objectives will only be considered if the use of the data does not compromise, in any way, the ability of the ICCAT AOTTP to fulfill its objectives.

- The Group recommended a close monitoring of the new school association Brazilian fishery by the CPC ensuring the complete data collection of fleet and fisheries statistics, as well as a proper sampling of size and biological samples to better assess the impact of this fishery on the overall stock.
- To enable the SCRS to evaluate the impact of potential changes of the capacity management plan of Ghana, the Group recommends that the ICCAT Secretariat requests Ghana to grant Ghanaian/SCRS scientists permission to access and analyze the AVDTH and VMS data from their purse seine and baitboat fleets to estimate fishing capacity by vessel type.
- The Group requests that CPCs that use FADs to capture tropical tunas prepare analyses reporting any changes in the distribution of effort and catch during and around the current moratoria and to compare such distributions to those prior to the implementation of the current moratoria.

Ecosystems

Various collaborative efforts to assemble and analyze observer shark, seabird and sea turtle by-catch data are active. The Sub-committee encouraged National scientists to collaborate with these data gathering initiatives including the seabird component of the Common Oceans Tuna project and the collaborative work being done by ICCAT CPCs on seabirds and sea turtles.

11. Replies to the Commission related to Rec. 16-14, paragraph 12, *c* and *d*

(c) provide the Commission with a summary of the scientific data and information collected and reported pursuant to this recommendation and any relevant associated findings.

Summarizing observer data information reported by CPCs using the ST-09 form is a complex task given the changes in format that this form had undergone. A summary of the information reported for 2017 can be found in Secretariat's document SCI_08, Section 1.4 and Tables 8-11.

d) make recommendations, as necessary and appropriate, on how to improve the effectiveness of scientific observer programmes in order to meet the data needs of the Commission, including possible revisions to this Recommendation and/or with respect to implementation of these minimum standards and protocols by CPCs.

The SCRS has not received enough information on national observer programmes to assess the effectiveness of these programmes to meet the data needs of the Commission. It is expected that through the use of the ST-09 observer data from enough information will be collected in the future to assess these programmes.

12. Other matters

Document SCRS/2018/117 - This document presented the rationale for the U.S. to revise its historical commercial landings of shortfin mako (SMA). The revised series used a dressed weight – round weight conversion factor of 1.46 for commercial landings instead of the previous conversion factor of 1.96. The updated series also completed missing information on sampling areas in some years for both commercial and recreational landings.

The Sub-committee adopted the revised series of SMA landings which will be permanently integrated by the Secretariat into the ICCAT-DB.

Document SCRS/2018/155 - Electronic Monitoring System (EMS) in purse seine vessels was tested as an alternative technology to complement and improve on board observer programmes for tropical tuna purse seiners. The authors proposed an optimized sampling strategy for estimating discards applicable to both electronic and human observers that reduces sampling time with minimum estimation bias.

The Sub-committee found the results of the paper to be interesting and useful. It was discussed that the particular sampling strategy implemented could depend on the discard species of interest. For example, the sampling strategy implemented to estimate total bycatch of the most common species might not be the best strategy to implement for rare species. The Sub-committee also inquired about the heterogeneity with which bycatch species are loaded in the sorting belts and if there was a particular reason for this. The presenter explained that this might be related to how the brailer operations are conducted.

Document SCRS/2018/169 – The paper recalls combined systems applied to obtain representative multiple variables which are used to obtain statistical tasks and to carry out scientific studies of different species and topics. Pay special attention to observations at sea. The paper also proposes a critical consideration of some ethical issues that may arise as a result of the biased or misleading interpretation of data and scientific studies submitted, and of the omissions or misinterpretations that may appear as post truth in some cases regarding the tRFMO studies, reports and assessments.

The Sub-committee mostly discussed the ethical issues that were introduced in the document. The Chair of the Sub-committee indicated some of those ethical issues which have occurred in ICCAT. For example, he indicated that in his opinion biased results from studies funded by advocacy groups have been presented at the SCRS. Similarly, the misuse and misinterpretation by non-ICCAT groups of the results of studies and stock assessments conducted by the SCRS have occurred in the past. The Chair also emphasized that in his experience in ICCAT all scientific results presented at the SCRS have always been fairly assessed and treated with great respect by the members of the SCRS. The Sub-committee also indicated that the Commission tasked the SCRS with developing a 'Code of Conduct' for scientists participating in the SCRS to particularly avoid some of the ethical issues discussed in the document.

13. Future plans and recommendations

13.1 Recommendations

- The Sub-committee reiterates the request that the information of the vessels included in the ST01-FC form be only from active vessels instead of information from licensed vessels that could include inactive ones. In addition, it is requested that, when possible, CPCs also report on the fishing days of these vessels.

- The Sub-committee reminds CPCs that the statistical forms should be filled only using ICCAT codes. The Secretariat has identified cases where non-ICCAT codes have been used in the forms. In addition, some CPCs have used sampling areas that do not correspond to the species being reported. Finally, CPCs that do not provide information for a particular variable in the statistical form should leave the cells blank instead of using codes like 'NA' or 'NULL'.

- The Secretariat informed the Sub-committee of submission of CAS data for species for which this information is not required. The Sub-committee is requesting that the Secretariat keep these data in the ICCAT-DB.

- The Sub-committee requests that the WGSAM and the Sub-committee on Ecosystems (SC-ECO) review the current 'data scoring system' developed by the Secretariat and, if necessary, provide advice on potential improvements. For this end, the Secretariat will make a presentation on the details of the data scoring system during the next meeting of the WGSAM and SC-ECO.

- Even though data reporting has improved during the past several years, there are still significant gaps in the historical data. Hence, the Sub-committee recommends that CPCs review the SCRS catalogues to identify data gaps that could be filled through data recovery efforts.

- The Sub-committee reiterates previous recommendations for CPCs to review their T2SC/CS data submission in particular for those species for which stock assessments will be conducted.

- The Sub-committee reviewed the latest version of the ST-09 form and it didn't identify any major concerns. The Sub-committee recommends that the current format of this form be maintained, but it also recommends that the SC-ECO review this form during its next meeting.

- The Secretariat and the SCRS will compile the information and recommendations provided in the reports on artisanal fisheries in West Africa and in the Caribbean/Central America regions to prepare a work plan and provide recommendations to the Commission.

- The Sub-committee reiterates once again that CPCs have an obligation to report total discards and live releases. The Sub-committee also recommends that the SCRS explores ways to provide capacity building to those CPCs that need it to comply with the discard reporting requirements.

- The Sub-committee recommends that CPCs that report T2CE data for intersessional meetings for a particular species also include that species in the CE data submitted by the deadline of 31 July.

- The Sub-committee reiterates its support for the developing of the ICCAT Integrated Online Management System and the work of the ICCAT Online Reporting Technology Working Group. As such, the Sub-committee recommends that the Commission fully supports this effort.

13.2 Future Work

Unlike other SCRS Working Groups, the Sub-committee on statistics does not have a work plan. Instead, the Sub-committee reviews and comments on the work plan of the Secretariat.

The most important project the Secretariat has been working on since 2017 is the Statistical Online Reporting System web application, for which a preliminary prototype was deployed on the Web in April 2018 covering statistical forms of Task I and II. The SCRS and the Commission Online Technology Working Group has supported and recommended to continue with this project, extending to all compliance and statistical data submission requirements of CPCs. However, they also recognized that this new ICCAT IOMS system will require a commitment for financial and expertise support from the Commission for moving forward and completing an application in a near future that will fulfill the recommendations from the Online Reporting Technology Working Group meeting in March 2018.

The Secretariat also has other tasks and projects that will be extended over 2019. The main tasks that should be finalized in the first semester of 2019 are:

- The ICCAT RDMBS server migration from MS-SQL 2008-R2 to MSQ-SQL 2016, and;

- Replacement of the stand-alone MS-ACCESS Task II databases on the web by SQLite equivalent ones.

Other ongoing tasks represent continuous improvements that will continue during 2019 and beyond. The tasks that are a priority for 2019 are:

- Improvements to the applications that work with the various databases;
- Ongoing work on the tagging database including the revision of the database structure for electronic tagging data, TG forms standardization, and automatic reading of TG forms;
- the standardization of electronic forms of compliance and statistics for automatic data integration, and;
- Adaption of all the databases of ICCAT-DB to the foreseeing future "ICCAT Online Reporting" strategy.

14. Adoption of the report and closure

The Chair thanked the participants for their attendance to the meeting and he thanked the Secretariat staff for their continuous support of the Sub-committee's work and acknowledged how difficult its work would be without the full assistance of the Secretariat.

The report of the meeting was adopted by correspondence.

Reference

Báez, Jose & Lourdes Ramos, Mª & Lopez, Jon & Santiago, Josu & Grande, Maitane & A. Herrera, Miguel & Rojo, Vanessa & Moniz, Isadora & Muniategi, Anertz & J. Pascual, Pedro & Murua, Hilario & Abascal, Francisco. 2017. Interpreting ICCAT's data reporting requirements for activities on FADs: An overview from EU-Spain. Document SCRS/2017/217 (https://www.researchgate.net/publication/320225830_INTERPRETING_ICCAT'S_DATA_REPORTING_REQUIREMENTS_FOR_ACTIVITIES_ON_FADS_AN_OVERVIEW_FROM_EU-SPAIN)

Addendum 1

Agenda

1. Opening, adoption of Agenda and meeting arrangements
2. Review of fisheries and biological data submitted during 2018
   - 2.1 Task I (T1FC and T2NC) and Task II (T2CE and T2SZ) statistics
   - 2.2 Tagging
   - 2.3 Complementary data obtained within ICCAT data collection and research programmes (GBYP, AOTTP, EPBR, SMTYP and SRDCP)
   - 2.4 Other relevant statistics (observer data, VMS, BCDs, ISSF, etc.)
3. Review of Secretariat's standard (yearly based) datasets estimations
   - 3.1 CATDIS and EFFDIS
   - 3.2 CAS (catch-at-size) and CAA (catch-at-age)
4. Evaluation of data deficiencies pursuant to Rec. 05-09
   - 4.1 Report cards for 2017 with SCRS validation criteria (filters 1 and 2)
   - 4.2 Standard catalogues of major ICCAT species (last 30 years)
   - 4.3 Report on data recovery activities, new plans, and improvements on national data collections systems
5. Review of existing practices for data submission and validation by the Secretariat
   - 5.1 Proposals for improving ICCAT eFORMS (structures, formats, codes, deadlines, etc.)
   - 5.2 Progress on the work to develop an ICCAT online reporting system
6. Progress on the work developed by the ICCAT Online Reporting Technology Working Group
7. Review of the ICCAT relational database system (ICCAT-DB)
   - 7.1 Improvements, ongoing work, and documentation work (technical manuals, Java docs, user guides, etc.)
   - 7.2 Plans to publish some ICCAT-DB data in the ICCAT cloud infrastructure
8. International and inter-agency cooperation on statistical activities (FAO, CWP, FIRMS, CLAV)
9. Review of the Report of the short-term contract: *Comprehensive study of strategic investments related to artisanal fisheries data collection in ICCAT fisheries of the Caribbean/Central American region*
10. Considerations on the Sub-committee on Statistics recommendations (past and 2018)
    - 10.1 Progress with prior year Recommendations of the Sub-Committee
    - 10.2 Review of Recommendations from 2018 inter-sessional meetings
11. Response to the Commission related to Rec. 16-14, paragraph 12, *c* and *d*
12. Other matters
13. Future plans and recommendations
14. Adoption of the report and closure

Addendum 2

List of Papers and Presentations

Reference	Title	Authors
SCRS/2018/114	Comprehensive study of Strategic Investments related to Artisanal Fisheries Data Collection in ICCAT Fisheries of the Caribbean/Central American Region: Draft final report	Arocha F.
SCRS/2018/117	Updated U.S. time series of shortfin mako shark landings for 1996-2016	Diaz G., E. Cortés
SCRS/2018/155	Improving the sampling protocol of electronic and human observations of tropical tuna purse seiner discards	Briand K., Sabarros P.S., Maufroy A., Relot-Stirnemann A., Le Couls S., Goujon M., and Bach P.
SCRS/2018/169	Considerations on combined strategies for collecting information and sampling of multiple variables for statistical tasks and scientific studies on tuna and tuna-like species: Ethical reflections on scientific activity in the context of tRFMOs	Mejuto J.

SCRS/P/2018/056	Fisheries & biological data submitted during 2018, data deficiencies & ongoing recovery plans	Palma C., and Mayor C.
SCRS/P/2018/057	Secretariat yearly based estimations (CATDIS, EFFDIS, CAS/CAA)	Palma C., Ortiz M., and Beare D.
SCRS/P/2018/058	Review of the ICCAT coding system and ICCAT-DB development status	Palma C., and Mayor C.
SCRS/P/2018/059	Progress on Online reporting	Mayor. C., and Palma C.

Addendum 3

SCRS Document and Presentations Abstracts as provided by the authors

SCRS/2018/114 - In 2014, ICCAT funded a Strategic Investment Inventory for artisanal fisheries of West Africa. Using that study as a model, this present project aims to get a clear understanding of existing data collection programmes and investments related to artisanal fisheries of the Caribbean/Central American region targeting ICCAT species (giving priority to those targeting billfish and shark species), in order to avoid duplication of effort and maximize the effectiveness of ICCAT's capacity building funds. The report presents the results of the study; the information and data presented represent a comprehensive view by country and the necessary information to maximize the effectiveness of ICCAT's capacity building funds.

SCRS/2018/117 – This document presented the rationale for the U.S. to revise its historical commercial landings of shortfin mako (SMA). The revised series used a dressed weight – round weight conversion factor of 1.46 for commercial landings instead of the previous conversion factor of 1.96. The updated series also completed missing information on sampling areas in some years for both commercial and recreational landings.

SCRS/2018/155 – Observer programmes have been implemented for many years in tuna purse seine fisheries. On board observers estimate discards using sampling and extrapolation methods when counting exhaustively is not possible. However, the flow of discards may be heterogeneous on the discard belt, and as a result, extrapolations may lead to biased estimates. Electronic monitoring system (EMS) has been tested as an alternative technology to complement and improve on board observer programmes for tropical tuna purse seiners. EMS allows monitoring discards at an acceptable species identification level and exhaustive counts on the discard belt. In this study, we used EMS "counts per minute" data from four French and one Italian purse seine vessels operating in Indian Ocean to analyse total discards in numbers, as well as discards per species for each fishing set. We analysed 48 fishing sets from 2017 and simulated different observer sampling strategies in order to optimise (i) the total sampling duration and (ii) the duration of sampling sequences. We propose an optimised sampling strategy for estimating discards applicable to both electronic and human observers that reduces sampling time with minimum estimation bias.

SCRS/2018/169 - The paper remind the combined systems regularly put in place by flag states and/or scientists to obtain multiple variables for fish and non-fish species which can be used to provide basic statistics and/or to prepare scientific studies on different species and topics, including observations at sea which should be considered together with the other mechanisms put in place. The paper underlines that most scientific groups tend to develop exclusively in a single language without interpretation. This fact undoubtedly hinders the equality between participants to raise arguments, hypotheses and ideas or present their studies. This is recognized as a limitation for scientists, but produces important economic advantages for the t-RFMOs. The confusion between compliance and scientific activity is also pointed out. The paper include critical considerations of some ethical issues that may arise in some cases as a result of the omission, biased or misleading interpretation of data and scientific studies submitted, or misinterpretations that may appear as post-truth in some cases regarding papers presented, the tRFMO studies, reports and assessments.

SCRS/P/2018/056 – Details are provided in document SCI_09/2018.

SCRS/P/2018/057– Details are provided in document SCI_09/2018.

SCRS/P/2018/058 – Details are provided in document SCI_09/2018.

SCRS/P/2018/059 – Details are provided in document SCI_09/2018.