

2019 Report of the Sub-committee on Statistics
(*ICCAT Secretariat, 23-24 September 2019*)

1. Opening, adoption of Agenda and meeting arrangements

The Sub-committee on Statistics met at the ICCAT Secretariat (Madrid, Spain) on September 23-24, 2019. 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.

2. Review of fisheries and biological data submitted during 2019

The Secretariat presented information contained in the 2019 Secretariat Report on Statistics and Coordination of Research related to fisheries and biological data submitted for 2018 including revisions to historical data.

The activities and information included in this report refer to the period between October 1, 2018 and September 16, 2019 (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. After 5 years of continuous improvement, the Secretariat observed some decline in data completion quality of the latest data submissions. The Secretariat had to correct more datasets so they pass the SCRS filtering criteria and there were a number of submissions that did not use the 2019 version of the 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, together with some lack of adherence to deadlines established for data submission, continues to constitute an enormous amount of work for the Secretariat.

The Secretariat applied to the 2018 datasets reported 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 76 flag related CPCs (51 CP + 1 CP [16 EU Member States] + 1 CP [4 UK Overseas Territories Member States] + 5 NCC) with reporting obligations. The forms submitted with errors that the Secretariat was unable to correct were considered unreported data and shall require CPC revisions.

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

The Secretariat presented 2018 data reporting status (Table 1 and 2 of the Secretariat report) of the two datasets of Task I statistics (T1FC: fleet characteristics; T1NC: nominal catches). The Secretariat reminded the Sub-committee once again 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 T1FC 2018 report card is presented in Table 1 of the Secretariat report. Overall reporting of T1FC was 74% in 2019; while it was 75% in the previous year 2018 (56 flags). Three flags reported after the submission deadline. The Secretariat made corrections to the information reported by 4 flags CPCs, and, 3 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 2018 report card is presented in Table 2 of the Secretariat report. Like the T1FC reporting, 2018 reports were similar (64 flags

corresponding to 84%) compared to 2017 (83%). Nine flags reported late and the Secretariat made corrections to 7 datasets. Twelve CPCs (16%) have yet to report their T1NC data. The number of CPCs that did not report is similar to the number in the previous year.

The T2CE (catch and effort) report card is presented in Table 3 of the Secretariat report on statistics and coordination of research in 2019.

A total of 49 flags (64%), including 4 late reporting-flags, reported T2CE. This represents a significant decrease in T2CE reporting compared to 2018 (68% reporting) and to 2017 (76%). Twenty-seven flag CPCs have yet to report T2CE data.

The Secretariat presented the Task II size data (combining T2CS and T2SZ) card report in Table 4 of Secretariat report. A total of 48 flag CPCs (63%), including 4 late reports, submitted 2018 size data. Some of the submitted data are pending review and corrections by the Secretariat. A total of 28 CPCs have yet to submit 2018 size data. The submission of 2018 and 2019 size data was similar, but was significantly lower compared to 2017 (70%).

2.2 Tagging

The different laboratories and scientific institutions conducting electronic tagging in the ICCAT Convention area reported a total of 481 releases and 83 recoveries made in late 2018 and during 2019. With respect to conventional tagging, a total of 123,335 tags were deployed and 17,362 were recovered during the same period. From September 2018 to September 2019, the Secretariat distributed about 3,850 conventional tags, primarily under the tagging projects of the GBYP. These figures include any tags deployed and recovered by the AOTTP.

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

The data recovery activities made within ICCAT research programmes (GBYP, AOTTP, EPBR, SMTYP and SRDCP) have contributed historically with great improvements to the ICCAT fisheries statistics, in particular by recovering missing or incomplete catch series and biological samples.

During 2018 and 2019, within GBYP Phase 8, data recovery included: new and improved estimates of annual catches (historical and recent years) of five Italian tuna traps; and b) recovery of the 1962-1978 landings of some flags reported at ICES meetings (data available in paper), which were incomplete or not available in ICCAT-DB. This work, presented in document SCRS/2018/176, was evaluated and approved by the SCRS. The GBYP is working with the Secretariat on the integration of this information in ICCAT-DB. The other two tasks have consisted in the provision of two electronic tags datasets: one including data from 41 tags deployed in 2016-2017 by Dr Barbara Block's team and the second including data from 220 tags deployed by Dr Molly Lutcavage team between 2002 and 2009. These data sets will be integrated into the ICCAT common electronic tagging database, which is under development by GBYP, AOTTP and the Secretariat. Once this database becomes available it will also include the available data sets from the e-tagging activities on northern albacore, swordfish and sharks being conducted since 2017.

The information recovered under the SMTYP research programme during 2018 (Mauritania (2006-2018), S. Tomé e Príncipe (2009-2017) and Liberia (2011-2017)) were already integrated into ICCAT-DB. These catch series were evaluated and adopted by the Small Tunas Species Group (SCRS/2019/010).

To be included in ICCAT-DB is the information recovered under the 2016 Spanish artisanal Mediterranean small tuna fisheries historical data recovery (SCRS/2017/004). The Secretariat is working with the EU-Spain scientists on the best way to classify that information with ICCAT gear codes.

The Secretariat is working with GBYP coordination team on a new project, aiming to consolidate the stereoscopic cameras size data (provided between 2014 and 2018) and make them available to the next bluefin stock assessment session. This work, which is now in its first phase, has shown to be extremely time consuming given the heterogeneity and large number of raw files that have to be inventoried and processed. However, this work has been given a high priority. This work will result in unique BFT size information from purse seine fisheries in the Mediterranean Sea. The first datasets are expected to be available by April 2020.

Finally, upon the 2018 SCRS request, the Secretariat issued a short-term contract to recover Mediterranean swordfish data. This data recovery aims to improve the available catch and CPUEs time series currently in use in the stock assessment models for Mediterranean swordfish, which currently start in 1985. This data recovery should allow to gather data for early period of the fisheries (1972-1984) and add some new data for the period 1985-1989. This task is scheduled to be finalized later in the year.

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

The Secretariat indicated that for 2019, 24 CPCs reported observer data using the revised ST09 form (an increase of 3 from 2018 and 8 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. For example, of the 24 CPCs that reported observer data, only 12 provided data on sea turtles and only 6 on seabirds. However, the Sub-committee is unable to determine at this time if the low reporting rate is due to some fleets not interacting with these species, or the data are not being collected and reported, or a combination of both. At this time, the ST09 form does not permit the reporting of 'zero interactions'. As has already been recognized by the SC-ECO, this Sub-committee once again reminds CPCs of their obligations to report bycatch data collected by their observer programs.

The Sub-committee reiterated the utility of VMS data for assessing fishing activity in the Atlantic Ocean. It was noted that the ICCAT FAD Working Group 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 these data to improve their analyses.

ISSF participating companies continue to provide the Secretariat with detailed information on catches (by vessel trip, species and commercial size category) for all their purchases. These correspond to unloading of catches from tropical tunas (bigeye, yellowfin, skipjack) and albacore to canning plants around the world. This information has previously been used by the SCRS. In 2019 the Secretariat was informed by ISSF that the Secretariat of the Pacific Community (SPC, Science Provider to WCPFC) receives the same types of data files from ISSF participating companies as the ICCAT Secretariat does. SPC has developed code to semi-automatically input the data into their database. SPC has expressed willingness to process the ICCAT data, at no cost to ICCAT, and export them in a format that the Secretariat can use effectively. The Secretariat will soon contact SPC to see how to make this happen. ISSF also noted that it has amended its requirement for cannery data submissions to RFMOs, so that a single data reporting format must be used starting in 2020. This should solve the problem found with multiple submission formats.

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 (1950 to 2017) 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. Some LL fleets might need some revisions and CATDIS for SMA and BSH still need to be completed due to data limitations. CATDIS can be improved if historical T2CE series are recovered and updated. The resulting maps were published in the ICCAT Statistical Bulletin Vol. 45: www.iccat.int/sbull/SB45-2019/index.html.

The Secretariat presented to the Sub-committee an update on the current status of EFFDIS. The Secretariat will continue to review the methodology used for EFFDIS and it is expected to provide an update on the progress of estimating a new EFFDIS at the 2020 meeting of the Sub-committee on Ecosystems.

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 continues to have an active connection between the size data and the substitution tables used for the CAS estimations. The Secretariat did not update the CAS and CAA matrices for the 2019 YFT stock assessment because it was not considered to be a priority. The Secretariat requested that the species working group review their needs for CAS and CAA estimates for their work as these estimations significantly increase the workload of the Secretariat.

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

4.1 2018 report cards with SCRS validation criteria (filters 1 and 2)

The Secretariat applied, for the 6th consecutive year, 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 2018 data, Filter 1 was effectively applied and the results are presented in the SCRS Report Cards (**Tables 1, 2, 3, 4, and 5**, with a summary in Figure 1 of the Secretariat report). 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, 2015¹).

Although during the last 2 years the level of reporting has remained relatively constant, overall during the last seven years the Sub-committee and the Secretariat observed 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 SCRS Scorecards and catalogues of major ICCAT species (last 30 years)

The Secretariat presented in Appendix 1 of document the Secretariat report, the Task I/Task II data SCRS catalogues for the major ICCAT species (1999 to 2018). The Sub-committee acknowledged that data submissions have greatly improved during the last decade. 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 2020.

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. Particularly to evaluate how reducing uncertainty can help reduce the risk of failing to meet management objectives.

Despite the multiple recommendations made by the Sub-committee and different species working groups the reporting of total dead discards and live releases (see *Section 2.1*) continues 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 and improvements, new plans, and improvements on national data collections systems

Document SCRS/2019/151 presented a revised time series (1986-2017) of U.S. commercial landings of blue shark. The revision was conducted to update the dressed weight-whole weight conversion factor used by the U.S. (1.96) with the new conversion factor adopted by the shark working group (2.46).

Document SCRS/2019/152 answered a request by the Small Tunas Species Group and the Secretariat that the U.S. update its king mackerel time series of landings. The document presented a time series of king mackerel commercial landings for the 2009-2017 that was estimated for a U.S. domestic stock assessment of this species.

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.

Document SCRS/2019/200 presented a revised time series (2004-2017) of U.S. recreational landings for species other than blue and white marlin, sailfish, swordfish, and bluefin tuna. The review was conducted to include improvements that were incorporated to the marine recreational surveys used to estimate recreational landings. The discussion and presentation of the review of US recreational statistics was for a given set of spp (BON, BSH, ALB, POR, BET, YFT) as the methodology was reviewed and updated by an external scientific panel, however for other spp (BFT, BUM, WHM, SAI, SWO) those recreational catches were not affected as the recreational sampling is from different sources and methodologies.

The Sub-committee reviewed and discussed the new information presented by the U.S. and it agreed to officially include the new time series of landings in the ICCAT-DB.

All the other T1NC, T2CE and T2SZ dataset revisions (details in Tables 13, 16 and 17 of the Secretariat report, respectively) were presented and approved by the respective species groups in the 2019 intersessional meetings (WHM, YFT, SWO, and, small tunas).

5. Review of existing practices for data submission and validation by the Secretariat

5.1 Proposals for improving ICCAT eFORMS, codes, and deadlines

The Sub-committee indicated that no changes have been made to the official deadlines to report Task I and Task II data, July 31. However, the Sub-committee continues to recommend that CPCs make their utmost effort to report their data in advance of the official deadline to help the Secretariat with its workload. For the late submissions (after July 31), the Secretariat informed the Sub-committee that, updating the ICCAT-DB system with data received until just one week before the start of the SCRS annual meeting leaves a very short time to prepare the SCRS annual meeting. Thus, the Secretariat proposed September 1 each year, as the last day for accepting and updating the ICCAT-DB system. Accordingly, all the information arriving afterwards shall be presented to the species groups as “preliminary official data” not covered in the Secretariat report on statistics.

With respect to providing data for intersessional meetings, in the past the Sub-committee recommended that CPCs made an effort to provide the requested data by the provided deadlines. However, many CPCs do not have the capability of providing Task I and II data for intersessional meetings prior to the July 31 deadline. As a result, it has been very rare that data from the prior year were complete enough to be included in stock assessments conducted before July 31. The Secretariat has indicated that the practice of requesting data for intersessional meetings that include the data from the previous year greatly increases the Secretariat’s workload. This is an undesirable consequence of such requests, particularly when considering that in most cases that data are not included in the stock assessments mostly due to the low proportion of data submissions. Therefore, the Sub-committee recommends that species groups abstain from requesting data from the previous year to use in their intersessional meetings.

The Sub-committee agreed with a proposal from the Shark Species Group to include in the ST02-T1NC electronic form 2 columns to indicate the conversion factors used to estimate landings in whole weight and dead/live discards, respectively.

Following the recommendation from this Sub-committee and the Sub-committee on Ecosystems, the Secretariat work intersessionally with a group of national scientists to develop a new version of the ST09 form. The revised form is flexible enough to allow for different levels of data resolution (i.e., set by set or aggregated data). It also merges the current ST11 form, which will be discontinued in 2020. The Sub-committee requested that the form be slightly modified for CPCs to report if seabird mitigation measures were used or not in a specific ‘notes’ field to describe the mitigation measures used.

The Secretariat informed the Sub-committee on the progress made to update the coding system. This includes ongoing work to reclassify deprecated gears SURF/UNCL in the ICCAT-DB system. Good progress has been made on this issue, particularly for BFT. The Sub-committee and the Secretariat also discussed approaches to reduce the number of codes used to describe LL gear. Reclassification of FL length type into SFL was finished. The Secretariat informed the Sub-committee on the work being conducted to reclassify some of the sampling areas, but it was indicated the input from different species working groups is needed. Finally, records in Task II data that corresponded to large grids (10x10 and 20x20 grids, already removed from the forms) are continuously being replaced by revised and more detailed datasets reported by CPCs.

Finally, the Sub-committee recommended that CPCs and the Secretariat adopt the dressed weight-whole weight conversion factors for SMA and BSH that were estimated and published by Mejuto *et al.*, 2008. These conversion factors should be included in the list of conversion factors published in the ICCAT website.

6. ICCAT Online Management System (IOMS)

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

The ICCAT Online Reporting Technology Working Group did not meet during 2019, but it did maintain discussions through electronic communications. The Group drafted Terms of Reference for its work that will be introduced for their discussion at the upcoming meeting of the ICCAT Compliance Committee meeting this November.

6.2 Progress on the work on the IOMS

In May 2019, the Secretariat started the development of the IOMS. The IOMS is a system designed to manage online all the ICCAT data requirements. This is a long-term project that will entirely replace the current ICCAT data reporting system. The Secretariat presented to the Sub-committee an example of how the system is currently working and its capabilities. At this time, the IOMS is in the first half of the Phase 1 development, planned for 1 year. It covers the IOMS core web application (the entry portal to all the future modules/web-applications) and, the module that will manage Sections II and III of the CPCs Annual Reports.

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.)

In 2019, the Secretariat redesigned 3 databases to store information related to tropical support vessels, FAD deployments, and port sampling for tropical tunas that were reported using the ST-07, ST-08, and ST-10. Four additional databases (Task I, Task II, Vessels, and Tagging) are also being redesigned to be integrated into the IOMS.

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 documentation is under a merging process with the documentation related to the IOMS implementation. This work is now being continuously merged and updated in parallel with the improvements made to the ICCAT-DB and the progress of the IOMS.

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, this web application was deployed online on April 2018 (as a prototype) for testing by ICCAT Statistical Correspondents during 2018.

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

Representatives of the ICCAT Secretariat participated in the following activities:

- 1) In 2018, Secretariat staff attended the FAO Coordinating Working Group on Fishery Statistics (CWP) technical workshop on global harmonization of tuna fisheries statistics.

- 2) ICCAT is a partner of the FAO/FIRMS that provides access to information on the global monitoring and management of fishery marine resources. As such, the Secretariat provides regular updates of the stock status of ICCAT species assessed by the SCRS. In 2019, the Secretariat updated information for blue marlin, bigeye tuna, swordfish, Mediterranean albacore, and shortfin mako populations that were assessed by the SCRS during the last 2 years.
- 3) The Secretariat is also a member of the iMarine extended board. The iMarine is an initiative to support the implementation of the ecosystem approach to fisheries management and the conservation of marine living resources.
- 4) The Bycatch Coordinator attended the third meeting of the ABNJ seabird bycatch assessment in tuna fisheries was held from February 25 to March 3, 2019 in Kruger National Park South Africa.
- 5) FAO Common Ocean/ABNJ Tuna project/ISSF International Workshop on Mitigating Environmental Impacts of Tropical Tuna Purse Seine Fisheries. The meeting was held in Rome, Italy, from 12-13th March 2019.
- 6) FAO Common Ocean/ABNJ Tuna Project Workshop on Options to Operationalize the Ecosystem Approach to Fisheries Management in tuna RFMOs. The workshop was held at FAO Headquarters, Rome on 17-19 September 2019.
- 7) In 2018 the ICCAT Secretary attended a meeting of the Mediterranean Advisory Council (MEDAC, Rome, Italy, October 11, 2018) and provided a presentation on the recent findings of the SCRS as regards the status of the stock of eastern Atlantic and Mediterranean bluefin tuna, as well as for the Mediterranean albacore and swordfish stocks.
- 8) International Council for the Exploration of the Sea (ICES). Considering the fruitful experience ICCAT and ICES have had in recent years regarding scientific collaboration, in 2018 both organizations expressed their willingness to strengthen this cooperation and explore new initiatives and discussions which have commenced between the Secretariats.
- 9) Global Environment Facility (GEF) – FAO Common Oceans/ABNJ Tuna Project. In 2015 the Commission decided to continue with the cooperation between FAO Common Oceans/ABNJ Tuna Project and ICCAT. To this end, since the 2018 SCRS plenary, the ICCAT Secretariat has participated in several FAO Common Oceans/ABNJ Tuna Project initiatives. These include participation in the following meetings that were funded or partially funded by the project:
 - Joint t-RFMO FAD Working Group Meeting 8-10 May 2019, held in California, USA;
 - Sixth Project Steering Committee (PSC) meeting of the Common Oceans ABNJ tuna project held in Rome, 8-10 July 2019.

A Joint t-RFMO meeting on by-catch, mainly focusing on sharks and in collaboration with other t-RFMOs, is currently being organized by the ICCAT Secretariat with the support of the European Union with a contribution of the FAO Common Oceans/ABNJ Tuna Project. It will take place in Porto (Portugal) 16-18 December 2019.
- 10) Collaboration with Western Central Atlantic Fishery Commission (WECAFC). In 2018, contacts were made between the ICCAT Secretariat and the WECAFC Secretariat to enhance the collaboration between the two organizations regarding the collection and reporting of tuna fisheries data to ICCAT

9. Considerations on the Sub-committee on Statistics recommendations

9.1 Progress with prior year Recommendations of the Sub-Committee

- The Sub-committee reiterates the request that the information of the vessels included in the ST01-T1FC 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 Secretariat indicated that this is an issue that it is very difficult to assess. As a result, the Sub-committee develop a new recommendation for CPCs to make an effort to report 'fishing days' in their submission of ST01.

- 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 meaningless strings such as 'NA', 'NAN', or 'NULL'.

The Secretariat informed the Sub-committee that some of these problems still persist in data submissions and no significant progress has been made.

- 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.

Task completed.

- The Sub-committee requests that the WGSAM and the Sub-committee on Ecosystems 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.

The Secretariat made the required presentations (including the method in SCRS/2019/045) and both the WGSAM and the SC-ECO endorsed the use of the scoring system. Following an additional WGSAM request the scores were extended to the small tuna species. The results were presented to the respective Small Tunas Species Group 2019 intersessional meeting. The final scorecard adopted by WGSAM (updated with 2018 statistics) is presented in Table 6 of the Secretariat report, as the SCRS scorecard on Task I/II data availability.

Task completed, but:

- 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 most recent SCRS catalogues (Appendix 1 of the Secretariat report) to identify data gaps that could be filled through data recovery efforts.

Ongoing Task

- The Sub-committee reiterates previous recommendations for CPCs to review their T2SZ/CS data submission in particular for those species for which stock assessments will be conducted.

Some CPCs have conducted such review and some progress on this issue has been made.

- The Sub-committee reviewed the latest version of the ST09 form and it did not identify any major concerns. The Sub-committee recommends that the current format of this form be maintained, but it also recommends that the Sub-committee on Ecosystems review this form during its next meeting.

The SC-ECO reviewed the ST09 form during its 2019 meeting and a revised version was presented, discussed, and approved during the Sub-committee on Statistics meeting (see Section 5).

- 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.

This work is in progress.

- *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.*

Very little progress has been made on the reporting of dead discards and live releases. In addition, the SCRS have not taken any steps towards improving CPCs' capabilities to estimate discards.

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

The Secretariat informed the Sub-committee that this problem still persists.

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

The Commission is fully supporting the work of the *Online Reporting Technical Working Group*.

9.2 Review of Recommendations from 2019 inter-sessional meetings

The following recommendations for statistics from the 2019 inter-sessional meetings were reviewed and endorsed by the Sub-committee.

SWO

- Given that sometimes size data are reported at relatively low resolution (e.g., 5cm size classes) even when it is collected at higher resolution (e.g., 1cm), which may substantially impair the conversion of CAS to CAA, the Group recommended that size measurements are reported at the highest resolution available.

BIL

- Improvements in ICCAT data: CPCs that have historic reports of unclassified billfish and unclassified gear should continue to review such reports with the purpose of improving the precision of the ICCAT database.

- The Group noted that to date only 7 CPCs (out of 68 CPCs or fishing entities) have ever reported billfish discards and using such limited information the estimates of dead discards are around 2-3%. On the other hand, by using statistical analysis within the stock assessment models it was noted that unaccounted IUU catches, including dead discards may reach values of around 27% of the reported catches. Having the total catches, including dead discards and live releases (estimates of post-release mortality) is important for stock assessment purposes. As such, the Group emphasized the need for all CPCs to comply with the mandatory requirements to report discards (both dead and alive) for billfishes.

YFT

- Improvements of historical catch and effort data series continue to happen under the leadership of the Secretariat and with the collaboration of some CPCs. There is still a need for CPCs to continue to review historical data series to improve the quality of the reports, especially for data sets which contain gaps that have been temporarily replaced with "carry-overs".

- The Group noted that size frequency from the longline fishery of Chinese Taipei suggests substantial changes in gear selectivity, availability or retention of small yellowfin tuna in the early 2000s. As no scientist from Chinese Taipei attended the data preparatory meeting, it was not possible to obtain answers to the questions raised. The Group recommended that the Secretariat reach out to data correspondents of Chinese Taipei to determine the appropriate use of size frequency data in the yellowfin tuna stock assessment.

- The Group noted the importance of information on fishing effort from the tropical tuna surface fleets. The Group recommends that the Sub-Committee on statistics considers requesting all CPCs with surface fleet fisheries targeting tropical tuna fleets to provide information on the active vessels with the corresponding fishing days and the specific vessel characteristics (using form ST01-T1FC).

SHK

- The Group recommended that the Secretariat include on the list of published conversion factors on the ICCAT website and the ICCAT Manual, the conversion factors for dressed-weight to whole-weight (live-weight) for blue shark and shortfin mako developed by Mejuto *et al.*, 2008.

- The Group recommended that the Sub-Committee on Statistics discuss and approve the use of the Mejuto *et al.*, 2008 conversion factors for application for blue shark and shortfin mako.

- The Group recommended that the Secretariat develop a proposal on potential changes to the ST02-T1NC form to include information on the conversion factors used by CPCs to report catches in whole weight. Such proposal shall be presented at the 2019 meeting of the Sub-committee on Statistics for its discussion and potential adoption.

- The Group recommended that the Secretariat adopt the time series of catches of shortfin mako by Chinese Taipei estimated by the Group as the official Task I catch statistics.

- The Group recommended that the Secretariat adopt the time series of catches of porbeagle estimated in the 2008 stock assessment (Anon. 2009) meeting as the official Task I catch statistics for this species.

- The Group recommended that the Secretariat contact the Statistical Correspondents of Namibia and Morocco to confirm the 2017 reported shortfin mako catches.

- The Group emphasized that the report of all sources of mortality is an essential element to decrease the uncertainty in stock assessment results, and particularly the report of estimated dead discards for all fisheries. Although the reporting of dead discards is already part of the ICCAT data reporting obligations, the requirement has been ignored by many CPCs. The report of dead discards and live releases is of the utmost importance particularly if the Commission adopts a non-retention strategy.

SMT

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

ECOSYSTEMS

- Upon review of the EFFDIS estimates, the Sub-Committee noted significant discrepancies with the Task II reported catch and effort. Given the wide use of this product, it is recommended that the Secretariat pull the existing EFFDIS dataset from the website to review it and correct the estimation methodology. The progress of this work should be presented at the 2019 meeting of the Sub-Committee on Statistics.

- The Sub-Committee recommends that a group of National Scientists and the Secretariat work intersessionally to develop a revised version of the ST09 form following the guidelines provided in this report. This new form will be presented at the 2019 meeting of the Sub-Committee on Statistics for its discussion and approval.

WGSAM

- The Group recognized the importance of the scorecard and SCRS catalogues as useful instruments for tracking fisheries data availability and improvements over time. The Group recommended that ICCAT CPCs should use these tools to revise/complement their data and that the error in the catch be given careful consideration in stock assessment and management advice development. It is recommended that the proper place to report the scorecard with three time series (10, 20, and 30 years) of all stocks is in the report of the Sub-committee of Statistics.

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

The Sub-committee had not received any additional information to change the response that it gave to the Commission in 2018 (see below).

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;

In 2018, the ICCAT Secretariat reviewed and compiled all National Observer Program data that had been reported to the Secretariat since 2016. It included records from National observer programs from fishing activities from 2012 to 2019. The information that was reported has not the same format/structure in all years once the ST09 form has changed over time. This required the creation of three different data models in the National Observers database in the ICCAT-DB system. Whereas data entries before 2019 received visual inspections only, the Secretariat developed a JAVA software application in 2019 to validate form completeness and errors. As a result of this, data submissions could be verified before being compiled. In 2019 therefore, all data submissions with potential problems were fixed through re-submission in August-Sept 2019 so that all 2019 ST09 submissions could be uploaded into the ICCAT database system.

But, not all the pre-2019 submissions of National Observer Program data could be uploaded into the ICCAT database system. As part of the compilation process, data submissions were evaluated to determine if they could be entered into the database or not. The evaluation process excluded the uploading of form data submitted to the Secretariat where the data were rated as having No data or as being not useable. **Table 1** and **2** shows the number of records by species and the number of operations what were observed, respectively, that were entered into the database.

Table 1. Summary of national observer program data records by species group.

Species groups	2012	2013	2014	2015	2016	2017	2018	Grand Total
1-Tuna (major sp.)	49322	141655	65492	24100	25854	8658	4175	319256
2-Tuna (small)	1488	1429	4527	1623	12100	4310	4868	30345
3-Tuna (other)	3722	1884	1265	491	2116	560	455	10493
4-Sharks (major)	8145	9732	13051	3187	4649	2134	939	41837
5-Sharks (other)	251	194	2113	724	5564	2495	3248	14589
Grand Total	62928	154894	86448	30125	50283	18157	13685	416520

Table 2. Summary of distinct fishing operations observed by year and gear.

Gear groups	2012	2013	2014	2015	2016	2017*	2018*	Grand Total
BB						4	5	9
GN						7	12	19
HL							29	29
HP							3	3
LL	2214	6368	3374	1285	213	400	467	14321
OT						1		1
OTH							17	17
PS			266		1323	3339	6694	11622
RR						2		2
TN						8	13	21
TP						3		3
TR							2	2
TW						144	161	305
Grand Total	2214	6368	3640	1285	1536	3908	7348	26299

In general, the rate of reporting of observer data using the ST09 form has increased in the past 2 years. However, the number of CPCs that reported data on seabirds and sea turtles remains low. At the time, the Sub-committee cannot determine if the low number of CPCs reporting sea turtles and seabird data is because most CPCs do not interact with this species, or because that data are not being collected/reported, or a combination of both.

d) make recommendations, as necessary and appropriate, on how to improve the effectiveness of scientific observer programs 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.

In order for the Committee to further develop a response to the Commission, CPCs are encouraged to:

- Resubmit old data in new format including the 2018, 2019 submissions as well as old submission that could not be stored in the ICCAT-DB system
- Clear instructions on how aggregated fields should be interpreted for sampling and mitigation measures.
- Encourage all CPCs to resubmit/submit any National Observer Program data

The SCRS has already adopted and recommended the implementation of minimum standards for the use of Electronic Monitoring System for purse seine vessels in the Tropical tuna fishery.

11. Other matters

The convener of the Sub-committee, Dr. Guillermo Diaz (USA) informed of his decision to step down as Chair of the Sub-committee. He thanked the attendees for their participation in the meetings and he particularly thanked the ICCAT Secretariat for the support he received during his tenure.

12. Future plans and recommendations

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 workplan of the Secretariat which is the following:

- Replace the stand-alone MS-ACCESS Task II databases on the web by SQLite equivalent ones.
- Improve the 'client applications' that manage the databases of the ICCAT-DB system.

- Continue the tagging database redesign, including the addition of the model structure for electronic tagging, TG forms standardization, and automatic data integration of TG forms.
- Continue the development of the GIS project (create a PostGIS server and geo-reference all the ICCAT data available in the ICCAT-DB).
- Continue the standardization of electronic forms of compliance and statistics for automatic data integration.
- Adapt all the databases of ICCAT-DB to the ICCAT IOMS.
- Finalize the BFT stereo-camera size data integration.

Recommendations

- The Sub-committee recommends that the Secretariat adopt a new denomination of Task III, as the annual Task to handle (compile and manage) all the datasets (obtained using forms ST07, ST08, ST09, and ST10) that are not included in Task I and Task II, except for the tagging data.
- The Sub-committee recommends that the Secretariat adopts September 1 as the end date of the reporting period. However, the official deadline for CPCs to report all required data to ICCAT continues to be July 31.
- The Sub-committee once again recommends that CPCs make an effort to provide 'fishing days' in their submission of the ST-01A from (fleet characteristics).
- The Sub-committee reminds CPCs that the submission of the ST01B sub-form is mandatory (fleet characteristics for vessels <20 m).
- The Sub-committee reminds CPCs that the submission of the ST02B sub-form (zero catch matrix) is mandatory (Res. 15-09).
- The Sub-committee recommends that the species working groups provide the Secretariat with the range of lengths and weights that are considered biologically acceptable for each species.
- The Sub-committee recommends the Secretariat to contact EU National Scientists to obtain a document to support the time series of BUM catches 1985-2013 by Guadeloupe-Martinique. Without such supporting document the data cannot be integrated into the ICCAT-DB.
- The Sub-committee reminds CPCs of the previous recommendation that only the latest format of the electronic forms should be used to report data.
- The Sub-committee recommends that the different species working groups and sub-committees discuss if they have a need for the Secretariat to estimate CAS, CAA, and mean weights for their analyses. This discussion should be included as part of their workplans for 2020.
- The Sub-committee recommends that species working groups and CPCs review the CATDIS, particularly for historical periods and decide the time periods for which CATDIS should be estimated for.
- The Sub-committee recommends that the Secretariat present at the next meeting of SC-ECO an update on the progress made to estimate EFFDIS.
- The Sub-committee recommends that species working groups do not request data from the previous years for stock assessments conducted before July 31. These requests greatly increase the Secretariat's workload and the data reported are usually incomplete and, therefore, they are not included in the analyses.

13. 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 continued support of the Sub-committee's work. The Sub-committee acknowledged how difficult its work would be without the full assistance of the Secretariat.

The Secretariat showed its deepest appreciation towards Dr Guillermo Diaz for the work carried out during his five years as convener of the Sub-committee and highlighted the major improvements achieved under this period. Mr. Camille Jean Pierre Manel also thanked Dr Diaz for the trust he placed in the Secretariat and expressed his appreciation towards the Secretariat staff for their efforts in supporting the Sub-committee work throughout the last five years and during the meeting.

The report of the meeting was adopted.