

**Report of the 2023 Meeting of the Subcommittee on Statistics**  
(Hybrid/Madrid, Spain, 22-23 September 2023)

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

The Subcommittee on Statistics (SC-STAT) annual meeting was held in Madrid on 22-23 September 2023, under a hybrid format. The Chair of the SC-STAT, Dr Pedro Lino (EU), opened the meeting. The Chair of the Subcommittee, highlighting the complexity associated to hybrid meetings, reinforced the need to work efficiently focusing on the main aspects.

The Agenda was discussed and adopted (**Addendum 1 to Appendix 13**) with modifications. Mr Carlos Palma and Mr Carlos Mayor (ICCAT Secretariat) served as rapporteurs to the meeting. The List of Participants is attached as **Addendum 2 to Appendix 13**. The List the Documents presented during the meeting is summarised in **Addendum 3 to Appendix 13**, with the respective summaries provided in **Addendum 4 to Appendix 13**.

### 2. Summary of fisheries and biological data submitted during 2022 (Tasks 1, 2 and 3), including historical revisions

The Secretariat provided a summary of the data reported at the time of the meeting (an overview of the 2023 detailed Secretariat Report on Research and Statistics) covering the activities and the information on fisheries statistics and biological data received (including revision to historical data) between 1 October 2022 and 6 September 2023 (the Reporting Period). Furthermore, all the basic fisheries statistics and biological information were presented by the Secretariat to the SCRS working groups during the SCRS intersessional meetings.

After five years of continuous improvements, the Secretariat observed a slight regression in data provision for years 2019 and 2020 (provided during 2020 and 2021, respectively), a slight improvement for 2021 data, and again a slight regression in data completion and quality for 2022 data. Compared to the previous year, more datasets only passed the SCRS filtering criteria after the corrections were made by the Secretariat (errors mostly linked to incomplete forms and invalid use of ICCAT codes). In addition, the information submitted using old electronic forms (versions prior to 2023) increased to a total of 8% of the nearly 1200 forms submitted during the Reporting Period, with 19 ICCAT CPCs submitting information in old form versions (14 ICCAT CPCs in 2022 providing 2021 data). The Subcommittee reminds CPCs that only the latest version of the electronic forms is valid to submit new and historical data as they incorporate the latest changes approved by the SCRS.

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 data sets required for each data preparatory meeting and each stock assessment) substantial 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 (slightly improved this year), continues to constitute significant additional work for the Secretariat. However, to partially mitigate the consequences of the already excessive workload, the Secretariat has been able to improve the automation of data integration and validation procedures.

The Secretariat applied to the 2022 datasets reported during the Reporting Period, the SCRS filtering criteria to accept/reject statistical forms (Filters 1 & 2, Addendum 2 to Appendix 8 of the *Report for Biennial Period, 2012-13, Part II (2013), Vol. 2*) adopted in 2013. The results are based on a total of 75 flags related to CPCs (50 CP + 1 CP [15 EU Member States] + 1 CP [5 UK flag States] + 5 NCC) with reporting obligations. The forms submitted with errors that the Secretariat was unable to correct until the end of the SCRS annual meeting were considered unreported data and shall require CPC revisions.

The overall reporting status for 2022 data (**Figure 1**), shows that 63 of the 75 flag CPCs (84%) have reported fisheries and biological information: 59 flags with catches (79%) and 4 flag CPCs reported no fishing activity (5%). During the week of the species group meetings, several ICCAT CPCs reported new or revised data for 2022 and prior years. This late reporting considerably hampered the ability of the Secretariat and the SCRS to conduct their work.

### **2.1 Basic Task 1 (T1FC and T1NC) and Task 2 (T2CE and T2SZ) statistics**

The Secretariat presented a summary of the 2022 data reporting status of the two datasets of Task 1 statistics (T1FC: Fleet Characteristics, T1NC: Nominal Catches), and of the three datasets of Task 2 (T2CE: catch and effort; T2SZ: size frequencies; T2CS: catch-at-size) using the standard SCRS Report Cards (Tables 1, 2, 3 and 4 [for both T2SZ and T2CS] of the 2023 Secretariat Report on Research and Statistics, respectively).

The form ST01-T1FC is used to report T1FC information on individual vessels (sub-form ST01A) and summarized information for vessels less than 20 m LOA (sub-form ST01B). The overall reporting of T1FC for 2022 was 73% (55 flags) lower than the 81% (61 flags) observed for 2021. Two flags reported ST01 after the deadline, and the Secretariat made corrections to the information reported by 9 flags CPCs.

The form ST02-T1NC is used to report T1NC information and has two sub-forms: 1) ST02A used to report positive catches (landings, dead discards, and live releases), and 2) ST02B used to report “zero” catches. The overall reporting of T1NC data for 2022 was 84% (63 flags) lower than for 2021 data with 65 flags (87%) reporting this information. One flag CPC reported late, and corrections were made to the datasets of 13 flags. Twelve flag CPCs (16%) have yet to report their 2022 T1NC information.

The form ST03-T2CE (a single form) is used to report T2CE information (observed or raised to the total catches). A total of 51 flags (68%), including one late reporting flags, reported T2CE (similar to the values of 2020 data with 53 flags corresponding to 71% of the total). Twenty-four flag CPCs (32%) have yet to report T2CE data for 2022.

The T2SZ/CS report card covers 2022 data reported in both ST04-T2SZ and ST05-T2CS forms. A total of 41 flag CPCs (55%), including 2 late reporting flag CPCs, submitted 2022 size data. A total of 34 flag CPCs (45%) have pending the submission of 2022 size data. These indicators are slightly worse than the ones observed for 2020 and 2021 size data (**Figure 1**).

The Secretariat informed that four flag CPCs reported no fishing activity on ICCAT species (“0” catches in all species) for 2022 calendar year, well below the number observed in previous years. The list of flags with “0” catch reports is published in the Table 5 of the 2023 Secretariat Report on Research and Statistics, which presents a summarised view of the reporting status of all the Task 1 and Task 2 datasets for 2022.

The Task 1 and Task 2 dataset provisions over the last six SCRS meetings (**Figure 1**) gives the broader perspective of the ICCAT flag CPCs reporting status at the beginning of each SCRS annual meeting.

The Secretariat informed that, globally across all the Task 1 and 2 datasets, the most common deficiencies continue to be incompleteness of the header and detailed sections of the electronic forms, empty sub-forms (e.g., ST01B for small scale vessels; ST02B for “0” catches), use of non-ICCAT codes, and the use of old form versions. All these four types of deficiencies, identified with “orange” cells in the SCRS report cards (Tables 1 to 5 of the 2023 Secretariat Report on Research and Statistics), do not pass the SCRS filtering criteria and do require Secretariat explicit corrections (or data completion) and posterior confirmations and/or revisions by the CPCs. The Subcommittee reiterated the need for the ICCAT CPCs to pay a special attention to these four deficiency types in future submission. The Subcommittee also encouraged the statistical correspondents of the CPCs that need clarifications on their 2022 data reporting status to contact the Secretariat to resolve the problems identified.

The Secretariat also informed that T1NC dashboard is now fully operational and has been published on the ICCAT website. During 2023, improved versions of the T1NC dashboard were also prepared for the 2023 species groups intersessional meetings. The Subcommittee commended the Secretariat to continue the work on the development and maintenance of T1NC dashboards as an important means to properly disseminate T1NC information.

## 2.2 Tagging

The Secretariat provided a summary of the tagging data received by the Secretariat during the Reporting Period. The different laboratories and scientific institutions conducting electronic tagging in the ICCAT Convention area reported a total of 270 releases and 121 recoveries. With respect to the conventional tagging (details in Table 7 of the 2023 Secretariat Report on Research and Statistics), a total of 5,941 tags were deployed and 422 were recovered. In the same period, the Secretariat distributed about 2,075 conventional tags, primarily under the tagging projects of the Atlantic-Wide Research Programme for Bluefin Tuna (GBYP).

The Secretariat also informed on several ongoing projects on the conventional tagging such as, the database merge process (ICCAT, AOTTP, and GBYP), the integration of pending datasets received by ICCAT (e.g., some USA past submissions mostly with revisions), the recovery of the shark species sex information (with major advancements during 2022/2023), and the overall quality control checks on all tagging datasets. All these projects aim to increase the quality of the conventional tagging information managed by ICCAT. The Secretariat also presented improved versions of the conventional tagging dashboards and Map Viewer (interactive Geographic Information System (GIS) system) tools developed in the last couple of years, and it also presented a plan to release these visual tools on the ICCAT website during 2024 following the Subcommittee guidelines.

The Secretariat also informed on major progresses made on the ICCAT electronic tagging management system (ETAG) during 2022/23 with two phases already completed (for further details see the Report of the 2023 ICCAT GBYP Workshop on Atlantic Bluefin Tuna Electronic Tagging (Anon., 2023f) and the Report of the Atlantic-wide Research Programme for Bluefin Tuna (GBYP) (Appendix 6 of the Report for Biennial Period 2022-2023, Part II (2023), Vol. 2).

The Subcommittee welcomed the Secretariat's progress on both conventional and electronic tagging activities and reiterates its full support for continuation of these activities.

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

The data recovery activities conducted within ICCAT research programmes (GBYP, AOTTP, EPBR, SMTYP and SRDCP) have historically resulted in great improvements to the ICCAT fisheries statistics by recovering missing or incomplete catch series and biological samples. However, no major fisheries statistics datasets were recovered under these programmes during the Reporting Period. All the historical revisions made during the Reporting Period are presented in Table 14 (T1NC), Table 17 (T2CE), and Table 18 (T2SZ) to the 2023 Secretariat Report on Research and Statistics, which also contains the supported SCRS documents and the adoption status of the respective species group. Some of these SCRS documents were associated with these programmes.

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

Domestic Observer data are submitted using the 2023 version of the form ST09-DomObPrg. The Secretariat indicated that the number of flag CPCs submitting observer data using the ST09 has shown a slight increase from 24 in 2022 (2021 data) to 29 in 2023 (2022 data) in the reporting periods (Appendix 4 to the 2023 Secretariat Report on Research and Statistics). Table 9 of that Report provides a summary of ST09-DomObPrg data reported for 2022 by discard fate and species group including sharks, sea turtles, and seabirds. Table 10 contains T1NC data for bycatch species for 2022. A summary of the information submitted on ST09 forms for sea turtles and seabirds is provided in Tables 12 and 13, respectively.

The Secretariat provided an overview with the statistical information available for FAD data (form ST08). Appendix 2 of the 2023 Secretariat Report on Research and Statistics provides a summary of FAD information received in FAD Management Plans and ST08 forms for 2022 (some datasets could require revisions). A short presentation was also given by the Secretariat summarising the work done during the [Second Intersessional Meeting of Panel 1 on Western Skipjack MSE](#) in 2023, where these matters were discussed in depth.

## 2.5 Historical revisions

Updates to Task 1 occurred during the Blue Shark and Sailfish Species Groups meetings in 2023 and are summarised in Table 14 of the 2023 Secretariat Report on Research and Statistics. All the other T1NC, T2CE and T2SZ dataset revisions (details in Tables 13, 16 and 17 of the 2023 Secretariat Report on Research and Statistics, respectively) were presented and approved by the respective species groups during the 2023 intersessional meetings.

## 2.6 Relevant documents to statistics

Five documents were presented to the Subcommittee.

Serghini *et al.* (2023) detailed the methodology proposed by Morocco for implementing an alternative approach for monitoring artisanal fisheries catching tunas and related species. The Subcommittee acknowledged the Moroccan scientists for this work and recognized that the proposed stratified port interviews are currently the best possible approach for small vessels where an onboard observer cannot be deployed. The Subcommittee recommended that the use of this methodology should not exclude future technological methodologies such as EMS or others.

Díaz *et al.* (2023) presented a proposal to standardize the Task 1 Nominal Catch tables in the Executive Summaries of the SCRS Annual Report, covering several improvements. The Subcommittee acknowledged this proposal and recommended that a group of experts involving the Subcommittee Convener, the authors, other interested national scientists, and the Secretariat be created to work intersessionally on this subject and present its work to this Subcommittee at the 2024 SCRS annual meeting.

Anon. (2023i) summarized the work that has been carried out to date by the Technical Sub-group on Electronic Monitoring Systems (EMS), since it was originally created in 2021. The work provides a summary of the main conclusions of the work that was carried out, and a proposal for draft minimum technical standards for implementation of EMS in purse seine vessels targeting tropical tunas in ICCAT fisheries. The Subcommittee agreed that the specification for the Minimum Standards was adequate for implementation.

The work also provides a draft response to the Commission following the request contained in the *Recommendation by ICCAT to establish rebuilding programs for blue marlin and white marlin/roundscale spearfish (Rec. 19-05)* (paragraph 20). Finally, the presenter opened the draft tables that have been provided by the Commission EMS Drafting Group, and that are awaiting input from the SCRS with regards to the data fields and descriptions that should be collected by EMS and reported for both longline and purse seine for scientific purposes. The Subcommittee agreed that the modifications proposed by the Technical Sub-group on Electronic Monitoring regarding scientific requirements that constitute information essential for stock assessment are acceptable and should be presented to the Commission.

García *et al.* (2023) presents the most important aspects of the design and the exploitation of the AOTTP tagging database developed by the same scientific programme. Its main goal is to describe the whole system (from data entry to data quality control) and provide guidance on the best ways to explore and analyse this information. The Subcommittee acknowledged the Secretariat work on the development of the AOTTP tagging system (now under integration with the existing ICCAT tagging databases) and congratulated the authors for this important document in the form of a user's manual.

Die (2023) contains the Report of 2023 ICCAT Regional Workshop in West Africa for the Improvement of Statistical Data Collection and Reporting on Small Scale (Artisanal) Fisheries. ICCAT conducted a workshop in Abidjan from 12-16 June 2023 to improve reporting and collection of fishery data in small scale fisheries. Twenty-one participants from twelve different ICCAT CPCs countries participated and provided national reports on their fishery data collection systems. Presentations of these reports revealed the diversity of methodologies and capacities across the region. Participants expressed a view of the need to take advantage of existing capacity by individual CPCs to improve the overall quality of data provided by West African CPCs. These national reports will be edited by the workshop Coordinator to provide a consolidated summary of the West African region data collection systems as a separate SCRS document. The document will be presented at an appropriate meeting in 2024. All workshop documents and course material were provided through Google Classrooms and mostly included published documents from ICCAT. The use of a dedicated learning platform like Google classrooms is a good way of supporting training and the SCRS should consider

using this platform or other similar platforms for future training. Learning platforms have the advantage of providing specially designed tools for instructions and can be available for training after the workshop has been completed. Pre and post workshop questionnaires were completed by participants and will be used to evaluate the success of the workshop. A similar workshop is being planned for the region of the Caribbean and central America in early 2024.

After various interventions of the participants discussing the importance of these workshops on the improvement of ICCAT CPCs capacity building, the Subcommittee stated the importance these workshops and recommended their expansion to ICCAT CPC regions other than Africa.

### **3. Summary of ICCAT Secretariat's standard (yearly based) datasets estimations**

#### **3.1 CATDIS and EFFDIS**

The CATDIS (catch distribution: estimation of T1NC for the nine major tuna and tuna-like species of ICCAT, stratified by year, flag, fleet, gear, fishing mode, catch type, trimester, and 5×5 degree squares) is one of the most used ICCAT catch estimations, particularly in the latest stock assessments of ICCAT using integrated stock synthesis models (SS3). The Secretariat has updated the CATDIS from 1950 to 2021 with the most recent statistical information available. The newly CATDIS estimations were published on the ICCAT website on 31 January 2023 (reflecting in detail the T1NC catches also published on the same date). The CATDIS was used in the majority of the 2023 SCRS intersessional meetings. Vol. 48 of the Statistical Bulletin was also updated with the most recent CATDIS (maps) estimates of the period 1950-2021. No other intermediate updates were required intersessionally by the SCRS species groups.

Once again, the CATDIS has not included the estimations of four additional species: spearfish (SPF), blue shark (BSH), shortfin mako (SMA) and porbeagle (POR), due to the lack of sufficient information in T2CE for these four species (as observed in the SCRS catalogues of these species). However, new attempts to estimate CATDIS for these 4 species should be made in the near future.

The Subcommittee acknowledge the Secretariat's additional efforts to synchronize the CATDIS estimations with the adopted SCRS statistics in relation to the times series coverage, which will greatly benefit the future work of the SCRS and reduce the number of partial CATDIS updates required intersessionally.

The EFFDIS estimations of Atlantic longline were published on the ICCAT website in 2023 (period 2000-2021), as recommended by the Subcommittee on Ecosystems and Bycatch (SC-ECO), and they will be published in the ICCAT website on a regular basis.

The Subcommittee acknowledged the Secretariat efforts and again commended the Secretariat to continue with the recovery and improvement of T2CE datasets.

The Subcommittee noted that when CPCs provide updates to their T2CE datasets, they must follow the standard SCRS rules for revising historical data which include the provision of a SCRS paper with the update of the methods used on the data recovery or associated estimations.

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

The catch-at-size (CAS) database are complete and functional, with an active connection between the size data and the substitution tables used for the CAS estimations. This year, the Secretariat has made no CAS updates in any of the six species.

The Subcommittee engaged in an extensive dialogue about the importance of CAS for the work of the SCRS to provide advice to the Commission, and the obligation of the ICCAT CPCs to report on a yearly basis CAS estimation for six species. The Subcommittee addressed this matter with a clear recommendation detailed in section 8 of this report.



#### **4. Review of data deficiencies and ongoing data recovery plans pursuant to *Recommendation by ICCAT on compliance with statistical reporting obligations (Rec. 05-09)***

##### **4.1 2022 Report cards with SCRS validation criteria (Filters 1 and 2)**

The Secretariat has continuously applied in the last decade, the SCRS filtering criteria (Filters 1 & 2, described in Addendum 2 to Appendix 8 of the *Report for Biennial Period, 2012-13, Part II (2013), Vol. 2*, updated by the SCRS in 2016) to validate and accept Task 1 (form ST01 and ST02) and Task 2 (forms ST03, ST04 and ST05) statistics received under those official forms. The filtering criteria are also embedded in each one of these forms.

For 2022 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 2022 Secretariat Report on Research and Statistics contained in the *Report for Biennial Period, 2022-23, Part I (2022), Vol. 4*). Detailed results are described in the 2023 Secretariat Report on Research and Statistics. The SCRS Report Cards have been one of the most important instruments used to evaluate the CPCs data provisions to ICCAT. 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 Score cards and catalogues of major ICCAT species (last 30 years)**

The *Recommendation by ICCAT on compliance with statistical reporting obligations (Rec. 05-09)* recognized the need to establish clear process and procedures to identify data gaps, particularly those that limit the ability of the 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.

The SCRS catalogues, contribute to comply with Paragraph 1 of *Rec. 05-09*. The Secretariat presented in Appendix 1 of the 2022 Secretariat Report on Research and Statistics contained in the *Report for Biennial Period, 2022-23, Part I (2022), Vol. 4*, the SCRS catalogues on Task 1 and 2 data availability for the major ICCAT species, by stock, for the last 30 years (1992 to 2021). The small tuna species SCRS catalogues were also prepared and made available to the SCRS annual meeting. As recommended by the SCRS in 2020, the Secretariat continues to publish the two SCRS catalogues on the ICCAT website (<https://www.iccat.int/en/accessingdb.html>), the latest ones published in January 2023 with the information approved by the SCRS and the Commission in 2022.

The Subcommittee 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 Subcommittee agreed that the SCRS catalogues should be reviewed by the Species Groups, in particular by those ones that are scheduled to conduct stock assessments in 2024.

The SCRS scorecard, in the format adopted by the SCRS in 2019, is presented in Table 6 of the 2023 Secretariat Report on Research and Statistics with all the major ICCAT fisheries and covering the period 1993 to 2022.

Despite the multiple recommendations made by the Subcommittee and different species groups, the reporting of total dead discards and live releases (see Section 2.4) continues to be very poor which impact the estimates of total biomass removals and total mortality needed to conduct robust stock assessments.

#### **5. Brief overview of ICCAT Online Management System (IOMS) work**

The ICCAT Online Reporting Technology Working Group (WG-ORT), whose mandate was established under *Recommendation 16-19*, and extended through *Recommendation 19-12*, governs all the IOMS implementation process. A *Meeting of the Online Reporting Technology Working Group (WG-ORT)* was held in 2023 where the existing workplan was revised and next few phases were planned. In 2023, the IOMS system was declared a mandatory platform for reporting scientific and management requirements, obtaining a satisfactory response from users. This year the dynamic help system and the optimization and redesign of the central module of the system were also carried out. The Secretariat planned an IOMS workshop (training sessions) to be held on 16 October 2023. This workshop will focus on the vessel management module.

For the 2023/2024 IOMS development period, the European Union (EU) has also granted two complementary contributions with an extraordinary budget to support the development of the IOMS vessel record module and the integration of the Fisheries Language for Universal Exchange – Transportation Layer (FLUX TL) system for managing EU vessels (and potentially other ICCAT CPC vessels) in a more efficient way. Additionally, one GEF/ABNJ project was approved to support the functionality to exchange IOMS information with third parties taking advantage of web services.

This Subcommittee maintains a strong collaboration with the WG-ORT since the beginning. The current development of the Forms Manager module in IOMS will improve version control and reduce the email burden for CPCs and the Secretariat. In addition, the Task 1 module manager is planned to be developed in Phase 4 by mid-June 2024. This Subcommittee recognizes the crucial importance of the IOMS in the future of ICCAT and reiterates its full support for the continued implementation of the IOMS.

## 6. Responses to the Commission

### 6.1 *The SCRS will advise the Commission on the suitability of the alternative approach proposed by CPCs, Rec. 16-14 para 4b (item 19.7)*

**Background:** *b) Notwithstanding paragraph a), for vessels less than 15 meters, where an extraordinary safety concern may exist that precludes deployment of an onboard observer, a CPC may employ an alternative scientific monitoring approach that will collect data equivalent to that specified in this Recommendation in a manner that ensures comparable coverage. In any such cases, the CPC wishing to avail itself of an alternative approach must present the details of the approach to the SCRS for evaluation. The SCRS will advise the Commission on the suitability of the alternative approach for carrying out the data collection obligations set forth in this Recommendation. Alternative approaches implemented pursuant to this provision shall be subject to the approval of the Commission at the annual meeting prior to implementation.*

Morocco presented Serghini *et al.* (2023) with a stratified sampling design as an improvement to the alternative scientific monitoring approach presented during 2022 to collect data from small scale/artisanal fisheries of bluefin tuna (Álvarez-Berastegui *et al.*, 2023), small tuna (Abid and Bensbai, 2022a) and swordfish (Abid and Bensbai, 2022b).

This alternative approach aimed at estimating discards covers other artisanal fisheries including pelagic sharks, tropical tunas and billfishes.

The Committee recognized that the new proposed methodology is at present the best possible alternative to an onboard observer program in the multi-species artisanal fisheries where observer coverage is not possible. This current methodology does not exclude the possibility of future technological solutions, including simplified EMS or others.

### 6.2 *Develop recommendations for Electronic Monitoring Systems, Rec. 19-05, para 20 (item 19.8)*

**Background:** *The Permanent Working Group for the Improvement of ICCAT Statistics and Conservation Measures (PWG), in cooperation with the SCRS, shall work to develop recommendations on the following issues for consideration at the 2021 annual meeting of the Commission:*

- a) *Minimum standard for an electronic monitoring system such as:*
  - i) *the minimum specification of the recording equipment (e.g. resolution, recording time capacity, data storage type, data protection)*
  - ii) *the number of cameras to be installed at which points on board*
- b) *What shall be recorded*
- c) *Data analysis standards, e.g., converting video footage into actionable data by the use of artificial intelligence*
- d) *Data to be analysed, e.g. species, length, estimated weight, fishing operation details*
- e) *Reporting format to the Secretariat*

*In 2020 CPCs are encouraged to conduct trials on electronic monitoring and report the results back to the PWG and the SCRS in 2021 for their review.*

The Committee informs the Commission that the work carried out regarding the Minimum Standards for Electronic Monitoring Systems onboard Longliners described in Appendix 17 of the [Report for Biennial Period, 2022-23, Part I \(2022\), Vol. 4](#) and onboard purse seiners targeting tropical tunas described in **Appendix 17** of the [Report for Biennial Period 2022-2023, Part II \(2023\), Vol. 2](#), has been finalized.

### **6.3 Develop recommendations for Electronic Monitoring Systems, Rec. 22-01 para 55 (item 19.9)**

**Background:** *The Working Group on Integrated Monitoring Measures (IMM), in cooperation with the SCRS, shall make a recommendation to the Commission for endorsement at its 2023 Annual meeting on the following:*

- a) *Minimum standards for an electronic monitoring system such as:*
  - i) *the minimum specifications of the recording equipment (e.g., resolution, recording time capacity), data storage type, data protection*
  - ii) *the number of cameras to be installed at which points on board*
- b) *What shall be recorded*
- c) *Data analysis standards, e.g., converting video footage into actionable data by the use of artificial intelligence*
- d) *Data to be analysed, e.g., species, length, estimated weight, fishing operation details*
- e) *Reporting format to the ICCAT Secretariat*

*In 2023 CPCs are encouraged to conduct trials on electronic monitoring and report the results back to the IMM and the SCRS in 2023 for their review. CPCs shall report the information collected by the observers or the electronic monitoring system from the previous year by 30 April to the ICCAT Secretariat and to SCRS taking into account CPC confidentiality requirements.*

The Committee informs the Commission that the work carried out regarding the Minimum Standards for Electronic Monitoring Systems onboard Longliners described in [Anon. \(2022i\)](#) and onboard purse seiners targeting tropical tunas described in [Anon. \(2023i\)](#), has been finalized.

## **7. Workplan for 2024**

The Secretariat has been working since 2017 on the ICCAT Integrated Online Management System (IOMS). After being adopted by the SCRS and the Commission, the Commission's Online Reporting Technical Working Group (WG-ORT) has overseen the specifications and the governance of all the development process. The last [Meeting of the Online Reporting Technology Working Group \(WG-ORT\)](#) held in February 2023 delineated the content of the future work to be presented at the 2023 Commission meeting for revision and approval. The IOMS went into production on 1 August, 2021, and currently manages the ICCAT CPCs Annual Reports. The IOMS is a crucial long-term ICCAT project that requires the full involvement/commitment of the Secretariat.

Additionally, the following tasks represent ongoing database improvements and maintenance that will continue throughout 2023 and beyond. Priority tasks for 2023/2024 include:

- Upgrade all the ICCAT-DB system from MS-SQL server 2016 to MS-SQL server 2022
- Replace the stand-alone MS-ACCESS Task 2 databases on the web by SQLite equivalent ones
- Improve the "client applications" that manage the databases of the ICCAT-DB system
- Continue the development of the statistical/tagging dashboards (dynamic querying)
- Continue the tagging database development for both conventional and electronic tagging
- Continue the Biological Sampling database development (includes data recovery/integration)
- Continue the standardization of the electronic forms (TG: tagging forms, CP: compliance forms)
- Extend the automatic data integration tools for the standardized electronic forms
- Continue the development of the GIS project (create a PostGIS server and geo-reference for all the ICCAT data available in ICCAT-DB)
- The adaptation/migration of all the databases of the ICCAT-DB system to the new ICCAT IOMS system



## 8. Recommendations (with special emphasis on those with financial implications)

### 8.1 Review of recommendations from 2023 intersessional meetings

The Subcommittee reviewed the recommendations for statistics from the 2023 intersessional meetings. The following recommendations were endorsed by the Subcommittee:

#### *Albacore*

The conventional tagging database was shown to include some records that might not be accurate (e.g. implausible positions, individuals way larger than the maximum length for albacore, length-weight pairs that diverge substantially from the albacore length-weight relationship, etc.). This might prevent it from being used for different purposes, so the Group suggested that the Secretariat improve existing protocols of data verification and work together with the national scientists to try to improve the quality of the database.

#### *Research and statistics recommendations*

The Committee recommends that CPCs and the Secretariat work together to complete the Task 1 NC data for Mediterranean albacore before the next assessment. The Group has identified this as one of the main uncertainties in past assessments, and recommended to consider methods developed by the WGSAM to estimate unreported catches.

The Group recommends the review and update of the fisheries statistics of Mediterranean albacore from the Egypt fleet(s) available in the ICCAT Secretariat databases.

#### *Tropical tunas*

Continuation on the improvement of T1FC, noting its relevance in the estimation of fishing capacity in the ICCAT Convention area.

Update for ST01-T1FC (fleet characteristics), to make mandatory the fishing effort (field “fishing days”) in both sub-forms (ST01A and ST01B) and add two additional mandatory fields: IMO number and carrying capacity for tropical tuna fisheries.

That the contract with the University of Maine on tropical tuna tagging be amended as requested by the contractor, with the condition that reporting on project progress and tagging data submission is improved, as well as the communication with the ICCAT Secretariat.

#### *Blue shark (data preparatory meeting)*

The Group recalled that during the 2015 blue shark stock assessment (Anon., 2016b), times series of removals of this species were estimated for several CPCs. The Group recommends that the SC-STAT discusses the inclusion of these estimates in Task 1 time series in the ICCAT-DB.

The Group recommends that those CPCs for which these Task 1 time series were estimated review these estimates and provide the Secretariat with their updated Task 1 time series. In case CPCs do not disagree with the estimated time series or do not provide the Secretariat with an updated Task 1 data to replace the estimated time series, then the Task 1 removals estimated by the Group will be considered the official CPCs’ Task 1 data.

The Group discussed that while data collected by scientific observers and reported with the ST-09 DomObProg ICCAT electronic form are not publicly available, the conventional tagging data also collected by observer programmes are. These publicly available tagging data include locations, sex and size of tagged individuals, and dates. It was unclear for the Group if this situation constituted a lack of consistency on the current policies regarding the dissemination of data collected by scientific observers. Therefore, the Group recommended that the Subcommittee on Statistics review the current policies regarding the dissemination of scientific data collected by domestic observer programmes and conventional tagging data and, if necessary, make recommendations to solve any potential lack of consistency.

The Group recommends for the ICCAT conventional tagging programme the use of Stainless Steel Dart Tags for sharks. The recommendation is based on new information available and presented to the Group that proves that the recapture rate of this type of tag is higher than the obtained with the conventional single dart plastic tags used by ICCAT.

*Blue shark (stock assessment)*

Recommendations without financial implications

Considering the need to reduce uncertainty in the stock assessments of pelagic shark species impacted by ICCAT fisheries and bearing in mind [Recommendation by ICCAT to replace Recommendation 16-13 on improvement of compliance review of conservation and management measures regarding sharks caught in association with ICCAT fisheries \(Rec. 18-06\)](#) and other previous recommendations which made the submission of shark Task 1 and 2 data mandatory, the Group once again strongly urges CPCs to provide the corresponding statistics, including estimates of discards (dead and alive) from all ICCAT fisheries, including recreational and artisanal fisheries, and to the extent possible non-ICCAT fisheries capturing these species. The Group considers that a basic premise for correctly evaluating the status of any stock is to have a solid basis to estimate total removals.

As a result of changes in the data reporting requirements over time, significant gaps in the historical shark data remain in the ICCAT-DB. Therefore, the Group once again reiterates previous recommendations that national scientists review the SCRS reports cards to identify shark data gaps and submit the missing data to the Secretariat to comply with ICCAT data reporting requirements. The Group recommends that national scientists from CPCs that in the past have reported shark data as part of a species complex explore the possibility of re-submitting those data at the species level.

The Group recommends that CPCs that catch blue sharks in the Mediterranean Sea provide the required Task 1 nominal catches (including estimates of dead and live discards) and Task 2 size and catch-effort data including historical time series. In addition, the Group also recommends that CPCs endeavour to increase their efforts to collect blue shark biological samples in the Mediterranean Sea.

The Group recommends promoting the activities of the SCRS Ad Hoc Working Group on Tagging Coordination and that national scientists further emphasize conventional shark tagging activities.

Recommendations with financial implications

The Group recommends that the Secretariat acquire and make available to the SCRS Species Groups high-performance computer Cloud resources to conduct tasks such as standard diagnostics, MCMC runs, stochastic projections, and uncertainty grids.

*Subcommittee on ecosystems*

Recommendations for the Ecosystem component of SC-ECO

None.

Recommendations for the Bycatch component of SC-ECO

The Subcommittee recommends that the SCRS explore the mechanisms and processes for providing fine scale data to advance the work on the multispecies spatial distribution in longline fisheries.

The Subcommittee recommends that the SCRS inform the Commission that the new ST-12 electronic form to report sea turtle data requested by [Rec. 22-12](#) will not be available until 2024 at the earliest or 2025 at the latest. Once ST-12 is made available, CPCs should report their sea turtle data requested in [Rec. 22-12](#) from 2022 onwards. The CPCs are reminded that the existing reporting requirements for sea turtles in form ST09 remain in effect.

The Subcommittee recommends that the Secretariat revise the ST-09 DomObsProg form to allow the collection of information regarding the implementation of EMS in different fleets, the % coverage of the EMS, the purpose of the EMS (i.e., scientific, compliance, or both), and if the data reported were collected by EMS or scientific observers. This can be done using a format that the Secretariat considers to be the most convenient to record such information. The revised ST-09 form should be presented at the 2023 meeting of the Subcommittee on Statistics for discussion.

#### *Small Tunas Species Group*

##### General recommendations

The Group recommended that Statistical Correspondents and/or national scientists revise, update, complete, and submit their small tuna T1NC series to the ICCAT Secretariat. This revision should consider Appendix 1 (SCRS catalogues) of the 2023 Secretariat Report on Research and Statistics, the split of “unclassified” gear catches to specific gear codes, and the completeness of Task 1 gaps identified. The Statistical Correspondent and/or national scientists of CPCs should correct inconsistencies identified in T2SZ series. For the 13 species of small tuna, the T2SZ revision should have as reference, the stratification of the samples by gear, month, 1°x1° or 5°x5° squares, and SFL size classes of 1 cm (lower limit). CPCs should further improve their estimates of total catches, as there are still important gaps in the basic data available. These data are required as inputs for most data-limited stock assessment methods. The ICCAT Secretariat should continue its work on the data recovery and making inventories of tagging data for small tuna species. This process will require active participation of the national scientists who hold such data.

#### *Working Group on Stock Assessment Methods (WGSAM)*

##### Recommendation without financial implications

The Group recommended that the Secretariat should maintain an archive of the computer software and documentation used in the various MSEs.

The Group recommended that the Secretariat update the MSE webpage of ICCAT’s website to include capacity building materials and information pertinent to each of ICCAT’s current five MSE processes, including trial specification documents, results summaries, Commission decisions and links to code and Shiny apps.

#### *Swordfish Species Group*

##### Recommendations without financial implications

Given the importance of including discards (dead and alive) in the reported catch, the Group recommends developing and adopt standard methods for raising observed discards to the total effort and that these be reported in Task 1 data.

Furthermore, the Group recommends that the submission of size samples to the ICCAT Secretariat, as part of the CPCs Task 1 and 2 data submission obligations, be completed using the ST04-T2SZ statistical form. Size samples reported with the ST04-T2SZ form shall include all samples collected by the CPC from all fisheries and size samples of dead and live discards (when applicable) collected by its National Observer Programme. This recommendation does not preclude CPCs from the optional reporting of size samples collected by their National Observer Programme using the ST09-DomObPrg form.

The Swordfish Species Group recommends that the Subcommittee on Statistics update the list of ICCAT accepted size conversions for North Atlantic and Mediterranean swordfish to reflect new analyses accepted by the Species Group.

##### Recommendations with financial implications

The Subcommittee recommends that the Committee develops a shared online ICCAT hosted ageing software. SmartDots (ICES, 2020) developed by ICES has been used for swordfish and discussed as an example for such platform. It was further noted that Canada is also developing a platform based on SmartDots. This software could be used by other ICCAT Species Groups.

### *Billfishes Species Group*

#### Sailfish Data Preparatory Meeting

The Group noted that the Venezuelan longline observer programme has been suspended since 2019. Considering the broad importance of observer data to carrying out the work of the SCRS, the Group strongly recommends that the Venezuelan longline observer programme be promptly reinstated, and the data collected be reported to the ICCAT Secretariat following the guidelines adopted by the Commission and, if possible, with financial assistance from ICCAT.

The Group was made aware of potentially important sailfish landings from the Venezuelan artisanal offshore (VAOS) longline fleet that have not been reported to ICCAT since 2014. The Group recommends that efforts be made by Venezuelan national scientists to recover and report this fleet's landing statistics.

Important recreational fisheries have been developed in the West Africa region and, particularly in Senegal, the Group recommends that CPCs increase efforts to report current and historical recreational catches, fishing effort, and tagging data.

The Group recommends that CPCs continue with their efforts to improve and report their fishery indicators and fishery statistics including estimates of dead discards and live releases.

#### Future recommendations

The Subcommittee recommends that the reporting of Task 2 catch-at-size (Form ST05-T2CS) for YFT, BET, SKJ, SWO, BFT, and ALB be optional instead of mandatory, however CPCs are still required to report Task 2 Sizes Samples (Form ST04-T2SZ). As an alternative to the mandatory reporting of CAS, species groups can request that CPCs submit CAS on a case by case basis when such estimates are needed to conduct specific analysis. The updates of the CAS must be requested at least 6 months in advance of the deadline. Those working groups which anticipate the need for catch-at-size estimates in the next year, or which have a recurring need for such estimates, should include the specific catch-at-size data requirements in their workplan.

The Subcommittee recommends to update the format used to display the T1NC tables in the Executive Summaries.

The Subcommittee recommends that a subgroup composed by SCRS scientists and Secretariat staff be created to address the technical challenges related to modifying the TINC tables and present progress to the next SCRS annual meeting.

The observed CPCs late reporting (or close to the deadline) of fishery statistics and biological data, combined with the overloaded calendars of recent years and the advancement of the SCRS annual meeting by one week, does not allow the Secretariat to have sufficient time to validate, process, store and prepare these in time for the SCRS annual meeting. In consequence, the Subcommittee recommends that the deadline for submission of all statistical data be changed to 15 July each year, allowing the Secretariat to validate and prepare in time the data for the SCRS annual meeting. The requested corrections must be submitted before the 30 July (15 days after).

## **9. Other matters**

### ***Changes proposed to statistical (ST type) and tagging (TG type) electronic forms:***

The Subcommittee adopted several updates (no structural changes) to ST forms:

- Rename field "PortZone" (majority of ST\* forms) by "FleetSuffix" a more objective identifier of the three components used in the identification of a CPC fleet, and adapt the pertinent documentation (embedded form instructions and others)

- Add to form ST01-T1FC two additional fields (IMO and carrying capacity) in subform ST01A
- Make mandatory the two optional fields on effort in sub-form ST01A (FishDatl, FishDatl) for the remainder fisheries (for BFT-E it is already mandatory)
- In form ST02-T1NC
  - Add a new field to ST02A to identify Target/bycatch records
  - Adapt sub-form ST02B to accommodate the existing species/stock combinations of the SCRS scorecard (Table 6 of the 2023 Secretariat Report on Research and Statistics)
  - Add a special row that allows to assume the completion of an entire gear (column) with “0” on blank cells (avoiding the need to complete individually each 0 in those cells)
- Adapt form ST04-T2SZ to also accept local mark samples (PS-ETRO fisheries only)
- Add a field to form ST09 to differentiate EMS and Observer data types

These changes to the SCRS statistical forms (ST type) should be described in detail in a document, and the completion instructions embedded in each ST form updated accordingly. All the ICCAT CPCs must consequently be informed of those changes.

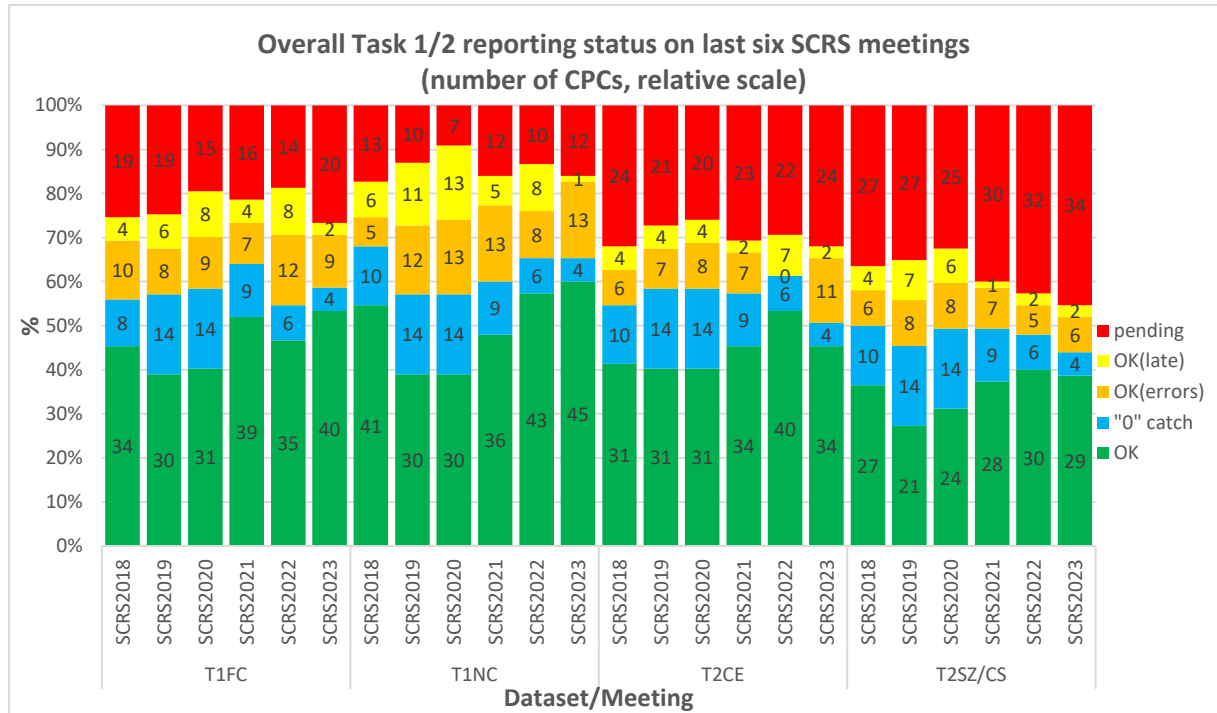
Despite the Secretariat’s continuously growing workload that has not been matched with the same growth in the available resources, the Secretariat continues to provide outstanding support to the SCRS species groups and subcommittees. The Subcommittee on Statistics deeply thanks the Secretariat for their hard work and it acknowledges that the Subcommittee’s work would be significantly more difficult without the Secretariat’s support.

The Subcommittee recognised Mr Carlos Palma’s 23 years of service at the ICCAT Secretariat. Carlos’ work during his years at the Secretariat has been nothing but absolutely outstanding. It was not possible for the Subcommittee on Statistics to put into words the positive impact the Carlos’ contributions have had on the SCRS and especially on the Subcommittee’s work. The Subcommittee could not thank Carlos enough for his support and hard work and it wished him the best of luck in his future endeavours.

## **10. Adoption of the Report**

The Report of the Meeting of the Subcommittee on Statistics was adopted.





**Figure 1.** Overall evolution of the Task 1 (T1FC, T1NC) and Task 2 (T2CE, T2SZ/CS) reporting status (Report Cards in the 2023 Secretariat Report on Research and Statistics) over the last six SCRS annual meetings (between 2018 and 2023), covering the provisions of Task 1 and Task 2 datasets, for each terminal year, by default the previous year of the meeting (e.g., 2017 data on the 2018 meeting, ..., 2022 data on the 2023 meeting).

**Addendum 1 to Appendix 13****Agenda**

1. Opening, adoption of Agenda and meeting arrangements
2. Summary of fisheries and biological data submitted during 2023 (Tasks 1, 2 and 3), including historical revisions
3. Summary of ICCAT Secretariat's standard (yearly based) datasets estimations
4. Review of data deficiencies and ongoing data recovery plans pursuant to *Recommendation by ICCAT on compliance with statistical reporting obligations* ([Rec. 05-09](#))
5. Brief overview of ICCAT Online Management System (IOMS) work
6. Responses to the Commission
7. Workplan for 2024
8. Recommendations (with special emphasis on those with financial implications)
9. Other matters
10. Adoption of the Report

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## List of SCRS documents

<i>DocRef</i>	<i>Title</i>	<i>Authors</i>
SCRS/2023/132	Methodology for Implementing an Alternative Approach for monitoring Artisanal Fisheries catching Tunas and associated Species.	Serghini M., Bensbai J., Abid N., Amina N., Baibbat S.A., Ikkis A., Layachi M., Hamdi H., Joumani M.
SCRS/2023/136	A proposal to standardize the Task 1 Nominal Catch table in the Executive Summaries of the SCRS Annual Report	Díaz G.A., Duprey N.M.T., Palma C.
SCRS/2023/151	Report of the Sub-group on Electronic Monitoring Systems: proposal of ICCAT minimum technical standards for EMS in purse seine fisheries targeting tropical tunas	Anonymous
SCRS/2023/167	Design and exploitation of the AOTTP tagging database	Garcia J., Palma C., Mayor C.
SCRS/2023/178	Report of 2023 ICCAT regional workshop in West Africa for the improvement of statistical data collection and reporting on small scale (artisanal) fisheries	Die D.

**Addendum 4 to Appendix 13****Summaries of SCRS documents presented**

SCRS/2023/132<sup>1</sup>: The document detailed the methodology proposed by Morocco for implementing an alternative approach for monitoring artisanal fisheries catching tunas and related species onboard observer cannot be deployed. The present study aims to evaluate bycatch and discard of various species in artisanal fisheries operating in the Moroccan Atlantic and Mediterranean waters, with a specific focus on tunas and tunas-like species. Additionally, the study aims to identify and define fishing areas in these regions. The assessment of these fisheries faces challenges due to several variables, including diverse habitats, a wide array of caught species, and the utilization of various fishing gears. To overcome these challenges, we propose implementing a stratified sampling strategy. Mathematical formulations were employed to describe the estimation processes for operational indicators including fishing effort, bycatch, and discard yield. This systematic approach ensures that the assessment process is more straightforward and precise, allowing for reliable analysis and interpretation of the data.

SCRS/2023/136: The document presented a proposal to standardize the Task 1 Nominal Catch tables in the Executive Summaries of the SCRS Annual Report, covering several improvements. Some of the recommended improvements included to standardize across all species groups, the procedures involved in the estimation of preliminary catches (to complete non-submitted catches) and the required corrections to Task 1 nominal catches (T1NC), discontinue the practice of filling up empty cells with a value of zero, include catches less than 0.5 t with the reported value instead of rounding it to zero, and including in the Executive Summaries two T1NC tables: one with the estimated catches by the Committee and one with the reported catches.

SCRS/2023/151: The document summarized the work that has been carried out to date by the Sub-group on Electronic Monitoring Systems (EMS), since it was originally created in 2021. The work provides a summary of the main conclusions of the work that was carried out, and a proposal for draft minimum technical standards for implementation of EMS in purse seine vessels targeting tropical tunas in ICCAT fisheries. The work also provides a draft response to the Commission following the request contained in ICCAT Rec. 19-05 (paragraph 20). Finally, the presenter opened the draft tables that have been provided by the Commission EMS Drafting Group, and that are awaiting input from the SCRS with regards to the data fields and descriptions that should be collected by EMS and reported for both longline and purse seine for scientific purposes. The Subcommittee agreed that the modifications proposed by the EMS Sub-group regarding scientific requirements that constitute information essential for stock assessment are acceptable and should be presented to the Commission.

SCRS/2023/167: The document presents the most important aspects of the design and the exploitation of the AOTTP tagging database developed by the same scientific programme. Its main goal is to describe the whole system (from data entry to data quality control) and provide guidance on the best ways to explore and analyse this information.

SCRS/2023/178: The document contains the Report of 2023 ICCAT Regional Workshop in West Africa for the Improvement of Statistical Data Collection and Reporting on Small-scale (Artisanal) Fisheries. ICCAT conducted a workshop in Abidjan from 12-16 June 2023 to improve reporting and collection of fishery data in small scale fisheries (SCRS/2023/178). Twenty-one participants from twelve different ICCAT CPCs countries participated and provided national reports on their fishery data collection systems. Presentations of these reports revealed the diversity of methodologies and capacities across the region. Participants expressed a view of the need to take advantage of existing capacity by individual CPCs to improve the overall quality of data provided by West African CPCs. These national reports will be edited by the workshop coordinator to provide a consolidated summary of the West African region data collection systems as a separate SCRS document. The document will be presented at an appropriate meeting in 2024. All workshop documents and course material were provided through Google Classrooms and mostly included published documents from ICCAT. The use of a dedicated learning platform like Google classrooms is a good way of supporting training and the SCRS should consider using this platform or other similar platforms for future training. Learning platforms have the advantage of providing specially designed tools for instructions and can be available for training after the workshop has been completed. Pre and post workshop questionnaires were completed by participants and will be used to evaluate the success of the workshop. A similar workshop is being planned for the region of the Caribbean and Central America in early 2024.

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<sup>1</sup> Summary not received from author; Abstract used for completion.