

## 2014 REPORT OF THE SUB-COMMITTEE ON STATISTICS

*(ICCAT Secretariat, 22-23 September 2014)*

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

The Sub-Committee on Statistics met at the ICCAT Secretariat (Madrid, Spain) on September 22-23, 2014. The meeting was chaired by Dr. Gerald Scott (EU) while Dr. Michael Schirripa (US) and Dr. Shannon Cass-Calay (US) served as rapporteurs. The Agenda was discussed, accepted and adopted as modified by the Sub-Committee (**Addendum 1 to Appendix 8**).

### 2. Review of fisheries and biological data (new and historical revisions) submitted during 2014

The Secretariat presented information contained in the 2014 Secretariat Report on Statistics and Coordination of Research (SCI-008) related to fisheries and biological data submitted for 2013, including revisions to historical data.

The activities and information included in this report refer to the period between 1 December 2013 and 5 September 2014 (the reporting period). All the basic fisheries, biological statistics and data compliance related information have been presented by the Secretariat to the SCRS Working Groups during SCRS inter-sessional and species meetings. The Secretariat continues to note the improvements in terms of data submission using the ICCAT electronic forms. Regarding the activities conducted by the Secretariat, in the most recent years, in addition to the normal activities developed on statistics, publications, data funds management and others, the Secretariat is dedicating (apart from the usual preparation of the majority of the datasets required by each 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. Also, the statistical work requested to the Secretariat in the last five years, together with the lack of adherence to deadlines established for data submission, have constituted an enormous amount of work for the Secretariat, which is not sustainable.

The Secretariat applied, for the first time, to the 2013 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 in a total of 68 flags (from 49 CP's & 4 NCC's: 47 CP's + 13 EU members + 4 UK-OT members + 4 NCCs) with possibly reporting obligations. The forms impossible to be corrected were considered unreported data, and Flags reporting "zero" catch were understood as accomplishing the reporting task. Among the 4 scenarios presented, scenario 2 (gives the most optimistic scenario on filter application) was the one chosen by the Group. Detailed results can be found in SCRS/2014/129.

#### 2.1 Task I (nominal catches and fleet characteristics)

The Secretariat presented 2013 data reporting status (**Table 1 and 2** of SCI-008) of the two datasets of Task I statistics (T1FC: fleet characteristics; T1NC: nominal catches). Overall, the results of applying the filters to accept/reject the data reported in forms ST01-T1FC and ST02-T1NC were not very encouraging, but should improve after several iterations. For T1FC, only 39 flags (57% of 68 flags) did report (37 in time and 2 after deadline) this dataset in good conditions (passing at least filter 1). Data from 10 flags didn't pass the filtering criteria and had to be corrected (directly or indirectly through a revision request) by the Secretariat, in order to be accepted by the SCRS. This process of correction took a significant amount of staff time and effort. Information on T1FC from 19 flags had not yet arrived at the time of the meeting.

The T1NC dataset was presented by major ICCAT species (major tunas, major sharks, and, any of the 13 small tuna species and dolphin fish). The reporting status shows that only 39 flags (57% of the total) did report data for all the species in good condition (35 timely and 4 after deadline). The data submitted from 16 flags that were not in acceptable condition (11 flags on all species and 5 only on a few species), but which were corrected by the Secretariat at considerable expense of staff time and effort. The T1NC information from 13 flags at the start of the Sub-Committee meeting were still missing.

The Secretariat also informed the Group that two sets of historical revisions of Task I catch series are pending approval of the SCRS.

The first one (**Table 8a** of SCI-008) compiles the catch series of the major revisions reported to ICCAT by EU-Malta (SCRS/2014/118, covering several species and gears) from 1920 to 2010, and, EU-Spain (SCRS/2014/052, Spanish bluefin tuna catches from baitboat fishery in the Cantabrian Sea from 1900 to 2000 (work financed by the GBYP project). In addition, there are some updates related to the estimations of T1NC catches of “*faux poissons*” (SCRS/2014/063) which covers the tropical purse seine fisheries of EU-Spain and EU-France (bigeye, yellowfin and skipjack) in two distinct periods: a) from 1982 to 2004 in which Task I catches have flags combined (Mixed flags (FR+ES)); b) from 2005 onwards which have Task I catches separated by flag. Except the Maltese revisions, all the revisions have scientific documents and were presented to (and used by) the respective species group, and therefore, the SCRS approval should be straightforward.

Document SCRS/2014/118 was presented to the Group by the Secretariat (in the absence of the author). The majority of the information is new to Task I. In addition, those historical Maltese catch series, based on FAO statistics and many carry overs, are fully eliminated with the revision presented. The Group acknowledged the work of EU-Malta for such a large revision, and congratulated the author. All the new series were accepted by the Group and endorsed to the respective species working group for further final adoption.

The second one is another set of T1NC data (covering both, historical revisions and recent years) that, for various reasons (no scientific document, Secretariat doubts of double counting catches, GBYP related catch series re-estimated due to problems found, GBYP research mortality allowance, etc.), were not integrated into the ICCAT-DB system. Those series (**Table 8b**) require SCRS guidance and approval. The Group considers that, the ones related to GBYP re-estimations (including the GBYP Research Mortality allowance) are eligible for approval because they were already used in the assessment. The ones from Angola, EU-France (overseas territories) and Sierra Leone requires further analyses from the respective species group.

The Sub-Committee also noted that a number of CPCs are currently explicitly reporting “zero” catch in Task I (**Table 8c** of SCI-008), which is now mandatory. The Sub-Committee acknowledged the improvements attained over the last 3 years.

## **2.2 Task II (catch & effort and size samples)**

The 2013 data related report cards of the two datasets of Task II statistics (T2CE: catch & effort; T2SZ: size samples) were also presented (**Table 3 and 4** of SCI-008). The reporting status of Task II, after applying the filtering criteria agreed by SCRS in 2013, shows worse results for T2CE than for T2SZ datasets. In general, those datasets have poor (less information) reporting ratios than for Task I. Both T2CE and T2SZ datasets are analysed by major ICCAT species (major tunas, major sharks, and, any of the 13 small tuna species and dolphin fish).

The T2CE dataset reporting status shows that only 27 flags (40% of the total) reported data for all the species in acceptable condition (24 timely and 3 after the deadline). The data from 23 flags that were not in acceptable condition (18 flags on all species and 5 only on a few species) were properly corrected by the Secretariat which required significant time and effort. However, T2CE information from 18 flags were not yet reported. The Sub-Committee noted that almost one quarter of the flags required to report failed to provide any information. On the other hand, T2SZ dataset reporting status shows that 35 flags (51% of the total) reported data for all the species in good conditions (33 in time and 2 after deadline). The data from only 6 flags with poor conditions (4 flags on all species and 2 only on a few species) were properly corrected. The T2SZ information from 27 flags still missing. The Group acknowledged the progress in reporting T2SZ in good conditions, despite the continuing high number of flags (40%) missing size data reports.

The Secretariat also presented the historical revisions of T2CE data (**Table 9** of SCI-008) made by EU-France, Ghana and Turkey, and, to T2SZ data (**Table 10** of SCI-008) made by EU-Spain and EU-Portugal. In addition, the Secretariat informed that, all the GBYP Task II information recovered was integrated into the ICCAT-DB system. The Sub-Committee considered that these revisions should be entered into the appropriate data bases, conditional on acceptance by the relevant species group.

The question was asked if a CPC needs to report catch and size for all species to get a solid green? The answer was, yes; there was one color coding which was not species specific. The point was raised then that perhaps the representative colours could or should be species specific (i.e. different species have different requirements). Furthermore discussion resulted from the question that was asked, why are there different data requirements for different species? The answer was one of history. It was noted that there are currently only one out of five species that require catch-at-size data. However, based on the time that has elapsed from the original designation of which species require reporting of extended data (such as size data), the Working Group on Stock Assessment Methods might want to pick up on the question of matching the model with the data; are our current requirements suitable to the assessment needs?

### **2.3 Tagging**

Conventional and electronic tagging information (release and recovery data) continues to be reported to ICCAT on a regular basis. During the reporting period, ICCAT CPCs have reported tagging data from 12,843 specimens released (various species, being bluefin tuna the majority - GBYP) and recovery data from 256 individuals (**Table 5a** of SCI-008). As in previous years, the ICCAT Secretariat has, at disposal of the ICCAT scientific community (scientists or scientific Institutions from ICCAT CPCs), conventional tags for tagging experiments. During 2013/2014 the Secretariat distributed about 2,000 tags to the ICCAT scientific community (**Table 5b** of SCI-008). A large portion was directly associated with GBYP.

The Secretariat also informed about the problems with the tagging reports of USA (the largest supplier of tagging data to ICCAT). The ICCAT/USA data exchange protocol (created in 2008), which was applied with success only for one year, wasn't used in 2013 and 2014 to report the USA conventional tagging. In turn the entire database is sent. The Secretariat reiterates that this is impractical (currently, impossible to integrate that information into the ICCAT tagging database) and it is very time consuming to work with those databases. The Secretariat is working with USA tagging agencies in order to reactivate the available protocol.

### **2.4 GBYP data and information (Trade information and others)**

Following the request from the 2014 Bluefin Tuna Data Preparatory meeting (Madrid, 5-10 May 2014), the Secretariat informed that all GBYP fishery data recovered in the last three years were integrated into the ICCAT-DB system. In addition, provisional estimations of "wild equivalent" bluefin tuna size samples obtained from species harvested (SCRS/2014/040) on farms, were also entered into a data base for use by the Bluefin Tuna Species Group.

### **2.5 ICCAT Biometric Relationships and other conversion factors revision and update workplan**

During 2013 and 2014 different species groups have identified important deficiencies and/or inconsistencies in some biometric relationships and other conversion factors currently used by the SCRS and posted in the ICCAT web site. For most of the stocks, the values used were obtained a long time ago and have not been updated. In other cases, the values are not well documented and/or were obtained from limited data series.

It was brought to the Sub-Committee's attention that the Shark Group has reviewed new relevant shark statistics and morphometric data on shark. This new data should be used and replace the ones currently expressed in the *ICCAT Manual*. These revisions are reflected in document SCRS/2013/033 and SCRS/2013/046. It was noted that there should be no difficulty when trying to accomplish this task.

The Sub-Committee encourages the species groups which have not yet done so, to review the current values and to elaborate a multi-annual work plan to update the biometric relationships and other conversion factors. The work plan should establish priorities by species and/or factor.

The Sub-Committee was also presented with statistics pertaining to the characteristics of the fishing fleets participating in the ICCAT. These vessels were to be characterized both by vessel tonnage (GRT) and vessel length (LOA). Although well populated, there were a number of missing data within the database. Because there is likely a meaningful relation between vessel tonnage and vessel length, the Sub-Committee suggested that perhaps some of this missing data could be filled in via extrapolation between the two variables of GRT and LOA.

The Sub-Committee recommended that a work plan be elaborated to develop such conversions for the vessel types extant in the ICCAT vessel list. In addition to LOA and GRT metrics, the work plan should consider other metrics such as FHV (fish hold volume) to allow for consistent comparisons between different oceans, especially for purse seiners.

## 2.6 Other relevant statistics

For the reporting period, the Secretariat has received discard information for 35 teleost and shark species/categories. Very little information was received under statistics reporting requirement S40 and thus for this reporting period, information was only obtained from TINC data forms. Similarly catch information for by-catch species (in particular sharks) was not obtained from requirements S29 - S31, S33 – S36 but also from TINC submissions. For sea turtles, in 2014 more information was submitted in accordance with Rec. 10-09, however due to comments and recommendations by the Sub-committee on Ecosystems and By-catch, detailed confidential information on sea turtle interactions was also supplied directly to the Secretariat. For the 2013 reporting period, the Secretariat has received seabird interaction information along with a release fate from 13 CPCs and for nine species or groups.

At the 2014 Sub-Committee on Ecosystems and By-catch the Secretariat presented newly developed observer data reporting forms for recording catch and effort data. It was noted at that time, that the vast majority of by-catch information recorded by CPCs comes from observer programmes and thus these forms provide a means for not only capturing observer data, but for the submission of by-catch data as well (i.e. any data not already submitted at a species specific level in the TI and TII data collection forms). The Sub-Committee on Ecosystems reviewed the forms and discussed issues related to how these forms could accommodate the reporting of both aggregated and non-aggregated data and recommended their use in 2015.

In accordance with Recs. 12-03 and 13-07, data collected under the national bluefin tuna observer programmes was also submitted to the Secretariat. No format has been developed for this data submission as of yet, although potentially the observer data collection forms described above could be used.

In *Recommendation by ICCAT on a Multi-Annual Conservation and Management Program for Bigeye and Yellowfin Tunas* [Rec. 11-01] it is stated that by July 1 of each year, CPCs with purse seine and baitboat vessels fishing for bigeye and yellowfin tunas in association with objects that could affect fish aggregation, including FADs, shall submit to the Executive Secretary, Management Plans for the use of such aggregating devices by vessels flying their flag. A new form (ST08-FadsDep) was created and distributed in response to Rec. 13-01, paragraph 2. This form was designed to capture information on the number of FADs actually deployed on a quarterly basis, by FAD type, indicating the presence or absence of a beacon associated to the FAD. Thus far, the submission of these forms has been very low.

In order to address Rec. 11-03, paragraph 14, CPCs which operated pelagic longline fisheries in the Mediterranean have been requested to submit specific information for the fishing vessels that were authorized to carry out pelagic longline fisheries and harpoons in the Mediterranean during the preceding year. The Secretariat further presented a proposal to consolidate information on vessels into a single form, reducing redundancies and streamlining reporting.

The Sub-Committee noted that in 2013, the Secretariat informed the SCRS of redundant (partial and different in structure) reporting obligations for ICCAT CPCs in terms of fishing vessel information. Form ST01-T1FC (for T1FC fleet characteristics) provides a distribution of the number of vessels, by LOA and GRT classes, of each CPC fishing fleet from the previous year. Under the ICCAT vessel registry (positive list of vessels allowed to fish for ICCAT species, with LOA $\geq$  20 m) the CPCs should also report the list of individual vessels which operated in the previous year (form CP38-VessAuth), in the tropical fisheries [11-01], Mediterranean swordfish [11-03], and, Eastern bluefin stock [12 03/13-07].

Reporting both forms, with the same data but structured differently is a duplication of effort for the ICCAT CPS. In consequence, the Secretariat presented a proposal to the Sub-Committee aimed to merge both forms by creating a new form that covers the data from both forms. In summary, it changes the current CP38 form by adding the required elements to the details section:

- a) Vessel identification section: Radio call sign, Gear and GRT,
- b) Two new fields to record the effort (fishing days) from the Atlantic and the Mediterranean Sea.
- c) Replaces the three columns for “Vessel Registry (Previous Year)” by a column specifying the fishery (currently: ETRO, SWO-M and BFT-E). This field could freely accommodate more fisheries (i.e.: BFT-W, ALB-N, ALB-S, SWO-N, Sharks, etc.) in the future. Optionally it could have more than one option (Fishery1 & Fishery2) to account for multi fisheries authorisations in a given year.

The Sub-Committee analysed the proposal and acknowledged the work of the Secretariat in facilitating/simplifying the work of the CPCs. In addition, the Sub-Committee noted the potential increase in quality of both reporting methods and recommended that, this form be adopted by the SCRS, but enlarged to accommodate fishing vessels smaller than 20 meters (LOA).

The Sub-Committee agreed with the proposal by the Secretariat. The Sub-Committee also noted that the reduction in redundancy could have implications for those CPCs concerned about data confidentiality as vessel specific information will be requested.

Data on discards was presented by the Secretariat. More data on more species are being reported but large gaps in the data still exist. It is likely that the observer program is a better means for reporting bycatch data rather than the catch reporting. Improved bycatch data is becoming more important to groups such as the Subcommittee on Ecosystems and By-Catch and the Sharks species Working Group. The data form was presented to and accepted by the Subcommittee on Ecosystems and By-Catch. The Observer data collection forms are quite extensive and may need some revisions based on feedback from the users. Since that Subcommittee has already approved these forms, there was no need to discuss it any further.

The Secretariat presented the document Streamlining ICCAT conservation and management measures and associated reporting requirements (SCI-078), which included a list of reporting requirements for the SCRS and comments summarizing potential issues with each recommendation. In many cases, the existing requirements are redundant and/or require additional clarifications to reduce uncertainty as to what exactly is required for submission. To clarify and simplify these reporting obligations, SCI-078 includes the following general suggestions:

- Check that the requirement is not already covered (e.g. Specific requested for data that are already covered by the usual submission of Task I and Task II data).
- If requiring specific data, indicate the format to be used.
- Ensure that the request is clear and unambiguous. It should be obvious what data should be submitted and by whom.
- Indicate in the text of the measure the purpose of the information required.
- Check with SCRS or Species Group chairs to ensure that the data requested would be sufficient for the analysis required.

The Sub-Committee agreed that these were valuable and sensible suggestions and recommended that they be presented to the Commission.

The Sub-Committee also reviewed a document (SCRS/2014/141) describing the use of stereo-cameras. Size frequency data of bluefin tuna from stereo video camera systems at caging transfer operations was compiled, revised and preliminary analysis done to estimate size at catch of farmed fish. Preliminary results indicate a multimodal size distribution for bluefin destined to farming in 2014; with a large mode of small fish of about 75 FL cm, and two modes for medium 120 FL cm and large 210 FL cm. Comparisons with alternative catch at size estimates from prior years (2010-2013) indicate significant differences of density and cumulative size frequency distributions by flag. At present, however it is not possible to conclude if these differences are due to changes in the catch of 2014 compare to prior years or to the methodology for estimating catch at size from the size at harvest reports. Weight estimates from the stereo video systems need to revise and standardize the size-weight relationship used in the video algorithms.

The Sub-Committee noted that the preliminary comparisons suggest that the quality of length frequency of bluefin tuna obtained by stereo-cameras is encouraging. However, it is clear that different CPCs have used various length-weight conversions, which has complicated comparisons. The Sub-Committee recommended that length-weight conversions be reviewed and standardized across CPCs. The Sub-Committee also noted that stereo cameras be used at delivery to the cage and at harvest to facilitate estimation of growth in cages.

*Summary of Sub-Committee Discussion of Elements in Section 2*

The Sub-Committee noted the several updates to the Task I and II data, which were presented. Updates to fleet size and characteristics were presented with several updates and improvements made from previous years. The presentation pointed out that the number of data revisions is down considerably from last year, which was looked upon favorably. It was apparent from the figures presented that the number of longline vessels in 2013 was an obvious outlying data point and was viewed an error which required further revision. The overall increasing trend in the overall number of vessels apparent in the graphs were characterized as inaccurate due to historic reporting issues, and as such should be interpreted accordingly.

The Sub-Committee reiterates to the CPCs the Commission's requirement of using the standard electronic forms for data submission and complete all the information requested.

A relatively more detailed discussion was entered into with regard to the proper and formal characterization of "Revision", vs. a "Partial Revision", vs. a "Full Revision". Importantly, the CPCs need to decide what to call the revision, not the ICCAT Secretariat. But most importantly, the CPCs need to be explicit and clear with regard to the type of revision that is being submitted to the Secretariat. Definition of terms is important and having those definitions recorded on the ICCAT Web site is necessary.

Several new "Filters" were presented in an effort to reduce redundancy in reporting obligations of the CPCs, increase efficiency in the data processing steps taken by the Secretariat, and to permit increased rapidly in evaluation of data gaps. There was discussion on the timeline and starting this in 2015. Some felt it was too early. But it was recognized that this is a stated need, knowing full well that 2015 is early to expect full adherence to these rules. So the term "in force" was modified to "fully applied". It will take some time to get the application fully adhered to. To this end, the Secretariat recommended that:

- Filter 1 & 2 be used as mandatory, following the schedule below:
  - Filter 1: fully applied from 2015 onwards, with the following change:
    - Moving item (d) to the forms (header section) in the fields with options: (NEW data; FULL revision; PATRIAL revision)
    - Scenario 3 specifications should be applied
    - Reporting date shall be the one with the "good" data
- Filter 2: "testing" mode in 2015, in which:
  - Accomplishments should be analyzed by the Secretariat, and,
  - Filter 2 adjusted by the SCRC if required

Filters 1 & 2: Fully applied in 2016, with scenario 4 specifications (SCRS/2014/129) fully utilized so this effort needs to get started early in 2015. The Sub-Committee endorsed this recommendation.

### **3. Review of criteria applied to ICCAT statistics**

These criteria are provided in SCI-008.

#### ***3.1 New sampling areas proposal***

The Secretariat presented a proposal to simplify the current biological sampling areas (SAs) ([www.iccat.int/Data/ICCATMaps2011.pdf](http://www.iccat.int/Data/ICCATMaps2011.pdf)) of the major ICCAT species, noting that SAs are now mandatory for Task I. The Group noted that, the ICCAT SAs lack nowadays the proper biological knowledge of the fisheries of ICCAT. They were created many decades ago, and while the Secretariat proposal could partially eliminate some duplication (in particular bigeye and yellowfin) it considers that a long term goal for the geographical classification of Task I should be to adopt a 5 by 5 degree square grid in all fisheries (and a 1 by 1 in surface fisheries). Nevertheless, the Group endorsed this and recommended the respective ICCAT species groups identify length/weight range limit criteria for use in Filter 2 applications (see below).

The Secretariat made a number of recommendations to simplify and/or improve the species-specific ICCAT sampling areas. The Sub-Committee did not recommend any changes to the current sampling areas, but instead recommends that the Species Groups evaluate these proposals and suggest improvements.

The Sub-Committee also recognized the WG-SAM recommendation to require Task 1 and 2 data be reported at a finer scale, and consistently (at a minimum by 5° by 5° and quarter) thus eliminating the need to reevaluate species-specific ICCAT sampling areas in the future. The Sub-Committee also recognized the complexities of calculating landings in weight based on the number of fish landed and catch-at-size which may be reported by CPCs in different spatial strata. However, the Sub-Committee recognized that currently similar assumptions are routinely made by the Secretariat, and that the estimations would likely be better made by those most familiar with the data.

### ***3.2 Application of Filters 1 and 2 on data submission***

The Secretariat presented SCRS/2014/129, which included the results of applying Filter I and Filter II to data reported. The utilization of the filtering criteria resulted in a complex exercise for both the Secretariat and the ICCAT CPCs, mainly because of being used for the first year. The Secretariat hasn't yet completed the filtering infrastructure inside the database system and some CPCs had some doubts on how the filters would apply.

The major problems identified were the forms incompleteness, the improper (or no) use of ICCAT codes, and, not following the basic standards of the dataset structures adopted by the SCRS. However, the Sub-Committee considered the filtering criteria a powerful tool, which could potentially improve the way fishery data is reported to ICCAT, by requiring ICCAT CPCs to verify/validate the information prior to the submission. In the long run, they could definitely improve the quality of fishery statistics data, and benefit the SCRS long term strategic plan in terms of data availability/quality. The Sub-Committee reiterated their support for their future use, and considers that they should be fully applied (both filters) in a period of two years (being the next year an additional testing year for filter 2). The Secretariat should present the results of the filter application and the progress made on this matter at the next meeting.

The importance of complete and timely reporting was reflected in the additional following three Sub-Committee recommendations:

1. Updating the ICCAT guide book to reflect these terms and conventions.
2. Capacity building to maintain these updates is also important.
3. Workshops were recognized as a good way to teach CPCs exactly how to report landings and the Sub-Committee recommended conducting regional workshops starting early in 2015.

The Sub-Committee noted numerous times during the meeting that the various Species Groups are better suited to review the available Task I and II data to ensure the highest degree of accuracy and completeness.

### ***3.3 Recommendation of WGSAM on spatial strata for Task II catch and effort data***

The Sub-Committee discussed and endorsed the recommendations of the WGSAM regarding the spatial strata for Task II catch and effort data. This recommendation encouraged CPCs to report their Task II catch and effort data at a finer geographical stratification (e.g. 1 x 1 degree) instead of 5 x 5 degrees.

### ***3.4 Proposal for updating the definition of tuna and tuna-like species under the ICCAT Convention as defined when the Convention was adopted in 1969***

The Commission recently asked "What constituted tuna and tuna-like species when the Convention was adopted in 1969 and how is this list of species best characterized today, given that taxonomic categories and names can change from time to time and the Convention cannot be modified frequently?".

With regard to this question, the Sub-Committee prepared a response to the Commission, which is included in item 18.10 of the SCRS report.

### ***3.5 Species covered by the term "oceanic, pelagic and highly migratory elasmobranchs"***

The Sub-Committee noted and endorsed the response to the Commission prepared by the Shark Working Group addressing the question: "Which species should be covered by the term "oceanic, pelagic and highly migratory elasmobranchs"? This response is provided in item 18.10 of the SCRS report.

### ***3.6 Consideration of methods to display/calculate catches on the ‘high seas’***

The Sub-Committee noted the need to fully utilize the ‘high seas’ data. Examples of new maps from the ICCAT web site were presented to the Group. The new web page design was noted to be an improvement as it added convenience and ease of getting directly to the desired material. It was pointed out that what constitutes “high seas” versus “other” needs to be made, which is not always obvious and/or easy.

## **4. Review of ICCAT-DB**

A presentation was made on the progress of the ICCAT-DB transition. Several improvements were made this year to various aspects of the ICCAT-DB. These include Task II database, CATDIS, EFFDis, CAS, and vessel registry. There was also a creation of a new GBYP database. Statistical forms were updated, but were not yet finished. SQL code revisions were made for various improvements. To date, the Secretariat has completed 80-90% of the proposed work on the full redesign of the Task I database. Further details of this work can be found in SCRS/2014/130. The Sub-Committee noted, however, that progress on all components has been slowed due to inordinate demands on the limited staff available.

### ***4.1 Development status***

The Secretariat described the current development status of the ICCAT-DB system, detailing the overall improvements made, and also, the various ongoing projects (databases developments, refinements on the system, etc.). Important refinements (mostly code programming) were made to the Task II, CATDIS, EFFDis, and, CAS databases. A new database for the GBYP was also created to facilitate the integration of current data into the ICCAT-DB system and future updates. The full redesign of the Task I database (due to its age and some new SCRS requirements) is one of the most important projects that the Secretariat is working on. It is not yet finalized (finished about 80%) but it is planned to end in about two months.

The Secretariat noted that, the majority of the improvements made were planned to accomplish the major tasks of the SCRS, in particular the bluefin tuna assessment.

The Sub-Committee thanked the Secretariat for this effort and expressed their appreciation and great satisfaction for these useful revisions. The revisions were an obvious improvement on the past status as it uses more up to date techniques, software, and programming languages. User books are available for assistance in utilizing the ICCAT-DB and for documentation purposes.

### ***4.2 ICCAT-DB documentation and its publication (ICCAT cloud status)***

The Secretariat informed that, this project was postponed one year due to inordinate demands on limited staff time. Therefore, no major progress was made. In consequence the three year work plan has to be extended to 2016.

During 2014 the ICCAT cloud-computing servers (<http://rscloud.iccat.int>) were used for hosting working group datasets (<http://rscloud.iccat.int/kobe/>) and the development of R packages to read and process these data e.g. to provide advice in the Kobe framework (<http://cran.rproject.org/web/packages/kobe/index.html>) and provide model diagnostics (<http://flr-project.org>). In addition tools for running assessment (<http://rscloud.iccat.int:3838/swo-med-xsa/>), evaluating management options (<http://rscloud.iccat.int:3838/swo-med/>) over the web have been developed. Several R packages were also developed that use parallel computing (ASPIG, Biodyn, FLash) for developing management advice and conducting MSE. The cloud is also being used to host tutorials and courses see

<http://rscloud.iccat.int/Tutorials/MSE/html/programme.html> for a course on MSE. The Atlantic bluefin assessment was conducted inter-sessionally using ownCloud ([www.owncloud.com](http://www.owncloud.com)) to make the data, methods and results available. The cloud platform tests made were considered successful in allowing SCRS scientists to collaborate inter-sessionally and to conduct the many tasks required by stock assessment Working Groups. These cloud computing trials have shown its potential for modeling and various types of collaborative work. The next steps are to make the system a widely used tool by SCRS Working Groups.

### ***4.3 ICCAT-DB migration from Microsoft-ACCESS to other platform***

Regarding the VBA code migration of the 13 applications that interact with various databases of the ICCAT-DB system, the Secretariat has started the process in 2014 with one of the ICCAT databases (the vessels list). This work is outsourced and must be continued next year until the complete migration of all ICCAT databases. The statistical department has scheduled (inside this project) an intensive training course of two weeks.

The Sub-Committee agreed the need of doing this migration and strongly recommended to finalize this task as soon as possible in order to ensure the full operation of the ICCAT-DB system. The Sub-Committee noted that to complete it a financial support of around 150,000 Euros will be required.

## **5. National and international statistical activities**

The Sub-Committee supported the participation of ICCAT in various international efforts to harmonize data collection and coordination.

### ***5.1 International and inter-agency coordination and planning (FAO, CLAV, CWP, FIRMS)***

The Secretariat's involvement in coordinating and inter-agency planning is summarized in SCI-008. A new initiative, IMARINE, is an opportunity for scientific collaboration on ecosystem data and analysis. This effort would make available tools and data that ICCAT could find useful. A high degree of technical expertise is needed to get involved in this initiative. The effort maybe more than ICCAT needs at this time and its utility should be further considered by the Sub-Committee on Ecosystems and By-catch. The Secretariat also informed the Sub-Committee of the revision and improvement of the Data Collection Regulation (DCR) that the EU is conducting. This revision is important for ICCAT because it directly affects the data collection criteria and quality of the data submitted by the EU to ICCAT. In particular, the collaboration with the Regional Co-ordination Group for Large Pelagics was recommended. Also, the Secretariat informed on the process of revision and update of the FIRMS web site in which the participation of the SCRS would be greatly appreciated.

### ***5.2 National data collection systems and improvements***

No discussion was conducted under this item.

## **6. Report on data improvement activities**

SCI-008 reported upon these activities.

### ***6.1 ICCAT-Japan Data and Management Improvement Project***

The Coordinator of the JDMIP presented the Coordinator's Report on Activities of the ICCAT/Japan Data and Management Improvement Project (JDMIP) 2014 (SCI-009) to the Sub-Committee that describes the activities of the JDMIP since its inception in December 2009. The ICCAT/Japan Data Management Improvement Project (JDMIP) trust fund has been dedicated to assist developing CPCs to effectively implement ICCAT measures including those related to the monitoring, control and surveillance of tuna fishing activities as well as the improvement of data collection, analysis and reporting. Document SCI-008 provides the progress report of activities carried out in the fifth year of the JDMIP as well as a summary of the general outcome as 2014 is a final year of the project. Specifically, the report summarizes 2014 activities including Steering Committee meetings, training programs in Cape Verde and West Africa, enhancement of data collection capabilities in Belize and São Tomé and Príncipe and observer programs in Ghana. The JDMIP program also supported attendance at ICCAT meetings throughout the year.

The Coordinator noted that 2014 is the final year of the JDMIP program, but announced the initiation of a new project, the ICCAT-Japan Capacity Building Assistance Project (JCAP) and invited the Sub-Committee to communicate ideas for possible activities to be funded under this new project. The Sub-Committee expressed its appreciation for Japan's generous support of JDMIP activities during the 5-year program and looks forward to an ongoing and important collaboration with Japan during JCAP.

### 6.2 Observer data from Venezuela (SCRS/2014/085)

The objective of this JDMIP-funded project was to create an enhanced species-specific monitoring of the VAOS medium and long range fishery, 2011-2014. The VAOS is an artisanal longline fleet that supplies a generally local market. A total of twenty five species were identified, but mostly dolphin and sailfish. Approximately 82% by weight of all billfish species were sailfish. Of sharks, 51% was silky shark, and 31% scalloped hammerhead. Targeted species include dolphin, sailfish, sharks, and blackfin tuna.

The Group discussed the readiness of these data for the potential upcoming sailfish assessment. The data would in fact be ready for a sailfish assessment, and some of it has already been used for other billfish assessments. Despite a consistent manner in setting of the gear over the years, the species composition of the catch has changed considerably.

The Sub-Committee recommended that these new data should be added to the ICCAT database for future use in the general assessment process. There was also discussion on Captain differences, how Captains were selected, and the consistency of Captains participation.

### 6.3 Funds from [Res. 03-21], [Rec. 13-19] and other ICCAT funds

The Secretariat provided a summary table of the use of various data funds for 2013, as follows:

Use of Data Funds from [Res. 03-21], [Rec. 13-19] and other ICCAT funds in 2014. This Table does not include the activities funded by GBYP, EBRP or JDMIP.

<i>Participation at meetings</i>	<i>SCRS meetings</i>	<i>Meetings 9 Countries 16 Scientists 35</i>
Improvement of statistics	Participation of one Ghanaian scientist in the Tropical Tuna coordination meeting on data processing under the IRD-MFRD collaboration project for the improvement of statistics on tropical tunas in the Gulf of Guinea, approved by the SCRS in 2011.	
Support to the work of the SCRS	Participation of an expert to teach the training course on Bayesian Surplus Production (BSP) for stock assessments.	
	Hiring of an external expert to carry out an inventory of strategic investments related to artisanal fisheries in the western part of Africa. The inventory is presented to the Committee as document <i>Inventaire des investissements stratégiques relatifs aux pêcheries artisanales dans la région de l'Afrique de l'ouest</i> (SCI-072) (SCRS/2014/143).	
	Participation of an expert in Bayesian Surplus Production models (BSP2) in the Mediterranean swordfish stock assessment meeting.	
	An ad-hoc training on techniques used in tropical tuna fecundity studies, for a scientist from Côte d'Ivoire in the IRD Centre in the Seychelles. Document <i>Rapport de la formation de perfectionnement : Histologie des gonades de l'albacore et du patudo dans l'Atlantique</i> (SCI-073) (SCRS/2014/116) presents a report on the work undertaken during the placement.	
	Co-financing the participation of an expert in the application of assessment methods in data poor stocks at the Atlantic Skipjack Stock Assessment meeting.	
	Co-financing the contract of a team of experts to carry out a feasibility study on an Atlantic Ocean Tropical Tuna Tagging Programme which is presented in document <i>étude de faisabilité du programme de marquage de thons tropicaux de l'océan Atlantique</i> (SCI-068) (SCRS/2014/094).	
	Small tuna biological data inventory and recovery for Côte d'Ivoire under the SMTYP.	

The Sub-Committee noted the support provided through the Data Funds applications and recommended continued use and refreshing of these funds by the CPCs, since they have become a vital portion of supporting the work of the SCRS.

#### **6.4 Data recovery activities**

The Sub-Committee deferred discussion until advice from Species Groups is received.

#### **6.5 BFT-E VMS data**

No discussion of these data were held by the Sub-Committee pending advice from the Bluefin Tuna Species Group.

#### **6.6 BFT-E Observer data**

No discussion of these data were held by the Sub-Committee pending advice from the Bluefin Tuna Species Group.

However, in response to a query, the Secretariat verified that it had received observer forms in due course from Morocco.

#### **6.7 BFT-E weekly and monthly catch reports**

**Tables 12a and 12b** document SCI-008 contain this data. However, the manner in which the data is formulated now does not appear to provide any additional scientific information at this time. Further evaluation of these data was referred to the Bluefin Working Group.

#### **6.8 Transshipment observer data**

The Secretariat informed the Sub-Committee that in 2013, a very small fraction (26 t) of the 2013 bluefin tuna catch was recorded by transshipment observers.

#### **6.9 Electronic monitoring**

The Sub-Committee considered two documents pertaining to electronic monitoring systems.

SCRS/2014/132 describes an Electronic Monitoring System (EMS) that can be used in some fisheries to collect the same type of scientific information that human observers can collect, and in some cases for compliance with existing regulations. An EMS system was tested previously onboard a tropical tuna purse seiner in the Atlantic Ocean and it showed that the system could perform very well in many tasks. Since then, 17 purse seine vessels operating in the four RFMO's, have been equipped with a different EMS that has been developed recently by SATLINK (SeaTube). In this paper, the authors present preliminary analyses comparing information collected by human observers from the IEO and recordings of the SeaTube system reviewed by DOS (Digital Observer Services) of 103 sets made along four trips in two different vessels in the Atlantic Ocean. The authors, in particular, also compare estimates of catch per set (for target and non-target species), amounts of discards, fishing effort type and set location, and comment on other potential uses of the electronic system including for compliance purposes.

The authors concluded that EMS systems are capable of delivering and validating many types of information that observers provide, and could also be useful to monitor compliance. However, they also concluded that the SCRS should develop technical standards and submission protocols.

The Sub-Committee noted that observers are not perfect, thus a 1:1 ratio of catch per set by observers and by EMS is not expected. Also, some species were rarely observed which confounds comparisons (e.g. sea turtles).

SCRS/2014/138 describes the Electronic Eye (EE), an electronic monitoring systems based on the automatic photo taking and developed by Marine Instruments S.A. This system was developed with the aim of being an alternative, or a complement to human observers. The overall objective of this study was to test the use of EE on a tropical tuna purse seiner in the Atlantic Ocean, and determine the feasibility of the EE to reliably document fishing effort, set-type, catch, and bycatch on the tuna purse seine fishery. To achieve these objectives, EE and an observer were deployed simultaneously on a complete fishing trip. Based on this research, EE is a valid tool for monitoring number of sets, set-type and total tuna catch within the tropical tuna purse seine fishery; however some future adjustments are still needed for the monitoring of the by-catch. Thus, the EE system could be a complement to observers or even a real alternative, according to the final goals of a monitoring program.

The authors conclude that the EE is quite accurate at classifying fishing operations (i.e. FAD and Free School sets) and that EE and observer data were equally reliable methods to determine total catch per set. However, some difference in species composition exists and EE consistently underestimated by-catch species since they were not always handled on the fishing deck. Including an EE system below deck would significantly improve by-catch estimates.

With regard to EMS systems in general, the Sub-Committee reviewed a presentation by ISSF of the minimum requirements to ensure the reliable operation of EMS systems. Documents SCRS/2014/132 and SCRS/2014/138 show that EM systems can provide very useful information on fishing trips and be a complement to port sampling and human observer programs for tropical tuna purse seine fisheries. Given that there are several vendors and multiple possible system configurations, it was noted that SCRS should develop minimum standards for Electronic Monitoring Systems. The Sub-Committee agreed that the SCRS should also adopt minimum standards, using the ISSF guidelines as a starting point. These would aim to standardize the implementation of EM systems and to ensure that the systems can result in collecting useful information for fisheries monitoring. ISSF's technical report 2014-08 "Updated guidance on Electronic Monitoring Systems for tropical tuna purse seine fisheries" could be used as a starting point for this objective. The Sub-Committee also noted the need to determine best practices for the integration of information from EMS, human observer, and port sampling programs. Furthermore, the Sub-Committee noted that EMS could be improved by the use of stereo-cameras to improve quantification of length frequency, such as has been demonstrated for bluefin tuna at the point of transfer into farms (SCRS/2014/141).

It was questioned if skilled scientific observers could provide more information than a camera system, and if EMS systems could also reduce employment opportunities for trained observers. Some members expressed concern that the current use of EMS tends toward compliance rather than scientific observation, although it was noted that human observers can (and do) serve multiple purposes. It was noted that EMS can be more powerful for some functions, equal to others, and less powerful than others conducted by humans, and so, they are not considered to be a substitute for but rather a complement to human observer programs, when these are possible and may, in fact, be the only realistic option to collect at-sea data of this nature. Advantages of EMS systems include minimal processing time (e.g. one week for a two-month deployment of a human observer), and the ability to operate in conditions that do not allow human observers. The use of EMS also requires skilled personnel to operate and maintain systems and process and report data. This creates job opportunities that may be more attractive and higher paying than continuous work at-sea, although it was noted that analysis of the EM data, especially the imagery, requires at-sea experience.

The Sub-Committee also discussed the relative cost-benefits of EMS systems compared with human observers or other forms of monitoring. EMS provides detailed position information that does not require satellite transmission (it is saved to hard drive), thus they may represent a more cost-effective option than VMS and with a much higher reporting rate. Compared to human observers, EMS systems may be more cost-effective when observer deployment is expensive. However, the initial set-up costs could be difficult for some developing nations.

## **7. Review of Secretariat yearly based fishery datasets estimations and dissemination (SCI-008)**

Of course, the Secretariat has done an ongoing, outstanding job of providing data for the purposes of stock assessment. However, as usual, their efforts can only move as fast as the CPC's reporting of the data, which is an ongoing effort.

### **7.1 CATDIS**

*FAD versus free school catch distribution.* The Sub-Committee noted the improvement in CATDIS made by adding fishing mode to the data used for showing catch distributions. Purse seiners, primarily in the eastern tropics, have transitioned from free schools to FADs. As transitions within the other gear groups are made, the Sub-Committee recommends that CATDIS be updated to also reflect these change to the degree possible.

### **7.2 CAS and CAA**

SCI-008 provided a summary of recent efforts to standardize the provision of CAS and CAA in support of SCRS requirements. The Sub-Committee noted these efforts and encourages continues Secretariat support in this activity.

### **7.3 Others (e.g. EffDIS)**

The Sub-Committee noted that some concern about the methods and assumptions applied to develop the EffDIS data. Both the Sub-Committee on Ecosystems and the Working Group on Stock Assessment Methods (WGSAM) recommended that work on re-estimation of EffDIS needs to be continued as it is critical to both groups and to assessment efforts in general. Discussion on exactly which group should take on the task of methodology was brought into question. This is an ongoing question for which the Sub-Committee could not arrive at a firm resolution. The methodology was presented to the WGSAM to seek recommendation for any improvement to the current methodology.

The Sub-Committee recommended formation of a small, inter-sessional group, including members from both the Sub-Committee on Ecosystems and the Working Group on Stock Assessment Methods, to arrive at an avenue to improve the estimates and to work out details on exactly what is needed.

## **8. Review of publications and data dissemination**

The Sub-Committee was presented with an update of the various ICCAT publications and was most appreciative of the efforts made by the Secretariat. The new deadline for documents was met with less than stellar success. Currently, the deadline is six and three days before the meeting to submit titles and documents for the Species Groups. However, more than 50% of the documents have been submitted after the deadlines.

The Sub-Committee agreed that deadlines help the rapporteurs to better organize the meetings and noted that it would be helpful to note in the meeting announcement exactly why these deadlines are in place and the “consequences” of missed deadlines and recommended the Secretariat introduce such language in announcements as a matter of course.

### **8.1 Revise alternatives to the ICCAT-Aquatic Living Resources publication agreement**

The Sub-Committee discussed potential partnerships with peer-reviewed journals to facilitate the publications of ICCAT working products. Previously, ICCAT had a six-year arrangement with Aquatic Living Resource (ALR), but that arrangement was temporarily interrupted. The Secretariat informed the Sub-Committee that a new ICCAT-ALR agreement is now possible, and that the scope of the journal will be broadened, including fisheries management in general. The Bulletin of Marine Science (BMS) also expressed an interest in collaboration with ICCAT with some specific conditions (**Appendix 2** of SCI-008). Both of these opportunities request a higher implication of the SCRS in the review process and have financial implications in the case of BMS. The Sub-Committee recommended that we continue our collaboration with Aquatic Living Resources but investigate ways to accelerate the process of publication.

### **8.2 ICCAT publications**

The Secretariat informed the Sub-Committee about two issues related to publication of SCRS working papers: 1) the need for authors to follow the ICCAT publication guidelines when submitting documents, and 2) the submission of presentations without a corresponding document. With regard to these issues, the Sub-Committee made two recommendations. First, that SCRS documents submitted with improper formatting be excluded from CVSP, but maintained with an electronic link on the ICCAT website, and second, that a new identifier be established to reference presentations made to working groups without a corresponding document. This identifier would be used within inter-sessional reports to reference the presentation and the presentations should be held in the archive of the meeting proceedings (also see discussion above in Agenda 8).

### **8.3 Development of web based tutorial for ICCAT data submission**

The Secretariat is considering the development of web-based tutorials (e.g. a video tutorial with voice-over in official language) to train users in the proper use of data-reporting forms. The Sub-Committee agreed that this is sensible and supported that effort.

## 9. Future development plan for the *ICCAT Manual*

Work continues to complete the *ICCAT Manual*. Currently, there is a desire to improve information about fleet and vessel characteristics. The Sub-Committee also discussed the need to review and update the glossary which has become outdated and recommended this work proceed under the guise of WGSAM.

## 10. Consideration of recommendations from the 2014 inter-sessional meetings

A number of recommendations made during various inter-sessional meetings in 2014 of pertinence to the Sub-Committee were made. The following were reviewed and endorsed by the Sub-Committee.

### *Sub-Committee on Ecosystems*

- An update of the EffDIS dataset is critical. Many tasks have been assigned to the SCRS which are reliant on this dataset, especially with regard to by-catch evaluations. The Sub-Committee on Ecosystems strongly recommends hiring a contractor to assure that this update is completed prior to the 2015 Sub-Committee on Ecosystems meeting.

### *Billfish*

- The Group observed that there has been an increase of the proportion of unclassified billfish landings reported since 2011. The Group recommends that the CPCs make greater efforts to identify by species the unclassified captures of billfishes.
- The Group recommends that the catches from Anchored FADs be identified as specific gear in Task I. If available Task II information from Anchored FADs should also be provided (e.g. location, effort, fish size, etc.).
- In line with the Recommendation of the 2014 Working Group of Stock Assessment Methods, the Group recommends to encourage CPCs to report their Task II catch and effort data in a timely manner and at a finer geographical stratification (e.g. 1° by 1°) instead of reporting these data at 5° by 5°.

### *Albacore*

- The Albacore Species Group recommends increasing efforts to obtain French mid-water trawl and other fisheries historical series of catch, effort, catch at size, geographical distribution and other related fisheries information. In addition, the Group reiterated the SCRS requirement to report CAS together with the size samples when submitting Task II size information.
- First estimates of albacore tuna discards in Uruguayan longline fisheries were made available during the 2013 data preparatory meeting (SCRS/2013/067). The Group recommended to extend these studies to other longline fisheries to obtain estimates of the amount of albacore tuna being discarded. It was also recommended that CPUE series be constructed using data from both retained and discarded albacore tuna.
- Several countries with important albacore fisheries were not represented in the 2013 data preparatory meeting. This limited the ability of the Group to properly revise the basic fishery data and some standardized CPUEs that were submitted electronically. This resulted in unquantified uncertainties and negatively affected the success for achieving the objective of the meeting. To overcome this, the Group recommends that CPCs make additional efforts and be made aware of capacity building funds available for participation in and contributing to Working Group meetings.

### *Tropicals*

- With the aim of characterizing the fishing effort associated with the two main fishing modes (free school sets and FAD sets) used by the tropical purse seiners and baitboats, the Working Group recommended that the catch and number of sets (total and successful ones) by fishing mode (FAD and school sets) on a 1° square/month basis be submitted by each CPC to ICCAT. For major Purse Seine fisheries (e.g., Ghana) for which the fishing mode was classified as unknown in the CATDIS ICCAT file, the Working Group is recommending that these unclassified catches should be assigned to FAD or free schools, based on the scientific knowledge on each fishery and periods.
- According to Rec. 13-01 which stated that CPCs shall ensure that all purse-seiners, bait-boats and supply vessels flying their flag, when fishing in association with fish aggregating devices (FADs), shall collect and report all FAD activities in a FAD-logbook, the Working Group recommended that the information on the numbers of FADs and buoys in activity on a quarterly basis and related activities developed from supply be analyzed and incorporated into the standardization procedure.
- Considering the volume of catch and size of tropical tunas not included in task I and II by a number of fleets (e.g., due to landing this catch for the local African markets, as in Abidjan), the Working Group recommended that CPCs establish adequate logbook and sampling programs to assure the total catch composition and disposition of the catch is fully quantified and reported as part of national statistic reporting obligations. The data collection of logbooks and samplings should be based on a full cooperation between the concerned CPCs and the Cote d'Ivoire scientists in charge of the faux poisons sampling program conducted in Abidjan.

### *Swordfish*

#### *Atlantic*

- Catch. All countries catching swordfish (directed or by-catch) should report catch, catch-at-size (by sex) and effort statistics by a small an area as possible, and by month. Recognizing the differential growth and distribution between sexes, collecting catch-at-size information by sex is particularly important. These data must be reported by the ICCAT deadlines, even when no analytical stock assessment is scheduled. Historical data should also be provided.
- Timely submission of Task I and II data. Considering that a substantial amount of data, (including revisions of many years of historic size information) was received after the deadline and taking into account the time that the Secretariat needs to incorporate, validate and compile to generate the datasets requested, the Group strongly reiterates the need for respecting deadlines and providing the data in the ICCAT standard formats. This recommendation is particularly important as the SCRS moves to incorporate more complex methods than those normally used and for which the request of data is much higher.
- Unreported Catches. The 2009 stock assessment report noted that the summarized form in which the information from the ICCAT Statistical Document Program (SD) is currently reported to ICCAT (bi-annual summaries of direct imports and re-exports) does not give the sufficient detail for improving estimates of potential NEI and volume of Atlantic swordfish in international trade largely due to uncertainty about the year and area of capture for swordfish products in trade, the general lack of product to live weight conversions, and the potential for double counting catches submitted on the re-export certificates. These estimates could be greatly improved if the corresponding *individual* statistical documents and re-export certificates were made available. These detailed data exist at National levels (with identification numbers) and an effort should be made to recover this important information, if the Commission wishes to improve the utility of the SD Program for validating Task I data. SCRS has reiterated this advice over the past decade (see General Recommendations to the Commission, on the SCRS Reports of 2000, 2001, 2002, 2003 and 2004), but as of yet none of the detailed swordfish SD information has been received by the Secretariat.

*Mediterranean*

- *Historical data.* The Group noted that new CPUE series have been developed and recommended the collection and recovery of historical data to increase the period covered by these time series.
- *Task II.* The Group recommended EU-Italy mesopelagic longlines and traditional drifting surface longlines to be considered as different gears by the ICCAT Secretariat, and separate Task II series be developed in the future.
- *Next Mediterranean swordfish stock assessment.* It is recommended that the next swordfish stock assessment be conducted no sooner than 2017, as long as there is no signal from the stock indicating decline. This allows time to increase the time series of catch and effort data, and to advance basic research and assessment methods. It should be noted that the data required for that session should be up to and including the year prior to the meeting.

*Bluefin tuna*

- Fishery independent information is needed, either through a large-scale tagging program or by developing fishery independent indices of abundance (e.g., aerial surveys), to better track trends in biomass and fishing mortality rates. Fishery-independent information is furthermore crucial to avoid biases due to management regulations in the models based on catch and CPUE.
- It is essential to obtain representative samples of otoliths and other tissues from all major fisheries in all areas. Otoliths, spines and vertebrae can be used to provide direct estimates of the age composition of the catch, thus avoiding the biases associated with determining age from size. Moreover, otolith microconstituent data can be very useful to determine stock origin with relatively high accuracy, and thus could be a key factor to improve our ability to conduct mixing analyses.

*West*

- The Committee acknowledged that there were several attempts to analyze the historical catch and effort for the West Atlantic data from the Japanese longline fleet by main areas and groups of years presented at past bluefin stock assessments, which include the Gulf of Mexico, the waters off Brazil and the Florida-Bahamas areas from 1960 through the 1980s. Although the Committee notes that further information by mining of the data is unlikely, the Committee welcomed continued work by Japanese scientists to improve their analysis on those historical catch and effort for Japanese longline fleet.

*East*

- The Group recommends continuing the analysis of VMS data to get better estimates of the spatial and temporal variations in the fishing effort of the main fleets and to obtain an index of abundance of the Mediterranean purse seine fleet through state-space modeling. For that purpose, the Group also recommends that VMS data be provided at the highest temporal resolution (1 hour or less) possible.

*Sharks*

- The Secretariat, in consultation with the relevant CPCs, should revise Task I catch tables with records flagged as questionable
- CPCs should provide catch statistics (including Task I, task II, and CPUE) of all ICCAT fisheries, and to the extent possible non-ICCAT fisheries, capturing pelagic species, including recreational and artisanal fisheries. Task II C/E and size data in particular are lacking;
- Call for electronic and conventional tagging data to all CPCs conducting such research in the Atlantic. The SCRS Tagging Working Group has developed a form for reporting electronic tagging data to ICCAT.

### ***Small tunas***

- All countries should report Task I and Task II data;
- National scientists should review their small tuna catches and try to classify them by species using the ICCAT identification sheets;
- CPCs should report frigate tuna (FRI) catches in the Mediterranean as Bullet tuna (BLT)

### ***WGSAM***

- To expedite the completion of the EffDIS revision database, the WGSAM recommends that a Call for Tender be developed to hire a technical expert to assist the Secretariat on a short term basis. The expert would, under the direction of the Secretariat, develop a database of historic and current fishing effort distribution that meets the stated needs of the various Subcommittees and Species Groups. The Group expects that this task could be completed within a 12-month time frame, and should begin no later than spring 2015.
- In the interest of ongoing ICCAT CPC capacity building, the WGSAM recommends a formal course in CPUE standardization be conducted by the Secretariat. Many of the countries who would benefit most from this course do not have sufficient travel funds, and as such, should have their travel supported by the Secretariat.

## **11. Evaluation of data deficiencies**

The Sub-Committee agreed that these deficiencies should be discussed by each species group, particularly by those that conducted an assessment this year (skipjack, bluefin (East and West), and the Sub-Committee on Ecosystems. Information provided by the species groups to the Sub-Committee is reflected in section 18.7 of the SCRS report.

## **12. Review of existing data submission policy**

The current data submission policy is described in SCI-008. The forms (ST-01 to ST-06) have been updated this year and CPCs are reminded to download the most recent versions. Two additional forms were also developed and are now mandatory: 1) Information regarding FAD Deployments (ST-08) and 2) Supply Vessels (ST-07). The Sub-Committee noted that the information included in the FAD Deployment forms are important to facilitate the work of the Tropical Tunas Species Groups, and also noted that it is necessary to capture information from the deployment of both anchored and drifting FADs. Anchored FADs may be used more commonly in the future to support artisanal fisheries, and data from these activities is likely to become an increasingly important source of information.

### ***12.1 Formats (e-FORMS improvements to account with current fishery practices)***

Changes to some e-FORMS formats were discussed under Agenda items above.

### ***12.2 Improvements to the ICCAT coding system***

Improvements to by-catch reporting codes were developed by the Secretariat and distributed to the Sub-Committee on Ecosystems during its 2014 inter-sessional meeting. They are currently under evaluation by the Sub-Committee on Ecosystems and are expected to be revised (as needed) and accepted in 2015. These improvements shall be reviewed in the future.

### ***12.3 Rules applied to historical data revisions***

The Sub-Committee recommended maintaining current requirements for admitting such revisions into the ICCAT data bases.

#### ***12.4 Review of deadlines for submitting statistics to SCRS inter-sessional meetings***

No revisions were made to submission deadlines, but the Secretariat noted and the Sub-Committee agreed that deadlines, while clearly described, are frequently not met. This lack of compliance complicates and increases the workload of the Secretariat, causes undue stress, and delays the timely provision of information to Species Groups. The Sub-Committee expressed its disappointment that few CPCs have routinely met the data submission requirements, and reiterates that these deadlines are crucial to the function of the Secretariat and the SCRS, and urges the CPCs to comply.

#### ***12.5 Other related matters***

No other matters were discussed.

### **13. Review of the inventory of ongoing and recent investments in the tuna artisanal fishery in West Africa area**

The ICCAT Scientific Committee (SCRS) has lamented the absence of artisanal fisheries data or their low reliabilities during the different stock assessment sessions, and the most immediate consequence is that the scientific advice intended for the Commissioners is subject to much uncertainty, which hinders management decisions. Therefore, to reduce these drawbacks, ICCAT took the initiative in 2003, by adopting Res. 03-21, to use some of the funds collected from Contracting Parties to help improve the collection of tuna fishery statistics by Parties which do not have sufficient capacity to meet some of their obligations. Moreover, recently, these strategic funds have enabled improved knowledge of small tunas in the countries of some Contracting Parties such as Morocco, Senegal, Côte d'Ivoire and Venezuela. Other Contracting Parties have also benefited from these funds to recover historical data or conduct surveys in the context of the artisanal fishery.

Ten years after implementation of Res. 03-21, ICCAT wished to strengthen its financial assistance strategy by extending it to developing countries through the adoption of Rec. 13-19. However, it has been noted that other international institutions, national cooperation agencies in developed countries, non-governmental organizations and regional fishing bodies act in the artisanal fishing sector with similar objectives but that the various initiatives are not coordinated. The support is technical in nature as hardware, software and other logistic materials are supplied, or courses and training courses are run for people who collect and analyse fisheries data. Investment is also provided for institutional support which aims to build the capacity of States to meet data collection requirements in their fisheries.

To avoid duplication of effort, and to improve the efficacy of the use of these funds, ICCAT wished to conduct a comprehensive inventory – instead of an assessment – of strategic investment in the artisanal fishery data collection system in West Africa. SCI-072 provided the first inventory of this nature for ICCAT.

The Sub-Committee discussed the several new funding opportunities not mentioned in the presentation of SCI-072 and recommended the document be forwarded to the Commission for further discussion and used to provide guidance in deciding the best strategies for future investments into improving the information from the artisanal fisheries affecting tuna and tuna-like species.

### **14. Other matters**

The Sub-Committee reviewed actions taken on the following, which were recommendations made by the Sub-Committee in 2013 and provided several additional recommendations to progress the work of the Sub-Committee into the future:

- More focused discussions on artisanal fisheries be conducted inter-sessionally. Strategic investments in the short term may make improvements, but greater discussion made to avoid duplication and improve utility should be undertaken. Generally, artisanal fisheries do not have by-catch or discards and are usually multi-specific. These discussions should draw on expertise of other sub-regional and regional management bodies and evaluate how best to coordinate with other ongoing initiatives.

The Sub-Committee favorably reviewed the report on investigation into current and recent investments by various groups aimed toward improvement of information from artisanal fisheries of West Africa which exploit tuna and tuna-like species. It is obvious from the work described in SCI-072 that multiple and large investments have and are being made, which seem not well coordinated. The Sub-Committee recommends that broader oversight of these programs by groups such as FAO and/or ATLAFCO to improve their efficiency and efficacy.

- A task group be formulated to identify better ways to characterize uncertainty in unquantified aspects of data utilized in assessments. This should be done in a way that builds upon the SCRS capacity to advise the Commission on how this uncertainty impacts the robustness of scientific advice for fishery management that can be provided.

The Sub-Committee noted that a discussion of this topic occurred during the WGSAM meeting, based upon a proposal developed by a task group and provided in SCRS/2014/035. The Sub-Committee recommended broad application of this methodology to species stocks undergoing assessments into the future.

- The Sub-Committee noted that continuing difficulties are experienced due, in some cases, to Statistical Correspondents lacking adequate knowledge and expertise in providing the full dimension of data within the time-frames that CPCs are obliged to produce. The Sub-Committee recommends that CPCs take steps to assure that Statistical Correspondents are fully versed and equipped to meet data reporting obligations and that those individuals attend the Sub-Committee on Statistics Annual meeting, at a minimum.

The Sub-Committee notes that a proposal by the Secretariat to develop web-based training videos was discussed and recommended. It was also noted that in addition to the three official languages, translation into other languages (e.g. Arabic, or others) could facilitate data reporting. The Sub-Committee recommended that in addition to web-based training videos, a series of regional workshops be implemented starting in early 2015 to assure that adequate training in the currently adopted reporting obligations and proper utilization of electronic reporting forms be undertaken.

## **15. Future plans and recommendations**

### ***15.1 2015 Work Plan***

The work plan for 2015 is included in item 16.1 of the SCRS report.

### ***15.2 Recommendations***

Recommendations with financial implications and other recommendations are included in items 17.1 and 17.2 of the SCRS report.

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

The Sub-Committee thanked the Secretariat for their excellent work during the year and acknowledged that high quality work was again achieved in spite of the increasing burden of even greater workloads on staff. However, it was noted that a number of priority items previously identified in need of completion were postponed due to the increasing workload. This is viewed as a lowering of support for the work of SCRS.

The Sub-Committee agreed to adopt the report in the plenary and the meeting was adjourned on 23 September 2014. The Convener thanked all participants for their work.