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# REPORTS OF MEETINGS OF THE CRFM PELAGIC FISHERIES WORKING GROUP (CRFM-PWG) ON THE INTERNATIONAL COMMISSION FOR THE CONSERVATION OF ATLANTIC TUNAS (ICCAT) FOR 2016-2017

CRFM Secretariat
2017

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CRFM Secretariat
Belize, 2017

## CRFM TECHNICAL & ADVISORY DOCUMENT – Number 2017 / 06

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## Virtual Meeting, 18-19 August 2016

**SESSION 1: MANAGEMENT - 18 AUGUST 2016**

### 1. Meeting Registration
The list of participants is given in Appendix 1.

### 2. Opening
The CRFM Secretariat's Deputy Executive Director, Susan Singh-Renton, opened the Meeting and thanked participants for their efforts to attend. Dr. Singh-Renton reminded participants that the present meeting was part of an ongoing effort by the CRFM PWG to provide required technical support for improved participation in ICCAT at both the scientific and management levels, in accordance with the revised Terms of Reference for the Working Group and a directive of the Thirteenth Meeting of the Caribbean Fisheries Forum.

Dr. Singh-Renton served as the PWG Chairperson for the meeting.

### 3. Adoption of Agenda
On review of the agenda, the CRFM's Programme Manager for Research and Resource Assessment (PMRRA), Ms. Elizabeth Mohammed, asked for two items to be specified and addressed under 'Any Other Business': (i) update on countries' statistical reporting to ICCAT, and (ii) proposed date of next meeting and agenda.

These changes were accepted, and the amended, adopted agenda is provided in Appendix 2.

### 4. Procedural matters
The PWG Chairperson advised that the meeting was expected to be conducted in 2 Sessions, approximately 2.5 hours each. Given the relative short duration of each session, there would be no break. Additionally, the Chairperson stated that the intention of the sessions was to provide overviews of the content of the various ICCAT inter-sessional meetings held so far for 2016, and for which the meeting reports were available by mid-July 2016. During the course of the meeting, items requiring more detailed attention by the CRFM PWG would be identified, and would then inform the agenda of subsequent CRFM PWG meetings in the near future, anticipated to be held in advance of the 2016 annual ICCAT Commission Meeting.

### 5. ICCAT management activities
5.1 Inter-sessional meetings of Panel 2: Northern Temperate Tunas

The PWG Chairperson presented the two meeting reports.

The first meeting, held during 2-3 March 2016, has the primary purpose of facilitating review and endorsement of ICCAT CPC fishing inspection and capacity management plans for Eastern Atlantic Bluefin tuna, which are due annually in accordance with ICCAT Recommendation 14-04. This meeting

allowed the Panel to obtain clarifications on these plans, as required, and to ask for further clarification of those countries whose plans could not be endorsed at the meeting. Other issues discussed were the handling of bycatch with regard to allocated catch quotas, marketing of catches from countries that have exceeded their catch quotas, and the need to standardize the format of the annual management plans.

The second meeting of Panel 2, was held during 20-21 July 2016, and focused on review of the progress by the SCRS to assess both the north and south Atlantic stocks of albacore tuna, including the quality of the data and information available for informing development of a suitable Harvest Control Rule (HCR) for north Atlantic albacore, and linked to the HCR, development of the approach to Management Strategy Evaluation (MSE). The SCRS proposed a list of Performance indicators (PIs) for north Atlantic albacore MSE, and this list was reviewed and amended by the Panel. In addition, the EU presented a draft recommendation on a proposed HCR for north Atlantic albacore, which was discussed. The Panel agreed that the amended list of PIs and the draft EU recommendation on a suitable HCR for north Atlantic albacore would be given further consideration at the 2016 annual Commission meeting. The Panel also learned that SCRS was developing a MSE for Bluefin tuna, using improved data and information from the ICCAT GBYP. MSE development support was also being provided through the Kobe MSE Working Group that was hoping to have its first in-person meeting in November 2016.

*PWG Discussion*

Mr. Justin Rennie of Grenada recognized the importance of ICCAT measures, but was concerned about the possible negative impact on Caribbean countries' fisheries, which were still in a developmental stage. The Chairperson/ Presenter reminded the PWG that ICCAT recommendations were driven by ICCAT Member States, which had direct inputs into the wording of the recommendations. In this regard, if Caribbean countries had plans to develop significant large pelagic fisheries, then membership in ICCAT should comprise part of that development process. Additionally, active participation in both the scientific and management activities of ICCAT, e.g. good data contributions, chairing and rapporteuring of meetings, often helped the countries concerned to obtain ICCAT support for their fishing interests. The Chairperson/ presenter also advised the PWG of the importance of preparing fishery management plans, as these provided clear information about a country's fishing intentions. Mr. Rennie indicated that Grenada was hoping to revisit the issue of ICCAT membership in the near future.

5.2 Meeting of the Conservation and management Measures Compliance Committee (COC)

The PWG Chairperson presented the report of this meeting, which was held 4-5 March 2016.

The COC addressed several issues. There was concern about that COC meeting procedures during the annual Commission meetings did not allow for compliance issues to be properly addressed, particularly: time constraints during the annual Commission meetings and for detailed review and analysis of the submitted compliance information; process for reviewing individual CPC compliance information; process and steps for managing cases of non-compliance; incomplete reporting by CPCs, especially in respect of agreed shark measures; management, formats and timelines for reporting compliance information such as the Compliance Tables, and Annual Reports.

The COC considered options for a more complete and timely review of Compliance data and information, including shifting the deadline for submission of the management section of the Annual Report and Compliance Tables. Recognizing the enormity of the task of compliance review, the COC considered a 'Friends of the Chair' process. In this regard, ICCAT CPCs emphasized the need to ensure good governance practices, including ensuring equitable representation, transparency, consistency and accountability. The meeting time allocated to the COC during the annual meetings, as well as the need for inter-sessional meetings was also given consideration. The COC also review a letter by the Chairman of the Commission, expressing his concerns about the COC process and his views on the way forward. Many of the Chairman's recommendations were highlighted again in proposals that were formally tabled

at the meeting. Japan presented two proposals, one aimed at improving the COC process, and another proposal aimed at improving the process for reviewing compliance with shark measures. The COC Chairman submitted a proposal that proposed options for simplifying the Compliance table format and review process and a new form for the Compliance Table was presented for consideration.

The COC also dealt with some other matters, including a proposed draft resolution by the USA on guidelines for an efficient and effective compliance process, simplification of the format for reporting data by national observers, and CPC difficulties being experienced in obtaining IMO numbers for certain fishing vessels.

The COC noted the need for CPCs to provide feedback in the inter-sessional period on the various documents and proposals presented, to facilitate easier finalization and adoption at the Annual Commission Meeting.

*PWG Discussion*

Regarding the issue of additional COC meeting time, Robert Robinson of Belize noted that the option of holding a COC session immediately prior to the annual Commission meeting was the most sensible option, as the majority of the CPCs would be present.

Regarding the issue of IMO numbers, Mr. Robinson noted that Belize has not experiences any difficulties to obtain IMO numbers for its High seas fishing vessels.

5.3 Fourth Meeting of the Working Group on the Convention Amendment (WGCA)

The PWG Chairperson presented the report of this meeting, which was held 7-8 March 2016.

The PWG Chairperson recalled the major topics/ issues, which had been identified for attention by the WGCA: revision of list of species included in the ICCAT mandate, with special attention to shark conservation and management; decision-making process and procedures (particularly entry into force of measures, voting and objection procedures, dispute settlement); non-party and fishing entity participation; incorporation of the precautionary and ecosystem approaches; allocation of fishing possibilities; capacity building and assistance to developing states; governance issues.

To address the areas mentioned, the WGCA had held three separate meetings during 2013-2015, and met also during the 2015 Annual Commission Meeting.

At the time of the Fourth Meeting, there were two issues that remained to be resolved: dispute settlement procedures and fishing entity participation in ICCAT. These were therefore the main subjects of debate during the fourth meeting of the WGCA. Regarding dispute settlement, the primary issue was to agree on whether or not to adopt a compulsory or a non-compulsory process. While the USA proposed some amended text to the relevant Article VIII bis, the matter remained unresolved, as CPCs indicated the need for further legal advice at the individual country level. As a result, the WGCA Chairperson advised CPCs to work inter-sessionally to develop a further refined proposal on the arbitral tribunal process, as it was imperative to reach a decision by November 2016.

The issue of fishing entity participation was linked to the issue of FAO currently serving as the Convention depositary. While FAO had indicated verbally that it had no difficulty with a decision by ICCAT to change the Convention depositary, CPCs stressed the importance of receiving a written response of the view of FAO, as this would help to inform CPC positions on the matter. The WGCA also discussed and agreed that the amendment being proposed on fishing entity participation was intended to apply only to Chinese Taipei. Hence it was agreed to ensure that a specific date was included to restrict the application of the amendment. There were further discussions on the extent of fishing entity

participation, particularly whether the entity should be able to serve as Chair or Vice-Chair of the Commission, and it was agreed that a good balance of fishing entity participation should be accommodated.

The WGCA Chair presented a document on various options for adoption and entry into force of the proposed amendments, and agreed to consider the options further during the inter-sessional period, so as to inform a final decision by November 2016. The WGCA agreed to set up a virtual working group to facilitate the inter-sessional activities recommended.

*PWG Discussion*

PWG participants, whose countries were ICCAT CPCs, confirmed that they were not involved in the Virtual Group discussions, and so no further updates on Convention amendment was given. Mr. Robinson of Belize agreed to check on the progress of the Virtual Group and to provide feedback to the PWG.

Mr. Rennie of Grenada enquired whether the proposed amendments dealt with the issues of food security and livelihoods. Dr. Singh-Renton sought clarification about the context of Mr. Rennie's query as Article III bis made provisions for fairness and transparency in decision making processes, with specific reference to the allocation of fishing possibilities. Dr. Singh-renton clarified that this reference pertained to the suite of ICCAT Catch Allocation Criteria that took into account countries' reliance on the fishery for food security and livelihoods.

Mr. Rennie further noted that the IWC was moving towards including these issues in its Convention that was in the process of also being amended. Ms. Sarita Parker of St. Lucia supported Mr. Rennie's position. Mr. Robinson from Belize recalled that food security and livelihood issues were raised during earlier WGCA discussions, and that some provisions were made. In consequence, the PWG agreed on the following:

(i) Mr. Rennie would check the proposed, relevant wording being considered by the IWC for amending its Convention;
(ii) Dr. Singh-Renton would check the Convention texts of other tuna RFMOs to determine how these issues were included;
(iii) Mr. Robinson agreed to review the earlier work of the WGCA to reconfirm if and how the two issues had been taken into account.

5.4 Eleventh Meeting of the Working Group on Integrated Monitoring Measures (WGIMM)

The PWG Chairperson presented the report of this meeting, which was held 18-19 July 2016.

The WGIMM reviewed several proposals to improve the performance of various observer programmes, port and at sea inspection schemes. Regarding the ICCAT Regional Observer Programme for transhipment, the EU presented a draft amended version recommendation of the existing 2012 recommendation [Rec. 12-06]. The amended recommendation enjoyed general support, and was further refined during the meeting in preparation for onward transmission to the PWG for further consideration.

The EU presented another draft recommendation for establishment of a Scientific Observer Programme, intended to improve on the existing recommendation [Rec.10-10] dealing with minimum standards for a scientific observer programme. There were several queries regarding the proposal, including the fact that it seemed to mix elements of national and regional level activities, and also mix scientific and enforcement tasks. CPCs agreed to provide comments to the EU for refinement of the new draft recommendation, which would also be transmitted to the PWG for further consideration.

The WGIMM then received a proposal for a draft measure on a Joint International Inspection Scheme, which had been tabled in 2015, but was not supported back then. The proposal was intended to improve

detection of IUU fishing, but the WGIMM could not reach agreement on all aspects of the proposal. It was agreed to revisit the proposal during the next meeting of the PWG.

Regarding the Electronic Bluefin Tuna Catch Document system (eBCD), the respective working group provided an update, noting that while there had been some delays in implementation, the system was in operation for the most part. The WGIMM noted that there may be a need to expand the time period of support to CPCs until all technical issues had been resolved. Related to the eBCD, the WGIMM acknowledged that statistical document programmes (SDPs) for other species needed to be revisited because the fishery operations had evolved and new factors had to be taken into account in the combat against IUU fishing.

In response to a directive by the 2015 Commission meeting, the WGIMM considered draft text that combined and consolidated two older measures dealing with monitoring and compliance [Res.94-09], and transhipment and vessel sightings [Rec. 97-11]. The WGIMM recognized that there were also other existing measures {[Rec 12-07] and [Rec.98-11]}, as well as the draft recommendation already considered by the meeting on high seas boarding and inspection. Hence it was important to perhaps consider these in developing a new consolidated measure. A small group of CPCs offered to work on a revised version.

The ICCAT Secretariat advised the WGIMM of recent requests by developing states, Angola and Suriname, for support to build port inspection capacity. These requests were linked to the implementation of recommendations on port inspections, and the establishment and management of a special monitoring control and surveillance fund (MCSF) to provide the necessary capacity building support to eligible developing states{[Rec. 12-07] and [Rec.14-08]}. The WGIMM was asked to provide guidance on development of a suitable manual and training course on port inspection, as these were not yet available to support fulfilment of the obligations included under the recommendations. In this regard, there was some consideration of efforts being pursued by other similar organizations such as IOTC and FAO, but it was agreed to hold further discussions during the Annual Commission Meeting.

*PWG Discussion*
No queries or comments were made by the PWG.

5.5 Second Meeting of the Ad Hoc Working Group on FADs (WGFAD)
The PWG Chairperson and the PMRRA presented the report of this meeting, which was held 14-16 March 2016.

The PWG Chairperson noted that the FAD WG received several presentations on the progress of work towards improving scientific understanding of the biological and ecological impacts of FADs, as well as of the nature of FAD usage and management by the fishing vessels. The FADWG prepared a synthesis of its findings since its first meeting and consistent with the Group's Terms of Reference. This synthesis rationalized a suite of recommendations for improved management of the fisheries concerned, including inter alia: request for improved data on FAD fishing capacity and operations; preparation of FAD management plans with specific requirements for data reporting, scientist-fishing operator collaboration, and improved FAD management and recovery to minimize ecological and environmental impacts; request for improved scientific observer coverage to capture more detailed data on catch and bycatch, as well as scientific advice on indicators of FAD fishing performance and impacts; request for improved compliance with the FAD management provisions of the 2015 recommendation on the multi-annual conservation and management program for tropical tunas [Rec.15-01]; and, a request to develop a suitable, practical bycatch retention policy.

In view of the activities and recommendations of the WGFAD, the PWG was reminded of the CRFM Secretariat's efforts, via the CARIFICO project, to improve data collection on the developing FAD fisheries in the Eastern Caribbean. It was important that the Eastern Caribbean FAD fishery data be stored and managed in a sensible manner, using a structured database. Additionally, data analyses were necessary to identify areas of weakness in the data collection programs and hence areas in need of improvement, as well as management advice to be acted upon.

*PWG Discussion*

Mr. Rennie noted that the presentation was very useful. He added that, in his view, the CARIFICO project had been very successful in promoting co-management for resource management and FAD management, and that there had been improvements also in the data being collected. Dr. Singh-Renton sought clarification about the specific co-management focus of the CARIFICO project, as in her opinion, the project seemed to focus on strengthening co-management for the purposes of management of the FADs deployed, and not management of the fishery. Mr. Rennie agreed that the focus was predominantly on management of FADs, and that countries had to move more aggressively towards improved FAD fishery management. In this regard, Mr. Isaac advised the PWG that the FAD group participated in the national consultations on the draft regional FAD Fisheries Management Plan during which the issue of resource management was fully discussed. Data collected under the CARIFICO project was expected to inform the resource management process, and Mr. Isaac was asked to liaise with the CARIFICO project about plans to analyse data for such purposes.

Given that the CARIFICO project has focused heavily on FAD management, Ms. Mohammed enquired whether data were being collected on FAD management, and whether the CARIFICO project had proposed a specific form for the collection of such data. Participants indicated that data were being collected, but it did not seem that a specific form for FAD management data had been developed. Still on this same issue, Ms. Mohammed reminded the PWG of the importance of reviewing and analysing the CARIFICO data collected, as delays in data analysis would cause delays in any additional progress in data improvements.

Dr. Singh-Renton pointed out that while the ICCAT FAD recommendations did not immediately apply to CRFM countries using anchored FADs in the Eastern Caribbean, similar measures should be expected in the near future for anchored FAD fisheries. Mr. Robinson then clarified that the existing ICCAT recommendation for tropical tunas, which contained a FAD component, was already applicable to Belize, which had purse seine vessels operating in the Eastern tropical Atlantic.

## SESSION 2: STATISTICS AND RESEARCH - 19 AUGUST 2016

### 6. ICCAT SCRS activities

6.1 Second Meeting of the Ad Hoc Working Group on FADs (WGFAD)

The presentation and discussion of this item was completed during Session 1 and is reported under item 5.5.

6.2 Meeting of Working Group on Stock Assessment Methods (WGSAM)

CRFM Secretariat's PMRRA, Ms. Mohammed, delivered a powerpoint presentation of the report of the Meeting. The powerpoint presentation is given in Appendix 3.

*PWG Discussion*

No queries or comments were submitted. In consequence, Dr. Singh-Renton acknowledged the wide range of work undertaken by the WGSAM, and its importance in ensuring quality and consistency in the

ICCAT scientific procedures used for developing management advice. Dr. Singh-Renton then asked Ms. Mohammed if there were specific areas that should be given specific attention by the PWG in a future meeting. Ms. Mohammed noted that some of the methodology being developed by WGSAM included consideration of climate change information and the ecosystem approach, and hence may likely be useful for the assessment work planned under the Investment Plan for Pilot Program for Climate Resilience, which is expected to commence in the near future. Dr. Singh-Renton gave her support to the suggestions made by Ms. Mohammed.

6.3 Species Groups Intersessional Meetings:

*6.3.1 Small Tunas*

CRFM Secretariat's PMRRA, Ms. Mohammed, delivered a powerpoint presentation of the report of the Meeting. The powerpoint presentation is given in Appendix 3.

*PWG Discussion*

A clarification was sought by Ms. Mohammed concerning the process for countries to be included in the ICCAT scientific programmes, and also to be allocated funds under specific research programmes. Dr. Singh-Renton clarified that the inclusion of countries is decided at the SCRS level, usually via collaboration among the relevant scientists. Usually, national scientists indicate their interest and availability to contribute to the programmes, and also advise about their funding needs. In this regard, Dr. Singh-Renton emphasized the importance of having active representation in the SCRS process, and reminded the PWG of the contributions to billfish biological data to ICCAT made in previous years through a working relationship between Grenada and ICCAT. Dr. Singh-Renton went on to acknowledge that while relevant scientific expertise existed within the CRFM Secretariat and the fisheries departments/ divisions, officers were usually not supported for such specialized tasks. As a result, the university scientists were better placed to contribute to the ICCAT process, but would have to do so as part of a member country's delegation.

Mr. Rennie acknowledged the importance of the small tunas to Grenada, and supported the comment regarding the strains on national scientific expertise, and reiterated the need for building suitable linkages with academic institutions. Mr. Rennie mentioned that Grenada was making an effort to improve its data collection effort on the small tunas. At this point, Mr. Isaac added that Grenada had made efforts to collect scientific data on blackfin tuna in response to a request made by the former CRFM Large Pelagic Fish Resource Working Group (CRFM LPWG), but Grenada had not been able to sustain the effort owing to human and financial constraints. Mr. Isaac confirmed that from a fisheries and socio-economic standpoint, the blackfin tuna fishery remained a priority for attention.

Ms. Mohammed noted that because of our inability to organize our data in the Caribbean, it will be interpreted as not being important to us by the international community, and particularly so from a socio-economic standpoint. She went on to emphasize that the problem was not restricted to the contributions to ICCAT but was affecting the management of all CRFM fisheries.

Ms. Martin, of Trinidad and Tobago, supported all the previous comments and highlighted the importance of the PWG addressing it.

Dr. Singh-Renton concluded that the issue was a fundamental one and would require further thought and debate, and recommended that a subsequent meeting be held to address it.

*6.3.2 Sharks*

CRFM Secretariat's PMRRA, Ms. Mohammed, delivered a powerpoint presentation of the report of the Meeting. The powerpoint presentation is given in Appendix 3.

*PWG Discussion*

The PWG Chairperson noted that, similar to the small tunas, the presentation on sharks highlighted again the importance of good data and information management. Ms. Martin informed the meeting that Trinidad and Tobago had just signed an agreement with FAO for FAO support to develop a National Plan of Action for sharks, which would identify options for addressing a range of shark management issues. Notwithstanding, Dr. Singh-Renton emphasized the importance of countries attaching priority to data and information management both in annual work plans and annual budgets. Ms. Mohammed pointed out that this was not the issue, but rather that decision-makers within the relevant ministries did not share the allocated prioritizations; she went on to lament that Ministers did not ask for data and evidence to inform their decisions. Ms. Mohammed recognized the need to have a strategic approach, and suggested that the CRFM Ministerial Council could hold a special session for increasing sensitization on the role of statistics and information. Her position and suggestion were supported by Ms. Martin and Mr. Rennie. Mr. Rennie and Mr. Isaac then took the opportunity to advise the PWG about Grenada's efforts to improve monitoring of shark catches. They noted that as the capture of sharks by pelagic longline gear influenced branding of tuna catches, it was important for countries to demonstrate that their tuna fisheries were making efforts to limit bycatch of endangered species such as sharks and turtles. Grenada has developed a fisher ID manual for oceanic white-tip, scalloped, great & smooth hammerhead sharks and the blue shark, species of interest to CITES. Ms. Cheryl Jardine-Jackson advised the meeting that in St. Vincent and the Grenadines, shark species identification remained an issue and noted the need for training to improve the situation. Mr. Seion Richardson confirmed that Guyana was also experiencing several constraints with regard to statistical monitoring of the country's shark fisheries.

Dr. Singh-Renton, while agreeing with the proposal to utilize regional fora for building awareness, considered the efforts that should be advanced at the national level where the decisions were actually taken and executed. She also wondered whether national fisheries authorities still prepared annual reports, and pointed out that such reports should emphasize the performance of fisheries against economic objectives such as generating revenue and employment income. Both Ms. Cheryl Jardine-Jackson and Mr. Kris Isaacs confirmed that St. Vincent and the Grenadines still prepared an annual report. Mr. Isaacs added that consideration should be given to including a section on specific industry development recommendations in the annual report. Ms. Mohammed then took the opportunity to remind the PWG that during the CRFM Workshop held in 2014 on improvement of statistics and information, that workshop had recommended that national fisheries authorities also seek to strengthen their linkages with other national ministries and agencies involved in data collection, as such data, even though general, may still serve to strengthen the fisheries data and information base.

6.4 Data preparatory and stock assessment meetings

*6.4.1 Atlantic albacore &*

*6.4.2 Sailfish*

CRFM Secretariat's PMRRA, Ms. Mohammed, delivered presented the two meeting reports in a single powerpoint presentation, which is given in Appendix 3.

*PWG Discussion*

Mr. Rennie enquired if and how the ICCAT SCRS assessments and recommendations on stock status took into account catches taken during illegal fishing operations. Dr. Singh-Renton explained that the SCRS scientists used various sources of information to estimate illegal fish catches, and that these estimates were incorporated into the assessments and stock status advice. This had been done for at least bigeye tuna and Bluefin tuna where the problem has been worst. The SCRS had also done specific investigations to inform the amount of illegal catch where TACs and country quota allocations were in place.

Mr. Rennie argued that where there was a continuing increase in IUU fishing, then this might be expected to decrease the fishing opportunities for other countries with developing fisheries. Dr. Singh-Renton indicated that country quota allocations were more dependent on their level of contribution to the ICCAT management process, rather than dependent on perceived levels of illegal fishing.

The PWG also noted again the challenge of improving data and information for species of interest to CRFM countries and to ICCAT.

## 7. Any Other Business

7.1 Update on countries' statistical reporting to ICCAT

The PWG Chairperson invited Ms. Mohammed to clarify the updates being requested. Ms. Mohammed explained that, given that the PWG held tutorials earlier in the year to help countries with reporting difficulties, it would be useful to receive some feedback on the usefulness of the tutorials in resolving the difficulties.

Mrs. Medar, of St. Lucia, noted that the ICCAT species list had been amended, with the list of shark species having been removed. Ms. Martin said that she had noticed the same change in the ICCAT reporting form, and indicated that she provided text explanations in the notes section to support the data entries. The PWG noted the need to understand why the change had been made, which may involve reviewing last year's SCRS documentation and/or contacting ICCAT for an explanation.

Ms. Martin confirmed that Trinidad and Tobago had submitted its Task I and Task II data and were trying also to submit the required size data for three species (yellowfin tuna, bigeye tuna, and swordfish). Mrs. Medar also confirmed that St. Lucia submitted Task I and Task II data. Similarly, Mr. Robinson confirmed that Belize had submitted Task I and Task II data, and also its size data for albacore, yellowfin tuna, bigeye tuna and skipjack tuna. Cheryl Jackson confirmed submission of ask I and Task II data, as well as size data for albacore and swordfish, and also fleet characteristics for St. Vincent and the Grenadines. Ms. Nikkita Browne of St. Kitts and Nevis confirmed that St. Kitts and Nevis had submitted its Task I and II data. Mr. Richardson was unable to advise about Guyana's data submission at the time of the meeting.

The PWG Chairperson invited countries to identify any additional statistical reporting issues, but none was identified for further attention by the PWG.

7.2 Proposed date of next meeting and agenda

The PWG Chairperson identified the following 14 items for further attention during future meetings of the PWG:

Panel 2 –

1) Proposal by the EU for a recommendation on establishing harvest control rules for the north Atlantic albacore stock;
2) SCRS proposed list of candidate reference points for informing harvest control rules, as amended by Panel 2 in 2016;

Compliance Committee –

3) Proposal by Japan to improve the Operation of the Compliance Committee;
4) Letter from the ICCAT Chairman on compliance issues;
5) Proposal by Japan to improve compliance review of shark conservation and management measures;
6) Proposal by the Compliance Committee Chair for improving Compliance Tables - process for review and approval, formatting, and other issues;

7) Proposal by the USA for a resolution on guidelines to facilitate an efficient and effective compliance review process;

Convention Amendment –

8) Inter-sessional activities of virtual working group;

Ad Hoc Working Group on FADs –

9) CARIFICO activities aimed at supporting analysis of data on FAD fishing operations for informing improved FAD fishery management;

Integrated Monitoring Measures –

10) Proposal by the EU for a Recommendation on transhipment;
11) Proposal by the EU for a recommendation to establish a scientific observer program within the ICCAT Convention Area;
12) Proposal led by the EU for a recommendation/ resolution for a model joint international inspection scheme;
13) Proposal by the Permanent Working Group for Improvement of ICCAT Statistics and Conservation Measures (PWG) to update and consolidate ICCAT measures {[94-09] and [97-11]};
14) Information on the implementation of Recommendations 12-07 and 14-08 on port measures, particularly management of capacity building requests.

The CRFM PWG agreed to convene two Commission Preparatory meetings to address the 14 items listed above, as well as to discuss the SCRS 2016 findings and recommendations. These two meetings were tentatively scheduled for 23 September and then again for 21 October or 2 November 2016.

Additionally, the PWG recalled the need to give further attention to the ongoing fundamental issue of data and information. In view of it importance but anticipated time constraints, it was agreed to convene the data and information meeting after the annual ICCAT Commission meeting and before the end of 2016.

## 8. Adjournment

The Chairperson asked if there were any final remarks or other inputs prior to adjournment.

The Chairperson then thanked participants for their time and contributions on behalf of their countries, and also acknowledged with appreciation the efforts by Ms. Mohammed to prepare and deliver detailed powerpoint presentations to inform Session 2's discussions. Additionally, the Chairperson expressed her faith that the PWG meetings on ICCAT were being successful in their objective, i.e. to provide support to countries for improved ICCAT cooperation and participation.

The meeting was adjourned at approximately 12:45 p.m.

**Appendix 1: List of Participants – Third CRFM PWG Meeting on ICCAT**

| Country | Name of Representative | Affiliation | Email Address |
|---|---|---|---|
| Barbados | Christopher Parker<br>*Senior Fisheries Biologist* | Fisheries Division | fishbarbdosfb@caribsurf.com |
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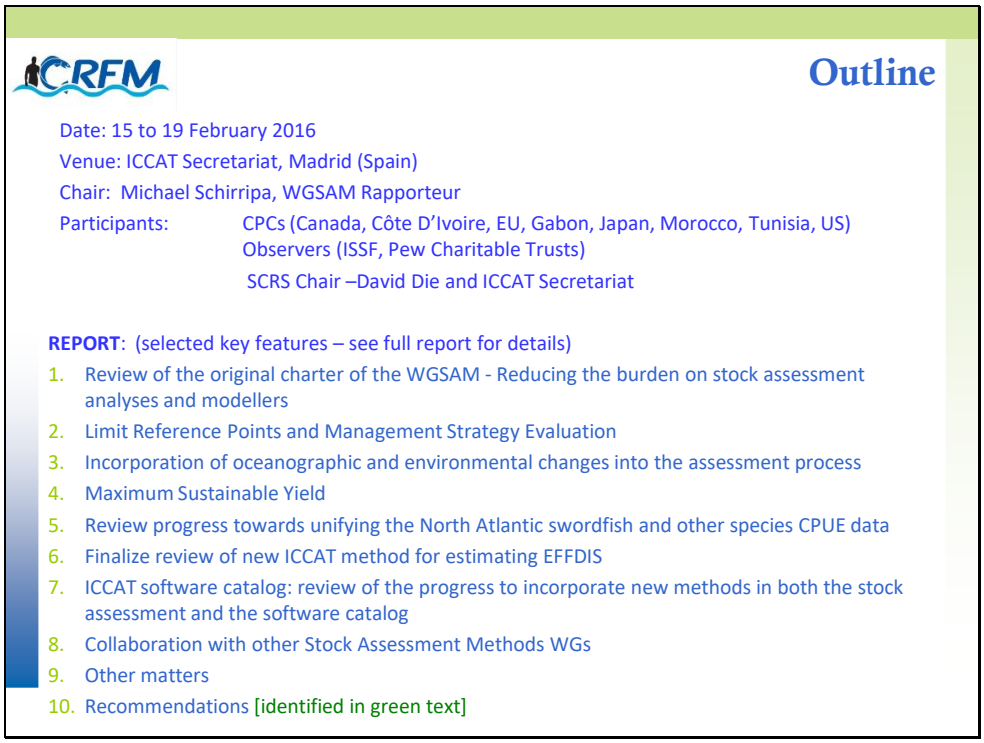
| CRFM Secretariat | Susan Singh-Renton<br>*Deputy Executive Director* | CRFM Secretariat | susan.singhrenton@crfm.int |
| | Elizabeth Mohammed<br>*Programme Manager, Research and Resource Assessment* | | Elizabeth.mohammed@crfm.int |

**Appendix 2: Agenda – Third CRFM PWG Meeting on ICCAT**

| Item | Title | Date & Time (Eastern Caribbean Time) |
|---|---|---|
| | **Session 1 – Management** | **18 August** |
| 1 | Meeting registration | 10:00 – 10:10 a.m. |
| 2 | Opening of meeting | 10:10 - 10:15 a.m. |
| 3 | Adoption of Agenda | 10:15 - 10:20 a.m. |
| 4 | Procedural matters | 10:20 - 10:25 a.m. |
| 5 | ICCAT management activities<br>5.1 Intersessional meetings of Panel 2: Northern Temperate Tunas<br>5.2 Meeting of the Conservation & Management Measures Compliance Committee<br>5.3 Meeting of the Working Group on the Convention Amendment<br>5.4 11th Meeting of the Working Group on Integrated Monitoring Measures<br>5.5 2nd Meeting of the Ad-Hoc Working Group on FADs | 10:25 - 12:30 p.m. |
| | **Session 2 – Statistics and Research** | **19 August** |
| 6 | ICCAT SCRS activities<br>6.1 2nd Meeting of the Ad-Hoc Working Group on FADs<br>6.2 Meeting of Working Group on Stock Assessment Methods<br>6.3 Species Groups Intersessional Meetings:<br>6.3.1 Small Tunas<br>6.3.2 Sharks<br>6.4 Data preparatory and stock assessment meetings<br>6.4.1 Atlantic albacore<br>6.4.2 Sailfish | 10:00 - 12:00 noon |
| 7 | Any Other Business<br>7.1 Update on countries' statistical reporting to ICCAT<br>7.2 Proposed date of next meeting and agenda | 12:00 - 12:25 p.m. |
| 8 | Adjournment | 12:25 – 12:30 p.m. |

**Appendix 3: Presentation on ICCAT's SCRS Activities Jan to Jul 2016**

## Review of the original charter of the WGSAM

***Mission: To implement Quality Management for stock assessment methods, leading to the review, testing and documentation of assessment methods used by the SCRS***

- Need for improved communication with species groups – addressing specific questions;
- Options for expanding the original mandate based on how WG has evolved;
- Agreed that group should:
  - focus on methodologies to be applied for multiple species groups
  - provide guidance and review of general methodology – it does not have expertise in all fields of fisheries
  - clearly address recommendations from each species group
  - communicate the types of questions it can address
- Suggest attendance of species group rapporteur at group meetings to resolve related problems

## Review of the original charter of the WGSAM

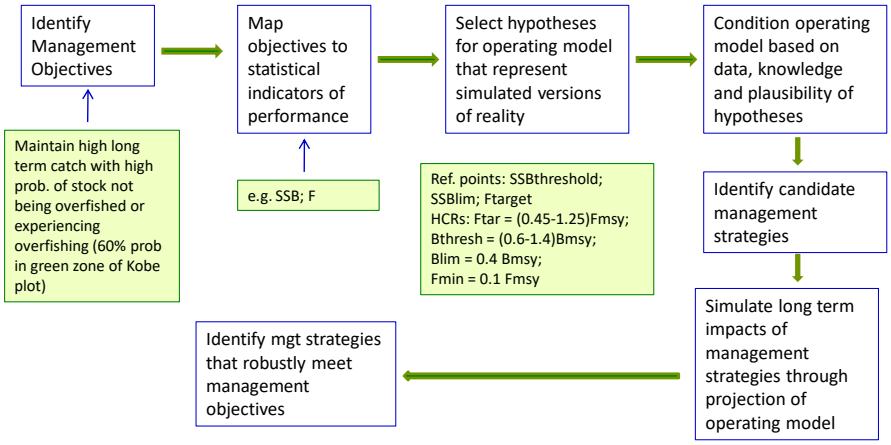
*Reducing the burden on stock assessment analysts and modellers*

- Paper presented on many burdens modellers face in conducting stock assessments – especially using complex models and conducting extensive diagnostic ananlyses;
- Additional problems of Secretariat identified in meeting deadlines for producing data for assessment models - data formats; conflicting trends in abundance indices;
- Several options put forward and discussed for improving the process and reducing the burden to modellers;
- Agreed to produce guidelines for more effective use of time and effort – consistent with SCRS Strategic Research Plan
  - ✓ On scheduling: develop a clear schedule of entire stock assessment process, adherence to deadlines, coordinated intersessional activities; sufficient time for diagnostic analyses – Rapporteurs to reiterate to CPCS importance of timely data submission;
  - ✓ On use of multiple models: appropriate for better understanding problems in an assessment - should combine results in an effective and understandable manner – clarify purpose of each model, its assumptions and whether or not they are met – help ensure model appropriate for available data and fishery;
  - ✓ On use of information: concerning catchability – wrt conflicting trends in abundance indices – and difficulties in application of stock assessment models – recommend follow guidelines previously provided on selection of indices – all available information to evaluate the indices must be provided in the index documentation and issues of varying catchability and/or selectivity considered.

# Limit Reference Points & Management Strategy Evaluation

ICCAT Rec 15-04 – to Establish Harvest Control Rules for North Atlantic Albacore – MSE is used to estimate different levels of probability of achieving management objectives by alternative HCRs, taking into account existing uncertainties that affect fisheries dynamics.

Steps in Conducting a MSE (p.9 of Albacore Species Group Meeting Report)




# Limit Reference Points & Management Strategy Evaluation

- Reviewed and contributed to continuing progress on MSEs; HCRs; Limit, Threshold and Target Reference Points with focus on MSE study for North Atlantic Albacore – key paper presented *on Evaluation of HCRs for N ATL albacore*;
- Discussions focused on the approach, process and results – many questions related to methodology - agreed that WG will focus on general examination of the methodology used for MSE study not the outcomes;
- Other questions: how framework operated; how to interpret outputs; how MSE process would alter ICCAT assessment process –issues highlighted were not prioritized;
- Highlighted issues with operating model, use of CPUE data and made suggestions;
- Identified need for review of the MSE simulation framework;
- Noted that a key component in moving the process to other species is collaboration with other RFMOs and developing diagnostics;
- WGSAM encouraged continued development of MSE framework and presentation of results to Panel 2 in July 2016 - results of MSE study also to be presented to Joint Tuna RFMO MSE Working Group;
- Reviewed papers on *Conditioning Operating Models on Data and Knowledge and Rejecting and Weighting of Hypotheses* and *Flife: An R Package for Modelling Life History Relationships and Dynamic Processes*.

## Incorporation of oceanographic and environmental changes in assessment process

- The approach was recommended by WGSAM, Swordfish Species Group and Sub-Committee on Ecosystems to test robustness of CPUE standardization methods; could improve interpretation of contradicting CPUE trends indices and changes in "q";
- Paper presented - demonstrated habitat suitability model for blue marlin – noted that fluctuations in habitat volume caused fluctuations in CPUE that are independent of population abundance – unrecognized uncertainty – impacts population estimates – need to expand stock assessments to include annual climatology to account for changes in habitat volume and global warming;
- Identified variables to take into account for describing BUM abundance in relation to habitat;
- Proposed various validation exercises for blue marlin – contrast predicted habitat with tagging recapture data; overlay predicted habitat map with catch rate data; analysis of habitat consistency with migration paths from tagging data;
- Discussed possible use of EFFDIS database; possible application of habitat model to other pelagic species (sharks, SWO, ALB, BFT); identified useful datasets and need for cooperation to estimate CPUEs by Area instead of Flag;
- Recommended cooperation between WGSAM and other WGs and Sub-Committee on Ecosystems;
- Identified information sources – habitat of main tuna species across all oceans.

## Maximum Sustainable Yield

1. Presentation on bigeye tuna – variability of fishing mortality with age – increased purse seine catches and decreased longline catches resulted in selectivity from older to younger fish – hence MSY estimates show decreasing trend – impacts on estimates of $Yield_{msy}$ and other reference points;
2. SCRS practice is to calculate MSY estimates using most recent selectivity and Fapex – but changing selectivity poses problems for interpretation of assessments as estimated MSY will vary correspondingly;
3. Agreed to inform the Commission about implications of changing selectivity patterns and discussed how to communicate the information;
4. Agreed that guidance is required from the Commission – process of setting projections with alternative selection scenarios;
5. Agreed that decision tables are handy tools to interpret sources of uncertainty and summarize assessment results – valuable to SCRS – may worth inclusion in detailed Report – however due to technical details such tools are not suitable for reporting to the Commission;
6. Agreed to continue reviewing summary figures and tables for providing information to Commission – such as Kobe plot and Kobe Strategy Matrix.
7. Agreed and recommended that for stocks with time varying selectivity, or changes in proportion of catch between gears with different selectivity, SCRS to provide time series estimates of MSY and corresponding time series of $B/B_{msy}$, $F/F_{msy}$ for specific years as well as estimate a global MSY (for reference purposes).

## Review progress – unifying NA swordfish & other species CPUE data

- Discussed how changes in local availability (time and space) could undermine use of abundance indices provided by different CPC fisheries to track stock abundance trends – given that there are instances of conflicting trends;
- One solution proposed is to develop a single index incorporating data from multiple CPCs with spatial and temporal coverage that more closely corresponds to stock distribution;
- Recalled that such an approach was applied for previous assessments of NA SWO (using both aggregated and non-aggregated data) and WA BFT (non-aggregated data) – and noted the need for appropriate confidentiality constraints when using non-aggregated data;
- At 2015 meeting presentation was made on an approach to permit development of a combined non-aggregated dataset from multiple CPCs, incorporating external data (e.g. environmental variables) and maintaining data confidentiality – subsequently USA and Canadian scientists collaborated to develop BFT CPUE indices using data from LL and RR fisheries of both CPCS;
- Plans to use the approach for 2017 western BFT stock assessment and next NA SWO stock assessment;
- Discussed options for providing greater assurance to CPCs re: data confidentiality – suggested this concept may be incorporated in the SCRS Code of Conduct being developed.

## Finalize review of new ICCAT method for estimating EFFDIS

- A new methodology for estimation of EFFDIS (Estimates of Overall Atlantic Effort by Time-Area Strata) was presented and discussed;
- No clear consensus on the assumptions/decisions – e.g. calculation of average weights from Task II data does not consider differences in size distribution of catches between various gear types;
- New methodology provides a dataset with estimates for cells with unreported or incomplete data;
- R-code available for new methodology to allow individual scientists flexibility to analyze the data with alternative assumptions/decisions;
- New methodology is a fundamental change from previous one – e.g., modeling of spatio-temporal catch distribution in order to estimate data for missing cells.

## ICCAT software catalog: review of progress to incorporate new methods (stock assessment & software catalog)

- Needs of the SCRS reviewed (in coordination with species group rapporteurs) re: the cataloging of software used by assessment groups;
- Catalogue developed and is available online at https://github.com/ICCAT/software/wiki
- Next steps – solicit volunteers to add other software to catalogue
- Advised that: (1) Species Groups should preferentially use software in the catalog (use newest version); (2) include any new software to be regularly used by the SCRS to produce stock assessment advice in the catalog;
- Advised that all data used in stock assessment should be fully described and the software used by the species group should be included in the ICCAT repository to facilitate any required replication of the analyses

## Collaboration with other Stock Assessment Methods WGs

Two initiatives highlighted:

1. ICES-ICCAT Global Assessment Methods Working Group (GAME) established
   a. ToRs to be developed defining deliverables between 2016 and 2019;
   b. ToRs to be addressed in 3 consecutive annual meetings;
   c. ToRs to focus on development of new assessment methods; improving existing assessment models; organizing a collection of datasets; testing performance of existing and new models; developing, improving and testing assessment-related techniques
   d. Joint meeting to be convened

2. Joint MSE Technical Working Group established at the 3rd Joint Tuna RFMOs meeting – to work electronically – chaired by ICCAT – various activities conducted - next stage is a physical meeting to be convened before Kobe meeting in the first semester of 2016.

## Other Matters

*Update of the ICCAT-SCRS technical glossary*

- SCRS and Commission requested update of glossary on technical terms;
- Paper presented on preliminary list of technical terms – to update current ICCAT glossary – part of ICCAT Manual - list developed by scanning selected ICCAT scientific documents and recent ICCAT Recommendations and Resolutions - considered other fisheries glossaries & literature;
- Document to serve as basis for update of glossary – update to be presented to Commission in Nov 2016
- SCRS Scientists are to review the document and provide comments to improve list;
- Document to be shared with other tuna RFMOs for review and improvement;
- Update of glossary – a continuous process – suggested small Ad-Hoc Sub-Committee to oversee updates annually – Sub-Committee should have members from SCRS, the Secretariat and Commission - Any SCRS Scientist could provide updates through appropriate WG or sub-committee – process identified for review and approval – updates to be presented to SCRS plenary for review and approval - SCRS Chair to propose ToRs for the Sub-committee
- Recommended that authors consider terms in the Marine Stewardship Council glossary and check consistency with ICCAT basic texts;
- Recommended that list of acronyms included in current glossary also be updated.

## Other Matters

*Atlantic Ocean Tuna Tagging Program*

- Presentation delivered on objectives and progress of the Program – including summary of plans for tagging in 2016; update on procurement of staff and description of making decisions regarding design of tagging experiments;
- Agreed that SCRS scientists involved in tropical tuna research should provide advice to the AOTTP about major decisions (design of tagging program; types of tags used; species to focus on; what biological/life-history parameters to be derived)
- Discussed issues regarding release of tagged fish (conventional and electronic tags);
- Recommended that program coordinator make contact with experts that have used electronic tagging technology; maintain involvement of tropical tuna species group to increase changes of program success;
- Discussed how to incentivize scientists' involvement in data analysis and data accessibility;
- Recommended development of a protocol concerning how and when data would become available to the SCRS.

## Other Matters

*ICCAT-SCRS Competitive Research Program*

- ICCAT Chair presented proposal which was presented to the SCRS Plenary and Commission in 2015;
- Program is likely to: (a) provide stable sources of funding for ICCAT funded research; (b) ensure more efficient use of limited funds to support the SCRS research; © encourage research that is better aligned to the ICCT strategic research plan;
- Agreed that in addition to criteria in the proposal, priority be given to proposals involving young scientists and students and that the research call may be used to fund development and testing of software used in ICCAT to perform stock assessments and provide management advice.

***Questions, Discussion, Way Forward?***

CARIBBEAN REGIONAL FISHERIES MECHANISM

## ICCAT's SCRS Activities - Jan to Jul 2016
## Species Groups Intersessional Meetings

**CRFM Pelagic Fisheries Working Group**
**Third Meeting on ICCAT**
**Session 2: Research and Statistics**
**18 – 19 August 2016**
**GoToMeeting ID: 798-372-677**

## Small Tunas Species Group

Date: 4 to 8 April 2016
Venue: ICCAT Secretariat, Madrid (Spain)
Chair: Noureddine Abid (Morocco), Small Tunas Species Rapporteur
Participants: CPCs (Angola, Brazil, Cabo Verde, Côte D'Ivoire, EU, Mauritania, Morocco, Sao Tomé e Príncipe, Senegal, Tunisia)
SCRS Chair –David Die
ICCAT Secretariat

**REPORT: (key features)**

- Review of Fishery Statistics
- Review of information on biology & other life history information (e.g. stock structure)
- Update on Ecological Risk Assessment
- Initiate development of meta-database for small tunas – define future assessment approaches
- Develop strategies within SMTYP to improve collaboration among scientists and obtain information for assessment
- Recommendations
- Other Matters

**Issues**

Small tunas are socio-economically important to CRFM Member States

Limited management of these fisheries by CRFM Member States

ICCAT data constraints to assess and manage these fisheries – but is working on these constraints

## Small Tunas Species Group

A Reminder before we begin

**2015: Ecological Risk Assessment (ERA) conducted for longline fishery in SW ATL** *(from SCRS 2015 Report (prov))*

- Results identified king mackerel, wahoo and Serra Spanish mackerel being at high risk and hence priority for assessment;
- Medium risk species such as Atlantic bonito, bullet tuna, frigate tuna and little tunny also identified for assessment.
- Currently no management measures in place;
- Work being conducted to develop indicators that could be used to provide management advice;
- SMTYP and tropical tunas tagging programmes could contribute to biological data requirements for assessments.

**Small Tunas Year Program (SMTYP)**
*(from SCRS 2015 Report (prov))*

- Initiated since 2013
- Recovery of historical Task I and Task II data series & biological sampling (esp. growth and maturity);
- Focus on Mediterranean and Black Sea, West Africa and Caribbean Sea and SW Atlantic
- For Caribbean Sea and SW ATL – blackfin tuna, king mackerel, Serra Spanish mackerel & dolphinfish;
- 2015 WP focused on BON, LTA, KGM, FRI and BLT.
- 5 proposals recently approved by Secretariat – "Short-term contract for the small tunas research program – data recovery plan and biological samples collection for growth and maturity studies

## Small Tunas Species Group

**Review of Fishery Statistics**

1. T1NC – 13 species groups – 7 most important species represent >90% catches (1950 to 2014) – Atlantic bonito (34%); little tunny (14%); frigate tuna (12%); king mackerel (11%), Atlantic Spanish mackerel (11%); Serra Spanish mackerel (5%); bullet tuna (5%) – Note: all remaining species – blackfin tuna, West African Spanish mackerel, wahoo, common dolphinfish, plain bonito and cero mackerel represent only 7% (combined)
2. T1NC data were revised – but the majority of species still have highly incomplete catch series in official ICCAT statistics
3. Two weaknesses to be eliminated
   - T1NC carry-overs (accounts for about 17% T1NC data)
   - Lack of provision of specific "fishing gear" code – implications – poor knowledge of fleet structure and limitations in future stock assessments
4. Secretariat to contact Statistical Correspondent and/or national scientists – revision, update, completion of small tuna catch series.
5. Large number of T2SZ datasets included and updated since last intersessional meeting – data recovery rate of about 31% in less than 1 year – strengthens case for special data recovery projects.
6. 31,000 records on conventional tagging for small tuna species registered in ICCAT-DB system – current situation similar as for 2015 intersessional meeting.

## Small Tunas Species Group

**Review of Biological and Life History Information**

Three documents presented:

1. fecundity studies and relationship of fecundity and fork length/eviscerated weight – Little tunny – Tunisia
2. biology, length composition, growth parameters – Atlantic bonito – Morocco
3. genetic population structure – bullet tuna – Algeria, Italy, Tunisia

**Update on Ecological Risk Assessment (N and S ATL)**

1. 9 life history traits compiled and relationships examined - vulnerability evaluated as a function of productivity and susceptibility attributes – semi-quantitative ERA (level 2) obtained - few data to get good quality susceptibility attributes
2. Life history traits of small tunas from S ATL poorly documented – but highly correlated so allows for estimation of missing values;
3. With available data – the most vulnerable species caught by LL fleet in ATL Ocean , with high risk were: wahoo (S ATL), **King mackerel** (N & S ATL), **Atlantic Spanish mackerel** (N ATL), Little tunny (S ATL) and **blackfin tuna** (N ATL); See details in Table 11.
4. Issue to be addressed – integration of "data poor" approaches, including ERA & other methods;
5. Suggested improving collection of life history traits and length data to improve quality of analyses; incorporate other important gears in future ERA; update analysis for 5 ICCAT areas for small tunas.

## Small Tunas Species Group

**Initiate development of meta-database – define approaches for future assessments**

1. Summaries presented onf number of species measured by stock/statistical areas ; number of fish measured sorted by gear group and by species ;
2. Global scombrid life history dataset presented – 667 life history studies published 1933 to 2012 for 51 species (excluding common dolphinfish);
3. The database was filtered for the tuna species and ICCAT areas of interest – the records identified were used to update the life history parameters for the small tuna species in the 5 major areas – gaps (reproduction and growth parameters) identified for ATL and Mediterranean Sea;
4. Agreed that even where information is available regular updates required because small tunas are short-living species – need to update life history parameters intersessionally.

## Small Tunas Species Group

**Initiate development of meta-database – define approaches for future assessments**


**Figure 12.** Locations of published life history studies in the 5 stock/statistical areas: North and South Atlantic Ocean (both Eastern and Western) and the Mediterranean Sea.

## Small Tunas Species Group

**Initiate development of meta-database – define approaches for future assessments**

**Table 14.** Summary of the life-history parameters currently available for SMT species in the 5 stock/statistical areas: North and South Atlantic Ocean (both Eastern and Western) and the Mediterranean Sea.

| ZONES | NORTHEAST ATLANTIC | | SOUTHEAST ATLANTIC | | NORTHWEST ATLANTIC | | SOUTHWEST ATLANTIC | | MEDITERRANEAN | |
|---|---|---|---|---|---|---|---|---|---|---|
| Species | Growth Parameters | Reproduction parameter | Growth Parameters | Reproduction parameter | Growth Parameters | Reproduction parameter | Growth Parameters | Reproduction parameter | Growth Parameters | Reproduction parameter |
| LTA | | | | | | | | | | |
| FRI | | | | | | | | | | |
| BLT | | | | | | | | | | |
| SSM | | | | | | | | | | |
| MAW | | | | | | | | | | |
| BON | | | | | | | | | | |
| WAH | | | | | | | | | | |
| BRS | | | | | | | | | | |
| BLF | | | | | | | | | | |
| KGM | | | | | | | | | | |
| BOP | | | | | | | | | | |
| CER | | | | | | | | | | |
| DOL | Not yet reviewed by the WG-SMT | | | | | | | | | |

Data available, several studies and at least one of them was published in the last 10 years
Data available, single study or several older than 10 years
No existing data

# Small Tunas Species Group

## SMTYP – strategies to improve collaboration and obtain data

1. Budget approved in 2015;
2. Group agreed that research activity on basic fishery data is of lower priority than research related to improving knowledge of biological parameters (including size data) for stock assessment;
3. Stock structure important but expensive to determine – agreed that in the interim all available data to characterize stock structure be reviewed and summarized to preliminary define stock structure for each species (biological sampling under SMTYP includes genetic samples);
4. Established priorities for biological parameters to be investigated for key species – based on information gaps;
4. Agreed that best approach for biological sample collection – Consortium of CPCs to reply to ICCAT call for tenders – re SMTYP – in 2017 priority will be given to the S ATL on species that have not been sampled in 2016.

# Small Tunas Species Group

## SMTYP – strategies to improve collaboration and obtain data

Table 1. Estimated costs related to activities planned for 2017 under the ICCAT SMTYP.

| *Planned activities* | *Species* | *Estimated costs (€)* |
|---|---|---|
| **1. Recovery of Task I and Task II data:** | | |
| • Eastern Mediterranean: Turkey | Atlantic bonito (BON) | €7,500 |
| • North East Atlantic:<br>– Mauritania<br>– EU. Portugal | Little tunny (LTA)<br>Frigate tuna (FRI)<br>Bullet tuna (BLT) | <br>€7,500<br>€7,500 |
| • South Atlantic & Caribbean Sea:<br>– Venezuela, Brazil<br>– Angola | King mackerel (KGM)<br>Serra Spanish mackerel (BRS)<br>Wahoo (WAH) | <br>€15,000<br>€7,500 |
| **2. Conducting biological sampling in the major areas** | | |
| • North East Atlantic:<br>– Senegal<br>– Côte d'Ivoire<br>– Morocco<br>– Mauritania<br>– Cabo Verde<br>– EU (Portugal)<br>– São Tome e Principe | <br>Atlantic bonito (BON)<br>Little tunny (LTA)<br>Frigate tuna (FRI)<br>Bullet tuna (BLT | €7,500<br>€7,500<br>€7,500<br>€7,500<br>€7,500<br>€7,500<br>€7,500 |
| • Mediterranean Sea:<br>– Tunisia<br>– Algeria | Atlantic bonito (BON)<br>Little tunny (LTA)<br>Frigate tuna (FRI)<br>Bullet tuna (BLT) | <br>€7,500<br>€7,500 |
| • South Atlantic and Caribbean Sea:<br>– Venezuela<br>– Mexico<br>– Brazil<br>– Angola | <br>King mackerel (KGM)<br>Serra Spanish mackerel (BRS),<br>Wahoo (WAH) | €7,500<br>€7,500<br>€7,500<br>€7,500 |
| **Total** | | **€142,500** |

## Small Tunas Species Group

**Other Matters: AOTTP (Atlantic Ocean Tropical Tuna Tagging Programme)**

1. Coordinator presented summary of progress;
2. Main Objective – to ↑benefits that countries, especially developing countries, obtain from the harvest of tropical tuna through improvements in estimates of population parameters derived from tagging and ↑capacity of developing country scientists to collect stock-level data in support of stock assessment;
3. Secondary Objective – to ↑ knowledge on small tuna resources – particularly important for food security to coastal developing states;
4. Group urged to engage in programme – to help define specific objectives in relation to SMTs – identify which aspect of population biology is most feasible – limited to conventional tags because of fish size;
5. Group agreed that most important objective is to estimate growth parameters – secondary objective to obtain migration information;
6. Group concluded that AOTTP considers little tunny as highest priority species for tagging SMTs – a secondary species should be wahoo (especially in W ATL).

## Small Tunas Species Group

**Recommendations (selected)**

1. Continue SMTYP in 2016 - improve biological information (growth & maturity) for priority spp.
2. CPCs to make arrangements to ensure large participation in group meetings;
3. Extend species description chapter of ICCAT manual for SMT species such as wahoo; Serra Spanish mackerel, West African Spanish mackerel; common dolphinfish – update for all other species except blackfin tuna (already updated in 2013);
4. Use AOTTP to study growth patterns for little tunny (E ATL) and wahoo (SW ATL) – for tagging/recapture focus on artisanal gillnets and purse seine fisheries for little tunny and on longline and handline fisheries for wahoo;
5. Secretariat to contact Statistical Correspondent and/or national scientists to revise, update and complete small tuna T1NC series and to address T2SZ inconsistencies;
6. Secretariat to continue work on data recovery and inventory process of tagging data for small tuna – active participation of relevant national scientists required;
7. Group should use simulation to evaluate robustness of candidate methods for providing management advice – especially how to reduce uncertainty by improving data collection and scientific knowledge.

## Small Tunas Species Group

**2017 Meeting**

Group suggests a 5-day workshop meeting to inform Commission of stock status based on the fisheries indicators;

Meeting objectives:

- Update the ERA analysis using the new life history parameters dataset developed by the Small Tunas Species Group for each of the 5 major ICCAT areas and extending the analysis to other gears such as purse seines;
- Assess the priority species of small tuna species by applying different data poor stock assessment methods;
- Update the metadata base for small tuna species with the new available biological information.

Tasks:

- National scientist to submit Task I and Task II data for small tunas up to 2015 a least 2 months prior to the meeting;
- The Secretariat to update the Task I and Task II data.

## Small Tunas Species Group

**Questions/Discussion/Proposed Actions**

1. Improving historical time series data for SMTs – king mackerel, Serra Spanish mackerel & wahoo by gear (separate data for FAD fisheries) are priority species for N ATL under SMTYP - submission of scientific papers to SCRS;
2. Dolphinfish and blackfin tuna – way forward?
3. Biological – life history studies – any being done?
4. Any CRFM studies to contribute to database on life history parameters?
5. Participation in AOTTP?

# Shark Species Group

Date: 25 to 29 April 2016

Venue: Madiera, Portugal

Chair: Enric Cortés, Sharks Rapporteur

Participants: CPCs (Brazil, Cabo Verde, Côte D'Ivoire, EU, Gabon, Japan, US, Uruguay, Venezuela)

Observers (Chinese-Taipei)

SCRS Chairman and ICCAT Secretariat

**REPORT: (key features)**

- Review of fisheries and biological information from SRDCP to date & plans for 2017
- Review of updated data from Secretariat & new data from scientists (emphasis on shortfin mako)
- Review data inputs for stock assessment modelling
- Recommendations
- Other matters
  - Progress on CITES-ICCAT collaborative work in West Africa and future Species Listings
  - Revised list of species for data collection;
  - Discussion on conversion factors
  - National Data Collection Programmes
  - Feedback on shark proposals at Commission

# Shark Species Group

A Reminder before we begin

Stock Status and Management Recommendations as at 2015 SCRS

| Last Assessed | Stock Status | Current management measures | Management Recommendations/Concerns |
|---|---|---|---|
| 2015 –Blue shark (N & S Atlantic);<br>2012 – Shortfin mako;<br>2009 – Porbeagle;<br>2012 – ERA for 16 species (20 stocks) | Blue shark (North Atlantic): not likely overfished; not likely experiencing overfishing<br><br>Blue shark (South Atlantic): undetermined<br><br>Shortfin mako (North & South Atlantic): not overfished; not experiencing overfishing<br><br>Porbeagle (NW Atl, SW Atl and NE Atl): overfished; not experiencing overfishing<br><br>Stocks with lowest productivity were:<br>Bigeye thresher*<br>Sandbar<br>Longfin mako*<br>Night shark*<br>Silky Shark (South Atlantic)<br><br>Most vulnerable stocks:<br>Bigeye thresher*<br>Shortfin mako and Longfin mako*<br>Porbeagle<br>Night Sharks* | Submission of shark data to ICCAT is mandatory<br>Data required on discards – dead or alive and from all ICCAT fisheries (incl recreational and artisanal; purse seines, gillnets, artisanal fisheries; entanglement in FADs)<br><br>N and S Atl Shortfin mako: Recs 04-10; 07-06; 10-06<br><br>Some other measures<br>Regulation of finning – Rec 04-10;<br>Release (dead or alive) – Rec 11-08 (Silky sharks); Rec 10-08 (Hammerheads)<br>Prohibit retaining on board, transshipping, landing, engaging in international trade – Rec 11-08 (Silky sharks); Rec 10-08 (Hammerheads)<br><br>See also Rec 10-07 (Oceanice Whitetip); Rec 09-06 (Thresher sharks); Rec 14-06 (Shortfin mako)<br><br>Several Recs require improved Task I and Task II data reporting and research | Recommends:<br>• precautionary management for stocks with greatest vulnerability and conservation concerns and with little data and high uncertainty in assessment;<br>• recent catch levels (2009 to 2013) of S Atl Blue shark should not be increased;<br>• catch levels of shortfin mako (N Atl and S Atl stocks) should not be increased with respect to 2006 – 2010 levels until more reliable assessments available;<br>• collaborate with other RFMOs and countries for recovery of N Atl porbeagle;<br>• collaborate with ABNJ for assessment of S Atl porbeagle; catches of porbeagle should not exceed current catches; prevent new targeted fisheries;<br>• encourage release of porbeagles retrieved alive, report all catches and harmonize data collection |

# Shark Species Group

A Reminder before we begin

**ICCAT Shark Research & Data Collection Program (SRDCP)**

Objective: to develop and coordinate science and science-related activities needed to support provision of sound scientific advice for conservation and management of pelagic sharks in the Atlantic.

Start Date: 2015 (developed 2013-2014; framed within SCRS Science Strategic Plan 2015-2020)

Focus on mako shark:

- pan-Atlantic age and growth study;
- population genetics study to estimate stock structure and phylogeography
- post-release mortality study focusing on pelagic longline fisheries;
- satellite tagging study to determine movements and habitat use;
- trophic relationships of Atlantic mako sharks through stable isotope and possibly fatty acid analyses.

Participating countries: Brazil, EU, Japan, Uruguay, US, Venezuela, etc. – no CRFM MS

Project to continue in 2016, 2017

# Shark Species Group

**Review of fisheries and biological information from SRDCP to date & plans for 2017**

1. Age & growth study on SMA – update:
   a. Update on number of vertebrae collected in which hemisphere and size ranges - sample distribution more complete for North – proposed workshop on age reading and growth, age validation and band deposition periodicity (great uncertainty in periodicity of band deposition for SMA) – to be presented to Group in 2017 & contribution to 2017 assessment;
   b. Population genetic studies across oceans seem to support assumption of similar growth patterns between oceans;
   c. IICAT's Tag/Recapture Database – data available for SMA (9,316 sharks tagged since 1962, 1,255 recaptured) that could contribute to derivation of growth curves.

2. Studies on habitat use and post-release survival of SMA using satellite telemetry:
   a. Described preliminary findings on SMA movement
   b. Discussed genetic project, acquisition of additional tags, tag type to capture different movement patterns and logistics of deployment;
   c. Post release mortality important to estimate to inform mitigation measures – detailed observer data may be useful;
   d. Prioritized equatorial region for future tagging as population genetic studies have identified the region as a mixing zone for SMA stocks.

## Shark Species Group

**Review of fisheries and biological information from SRDCP to date & plans for 2017**

3. Genetic population studies of SMA in Atlantic:
   a. Discussed findings – observed reproductive segregation of females (philopatric behaviour) across W, SW and SE ATL – not observed for males - study supports current stock boundary at 5°N between N and S ATL stocks – some stock mixing across boundary – possibility of local depletion of southern stock;
   b. Need to improve knowledge on mating and pupping areas and lifecycle for better understanding of population dynamics;
   c. 3 SMA stocks identified with males moving between regions which could imply different biological parameters between regions – additional samples from other areas (Caribbean, Gulf of Guinea, Mediterranean) required to help better define stock delineation;
4. Involvement of CPCs: several CPCs indicated interest in being more involved - Secretariat or Rapporteur to contact national correspondents directly to enhance participation.
5. Plans for 2016 and 2017:
   a. 2016 - €65,000 budgeted for age and growth studies on SMA (workshop and processing samples); genetics (processing SMA samples for priority areas); isotope analyses and tagging studies;
   b. 2017 – priority on filling knowledge gaps for porbeagle (Rec 15-06) as next species for assessment; continue work on SMA, commence biological projects and data collection on other species e.g. hammerhead and thresher sharks (Recs 10-08, 09-07)

## Shark Species Group

**Review of fisheries and biological information from SRDCP to date & plans for 2017**

4. Plans for 2016 and 2017:
   d. Group to work intersessionally to develop plan for 2017 – priority areas: age & growth, reproduction, tagging and population genetics – priority species: blue, shortfin mako and porbeagle sharks – 2-3 other species to be identified to begin groundwork – plan to be finalized during SCRS Shark Species meeting and presented to SCRS for consideration.

**Review of updated data from Secretariat and new data from national scientists**

1. T1NC data for SMA by stock, flag and gear presented – no major updates to historical catch series – before 1997 there is a lack of official catch statistics from some major CPCs for SMA (N & S ATL)
2. Noted comprehensive estimation of historic catches for blue shark was made in 2015 for stock assessment purposes;
3. Recommended that Secretariat coordinate with CPC scientists to develop historical estimation of catch for SMA using observer data & other potential techniques for review at Group's 2017 data preparatory meeting – specific CPCs identified for this exercise for N and S ATL stocks;

## Shark Species Group

**Review of updated data from Secretariat and new data from national scientists**

4. T2CE & T2SZ data presented to Group – noted many data gaps that could pose problem for stock assessment – but much observer data being compiled by national scientists – T2CE data not often used in stock assessments as CPCs provide stand. CPUE indices using more comprehensive data not available in Task II dataset;
5. Presented SMT conventional tagging data available in ICCAT Database – 9,316 SMA released from 1962 to 2014 – recovery rate of 13.5% (1,255 individuals) – most shark tagged in NW ATL – Group recommended continuity in this work;
6. Research program funded by France & implemented by Ifremer (SELPAL) focused on ATL Bluefin Tuna - some work a well on blue shark (habitat residency, migration, behavioural data re temperature and depth), at-vessel mortality and post-release survival rates;
7. Several CPUE SMA indices presented: Venezuela, US, Portugal, Japan, Brazil, Taiwan – see report for details;
8. Papers on life history studies presented – effects of biological parameters on population dynamics of blue shark and shortfin mako evaluated; aspects of reproductive biology of blue shark in Ivory Coast EEZ in 2015 - Authors encouraged to continue activity.

## Shark Species Group

**Review of data inputs required for stock assessment modelling**

1. Noted importance of considering Z associated with gear interactions for some fleets that discard sharks;
2. Noted growing list of literature on delayed discard mortality in sharks that could be used for 2017 SMA assessment;
3. Examined preliminary length composition data for SMA – identified gaps – discussed whether necessary to split data into sub-regions based on fleet characteristics;
4. Discussed modelling approaches and required data preparation; suggested consideration of recommendations from N ATL blue shark assessment on how to reduce data conflicts with Stock Synthesis method.

**Recommendations**

Noted €150,000 approved by Commission for SDRCP in 2017 – but SCRS assigned medium priority to these activities – since SRDCP will contribute to research and regional project monitoring requirements for Recs 15-06 (porbeagle), 14-06 (shortfin mako), 10-08 (hammerheads) and 09-07 (thresher) – strongly recommended that SCRS changes status of project to high priority.

## Shark Species Group

### Other Matters

Progress on CITES-ICCAT collaborative work in West Africa and future Species Listings

1. Secretariat informed of progress in collaborative work between ICCAT and CITES – re training course in West Africa – In light of additional shark species recently listed under CITES Appendix 2 (oceanic whitetip, porbeagle, scalloped hammerhead, smooth hammerhead, great hammerhead) – need partnerships to provide training in species identification and data collection (note that silky sharks and bigeye thresher shark are proposed for similar listing at COP 17; other thresher sharks to follow) See ICCAT Recs 11-08 and 10-08.
2. Group made aware of proposed June 2016 meeting of FAO Expert Panel to assess CITES listing amendments proposed – Secretariat to inform Rapporteur of developments.

Revised list of species for data collection

1. Work of WG on Convention Amendment – draft text of amended Convention mentions sharks that are pelagic, oceanic and highly migratory as species of interest and refers to list of species to be developed by SCRS and Commission – Group already developed list that was endorsed by SCRS in 2014 but SCRS to revise list until Convention amendment is adopted;
2. SCRS and Group to continue to develop list of species potentially caught by tuna fisheries and are part of bycatch – as ICCAT has responsibility for reporting such to other management agencies;
3. Listings of elasmobranch species defined as oceanic, pelagic and highly migratory and species of relevance for by-catch data collection were reviewed and agreed upon.

## Shark Species Group

### Other Matters

Discussion on conversion factors

1. Table of commonly used length codes for ICCAT species presented and shark species highlighted;
2. CPC scientists are to provide:
   a. equations they use for length-length and length-weight conversions for POR, BSH and SMA for different fleets – conversion factors to be tables and included in ICCAT Manual;
   b. clear definitions of their understanding of total length (this varies among CPCS);
   c. conversion factors they currently use for the relationship between dressed weight and total weight.

National Data Collection Progams

Updates from Portugal and Uruguay presented.

Feedback on shark proposals at Commission

1. 5 proposals tabled by various delegations at 2015 Commission Meeting (shark finning; porbeagle; shortfin mako; blue shark; thresher shark) but only porbeagle proposal supported and adopted;
2. Group agreed that advice based on catch limits is better provided for each stock based on sustainable harvest levels;
3. Noted discards are substantial & important source of mortality – management of discards will require Commission ask CPCs to improve monitoring of discards & SCRS to estimate discard fate;
4. Group expressed desire to be kept informed of Commission work so it can address the scientific requirements accordingly.

# Shark Species Group

**Questions/Discussion/Proposed Actions**

1. Improving historical time series data for blue shark, shortfin mako, porbeagle?
2. Shark landings data recorded by species?
3. Any shark discards? Data captures?
4. Species identification guides, data collection protocols, conversion factors?

CARIBBEAN REGIONAL FISHERIES MECHANISM

# ICCAT's SCRS Activities – Jan to Jul 2016
## Stock Assessment Meetings

**CRFM Pelagic Fisheries Working Group**
**Third Meeting on ICCAT**
**Session 2: Research and Statistics**
**18 – 19 August 2016**
**GoToMeeting ID: 798-372-677**


*Albacore (N & S Atlantic)*


*Sailfish (E & W Atlantic)*

## Albacore Stock Assessment

Date: 28 April to 06 May 2016
Venue: Madeira, Portugal
Chair: Haritz Arrizabalaga (EU-Spain), Albacore Species Group Rapporteur
Participants: CPCs (Angola, Brazil, Côte D'Ivoire, EU, Japan, US, Uruguay, Venezuela
Observers (Chinese-Tapei, International Seafood Sustainability Foundation, SCRS Chair –David Die
ICCAT Secretariat

**REPORT: (key features)**

- Summary of available data for assessment
  - *Biology*
  - *Catch, effort and size*
  - *Relative Indices of Abundance*
- Reference Points, Harvest Control Rules and Management Strategy Evaluation
- Stock Assessment
- Projections
- Management Recommendations
- Recommendations on Research and Statistics

**North ATL Stock**
Barbados*
Belize*
Grenada
St Vincent & Grenadines*
Saint Lucia
Suriname *
Trinidad & Tobago*

**South ATL Stock**
Belize*
St Vincent & Grenadines*

# Albacore Stock Assessment

A Reminder before we begin

## Stock Status and Management Recommendations as at 2015 SCRS

| Species/Stock | Stock Status (2013 assessment) | Current management measures | Management Objective /Recommendations/Concerns |
|---|---|---|---|
| Albacore (*Thunnus alalunga*) North Atlantic Stock | MSY = 31,680 t<br>2014 Yield = 26,539 t<br>2011 Yield = 20,039 t<br>$SSB_{msy}$ = 81,110t<br>$F_{msy}$ = 0.1486<br>$SSB_{curr}/SSB_{msy}$ = 0.94 (0.74 – 1.14)<br>$F_{curr}/F_{msy}$ = 0.72 (0.55 – 0.89)<br>Overfished = yes<br>Overfishing = no | • Rec 13-05: TAC = 28,000t (each year from 2014 to 2016) – 53% prob. That population levels could support MSY by 2020;<br>• Rec 98-08: Effort limit - # vessels to 1993 to 1995 average | Objectives: maintain stock in green zone (Kobe Plot) with at least 60% prob, while maintaining long term yield; if SSB<$SSB_{msy}$<br>Rebuild SSB to > $SSB_{ms}$ with 60% prob. At least by 2020 – while max. avg. catch and min. interannual fluctuations in TAC levels.<br><br>Concerns: several provisions under Rec 13-05 allow catch to exceed the established TAC level<br><br>Recommendations:<br>• Available projections under alternative HCRs for certain levels of stock recovery, at certain time frames and probabilities consistent with Rec 11-13, which Commission could consider;<br>• note at current TAC there is a 53% probability that stock would rebuild by 2019. |
| Albacore (*Thunnus alalunga*) South Atlantic Stock | MSY = 25,228 t (19,109 – 28,360 t)<br>2014 Yield = 13,681 t<br>2011 Yield = 24,129 t<br>$B_{msy}$ = 216,807 (88,380 – 595,953 t)<br>$F_{msy}$ = 0.176 (0.063 – 0.481)<br>$B_{2012}/B_{msy}$ = 0.92 (0.71 – 1.26)<br>$F_{2011}/F_{msy}$ = 1.04 (0.38 – 1.32)<br>Overfished = yes<br>Overfishing = yes | Rec 13-06:<br>TAC = 24,000t (each year from 2014 to 2016) | Concerns: considerable uncertainty about stock status and the effect of catch limits on probability of stock rebuilding<br><br>Recommendations:<br>• At current TAC probability of being in green status (F< Fmsy and B>Bmsy) would exceed 50% only after 2020;<br>• With catch around 20,000 t probability of 50% exceeded by 2015 and 60% exceeded by 2018;<br>• Lower catch levels would increase probability of recovery in those time frames;<br>• Commission to consider alternative HCRs |

# Albacore Stock Assessment

A Reminder before we begin

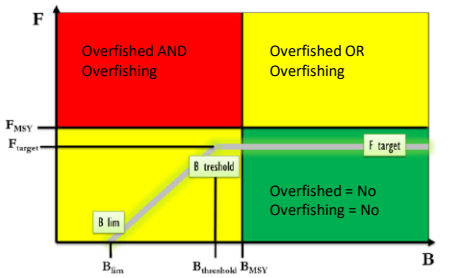
## 2015Commission Management Recommendations : ICCAT Rec 15-04 (N ATL Albacore)

1. SCRS to identify and test candidate reference points in support of management objectives;
2. Results of analyses to be discussed between scientists and managers in 2016;
3. Based on scientific analyses and management advice as well as discussions, the Commission shall adopt HCRs and pre-agreed management measures depending on stock condition;
4. SCRS to review HCRs through MSE process and considering latest stock assessment results; Commission to review and adjust HCRs as needed.

### Proposed HCRs for consideration (Rec 15-04):

- If SSB<$SSB_{msy}$ – immediate adoption of severe management actions to reduce F - including suspension of fishery; initiate scientific monitoring quota to evaluate stock status; re-open fishery only when SSB>$SSB_{msy}$ with high prob. - before re-opening develop a rebuilding plan to ensure stock goes back to green zone (Kobe plot);
- If $SSB_{lim}$ ≤ avg. SSB ≤ $SSB_{threshold}$ and F > level specified in the HCR, then reduce F to a level that will rebuild SSB to $SSB_{msy}$ or above that level.
- If avg. SSB > $SSB_{threshold}$ and F > $F_{target}$ - immediately take steps to reduce F to $F_{target}$
- Once avg. SSB > $SSB_{threshold}$ and F ≤ $F_{target}$ – ensure that applied management measures will maintain F at or below $F_{target}$.

Generic form of the HCR recommended by SCRS in 2010 that would be consistent with UNFSA (Report of the 2010 WGSAM)



## Albacore Stock Assessment

**Summary of available data for assessment : Biology**

1. **Biological parameters remained same as for previous assessments**;
2. Presentation - authors of 2014 bibliographical review on the identification of albacore populations among and within oceanic regions (Atlantic, Pacific, and Indian Oceans, and Mediterranean Sea) indicated **urgent need to review and improve management units used by RFMOs**;
3. Presentation - analysis of spatial and temporal distribution of N Albacore by Venezuelan pelagic LL observer program (1991-2014);
4. New study was published (Ortiz de Zárate and Babcock, 2015) that describes the individual growth variability in North Atlantic albacore;
5. Group agreed that **many of the critical biological parameters for Atlantic albacore are still poorly known** – impacts for stock assessment models used and management advice - substantially **more biological research is required** to **improve the quality of the scientific advice** and **to reduce the uncertainty** associated with it.

## Albacore Stock Assessment

**Summary of available data for assessment : Catch, effort and size**

1. Two documents on fishery data presented: EU-Portugal (Madeira) baitboat fishery; Venezuelan LL fleet
2. T1NC, T2CE, T2SZ information presented by Secretariat

   **North Albacore** – decreasing trend in catches since 2006 (about 37,000 t) to minimum of 20,000 t in 2011 and since 2012 slightly increasing to maximum of about 26,500 t in 2014; 90% of total yield from only 7 fleets (EU-Spain, Chinese-Taipei, EU-France, EU-Portugal, EU-Ireland) – discussed reasons for trends, data gaps etc.

   **South Albacore** – overall catch have oscillated around 24,000 t (2006 to 2012), followed by large drop to less than 14,000t in 2014 (>40% ↓); 90% of total yield from only 5 major fleets (Chinese-Taipei, South Africa, EU-France, EU-Portugal, EU-Ireland) – discussed reasons for trends, data gaps, etc.
3. Catch-at-size – matrix updated to 2014, used solely to estimate the weighted mean weights by major gear and stock

**Summary of available data for assessment : Relative Abundance Indices**

1. Several papers presented with indices – North ATL (Venezuela LL, Spain BB & TR, Taiwan LL, US LL, Japan LL); South ATL (Chinese-Taipei LL, Japan LL, South Africa PL, Brazil LL);
2. Presentations of different analyses – and agreement on which indices to use for assessment of each stock.

# Albacore Stock Assessment

## Reference Points, Harvest Control Rules and Management Strategy Evaluation

1. Noted that current work aims to contribute to potential decisions of Commission re: HCR for N ATL stock as well as decisions taken by the WG to ensure that stock assessment advice is robust to uncertainty
2. Discussed options for sharing experiences on MSE for albacore across tRFMOs, through existing Kobe Joint MSE Working Group
3. Reviewed recent progress in N ATL albacore MSE and evaluation of HCRs;
4. Presented a synthesis on discussions regarding how this work may be presented to 2016 Panel 2 and SCRS meetings;
5. Presented results of simulation work to calculate the risk associated with management decisions for N ATL albacore.


MSE is used to estimate different levels of probability of achieving management objectives by alternative HCRs, taking into account existing uncertainties that affect fisheries dynamics

# Albacore Stock Assessment

## Stock Assessment, Projections and Management Recommendations

| Stock | Assessment Methods | Assessment Results (Summary) | Projections | Management Recommendations |
|---|---|---|---|---|
| North Atlantic | BDM & sensitivity analyses | Prob $F<F_{msy}$ and $B>B_{msy}$ (green) – 96.8%<br>Prob. $F>F_{msy}$ or $B<B_{msy}$ (yellow) – 3.2%<br><br>stock has improved and is most likely in the green, although exact condition is not well determined | Projections for alternative TACs and HCRs (combinations of $F_{target}$, $B_{threshold}$, $B_{limit}$) – low confidence in prob. projected as these did not account for many sources of uncertainty | Current TAC (28,000 t) would maintain long term objectives; unable to advise on risks associated with ↑TAC – does not recommend an ↑TAC – if TAC ↑ must be done with high level of precaution and improved monitoring of stock indicators, including use of alternative fishery independent tools; further MSE necessary to consider more sources of uncertainty and robustness of advice |
| South Atlantic | ASPIC<br>BSPM<br>(8 scenarios) | 6 scenarios indicated stock is not overfished and not undergoing overfishing; 2 scenarios indicated stock is overfished but not undergoing overfishing; higher $B/B_{msy}$ and lower $F/F_{msy}$ estimated compared to last assessment<br><br>Stock status has improved and stock in the green with high probability | ASPIC and BSMP predictions – catches which enable the stock to be in Kobe green zone in 2020 with at least 60% prob. ranged from 18,000 t to 30,000t; avg. = 25,750t and median = 26,000t<br><br>Projections at current TAC (24,000 t) show 63% prob. of stock in the green zone by 2020 | Further reductions in TAC would ↑prob. of being in green zone by 2020. Catches above 26,000 t will not meet the management objective (60% prob. of being in green zone by 2020) |
| BDM – Biomass Dynamic Model; ASPIC - – Stock Production Model incorporating Covariates; BSPM - state space surplus production model | | | | |

## Albacore Stock Assessment

**Recommendations on Research and Statistics (selected)**

1. Future research to investigate impacts of mixed layer depth on catchability of surface fisheries and inspection of sources of historical environmental information to help integrate this info into CPUE standardizations;
2. ↑ efforts to obtain historical series data (catch, effort, catch-at-size, geographical distribution, etc. & to obtain revised catch-at-size by month and 5x5 for Chinese Taipei;
3. Explore more fully better ways to incorporate spatial and targeting efforts into CPUE standardizations – joint analysis across multiple fleets recommended for WGSAM;
4. Accelerate biological research – current parameters based on limited research – need to assess whether these parameters have changed over time or if current observations are consistent with estimates from limited studies;
5. Further elaboration of MSE framework – testing complete range of uncertainties – for better characterization of uncertainty in current and future stock conditions – improved management advice;
6. List of research lines to be prioritized and budgetted for next meeting of Albacore Species Group;
7. Scientists be encouraged to participate in Joint MSE Technical Working Group meeting scheduled for November 2016;
8. Kobe matrix – valuable tool for promoting dialogue on uncertainty between managers and scientists – need to investigate additional communication tools.

## Albacore Stock Assessment

**Discussion/Questions/Proposed Actions**

1.

# Sailfish Stock Assessment

Date: 30 May to 03 June 2016
Venue: University of Miami (Rosensteil School of Marine and Atmospheric Science)
Chair: Dr Freddy Arocha, Billfish Species Group Rapporteur
Participants:

**REPORT: (key features)**

- Summary of available data for assessment
  - *Biology: genetics, distribution, age, growth, natural mortality, size at maturity*
  - *Catch, effort and size*
  - *Relative Indices of Abundance*
- Stock Assessment
- Management Recommendations
- Recommendations on Research and Statistics
- Other Matters – The Caribbean Billfish Management and Conservation Plan

**West ATL Stock**
Barbados*
Belize*
Dominica
Grenada
St Vincent & Grenadines*
Saint Lucia
Trinidad & Tobago*

**East ATL Stock**
Belize*
St Vincent & Grenadines*

# Sailfish Stock Assessment

A Reminder before we begin

Stock Status and Management Recommendations as at 2015 SCRS

| Species/Stock | Stock Status (2009 assessment) | Current management measures | Management Recommendations/Concerns |
|---|---|---|---|
| Sailfish (*Istiophorus albicans*) Western Atlantic Stock | MSY = 600 – 1,100 t<br>2014 Catches (prov) = 666 t<br>$B_{2007}/B_{msy}$ = possibly <1.0<br>$F_{2007}/F_{msy}$ = possibly > 1.0<br>Overfished = possibly<br>Overfishing = possibly | No ICCAT management measures/regulations in effect<br>Some countries have established domestic regulations e.g. release from longline vessels, minimum size restriction, circle hooks and catch and release in sport fisheries | Concerns: incomplete reporting of catches, especially in recent years – uncertainty in stock assessments<br><br>Recommendations:<br>• all countries landing or having dead discards report to ICCAT;<br>• catches should not exceed current levels;<br>• adoption of measures to reduce mortality, such as mandated use of non-offset circle hooks;<br>• consider actions to reduce mortality in non-industrial fisheries |
| Sailfish (*Istiophorus albicans*) East Atlantic Stock | MSY = 1,250 – 1,950 t<br>2014 Catches (prov) = 786 t<br>$B_{2007}/B_{msy}$ = Likely < 1.0<br>$F_{2007}/F_{msy}$ = Likely > 1.0<br>Overfished = Likely<br>Overfishing = Likely | | |

## Sailfish Stock Assessment

**Summary of available data for assessment : Biology**

*Genetics :* samples from western North Atlantic (Florida, Senegal and Brazil) – Results: genetic stock structure between both the eastern and western Atlantic, and northern and southern hemispheres - further work to confirm results – use of samples from Côte d'Ivoire, EU-Portugal, EU-Spain, Uruguay and Venezuela anticipated

*Distribution :* paper on prediction of distribution using GAMs for the Gulf of Mexico – Results: probability of catching a sailfish and the CPUE are most influenced by sea bottom depth and sea surface temperature; seasonal flux with increased CPUE between April and September; higher catch rates associated with fronts

*Age, growth, Natural Maturity and Size at Maturity:* reviewed and compared growth parameters from studies in Atlantic and Pacific Oceans and agreed to use parameters derived for Gulf of Tehuantepec, Mexico (most plausible) for exploratory assessment model runs (Linf = 206.83; K = 0.36 and T0 = -0.24); agreed on estimate of M (0.35 after Hoenig, 1983) and mean maximum age (12 years) based on age & growth and tagging information; new estimate of size at maturity presented at 2014 Billfish Species Group Meeting and 2015 SCRS Species Group Meeting (L50 = 142.12 cm LJFL @ 3 yrs) – using data from Brazil and Venezuela for west Atlantic sailfish stock

## Sailfish Stock Assessment

**Summary of available data for assessment : Catch, effort and size**

*Task I nominal catch (1950 to 2015):*

1. Summarized statistics by stock, flag and gear;
2. Updates to historical catch series for Venezuela (longline, artisanal);
3. Noted that for 2 key fisheries data were either absent (Grenada) or reported catches were very low (mixed flags FR and ES) in recent years – decided how to address these issues;
4. Observed sailfish by-catch was linearly related to observed tuna catch for both FAD and free sets – used this relationship with Task II data (by year and fishing mode and stratum/area) to estimate total sailfish by-catch;
5. Noted that reported catches were most certainly lower than true catches – agreed to use catches reported for 2008 to 2010 as carry-over for 2011 to 2014 in assessment;
6. Notes strong decline in total reported catches since 2010 –attributed to product of fisheries management actions (billfish rebuilding plan targeting marlins also beneficial) or changes in fishing operations;
7. Noted that live release information not provided (to demonstrate impact of prohibition of retaining billfish catch); few fleets report dead discard information;
8. Expressed concern about high uncertainty re: removals;
9. Concluded that Ghana catches (1950s – 1989) incorrectly estimated and tested assessment sensitivity to these statistics by generating alternative catch series for the period

# Sailfish Stock Assessment

**Summary of available data for assessment : Catch, effort and size**

*Task II catch and effort and size information (1990 to 2015):*

1. Presented data for East and West Atlantic Stocks;
2. Noted many gaps in datasets – limits use of integrated stock assessment models;
3. Noted that much size information exists for Venezuela from EPBR and JDMIP – data being compiled for inclusion in ICCAT database – even though not official Task II data;
4. Task II CE data not often used in stock assessments as CPCS usually provide standardized CPUE indices based on more comprehensive data not available in Task II data set;
5. ICCAT Database – contains conventional tagging data for sailfish – from 1950 to 2011 – 115,743 individuals tagged and released – 1.7% recapture – most tagging took place in western Atlantic – this work was acknowledged – recommended exploration of methodologies to include this information on the stock assessment framework

**Summary of available data for assessment : Relative Indices of Abundance**

Separate indices provided for: Venezuela (recreational fishery); US recreational billfish fishery; Brazilian tuna longline fleet; Senegal (artisanal fishery); Ghanian drift gillnet artisanal fishery; Portuguese pelagic longline fleet; EU-Spain surface longline fleet; Japanese tuna longline fishery; Chinese-Taipei distant water longline fishery; indices presented at 2014 intersessional meeting of Billfish Group and 2015 SCRS Species Group meeting.

See report for further details on fishery, time period, spatial coverage and specific papers presented.

# Sailfish Stock Assessment

**Stock Assessment & Management Recommendations**

| Stock | Assessment Methods | Assessment Results (Summary) | Management Remarks | Management Recommendations |
|---|---|---|---|---|
| West Atlantic | ASPIC<br>BSPM<br>ASPM<br>SRA | Inconclusive – conflicting results with different models - results should be interpreted with caution -<br>MSY estimates between 1,200 and 1,400 t and current catches well below this level but B may be below Bmsy (overfishing could be occurring) | Concerns:<br>conflicting trends in abundance indices;<br>reported catches, including dead discards are incomplete;<br><br>BUT more abundance indices available; improvements in CPUE standardizations; new data and modeling approaches used.<br><br>Results for Eastern stock more pessimistic than the Western stock (more results indicate recent stock biomass below $B_{msy}$) | Considering the uncertainty in assessment results, catches should not exceed current levels. One way of reducing fishing mortality could be to use non-offset circle hooks as terminal gear (as currently done by Brazil, Canada and US) |
| East Atlantic | BPM<br>ASPIC<br>SRA | All models showed similar trends in biomass trajectories and fishing mortality levels – greatest decline in abundance experienced prior to 1990s – stock is overfished but overfishing status and recovery status are uncertain | | At a minimum, catches should not exceed current levels; considering the possibility of overfishing occurring – Commission may consider reductions in catch levels |

BPM – Biomass Production Model; ASPIC – Stock Production Model incorporating Covariates; SRA – Stock Reduction Analysis; BSPM - Bayesian state space surplus production model; ASPM - Age Structured Production Model

## Sailfish Stock Assessment

### Recommendations on Research and Statistics

1. Update sailfish section in ICCAT Manual to reflect new life history parameters estimated in recent years;
2. Estimate more robust growth parameters for Atlantic Sailfish Stocks;
3. Consider new information about stock structure prior to future assessments;
4. Evaluate tagging data for western Atlantic prior to next assessment to determine if data can be formatted for inclusion in associated stock-synthesis models;
5. All CPCs to report dead discards as well as complete landings and representative size samples from ALL their fisheries;
6. Review sailfish catches reported by Ghana;
7. Include combined abundance indices of fleets with similar operational characteristics in future assessments of billfish stock status;
8. Consider how to reconcile divergent CPUE patterns that may be a function of changes in fleet spatial distribution, oceanography or targeting.

### Other Matters

The Caribbean Billfish Management and Conservation Plan was made available since the deadline for document submission to ICCAT. Due to time constraints the document was not reviewed but any comments and information could be addressed to the author.

## Sailfish Stock Assessment

### Discussion/Questions/Proposed Actions

1. Improving historical time series data on catches?
2. Any discards? If so are these recorded?
3. Any size data recorded?
4. The way forward?

# CRFM PELAGIC FISHERIES WORKING GROUP (CRFM-PWG)
# REPORT OF JOINT FOURTH AND FIFTH MEETINGS ON ICCAT
## Virtual Meeting, 02 November 2016

### 1. Meeting Registration
The list of participants is given in Appendix 1.

### 2. Opening and Prayer
The meeting was called to order by CRFM Secretariat's Deputy Executive Director, Susan Singh-Renton, who thanked those participants in attendance for their sustained effort with regard to advancing the aims of the meeting. Dr. Singh-Renton then also offered a prayer, and served as the PWG Chairperson for the meeting.

### 3. Review and Adoption of Agenda
The PWG Chairperson proposed a slight amendment to the agenda: she requested that a new agenda item be included to facilitate review of the last meeting's report, and that this be made agenda item 5. The agenda was adopted with this amendment, and is provided in Appendix 2.

### 4. Procedural matters
The PWG Chairperson noted that as the fourth meeting had to be deferred because of storm conditions, the fourth and fifth meeting agendas had been merged for the present meeting. As a result, the present meeting was expected to last about 3 hours. As such, it was agreed to have a 10-minute break during 11:30-11:40 a.m.

### 5. Report of the Third Meeting of the CRFM PWG on ICCAT
The PWG Chairperson reminded the meeting that the report had been circulated, and that all comments so far received had been incorporated. The revised report of the last meeting was then considered and endorsed without further amendments.

The meeting then considered the following matters arising.

Convention Amendment – regarding the inter-sessional activity of the virtual working group, Mr. Robinson from Belize advised that the virtual working group did not meet.

Regarding the issue of inclusion of food security and livelihood concerns in the convention text, Mr. Rennie had shared the IWC 2014 report and a resolution on food security proposed by Ghana. While the resolution did address the issue of food and nutrition security, the IWC convention text did not mention it specifically. Still on the same issue, the PWG Chairperson provided an update regarding investigation of other RFMO convention text treatment of food security and livelihoods, and advised that she had been able to examine the IOTC and WCPFC Convention texts. While the IOTC text did not include a specific provision on food security and livelihoods, the WCPFC Convention text did mention it in Article 10 dealing with Functions of the Commission, and specifically included it for consideration in development of criteria for total allowable catch or for total level of fishing effort. The PWG Chairperson pointed out that the treatment was consistent with ICCAT's catch allocation criteria document that had recently been made a resolution.

Sharks and Data and information management – As it had not yet been received by the Secretariat, Mr. Isaac was reminded of the request to Grenada to share its fisher ID manual for oceanic white-tip, scalloped, great & smooth hammerhead sharks and the blue shark, species of interest to CITES. The PWG chairperson then reminded the meeting that the remaining data and information issues were intended to be addressed during a specific and separate meeting.

## 6. Proposals being considered by ICCAT in 2016

During its third meeting, the PWG had identified 14 issues for which ICCAT had prepared specific documentation to inform possible development of management measures by ICCAT in 2016. A list of these documents follows.

Panel 2 –

1) Proposal by the EU for a recommendation on establishing harvest control rules for the north Atlantic albacore stock;
2) SCRS proposed list of candidate reference points for informing harvest control rules, as amended by Panel 2 in 2016;

Compliance Committee –

3) Proposal by Japan to improve the Operation of the Compliance Committee;
4) Letter from the ICCAT Chairman on compliance issues;
5) Proposal by Japan to improve compliance review of shark conservation and management measures;
6) Proposal by the Compliance Committee Chair for improving Compliance Tables - process for review and approval, formatting, and other issues;
7) Proposal by the USA for a resolution on guidelines to facilitate an efficient and effective compliance review process;

Convention Amendment –

8) Inter-sessional activities of virtual working group;

Ad Hoc Working Group on FADs –

9) CARIFICO activities aimed at supporting analysis of data on FAD fishing operations for informing improved FAD fishery management;

Integrated Monitoring Measures –

10) Proposal by the EU for a Recommendation on transhipment;
11) Proposal by the EU for a recommendation to establish a scientific observer program within the ICCAT Convention Area;
12) Proposal led by the EU for a recommendation/ resolution for a model joint international inspection scheme;
13) Proposal by the Permanent Working Group for Improvement of ICCAT Statistics and Conservation Measures (PWG) to update and consolidate ICCAT measures {[94-09] and [97-11]};
14) Information on the implementation of Recommendations 12-07 and 14-08 on port measures, particularly management of capacity building requests.

The PWG Chairperson reminded the meeting that these documents had been presented at the Third Meeting, and highlighted again some of the main points. The meeting then considered updates since the last meeting, as well as the latest versions that had been posted on the ICCAT website. Some updates were already addressed at item 5 and were therefore not reiterated. Representatives from Belize and Trinidad and Tobago confirmed that they had received directly from the USA that country's proposal for the Compliance Committee, and that their countries' inputs were being sought. Besides this, no further details or updates were provided, and no concerns or queries were raised regarding the proposals. The PWG Chairperson recognized that countries and participants may still be studying the proposals. In consequence, she proposed that if queries arose in the days prior to the ICCAT Commission meeting and

also during the Commission meeting, these queries could be shared and discussed with the PWG electronically. This proposal was accepted.

**7. Review of 2016 SCRS report and recommendations**

The meeting considered two working reference documents, which provided ICCAT SCRS species stock assessment and management information in summarized, ready-to-use, MS word and excel formats. The documents were prepared and presented by the PWG Chairperson, and were essentially key extracts from the 2016 ICCAT SCRS report. The documents had been prepared for use by Member States attending the Commission meeting and also to guide ICCAT cooperation activities over the next year for which the scientific information would remain valid.

**8. Any Other Business**

No other business was tabled.

**9. Adjournment**

The Chairperson asked if there were any final remarks or other inputs prior to adjournment. Mr. Robinson thanked the Chairperson for the documents she had prepared to serve as ready working reference documents containing essential information pertaining to developments at both the SCRS and Commission levels.

The meeting was adjourned at approximately 1 p.m.

**Appendix 1: List of Participants – Joint Fourth & Fifth CRFM PWG Meeting on ICCAT**

| Country | Name of Representative | Affiliation | Email Address |
|---|---|---|---|
| Belize | Robert Robinson<br>*Deputy Director* | Belize High Seas Fisheries Unit | Deputydirector.bhsfu@gmail.com |
| Grenada | Crafton Isaac<br>*Fisheries Officer* | Fisheries Division | Crafton.isaac@gmail.com |
| St. Kitts & Nevis | Nikkita Browne<br>*GIS and Oceanography Officer* | Department of Marine Resources | Nikkita.browne@yahoo.com |
| Trinidad & Tobago | Elizabeth Mohammed<br>*Director of Fisheries* | Fisheries Division | emohammed.fdtt@gmail.com |
| | Louanna Martin<br>*Fisheries Officer* | | lmartin@govt.tt<br>lulumart@hotmail.com |
| CRFM Secretariat | Susan Singh-Renton<br>*Deputy Executive Director* | CRFM Secretariat | susan.singhrenton@crfm.int |

**Appendix 2: Agreed Agenda - Joint Fourth & Fifth CRFM PWG Meeting on ICCAT**

| Item | Title | Date & Time (Eastern Caribbean Time) |
|---|---|---|
| 1 | Registration of attendance | 09:45 – 10:00 a.m. |
| 2 | Opening and prayer | 10:00 - 10:05 a.m. |
| 3 | Review and adoption of agenda | 10:05 - 10:10 a.m. |
| 4 | Procedural matters | 10:10 - 10:15 a.m. |
| 5 | Report of the Third Meeting of the CRFM PWG on ICCAT | 10:15 - 10:30 a.m. |
| 6 | Panel 2 –<br>1) Proposal by the EU for a recommendation on establishing harvest control rules for the north Atlantic albacore stock;<br>2) SCRS proposed list of candidate reference points for informing harvest control rules, as amended by Panel 2 in 2016;<br>Compliance Committee –<br>3) Proposal by Japan to improve the Operation of the Compliance Committee;<br>4) Letter from the ICCAT Chairman on compliance issues;<br>5) Proposal by Japan to improve compliance review of shark conservation and management measures;<br>6) Proposal by the Compliance Committee Chair for improving Compliance Tables - process for review and approval, formatting, and other issues;<br>7) Proposal by the USA for a resolution on guidelines to facilitate an efficient and effective compliance review process;<br>Convention Amendment –<br>8) Inter-sessional activities of virtual working group;<br>Ad Hoc Working Group on FADs –<br>9) CARIFICO activities aimed at supporting analysis of data on FAD fishing operations for informing improved FAD fishery management;<br>Integrated Monitoring Measures –<br>10) Proposal by the EU for a Recommendation on transhipment;<br>11) Proposal by the EU for a recommendation to establish a scientific observer program within the ICCAT Convention Area;<br>12) Proposal led by the EU for a recommendation/ resolution for a model joint international inspection scheme;<br>13) Proposal by the Permanent Working Group for Improvement of ICCAT Statistics and Conservation Measures (PWG) to update and consolidate ICCAT measures {[94-09] and [97-11]};<br>14) Information on the implementation of Recommendations 12-07 and 14-08 on port measures, particularly management of capacity building requests. | 10:30 - 11:45 a.m. |
| 7 | Review of 2016 SCRS report and recommendations | 11:45 – 12:45 p.m. |
| 8 | Any Other Business | 12:45 - 12:55 p.m. |
| 9 | Adjournment | 12:55 – 1:00 p.m. |

# CRFM PELAGIC FISHERIES WORKING GROUP (CRFM PWG)
# REPORT OF SIXTH MEETING ON ICCAT
## Virtual Meeting, 07 November 2017

### 1. Registration of attendance
The list of participants is given in Appendix 1.

### 2. Opening and Prayer
The CRFM Secretariat's Deputy Executive Director, Susan Singh-Renton, called the Meeting to order at 10:00 a.m. and offered a short Prayer.

The Meeting's Agenda was adopted without change. The Agenda is given at Appendix 2.

Dr. Singh-Renton, who served as the PWG Chairperson for the meeting, welcomed all to the Meeting and advised that the discussions would be focused on the 2017 SCRS Report[1]. The Meeting was also expected to review and discuss any ICCAT compliance issues for 2017, as well as discuss CRFM Secretariat's virtual technical support needs for the 25th Regular Commission Meeting.

### 3. Review and discussion of ICCAT SCRS 2017 report
The Chairperson presented this item. The Chairperson noted that the Standing Committee on Research and Statistics (SCRS) was a very important committee within ICCAT. The SCRS looked at how data was reported to ICCAT, and the state of stocks; identified research needs; and examined the understanding of the biology and ecology of the stocks. The SCRS identified strengths and weaknesses in the science and in the data, and developed recommendations which informed the Commission's discussions and adoption of recommendations.

The Chairperson then drew the meeting's attention to the Table of Contents of the 2017 SCRS Report and noted that key items were the Executive Summaries on Species, which provided the latest information on tuna and tuna-like species. She encouraged PWG members to read the Executive Summaries even if they were unable to read the entire report. The Chairperson added that important information was also provided in the following sections of the SCRS Report:

*Reports of Inter-sessional Meetings* – These meetings were usually data preparatory meetings or combined data preparatory and assessment meetings. Details of the data used, the interpretation of the science for informing the use of biological parameters in the stock assessment models, etc., were provided in the reports of these inter-sessional meetings.

*Reports of Data Collection and Special Research Programmes* – ICCAT usually had several data collection and research programmes ongoing. These included data recuperation programmes, such as the one for small tunas, tagging programmes, and an Atlantic-wide Research Programme for Bluefin Tuna (GBYP), which contributed significantly to improving the assessment of bluefin tuna. The research programmes usually provided fisheries independent information to the scientists, which was very

[1] ICCAT. (2018). Report of the Standing Committee on Research and Statistics (SCRS) for biennial period, 2016-17 Part II (2017) – Vol. 2. Madrid, Spain. ICCAT Secretariat. 465pp.

important in light of the many changes observed in the fishing operations for some species; changes that brought uncertainty to the assessments.

*Reports of the SCRS Sub-committees* – The SCRS had two sub-committees, the Sub-committee on Statistics and Sub-committee on Ecosystem and By-catch. The Sub-committee on Statistics was working on developing an on-line reporting system for submission of statistical data to ICCAT. The Sub-committee on Statistics examined in detail the quality of statistics used for the various assessments, as well as monitored the level of reporting or non-reporting by CPCs. The Sub-committee on Ecosystem and By-catch looked at methodologies for developing the ecosystem approach to fisheries and also examined issues of sea turtle by-catch and sea bird by-catch.

*Report of the Ad Hoc Working Group on FADs* – There was increased interest in FADs, especially drifting FADs due to the rapid increase in their use particularly in Eastern Atlantic fisheries (as many as 500 FADs per boat deployed at a time). It was therefore important for ICCAT to monitor FAD fishing operations and to gather the necessary data that would help understanding of the impacts of FADs on fishing effort, on efficiency, as well as the impacts on the biology and ecology of the stocks.

*Report of the Standing Working Group on Dialogue between Fisheries Scientists and Managers* – In recent years this Working Group had been looking at development of harvest control rules (HCR) and management strategy evaluation (MSE). This was a work-in-progress for ICCAT but countries especially those involved in MSC, eco-labelling, etc. should pay particular attention to these developments. The aim was to get stakeholders to understand the rationale for certain decisions and to agree on certain trigger points and accompanying management responses, if these trigger points were attained.

*Science Strategic Plan 2015-2020 and Work Plan for 2018* – A report on implementation of the Strategic Plan was prepared in 2017. The Annual Work Plan provided information on which species would be assessed in 2018, as well as the inter-sessional meetings scheduled for the year.

*General recommendations to the Commission* – Important information from the species assessments was repeated here for emphasis and usually included recommendations on improved reporting or research recommendations, such as establishment of a research programme, which have financial implications.

*Responses to the Commission's requests* – These were usually requests to the SCRS for additional information to better inform Commission decision-making. The Chairperson recognized that the report was a lengthy one, and so suggested that countries pay attention to information and recommendations that applied to their particular situations and gave as an example the recommendations of the FAD Working Group, which could impact CRFM Member States. She added that it was important for countries to understand what and why the scientists were saying what they were saying, so that at the ICCAT Commission Meetings countries could defend their positions, if necessary.

*Other matters* - Included such items as collaboration with other international organizations, and ICCAT peer-reviewed publications, etc.

*Appendices* – These included the reports of research programmes and the Sub-committees on Statistics and Ecosystems and By-Catch.

Following her overview of the Table of Contents, the Chairperson advised the Meeting that when she had read the report she had highlighted aspects that she thought would be of interest to the PWG. The Chairperson offered to share the report with the highlighted sections with the PWG, particularly for members who may not have time to read the whole report. She nevertheless strongly urged PWG members to read the entire report, if possible.

The Chairperson then briefly went through some of these highlighted areas. In the Secretariat's Report on its Research and Statistics activities a table which provided information on reporting of Task 1 and Task 2 data was included. The Chairperson noted that the level of reporting of Task 1 and Task 2 data was in included in the SCRS Chairman's report to the Commission. She noted further that reporting of data was a big issue at ICCAT and for some species it was worse than others, for example billfishes where the focus was on artisanal and Caribbean fisheries. The ICCAT Secretariat had been looking at electronic sharing of documents for several years now, and some information, such as the Commission Meeting documents were now downloadable directly from the ICCAT website. There was also direct online reporting for countries to submit statistical data. Regarding the ICCAT– Japan Capacity-building project, Japan had signalled its commitment to continue it, but had not yet replaced the Japanese expert.

Under the Review of national fisheries and research programmes, an appeal was made for countries to follow the revised guidelines for preparation of the Annual Reports including summary tables. The Chairperson noted that no CRFM Member State had submitted its summary on time so that it could be included.

**Species Executive Summaries**

The Chairperson advised that for the purpose of this meeting, discussions will be focussed on the assessments completed in 2017. The Executive Summaries included a brief outline of the biology of the species being assessed and provided rationale for the assumptions used in the stock assessments, such as a single Atlantic stock for yellowfin tuna. The Chairperson noted that no new assumptions had been made for any of the major species. In the case of yellowfin tuna, which was assessed in 2016, the stock was considered to be slightly overfished (5% below $B_{MSY}$) but overfishing was not occurring. Maintaining catch levels at the current TAC of 110,000 t was expected to maintain healthy stocks through 2024. Despite the 2016 catches having exceeded the recommended TAC by 16%, no major changes were anticipated for yellowfin at the 2017 Commission meeting. The Chairperson said that the SCRS presentations on the species may include fisheries, distribution, catches, and outputs from models, trends in $F_{MSY}$ through the models used, as well as the Kobe matrix, Kobe Phase Plot and Kobe Quadrant, which gave probability.

***Bigeye Tuna***

The last assessment of bigeye tuna was done in 2015. The Committee was very concerned about rapid changes in the fishing operations. Purse seiners had moved out of the Pacific and back into the Atlantic in recent times; there had been a rapid increase in the use of FADs and a drastic change in the mean weight of bigeye tuna due to the very heavy fishing on FADs; and as the fishery was selecting for smaller individuals the stock had decreased the estimate of the MSY. The Committee recognized the assessment was very uncertain; there was an estimated 70% chance that the stock was overfished and that overfishing was occurring. The TAC for bigeye tuna had been set for the period 2016-2018 at 65,000 t. The Chairperson said that notwithstanding the updated scientific advice, it was not anticipated that bigeye would be discussed at the 2017 Commission meeting. However, she would continue to monitor the meeting documents to see if any bigeye tuna issues may be raised, so that the PWG could discuss these. The Chairperson added that if any issue was raised it was likely to be about FAD operations and improving reporting from that fishery.

**Skipjack tuna**

The last assessments were done in 2014 both for east and west skipjack stocks. This species presented some issues for ICCAT as the possibility of sub-stocks existed, due to the low mobility of the species. However, for the 2014 assessments ICCAT maintained the two stock (east and west) hypothesis. There were more problems in the east. Numerous changes had occurred in the fishery since the early 1990s, including rapid increase in the use of FADs and the latitudinal expansion (the westward extension of the

fishing area), which resulted in an increase in the catchability of skipjack and in the proportion of biomass exploited. Belize was listed among the countries with major purse seine fisheries for skipjack tuna in the eastern Atlantic. The progressive use of FADs and the latitudinal expansion have been affecting all tropical tunas i.e. yellowfin, bigeye and skipjack. It was difficult to discriminate fishing effort between free schools and ones using FAD fishing in the eastern Atlantic because the fishing strategies can change from one year to the next and also the sea time devoted to activities on FADs was difficult to quantify.
The Chairperson reiterated that the progressive use of FADs, the latitudinal expansion and the transfer of European purse seiners to the Atlantic due to piracy in the Indian Ocean all posed challenges for the assessments. In terms of management recommendations, for the eastern Atlantic it was recommended that the catch and effort levels did not exceed the level of 2012-2013 catch or effort; and cautioned that increasing harvests or fishing effort for skipjack would have consequences for yellowfin and bigeye tuna. For the western Atlantic, the catch rates were fairly stable, but recognizing uncertainties in the data, the Committee recommended that the catches should not be allowed to exceed the MSY.

**Albacore**

North and South Atlantic Albacore were both assessed in 2016, and in 2017 there was a new assessment for Mediterranean Albacore.

*Mediterranean Albacore* – Although there appeared to be just two main players in the fishery, the available information was insufficient to reasonably estimate MSY and the results of the assessment were highly uncertain and did not indicate whether overfishing was occurring or the stock was overfished. Despite the high uncertainty, the results would seem to indicate that recent albacore median biomass levels were at about what they should be and median fishing mortality levels were below MSY, which suggested that the stock was likely to be in a reasonable condition. Due to the uncertainty, increases in catch and effort should be avoided, and the Committee recommended that catches should be maintained below MSY at least until more information was available. The Committee also advised that recent catches were close to the MSY. The Chairperson pointed out that there was no catch limit for Mediterranean albacore and remarked that it was possible that a recommendation could be put forward for Mediterranean albacore for a TAC set lower than MSY.

*North Atlantic Albacore* – The data sets were very developed and north Atlantic albacore was a candidate species for developing work on harvest control rules and management strategy evaluation. The probability of the stock currently being in the green area of the Kobe plot (not overfished and not undergoing overfishing) was 96.8%; while the probability of being in the yellow area was 3.2% and the probability of being in the red area (overfished and undergoing overfishing) was 0.0%. The stock appeared to be in a reasonably healthy state, which the Chairperson remarked was good news for countries like Belize and St. Vincent and the Grenadines which fished this species and would like to be able to take more. Regarding the effect of current regulations, a TAC of 28,000 t was established in 2001 and catch remained substantially below the TAC in all but three years including 2016. There was no mention of unreported catches, but it was indicated that this might have accelerated rebuilding. Projections assuming catch levels similar to those observed during the last 5 years suggested that biomass would continue to increase and was likely sustainable. It was possible therefore that the TAC of 28,000 t would remain in place.

*South Atlantic Albacore* – The data sets were not as developed as those for north Atlantic albacore, however the assessment was completed and the results showed a 3% probability for the stock to be overfished and experiencing overfishing; a 31% probability for the stock to be either overfished or experiencing overfishing but not both; and a 66% probability that biomass was above and fishing mortality below Convention objectives. The stock was in a reasonable state but not as good as the north Atlantic albacore. A TAC of 24,000 t was proposed and this gave a 63% probability of being in the green quadrant of the Kobe plot by 2020.

*PWG discussion*

The Chairperson queried if Belize fished for bluefin tuna. The Belize representative, Robert Robinson responded that Belize did not fish bluefin tuna neither did they fish any Mediterranean stocks.

Patricia Hubert-Medar of Saint Lucia queried the recommendation in relation to FADs. By way of response, the Chairperson said that the Committee did not seem to understand enough to be very precise about the limitations on FADs and opined that the Committee may have chosen a limit that it considered practical for the purse seine fishery to deal with. The Chairperson further explained that it appeared that a vessel could deploy multiple (500 or more) FADs at a time, and so a fishing capacity limit was set.

Robert Robinson of Belize referred to the capacity limit of 500 FADs per vessels and concurred with the Chairperson that not much was known about the effects of FADs on the ecosystem and the stocks, so that number was set to freeze the limit for FADs. Vessels often deployed the FADs to fish and would go back to them periodically, so the capacity limit was set in an attempt to avoid any vessel having more than 500 FADs in the water at any one time. Purse seiners typically had 200-350 FADs in the water at a time. Some fishers had beacons on the FADs and they knew exactly what species were under the FADs. FADs were very effective fishing tools for the purse seiners especially.

The Chairperson noted Mr. Robinson's comment about the number of FADs (200-350) that purse seiners usually deployed, and expressed that there must have been a reason for the 500 limit. Mr. Robinson said that the 500 FADs was just a number chosen to attempt to put some limit on the capacity; there was no real science behind it. Mr. Robinson also informed the PWG that ICCAT had established a FAD Working Group to try to understand the science behind FAD operations in the ocean and to set a more concrete, scientifically-sound limit for FAD operations. The Chairperson concurred with Mr. Robinson's intervention and added that the fishing effort and fishing operations in the purse seine fishery for tropical tunas and fisheries using drifting FADs seemed to be changing. The Chairperson made reference to the tropical tuna summaries, which spoke to the need to stop discarding and noted that it had been suggested that the best way to do this was to *prohibit* discarding, and remarked that all these issues impacted management of the tuna fisheries. The Chairperson concluded by saying that the limit was an arbitrary one and ICCAT was still developing the information base on the FAD fishery and a FAD Working Group had been established to assist with this.

**Bluefin tuna**

Although ICCAT was aware of some mixing in the middle of the north Atlantic, for the 2017 assessment Eastern, Western and Mediterranean stock hypotheses were maintained. The Committee has had problems with data; however the Bluefin Research programme has collected interesting fisheries independent data that better informed the biological parameters used in the assessments. However, little progress had been made in relation to stock recruit relationships. In 2017, the focus was not on MSY but rather the reference point of F0.1 was used, which had been rationalized based on information from the GBYP. ICCAT acknowledged that some bluefin tuna catch remained unreported; and estimated that actual catch was probably close to 50,000 t. for the eastern Atlantic and the Mediterranean. A reconstructed catch was used in the 2017 assessment, rather than the reported catch. With regard the management recommendations, it had been suggested that catches up to 38,000 t will give a greater than 60% probability of maintaining F below the required level. However, if a decrease in the stock was observed then the catch would have to go back down 36,000 t, and for this reason the Committee recommended that the TAC for bluefin tuna East be set at 36,000 t and institute a step-wise approach to increasing TAC. The Chairperson noted that the recommended TAC of 36,000 t was greater than the reported yield, because of the unreported catch and expressed concern that unreported catch and illegal fishing would continue.

With regard to the Western stock a similar approach was taken and F 0.1 reference point was used in the assessment instead of MSY. Although the stock appeared to be depleted, overfishing was not occurring. In terms of the management recommendation, the Committee advised that constant catch for 2018-2020 should not be greater than 2,500 t. However the Committee noted that nearly all constant catch options greater than 1,000 t. would result in a decrease in biomass. The Chairperson opined that the TAC should therefore be lower than the TAC of 2,000 t set in 2016, and added that given the assessment results the TAC would likely be re-negotiated at the Commission Meeting.

**Blue Marlin, White Marlin & Sailfish**

*Blue Marlin* - Blue Marlin was assessed in 2011 and the assessment result was very similar to what was done previously. The stock was overfished and concern was expressed about high uncertainty in relation to data and productivity of the stock. The Committee was concerned with the significant increase in the contribution from non-industrial fisheries to the total blue marlin harvest and that these fisheries were not fully accounted for in the ICCAT database. The Committee was seriously concerned over this data limitation. There was severe under-reporting occurring in some fisheries. The Chairperson noted that current management measures for blue marlin included a TAC of 2,000 t up to 2018, and opined that this year (2017) there could possibly be a recommendation in relation to the artisanal fisheries and would either be addressed through a new recommendation or through compliance.

*White marlin*

The situation with white marlin, which was assessed in 2012, was similar to that for blue marlin. The stock remained overfished but overfishing was likely not occurring. As with blue marlin, concerns were also expressed about the contribution from non-industrial fisheries not accounted for in the ICCAT database and the data limitations, which added uncertainty to stock assessment results.

*Sailfish*

Sailfish was assessed in 2016. Grenada was mentioned as a main longline fleet. In terms of the status of the stock, there was uncertainty as to whether overfishing was occurring but the stock was estimated to be overfished in the eastern Atlantic. The western Atlantic stock appeared to be in a better condition as it was not considered to be overfished neither undergoing overfishing. Notwithstanding, the Committee established catch limits for both sailfish stocks which were expected to enhance data collection initiatives; to reduce fishing mortality estimates; and overcome data gap issues in all fisheries. The Chairperson pointed out that although overfishing was not occurring and the stocks were not considered overfished, the Committee expressed uncertainty about the assessment results, and recommended that for western sailfish that catches should not exceed the current level of 1,421 t.

**Swordfish**

Swordfish was assessed in 2017. The rationale for maintaining a two (north and south) stock hypothesis was provided, as well as some information on trends. There was a complaint about discards. There were size limits and discard regulations in place for swordfish; and it appeared that there was under-reporting of small-sized fish and discards, which affected assessment results. The north Atlantic stock was considered to be in a good condition; it was neither overfished, nor was overfishing occurring. Biomass was estimated to be either higher or very close to the level at MSY. The Committee noted that the 2017 assessment represented a significant improvement on the understanding of current stock status for North Atlantic swordfish using updated information. Although the 2017 estimate of stock status was slightly more pessimistic than the previous assessment, the Committee had greater confidence in the assessment results. In terms of management measures, the Committee was recommending a small decrease in the TAC from 13,700 t to 13,200 t. The Chairperson advised the PWG that if swordfish was negotiated at this year's (2017) meeting, it may be a good time for countries wishing to increase their swordfish catches, to request more swordfish. She also suggested that those Member States which may be interested in increasing their swordfish catch should prepare swordfish plans.

The South Atlantic stock was considered to be overfished and overfishing could be occurring. The parameters for the 2017 assessment were changed based on new information, and so the assessment for 2017 was not comparable with the last assessment done in 2013. In terms of the outlook, the stock was overfished and the $B/B_{MSY}$ ratio was 0.72; hence it was recommended that catches be reduced to a level at or below 14,000 t. The Committee also believed that there was under-reporting of minimum sizes so that the proportion of under-sized fish in the catch had to be estimated. The Committee recognized that there could be biases unless CPCs improved their data reporting. In terms of the management recommendations, the Committee was proposing a reduction in the TAC from 15,000 t to 14,000 t for south Atlantic swordfish.

**Small Tunas**

For the management of small tunas, ICCAT was moving towards the ecosystem approach, similar to sharks, because of their position in the trophic chain; and also that regional assessments were done. The top three species at risk in the Atlantic Ocean were Atlantic little tuna, wahoo and king mackerel. No formal assessments were done.

**Sharks**

In 2017 North and South Atlantic shortfin mako stocks were assessed. Information was also provided on the ecological risk assessments done and shark biology and why they were vulnerable to overfishing (small litters, slow maturity, etc.). Catch rate indices were developed for the assessments of shortfin mako. In terms of the state of the stocks, references was made to the 2012 ecological risk assessment which had five (5) stocks with low productivity and certain stocks that had high susceptibility. The results showed that the most vulnerable stocks were bigeye thresher, longfin and shortfin mako, porbeagle and night sharks. In terms of the assessment, changes were made to the data that were provided since the last assessment and there was greater confidence in the 2017 stock assessment. The assessment results showed that for north Atlantic shortfin mako there was a very high possibility that the stock was overfished and experiencing overfishing. For south Atlantic shortfin mako the condition was a little better; there was a lower probability that the stock was overfished and experiencing overfishing, than for the north Atlantic stock. In terms of management recommendations, the Committee reiterated the need for CPCs to improve their reporting on sharks for ICCAT as well as non-ICCAT fisheries. There were also recommendations regarding reducing the incidence of mortality; improving reporting; and in the case of the south stock, maintaining catch levels below the minimum catch in the last five years in the assessments. Based on the 2017 assessments, the management measures for north and south Atlantic shortfin mako were likely to be updated and new measures would likely include catch limits.

*PWG discussion*

There was no discussion on this item.

## 4. Review of 2017 ICCAT Compliance

The Chairperson invited PWG members to share any compliance issues, concerns, etc.

Chris Parker of Barbados said that with regard to blue marlin, Barbados was over quota. Barbados was over quota in 2015, so that there should have been no further catches of blue marlin in 2016. The issue was raised in a letter by ICCAT's Compliance Committee but, unfortunately, the letter was received late (2016), by which time the usual quota for 2016 had already been landed. Barbados had responded to the letters citing the following reasons for the excess catch: nature of the fishery (blue marlin was abundant in Caribbean waters), increased catches due to Sargassum influx, and a food security issue (near-collapse of the very important flyingfish fishery). Mr. Parker said that he was unsure, but interested, to see how ICCAT would deal with the over quota catch. Mr. Parker also made reference to the transfer of quotas

from other countries and remarked that maybe this could be considered, but he was uncertain how to go about do this.

The Chairperson noted that Barbados had been good at responding to ICCAT's letters and had raised very good points as to why that country was in the position of excessive harvest of blue marlin. Regarding transfer of quotas, the Chairperson made the point that it helped if you were in attendance at the Commission meetings, and therefore part of the negotiations. The Chairperson suggested that, depending on the last time that Barbados wrote to ICCAT, another letter could be sent, possibly to the Compliance Committee, prior to this year's Commission Meeting, in which explanations for the excess harvest could be reiterated and mention could be made of the work of the Billfish Consortium and development of the regional billfish plan, which will show efforts to manage the fishery. The Chairperson again emphasized the need for CPCs to attend the Commission Meetings so that they could present and defend their positions, as necessary.

Mr. Parker referred to the 2017 report, and particularly the proposal to take an inventory of data collection programs in the Caribbean (Barbados, Trinidad and Tobago and Venezuela to be included), with the view to improving data collection programs. Mr. Parker noted that many countries were probably under-reporting, and pointed out that when the data collection systems were improved what countries would end up reporting would likely be greater than what the quotas were based on historically, and questioned how this would possibly be dealt with. Mr. Parker further queried the best way to get this point across, as what would appear to be increased catch was really an artefact of poor data collection in the past and the improved data collection programs. In short, it was not increased catches, but better quality data. The Chairperson concurred with Mr. Parker and said that the proposed improvements could provide opportunity to revisit the historical development of the fishery and to consider the management measures that could reasonably be adopted.

Robert Robinson of Belize supported Mr. Parker's and the Chairperson's interventions and added that at ICCAT there was a process to look at shared resources and to determine the way to best manage the total allowable quotas of the resources. Efforts were being made to get the necessary data and to get all stakeholders involved in the process of making better management decisions for the stocks. In this process, when there were fisheries that were not accounted for in the management decisions, efforts were made to reach out to those fishers to get a better understanding of the nature of their fisheries and the issues that they were likely encountering so that ICCAT could provide assistance, if possible. The Compliance Committee had sent Letters of Identification (which were of a more serious nature than Letters of Concern) to a few Caribbean countries. Mr. Robinson urged countries that had received letters, whether of Concern or Identification, to respond formally to the Commission so that there could be dialogue on the issues; there could be a better understanding of the challenges and better management decisions could be made that took this information into account. Mr. Robinson acknowledged that catching of billfishes was unavoidable as they were present in Caribbean waters; and noted that ICCAT was aware of this, but countries needed to provide data so that better informed decisions could be made with regard management of the fisheries. Mr. Robinson added that Belize was constrained by limited resources, but was always willing to facilitate communication between Caribbean countries and the ICCAT Secretariat and Commission. The Chairperson thanked Mr. Robinson and re-emphasized the need for countries to formally respond to any letters received from ICCAT.

Patricia Hubert-Medar of Saint Lucia referred to Mr. Robinson's earlier intervention in which he had indicated that countries should respond to the ICCAT letters, so that assistance could be provided to address issues, and informed the Meeting that Saint Lucia had received a letter from ICCAT in 2014. A response was prepared and a request made for assistance, possibly through ICCAT efforts already being conducted in the Caribbean, to address the issues/concerns raised, but no feedback was received from ICCAT. ICCAT has since written again to Saint Lucia, but Ms. Hubert-Medar was unsure if a response

had been sent. Ms. Hubert-Medar further expressed that, while recognizing that Saint Lucia was not a Contracting Party to ICCAT, the fact remained that ICCAT wrote to Saint Lucia and Saint Lucia responded, but received no assistance or feedback from ICCAT.

In response to Ms. Hubert-Medar's intervention, Mr. Robinson suggested that Saint Lucia should follow-up with the ICCAT Secretariat and request feedback. Mr. Robinson said that he would inform the Compliance Committee at the upcoming meeting of Saint Lucia's response to the 2014 letter and request the Chairman to share the letter with the Compliance Committee so that it would be aware of the issues in the particular case of Saint Lucia.

The Chairperson agreed with Mr. Robinson that it was important to respond to every letter and to receive an acknowledgement of receipt from the ICCAT Secretariat. With regard Saint Lucia's request for assistance, the Chairperson acknowledged that it was more difficult for Non-Contracting Parties to get assistance from ICCAT. The formal forms of assistance from ICCAT were reserved for CPCs. However, if an activity was led by Member States that were CPCs then some non-CPCs could possibly be included, for example the ICCAT data workshop held in the Caribbean a few years ago. Usually though, it was more difficult for non-CPCs to directly access ICCAT assistance; generally non-CPCs were expected to try to address their issues as best they could, while bearing in mind international law that directed cooperation with ICCAT.

**5. CRFM Secretariat Virtual Technical Support Needs for 25th Regular Meeting of ICCAT**

The Chairperson advised that Belize and St. Vincent and the Grenadines were expected to attend the Commission meeting. The Chairperson also indicated that she would download and review the documents for the Commission meeting and would be available via Skype (text messaging) and email to provide support to CRFM country delegations during the Commission meeting.

**6. Any Other Business**

Robert Robinson, Belize, suggested that PWG members could send him emails if they had any issue they wished to have raised and he would be willing to act as liaison for CRFM Member states during the 2017 Compliance Committee and Commission meetings. The Chairperson thanked Mr. Robinson for his kind offer and advised PWG members to take note of Mr. Robinson's email address, which he had shared in the chat.

**7. Adjournment**

The Chairperson thanked all the participants for taking time to participate in the meeting. There being no further interventions, the meeting was adjourned at 11:54 a.m.

**Appendix 1: List of Participants – Sixth CRFM PWG Meeting on ICCAT**

| Country | Name of Representative | Affiliation | Email Address |
|---|---|---|---|
| Barbados | Christopher Paker<br>*Senior Fisheries Biologist* | Fisheries Division | fishbarbados.fb@caribsurf.com |
| Belize | Robert Robinson<br>*Deputy Director* | Belize High Seas Fisheries Unit | Deputydirector.bhsfu@gmail.com |
| Dominica | Derrick Theophille<br>*Fisheries Officer* | Fisheries Division | derkjt@gmail.com |
| Jamaica | Anginette Murray<br>*Marine Researcher/Analyst* | Fisheries Division | anginettemurray@gmail.com<br>anginettem@yahoo.com |
| Saint Kitts & Nevis | Nikkita Browne<br>*GIS and Oceanography Officer* | Department of Marine Resources | Nikkita.browne@yahoo.com |
| Saint Lucia | Patrica Hubert-Medar<br>*Fisheries Assistant* | Department of Fisheries | patricia.medar@govt.lc |
| | Shanna Emanual<br>*Fisheries Biologist* | | Shans29@gmail.com |
| St. Vincent & the Grenadines | Kris Isaacs<br>*Senior Fisheries Officer* | Fisheries Division | Kris.isaacs@yahoo.com |
| CRFM Secretariat | Susan Singh-Renton<br>*Deputy Executive Director* | CRFM Secretariat | susan.singhrenton@crfm.int |

**Appendix 2: Agenda – Sixth CRFM PWG Meeting on ICCAT**

| Item | Title | Date & Time (Eastern Caribbean Time) |
|---|---|---|
| 1 | Meeting registration | 10:00 -10:10 a.m. |
| 2 | Opening and prayer | 10:10 - 10:15 a.m. |
| 3 | Review and discussion of ICCAT SCRS 2017 report | 10:15 – 11:15 a.m. |
| 4 | Review of 2017 ICCAT Compliance | 11:15 – 12:30 p.m. |
| 5 | CRFM Secretariat Virtual Technical Support Needs for 25th Regular Meeting of ICCAT | 12:00 – 1:00 p.m. |
| 6 | Any Other Business | 1:00 – 1:10 p.m. |
| 7 | Adjournment | 1:10-1:15 p.m. |

The CRFM is an inter-governmental organization whose mission is to "Promote and facilitate the responsible utilization of the region's fisheries and other aquatic resources for the economic and social benefits of the current and future population of the region". The CRFM consists of three bodies – the Ministerial Council, the Caribbean Fisheries Forum and the CRFM Secretariat.

CRFM members are Anguilla, Antigua and Barbuda, The Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Haiti, Jamaica, Montserrat, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Trinidad and Tobago and the Turks and Caicos Islands.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