Report of the ICCAT 2024 SCRS Workshop
(hybrid, Madrid, Spain, 18-20 March 2024)

The results, conclusions and recommendations contained in this report only reflect the view of the participants of this SCRS Workshop. Therefore, these should be considered preliminary until the SCRS adopts them at its annual Plenary meeting and the Commission revises them at its annual meeting. Accordingly, ICCAT reserves the right to comment, object and endorse this report, until it is finally adopted by the Commission.

1. Opening, adoption of agenda and meeting arrangements

The hybrid workshop was held in-person at the Secretariat in Madrid, Spain, and online, from 18 to 20 March 2024. Dr Craig Brown (USA), the SCRS Chair and meeting Chair, opened the meeting and welcomed participants. Mr Camille Manel, ICCAT Executive Secretary, welcomed and thanked the participants, and wished a successful and productive meeting. Dr Miguel Neves dos Santos, ICCAT Assistant Executive Secretary, highlighted the importance of this workshop, namely due to a number of challenges the SCRS is currently facing, including the: i) increasingly amount of requests from the Commission; ii) limited expertise of the SCRS in new areas of work (e.g. MSE and Climate Change); iii) limited human resources at the Secretariat to assist all requests from the SCRS; iv) high number of meetings; and v) difficulties faced by the SCRS to make use of the available funding.

The Chair proceeded to review the Agenda in detail, which was adopted with some changes (**Appendix 1**). The List of participants is included in **Appendix 2**. The List of presentations provided at the workshop is attached as **Appendix 3**. The abstracts of the SCRS presentations provided are included in **Appendix 4**. The following participants served as rapporteurs:

Sections	*Rapporteur*
Item 1	M. Neves dos Santos
Item 2	C. Brown, H. Arrizabalaga, K. Ramirez, D. Angueko
Item 3.1	N. Duprey, C. Brown, A. Domingo, R. Coelho, N. Taylor
Item 3.2	M. Neves dos Santos
Item 3.3	F. Alemany
Item 4	S. Cass-Calay, M. Ortiz
Item 5	S. Cass-Calay, M. Neves dos Santos
Item 6	J. Santiago, C. Brown, D. Die
Item 7	C. Brown, N. Duprey
Item 8	N. Taylor, M. Neves dos Santos

The Chair acknowledged that the volume of important topics to be discussed and the short time available (3 days only) indicated a likelihood that at least some parts of the meeting report may have to be adopted by correspondence. However, there was agreement that any recommendations emerging from the meeting should be reviewed and adopted during the meeting.

2. Overview of the 2015-2020 SCRS Science Strategic Plan, including Objectives

The Chair highlighted the importance of reviewing the goals, objectives, strategies and measurable targets described in the previous strategic plan in order to understand what has been done well (achievements), where the work has fallen short of objectives or where more work is needed (short-comings), and to note where there are new challenges for the SCRS. This review would inform discussions for other items on the agenda.

The review of the 2015-2020 Science Strategic Plan served to focus the discussions. During the review of the SWOT analysis, participants pointed out that some prior weaknesses had been partially or even fully addressed, and that other weaknesses had been identified since the development of that strategic plan. Participants also reviewed the goals and objectives defined in the 2015-2020 strategic plan. Unachieved objectives were identified and the participants identified the reasons why these objectives were not achieved and revised them. It was agreed that there is important progress for some of the aspects, and in some cases the objectives were achieved.

It was observed that this review exercise is also a necessary component of developing the new 2026-2031 Science Strategic Plan. Therefore, the 2015-2020 Science Strategic Plan text was modified to reflect the current situation with respect to the SWOT analysis, goals and objectives. In this manner, the agreements emerging from the active and wide-ranging discussion could be captured. This modified text, shown in **Appendix 5**, can also serve as initial draft text in the process of developing the new strategic plan, as described in **Section 5**.

There were other discussion topics not captured in the revisions shown in **Appendix 5**, including comments related to the listed strategies and measurable targets, as well as potential new strategies and targets. Largely these were considered more relevant to the scientific direction of the SCRS, and therefore they are reflected in **Section 3**.

3. Aspects on the scientific direction of the SCRS

This theme was identified during the 2023 SCRS Plenary as one of the items that should be discussed at this workshop. This is a broad theme, and at this workshop discussions covered not only how the way that the SCRS carries out its work on new demands, but also included topics such as long standing and new difficulties and approaches to address them.

3.1 Scientific direction of the SCRS

Enhancing participation of CPC scientists

The importance of increasing broad, active participation of scientists from all CPCs was highlighted. This can improve the input of local knowledge and improve the understanding of fishery data and issues. The interpretation that is now offered for some meetings is both helpful and appreciated. But there are many meetings without such interpretation, and there is also a need to improve the accessibility of developing countries to experts and training. It was also pointed out that, since the scientific techniques used by the SCRS are constantly evolving (e.g. management strategy evaluation, climate change), capacity building is necessary for all, not just for developing countries. There was substantial discussion on this topic, leading to a recommendation to develop a capacity building strategic plan.

Another substantial change in how SCRS carries out its work, is the expansion in use of online access to meetings, in both hybrid and online only meetings; the latter include many online meetings of working groups and technical subgroups ("unofficial" in the sense that they do not appear on the ICCAT calendar) that also work to be carried out collaboratively intersessionally. It was suggested that the SCRS consider how it could most effectively use the online capabilities; for example, online only meetings could be scheduled on noncontiguous days (e.g. to allow analysts to carry out work requested by the group and then report results on the next meeting day) since travel is not involved. There was a concern that such scheduling may be difficult to accommodate on the overly crowded ICCAT calendar.

It was noted that one reason that some CPC scientists are unable to participate in SCRS meetings and research activities to the extent that they had before, or would prefer, is that publication in peer-reviewed journals is a major component in the evaluation of their job performance and opportunities to advance. This led to a discussion of pro and cons of the past agreement between ICCAT and a peer-reviewed journal (Aquatic Living Resources, ALR) to publish selected SCRS documents, and the value of entering into such an agreement again. Several issues related to the experience with ALR were discussed, including the chairs not identifying suitable papers, the authors not preparing them to submit them to ALR (or other journals), and that authors might prefer to submit to other journals, when possible. Nevertheless, some pointed to positive experiences with the approach, and suggested that it may be worthwhile to consider again, with a commitment by both researchers and the Secretariat to encourage participation. The collaboration between SCRS scientists could lead to very relevant publications on specific issues.

Improving communication and collaboration

Improved communication was another topic of discussion, both between SCRS Species Groups and between the SCRS and the Commission. With respect to communication within the SCRS, it was noted that the SCRS Chair has implemented SCRS Officer meetings early in each year, to inform the Officers (and through them, their Species Groups) of new recommendations from the Commission, including new requests (and past requests still in effect) that may need to be accounted for in the workplans for the year. Additional Officers meetings can be held as needed during the year. Nevertheless, participants considered that there was still a need for improved communications and coordination, for example between the Subcommittee on Ecosystems and Bycatch (SC-ECO) and Species Groups.

With respect to communication between the SCRS and the Commission, some recalled past dialogues within the Standing Working Group to Enhance Dialogue between Fisheries Scientists and Managers (SWGSM) (established in the *Recommendation by ICCAT for enhancing the dialogue between fisheries scientists and managers* (Res. 13-18)) and wondered why such meetings were no longer being held. It was suggested that it may have been because the decision-making process and path to adoption of Recommendations and Resolutions is unclear from SWGSM, as opposed to the typical process starting with discussions of the Panels. The SCRS could suggest such meetings, but it is up to the Commission to agree. Despite this, there is more SCRS-Commission communication now than ever before. Examples include the communication between Panels and Technical Subgroups on MSE through their representatives, the meetings of the Joint Experts Group on Climate Change (JEG-CC), and the development of Electronic Monitoring System (EMS) protocols. Primarily this has arisen from the need, such as in the development of management procedures tested through MSE, for iterative exchanges between the SCRS and Commission (via the Panels) much more frequently that the year-long exchange from Annual Commission meeting to Annual SCRS meeting to Annual Commission meeting. Such faster SCRS feedback frequently occurs before SCRS Plenary endorsement, and therefore must be regarded as preliminary pending that endorsement. This might be problematic in some cases if the process to respond to urgent requests is not agreed beforehand.

Data and research

There have been improvements in data collection and submission, despite some post-pandemic decline in performance. This return to normal is taking place gradually. Improvements have also been recognized in terms of historical data submissions by CPCs. Nonetheless, as a crucial element of SCRS analyses, the completeness and accuracy of data reporting will always be a high priority.

All SCRS Species Groups have now established a data collection and research programme, with help in coordinating and improving data quality and quantity, and the strategic planning of research. The current research programmes are somewhat divergent, yet the approaches must be adapted to the requirements of the SCRS in order to fill information gaps.

It was noted that the Subcommittee on Ecosystems and Bycatch (SC-ECO) did not have such a programme, and that it may be advisable to develop one. This would require support in order to provide data to conduct its assessments of fishery impacts on ecosystem components like sea turtles, seabirds, sharks and marine mammals.

The need to improve communication within the SCRS also extends to data collection and research coordination between groups in order to improve biological sample collection and efficient use of research resources when efforts can address the objectives of multiple species groups. It was also proposed that national programmes could be linked to those of the SCRS to strengthen group collection and compilation programmes that consider the needs of the SCRS.

Difficulties have been encountered with the long-term storage of biological samples, and a solution is needed. It was also pointed out that the timing of research activities should be considered in the funding requirements and the contracting process, as there is usually a seasonality to sampling, and researchers carrying out the sampling and analytical work generally are not able to devote large contiguous blocks of time to carry out the work (due to other work commitments, considering that these projects are short-term).

Given the increasing need to provide climate conditioned science advice, it was suggested that data sources be identified and vetted to support this work by the Species Groups. Further, it was requested that the data be accessed via the Statistics tab of the ICCAT website and that groups be contacted that could provide the environmental data. The hosting of local data sets or links to the data providers would help to improve the internal coordination of the dissemination of appropriate ecological and oceanographic data.

SCRS model

Participants considered how the manner in which the SCRS carries out its mission has changed in recent years. Historically, management advice was developed primarily through stock assessments. Increasingly, advice is developed through the use of management strategy evaluations (MSEs), which involve different ways of providing advice and different approaches to management (e.g. management procedures). The potential need to incorporate climate change considerations in scientific advice for management will also be a substantial change. Expertise is being developed in MSE and may exist to some extent for climate change analyses, but there is still insufficient expertise for this work in all Species Groups.

If SCRS work is to continue along these lines, increased participation of CPC scientists with relevant expertise will be required. It was also pointed out that there is a need for other substantial resources to support the implementation of management procedures over the long term, including the evaluation of exceptional circumstances, periodic reviews and MSE updates. Currently, external contractors play major roles in programming, carrying out analyses, and developing presentation materials, albeit under the guidance of and in collaboration with Species Groups and associated Subgroups on MSE. Whether contractors should continue to carry out this work (with potential issues in maintaining living documents/shiny apps and/or problems with continuity in contractors), SCRS scientists or the Secretariat was discussed and is an important decision. Nevertheless, even though the main work is conducted by external experts, it is important and necessary that final outputs of MSE efforts (living documents/shiny apps) are stored and maintained by the Secretariat, so that they are available after the completion of the contracts.

In recent years, there is increased emphasis on how the SCRS might account for climate change impacts in its scientific advice. It was agreed that the SCRS should initially attempt to do so using the existing structure of the SCRS, pending further elaboration of what will be required, and only adjust the structure if necessary. In discussing the alternative case one suggestion was to create a Climate Change Working Group in order to oversee and expedite the progress on this issue. However, because the issue is such a broad one, the Species Groups need to also be active in addressing climate change impacts into their workplans. It is not to be considered a problem specific to the SC-ECO. In order to facilitate and focus the work of the groups, it would be important to define the objectives as they pertain to the issue, and the use of common data sets and common approaches where appropriate would help to standardize the results.

The recommendations emerging from these discussions are included in **Section 7**.

3.2 Research funding

The Secretariat provided a presentation (SCRS/P/SCRS/009) with an overview of the ICCAT science funding between 2018 and 2024, with a particular focus on the comparison of the available funds and their effective use by the SCRS. It was highlighted that the Commission has been increasing the funds to science through the ICCAT regular budget over the past 6 years. These together with some significant voluntary contributions from the EU and the USA, and to a lesser extent from other CPCs, had granted the SCRS all the necessary means for the development of its annual workplans. However, the SCRS has been unable to make a full use of those funds. The following reasons (that are not exhaustive nor listed by order of importance) were identified:

- Overestimation of funding needs over time
- Inability to use the funds due to low coordination or lack of service providers
- Limited programme management skills
- E-tags transmission issues
- Lower level of tag deployment than planned, due to difficulties in the access to fishing vessels (traditional tagging platforms), due to the COVID-19 pandemic

- Provision of samples lower than expected due to the COVID-19 pandemic, difficulty in accessing specimens of some size classes in the extreme range of the size distributions and low coordination among teams involved.

Based on the above and, in an attempt to make full use of the funds, the Secretariat extended the period of use of the funds, which resulted in the existence at year-end 2023 of a positive balance of the ICCAT Science (Fund) Envelope of €2,171,731, of which €695,144 corresponded to the ICCAT Atlantic-wide Research Programme for Bluefin Tuna (GBYP) with the remaining €1,170,906 corresponding to the other research and data collection programmes. As a consequence, the Commission significantly reduced science funding through the regular budget for the year 2024 to €45,000, which is lower than the amount of funding provided back in 2018, and approved the 2025 Science budget conditionally.

The Secretariat listed possible ways to overcome the underuse of the available science funds, as follows:

- Better assessment of funding needs
- Enhance ability to make full use of funding, through:

    - Improving planning/coordination within Consortium/between teams
    - Enhancing the number of teams involved
    - Enhancing management skills related to project coordination
    - Enhancing Secretariat engagement on project administration and management
    - Fully complying with the budget

Based on the above the Secretariat informed that the science budget for 2024 shall be used strictly in line with the budget approved by the Commission, which is detailed in Table 1 of Appendix 2 to Annex 7 of the *Report for Biennial Period, 2022-23 Part II (2023), Vol. 1*. Accordingly, no extensions will be granted, nor will changes between chapters be allowed.

The participants recognized the difficulties highlighted by the Secretariat and agreed that the financial requests from the SCRS should be based on a thorough assessment. On the other hand, it is essential to have good knowledge on the ability to effectively collect samples according to the time-area needs, particularly when the sampling platform is commercial fleets that collaborate with the national scientists.

Finally, the participants agreed on a number of specific recommendations that are compiled in **Section 7** of this report.

3.3 Electronic tags (MiniPATs issues)

The Secretariat provided a presentation (SCRS/P/SCRS/010) with an overview of the current status of ICCAT electronic tag programmes, with a focus on the issues that have been affecting the performance of the Wildlife Computer miniPATs and possible ways forward.

The Secretariat noted that the costs associated with deploying Wildlife Computer satellite tags go beyond the purchase of the tag, to include vessel costs, labour, fisher compensations, time, etc. As a result, the mere replacement of malfunctioning tags does not constitute full compensation. Therefore, the Secretariat requested that the SCRS provide some guidance on what to do with the tags that have already been purchased and on the purchase of new tags.

During discussion, it was pointed out that it would have been useful to inform the SCRS about the magnitude of these important technical problems when they were detected. It was recalled that, in spite of the different problems that have affected the e-tagging programmes, they have provided very useful information. Thanks to the improvement of e-tag deployment methodologies within ICCAT tagging programmes, the amount and quality of the information provided by e-tagging programs has improved substantially in recent years.

As a result of these discussions, the participants agreed on the specific recommendations that are captured in the subsection on tagging recommendations in **Section 7**. These include the re-activation of the Ad Hoc Working Group on Tagging Coordination, which would be tasked with reviewing SCRS tagging programmes and providing advice to SCRS Working Groups on many of the topics and concerns raised at this Workshop.

4. New Executive Summary template

The Secretariat presented documents SCI_135/2023 and SCI_136/2023 related to the proposed changes for the SCRS species Executive Summaries. SCI_135/2023 includes the new template, while SCI_136/2023 is an example of the new template applied to the yellowfin tuna (YFT) Executive Summary.

Participants commented that, in general, Executive Summaries of ICCAT species are too long and contain too much scientific information that is not of general use/interest for the intended users, the ICCAT commissioners. The participants agreed that a more user-oriented summary and a standardized format for the Executive Summaries was preferable, and in general, agreed with the proposed new template with some specific suggestions.

The participants recommended the following:

- That Executive Summaries be prepared by stock separately, i.e. no longer combined by species.
- On the format for Executive Summary (Table 2.1 of SCI_135/2023).
  - the item on "Total catch table by gear..." should include landings (retained catch), and discards indicating live and dead discards.
  - Under item "Management recommendations", include for species with management procedure (MP) implementation de addition of Exceptional Circumstances application result(s) in addition of the TAC resulted from the application of HCR.
  - It was agreed that any MSE or MP test, plots, development, etc. should not be included in the Executive Summary.
- On the Format of the "Species Summary" table (SCI_135/2023).
  - To exclude items of "Yield in last year used in assessment", "B_{MSY}", "F_{MSY}".
  - It was questioned what values should be included (and if should or should not be included) under relative biomass (B_{year}/B_{MSY}) or relative fishing mortality (F_{year}/F_{MSY}) for species under MP, deferring the decision to each Species Group as appropriate.
  - For the footnotes, current yield (2) should include the date "as of mm-dd-yyyy".

Furthermore, the participants discussed the proposed new elements of "Ecosystem and Climate Change Considerations" and "Bycatch considerations". It was noted that these elements could be provided by the SC-ECO, but this will require the interaction(s) of each Species Group with the SC-ECO and that during the SCRS Species Groups meeting in September when the Executive Summaries are normally finalized, there is no scheduled meeting of the SC-ECO. Alternatively, it was proposed that the Species Groups officers attend the intersessional meeting of the SC-ECO, but given the increased number of SCRS meetings throughout the year and increasing workload for the Species Groups officers, this was considered unlikely.

It was noted also that information for Ecosystems and Climate Change considerations may not exist yet for several species or has not been discussed by the Species Groups. Also, bycatch considerations are generally evaluated at the level of fisheries/fleet, thus may be aggregated across more than a single species, and several fleets for most of the ICCAT stocks. It was agreed that both "Ecosystems and Climate Change considerations" and "Bycatch considerations" items should be moved to the "Additional supporting information" section in the proposed new template.

The participants noted that the SCRS should consider another type of document wherein to reflect, in an "Executive Summary" style, the recommendations and conclusions from the SC-ECO to be communicated to the Commission, with clear indications on how this advice would affect/integrate the management recommendations from the SGs. No conclusion or recommendation was reached, and it was agreed that this should be further discussed by the SC-ECO in the upcoming intersessional meeting and during the SCRS Plenary meeting in September. It was suggested that the SCRS should also consult with the Commission during a proposed dialogue meeting between the Commission and the SCRS in 2025 (e.g. Climate Change Experts meeting), to inquire what information Commissioners need in terms of Ecosystems and Climate Change considerations as well as bycatch issues.

Finally, the participants agreed that for the 2024 SCRS Plenary, two examples of the Executive Summary applying the proposed new template be prepared, one for a species currently under MP (suggested N-ALB) and one for a species with classical stock assessment. The participants suggested avoiding the stocks that will be assessed this year.

5. New SCRS Annual Report template

The Secretariat presented document SCI_137/2023 related to the proposed changes for the SCRS Plenary meeting report, that includes a list of acronyms and a Summary Sheet that compiles the most relevant and updated information on the species stock status. In addition, the Secretariat also informed that is currently working in ways to reduce the size of the SCRS Plenary meeting report, namely my adding links to documents that can be found on the ICCAT website, such as those regarding the reports of the intersessional meetings and the detailed reports of the SCRS research and data collection programmes.

The participants commented that the SCRS Plenary report is too large (currently over 500 pages) and that the suggestions made by the Secretariat to make it shorter were welcome. The participants also agreed on the need to add a list of acronyms and the standardization of these throughout the text. The participants also noted that the language is often too technical and difficult to be understood by managers, and, therefore, an effort should be made to simplify the language and produce shorter text.

The participants also discussed a graphic summarizing the historical stock status that was proposed to appear in the header of the Plenary report. The participants generally agreed that the graphics were of little value to the Commission because they could be easily misinterpreted and did not capture scientific uncertainty. The participants considered improving the graphic to represent the scientific uncertainty using a columnated "pie-chart" illustrating the probability of the relevant stock condition (i.e. the quadrants of the Kobe Plot) but expressed concern that including that level of detail was not useful in a summary intended to inform the Commission. The participants also noted that producing an annual estimate of stock status was not possible for many ICCAT stocks in years where no assessment occurred and that any attempt to do so would require a consistent approach as the historical stock status estimates are affected by changes in selectivity. Accordingly, the participants concluded that at this stage there was no consensus on this matter, which should be further discussed at the SCRS level before being brought to the Plenary for eventual adoption.

6. Roadmap for the preparation of the new SCRS Science Strategic Plan

The SCRS Chair explained his proposal for the general structure of the new strategic plan, as well as a general approach to developing it. The new strategic plan could largely follow a similar format to that of the 2015-2020 strategic plan, with the addition of links to the various SCRS research programmes. Some aspects of the document could be "living", in that they could be updated as appropriate. The various goals, objectives and strategies would be constant, to be updated during the development of the next strategic plan, but under the measurable targets sections there would be a living text section which would be updated with progress and achievements in these targets - likely on an annual basis. This would address concerns that were raised during this Workshop that the value of a strategic plan is diminished if progress toward the objectives is not periodically reviewed. There might also be a summary table of research plans for the next 6 years in addition to the tentative meeting schedule for 6 years, with each table living in that it would be updated to maintain that 6-year projection.

The SCRS Chair indicated that an ad hoc Working Group may be best for developing the new strategic plan, informed by the initial text drafted during this workshop (**Appendix 5**). This ad hoc Working Group could consider this new proposed structure, and develop a draft strategic plan to propose to the SCRS at the annual SCRS Plenary.

Participants discussed options for reviewing progress towards strategic plan goals and objectives, such as developing a simple table of accomplishments each year accompanied by an action plan for the upcoming year. There were questions for the appropriate periodicity of reviewing the objectives of the strategic plan, for example a simple review after 3 years and an in-depth review and revision after 6 years, but this decision would be undertaken during the development and adoption of the new strategic plan. There was general agreement that revisions to objectives might be necessary due to new requirements of the Commission or due to important unanticipated situations, but that general objectives of the strategic plan should not be changed frequently. However, there was also general agreement that for a strategic plan to be useful, progress against measurable targets should be frequently (e.g. annually) reviewed.

The participants discussed how to move forward in the elaboration of the new edition of the Strategic Plan. The steps followed for the elaboration of the previous plan were taken as a reference. Unlike that process, this new edition of the Plan builds on the previous experience of the SCRS in the elaboration and implementation of the first Strategic Plan. The possibility of having some external support to assist the SCRS Chair in coordinating the process of elaborating the Plan was also discussed.

Thus, the steps proposed to approach the elaboration of the new Plan are as follows:

Phase	What	Who	When
1	Assess the situation: gaps and needs, identify goals and strategies	SCRS (rapporteurs, conveners and Chair) & Secretariat	April – September 2024
2	Validate goals and strategies; agree on mission, vision and values	SCRS Plenary	September 2024
3	Elaborate 1st draft	Phase 1 + CPCs contributions	October 2024 – March 2025
4	Completion of the Plan	SCRS (ad hoc meeting)	April 205
5	Dialogue with the Commission	SCRS – COM (dialogue meeting)	May 2025
6	Approval of the Plan	ICCAT SCRS	September 2025
7	Adoption of the Plan	ICCAT COMMISSION	November 2025

7. Recommendations

This list outlines the recommendations from the SCRS Workshop to the SCRS to incorporate into their new Strategic Plan and into their work planning for 2024-2025. This list was reviewed during the last day of the SCRS workshop. Note that specific recommendations regarding the new Executive Summary template appear in **Section 4**, and recommendations on developing the new Strategic Plan are found in **Section 6** (with initial draft changes from the 2015-2020 in **Appendix 5**).

Recommendations – Capacity building

1. The SCRS should develop and maintain a capacity building workplan.

2. The SCRS should develop a framework so that ICCAT training materials have a life beyond the duration of the training workshop and are available for use for the SCRS and the Commission.

3. The SCRS should focus on teaching people, among other things, the basic principles of stock assessments, how to choose, develop and evaluate models, and how to interpret the results. This recognizes that it can take a long time to develop and train an independent statistical population dynamics and stock assessment modeler, and there would be more capacity improvements by focusing on basic principles of stock assessments (and Management Strategy Evaluation).

4. The SCRS should work to encourage CPCs to promote medium to longer-term participation of their delegates undergoing capacity training to maximize the benefits to the SCRS and the SCRS' ability to use their new skills. This would improve retention of taught material and promote increased capacity within CPCs and within the SCRS.

Recommendations – Meeting formats

1. The SCRS should review how meetings are scheduled and structured to assess if the new virtual capabilities could allow a new way forward to better take advantage of these technologies. This includes (but is not limited to): reviewing the length of meeting days (timing of daily starts/stops); distributing the number of meeting days over longer periods of time (including the possibility of non-contiguous); virtual-only days and follow-up hybrid days later.

2. The Species Groups should structure their workplans to allow modelers and other scientists to informally present progress of stock assessments (and other relevant analyses), in a virtual format, at least 2 weeks before scheduled assessment meetings. This would allow the modelers to take advantage of any recommendations or suggested changes in time for the scheduled assessment meetings.

Recommendations – Communications between different SCRS groups

1. The SCRS should explore having a specific SCRS officers meeting to discuss matters that might be of interest to other Species Groups. Each rapporteur could make a presentation about cross-cutting issues.

2. The SCRS should continue developing ways to have cross-cutting issues discussed – in the same way MSE is discussed at the Working Group on Stock Assessment Methods (WGSAM) meeting. For example, perhaps SC-ECO would be a good venue to discuss how climate change is being incorporated into Species Group advice.

3. The SCRS should consider the logistics and tradeoffs of having a dedicated virtual seminar of scientific papers across Species Groups to discuss key research topics with the aim that scientific work of the SCRS be fostered and promoted.

4. On climate change issues, it was agreed to initially address them using the current SCRS structure instead of creating a new working group. The SC-ECO would include an agenda item in the upcoming intersessional meeting to further discuss this issue, and the Species Groups would consider species-specific issues in relation to their advice (e.g. robustness tests in MSE).

Recommendations – advice to Commission

1. The SCRS should investigate how best to use and incorporate new communication tools to modernize how we provide and explain advice to the Commission. This may include getting external experts to better align our advice with what Commissioners need.

2. The SCRS should continue to update its Executive Summaries.

3. The SCRS should explore providing the Commission its "annual advice presentations" in advance of the annual meeting. This idea was discussed at the Annual Meeting of the Commission in 2023 and could be a way to reduce the pressure on the SCRS Chair at the annual meeting, reduce the number of days needed at the annual meeting, and improve the SCRS' ability to respond to questions from Commissionaires. The SCRS could discuss this idea further with the Virtual Working Group on Sustainable Financial Position for ICCAT and other bodies of the Commission.

4. The SCRS should consider a way to distribute the workload of the SCRS Chair position, especially in relation to the duties involved around the Annual Meeting of the Commission, to more SCRS individuals/officers. This would help reduce the high workload associated with the Annual Meeting of the Commission.

Recommendations – from Overview of funding

1. The SCRS should secure storage for biological samples, and continue encouraging the use of collected samples for more research uses than those for which they were originally collected.

2. The SCRS should take advantage of new capacity within the Secretariat to find efficiencies and savings on contracts. For example, providing advice on what other groups have found for affordable solutions or estimates of costs for different project activities.

3. The SCRS should complete project evaluations to assess how project expenditures align with original budgets and use this to improve future budget requests.

4. The SCRS recommends that Working Groups provide the Terms of Reference (ToR) specifications for annual requests for research funds. These ToRs should include research details and when feasible, should be ready before the September Species Groups meetings, and in any event, prior to the Commission Meeting. Accordingly, these ToRs can be distributed in Calls for Tenders early in the year, once the Commission has approved the final research budget.

Recommendations – Tagging

1. The SCRS should re-activate the Ad Hoc Working Group on Tagging Coordination to carry out, among other things, a revision on how tagging (both electronic and conventional tagging) has been used in the various Species Groups and successes and pitfalls, including what the previously collected data have been used for. Then task this group with providing recommendations on how to proceed.

2. The SCRS should stop purchasing more pop-up electronic tags from the manufacturer currently most used in ICCAT until all the issues with the poor performance of the batteries have been fully and assuredly resolved. The SCRS, likely using the re-activated Ad Hoc Working Group on Tagging Coordination, should also review the current state of development of other pop-up electronic-tag manufacturers, in terms of tag performance, sensors used, types and frequency of data collected, structure of the data transmitted, specificities of the data processing needs with type of data structure, etc. with the intent of considering a future supplier.

3. The SCRS should develop a specification list of what the SCRS wants to get out of its e-tagging programmes and then provide this to various companies to see if alternative tags could be developed.

4. The SCRS should develop an integrated tagging workplan across all Species Groups and species to take advantage of tagging opportunities already established, expert tagging teams, recovery and promotion programs, etc. This tagging workplan should evaluate the overall needs and objectives of the SCRS research programmes.

5. The SCRS recommends making use of already-available pop-up electronic tags that can be used in existing tagging campaigns. This could provide information useful for evaluating the effectiveness of those measures implemented to minimize the observed transmission problems. This would allow those decisions about the strategic tagging plans to be based on the most recent information.

Recommendations – Biological sampling

1. The SCRS should encourage Species Groups to make budgetary requests for sampling specific for their current needs, recognizing that in some cases, namely when priority areas and/or sizes are needed for specific analysis, the costs of sampling might be much higher per sample. An example is when an entire fish needs to be collected for such biological sampling. In such cases, it is important to ensure that the full set of samples are collected from such fish.

2. The SCRS recommends that the Commission, the ICCAT Secretariat, and CPCs maintain engagement with the Convention on the International Trade of Endangered Species (CITES) regarding the collection of samples and the samples already collected from CITES listed species, including the issues related with the "Introductions from the Sea" and the sharing samples between laboratories in different countries. Ideally, CITES permits should be granted to Regional Fisheries Management Organisations (RFMOs) like ICCAT, so that sampling could take place under the management actions put in place in such RFMOs (e.g. the *Recommendation by ICCAT on biological sampling of prohibited shark species by scientific observers* (Rec. 13-10), which allows, under certain conditions, to sample from no-retention sharks).

3. The SCRS recommends that the Commission, the ICCAT Secretariat, and CPCs maintain engagement with CITES regarding the possibility of drafting Non-Detriment Findings that would apply to ICCAT fisheries for CITES-listed species.

8. Other matters

8.1 CITES

The Secretariat gave an overview of its recent interactions with CITES. The main motivation for increasing collaboration with CITES is that all ICCAT's major sharks (porbeagle, shortfin mako, and blue shark) and 41% of elasmobranchs of minor commercial importance are listed on CITES appendices (see Table A1, Appendix 1). The listing of these sharks has important consequences for the SCRS. First, all specimens (whole or parts of fish) landed from the high seas (i.e., areas not under the jurisdiction of any State) are considered to be Introduction from the Sea, and are therefore regulated by CITES, and require an Introduction from the Sea Certificate. The fisheries require Non-detriment findings. The second issue is that CITES permitting extends to scientific samples too. In summary, CITES listing greatly complicates obtaining data and exchanging scientific samples.

With the aim to make progress on these issues, the Secretariat participated in the CITES Standing Committee Meeting in November 2023. The Secretariat's report on that meeting can be found in the 2023 Commission document "Relevant notes from the Convention on 2023 International Trade of Endangered Species (CITES) Standing Committee Meeting" (PLE_120/2023). Two important documents developed emerged from the CITES Standing Committee Meeting: first, to make the exchange of scientific samples more efficient, CITES has Scientific exchange exemption and simplified procedures for registered scientific institutions; second, it might be possible obtain a Non-Detriment Finding for the whole ICCAT area. CITES is organizing a Technical workshop on Non-detriment findings for specimens of Appendix-II species taken from areas beyond national jurisdiction. The Bycatch Coordinator is attending that workshop to determine if developing a Non-detriment finding for the whole ICCAT area is possible. If so, then the hope is to present that information to the 2024 Sharks Species Group.

9. Adoption of the Report and closure

Due to the lack of time, it was agreed the report would be adopted by correspondence in the following few weeks. The Chair thanked Dr Josu Santiago for replacing him as meeting chair during his absence[*]. The Chair also thanked the participants, the Secretariat and the interpreters for their effort and assistance during the workshop. The meeting was adjourned.

[*] The SCRS Chair left halfway through the meeting with a short-term illness and was only able to rejoin online for the last afternoon session. At the SCRS Chair's request, Dr. Santiago kindly agreed to serve as meeting chair during his absence.

Appendix 1

Agenda

1. Opening remarks
2. Adoption of the agenda
3. Nomination of rapporteurs
4. Overview of the 2015-2020 SCRS Strategic Plan, including Objectives
    a. Achievements: *What has been done well?*
    b. Short-comings: *Where did we fall short, or more work is still needed?*
    c. New challenges
5. Scientific direction of the SCRS: *How should we navigate current and anticipated challenges?*
6. New Executive Summary template
7. New SCRS Annual Report template
8. Roadmap for the preparation of the new SCRS Strategic Plan
    a. Proposed conceptual change: 6-year living document, to include summary of planned research projects
    b. Updates to objectives/strategies/measurable targets (deletions/additions/modifications)
    c. Proposed structure
        i. Inclusion of table of meetings tentatively planned by working group, covering 6 years into the future
        ii. Inclusion of table of research projects tentatively planned by working group, covering 6 years into the future (links to respective research programs)
        iii. Sections reserved for status updates on progress ("living document" component)
    d. Review process and frequency
        i. Annual report on status updates
        ii. Periodic review of Strategic Plan (updates to objectives, etc.) – how often?
    e. Ad hoc Strategic Plan Drafting Working Group
9. Recommendations
10. Other matters
11. Adoption of the report and closure

Appendix 2

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Appendix 3

List of papers and presentations

Doc. Ref.	Title	Authors
SCRS/P/2024/009	Overview of ICCAT Science and funding between 2018 and 2024	Secretariat
SCRS/P/2024/010	Current status of ICCAT etagging programs: issues affecting performance of WC satellite tags and next steps	Secretariat

Appendix 4

SCRS presentations abstracts as provided by the authors

SCRS/P/2024/009 – The Secretariat provided an overview of the SCRS activities funding between 2018 and 2024, including: funding sources, funded activities and allocated funds. The evolution of the amounts provided by the different funding sources showed an increasing trend in voluntary contribution and the ICCAT regular budget and decreasing use of the ICCAT Working Capital Fund. A breakdown of the different funding assigned to each ICCAT Research and Data Collection Programme was also provided, as well as a comparison between the total amount requested, the allocated funds and the amount effectively used by. Finally, a summary of main issues oted was provided, together with a number of possible ways to enhance the use of the available funds.

SCRS/P/2024/010 – The Secretariat provided a summary of technical problems that have affected the performance of the Wildlife Computers PSATs used within ICCAT e-tagging programs, in recent years. This includes: i) referencing some background documents, including Research Programmes reports; ii) the different problems observed between 2018 and early 2023; iii) the measures taken to prevent or minimize them were enumerated in chronological order; iv) explanations on the current situation, including the results of the battery tests performed prior to deployments carried out after the implementation of the new protocols for tags maintenance and the very preliminary analyses of the performance of the tags deployed from 2023, already fitted with a tagware specifically designed to prevent battery passivation; and v) a series of possible strategies to address the current problems and research needs were proposed, and the decisions to be taken in the short term by the SCRS.

Appendix 5

Draft changes updating Science Strategic Plan mission, vision, values, and goals
(Changes from the text in the 2015-2020 Strategic Plan are shown. Deletions are struck through, and insertions are underlined.)

20~~15~~26-~~20~~2031 SCRS SCIENCE STRATEGIC PLAN

MISSION

The Standing Committee on Research and Statistics (SCRS), on which each member of the Commission may be represented, is responsible for providing scientific advice to the ICCAT Commission.

The SCRS develops all policy and procedures for the collection, compilation, analysis and dissemination of fishery statistics of tuna and tuna-like species in the Atlantic Ocean and adjacent seas; ensuring that the Commission has the most complete and current statistics available concerning fishing activities in the Convention area as well as biological information on the stocks that are fished. The SCRS also coordinates various national research activities, guides and develops plans for special international cooperative research and capacity building programs, carries out stock assessments, and advises the Commission on the need for specific conservation and management measures in support of the Commission's objective of implementing science-based fishery management. The Committee also advises the Commission on such other scientific matters as may be referred to it.

VISION

A Scientific Committee with broad participation of competent scientists all the CPCs that fish tuna and tuna-like species in the Atlantic Ocean and adjacent seas, working cooperatively in an effective and transparent way, with a solid scientific and technical support of the Secretariat, to provide objective, reliable and robust scientific advice to the Commission in support of the Convention objectives.

SWOT ANALYSIS

Strengths

- Transparency
- Openness
- International collaboration-cooperation
- Welcomes diversity of participation
- Diversity of the analytical approaches
- Secretariat support
- High scientific competence
- Credibility and international recognition
- Open to innovation
- Open to dialogue
- Independence
- Adaptability
- <u>Focus on the biodiversity of megafauna</u>

Weaknesses

- Low attendance in many cases
- Insufficient technical capacity in some areas
- Heavy workload leading to inefficiencies in organization intra-SCRS and mismatch between the COM requests and the SCRS capacities
- <u>Lack of long-term financial stability in support of SCRS activities.</u>
- <u>Insufficient financial support for the scientific process at the national level and from the COM in some instances.</u>
- ~~Insufficient financial support~~

- The SCRS inefficiency in fully utilizing the annual budget requested [associated in some cases with the current annual financial system]
- Insufficient quantity and quality of data in ~~many~~ some cases
- Gaps in data collection in ~~many~~ some cases
- Lack of "critical mass" especially in view of increasing workload.
- Insufficient dialogue and channels of communication with the COM
- ~~Limited specific guidance from the COM regarding management goals and risk tolerances~~
- Limited standardized products to provide information and advice to the COM
- Language barriers

[add lack of priorities from COM / need to improve prioritization across SG]

- [In some instances, due to time limitations a lack of critical, focused reviews of material presented to SCRS species groups.]

Opportunities

- Scientific collaboration and coordination among CPCs
- Broader participation from G77 countries
- Collaboration with other tRFMOs
- Collaboration with other organizations
- Peer review of stock assessments and science of the SCRS
- Broader external support to the work of the SCRS
- Use of new technologies
- Efficient use of Funding opportunities
- Support from the Commission
- Improvement of fishery statistics & methods
- Broader dissemination of scientific results

Threats

- ~~Reduced financial support~~
- Increase in demands to the SCRS with fewer resources
- Reduced contribution from CPCs in the SCRS (participation, research, data collection)
- Low priority/value attached to science (application of science) in some jurisdictions
- Insufficient support for science activities from the Secretariat
- Incidence of management regulations inhibiting ~~in~~ the collection and interpretation of required (fisheries dependent) data and information.
- Restrictions of data provision due to national data confidentiality policies.
- Lack of scientific interest on the SCRS matters from the scientific community
- Potential lack of expertise in expanded interest areas of the Commission
- Focus efforts on a limited number of stocks
- Undue influence by stakeholders, ideological or political pressure or by economic or financial interests groups

VALUES

I	**INTEGRITY**: The SCRS applies the highest ethical standards to all its scientific work. **INDEPENDENCE**: The SCRS provides advice that is objective and based on the best scientific information available and not unduly influenced by stakeholders, ideological or political pressure groups or by economic or financial interests.
C	**COOPERATION**: The SCRS values and encourages the participation of scientists from all CPCs, acting through scientific collaboration and cooperation to cultivate a diverse set of expertise and to promote best available scientific practices.
C	**COMMITMENT**: We are totally committed to provide the best scientific advice in support of the Commission's objective of implementing science-based fishery management.
A	**ABILITY**: The SCRS strives to ensure the work of the Committee conforms to the highest scientific standards and state of the art methodologies, constantly improving the foundation of knowledge to support the mandate.
T	**TRANSPARENCY**: The SCRS conducts its work in open sessions and encourages the participation of national scientists and external experts; the information, analyses and decision-making process are well-documented and easily accessible to all interested parties.

GOALS, OBJECTIVES AND STRATEGIES

DATA COLLECTION

GOAL 1 **IMPROVE FISHERY DATA COLLECTION AND REPORTING FROM ALL FISHERIES THAT CATCH TUNA, TUNA-LIKE AND OTHER SPECIES UNDER PURVIEW OF THE COMMISSION IN THE AREA OF THE CONVENTION. TO HAVE A REPRESENTATIVE VIEW OF WHAT IS ACTUALLY HAPPENING IN THE FISHERY, SO THAT THE STOCKS CAN BE PROPERLY EVALUATED**

OBJECTIVES

1.1 Strengthen the collection of High Quality Task I and II data and to address data gaps that are identified

Strategies

1.1.1 Analysing the effectiveness of existent Recommendations and Resolutions for improving data bases in support of the provision of scientific advice and recommend improvements to enhance effectiveness, as needed.

1.1.2 Collaborating with other tuna RFMOs and research institutes with tuna interests to assure that best practices are in place.

1.1.3 Refining protocols for data collection and species identification for target species and by-catch species (commercial and non-commercial) from industrial fishing fleets and non-industrial forms.

1.1.4 Designing and conduct data evaluation meetings on a regular basis, to review data quality, geographic resolution and misreporting of catches and landings through direct interaction with data providers.

1.1.5 Investing in capacity building and cooperation to improve both the quantity and quality of the collected data to ensure collection of enough data to have a representative view of what is actually happening in the fishery, so that the stocks can be properly evaluated.

Measurable targets

- A 20% reduction in missing or lacking data items in the Secretariat's annual report on statistics.
- List of specific data elements that are lacking for each stock over a 5-year span.

1.2 Improve resolution and precision of total catch composition and distribution and fishing effort data across CPCs

Strategies

1.2.1 Demonstrating through simulation modelling, improvement in precision of estimates of exploitation with different levels of information and cost/benefits of collecting such data.

1.2.2 Pursuing broad-based application of electronic monitoring systems and other automated data collection methods which provide near real-time data on catch/effort by: i) Monitoring the experiences already in place in tuna fleets, ii) Proposing minimum requirements for electronic monitoring.

1.2.3 Utilising VMS data for all tuna fisheries for which VMS is required in the Convention area at the highest temporal resolution possible (1 hour or less) by i) Advocating for adoption by the Commission, collection and recording of VMS data at 1 hour resolution as a minimum, and ii) Obtain access to high resolution VMS data through national scientists or through the Secretariat.

1.2.4 Compiling comprehensive data on floating object sets (especially on FADs) and on fishing operations by i) Cooperating with the industry for obtaining detailed FAD information (historical and present), under agreed confidentiality rules, ii) Proposing and adopting revisions to confidentiality protocols as needed.

Measurable target

- Fishery catch/effort maps at 1x1º resolution, by month by major gear type by 2020, in support of fine scale (time and space) fishery management advice.

1.3 Improve the fulfilment of the CPC´s data reporting obligations

Strategies

1.3.1 Discouraging provision of low/no quality data by i) Clearly identifying and communicating best practices for data collection and reporting, ii) Strengthen mechanisms to highlight providers of "good" vs "bad" data, iii) As needed, work directly with CPCs to identify methods to address data collection/reporting inadequacies and employ strategic investments to overcome inadequacies, and iv) advocating adoption of recommendations towards “no data, no fish”.

1.3.2 Implement quality characterisation methodology with which to inform CPCs of inadequacies in data quality provided to the Secretariat and to inform the Commission on the adequacy of the information available for formulating management advice.

1.3.3 Investing in capacity building and cooperation to improve both the quantity and quality of the collected data to ensure collection of enough data to have a representative view of what is actually happening in the fishery, so that the stocks can be properly evaluated.

Measurable target

- 20% reduction in non-compliance with CPC reporting obligations according to Secretariat’s compilation report within 5 years.

GOAL 2 INSTITUTE BIOLOGICAL SAMPLING PROGRAMS COMMENSURATE TO THE NEEDS FOR THE ASSESSMENT OF THE DIFFERENT STOCKS UNDER THE CONVENTION

OBJECTIVES

2.1 Identify the types of biological data that is needed (stock structure, growth, maturity, fecundity, etc.) for the assessment of the different stocks

Strategies

2.1.1 Using approaches such as MSE to determine the relative value of collecting different types of data / information to evaluate stock status and productivity.

2.1.2 Advising the Commission with regards to the types and quality of data that should be required from CPCs. Identify through Ecological Risk Assessments, stocks for which improvements in biological information are necessary for assessing stock status.

2.1.3 Identify through Ecological Risk Assessments, stocks for which improvements in biological information are necessary for assessing stock status.

Measurable target

- Application of MSE to the main ICCAT stocks to evaluate biological data needs by 2018 & Conduct Ecological Risk Assessment (ERAs) for those species for which lack of information prevents quantitative assessments of stock status, by 2020.

2.2 Elaborate sampling designs and evaluate the representativeness of samples of length (age) needed for each stock

Strategies

2.2.1 Demonstrate, through simulation modelling, the sampling required of a stock to achieve sufficient levels of precision in estimates of exploitation.

Measurable target

- Sampling designs for all the main stocks under Commission responsibility elaborated by SCRS by 2020.

2.3 Develop coordinated biological sampling programs for ICCAT stocks

Strategies

2.3.1 Institute regular and representative collections of biological samples as necessary to determine the age and stock structure of the catch to reduce the uncertainties.

2.3.2 Cooperate with national scientists and CPCs to develop appropriate biological sampling programs for ICCAT stocks.

2.3.3 Dedicate more effort and budget by ICCAT CPCs toward programs for collecting biological information necessary to more fully characterise stock status.

Measurable target

- Increase of 50% in biological sampling programs within a 5-year time frame.

GOAL 3 DEVELOP PROGRAMS FOR THE COLLECTION AND COMPILATION OF ADDITIONAL DATA NECESSARY TO IMPROVE THE SCIENTIFIC ADVICE TO THE COMMISSION

OBJECTIVES

3.1 Develop a comprehensive by-catch & observer data set

Strategies

3.1.1 Identifying the extent of the fisheries that catch tuna and tuna-like species for which CPCs should report catch and by-catch data, e.g. specify, shark and other species for which catch, effort, and size (age) data must be reported.

3.1.2 Defining standardised and flexible forms for reporting by-catch with an associated comprehensive electronic form, ensuring the form is consistent with a data base structure that allows CPCs to report by-catch at levels of aggregation in a way that ensures data confidentiality rules are met.

3.1.3 Compiling and maintain meta-data on observer programs and observer data collected by CPCs. Implement mandatory reporting of observer data collected by CPCs.

3.1.4 Enhancing coordination between the CPCs to cover the objectives of observer data collections. Conduct regular reviews of data provided through joint analysis and working group discussions.

3.1.5 Including in the national observer sampling programs the collection of gear and vessel characteristics, and other information, that can be used to standardise CPUE and estimate fishing capacity and changes in effective fishing effort.

3.1.6 Improving estimation of dead and live discards through collection of comprehensive data on total catch composition and disposition through observer (human and/or electronic, as appropriate).

Measurable target

- Representative observer and by-catch data set from 80% of the ICCAT fleets by 2020 and evidence of increase in analyses of CPC observer data through the number of papers submitted to the SCRS annually.

3.2 Elucidate data needs for Provision of Ecosystem Based Fishery Management Advice

Strategies

3.2.1 Defining data collection needed for the implementation of EBFM through application of integrated ecosystem models to identify key ecosystem components which need to be monitored in order to more broadly apply EBFM.

3.2.2 Include in the national sampling programs the collection of socio-economic information from the large pelagic fisheries by developing protocols for the collection of socio-economic data for large pelagic fisheries and upgrading ICCAT databases to include data other than biological data.

Measurable target

- Developing protocols for the collection of socio-economic data. Application of Integrated ecosystem models.

GOAL 4 **INFORMATION FOR ECOLOGICAL AND OCEANOGRAPHIC DATA (CLIMATE CHANGE) LINKS TO AVAILABLE DATA**

OBJECTIVES . . .

Strategies . . .

Measurable target . . .

DIALOGUE AND COMMUNICATION

[Merge Goals 1 and 2]

GOAL 1 **IMPROVE THE DIALOG WITH THE COMMISSION**

OBJECTIVES

1.1 Elevate science-management dialogue in support of defining critical elements of the decision framework policies of Rec [11-13]: "high probability" and "as short a period as possible"

Strategies

1.1.1 Implementing the Standing Working Group to Enhance Dialogue between Fisheries Scientists and Managers (SWGSM) [Rec. 13-18].

1.1.2 Promoting dialogue of SCRS scientists with their CPCs or Regional Organizations, enabling greater coordination and capacity.

1.1.3 Fully utilising possible GEF-ABNJ funding intended to promote such dialogue.

1.1.4 Focusing on stocks which give cause for concern while management advice is sought for those stocks.

Measurable target

- To provide mechanisms to the Commission so as to be able to adopt probabilities and deadlines for stocks before 2020 (50% percent of cost to be covered by GEF/ABNJ project).

1.2 Review the implications of ICCAT Recommendations and Resolutions across different groups (SCRS) and Panels

Strategies . . .

Measurable target . . .

GOAL 2 **PROMOTE OPEN DIALOG WITH THE COMMISSION AND INTERESTED PARTIES**

OBJECTIVES

2.1 Institute periodic meetings with decision makers, SCRS scientists, and stakeholder with more opportunity for free interchange (i.e., not in the usual Commission format)

Strategies

2.1.1 Instituting periodic meetings with Commissioners and stakeholders to discuss how they can tangibly contribute their knowledge of the fishery to the assessment.

2.1.2 Encouraging participation in the meetings by industry, NGOs and other stakeholders.

2.1.3 Taking advantage of the GEF/ABNJ funding offered to ICCAT in support of MSE conduct and in support of conducting dialogue with Commissioners and stakeholders.

Measurable target

- An SCRS-COM stakeholders meeting in the format of the SCRS Working Groups (50% percent of cost to be covered by GEF/ABNJ project).

GOAL 3 **IMPROVE THE DIALOGUE WITHIN THE SCRS**

OBJECTIVES

3.1 Increase interaction between SCRS officers

Strategies

3.1.1 Encouraging participation of SCRS officers in regular and inter-sessional meetings of the Sub-Committees (Statistics and Ecosystems) and Stock Assessments Methods Working Group.

Measurable targets

- 100% SCRS officers participate in the SCSTAT meetings.
- 100% of SCRS officers participate in the annual coordination meeting.

3.2 Develop better dialog between the working group chair and potential participants

Strategies

3.2.1 Submitting work documents to the Secretariat in advance of the meetings.

3.2.2 Based on the group's response, the Chair will ensure that the appropriate time will be given to the relevant documents within the framework of the meeting agenda.

3.2.3 The documents will be made available before the meeting to registered participants.

3.2.4 Promoting work with all intersessional participants.

3.2.5 Committing the participants in the work to performing the inter-sessional tasks.

Measurable targets

- Broader participation in the working group reports.
- Develop a protocol for the submission of documents prior to meetings.
- 100% of the work plans established (containing deadlines, allocated responsibilities, framed within the strategic plan, subject to financial and technical conditions).

GOAL 4 **IMPROVE THE DIALOG WITH THE SCIENTIFIC COMMUNITY**

OBJECTIVES

4.1 Strengthen linkages and collaboration with other Tuna Regional Fishery Management Organizations (tRFMOs)

Strategies

4.1.1 Increasing the scientific exchange between the SCRS with other RFMOs.

4.1.2 Prioritising the participation of scientists from other tRFMOs as guest experts or as peer reviewers.

4.1.3 Promoting inter-tRFMO meetings on areas of common interest (species, assessment methods, data acquisition, etc.), taking advantage of other fora in which best practices are being discussed. Such as ISSF stock assessment workshops.

4.1.4 Supporting the processes arising from Kobe of the By-catch and MSE groups.

Measurable targets

- Broader participation in the working group reports.
- External experts or scientists from other tRFMOs will participate in five SCRS meetings up to 2020.
- An inter t-RFMOs meeting on an area of common interest before 2020.

4.2 Strengthen linkages and collaboration with ICES

Strategies

4.2.1 Extending the cooperation to all the shared shark species in all areas of mutual interest (e.g. assessment methods).

4.2.2 Encouraging the participation of the Chairs of the ICES and ICCAT shark groups in the assessment meetings of both organisations.

4.2.3 Communicating to the scientists of ICCAT CPCs the ICES agendas for the purposes of encouraging their participation.

Measurable target

- Number of meetings with joint participation of ICES-ICCAT.

4.3 Collaborate with a peer-reviewed journal to enhance communication of SCRS science products to the scientific community

Strategies

4.3.1 Seek out a scientific journal that encourages peer-reviewed articles on a variety of topics.

4.3.2 Considering a dedicated tRFMO peer-reviewed journal.

Measurable target

- Partner with at least one peer-reviewed annual publication.

4.4 Promoting the dialogue and communication between CPCs in order to carry out scientific research on ICCAT fishery resources in a coordinate and efficient way

Strategies

4.4.1 Use the funding programs to develop capacity, research and cooperation between the CPCs, preferably intra-regionally.

4.4.2 Use the opportunities afforded by the special fund (SCBF) in accordance with Rec. 13-19.

Measurable targets

- Full utilisation of the Scientific Capacity Building Fund (SCBF) throughout the period of the plan.
- 10 collaborative papers on a regional scale to be submitted to the SCRS groups.

~~***GOAL 5 IMPROVE THE DIALOG WITH THE SOCIETY***~~

~~***OBJECTIVES***~~

~~***5.1 Broad dissemination of the results of the SCRS work to the society as a whole***~~

~~***Strategies***~~

~~5.1.1 Defining dissemination procedures.~~

~~***Measurable target***~~

- ~~A mechanism in place by 2020.~~

~~***GOAL 6 IMPROVE THE MECHANISMS OF COMMUNICATION OF THE SCRS***~~

~~***OBJECTIVES***~~

~~***6.1 Work on the Ontology of the durability of tuna fisheries in the epipelagic ecosystem***~~

~~***Strategies***~~

~~6.1.1 Utilising ontological methods of process analysis to share basic concepts and a clear representation of the SCRS missions among the various groups (scientific, administrative, NGO, fishers' organizations), and for decision-making, specifically employing an MSE approach.~~

~~6.1.2 It is proposed to set up an ad hoc working group, related to the WGSAM, contracting an expert in ontological engineering (i.e. in graphic or textual representations) to analyse and represent the ontologies of the main SCRS missions (diagnosis and uncertainty, selection process of regulatory measure, an ecosystem approach to fisheries).~~

~~6.1.3 Graphical representation (conceptual map, mind map, etc.) of the process of information flows or interconnections, from data collection through to the final objective, could provide clarification. This would then facilitate dialogue and integration of groups from various disciplines (fisheries, ecology, socio-economics) regarding the concepts used, knowledge, responsibility and point of intervention of each of them, as well as time management of the different SCRS tasks from an MSE approach, etc.~~

~~***Measurable target***~~

- ~~No measurable target has been identified.~~

PARTICIPATION AND CAPACITY BUILDING

GOAL 1 **PRESERVE AND PROMOTE THE INDEPENDENCE AND EXCELLENCE OF THE SCRS AND ITS WORKING GROUPS**

OBJECTIVES

1.1 Avoid conflict of interests and ensure the independence of the scientific process

Strategies

1.1.1 Adopting, publishing and implementing SCRS rules, including a code of conduct for scientists and for observers.

Measurable target

- Code of conduct of the SCRS by 2016.

GOAL 2 **IMPROVE SCIENCE CAPABILITIES OF THE SCRS ~~OBJECTIVES~~**

OBJECTIVES

2.1 Increase the capacity of the CPCs in meeting data-related obligations

Strategies

2.1.1 Developing programs to assist CPCs in meeting data-related obligations.

2.1.2 Continuing training on basic data collection and concept of representative sampling, preferably on site when feasible.

2.1.3 Increasing financial support to the CPCs monitoring and data collection.

2.1.4 Developing a strategy of observer's system improvement by training, monitoring and evaluation system.

Measurable target

- 20% reduction in Secretariat's annual report on statistics list of specific data elements that are lacking for each stock over a 5-year span.

2.2 Increase the ability of the SCRS in the application of methods used in providing management advice on tuna stock management

Strategies

2.2.1 Evaluating the use of funds currently available and evaluate the efficacy of the training activities conducted by the Secretariat and the SCRS in the recent years.

2.2.2 Defining standardised curriculum contents required to increase the abilities of the SCRS according to the needs required.

2.2.3 Working with CPCs to develop and promote undergraduate and graduate level curricula in quantitative fishery science.

2.2.4 Organising regular training courses, workshops, webinars and on-line courses.

2.2.5 Developing audiovisual, multimedia, electronic training material adapted to the curriculum contents defined.

2.2.6 Evaluate the value of the training programs conducted.

2.2.7 Bringing experts to meetings when there are clear and identified needs for the improvement in the knowledge/ability amongst participants in order to meet Commission objectives.

2.2.8 Attending meetings in other fora where contact can be made with experts in areas where the SCRS has deficiencies.

2.2.9 Developing and enhancing synergies and coordination of capacity-building initiatives.

Measurable target

- 5 courses are conducted and the training materials are openly available on the website.

GOAL 3 **ENHANCE AND IMPROVE PARTICIPATION IN THE SCRS, AND IN PARTICULAR ENHANCING THE ACTIVE INVOLVEMENT OF DEVELOPING ECONOMIES IN THE SCRS ACTIVITIES**

OBJECTIVES

3.1 Ensure the participation of scientists from those CPCs that harvest significant portions of the stock

Strategies

3.1.1 Advocating a mandatory participation for CPCs that catch >10% of the total catch of a given stock.

3.1.2 Note the participation of scientists by CPC in the elaboration of the scientific advice.

Measurable target

- 100% participation of the CPCs that harvest significant portions of the stock.

3.2 Increase scientific leadership for the SCRS by scientists from G77 economies

Strategies

3.2.1 Emphasizing the need for cross-cultural leadership in the SCRS with Commissioners.

3.2.2 Recruiting aspiring individuals from amongst G77 scientists attending SCRS meetings.

3.2.3 Seeking possible special 'capacity building' funding support for time & travel for G77 scientists to serve in leadership positions.

3.2.4 Establishing mentoring programs specifically targeted at aspiring G77 scientists using vice-Reporter positions where appropriate.

Measurable target

- At least 30% of the SCRS officers belong to G77 countries.

3.3 Increase scientific participation in the SCRS by scientists from G77 economies

Strategies

3.3.1 Supplementing travel/participation funding of G77 CPC scientists at inter-sessional and plenary.

3.3.2 Sponsoring long-term training at one or more national laboratories.

3.3.3 Initiating collaborative research projects with G77 scientists leading to SCRS/white journal papers.

Measurable targets

- 33% increase in scientific participation at the SCRS by scientists from G77 economies.
- Supplementing travel/participation funding: 10 participations funded per year.
- Long-term training of at least 6 scientists from G77 economies.
- Initiate 3 collaborative projects with the involvement of scientists from G77 economies.

RESEARCH PRIORITIES

GOAL 1 **QUANTIFY THE MAJOR UNCERTAINTIES AFFECTING STOCK ASSESSMENT AND MANAGEMENT ADVICE**

OBJECTIVES

1.1 Identify the major uncertainties affecting management advice and the type of research needed to address them

Strategies

1.1.1 Compile metadatasets about biological and fishery data that will allow characterisation of quality of data as well as identification of knowledge gaps.

1.1.2 Conduct meta-analyses and reviews on the knowledge about biological parameters, fishery data, data processing and assumptions during the assessment process.

1.1.3 Conduct surveys within the SCRS with specific questionnaires to characterise the expert opinion on the main uncertainties.

Measurable targets

- Metadatabase for fishery, biological and mark recapture data.
- At least one cooperative SCRS or peer reviewed research paper for each main specie identifying the main sources of uncertainty and ranges for different (e.g. biological) parameters.

1.2 Quantification of the relative importance of the different uncertainties and prioritisation of future research

Strategies

1.2.1 Developing simulation frameworks (MSE-style approach) for all main species or group of species, that allow the testing of the cost/benefits of different research activities (e.g., How much of the biology do we need?).

1.2.2 Developing (and/or updating) research plans for each specie or group of species, accordingly.

1.2.3 Prioritising according to socio-economic importance and stock status.

Measurable targets

- Simulation approach developed for each main species.
- At least one collaborative SCRS or peer reviewed research paper describing the relative merits of different research actions, for each main species.

GOAL 2 **ACQUIRE THE NECESSARY BIOLOGICAL KNOWLEDGE IN TUNA AND TUNA-LIKE SPECIES, AS WELL AS IN CRITICAL BY-CATCH SPECIES COMMENSURATE TO THE NEEDS FOR THE ASSESSMENT OF THE DIFFERENT STOCKS UNDER THE CONVENTION**

OBJECTIVES

2.1 Get accurate biological knowledge on stock structure, migrations and life history (growth, maturity, fecundity, maternal effects, etc.)

Strategies

2.1.1 Identifying biological knowledge gaps within the species working groups.

2.1.2 Promoting joint collaborative analyses of sparse biological datasets.

2.1.3 Designing and execute biological research programs.

2.1.4 Evaluating spatio-temporal patterns in fisheries data.

2.1.5 Summarising the outcome of the research programs by characterising the estimated biological parameters and their variability.

Measurable target

- Development of peer reviewed papers describing new biological findings.

GOAL 3 **IMPROVE THE STANDARDISATION OF THE FISHERY DEPENDENT INFORMATION**

OBJECTIVES

3.1 Develop measures of fishing capacity and standardized fishing effort for different fleets

Strategies

3.1.1 Agreeing, within the WGSAM, methodologies to quantify fishing capacity and standardised fishing effort.

3.1.2 Expanding EFFDIS estimates for PS, GN and other fleet/gears.

Measurable targets

- Develop SCRS documents and WGSAM reports on the methodologies to quantify fishing capacity and standardised fishing effort.
- EFFDIS database expanded to PS, GN and other gears, available at the website.

3.2 Further improve standardization of CPUEs for their use as reliable indices of abundance

Strategies

3.2.1 Developing standardised categories for different gear configurations/fishing strategies.

3.2.2 Continuing investigating alternative methods to standardise CPUEs and their relative merits/efficiency under different circumstances (changes in catchability due to changes in gear configuration, environmental influences, etc.).

3.2.3 Developing collaborative efforts to perform standardisations across national fleets.

3.2.4 Developing the quantitative basis for the potential use of floating objects to monitor relative abundance.

Measurable targets

- SCRS or peer reviewed paper on best practices to standardize CPUEs of different nature.
- Peer reviewed paper on the use of floating objects to monitor relative abundance.

GOAL 4 **APPLY APPROACHES WHICH PROVIDE INFORMATION ON POPULATION DYNAMICS INDEPENDENT OF DATA FROM THE COMMERCIAL FISHERY/ INCREASE IMPORTANCE OF FISHERY INDEPENDENT DATA IN ICCAT**

OBJECTIVES

4.1 Increase availability of fishery independent information to improve stock assessment and monitor the effect of management regulations
Strategies

4.1.1 Dedicated workshop on fisheries independent information for ICCAT (state of the art, as well as future development).

4.1.2 Fisheries independent indices of abundance (e.g. based on acoustics, aerial observations, egg-larvae surveys, scientific fishing, or other), should be sourced and projects to improve this information should be supported.

4.1.3 Implementing and/or continuing large-scale tuna tagging programs in support of developing fishery management advice (abundance, migration, mortality, etc.).

Measurable targets

- Development of report about dedicated workshop with specific recommendations on how to move forward.
- Increased number of peer reviewed and SCRS papers with the outcomes of fisheries independent research surveys.
- Develop and document experimental designs for mark-recapture surveys of key ICCAT species.

GOAL 5 **BALANCE THE ADEQUACY BETWEEN MODELS USED AND QUALITY OF DATA AND KNOWLEDGE**

OBJECTIVES

5.1 Develop guidelines and robust methodologies that can cope with a range of different situations, including data poor ones

Strategies

5.1.1 Dedicated workshop or contract to develop general guidelines, based on first principles, on best practices for the range of data qualities observed in ICCAT stocks.

5.1.2 Development of simulation frameworks to test the effects of alternative modelling approaches for different data qualities.

5.1.3 Collaborate with other institutions that work with the same goals.

Measurable target

- Identification and/or development of SCRS or peer reviewed papers on best practices and robust methodologies.

GOAL 6 **EVALUATE MANAGEMENT MEASURES AND STRATEGIES IN ACHIEVING THE OBJECTIVES OF THE COMMISSION**

OBJECTIVES

6.1 Quantify the effects of adopted as well as potential alternative management measures

Strategies

6.1.1 Develop MSE and other simulation frameworks for ICCAT tuna stocks that allow to test alternative management measures/strategies.

6.1.2 Apply such frameworks to quantify the effects of already adopted management measures.

6.1.3 Apply such frameworks to test candidate management strategies in consultation with the Commission.

Measurable target

- Development of SCRS and peer review papers with the effects of existing and alternative management measures/strategies.

GOAL 7 **COVER RESEARCH NEEDS SO AS TO BE ABLE TO INCLUDE ECOSYSTEM/CLIMATE CHANGE [identify specific objectives]/Bycatch CONSIDERATIONS IN THE PROVISION OF SCIENTIFIC ADVICE**

OBJECTIVES

7.1 Identify and fill knowledge gaps so as to be able to provide scientific advice including ecosystem considerations (e.g. assessment of by-catch species, mitigation strategies, environmental effects on population dynamics, fishing impacts on the ecosystem, socio economic aspects, etc.)

Strategies

7.1.1 Assessing the adequacy of existing ecosystem indicators in other forums and / or development of new indicators.

7.1.2 Sub-Committee on Ecosystems and By-catch to list the specific research needs and develop prioritised research plans.

7.1.3 Sub-Committee on Ecosystems and By-catch to organise specific workshops (e.g. on tropical tuna issues including moratorium effects, mitigation aspects, multispecies stock assessments, FAD effects and management plans, etc.).

7.1.4 Enhancing participation of researchers from different disciplines (oceanography, climate, socioeconomics, etc.) in the SCRS process (especially on the Sub-Committee on Ecosystem and By-catch) by invitation and appointment of specific tasks.

Measurable targets

- Development of Working Group reports with specific Research Plans.
- Increasing number of people by research discipline participating in the SCRS.

STOCK ASSESSMENTS AND ADVICE
[add preamble with definition of Goals that will not apply inclusive to all ICCAT species]

GOAL 1 **PROVIDE OBJECTIVE, RELIABLE AND ROBUST SCIENTIFIC ADVICE TO THE COMMISSION IN SUPPORT OF THE CONVENTION OBJECTIVES (VISION)**

OBJECTIVES

1.1 Integration of the different forms of uncertainties (e.g. natural variability and or lack of knowledge) in status diagnoses and projections

Strategies

1.1.1 Develop effective methods to integrate the sources of uncertainties into the stock assessment process and results.

1.1.2 Better utilisation of data preparatory meetings to quantify, prioritise, and integrate uncertainties identified in the previous assessment process.

1.1.3 Providing simple criteria could be used by the different working groups to start scoring the quality of the information used in different stock assessments.

1.1.4 Developing criteria to evaluate the importance of the different data elements depending on the life history and/or assessment model used.

1.1.5 Developing a meta-database with information on the quantity and quality of available fisheries, biological information, and mark-recapture data.

1.1.6 Utilising tables/plots as presented at the 2014 WGSAM, in an effort to be consistent with the resolution 13-15.

Measurable targets

- Development of a more standardised Terms of Reference for the Data Preparatory Meetings (and Assessment meetings?) that include a more complete analysis of the advice and uncertainty from the previous assessment.
- Further evaluate the quality of the fisheries data and related to the knowledge of the species.

1.2 Provide scientific advice using methods of analysis that are appropriate for the amount of information available for a given stock

Strategies

1.2.1 Applying MSEs to determine most parsimonious and robust assessment approaches and control rules to use given current and likely future information levels/data quality.

1.2.2 ICCAT continuing to build staffing levels to support the data needs of more sophisticated stock assessment models.

1.2.3 The SCRS should continue to participate in the ICES SISAM initiative in order to further promote collaborative work in developing assessment methodologies.

1.2.4 Establishing a dialogue with the Commission on the future role of the Secretariat and CPCs in the conducting of future assessments.

1.2.5 Conducting the meetings of the WGSAM next to already established meetings of the same topic in an effort to cultivate outside interactions.

1.2.6 Encouraging CPCs to provide sufficient access to CPUE set-by-set data according to the needs and priorities identified by the different species groups and the subcommittees; use of the existing “cloud” opportunities.

1.2.7 Developing protocols for utilising robust population indicators annually for species which are not necessarily being assessed.

Measurable target

- Conduct a meeting between the Commission and CPCs to discuss the future roles of the CPCs and the Secretariat in future assessments.

1.3 Consolidate the stock assessment catalogue to ensure the best use of models that should be fully documented

Strategies

1.3.1 Update the current stock assessment catalogue to remove outdated software and update the software versions that are currently being used.

1.3.2 Ensure that all software used in the most recent assessments are matched up with the versions in the catalogue.

1.3.3 Ensure that software is well documented and have an accompanying user's manual and code.

Measurable targets

- Reactivate the Working Group of the Stock Assessment Catalogue and review the protocols of inclusion and updating the software used for stock assessments while maintain a historic repository of version control.

1.4 Improve Stock Assessments by incorporating improved information on fishery and life history characteristics

Strategies

1.4.1 Encourages CPCs to provide limited access to CPUE set-by-set data according to the needs and priorities identified by the different species groups and the subcommittees; use of the existing "cloud" opportunities.

1.4.2 Quantification of exactly how much more information constitutes "improved".

1.4.3 Addressing uncertainties in stock assessment by incorporating improved information on life history characteristics: fecundity, age composition of catch, growth, stock structure, and spatial distribution patterns of the stocks of concern.

1.4.4 Expand the aforementioned meta-database to other tRFMOs for comparisons across ocean basins.

Measurable targets

- A written plan of how the data will be collected, stored, shared, and utilised and for exactly what purposes by 2015.
- Use an MSE approach to quantify the sample sizes needed to improve the information.

1.5 Strengthen peer review process

Strategies

1.5.1 Ensuring financial support for the SCRS's plans to implement a peer review system.

1.5.2 Inviting outside experts (e.g., from other RFMOs or from academia) to participate in the SCRS activities, particularly for stock assessments.

1.5.3 Publishing the SCRS scientific findings in the scientific peer-reviewed literature.

Measurable target

- Conduct a peer review of at least one assessment each year.

GOAL 2 **EVALUATE ~~PRECAUTIONARY~~ MANAGEMENT PROCEDURES~~REFERENCE POINTS AND ROBUST HARVEST CONTROL RULES~~ THROUGH MANAGEMENT STRATEGY EVALUATIONS**

OBJECTIVES

2.1 The SCRS should continue to evaluate precautionary management reference points and robust harvest control rules through management strategy evaluations

Strategies

2.1.1 Determining and characterising major sources of scientific uncertainty in the assessment of ICCAT's stocks and fisheries.

2.1.2 Developing operating models to examine the impacts of these sources of uncertainty on management advice.

2.1.3 Conducting management strategy evaluations to determine most robust harvest control rules given scientific uncertainty.

2.1.4 Testing precautionary harvest controls rules (e.g. targets and limits) using MSE and make recommendations for use of these measures for ICCAT stocks.

Measurable targets

- Establish a 5 year schedule for the establishment of species specific HCRs which will include a default HCR in the absence of species specific information.
- Produce a review of MSE efforts so far in light of successes, lack of successes and the resources limiting future MSE progress and to collate feedback from managers and stakeholders on the process thus far.

2.2 Provide advice on the setting of precautionary approach and harvest control rules to avoid overfishing and decline of stocks as well as rebuild overfished and depleted stocks.

Strategies

2.2.1 Carrying out directed studies and workshops to discuss and develop harvest control rules with reference points that achieve stated Commission objectives.

2.2.2 Engaging other scientific bodies and RFMOs in the development of HCRs and LRPs.

Measurable targets

- Establish a 5 year schedule for the establishment of species specific HCRs which will include a default HCR in the absence of species specific information.
- Advocate the establishment of a standardised precautionary approach limit to be used as a default in the absence of more specific limits.
- Conduct at least one workshop on the use of MSE to evaluate harvest control rules to be held jointly with other RFMOs.

GOAL 3 ADVANCE ECOSYSTEM BASED FISHERY MANAGEMENT ADVICE

OBJECTIVES

3.1 Focus on the fishery and its role in the ecosystem, including the commercial and non-commercial species as well as the habitat.

Strategies

3.1.1 Through a dialogue with the Commission, determining and making clear the Commission EBFM Goals and Objectives.

3.1.2 Identifying the major ecosystem correlates and drivers of the various ICCAT stocks under consideration.

3.1.3 Creating testable hypotheses relating these ecosystem drivers to various life history parameters (recruitment, growth, migratory patterns, etc.) for incorporation into stock assessments either directly or indirectly.

3.1.4 Creation of a research effort to quantify and monitor in time and space (to the extent possible) the forage base for the various ecosystem functional groups under ICCAT consideration.

Measurable targets

- Create a proposal of possible EBFM goals and objectives to the Commission referring to those currently used by other RFMOs that are further along in this process.
- Support a post-doc or similar position to establish as ecosystem (multi-species, multi-functional group) operating model that can be used to test the aforementioned hypotheses.

3.2 Enhance the Ecosystem Approach to Fisheries Management (EAFM)

Strategies

3.2.1 Organising workshops to review, evaluate, and develop EAFM plans relevant to the tuna fisheries in the ICCAT Convention area.

3.2.2 Supporting dialogue on Integrated Ecosystem Assessment approaches within and between the RMFOs.

3.2.3 Taking advantage of the GEF/ABNJ funding that ICCAT will receive for this purpose.

3.2.4 Defining data collection needed for the implementation of EBFM through application of integrated ecosystem models to identify key ecosystem components which need to be monitored in order to more broadly apply EBFM.

Measurable targets

- Host a workshop and invite outside expertise to collaborate with the Sub-Committee of Ecosystems to determine an effective approach to the creation of an ESR.
- In line with other RMFOs, compilation of an Ecosystem Status Report that describes the current state and trends in selected ecosystem indicators for communicating this information to participating scientists and managers.

3.3 Develop short term, medium and long-term objective to enhance ecosystem based approaches

Strategies

3.3.1 Determining a list of relevant ecosystem indicators that could be included in ICCAT stock assessments.

3.3.2 Formally and explicitly include these indicators into current stock assessments to the extent they are appropriate and constitute an improvement to the assessment.

3.3.3 Developing management advice that incorporates and considers these critical indicators.

3.3.4 Applying Integrated Ecosystem Based Approaches to the ICCAT Convention area.

3.3.5 Conducting a meta-analysis of year/area effects on ICCAT species abundance.

Measurable target

- Conduct a metaanalysis of year/area effects on ICCAT species abundance with the goal of determining historic and recent changes in the spatial distribution of these species, possible regime shifts in productivity, and other relevant characterisations.

GOAL 4 **~~BROADEN~~ADVANCE THE SCIENTIFIC ADVICE TO INCLUDE ECONOMIC AND SOCIAL ASPECTS OF VARIOUS MANAGEMENT MEASURES [weakness at current SCRS level]**

OBJECTIVES

4.1 Development and testing of bio-economic modelling approaches and identification of data needs

Strategies

4.1.1 Clearly understand the Commissions goals and objectives for embarking on bio-socio-economic modelling.

4.1.2 Identifying which modelling platforms are most appropriate to meet these stated objectives.

4.1.3 Identifying the desired outputs of the models so that the appropriate data can be secured.

4.1.4 Including in the national sampling programs the collection of socio-economic information from the large pelagic fisheries by developing protocols for the collection of socio-economic data for large pelagic fisheries and upgrading ICCAT databases to include other than biological data.

Measurable target

- Protocol to collect bio-socio-economic information.

4.2 Development and test bio-economic modelling approaches

Strategies

4.2.1 Identifying experts in the field that will assist ICCAT in this exercise.

4.2.2 Identifying the resources available for this modelling effort.

4.2.3 Identifying the costs and benefits of bio-economic modelling and measures of success.

4.2.4 Beginning a dialogue with other tRMFOs on successful approaches.

Measurable target

- Creation of a plan to apply bio-socio-economic modelling approaches.