COMMISSION
SEVENTEENTH REGULAR SESSION
Electronic Meeting
8 – 15 December 2020

SCIENCE-MANAGEMENT DIALOGUE

WCPFC17-2020-21
23 November 2020

Paper prepared by the Secretariat

Purpose

1. The purpose of this paper is to re-submit for the further consideration of the Commission the proposal to convene a Science-Management Dialogue to facilitate the expeditious implementation of the Indicative Harvest Strategy Workplan (Attachment H of the WCPFC16 Summary Report).

2. The paper also includes two related documents from WCPFC15: *Key Decisions for Managers and Scientists under the Harvest Strategy Approach for WCPO Tuna Stocks and Fisheries* in **Attachment 1** and *Terms of Reference for a Science-Management Dialogue* in **Attachment 2** to facilitate a discussion on the utility of a Science-Management Dialogue.

Background

3. It may be recalled that the proposal was initially considered at WCPFC15 in December 2018 where the Commission was unable to agree on the terms of reference for the Science-Management Dialogue and decided to convene a 6 day WCPFC16 in December 2019 with additional time devoted to the Commission to discuss harvest strategies.

4. At the 15th Session of the Scientific Committee in August 2019, the Scientific Committee provided these related positions in support of a Science-Management Dialogue [Paragraphs 138-139, SC15 Outcomes Document]:

> "*SC15 noted a final report which reviewed reference points, harvest control rules, management strategy evaluation development across each of the tuna-RFMOs (SC15-MI-WP-14). SC15 also noted the usefulness of following developments on MSE in other RFMOs and recommended that the WCPFC continues engaging in the work of the joint tuna-RFMO MSE working group.*
>
> *Noting the decision made by WCPFC15 to hold a 6-day annual meeting in 2019 with additional time devoted for the Commission to discuss harvest strategies, SC15 re-iterated its support for a Science-Management Dialogue as outlined in the recommendation from*

SC14 (Paras. 469-473, SC14 Summary Report) for prompt development of harvest strategies. Noting the work on Harvest Strategies at SC15 and the increasing number of issues that require the attention of managers, some CCMs expressed the view that a Science-Management Dialogue session after SC15 meeting would have been useful, and supported such an approach after SC16."

5. The Commission at WCPFC16 in December 2019 considered again the proposal for a Science-Management Dialogue but instead decided to "*note that the Scientific Services Provider is planning to continue to undertake workshops for individual CCM to build capacity on harvest strategies"*.

6. The issue of the Science-Management Dialogue was again considered at the 16th Session of the Scientific Committee in August 2020, and the Scientific Committee stated that [para 84 e) of the SC16 Outcomes Document]:

"Finally, noting that the development of the WCPFC harvest strategy framework is reaching a mature stage, and the increasing number of issues that require the attention of, and feedback from, managers in order to progress the Harvest Strategy Workplan, SC16 again reiterates its previous recommendations for a Science-Management Dialogue to be convened. In addition, SC16 calls attention to the importance of such a dialogue to ensure the input of managers and stakeholders to the MSE process and to ensure timely execution of the Commission's harvest strategies workplan."

Recommendation

7. The Commission is invited to consider the proposal to convene a Science-Management Dialogue to facilitate the expeditious implementation of the Indicative Harvest Strategy Workplan.

Attachment 1

COMMISSION
FIFTEENTH REGULAR SESSION
Honolulu, Hawaii, USA
10 – 14 December 2018

KEY DECISIONS FOR MANAGERS AND SCIENTISTS UNDER THE HARVEST STRATEGY APPROACH FOR WCPO TUNA STOCKS AND FISHERIES

WCPFC-SC14-2018/ MI-WP-05
WCPFC15-2018-20

SPC[1]

[1] OFP - Pacific Community (SPC), Noumea, New Caledonia

EXECUTIVE SUMMARY

SC14 requested that this paper be submitted to WCPFC15. It has not been modified from its original version. Comments and suggestions raised by members at SC14 are summarised as footnotes in this executive summary.

Development of the harvest strategy approach for WCPO fisheries and stocks will require managers and scientists to make decisions on specific harvest strategy elements and issues. In this paper, we highlight key decisions that i) regional fishery managers and stakeholders, and ii) scientists (through the Scientific Committee) will need to consider as the harvest strategy work progresses.

As drivers of the harvest strategy process, fishery managers and the wider stakeholder group will need to define key aspects of the process. These decisions would be supported through the 'science-management dialogue' process (SC14 summary report section 5.1.5 and attachment F). Key areas and activities for decision making will include the following:

- An agreed procedure for selection of the 'best performing' management procedure[2];
- Approach for implementing the agreed procedure;
- Adopting Target Reference Points (TRPs) that define desirable states of a stock and fishery;
- Definition of fisheries and fishery controls within the harvest strategy[3];
- Input into candidate harvest control rules (HCRs);
- Feedback on presentational approaches to enhance decision making;
- Development of the monitoring strategy; and
- Definition of exceptional circumstances.

The Scientific Committee will also need to consider at future meetings:

- Operating model (OM) refinement and development;
- Define candidate estimation methods (EMs);
- Refine and evaluate performance indicators;
- Provide advice on scientific aspects of candidate HCRs;
- Support TRP definition;
- Review approaches to support the monitoring strategy;
- Evaluate economic indicators;
- Evaluate exceptional circumstances; and
- Develop multi-species approaches[4].

[2] Members noted that a process of negotiation rather than a defined procedure may be used to identify the 'best' management procedure.

[3] Members noted the challenges associated with this where stocks are managed through a variety of controls (e.g. BET is managed by catch under the WCPFC measure, effort under the LL VDS and by FAD closures for the purse seine fishery).

[4] It was noted that multi-species approaches will take time to develop and that initial testing of management procedures will be based on single species analyses.

1. ABSTRACT

Development of the harvest strategy approach for WCPO fisheries and stocks will require managers and scientists to make decisions on specific harvest strategy elements and issues. In this paper, we highlight key decisions that i) regional fishery managers and stakeholders, and ii) scientists (through the Scientific Committee) will need to consider during this SC meeting and in the near future.

As drivers of the harvest strategy process, fishery managers and the wider stakeholder group will need to define key aspects of the process. These decisions would be supported through the 'science- management dialogue' process, the consultative draft Terms of Reference for which is presented in SC14-MI-WP-06. Key areas and activities for decision making will include the following, which are described within this paper:

- An agreed procedure for selection of the 'best performing' management procedure;
- Approach for implementing the agreed procedure;
- Adopting Target Reference Points (TRPs) that define desirable states of a stock and fishery;
- Definition of fisheries and fishery controls within the harvest strategy;
- Input into candidate harvest control rules (HCRs);
- Feedback on presentational approaches to enhance decision making;
- Development of the monitoring strategy; and
- Definition of exceptional circumstances.

Key decisions for SC14 have been presented within the individual working papers on operating models (Scott et al., 2018a), performance indicators (Scott et al., 2018b) and development of harvest strategy elements for south Pacific albacore (Pilling et al., 2018). The Scientific Committee will also need to consider at future meetings:

- Operating model (OM) refinement and development;
- Define candidate estimation methods (EMs);
- Refine and evaluate performance indicators;
- Provide advice on scientific aspects of candidate HCRs;
- Support TRP definition;
- Review approaches to support the monitoring strategy;
- Evaluate economic indicators;
- Evaluate exceptional circumstances; and
- Develop multi-species approaches.

2. INTRODUCTION

Development of the harvest strategy approach for WCPO fisheries and stocks will require managers and scientists to make decisions on specific harvest strategy elements and issues. In this paper, we highlight key decisions that scientists (through the Scientific Committee) and regional fishery managers and stakeholders will need to consider during this SC meeting and in the near future.

Issues will require consideration from both a management perspective and scientific perspective. We identify some of these issues in Sections 3 and 4, respectively. From the scientific perspective, in addition to the specific issues that will be discussed during SC14 under individual working papers, Section 4 highlights some of the key decisions that SC will need to consider in coming meetings.

Communication within WCPFC between managers and scientists is currently through iterative reporting between SC and WCPFC-Commission meetings. A dedicated 'management-science dialogue' meeting will enhance the decision making process for these cross-cutting issues and draft Terms of Reference for such a meeting will be presented to SC14 for technical consideration (MI- WP-06).

Throughout this document we note that Scientific Committee and other subsidiary bodies make recommendations to the Commission and that the WCPFC Annual Session is the body through which formal decisions on all matters are taken.

The areas presented below represent as comprehensive a list as can be developed at the current time. However, further considerations and decision areas are likely to be encountered as the WCPO harvest strategy process develops. To aid the reader, the Annex to this paper contains a short glossary of key terms.

3. FISHERY MANAGER/STAKEHOLDER CONSIDERATIONS

As drivers of the harvest strategy process, fishery managers and the wider stakeholder group will need to define key aspects of the process. Key areas and activities for decision making will include:

- **An agreed procedure for selection of the 'best performing' management procedure (MP)**. Performance indicators are used to highlight how well a candidate MP achieves management objectives. A process for using those performance indicators to identify the "best" MP must be agreed upon (Scott et al., 2018b). This will involve:
    - ***Refinement of management objectives and their relative importance***. The development of harvest strategies is an iterative process. Managers will have the opportunity, throughout the process, to refine and prioritise management objectives for the fishery, and identify possible trade-offs between them.
    - ***Review, refinement and prioritisation of corresponding performance indicators***. Where management objectives are refined, their corresponding performance indicators must be reviewed and, where necessary, modified to ensure they continue to provide appropriate information.

  These discussions will require input from both managers and scientists.

- **Approach for implementing the agreed procedure**. Once a management procedure is agreed, the approach for its implementation, from development of CMMs to changes in how Commission business is undertaken, will need to be defined. Individual CCMs will need to have clear pathways for implementation of the agreed management procedure.

- **Adopting Target Reference Points (TRPs) that define desirable states of a stock and fishery.** TRPs can indicate stock levels that achieve several prioritised objectives (e.g. minimal risk,

profitability, suitable catch) and hence can condense multiple objectives into a single performance indicator. Managers will need to adopt TRPs within the harvest strategy framework, as done for skipjack tuna.

- **Definition of fisheries and fishery controls within the harvest strategy**. A fundamental decision is how fisheries should be managed, e.g. through either catch or effort. The overall mechanism to control harvest rates within the fishery of interest should be defined by managers during the early stages of harvest strategy development. In turn, the fisheries to which those harvest controls will apply (all fisheries catching a stock; specific gear type combinations; gear types in a specific location) should also be detailed.

- **Input into candidate harvest control rules (HCRs)**. Managers and stakeholders should provide input to key areas of candidate harvest control rules. This can include:
    - Constraints, where necessary, on maximum catch or effort within the system.
    - Minimum effort levels at low stock size (e.g. exclusion of archipelagic waters from management systems, as in Scott et al., 2016).
    - Constraints on change between management periods (e.g. maximum allowable change in the effort or catch).

  Definition of the fishery and fishery controls (see above) will also help define HCRs by influencing, for example, the minimum levels of fishing at low stock sizes. These discussions will require input from both managers and scientists.

- **Feedback on presentational approaches to enhance decision making**. Developing a robust harvest strategy requires understanding and analysing a large amount of data (for example, exploring the relative performances of numerous candidate MPs using a suite of performance indicators). To enhance decision making it will be necessary to develop methods for the presentation and analysis of these data. The preferred strategy is to develop iteratively a range of presentation methods through the harvest strategy process, relying on the feedback of managers to highlight issues and inform on preferred presentation options.

- **Development of the monitoring strategy.** The actual performance of the implemented harvest strategy must be monitored to determine whether outcomes achieved are consistent with the performance expected from the modelling work. Managers may need to prioritise and refine areas of data collection from the fishery to ensure that objectives can be monitored.

- **Definition of exceptional circumstances**. Exceptional circumstances include any event that falls outside the range of assumptions over which the management procedure has been tested. For example if biomass falls below the limit reference point, or catches continually exceed some upper threshold. The events considered to be exceptional circumstances, as well as the actions to be taken if they occur, will need to be agreed. These discussions will require input from both managers and scientists (see also Section 4).

4. SCIENTIFIC COMMITTEE

Key decisions for SC14 have been detailed within the individual working papers on operating models (Scott et al., 2018a), performance indicators (Scott et al., 2018b) and development of harvest strategy elements for south Pacific albacore (Pilling et al., 2018). Here we detail further harvest strategy areas that the Scientific Committee will need to consider at future meetings:

- **Operating model (OM) refinement and development**. For skipjack, following adoption of the candidate initial suite of OMs, there will be a need to consider the expansion or refinement of that suite in subsequent meetings. In turn, the frequency at which the OM suite needs to be reconditioned, for example based upon updated stock assessments (e.g. in 2019 for skipjack), will need to be defined. For the other stocks/fisheries, the candidate suites of OMs will need to be defined in order to allow MSE analyses to progress.

- **Define candidate estimation methods (EMs)**. Alternative candidate model-based and/or empirical-based EMs will need to be defined for evaluation within the harvest strategy framework for each stock/fishery, and SC will have a role in reviewing the models and inputs to them prior to evaluation.

- **Refine and evaluate performance indicators**. Through the iterative MSE process, existing performance indicators will be refined and reviewed by SC, and new performance indicators developed where managers identify new fishery objectives. This will include review of the approaches used to display the information to improve clarity for management decision making (see Section 3).

- **Provide advice on scientific aspects of candidate HCRs**. Through the MSE evaluation of candidate HCRs, SC will provide scientific advice to managers on their suitability based upon the performance indicators.

- **Support TRP definition**. Scientific analyses will be required to support the identification of candidate TRPs that appropriately trade off manager's objectives. Examples are the analyses performed for skipjack and south Pacific albacore in this area.

- **Review approaches to support the monitoring strategy**. SC will need to review the data requirements underpinning the monitoring strategy for the stocks/fisheries, to ensure that data collection for those requirements are in place prior to harvest strategy implementation, and provide relevant bodies with advice in this regard.

- **Evaluate economic indicators**. Related to both performance indicators and the monitoring strategy, SC will need to evaluate relevant economic indicators and provide advice on the data requirements to support particular harvest strategies in this regard.

- **Evaluate exceptional circumstances**. As part of the monitoring strategy, SC will also need to check for **the** occurrence of 'exceptional circumstances', for example where the estimated stock trajectory under a harvest strategy falls outside the range expected from the results of simulation testing. SC will need to identify the conditions considered to be exceptional circumstances and, if they occur, highlight this eventuality to managers, who must then consider what action should be taken (see Section 3).

- **Develop multi-species approaches**. Many of the fisheries under consideration affect more than one key tuna stock. This is an important consideration for e.g. the tropical longline fishery (yellowfin and bigeye) and in the longer term for the southern longline fishery (where yellowfin and bigeye are important contributors to revenue). SC will need to provide input into the development of the multispecies MSE framework.

5. REFERENCES

Pilling, G.M., Scott, R., Scott, F., and Hampton, J. (2018). Technical aspects of a potential South Pacific albacore harvest strategy. WCPFC-SC14-2018/ MI-WP-02.
Scott, R., Pilling, G.M., Brouwer, S. and Hampton, J. (2016). Evaluation of candidate harvest control rules for the tropical skipjack purse seine fishery. WCPFC-SC12-2016/MI-WP-06.
Scott, R., Scott, F., Pilling, G.M., Hampton, J. and Davies, N. (2018a). Selecting and conditioning operating models for WCPO skipjack. WCPFC-SC14-2018/MI-WP-03.
Scott, F., Scott, R., Davies, N., Pilling, G.M. and Hampton, J. (2018b). Performance indicators for comparing management procedures using the MSE modelling framework. WCPFC-SC14-2018/MI- WP-04.
SPC and WCPFC Secretariat (2018). Draft Terms of Reference for a WCPFC Science-Management Dialogue meeting. WCPFC-SC14-2018/ MI-WP-06.

ANNEX

A selected glossary of key terms used in this paper:

Estimation Method

The estimation method is used within the management procedure to provide an indicator of stock status, for example through a model-based stock assessment (e.g. MULTIFAN-CL) or through an empirical method such as CPUE analysis.

Harvest Control Rule (HCR)
An HCR is an agreed rule, or algorithm, that describes how fishing opportunities are intended to be controlled by management in relation to the state of some indicator of stock status. It is a component of the management procedure.

Management Procedure (MP)

The MP represents the management system of the fishery and can be described as the formally specified combination of monitoring data, analysis method (e.g., the estimation of stock status through an estimation method) and management actions (through a HCR). The MP may be based on current or alternative assessment methods and management approaches. MPs are tested by simulation and chosen for their performance in meeting specified management objectives and their robustness to uncertainty.

Operating Model (OM)

The OM is a mathematical representation of the biological components of the resource as well as the fishery that operates on the modelled population. It also includes models for the generation of data and the procedures for implementation of management regulations. It simulates the real world by attempting to capture all existing knowledge and data processes for the exploited populations and associated fisheries. Where knowledge is incomplete the OM should allow for the evaluation of the consequences of contrasting hypotheses about the dynamics of those populations and fisheries. In this respect a suite of different OMs may be identified, each one representing an alternative hypothesis. Very often the OMs will include a greater level of complexity than that used for the stock assessment so that all sources of uncertainty about future stock status might be appropriately included in the evaluation process.

Attachment 2

COMMISSION
FIFTEENTH REGULAR SESSION
Honolulu, Hawaii, USA
10 – 14 December 2018

TERMS OF REFERENCE FOR A SCIENCE-MANAGEMENT DIALOGUE

WCPFC15-2018-21
WCPFC-SC15-2019/MI-IP-08

WCPFC Secretariat

Purpose

1. The purpose of this paper is to present for the consideration and decision of WCPFC15 draft Terms of Reference for a proposed Science-Management Dialogue as recognised by WCPFC14.

Background

2. The Commission at WCPFC14 reviewed the Harvest Strategy Work Plan and extended its timeline out to 2021 to allow for ongoing work towards adoption of harvest strategies for the four key stocks. In doing so the Commission recognized that this work requires the consideration of fisheries managers and scientists at different stages. Accordingly, the Commission agreed to reprioritize as needed the annual agendas of the Commission and the Scientific Committee to allow sufficient time for consideration of harvest strategy issues. It also recognized that there may also be a need for a dedicated science-management dialogue.

Discussions at SC14

3. Pursuant to the above WCPFC14 direction, the schedule for the 14th Regular Season of the Scientific Committee (SC14) incorporated additional sessions for the Management Issues Theme for discussion on harvest strategy issues. The outcomes of progress of those harvest strategy discussions at SC14 are reported separately to the Commission.

4. SC14 considered the need for a dedicated science-management dialogue as recognized by WCPFC14 in terms of a proposed draft consultative Terms of Reference (TOR) for such a dialogue as presented in SC14 working paper: SC14-MI-WP-06. The discussion at SC14 occurred both in plenary and during an Informal Small Group that refined the consultative draft TOR, which is annexed to this document.

5. The SC14 recommendations on this subject matter were as follows (Paragraphs 473-478, SC14 Summary Report):

> *473. SC14 expressed strong support for such a Science-Management Dialogue to begin in 2019 in order to make expedited progress consistent with the agreed Harvest Strategy Work Plan and taking full advantage of the WCPFC14 recommendation to give sufficient time during SC to the work on harvest strategies.*
>
> 474. *SC14 therefore recommends that WCPFC15 take the necessary steps to establish such a Dialogue in 2019 and consider the draft Terms of Reference provided in **Attachment F** (see below).*
>
> 475. *SC14 noted that it is important for this group to possess authority to enable them to make the appropriate recommendations to the Commission. SC14 therefore recommends the Commission define the appropriate format for this group.*
>
> 476. *SC14 also discussed the timing of the meeting and various options were expressed. SC14 recognised that this is a decision for WCPFC15.*
>
> 477. *SC14 recommends that WCPFC15 take the following elements into consideration when establishing this group:*
>
> 1) *While the size of the meeting should remain manageable, at least 1 senior fishery manager per CCM and 1 scientist per CCM should be encouraged to attend. Additional scientific advisors to these managers may also attend. Also, the participation of stakeholders is important and encouraged.*
>
> 2) *Given the need to have informal (capacity building) and formal (decision-making) elements to the meeting, particularly in the initial stages, a 2-day meeting was the*

minimum meeting length believed appropriate[5]*. However, the duration of the meeting would need to be flexible based upon the agenda, which should be linked closely to the harvest strategy workplan.*

3) *Capacity building elements of the meeting should focus on a 'learning by doing' approach, whereby key tuna stock and fishery results are used within the process.*
4) *The potential for input and facilitation by external experts was noted, and the cost implications of this should be considered.*
5) *This group should specifically rely on information derived from SC or through SC requests, and should not change the scientific advice but may add to it from a management perspective.*

478. *SC14 also recommends that WCPFC15 adopt an appropriate name for this dialogue, such as the Harvest Strategy Development Working Group.*

Issues for Consideration by WCPFC15

6. The SC14 expressed strong support for such a science-management dialogue and recommended its establishment in 2019. However, from the SC14 recommendations it appears that most of the core issues the TOR sought clearer guidance from SC14 were referred to WCPFC15 for further consideration and decision with limited guidance. So WCPFC15 will still need to decide on these core elements of a science-management dialogue as follows:
   a) the status of the dialogue - is it a working group or a formal standing subsidiary body of the Commission;
   b) the size and duration of the dialogue meeting and the preferred participants;
   c) the structure of the dialogue considering the need for an informal (capacity building) and formal (decision making) segments;
   d) the involvement of external experts and their role in the dialogue;
   e) the need to maintain the integrity of the SC, and the science advice and information provided by it; and
   f) what is an appropriate name for the dialogue, SC14's preference is to label it the "Harvest Strategy Development Working Group" making the clear link with the Harvest Strategy Work Plan.

Recommendation

7. WCPFC15 is invited to consider the paper and decide for adoption the Terms of Reference for a Science-Management Dialogue.

[5] To inform WCPFC15 discussions on the potential length of the meeting, a very rough outline indicative schedule for the meeting has been developed by SPC (see Appendix 1). Note this should not be viewed as definitive.

The Commission for the Conservation and Management of
Highly Migratory Fish Stocks in the Western and Central Pacific Ocean
Scientific Committee
Fourteenth Regular Session
Busan, Republic of Korea
8–16 August 2018

Terms of Reference for a WCPFC Science- Management Dialogue Meeting

Consultative Draft Terms of Reference for a WCPFC Science-Management Dialogue meeting

CONSIDERATION ELEMENTS

The proposed science-management dialogue would be distinct from, but combine features of, Scientific Committee and Commission meetings. To facilitate further discussion on the 'science-management dialogue' meeting, a non-exhaustive list of key elements and issues is provided below, which would benefit from SC14 consideration. It is noted that SC14 did not reach consensus on some of these issues:

1. The science-management dialogue needs to make formal recommendations to the Commission (and also requests of other Commission bodies and groups). Should the dialogue be established as a formal subsidiary body of the Commission, established by Paragraph 6, Article 11?
2. If the science-management dialogue holds formal meetings, does the SC see benefit in including an informal discussion element to the meeting, to ensure all stakeholders (science, management, industry, NGOs) are able to engage in the process?
3. Should the structure of the science-management dialogue meeting therefore include both formal and informal sessions?
    - The informal session could provide opportunity for capacity building for all attendees with (minimal) presentation, and interactive discussion of available analytical results. The informal nature of this session would facilitate involvement by the wider stakeholder group. This may have implications for meeting length but this element is expected to decrease over time.
    - The formal session can cover substantial issues, which may include developing and reviewing relevant CMMs and clearing meeting recommendations (assuming the remainder of the report could be cleared electronically).
4. What elements should be considered to structure and organise a science-management dialogue, noting that a large, formal Commission-style meeting has become the norm? Should as a minimum a scientist and manager from each CCM, where possible, be recommended to attend?
5. Under the assumption that a Harvest Control Rule will be implemented through fishery/stock-specific CMMs, will the science-management dialogue meeting have any direct role in the development or review of those CMMs and provide recommendations to the Commission?
6. Should it be required that all technical/analytical information be first reviewed by the Scientific Committee before it is made available to the science-management dialogue and to the Commission? If so, should there be an exception made for new information that the Scientific Committee has specifically recommended to be made available?
7. How should a Science-Management Dialogue be chaired? One option that reflects the management/science balance of the meeting could be for it to be co-chaired by the Chair of the Commission and the Chair of the Scientific Committee.
8. Should the use of external experts to provide input to and potentially facilitate the meeting be considered?

9. Should the [inaugural?] science-management dialogue be proposed as a [one/two]-day meeting that incorporates both capacity building and the progression of substantial issues, including adoption of recommendations?
10. Are there ways that the SC agenda could be reprioritised to allow sufficient time for consideration of harvest strategy issues?

CONSULTATIVE DRAFT TERMS OF REFERENCE FOR THE WORKING GROUP ON HARVEST STRATEGY DEVELOPMENT (WGHSD)

To facilitate further discussion on the 'Working Group on Harvest Strategy Development', a consultative draft Terms of Reference is presented here, encompassing the input and advice of SC14. The harvest strategy work of this Working Group would focus specifically on those tuna fisheries and stocks detailed within the harvest strategy workplan[6] and any other stocks the Commission might decide while noting that this does not apply to Northern stocks.

Objectives

The Working Group on Harvest Strategy Development would have the following objectives:

1. To enhance mutual, consistent understanding and capacity building through focused interactions and communications among managers, scientists and other stakeholders on the objectives and outcomes relating to harvest strategies for key tuna fisheries and stocks in the western and central Pacific Ocean, thereby aiding:
    a. the ability of managers to drive the process of harvest strategy development and guide further scientific work, by promoting full and consistent technical understanding on harvest strategy concepts and the functions of its elements; and
    b. the ability of scientists to efficiently deliver relevant technical outputs by promoting full and consistent understanding of the WCPO management and policy environment.
2. To facilitate the iterative process of decision making in relation to WCPO harvest strategies by the Commission and its Committees.
3. To refine candidate harvest strategy options through review of analyses of the performance of candidate harvest strategies against noted management objectives, then forward a reduced number of acceptable candidates to the Commission, allowing the Commission to concentrate its decision making role on a reduced number of acceptable candidate options, thereby increasing efficiency.

Tasks

The activities of this Working Group will be guided by the WCPFC harvest strategy workplan.

4. The Working Group on Harvest Strategy Development would have the following tasks, which are split into formal and informal meeting components:

Meeting components:

a. Iterative development and refinement of the key elements of harvest strategies as described in CMM 2014-06 and other associated ingredients.
b. Reviewing and refining the detailed Scientific Committee outputs on Management Strategy Evaluation (MSE).
c. When appropriate, recommending to the Commission appropriate candidate harvest strategies that adequately meet noted management objectives for the fishery/stock, highlighting key trade-offs and risks.

[6] The draft workplan was outlined in WCPFC12-2015-DP09_rev1 and is reviewed and updated annually by the Commission as a permanent agenda item.

d. Requesting through the Commission of the Scientific Services Provider, additional analyses and new/refined harvest strategy elements (e.g. candidate harvest control rules, calculation and weighting of performance indicators) for re-evaluation, which may better achieve objectives and desired trade-offs.
e. Requesting through the Commission of the Scientific Services Provider, improved approaches to presenting results to increase clarity and enhance decision making.
f. Considering the implications of developing harvest strategies in relation to data collection and fishery monitoring systems and implementation mechanisms to ensure the future effectiveness of strategies, and making recommendations to the Commission.
g. Review and update the WCPFC harvest strategy work plan for recommendation to the Commission.
h. Review the performance and implementation of any agreed harvest strategy, including through the monitoring strategy.
i. Enhancing the understanding of managers, scientists and the wider stakeholder group through review and discussion of detailed Scientific Committee outputs.

Meeting

5. For the Working Group on Harvest Strategy Development to efficiently facilitate the development of harvest strategies, physical meetings will be convened consistent with Paragraph 6[7] of the Convention Article 11, for the production of formal recommendations to the Commission. All Commission rules will be applied to CCMs and observers, including provision of funding for participation by developing CCMs.
6. The Chair(s) of the meeting shall be determined by the Commission and the Chair will develop the agenda for the meeting, consistent with the harvest strategy workplan.
7. To facilitate appropriate dialogue, CCMs are encouraged to ensure attendance by both scientific and management personnel on their delegation. The participation of stakeholders is also encouraged.
8. The structure and size of the meeting, including informal and formal sessions, will be agreed by the Commission.
9. The meeting shall adopt a summary report detailing advice and recommendations for consideration by the Commission, and requests of its relevant Committees and Scientific Services Provider, as described above.

Timeframe

10. The meeting will be held for [one/two] days at a time determined by the Commission, as appropriate to maximise the attendance of CCM scientists and managers and facilitate the functioning of those other meetings.
11. The first meeting will be held in 2019. WCPFC16 will review the effectiveness of the meeting and determine its future.

[7] The Commission may establish such other subsidiary bodies as it deems necessary for the exercise of its functions, including working groups for the purpose of examining technical issues relating to particular species or stocks and reporting thereon to the Commission.

APPENDIX 1. DRAFT INDICATIVE SCHEDULE FOR THE 2019 'WGHSD'

Day 1	Day 2
Session 1 • Introduction, aims and specific focus areas • Agree agenda • Summary of harvest strategy developments and work plan progress • Latest SC advice • Pending issues & decisions for WCPFC	**Session 1** • Southern longline fishery • General Approach - Overview • Analyses and Results • Draft recommendations
Coffee break	
Session 2 • Tropical purse seine fishery evaluations • General Approach - Overview • HCR designs • Results - Overview • Organise breakout groups	**Session 2** • Tropical longline objectives/Bigeye & Yellowfin TRPs • Draft recommendations
Lunch	
Session 3 • Breakout groups – detailed discussions and analysis of results • Feedback to plenary • Next steps	**Session 3** • Finalise recommendations
Coffee break	
Session 4 • Draft recommendations	**Session 4** • Finalise recommendations