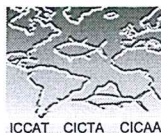**SCIENTIFIC COMMITTEE**
THIRTEENTH REGULAR SESSION

Rarotonga, Cook Islands
9 – 17 August 2017

Report of the 1st Joint Tuna RFMO Management Strategy Evaluation Working Group
WCPFC-SC13-2017/ MI-IP-09

Kobe MSE Working Group

ICCAT-SALIDA
N.º 376
FECHA 23 ENE. 2017

Madrid, 23 January 2017

ICCAT CIRCULAR # 0376 / 2017

SUBJECT: REPORT OF THE 1st JOINT TUNA RFMO MANAGEMENT STRATEGY EVALUATION WORKING GROUP

I have the honour to send you that the Synthesis Report of the First Meeting of the Joint Tuna RFMO Management Strategy Evaluation Working Group, which was adopted after the meeting held in Madrid, Spain (1-3 November 2016).

Please accept the assurances of my highest consideration

Driss Meski
Executive Secretary

DISTRIBUTION:

Kobe Steering Committee

Attachment: Synthesis Report.

Executive Summary

The Joint Management Strategy Evaluation (MSE) Technical Working Group was created during the Third Joint Meeting of Tuna RFMOs (the "Kobe process") in 2011 to support the implementation of the Precautionary Approach for tuna fisheries management. The Group has previously reviewed the Kobe Advice Framework and how the adoption of MSE would change the way that risk and uncertainty is communicated.

The Group met in Madrid November 1-3, 2016.

The objectives of the meeting were to:

- Review current MSE practice, successes, failures and potential areas for collaboration;
- Discuss progress on MSE;
- Identify future actions focusing on areas for collaboration.

The workshop was organised around five themes: namely 1) The MSE process and stakeholder dialogue, 2) Conditioning operating models, 3) Albacore case study currently underway across tRFMO's, 4) Computational aspects and 5) Dissemination of results.

MSE process and stakeholder dialogue

The tRFMOs have started to conduct MSE in order to evaluate the robustness of alternative Management Procedures (MPs) and are now engaged in a dialogue about the trade-offs between achieving a range of management objectives. Only the CCSBT has agreed and fully implemented an MP for setting TACs through such a process. The other tRFMOs are at various stages of MSE development and are expected to make progress over the next few years, although likely at different paces. Considering the lessons learned so far, as highlighted during the meeting, a number of key points have been revealed. Additional comprehensive reviews, beyond the scope of this meeting, are recommended to further elucidate ways forward.

While a Commission has the responsibility for the final adoption of a MP, the MSE process will also allow interim decisions to be made, i.e. in relation to the acceptable trade-offs between management objectives. Choices at a technical level made by the scientists involved in the MSE, however, will probably lead the development, e.g. in relation to options chosen when testing Management Procedures (MP).

Major interactions with decision makers and stakeholders will best be conducted using results from stocks of interest to illustrate trade-offs, so that they can choose between tangible options on the basis of actual projections rather than abstract concepts. The initial MP design and performance statistics, however, should be few, informative and based axes such as 'stock status', 'safety', 'stability' and 'yield'.

When conducting a dialogue, technical jargon and the tendency to lecture needs to be avoided when communicating the concepts related to development and testing of MPs. Technical terminology should be used only when absolutely necessary and should be consistently applied. Examples based on analogy, based on practical applications which encourage engagement of the audience, and using easily understood graphics, should be used. In addition, skilled facilitation should be employed in a dialogue to further engage and draw out the views of the participants.

A comprehensive review of the approaches and processes used when developing MPs across tRFMOs was beyond the meeting scope and should be developed as an outcome of the MSE tRFMO Group. However, an initiative is needed to identify additional key issues required to further facilitate adoption of Management Procedures in the tRFMOs.

Conditioning operating models

The meeting reviewed the operating models (OMs) currently being developed across the tRFMOs and found that the range of OMs examined were primarily based on assessment models. In some cases these OMs were developed to contain peculiarities of the stock/species not considered in the current assessment models runs, e.g. including spatial structure, as in the case of Indian Ocean skipjack and Atlantic Ocean bluefin tuna.

The current approach using an assessment model as the basis for OM design is a good starting point, though further processes (observation error and ecological processes with time dependence) should be accounted for in OM designs to ensure robustness.

Getting agreement on the scenarios considered should be done at the onset. A guillotine also needs to be applied, so that after an agreed date no new OM scenarios can be introduced. The process of eliminating unrealistic OM scenarios need to be standardized, and should be clearly documented so that tRFMOs can learn from each other.

A grid of OM scenarios (i.e. a design based on factors and levels) dealing with parameter and structural uncertainty has primarily been the basis of most development work so far. It was thought, however, scenarios dealing with sampling and time series approaches that account for non-stationarity of ecological processes should be examined also.

Plausibility weighting approaches that consider the qualitative approach used in the International Whaling Commission (IWC) SC should also be considered. In this approach scenarios are ranked as high, medium or low plausibility; the ones ranked low are then discarded, and MPs are required to meet a higher bar in terms of minimum stock size in projections for high plausibility scenarios compared to those ranked medium plausibility.

Spatial issues in OM and multi-stock/species structures are additional areas where further work should be undertaken, and observation error models accounting for sampling biases are important to consider.

Several t-RFMOs are in the initial planning stages of a multispecies MSE for tropical tunas. These MSEs will be specially challenging because they may also have to consider economic factors explicitly. Therefore it is recommended that the different development teams develop tools for collaboration through the tRFMO MSE technical group for the exchange of ideas and resources to enhance the development of tropical tuna multispecies MSEs.

Albacore Case Study

The albacore case study takes advantage of the relative advancement of MSE for several of the albacore stocks across several tRFMOs, and of the relative simplicity of the operating models required.

The case study will provide an opportunity to collaborate across RFMOs by conducting comparative studies on worldwide albacore stocks. The study will allow experiences to be shared, and provide a test bed for method development allowing rigorous, transparent, and replicable testing of methods and software.

Expected outcomes are improved collaboration on developing a common dialogue, new models and software, and promoting interdisciplinary work.

The highest priority research areas for the study will be: 1) how to select, weight and reject scenarios for OMs, 2) meta-analyses use of for difficult to estimate parameters that are difficult to estimate (and/or are confounded), *i.e.* to reduce value uncertainty and 3) the comparison of Harvest Control Rules (HCR).

As part of the work of the Group, a number of collaborative scientific papers will be developed. These will be both for the scientific committees of the tRFMOs and for peer review journals. These will describe case studies, novel methods and applications and ensure independent scrutiny by the scientific community. Draft outlines will be developed including tentative individual paper titles, an overview of each paper as well as its goal and a clear statement of the issues being addressed. The papers will be written inter-sessionally by interested members of the Group.

Computational aspects

It was recognised that it was important to include experts from outside of the tRFMOs and in disciplines related to risk, ecology, communication, computer science and control theory who could bring fresh perspectives to the Group.

These experts provided a value review based on their knowledge of feedback control systems, modelling and risk management in fields other than fisheries management science.

It was agreed that software validation is important, and should include tests across platforms, open code, and complete traceability. The user interface http://www.stockassessment.org and the use of make files was highlighted as an example of such an open and transparent framework, which could be used for both stock assessments and development of MSE.

The TMB R package was also considered to be an important tool for conducting MSE, and increases the potential of collaborating with others outside of the tRFMOs, e.g. ICES.

Dissemination of results

The presentations made during the meeting are available via the website. The group agreed, where possible, to provide links to the computer code available for each tuna stock, for both stock assessment models and MSE operating models. These links will be made available in the wiki page of the Group.

The bibliography on MSE will be updated in the wiki page with the documents for each tRFMO and relevant MSE related documents published by non-RFMO sources.

A compilation of glossaries on MSE and fisheries related terms will be made available in the wiki page (including those for the different tRFMOs, FAO and other sources).

Email lists will be created for communication on specific topics among group members.

The need for communication and visualisation tools, such as standardised "shiny apps", was highlighted. Support for the development of those tools may be available from partner institutions and/or other organizations.

The group agreed to work intersessionally on method development and on case studies; this work will assist the investigation of holding an MSE/CAPAM workshop followed by a special issue in Fisheries Research in 2019.