

Conclusions and Recommendations from the 2018 Joint tuna RFMO Management Strategy Evaluation Working Group Meeting in Seattle, USA – 13-15 June 2018

MSE process and stakeholder dialogue

- 1) The Group **stresses** that a successful and efficient MSE process should not be assigned to a single individual – it is an iterative process that should involve a consistent, core group of experts that regularly reports on progress to other scientists, managers and other stakeholders and implements their feedback. In addition, experience with previous MSE initiatives has highlighted the value of a ‘guillotine’ mechanism if the whole process is to avoid back-tracking and to meet deadlines for completion within a reasonable period of 2-3 years:
 - a) the first guillotine should apply to data selection, after which no new data may be taken into account in the process;
 - b) the second guillotine applies to agreement on a set of satisfactorily conditioned operating models, after which MPs testing is based on those accepted models alone. Further data or scenarios with their associated OMs that are forthcoming after these guillotine dates can be taken into account when the accepted MP enters a subsequent review and revision process (under an agreed schedule).
- 2) The Group **recommends** that each RFMO identifies all stakeholders, ideally at the outset, and clarifies their role and input within their MSE process. Not all stakeholders need to be involved in all aspects of the process; however, transparency and trust is critical and must be established. Mechanisms to achieve this, such as the use of “intermediary groups” (e.g. Miller et al; submitted) should be established.
- 3) In addition to scientists, the Group **advises** that consideration should be given to the use of other experts (e.g. managers, industry and/or conservation representatives) with experience of the MSE implementation process, to provide capacity building workshops for managers. This may facilitate better targeted information sharing as scientists may have a tendency to concentrate more on technical issues. In addition to the present capacity building efforts, consideration should also be given to more targeted approaches to individuals closer to decision process; this could include one-on-one meetings (with either a single individual or a group from a single country).
- 4) Small technical task groups to discuss and advance key aspects of the MSE process that are of common interest to the Tuna RFMOs are beneficial (and see 5 below). Care should be taken to ensure communication is maintained and that the work of these task groups is presented back to the larger tRFMO MSE WG and appropriate RFMO working groups.
- 5) Reviews of an MSE can be considered at 3 levels:
 - i. *Broad*: the overall MSE process (i.e. the rationale, framework and workplan);
 - ii. *More detailed*: specific MSE components e.g. review of operating models (OMs) and their conditioning (see 7 below); and
 - iii. *Specific*: validation of the technical code developed for MSEs at the various RFMOs, i.e. confirm that the code is correct and consistent with the equations documented in the full ‘trial specifications document’ (see 12 below).

The Group **recommends** that RFMOs should decide at an early stage how this review process will occur (including internal review through Scientific and other RFMO Committees and groups and/or the appointment of independent external experts on technical and process aspects of

MSE), noting that review must be iterative, not occur only at the end of the process. Should one or more RFMOs request that this Group is involved in the review process (this would provide a level of consistency amongst RFMOs), then long-term funding, support and expertise will be required. One option is that this Group could be directly involved in the first two levels as an advisory body, providing advice and facilitating contact with key experts to conduct one, or more, stages of the review and recommend appropriate sources of expertise for the validation exercise. The group **noted**, that transparency for the wider community was an important aspect of the review process and that the use of experts independent of the RFMO has been valuable in a number of case studies.

- 6) The Group recognizes that obtaining MSC (or similar) certification is a key motivator for fishing industries. However, concern has arisen about the applicability of the current MSC guidelines/criteria to fisheries managed under approaches developed using MSE. This is because the MSC's approach seems to be based on the "best assessment plus HCR" paradigm with its associated reference points, and these concepts often do not translate readily to the rather different management framework based on the precautionary MSE process. The Group therefore **recommends** that dialogue takes place with the MSC (perhaps leading to a joint workshop) to discuss their criteria for certification in an MSE context.

Conditioning operating models

- 7) With respect to OMs, the Group **advises** that it is valuable to limit their number to that needed to adequately address the key uncertainties, with a focus on those that may have management implications in the future (see 9 below). However, it **stresses** that this limitation should not be taken too far – the OMs should consider a range of plausible scenarios which is sufficiently broad that tested MPs or HCRs¹ do not require amendment or retesting too often.
- 8) The Group also **stresses** that it **essential** that all OMs are adequately conditioned i.e. ensure that they are sufficiently consistent with the historical data to be considered plausible. Whilst conditioning is a case-specific process, there are some general guidelines that should be followed including: the use of standard model fit diagnostics for indications of model mis-specification (automated where possible); focusing on the conditioning of 'limit' cases and which may be sufficient to justify the assumption that conditioning in between these is adequate.
- 9) Stock structure has been found elsewhere (e.g. with whales) to be a major source of uncertainty with strong conservation and management implications. It is also difficult to model. Thus far, this issue has not been given much emphasis in fishery MSE development. The Group **recommends** that much more attention is dedicated to this issue, including a focus on the research needed to provide the necessary data to develop and parametrize the OMs needed.
- 10) Shortage of time precluded discussion of the topic of how to weight the scenarios for which OMs are developed in relation to their relative plausibility. The Group **agrees** that this is an important and difficult issue that should be taken up with high priority in future meetings.

¹ Harvest Control Rules with discontinuities (leading to potentially large changes in recommended catches) should generally be avoided.

- 11) With respect to multispecies MSE, the Group **recommends** that initial OM developments focus on technical interactions (i.e., fleet and fishing operation levels with fleets focusing primarily on one species being unable to avoid catching others).

Computational aspects

- 12) The Group **stresses** that it is **essential** that the mathematical specifications for all code developed for MSE purposes is fully documented as part of a trials specification document; and that the code is validated and made publicly available, since it will ultimately be used to provide management recommendations.

Dissemination of results

- 13) The Group **recommends** that visualization approaches for presenting MSE results (e.g. for case study stocks) should be tested with various focus groups to check their suitability for each forum/stakeholder group. Feedback will help to develop more effective and targeted formats.
- 14) The Group **recommends** the creation of a common 'GitHub' or similar site to submit code for individual components of the various sets of MSE initiatives, including graphical presentations of results. This will also facilitate sharing of code on a modular basis that could be helpful to MSEs across RFMOs.

Further Work

- 15) In terms of its further work, the Group **recommends** that:
 - i. refinements to the draft glossary be made such that it can be finalized in three months' time (this should eventually include a lay glossary as well as a technical glossary);
 - ii. it continues to discuss the topic of 'Exceptional Circumstances'; this will be coordinated by Ann Preece and David Die;
 - iii. further consideration is given to the relative merits of model-based vs empirical MPs as it has been suggested (e.g. see Punt 2018) that there is little difference between model-based and empirical MPs in terms of performance, but that the latter have advantages in terms of easier understanding by stakeholders and simpler testing;
 - iv. a comprehensive joint TRFMO MSE WG website is developed that provides information and updates regarding the activities of the Group in a clear manner, as well as links to each RFMO's MSE webpages (a website manager should be identified and supported); and
 - v. the Chair develops a workplan, possibly in conjunction with a steering committee, to develop an agenda for the next meeting as well as a workplan and priorities for further activities.

References

Miller, S. K., Anganuzzi, A., Butterworth, D. S., Davies, C. R., Donovan, G. P., Nickson, A., Rademeyer, R. A. and Restrepo, V. Submitted. Improving communication: the key to increasing the effectiveness of MSE processes.

Punt, A. E. 2018. What Makes an MP an MP and an MSE an MSE?. Unpublished Presentation. University of Washington, 14 January 2018.