Research on management strategy evaluation: Update on activities and progress

Stock assessment program
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Past activities

- Preliminary MSE work has been conducted for:
  - Bluefin tuna (SAC-05-10b)
  - Dorado (SAC-07-06(ii))
  - Bigeye tuna (SAC-06-10b)

- Allowed for methodology development
  - Stock Synthesis (SS3) modelling platform as operating models have been developed based on stock assessment models
  - Data simulated using SS3 bootstrap capability
- Description of current and planned research in SAC7 (SAC-07-07h)

Current activities

- Literature review of limit reference points [SAC-08-05a](#)

- Work in progress on used to test interim reference points and interim harvest control rules using MSE for bigeye

- Participation on the MSE process for NP ALB
  - [Timeline and workplan](#)done by the ISC ALB WG

- Participation on Joint t-RFMO MSE Technical Working Group

MSE process for NP ALB

LESS OPTIMISTIC TIMELINE

Year	Quarter	Month	Milestone
2015	Q2	April	ALBWG mini-workshop to scope MSE
	Q3	July	ISC15 Plenary – approval of ALBWG MSE planning
		September	NC11 meeting to confirm workplan, request feedback from managers
	Q4	December	WCPFC meeting
2016	Q2	April	MSE Analyst hired by ISC country
		May	7th IATTC SAC meeting; MSE plans and progress
	Q3	July	ISC16 Plenary – progress report on MSE
		September	NC12 – 1-day workshop on MSE needs from managers
2017	Q2	May	8th SAC of IATTC; MSE plans and progress
	Q3	July	ISC17 Plenary – stock assessment reviewed for approval and report on MSE progress
		September	Prototype OM for MSE developed and evaluated by ALBWG
		September	NC13 – review prototype OM
2018	Q2	April	MSE OM revisions reviewed by ALBWG
		May	9th SAC of IATTC; report on progress with revisions to MSE
	Q3	July	ISC18 Plenary – revised MSE reviewed and approved
		September	NC14 – evaluation of revised MSE by managers and other stakeholders
2019	Q2	May	10th SAC of IATTC - report first round MSE results and conclusions
	Q3	July	ISC19 – report first round MSE results and conclusions
		September	NC15 - report first round MSE results and conclusions

Report on Annex 8

MSE Analyst hired by USA, she participated in the April 2017 Stock Assessment Meeting

May 2016:Managers Workshop

October 2017

CIAT IATTC

Joint t-RFMO MSE Technical Working Group

Created during the Third Joint Meeting of Tuna RFMOs (the "Kobe process") in 2011

- aim to technically support the implementation of the precautionary approach for tuna fisheries management.
- Kickoff meeting Nov 01-03 2016, Madrid
- Chair: Laurie Kell (ICCAT)

t-RFMO MSE Technical Working Group objectives of the kick-off meeting

- 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:
  - The MSE process and stakeholder dialogue,
  - Conditioning operating models,
  - Albacore case study currently underway across tRFMO's,
  - Computational aspects and
  - Dissemination of results.

Tuna-org

Joint Tuna RFMO Management Strategy Evaluation Working Group

At the Third Joint Tuna RFMOs meeting it was recognised that Management Strategy Evaluation (MSE) needs to be widely applied in order to implement the Precautionary Approach for tuna fisheries management. Therefore a Joint MSE Technical Working Group was created to work electronically initially.

Following discussions of the Steering Committee of Kobe Process it was agreed that an MSE workshop would be held in late 2016. After consultation with the tRFMOs Executive Secretaries/Directors, an initial list of potentially interested experts was provided by each tRFMOs.

The meeting will be held at the ICCAT Secretariat offices (Madrid, Spain) from November 1st to 3rd 2016, and registration is open to interested parties. Location, Hotels

The agenda of the meeting covers five main themes:

Development of a dialogue - between managers and scientists;

Conditioning of operating models - how to develop OM hypotheses, weight and rethem;

Computational aspect - development and sharing of code, cloud computing and parallel processing;

Albacore Case Study - to help develop practical examples it is intended to focus on albacore stocks worldwide.

Dissemination - glossary of terms, bibliography, common databases, shiny apps, publications, etc.;

t-RFMO MSE Technical Working Group Wiki Page

http://groupspaces.com/tRFMO-MSE/wiki/

MSE process and stakeholder dialogue

- 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'

Conditioning operating models

- Primarily based on assessment models.
- Some cases contain peculiarities of the stock/species not considered in the current assessment models (e.g. spatial structure)
- Further processes should be included to ensure robustness
- Process of eliminating unrealistic OM scenarios need to be standardized, and should be clearly documented so that tRFMOs can learn from each other
- Scenarios should be ranked as high, medium or low plausibility
- MPs are required to meet a higher standards on high plausibility scenarios
- Multispecies MSE for tropical tunas: may need to consider economic factors explicitly

Albacore case study

- Proposed based on:
  - relative advancement of MSE across several tRFMOs,
  - and of the relative "simplicity" of the operating models required.
- Priority research areas:
  - how to select, weight and reject scenarios for OMs,
  - meta-analyses use of for difficult to estimate parameters
  - the comparison of Harvest Control Rules (HCR)
- Expected outcomes:
  - collaboration on developing a common dialogue,
  - development of new models and software,
  - promotion of interdisciplinary work

Computational aspects

- include experts from outside of the tRFMOs (on risk, ecology, communication, computer science and control theory) who could bring fresh perspectives to the group.

- Software validation (testing across platforms, open code, complete traceability, e.g. stockassessment.org)

- Use of TMB R package

Dissemination of results

- On the [wiki page](), the group agreed:
  - when possible, to provide links to the computer code available for each tuna stock, for both stock assessment models and MSE operating models
  - share bibliography
  - compile glossaries on MSE and related terms
  - discussion email list
- Hold a MSE workshop followed by
- A special issue in Fisheries Research

Thank you