Possible Feedback on "Basic Structure of PBF MSE"

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Summary

In May 2018, ISC hosted PBF MSE Workshop in Yokohama, Japan (ISC, 2018). Some 70 participants including managers, scientists and stakeholders attended the meeting and started discussion on elements necessary for management strategy evaluation (MSE) of PBF. The Workshop developed a document titled "Basic Structure of PBF MSE" as a living-document to keep track of MSE development of PBF.

For particular relevance to PBFWG, the document includes potential operational management objectives, which are expected to be quantitively evaluated through MSE. ISC needs to comment on their relevance and feasibility. Here, I propose possible feedbacks from ISC on the document, which should be provided to the next PBF MSE Workshop planned in May 2019 in USA.

Reference

ISC, 2018. Summary Report of the Pacific Bluefin Tuna Management Strategy Evaluation Workshop.
http://isc.fra.go.jp/pdf/ISC18/ISC_18_ANNEX_08_Summary_Report_of_Pacific_Bluefin_MSE_Workshop_(May_2018)_FINAL.pdf

Basic structure of PBF MSE (as of March 2019)
This document will continuously be updated as MSE develops. Modification in this version is made by ISC PBFWG in March 2019.

1. **The Purpose of MSE of PBF**: "To develop long-term management strategies of PBF robust to perceived uncertainties including environmental impacts while also evaluating the current rebuilding strategy to rebuild the stock to 20%$SSB_{F=0}$ by 2034" **(ISC: It is unlikely at this stage that the MSE can address large-scale "environmental impacts" such as climate change. Recruitment fluctuation on the other hand would be addressed.)**

2. **Management objectives, operational management objectives and corresponding performance indicators:**

(1) Suggested possible additions to the current (aspirational) management objectives in the WCPFC Harvest Strategy (for further discussion at WCPFC NC-IATTC joint WG)

- Minimize negative impacts of increased PBF on other fisheries not targeting PBF **(ISC: It is unclear what kind of "negative impacts of increased PBF" are perceived. At this stage, MSE structure is expected to be similar to that of the current stock assessment. Therefore, the impacts of increased PBF can be assessed only on the fleets currently included in the assessment.)**
- Minimize negative impacts of management measures on sustainability of small-scale fisheries **(ISC: At this stage, MSE structure is expected to be similar to that of the current stock assessment. Therefore, the impacts of management measures can be assessed only on the fleets currently included in the assessment.)**

(2) Possible operational management objectives (should be able to be evaluated quantitatively through MSE)

Sustainability:

- Rebuilding: achieve 2nd rebuilding target (20%$SSB_{F=0}$) by 2034 with probability of at least 60%. **(ISC: It is better to be clarified if this is requisite or performance indicator; i.e. the candidate Management Strategies should be tuned to achieve 60% probability or the higher the probability, the higher the Management Strategy evaluated?)**
- Target: maintain the stock above TRP (B-base and/or F-base) (TBD) with relatively high probability (TBD)
- Risk: maintain the stock above LRP (B-base and/or F-base) (TBD) with (very) high probability (TBD). If the stock falls below LRP, rebuild the stock above LRP (TBD) within TIME (TBD) under the long-term management strategy (after 2034). (add recruitment related objective?)

Harvest:

- Yield: maximize yield (possibly including changing size of fish caught)
- Stability: ensure management changes are relatively small (TBD)
- Responsiveness: Respond more timely to biomass trend including recruitment variability **(ISC: Note that Stability and Responsiveness will have a trade-off relationship; when one is high, the other will be low.)**

Socio-economics:

- Maximize revenue to fisheries (trade-offs among fisheries? Increase Yield/Recruit?) **(ISC: We will treat this indicator as same as Yield above. Can we do anything for Yield/Recruit?)**
- Maximize social benefit from PBF fisheries (economic size of related industry?) **(ISC: At this stage, bio-economic MSE is not anticipated, although catch or CPUE /fleet can be provided from MSE.)**

(3) Performance indicators **suggested by ISC based on the proposed management objectives in 2. (2)**

Category	Management objective	Suggested performance indicator	Comments/questions from ISC
Sustainability	Rebuilding	Probability to achieve the 2nd rebuilding target by 2034.	Is this indicator or requisite?
	Target	Probability to stay above the target, or to stay in a certain area on Kobe chart.	TRP needs to be specified. Can we deal with F-based TRP?
	Risk	- Probability to breach LRP. - Time required to rebuild the stock above LRP.	LRP and acceptable risk need to be specified.
Harvest	Maximize yield	Expected average yield.	Timeframe needs to be considered. For example, short, medium, and long-term.
	Stability	Expected annual variance in catch.	Will managers set duration/amount of TAC change?
	Responsiveness	None.	This information should be included in "Maximize yield" and "Stability". The higher the yield and variance, the more responsive.
Socio-economics	Maximize revenue	None. (or CPUE can be useful?)	Yield can be provided. Trade-offs among fisheries should be investigated by the comparison of candidate Management Strategies.
	Maximize social benefit	None. (or CPUE can be useful?)	At this stage, economic model is not anticipated for MSE. Catch/CPUE per fleet can be provided.

3. Features of candidate management strategies to be advised by managers: options could to be evaluated through MSE. Some of them could be automatically filled as operational management objectives will be specified more.

Features	Status	Additional instruction
Rebuilding targets	Specified (SSBmed and 20%$SSB_{F=0}$, including timeframe)	
Risks (probability)	Specified only for rebuilding strategy	Risk to go below LRP, no more than 20% usually in WCPFC
Type of Management Strategy	Not specified. Empirical or Model based?	
Reference points	Not specified. Not indispensable, but low limit is desirable to evaluate MSs	
Duration of TAC	e.g. 2 or 3 years	
Change of TAC	e.g. 10%, 20% or absolute value (e.g. maximum or minimum)	
General guidance of TAC change	Proportional, different among CCMs, among fisheries?	
Any other features	e.g. Area-wise, size-wise, country-wise TAC? Any other?	

4. **Organizational structure for advancing PBF MSE**: Organizations responsible for various aspects to advance MSE, including decision-making and steering of MSE related work, scientific work and outreach, need to be clearly specified. Advice further discussion in this regard at NC-IATTC joint WG meeting.

5. **Timeframe and structure of computational aspects of PBF MSE**: It is expected that ISC PBFWG will be the principal organization to conduct computational aspects of PBF MSE. However, it is difficult for PBFWG to conduct assessment work and MSE work simultaneously. As the WG plans to conduct assessment in 2020 (2019-2020 March), the progress of MSE related work in 2019 will be minimum and substantive work on PBF MSE will commence after 2020 assessment is completed.