MIXED-FISHERY HARVEST STRATEGY DEVELOPMENTS

SPC-OFP WCPFC-SC17-2021/MI-WP-05

ON-LINE MEETING,

11–19 AUGUST 2021

Introduction

- SC15 agreed to consider developing a multi-species modelling framework for MSE for skipjack, bigeye, yellowfin and South Pacific albacore tuna.
- Develop single stock MPs for skipjack, bigeye and South Pacific albacore.
- Evaluate impact of these MPs on all stocks, including yellowfin.
- The paper provides a ‘proof of concept’ implementation of this framework based on skipjack, bigeye and yellowfin (no albacore).
- Example results generated for three different HCRs for the skipjack MP.
- No bigeye MP applied in this examples.
- Impact of skipjack MP on the bigeye and yellowfin stocks is demonstrated.

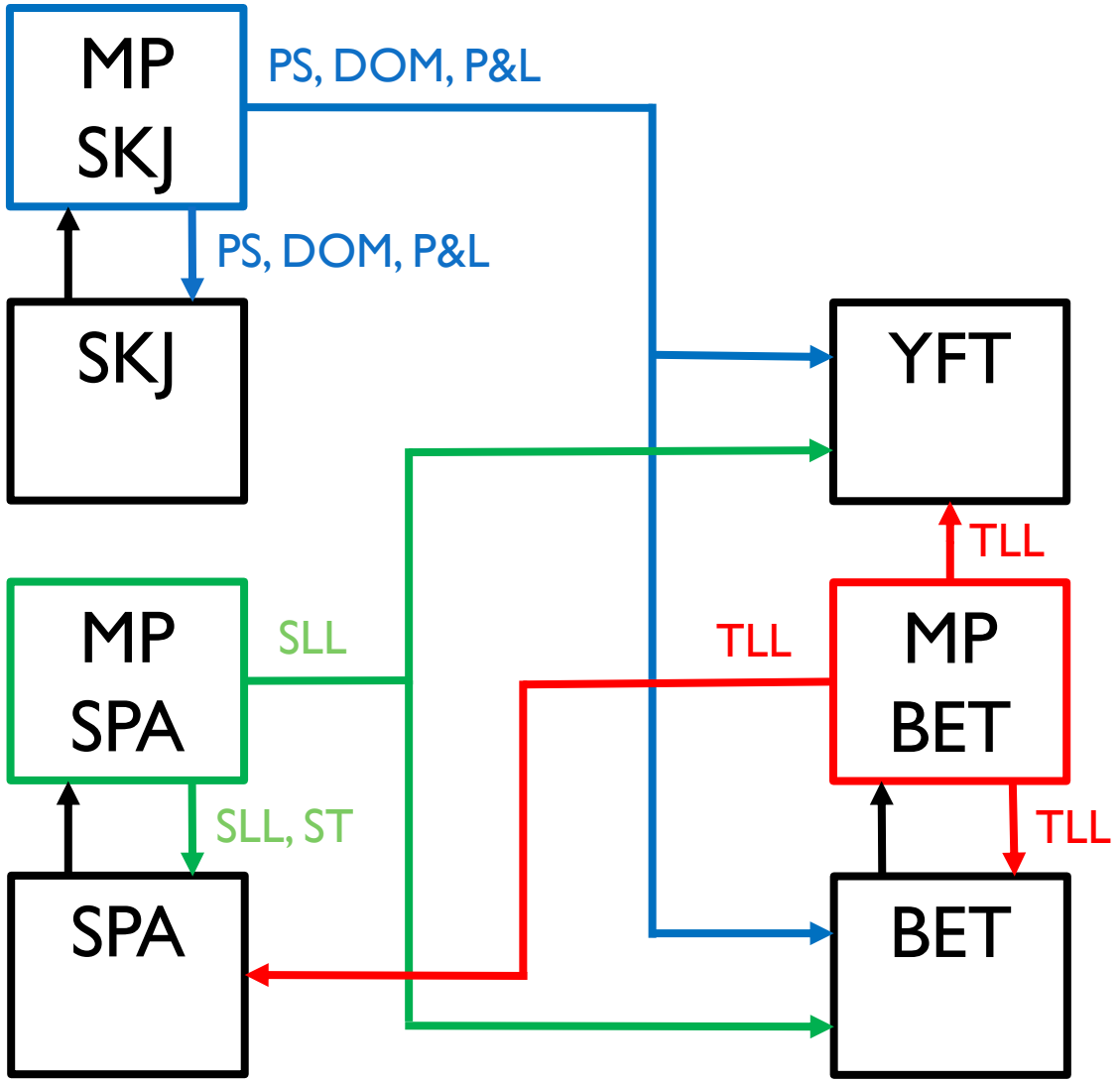
Summary

- The paper demonstrates that the technical challenges involved in implementing the multi-species modelling framework can be addressed and the framework remains tractable.
- Example results are sufficiently encouraging to support the continued development of this approach.
- Next steps:
  - Building a full suite of operating models for bigeye and yellowfin.
  - Develop candidate MPs for bigeye for the tropical longline fishery.
  - Agree multi-species performance indicators.

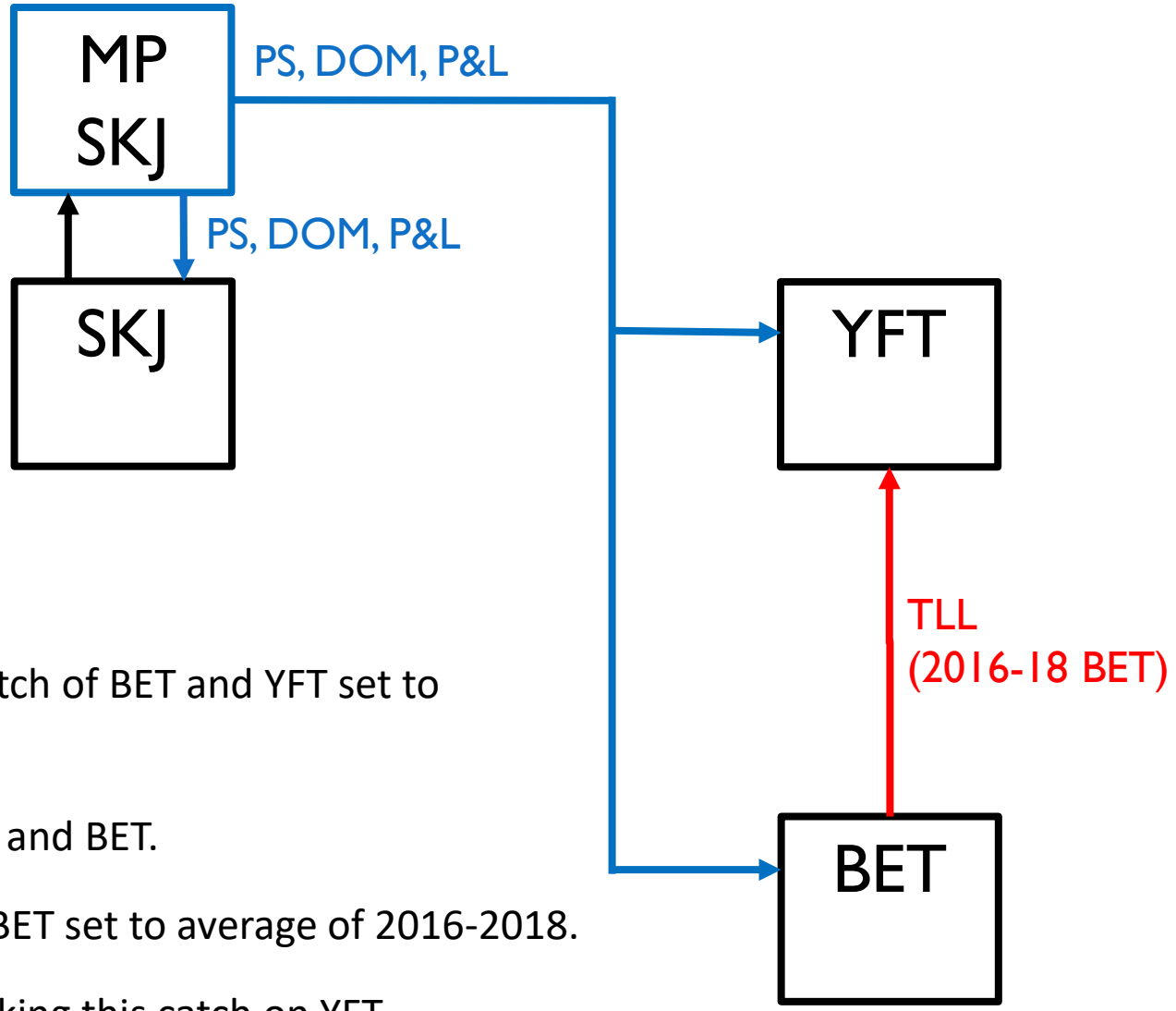
Invite WCPFC-SC to:

- Note progress in developing the multi-species modelling framework.
- Provide feedback on this initial approach for including mixed fishery interactions when developing and testing harvest strategies for the four main tuna WCPO tuna stocks.
- Provide suggestions for the initial development of prospective bigeye MPs.

FULL COMBINED MODELLING FRAMEWORK



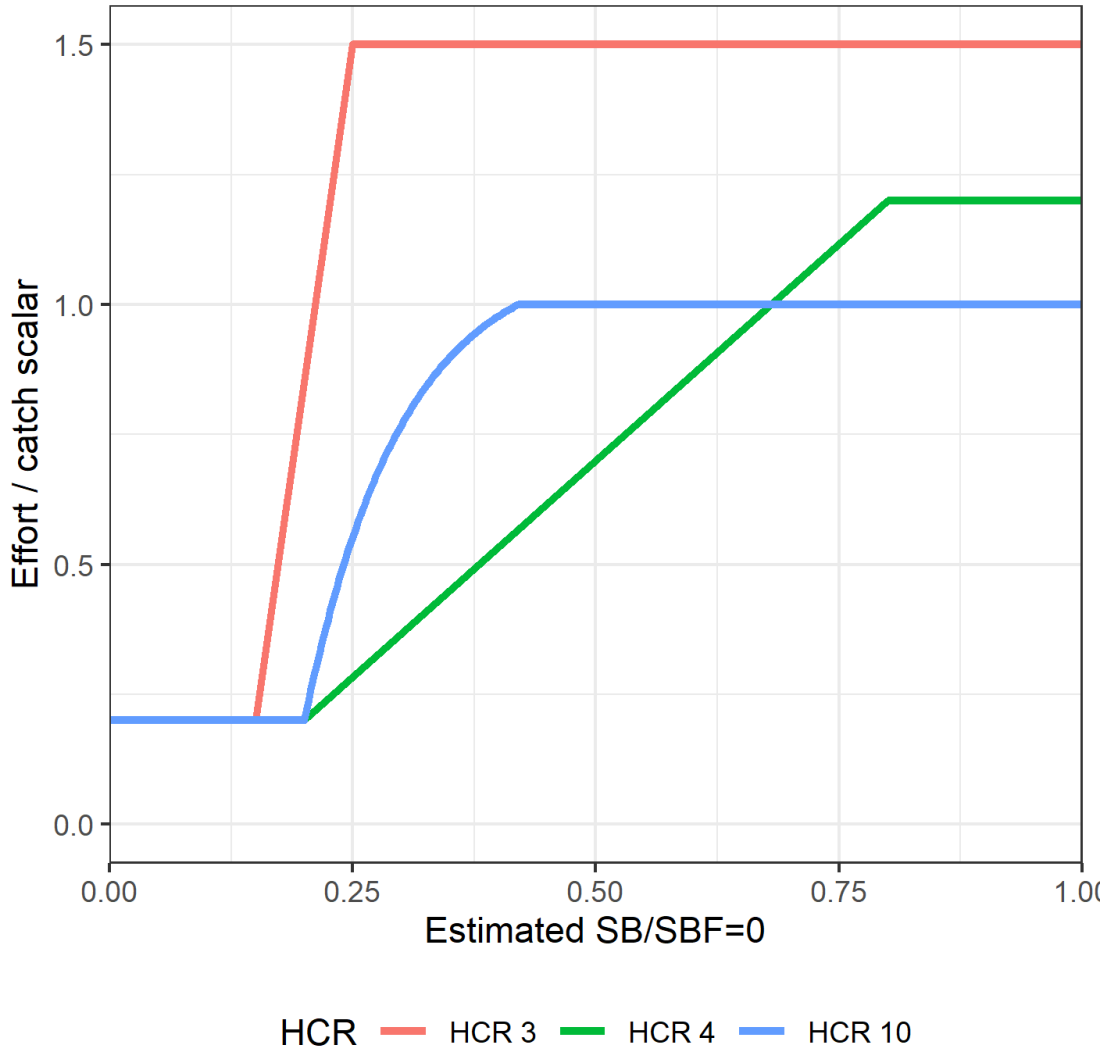
EXAMPLE MODELLING FRAMEWORK



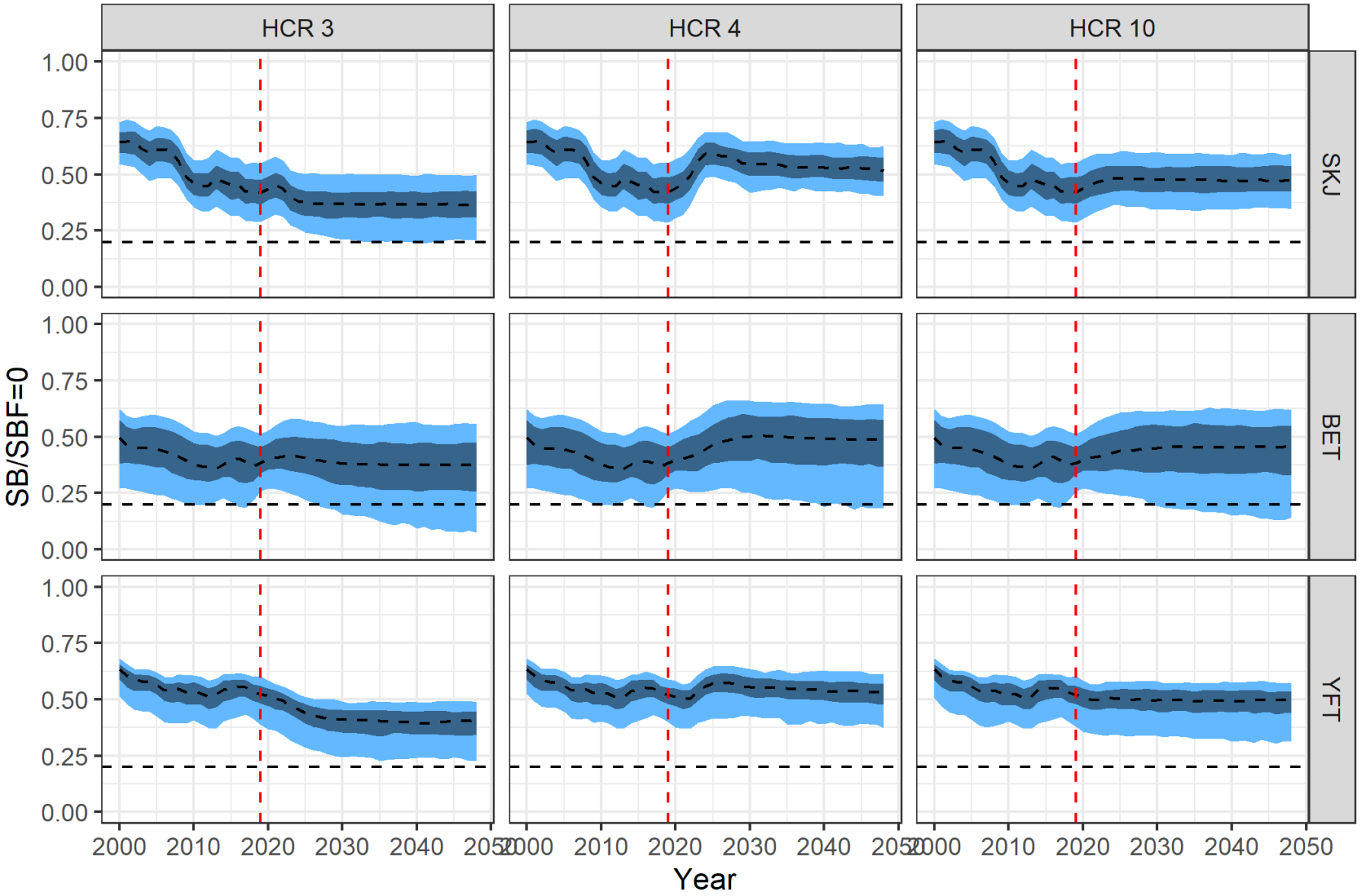
- No SPA or SPA MP: Future SLL catch of BET and YFT set to average of 2016-2018.
- Include impact of SKJ MP on YFT and BET.
- No BET MP: Future TLL catch of BET set to average of 2016-2018.
- Need to include the impact of taking this catch on YFT.

Running the simulations

- Three SKJ MPs tested, differing only in the HCR.
- HCRs chosen to offer contrast in the results. Their selection does not necessarily reflect their suitability.
- OMs based on previous evaluations (SKJ), or most recent assessment (BET and YFT).
- Next step: Build full suite of OMs for BET and YFT.
- Stochastic simulations with variability in future recruitment (as current SKJ evaluations).
- 240 iterations, OMs randomly selected from the OM grids for each stock.
- No correlation between stock OMs, e.g. high steepness in SKJ model does not necessarily correspond with high steepness in the BET and YFT stocks.



Results



- The selection of SKJ MP has an impact on the status of all three stocks.
- Results not explored in detail – focus is on method of linking the individual stock OMs.
- Under the least precautionary HCR (3), low probability of falling below the LRP.
- Reminder: No BET MP in these simulations.
- Need to start considering multi-species performance indicators.

Summary

- The paper demonstrates that the technical challenges involved in implementing the multi-species modelling framework can be addressed and the framework remains tractable.
- Example results are sufficiently encouraging to support the continued development of this approach.
- Next steps:
  - Building a full suite of OMs for bigeye and yellowfin.
  - Develop candidate MPs for bigeye for the tropical longline fishery.
  - Agree multi-species performance indicators.

Invite WCPFC-SC to:

- Note progress in developing the multi-species modelling framework.
- Provide feedback on this initial approach for including mixed fishery interactions when developing and testing harvest strategies for the four main tuna WCPO tuna stocks.
- Provide suggestions for the initial development of prospective bigeye MPs.