



Agenda item 5

MP design and MSE considerations

WCPFC BMW01
Online

SPC-OFP
20-21 May 2026

2026 timeline – mixed fishery MP development

Activity	April	May		June	July	August	September	October	November	December
MSE analyses based on WCPFC22 guidance										
Paper deadline for BMW01										
BMW01										
Analyses after BMW01										
Paper deadline for SC22										
SC adopts BET and YFT OMs										
SC provides technical advice										
Limited additional analyses prior to BMW02										
Paper deadline for BMW02										
TCC22										
Potential BMW02 provides guidance										
Limited additional analyses after BMW02										
Paper deadline for WCPFC23										
WCPFC23 adopts BET MP										

Scientific analyses feeding into the process

Management advice from WCPFC bodies

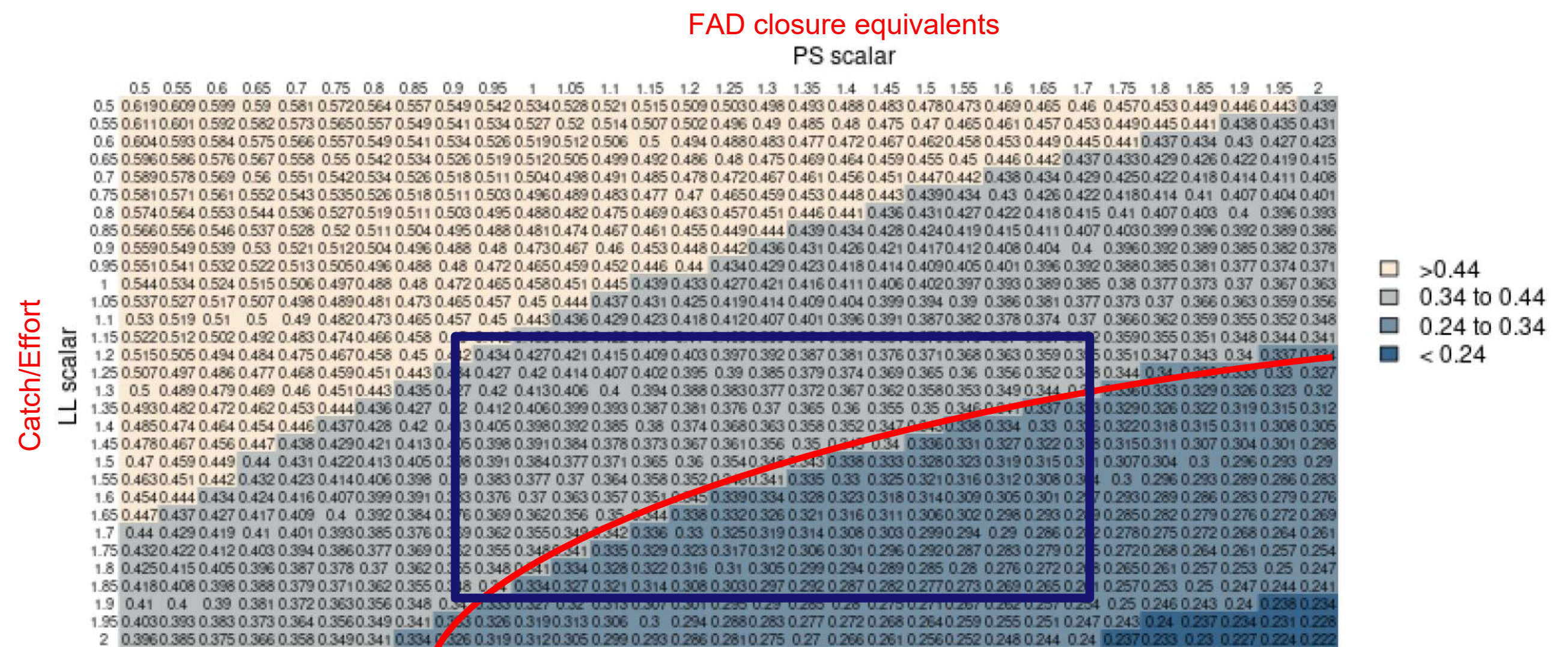
- Adoption of a BET management procedure (MP) is scheduled for 2026
- WCPFC21 – sequenced approach to developing TRPs for BET and YFT
 - 2012-2015 SB/SBF=0
 - 0.94 x 2012-15 SB/SBF=0
 - 1.06 x 2012-15 SB/SBF=0
- May be specified as threshold TRPs – associate probability of being ‘at or above’
- WCPFC22 – requested the SSP to develop additional candidate management procedures (MPs) that include controls for both the tropical longline and tropical purse seine fisheries.

BET MP – advice from WCPFC22

- Use of a three-year management period with a two-year data lag.
- Evaluate a range of HCRs controlling the tropical longline and tropical purse seine fleets, at different levels of FAD closure length (from 0 to 3 months) and tropical longline catch and/or effort, that form the basis of a continuum of MPs all tuned to achieve the same TRP.
- Plausibility of developing additional HCRs through interpolating the outputs of the evaluated HCRs.
- Evaluation of HCRs with and without constraints to the outputs between management periods.
- Evaluation of the candidate TRPs identified by the Commission at WCPFC21.
- Evaluate fixed assumptions on catch outside of the MP control.

Consideration should be given to how to translate and apply MP outputs to the range of existing management measures in place, including the longline catch limits, PNA+ Longline Vessel Day Scheme, and FAD management measures

'the arc of possibilities'™



Nuclear grid

Depletion (SB/SBF0)
corresponding to ranges of
Purse Seine and Long Line
scalars

Calculated across the OM grid

Baselines for scaling

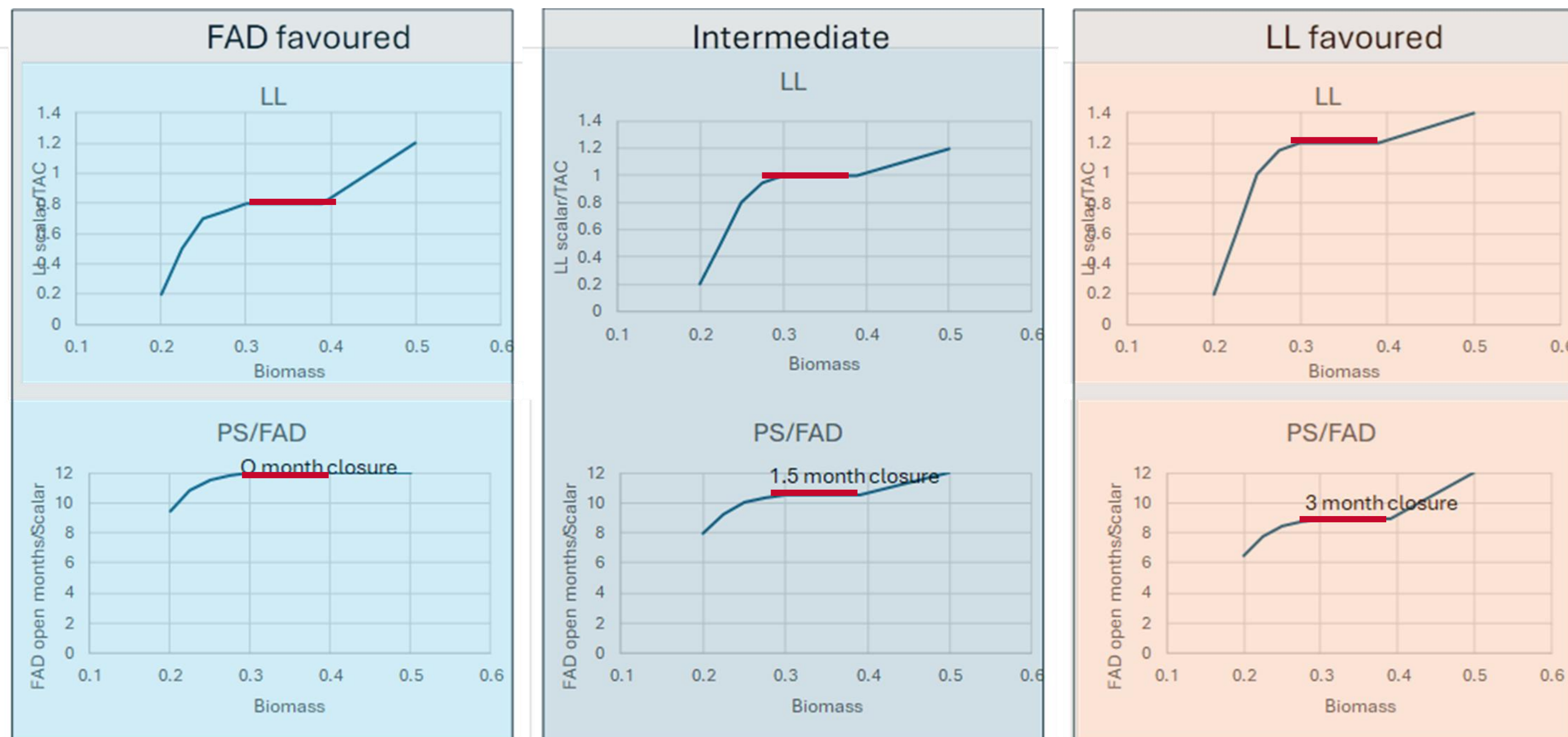
LL off 2022-2024 (catch/effort)

PS FAD off 2012 (effort)

Figure 1. Bigeye equilibrium stock depletion levels ($SB/SB_{F=0}$) resulting under the different purse seine (across) and longline (down) scalars (relative to 2019-21 levels), under the assumption that 'recent' recruitment levels continue. Values indicate equilibrium depletion levels resulting under fishery conditions. Shading indicates depletions relative to average stock depletion levels over the period 2012-15 ($34\%SB_{F=0}$), consistent with CMM 2021-01.

BET MP proposal

- 3 HCR pairs (LL & PS-FAD) designed to bracket the range of options for FAD closure period and LL catch/effort
- Nuclear grid used to determine the level of the plateau for each HCR pair
- Each HCR combo designed to achieve the same stock status



BET MP – decision points

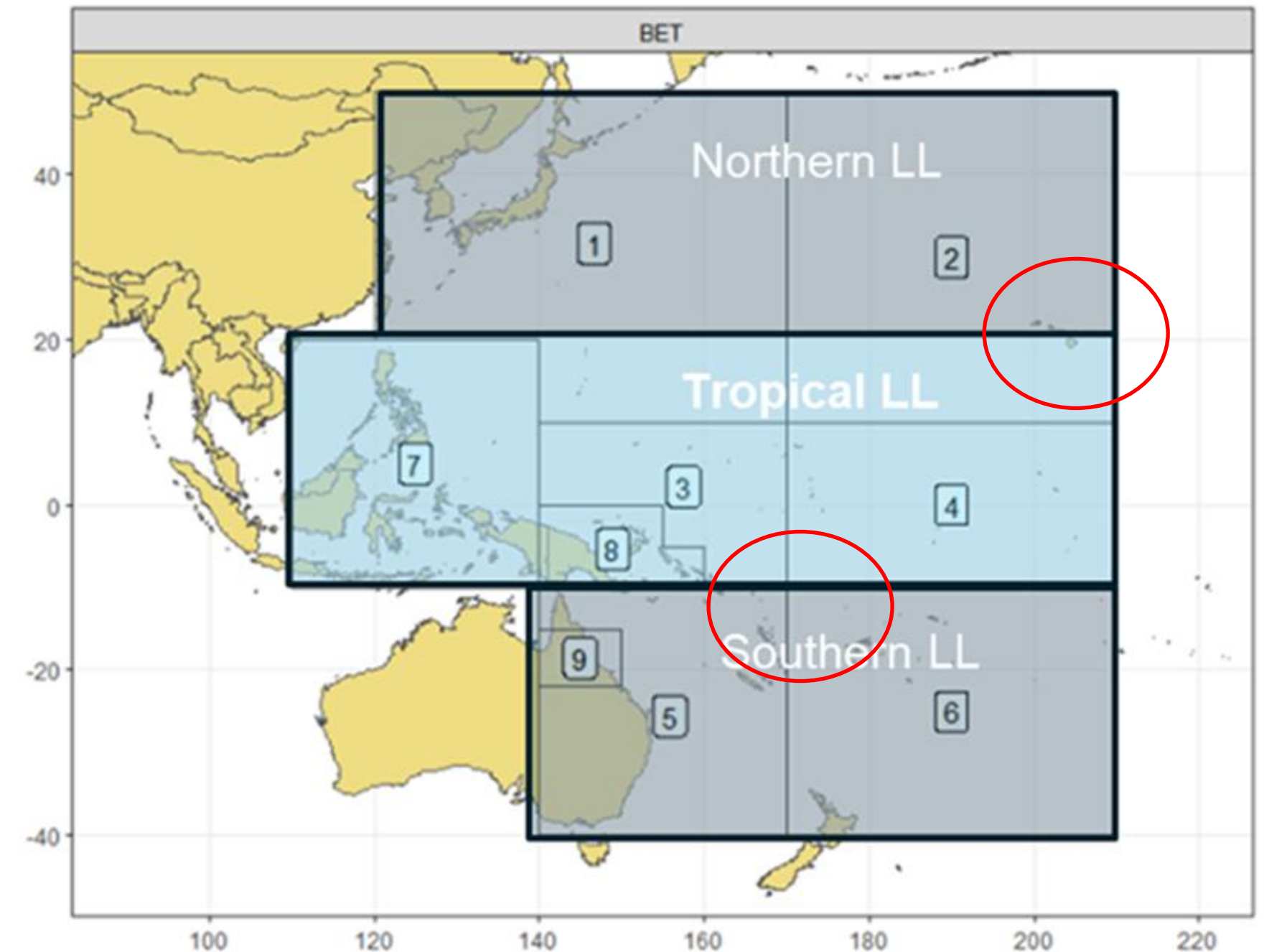
1. Spatial range of the BET MP.
2. Fisheries to be managed through the BET MP.
3. General shape and operation of the HCR.
4. Duration of management period.
5. Assumed future fishing levels of BET in fisheries not controlled by the BET MP.
6. Candidate performance indicators, noting that a smaller set of indicators is preferred to facilitate decision making.
7. Output controls of the BET MP – LL catch or effort; PS closure period. Change increments.
8. Meta rules – e.g. constraints on maximum change in fishing levels between management periods.

BET MP: spatial range (fisheries to be managed)

WCPFC guidance:
tropical LL and tropical PS fisheries

Mixed fishery approach:
NLL north of 20°N
TLL from 20°N to 10°S
SLL south 10°S

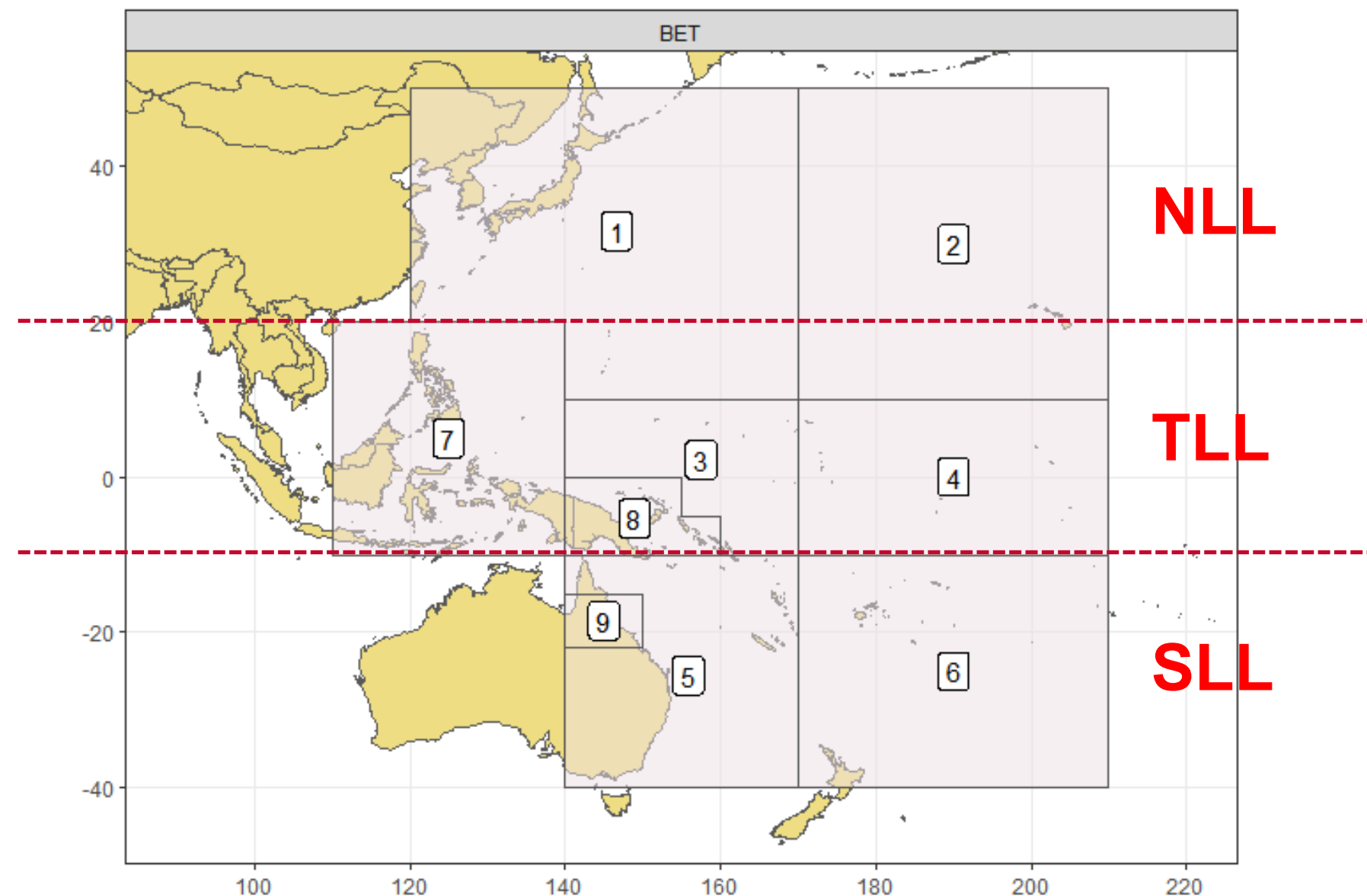
Tropical PS
Pole and line
Troll



Tokelau and Tuvalu excluded from SPA MP

20°N separates the Hawaiian LL fleet into two components

BET MP: spatial range (fisheries to be managed)



Mixed Fishery design - **current**

BET MP controls tropical LL fisheries and PS FAD closure

Assume a level of catch/effort for fisheries outside of MP control

Reduces potential for MP conflict. (discarding, high grading, misreporting, etc.)

Potential issues for bisecting key fisheries – e.g. Hawaiian LL

WCPFC-CA spatial extent - **option**

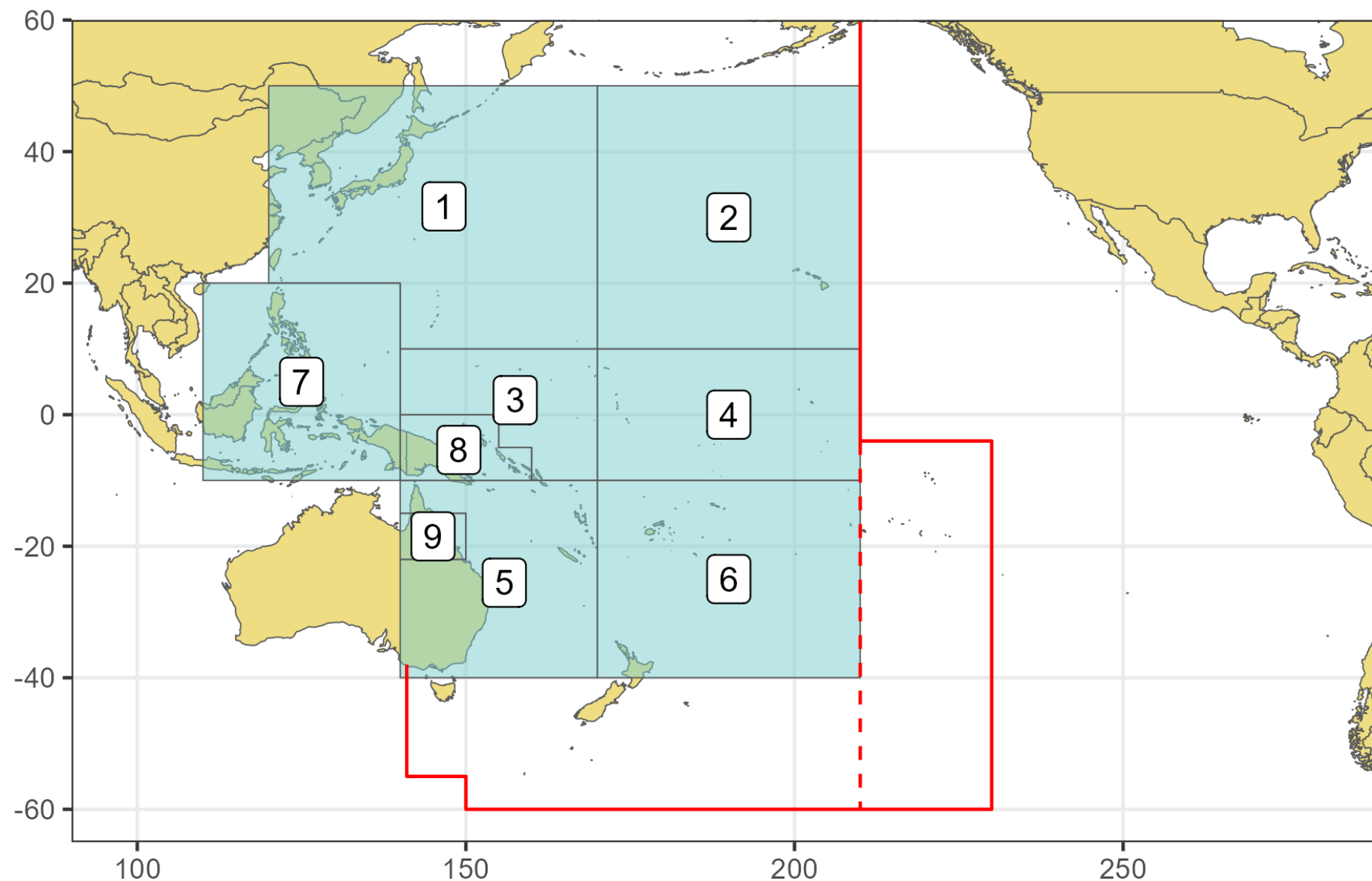
TT-CMM specifies limits for the WCPFC-CA

What happens to limits under a dynamic MP ?

Option for BET MP to set BET **CATCH** limits for WCPFC-CA

... how to translate and apply MP outputs to the range of existing management measures in place?

BET MP: spatial range (fisheries to be managed)



Overlap area assumptions

OMs based on 2023 assessment extend to 150°W

CMM 2025-02 Table 3 limits include the overlap area (our understanding)

Approximately 5% of WCPFC-CA catch

Evaluation of candidate MPs – MP sets BET catches for TLL (excluding overlap).

Consideration for MP implementation : addition to limits to allow for overlap area.

... how to translate and apply MP outputs to the range of existing management measures in place?

BET MP: fisheries to be managed

WCPFC guidance

... HCRs controlling tropical longline and tropical PS FAD closure period.

CMM 2025-02: para 5

SIDs exemption for longline catches

implications of paras 5 and 41 for MP development requires clarification

Catch limit floor for SIDs – MP may increase catches above floor but cannot reduce below floor.

Floor based on

2000 tonnes ?

recent catches ?

BET MP: fisheries to be managed

Longline controls under the Mixed fishery approach :

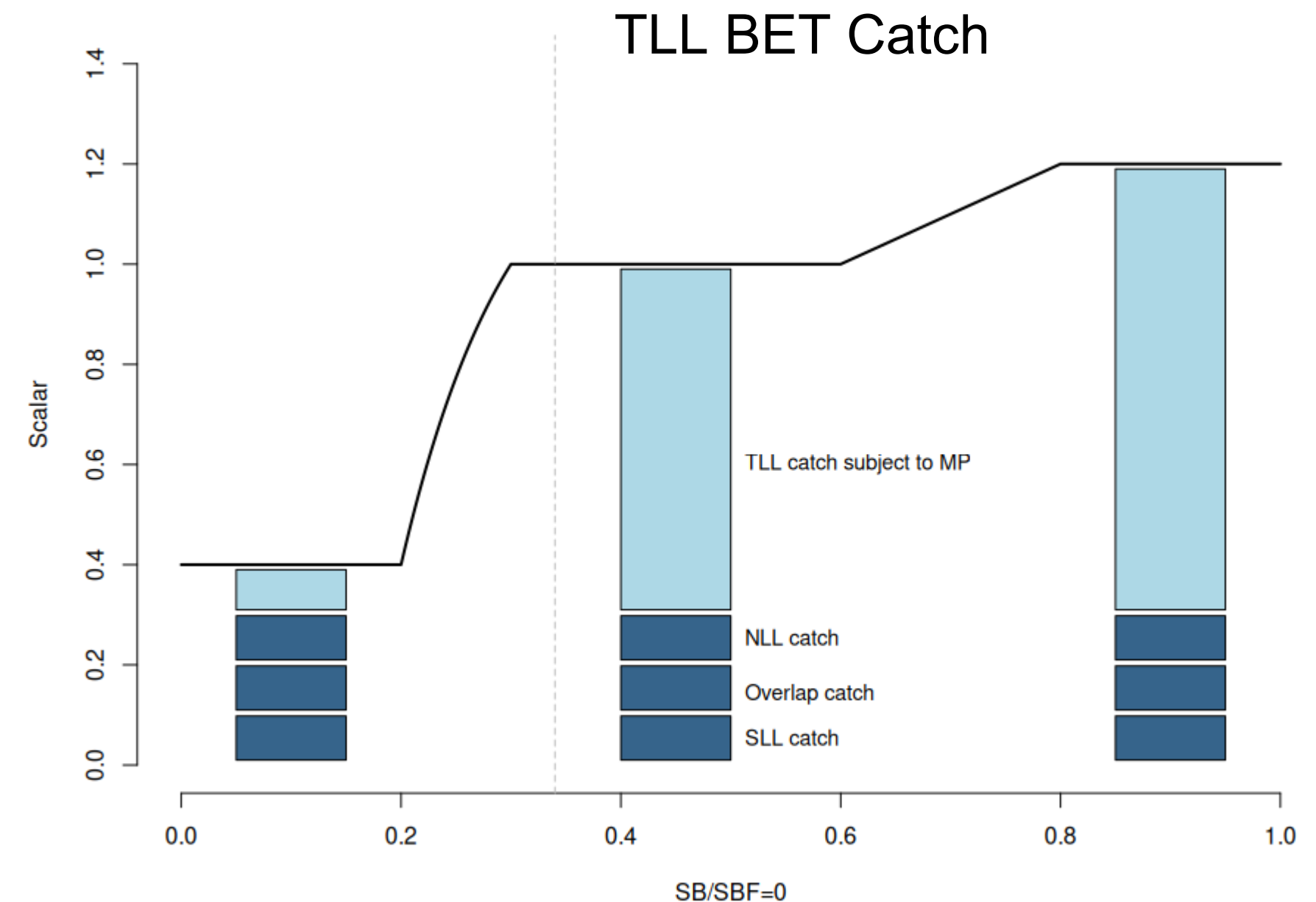
Minimum assumptions for testing the MP

Assume fixed BET catches for
Northern longline
Southern longline
Overlap area

Monitor assumptions

MP sets limits for tropical longline fishery as a whole.

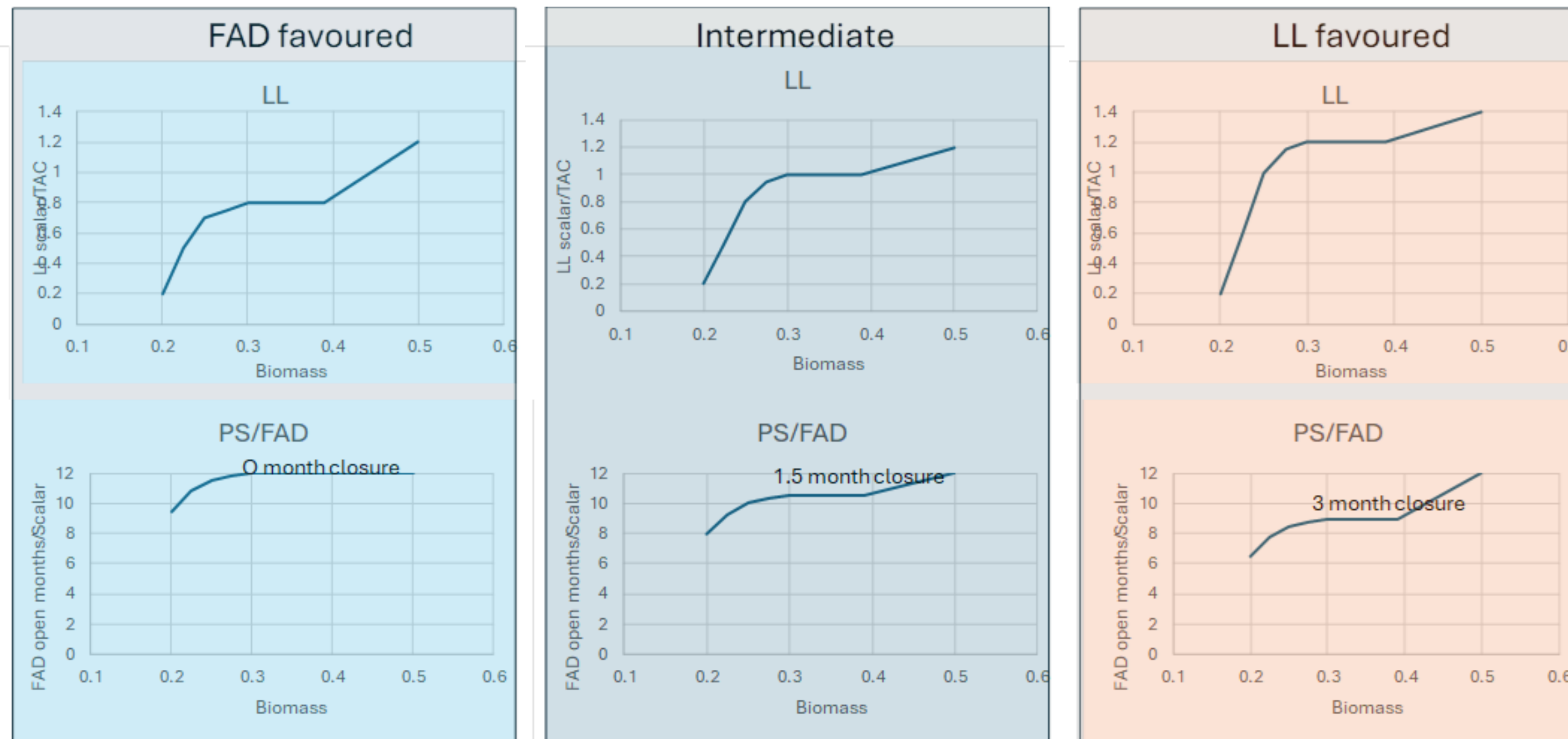
Allocation of TLL catch through the implementing measure.



... how to translate and apply MP outputs to the range of existing management measures in place?

BET MP: General shape and operation of HCR

- Separate HCRs for purse seine and longline
- Option to choose relative scaling (determined in accordance with the nuclear grid)
- Each HCR pair is designed to achieve the same outcomes.



- HCR limbs either side of plateau can be 'dynamically tuned'
- PS FAD period represented as months open
- PS FAD period – Hillary step design or constant ?

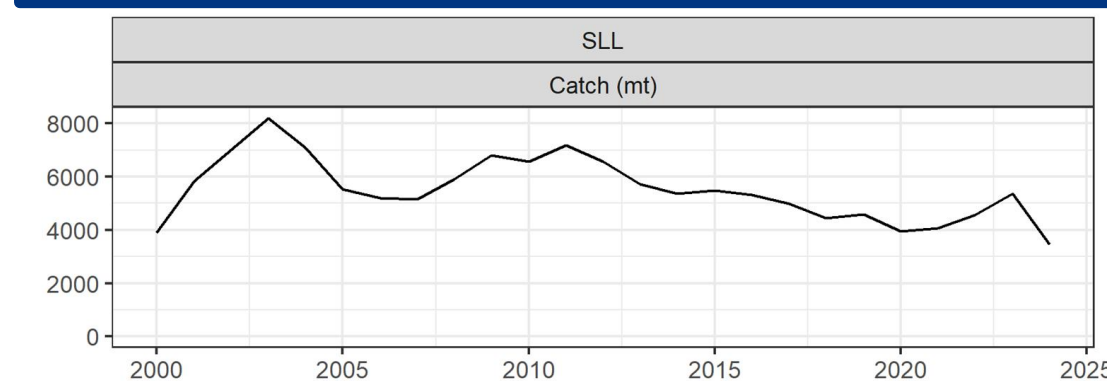
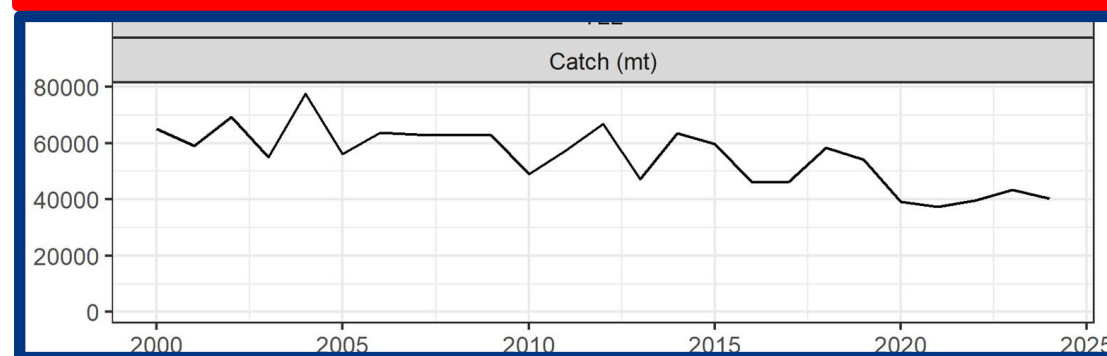
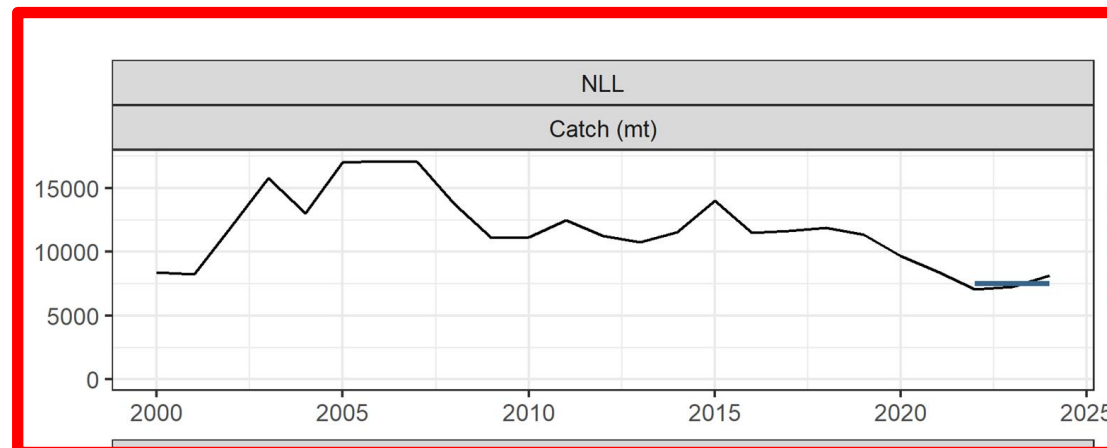
BET MP: Duration of management period

3-year MP duration
2-year data lag

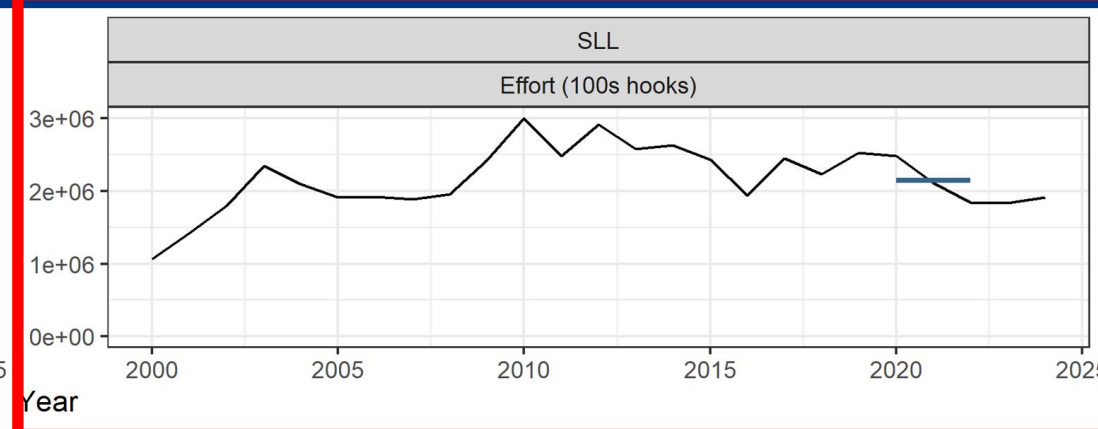
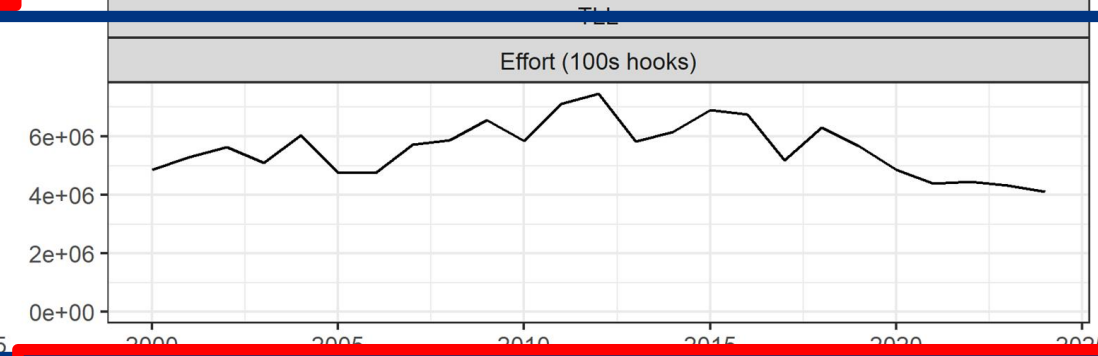
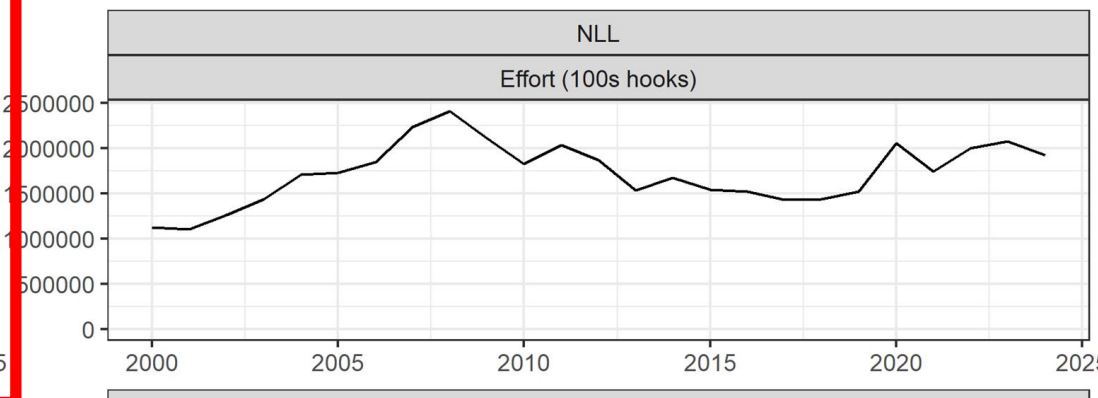
Run MP	2027	2030	2033	...
Sets limits for	2028-2030	2031-2033	2034-2036	...
Using data up to	2025	2028	2031	...

BET MP: future catches outside of MP control

CATCH



EFFORT



Future LL catches

NLL - recent catch (2022-2024)
~ 7,500 tonnes
~ 6% of total catch

SLL - effort (2020-2022)
- consistent with SPA MP
~ 4,200 tonnes
~ 5% of total catch

SIDs - assumptions ??

Other fisheries

Purse seine

Pole and line

Domestic region 7

2012 overall effort

2022-24 effort levels (even though 2001-04 in SKJ MP)

2016-18 effort levels + sensitivity tests

BET MP: performance indicators

1. Stock status in the WCPFC-CA ($SB/SBF=0$)
2. Proximity to TRP (threshold - prob $>$ TRP)
3. Probability $SB/SBF=0 <$ LRP
4. Expected BET catch for fisheries managed through the BET MP
 1. separated for LL and PS ?
5. Expected vulnerable biomass (proxy for catch rates) for LL fisheries managed through BET MP
6. Catch variability for fisheries managed through BET MP.
 1. Separated for LL and PS ?
7. Effort variability for fisheries managed through BET MP
 1. Separated for LL and PS ?
8. F relative to FMSY

BET MP: output controls

- Longline controls
 - Scalar off recent baseline
 - Catch (tonnes) – consistent with existing measures.
 - Effort (days)
- PS FAD controls
 - FAD closure period (weeks)
 - More easily expressed as FAD open period (1 month closure = 11 months open)

Noting potential to convert between catch and effort such that MP output could differ from implementing metric.

BET MP: meta rules (constraints)

- Longline catch/effort variability
- Purse seine FAD closure period variability
- Preliminary evaluations will inform appropriate constraints
- Proposal to defer specification of constraints until preliminary results available.

BET MP: Duration of management period

3-year MP duration

2-year data lag

Run MP	2027	2030	2033	...
Sets limits for	2028-2030	2031-2033	2034-2036	...
Using data up to	2025	2028	2031	...

	Skipjack	Bigeye	Yellowfin	Tropical Tuna Measure (TTM)	SP Albacore	SPA Implementing CMM
2024					Stock Assessment	
2025	Stock Assessment				Adopt MP + Run MP	Implementing measure planned adoption
2026	Run MP	Adopt MP Stock Assessment	Stock assessment	TTM Open for review taking account of the SKJ MP		
2027	Run MP	Run MP		TTM Open for review taking account of the SKJ and BET MP and any adjustments to YFT	Stock Assessment	
2028	Stock Assessment				Run MP	Review Implementing Measure
2029	Run MP	Stock Assessment	Stock assessment	TTM Open for review taking account of the SKJ MP		
2030	Run MP	Run MP		TTM Open for review taking account of the SKJ and BET MP and any adjustments to YFT	Stock Assessment	
2031	Etc.				Run MP	Review Implementing Measure
2032					etc.	

BET MP – decision points

1. Spatial range of the BET MP.

WCPFC-CA between 20°N and 10°S
2. Fisheries to be managed through the BET MP.

Tropical LL fishery and Purse seine FAD-FS ratio
3. General shape and operation of the HCR.

SKJ style HCR
4. Duration of management period.

3-year period (2 year data lag).
5. Assumed future fishing levels of BET in fisheries not controlled by the BET MP.

PS-PL-Dom7 – SKJ MP; SLL – effort consistent with SPA MP
NLL – 2022-24 catch/effort; ID domestic – 2016-18 robustness and sensitivity
6. Candidate performance indicators, noting that a smaller set of indicators is preferred to facilitate decision making.

8 candidates: SB/SBF=0, proximity TRP; risk LRP; catch var.; effort var; CPUE (vulnB); F/FMSY
7. Output controls of the BET MP – LL catch or effort; PS closure period. Change increments.

Initial evaluations based on LL catch/effort controls for 3 HCR formulations; FAD closure period weeks.
8. Meta rules – e.g. constraints on maximum change in fishing levels between management periods.

Pending initial evaluations
9. Time periods for baseline calcs

Longline catch/effort 2022-2024 ; purse seine FAD ratio 2012