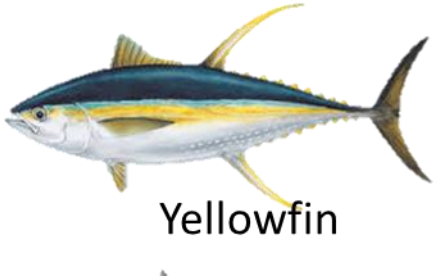
WCPFC20 Agenda item 10.2 b.i, ci: Bigeye & Yellowfin TRPs

WCPFC20 presentation by SPC

December 2023

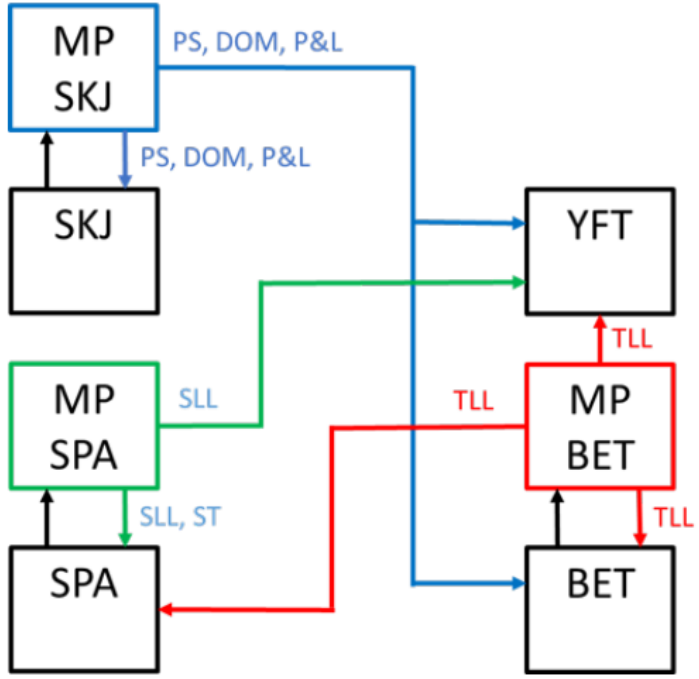
Rarotonga, Cook Islands



Mixed fishery harvest strategy

- SC15 agreed to initially consider a multi-species framework for developing mixed-fishery harvest strategies
- Fisheries are managed through **single stock MPs for skipjack, South Pacific albacore and bigeye, yellowfin is *indirectly managed* through these MPs**
- **'Proposed'** approach – the mechanics of the MSE modelling are feasible, but can it achieve objectives across stocks?
- **Next steps:** develop operating models (BET, YFT, SPALB), candidate MPs (SPALB, BET), TRPs (YFT, BET, SPALB), stitch it all together, run evaluations of candidate MPs – report SC20, urge some patience……HCRs may need modifications to work together

SC19: The Commission is invited to note the progress to date on the development of the mixed fishery MSE framework and provide feedback as needed.



% of recent catches that would be controlled by each MP

Stock	SKJ MP	SPA MP	BET MP	AW
SKJ	80			20
SPA		87	13	
BET	38	4	43	15
YFT	41	3	13	43

WCPFC-SC19-2023/MI-WP-07

BET & YFT TRPs

- SC19 (2023) Agreed new stock assessments for Bigeye and Yellowfin

- Harvest Strategy Workplan: **WCPFC21 (2024) is scheduled to agree on TRPs for Bigeye and Yellowfin tuna**
  - WCPFC20 - Opportunity to provide some direction for required analyses to be presented to SC20
  - Need to consider harvest strategy / mixed fishery implications

  - **TRPs are important for the design of harvest control rules (HCRs)** – i.e. HCRs are typically developed to keep the stock around a desired target level

Previous analyses on BET & YFT TRPs

- SC16 (2020) agreed assessments for BET & YFT
  - Initial **risk based** minimum TRPs for BET; subsequently around some candidate definitions
  - SC17 requested multi-species impacts analysis
    - Scalars applied to 2016-18 fishing levels (PS effort & LL catch), equally

focus

Impact on YFT/SKJ/ALB

Scenario (TRP goal)	% change in fishing (scalar)	BET 2048 Depl. ($SB/SB_{F=0}$)	2048 % Risk ($SB/SB_{F=0}$<LRP)	% change from 2012-2015 depletion	% change from 2015-2018 depletion	YFT Equiv. 2048 Depletion	SKJ Equiv. 2048 Depletion	ALB Equiv. 2048 Depletion
Baseline	0%	48%	0%	+30%	+17%	59%	51%	43%
-10%	+54%	33%	10%	-10%	-20%	43%	42%	39%
2012-15 Dep.	+38%	37%	3%	0%	-10%	46%	45%	40%
+10%	+24%	41%	0%	+10%	0%	48%	47%	41%
2000-04 Dep.	-4%	49%	0%	+34%	+21%	60%	53%	43%
10% LRP risk	+55%	32%	10%	-12%	-21%	43%	42%	39%
20% LRP risk	+70%	29%	20%	-23%	-30%	41%	40%	38%

!!!!!!!
Some concerns about the yellowfin assessment prompting a review of the stock assessment

Current evaluations

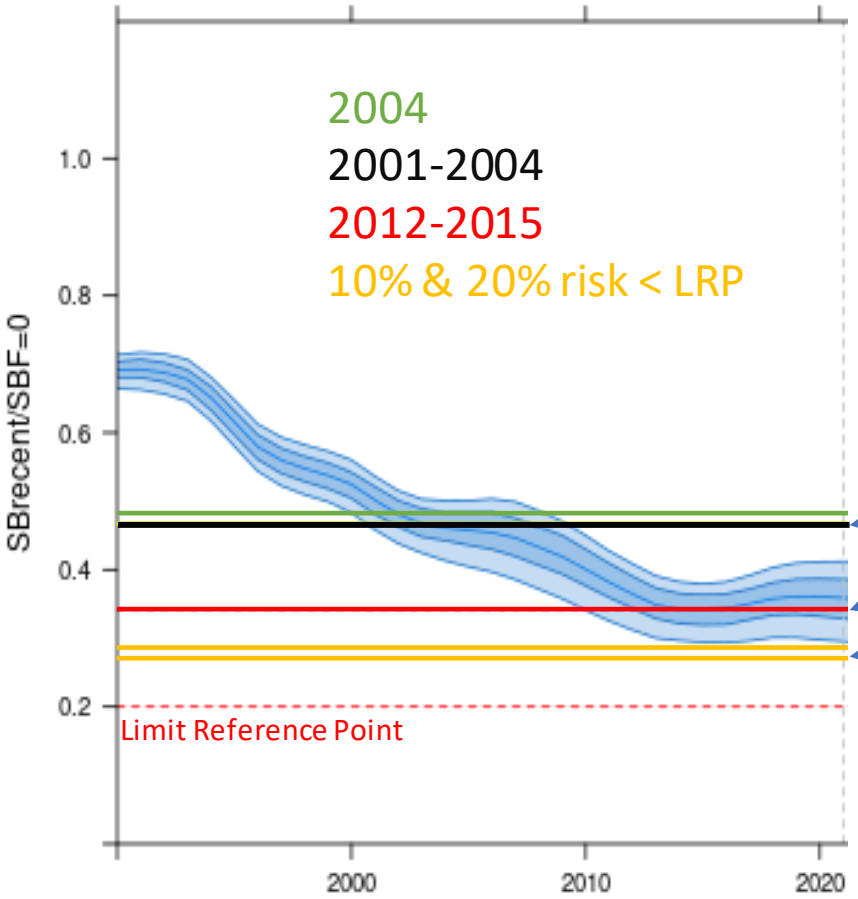
- SC19 (2023) agreed assessments for BET & YFT
  - Yellowfin appears more vulnerable following new assessment
- TT-CMM evaluations (WCPFC20-2023-16, table 10) provided biomass depletion levels associated with candidate TRP options
  - Scalars applied to average 2019-2021 **PS effort** and **LL catch**
  - PL and ID-PH domestic fisheries fixed at baselines (PL 2001-04; IDPH 2016-18….?)

Candidate TRP definitions	Bigeye $SB/SB_{F=0}$	Yellowfin $SB/SB_{F=0}$
2012-2015 depletion (CMM2021-01)	**0.34**	**0.44**
2004 depletion	0.48	0.50
2001-2004 depletion	0.46	0.51
Depletion consistent with 20% risk < LRP	~ 0.26	~ 0.27
Depletion consistent with 10% risk < LRP	~ 0.29	~ 0.31

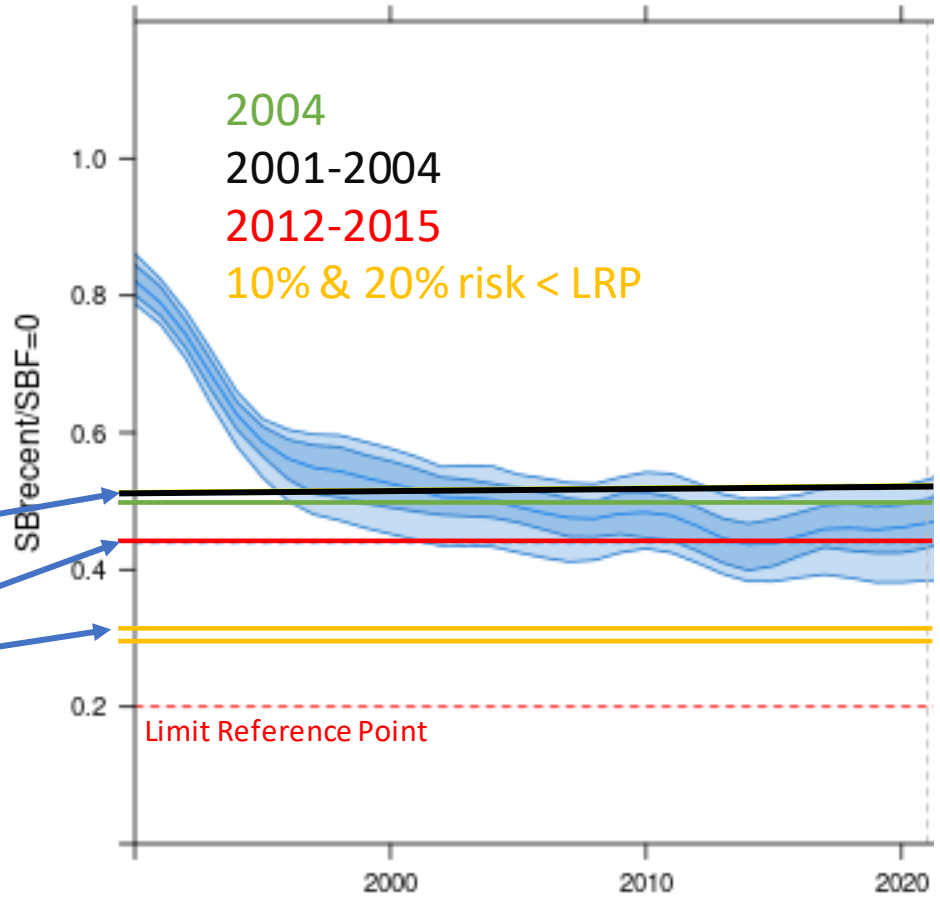
Others ?

Candidate TRP definitions

Bigeye



Yellowfin

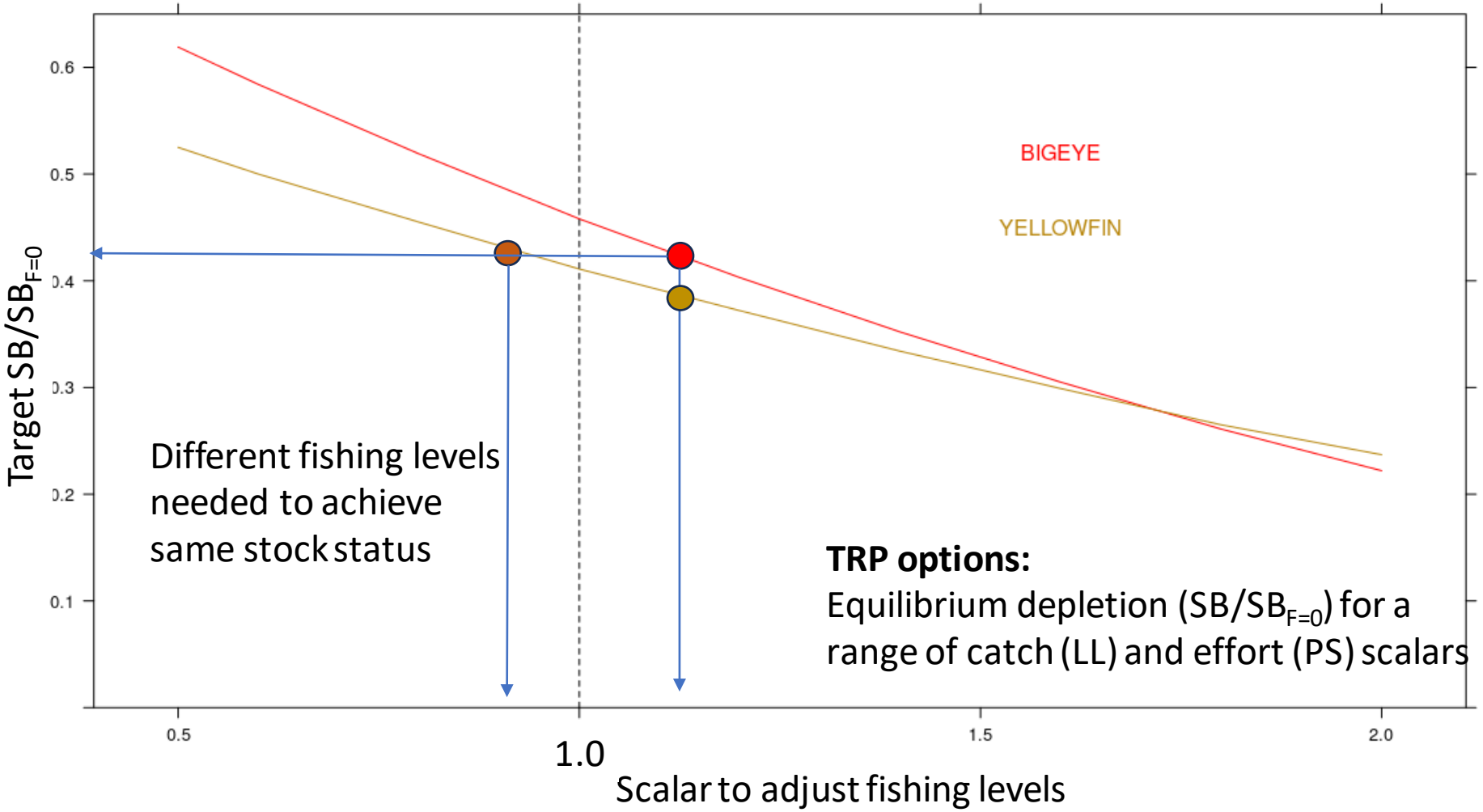


Same TRP '**definitions**' result in different values of stock status ($SB_{recent}/SB_{F=0}$), depend on stock assessment trajectories.

Current status meets 2012-2015 CMM objective

Note: YFT still in better stock status than BET

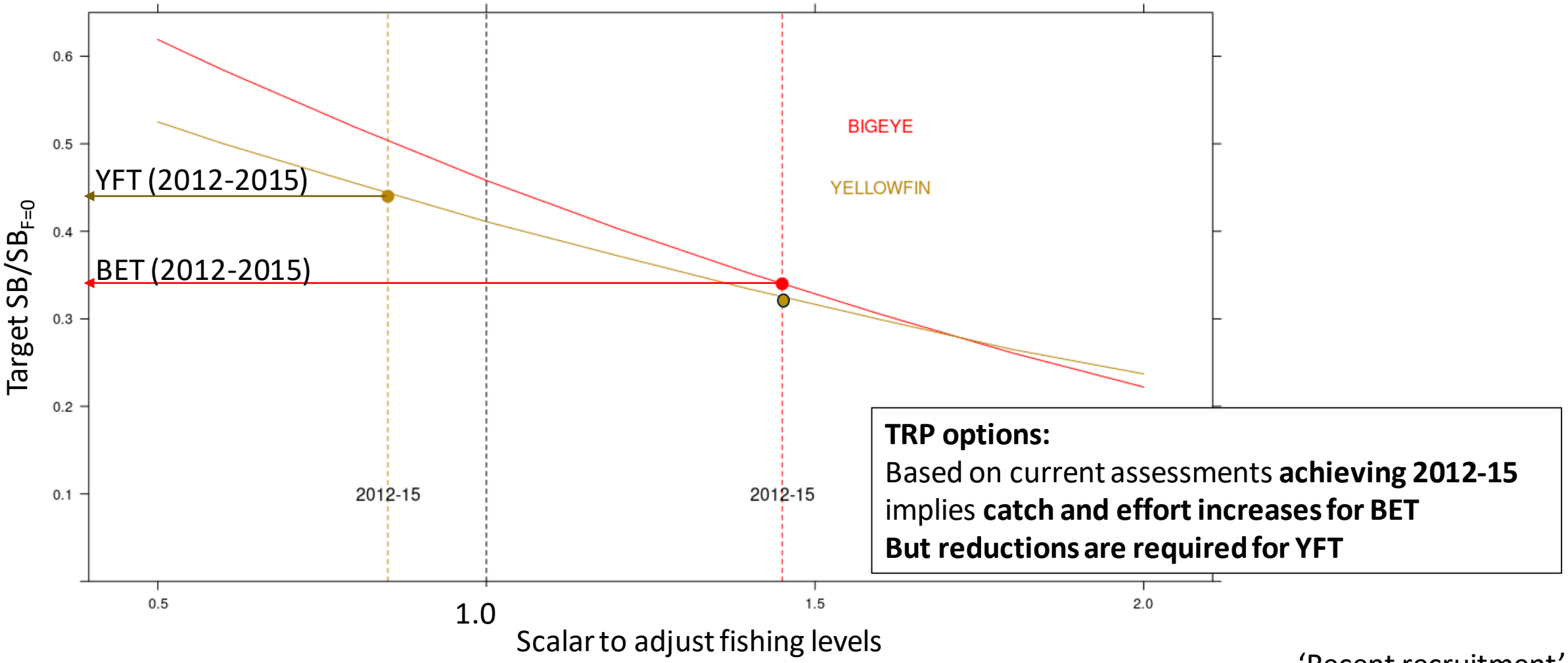
TRPs are unlikely achieved simultaneously with same fishing levels



BET and YFT stocks respond differently to fishing pressure

Assumes PS and LL are scaled equally

Cannot achieve targets simultaneously



TRP options:
Based on current assessments **achieving 2012-15** implies **catch and effort increases for BET**
But reductions are required for YFT

'Recent recruitment'

BET and YFT TRP options

- **A single definition for the TRP** cannot be achieved simultaneously for both BET and YFT – in theory different fishing levels are required, this is not feasible where both stocks are target of the same fishery.

- **BET is the primary management concern (current assumption)**
  - Identify a desired TRP for BET
  - Design a BET Management Procedure around achieving that TRP
  - Test against YFT to check that outcomes are acceptable (i.e. YFT stays above some minimum threshold)

Some YFT options

1. Identify a TRP range
2. Identify a lower threshold above the LRP
3. Set TRP low (always above)
4. YFT stock status 'similar' to BET
5. Ensure minimum risk not exceed the LRP

- **YFT is the primary management concern**
  - Identify a desired TRP for YFT
  - Design a Management Procedure for BET (or perhaps YFT) that ensures TRP is achieved for YFT
  - Test against BET to ensure that outcomes are acceptable (i.e. BET stays above some minimum threshold)

- **What direction can WCPFC20 provide for BET YFT TRP options to investigate for presentation and discussion at SC20 in 2024?**

Some things to consider

- Confirm that BET is primary management concern? Determine candidate TRP definitions for further evaluation
- If so, consider acceptable stock levels/risk for YFT

Current TRP definition options:

- 2012-2015 depletion (CMM2021-01)
- 2004 depletion
- 2001-2004 depletion
- Depletion consistent with 20% risk < LRP
- Depletion consistent with 10% risk < LRP

- Others????