Summary presentation from ISC
- to seek feedback -

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Objectives of the presentation

To recap the PBF MSE presentations and to receive feedback to finalize the MSE results by July JWG meeting. To check if there is critical problem in the current PBF MSE.

Go over MSE aspects; such as management objectives, OM structure, HCRs, evaluation presentation, and schedule.

After I go through the presentation, I will return to the top page and seek for comments.

Management objectives et al.

- Management objectives were developed by JWG in 2023.

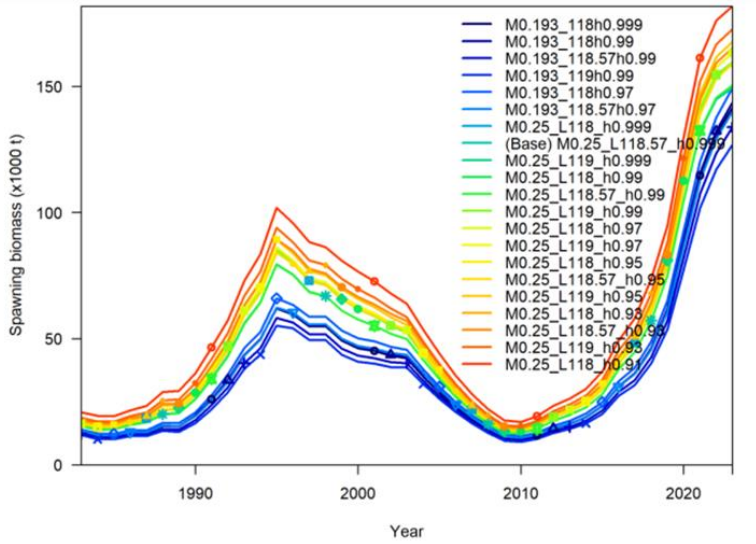
- Important instructions have been given.
  - ➢Two E-W impact ratios
  - ➢3-year TAC cycle
  - ➢25% restriction on TAC change
  - ➢2015-2022 Relative Fs
  - ➢Output fleets (WPO large, WPO small, EPO (including recreational fisheries))

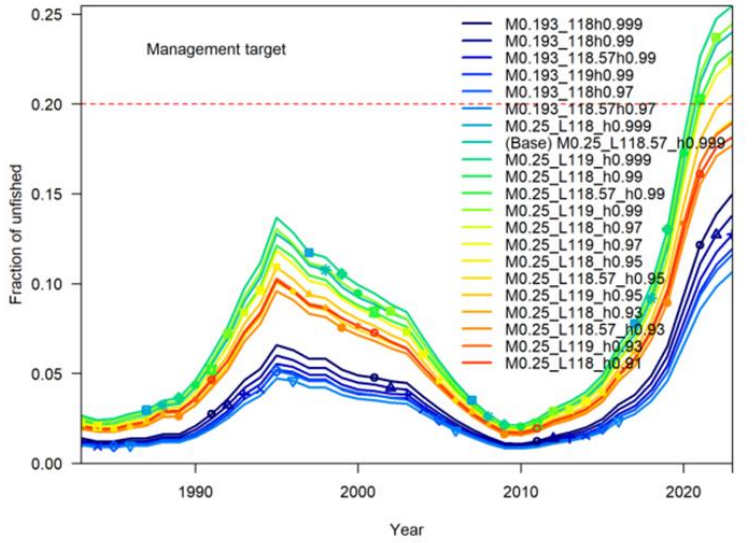
CANDIDATE OPERATIONAL MANAGEMENT OBJECTIVES AND PERFORMANCE INDICATORS FOR PACIFIC BLUEFIN TUNA

Category	Operational Management Objective	Performance Indicator
Safety	There should be a less than 20%[1] probability of the stock falling below the LRP	• Probability that SSB< LRP in any given year of the evaluation period
Status	To maintain fishing mortality at or below FTarget with at least 50% probability	• Probability that F≤FTARGET in any given year of the evaluation period • Probability that SSB is below the equivalent biomass depletion levels associated with the candidates for FTARGET
Stability	To limit changes in overall catch limits between management periods to no more than 25%, unless the ISC has assessed that the stock is below the LRP[2]	• Percent change upwards in catches between management periods excluding periods when SSB<LRP • Percent change downwards in catches between management periods excluding periods when SSB<LRP
Yield	Maintain an equitable balance in proportional fishery impact between the WCPO and EPO	• Median fishery impact (in %) on SSB in the terminal year of the evaluation period by fishery and by WCPO fisheries and EPO fisheries
	To maximize yield over the medium (5-10 years) and long (10-30 years) terms, as well as average annual yield from the fishery.	• Expected annual yield over years 5-10 of the evaluation period, by fishery. • Expected annual yield over years 10-30 of the evaluation period, by fishery.

Operating Models (OM) reference set

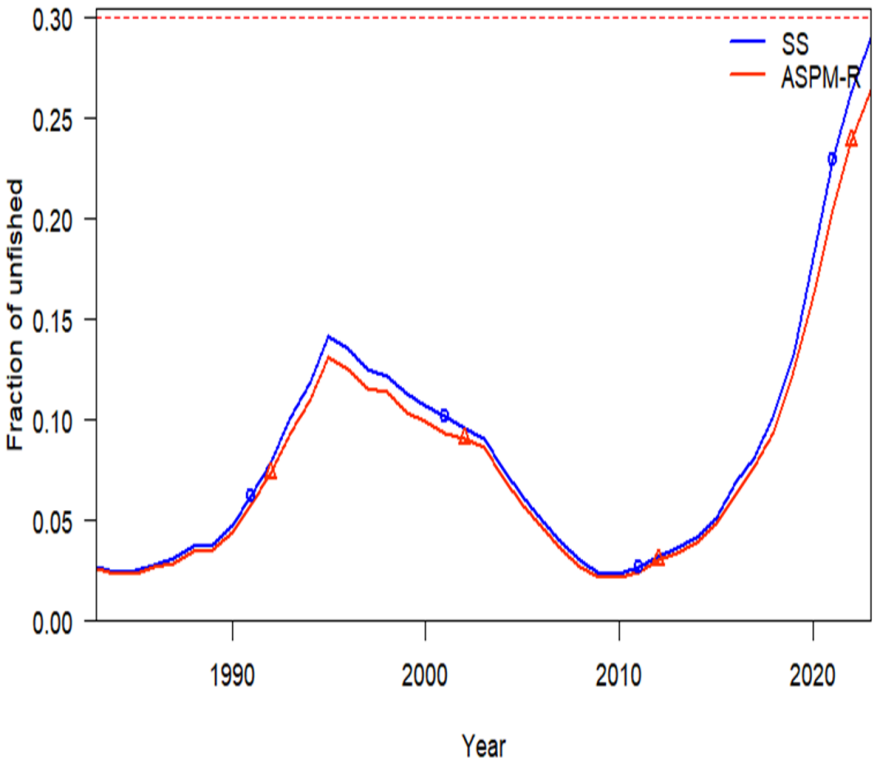
- OMs are a “testing ground” for HCRs’ competition (reference set).
- PBF MSE OMs are based on the 2024 stock assessment model.
- 3 uncertainty axes were considered (productivity, maximum length, natural mortality) and models with acceptable diagnostics were selected (20 OMs).
- They spread over a wide range (10-25% in current depletion) and are treated equally.





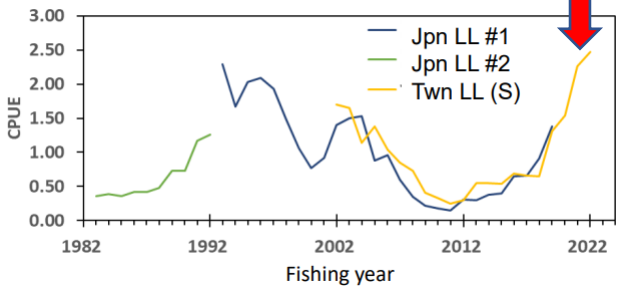
Estimation model (EM)

- PBF MP (management procedures) is a model-based MP. EM is a model to be used to estimate stock status to be applied to HCR.
- In the PBF MP, EM is a simplified model from the stock assessment model (i.e. age-structured production model), but considered to perform satisfactorily for use in the MP.

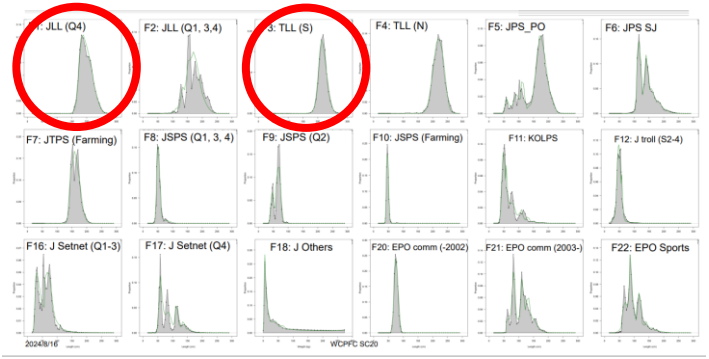


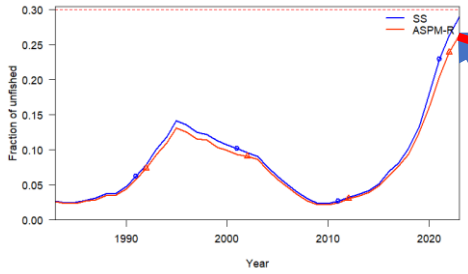
How PBF MP works

Chinese Taipei CPUE



Size info for few fleets

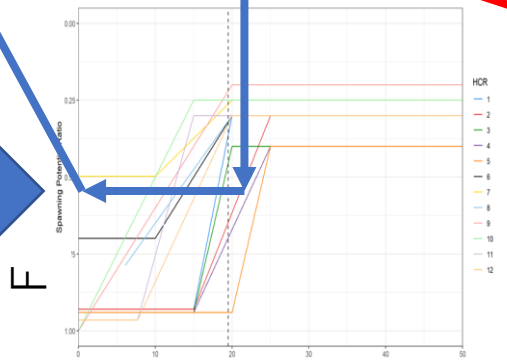




HCR

EM

stock status



TAC

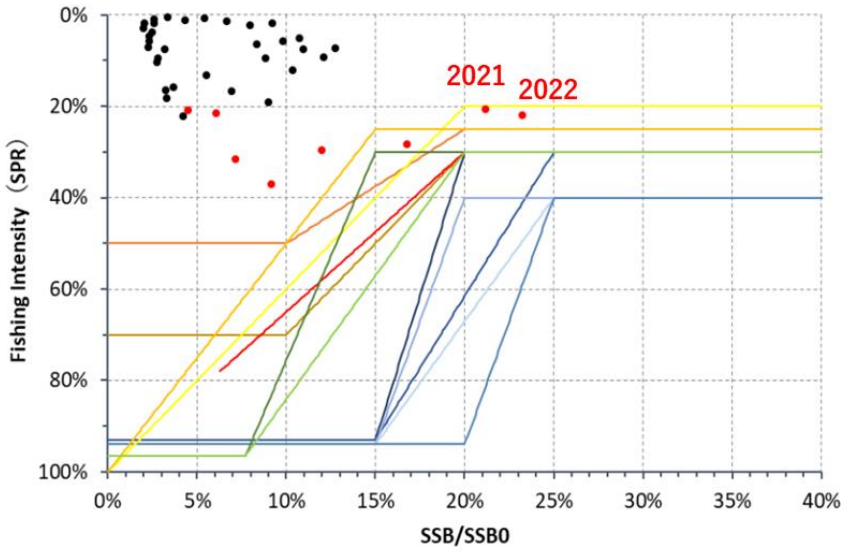
EM estimates the current SSB using global catch, Chinese Taipei CPUE, and size information for Japanese and Chinese Taipei longline fleets. The resultant SSB is applied to the HCR to calculate the TAC.

HCRs

- Currently 24 HCRs (12 HCRs x 2 impact ratios) are being evaluated.

- It may be beneficial to reduce the number of HCRs. For doing so, extreme HCRs or similar HCRs may be excluded. (e.g. HCRs with a same Ftarget performs very similarly.)

HCR Number	F_{target}	SSB Control Point 1 (ThRP)	SSB Control Point 2 (LRP)	Number of SSB control points	F_{min}
1	FSPR30%	$20\%SSB_{F=0}$	$15\%SSB_{F=0}$	2	$10\%F_{target}$
2	FSPR30%	$25\%SSB_{F=0}$	$15\%SSB_{F=0}$	2	$10\%F_{target}$
3	FSPR40%	$20\%SSB_{F=0}$	$15\%SSB_{F=0}$	2	$10\%F_{target}$
4	FSPR40%	$25\%SSB_{F=0}$	$15\%SSB_{F=0}$	2	$10\%F_{target}$
5	FSPR40%	$25\%SSB_{F=0}$	$20\%SSB_{F=0}$	2	$10\%F_{target}$
6	FSPR30%	$20\%SSB_{F=0}$	$10\%SSB_{F=0}$	2	FSPR70%
7	FSPR25%	$20\%SSB_{F=0}$	$10\%SSB_{F=0}$	2	FSPR50%
8	FSPR30%	$20\%SSB_{F=0}$	Median SSB 1952-2014	2	CMM limits
9	FSPR20%	$20\%SSB_{F=0}$	NA	1	NA*
10	FSPR25%	$15\%SSB_{F=0}$	NA	1	NA*
11	FSPR30%	$15\%SSB_{F=0}$	$7.7\%SSB_{F=0}$	2	$5\%F_{target}$
12	FSPR30%	$20\%SSB_{F=0}$	$7.7\%SSB_{F=0}$	2	$5\%F_{target}$



Performance Indicators

Base Case

	Prob SSB => LRP	Prob SSB => SSBo	Prob F <= Ftarget	Prob SSB => SSBtarget	% change TAC +	% change TAC -	EPO Impact	Median annual catch	Median year 5-10 average catch	Median year 11-23 average catch	Median WCPO large fish annual catch	Median WCPO small fish annual catch	Median EPO annual catch	MP TAC
1	98	94	69	60	12	-10	20	29221	27981	31015	17105	4036	6794	NA
2	98	94	70	63	13	-12	19	29053	27112	31043	16923	4030	6794	NA
3	100	98	68	49	12	-8	20	25405	22596	27815	14820	3317	5994	NA
4	100	98	69	49	13	-7	20	25294	22137	27776	14700	3313	5958	NA
5	98	98	68	49	14	-7	20	25300	22076	27776	14461	3309	5944	NA
6	100	93	69	60	12	-10	20	29223	27981	31085	17118	4040	6794	NA
7	98	88	68	76	12	-11	19	30699	30355	31978	17939	4485	6993	NA
8	100	93	69	60	12	-10	20	29187	27981	31011	17118	4042	6794	NA
9	98	80	67	80	11	-14	19	31970	32189	32400	18716	4965	7327	NA
10	100	88	67	75	11	-10	19	30732	30355	32127	17997	4490	7002	NA
11	100	93	68	60	12	-10	20	29228	27981	31092	17118	4037	6794	NA
12	100	93	69	60	12	-10	20	29223	27981	31119	17118	4040	6794	NA

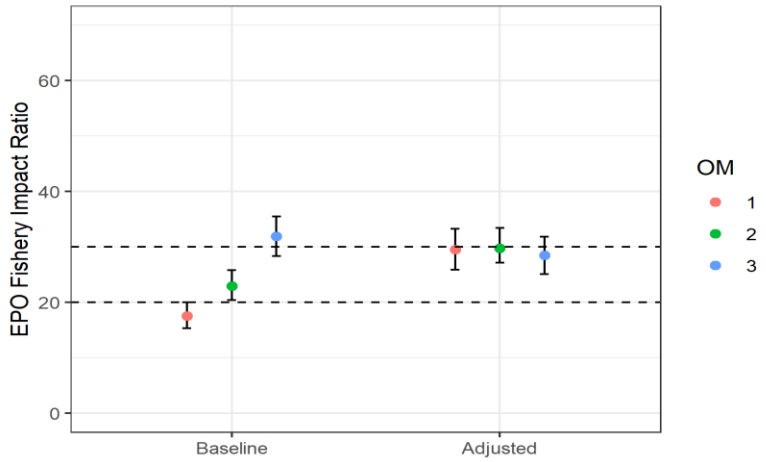
x 2

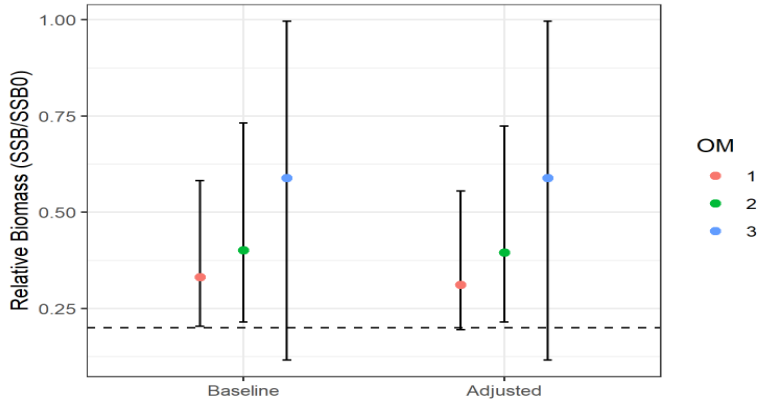
Impact ratio

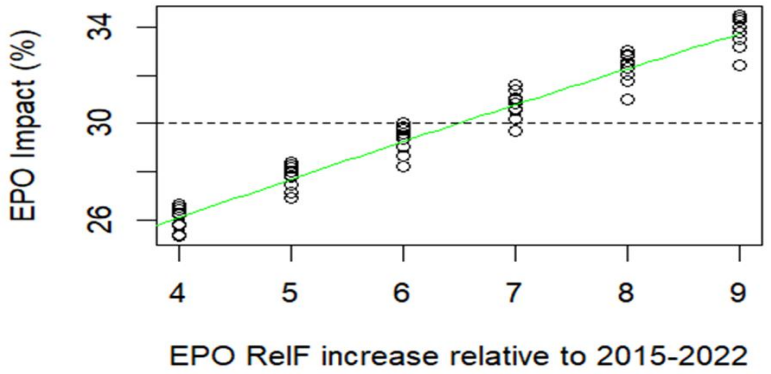
- Currently, the status quo (about 80-20) and the 70-30 (W-E) impact ratios are being considered.

- The impact ratio tweak does not change the overall performance of HCRs, except for catch. As the east impact ratio increases, the overall catch will increase slightly since the EPO catches larger fish.

- One option (not a suggestion): The impact ratio can be discussed after selecting an MP as an “allocation issue”.

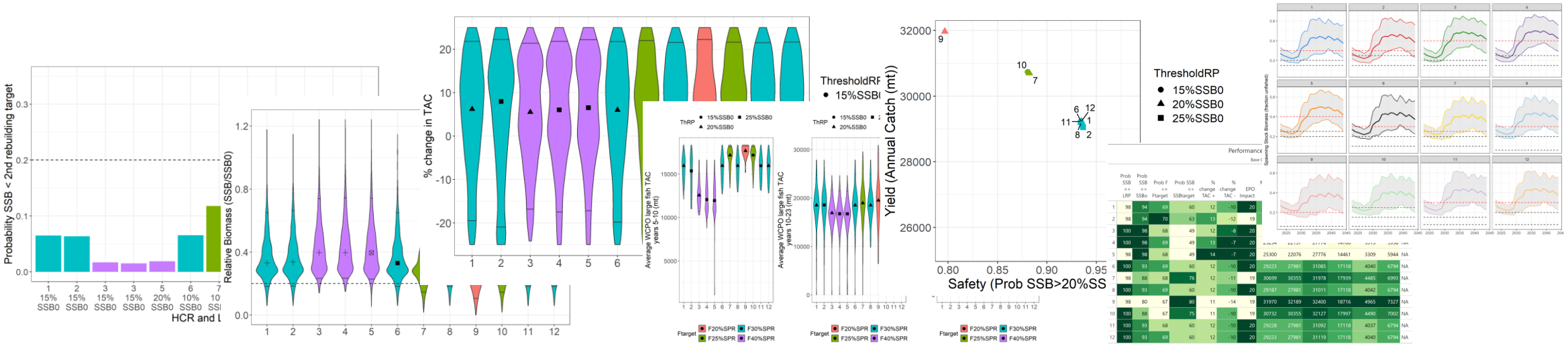






Performance indicators

- Many figures will be presented as already shown. Anything missing?
- Note that LRP and TRP levels are different among HCRs. (We also provide performance against a universal reference point.)



Robustness test

- The OM reference set is intended to cover plausible uncertainty of reality (“testing ground”).
- On the other hand, the robustness test is to create **unlikely but still possible realities.** In PBF MSE, three robustness tests will be conducted.
  - catchability change in TWLL
  - effect of climate change (as a 10-year recruitment drop like during the 1980s)
  - a doubling of discard levels
- The results will be included in the final result, which is to be used as one of selection criteria.

Things to note and consider

- Current results are preliminary. Most importantly, not all OMs were tested (Results from optimistic and pessimistic OMs were shown). Full results combining all OMs will be presented in July and could differ from the current results.
- At this stage, it is important to confirm that stakeholders are comfortable with the type of results that will be expected from PBF MSE.
- JWG has already provided substantial input for PBF MSE, including management objectives, candidate HCRs and other modalities.

Things to note and consider

Some specifics of PBF MSE

- OM considers uncertainty in growth, reproduction and natural mortality and spreads over a wide range.
- EM uses a simplified model to estimate biomass levels.
- As it stands, 24 HCR results will be presented. However, for the calculation for ISC and final MP selection for stakeholders, it is strongly encouraged to reduce the number of candidate HCRs as much as possible NOW.
- Robustness test includes effort creep, recruitment drop, and more unseen discards.

Things to note and consider

- PBF stock assessment and management have worked so far.
- Some HCRs may be too strict relative to the current stock status. HCRs have different LRPs and TRPs, so please use caution.
- Impact ratio can be considered after the selection of the MP (HCR).
- Requests that require substantial work may not be completed by July.

schedule

February	JWG	Review preliminary results
April	ISC PBFWG	Finalize PBF MSE
May	IATTC SAC	MSE results summary presented
June	ISC Plenary	PBF MSE results formally adopted
July	**JWG**	**Final MSE results presented and adopt an MP**
August	WCPFC SC	MSE results presented

Thanks, and let’s go back to the top