Further updates to WCPO skipjack tuna projected stock status to inform consideration of an updated target reference point

OCEANIC FISHERIES PROGRAMME, SPC

MI-WP-02

SC17, 11-19 AUGUST 2021, VIRTUAL

BACKGROUND

- Update of analyses presented to recent SC and WCPFC Commission meetings
- WCPFC17 requested further candidate TRP levels to be evaluated (range is now 36% to 50% $SB/SB_{F=0}$)
  - TTMW1 in April requested F-based outputs be evaluated for TTMW2 (as proportions of 2012 and 2012-2015 levels, overall, region fish size (juv/ad))
  - Not directed at SC17, but SSP felt SC should consider some of the outcomes for feedback to TTMW2
  - Other analyses and discussions have been moved to the Appendix

RE-CREATING THE MOW TABLE

- Baseline year = 2012 (with caveat - ID/PH @ 2016-18 avg)
- Ran stochastic projections 30 years into the future for each of the 54 models from the 2019 assessment
  - Assumed long term recruitment patterns into the future
  - Assume catchability remains constant into the future – i.e. no effort creep
- Combine results across each assessment model run and calculate the median depletion level ($SB/SB_{F=0}$) with SC15 weightings
  - Adjust PS fishing relative to 2012 to achieve desired depletions

RESULTS

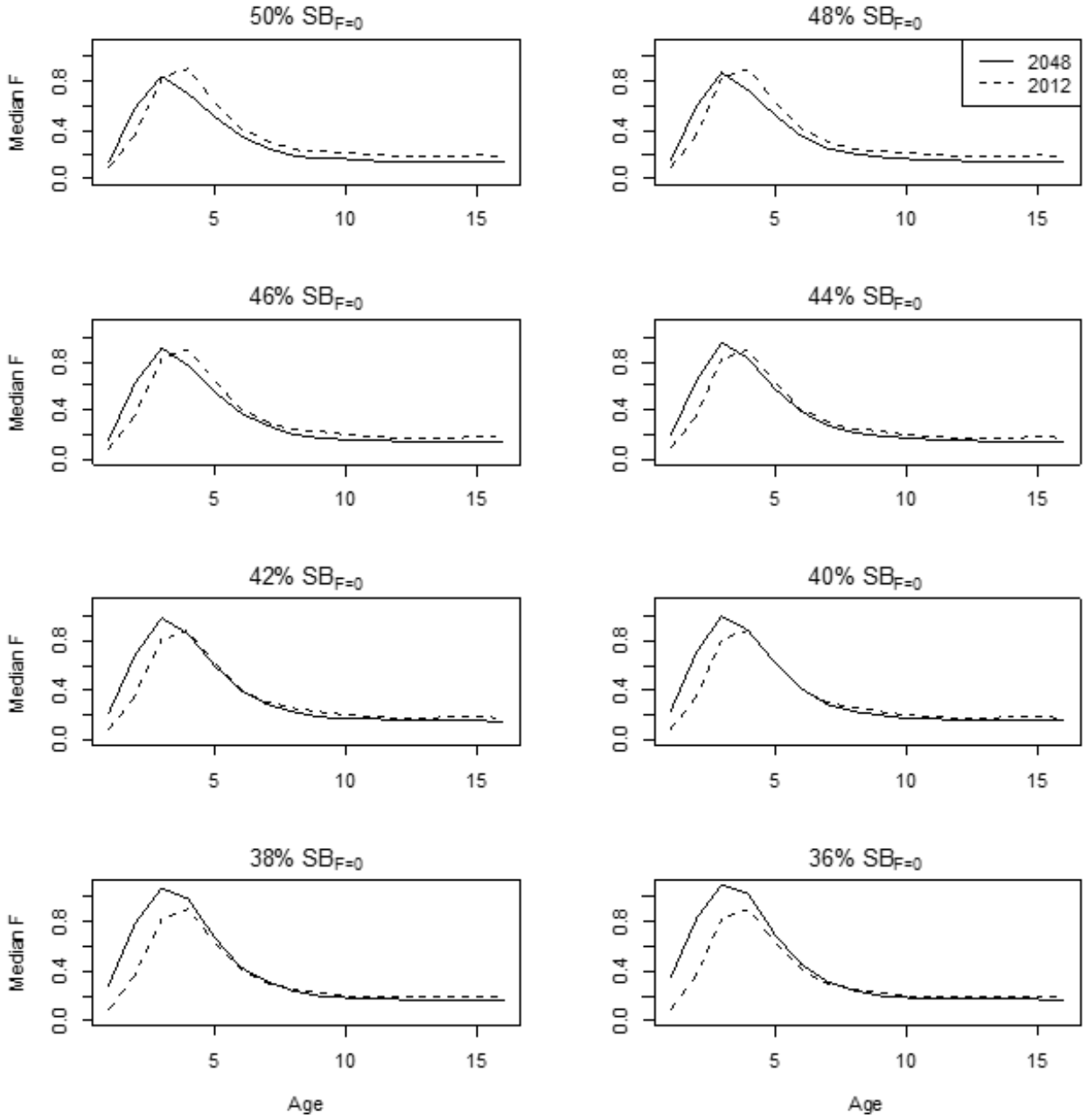
Median depletion level ($\%SB_{F=0}$)	Change in PS effort from 2012 levels	Change in spawning biomass ($\%SB_{F=0}$) from 2007-2009 levels	Change in spawning biomass ($\%SB_{F=0}$) from 2012 levels	Change in spawning biomass ($\%SB_{F=0}$) from 2012-2015 average	Change in spawning biomass ($\%SB_{F=0}$) from 2015-2018 average	Median total equilibrium yield (%MSY)
50%	-25%	-17%	+18%	+2%	+13%	78%
48%	-21%	-19%	+14%	-1%	+10%	81%
46%	-15%	-23%	+9%	-6%	+5%	87%
44%	-7%	-27%	+3%	-10%	0%	95%
42%	0%	-30%	-2%	-15%	-5%	97%
40%	+5%	-32%	-5%	-18%	-8%	98%
38%	+20%	-35%	-10%	-22%	-13%	98%
36%	+30%	-39%	-14%	-25%	-16%	98%

Table 2

No risk of falling below the LRP under any candidate level, under the current uncertainty framework

Median depletion level (%$SB_{F=0}$)	Juvenile F_{2048}/F_{2012}	Juvenile $F_{2048}/F_{2012\text{-}2015}$	Adult F_{2048}/F_{2012}	Adult $F_{2048}/F_{2012\text{-}2015}$
50%	1.20	1.06	0.89	0.90
48%	1.24	1.10	0.92	0.93
46%	1.31	1.15	0.97	0.98
44%	1.39	1.22	1.02	1.04
42%	1.48	1.30	1.08	1.09
40%	1.53	1.35	1.11	1.13
38%	1.74	1.54	1.22	1.24
36%	1.92	1.69	1.29	1.31

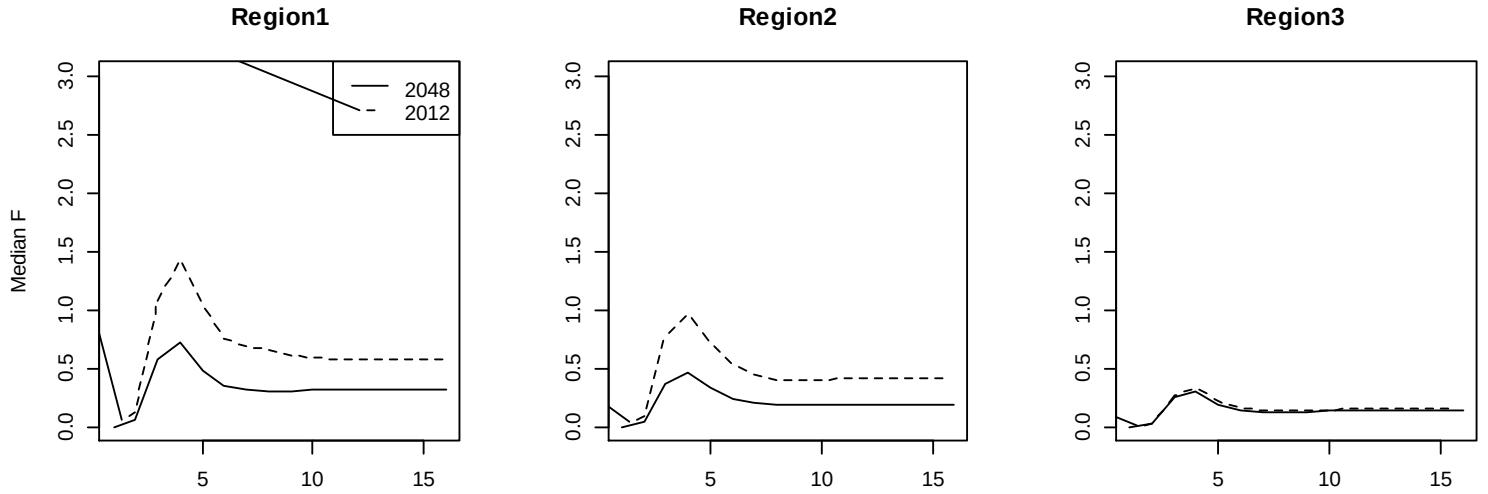
Table 3

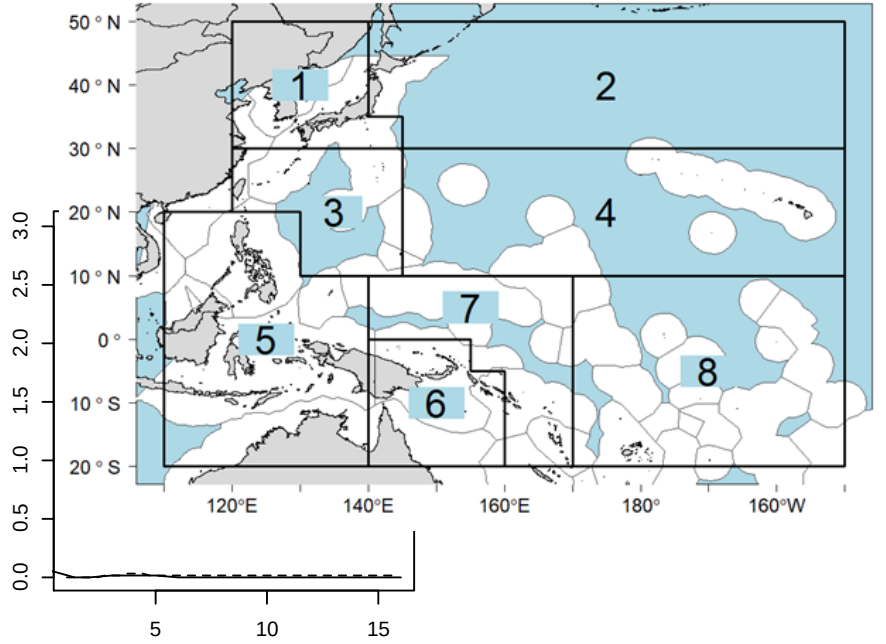


Median F across grid of models

Figure 3

Fishing mortality-at-age pattern at 42%$SB_{F=0}$





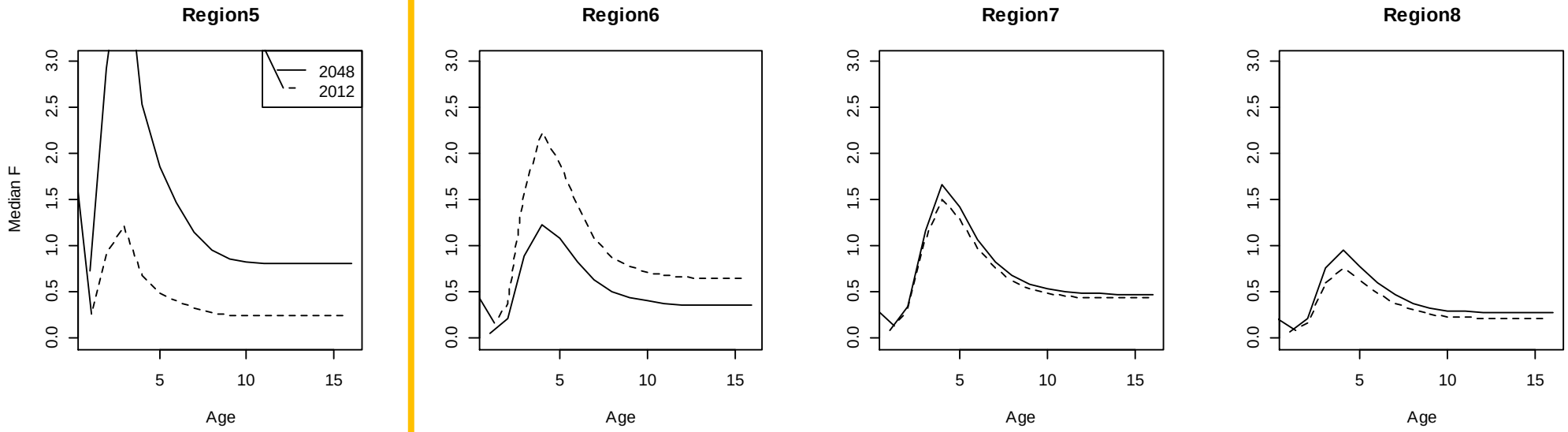


Figure 4

ISSUES TO CONSIDER IN INTERPRETATION

- Future F is driven by:
  - The combination of fisheries being projected
  - How they are being projected (catch/effort)
  - Their selectivity
- Key here:
  - Increased F in R5 being influenced by ID/PH/VN domestic fisheries
  - Projected on catch (not effort)
  - That catch is 2016-18 avg (not 2012)

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THANKS FOR LISTENING