**SCIENTIFIC COMMITTEE**
**EIGHTEENTH REGULAR SESSION**
Online
10-18 August 2022

# Summary of results focussed on skipjack, yellowfin and bigeye, as presented to WCPFC18 in support of the development of the new WCPFC Tropical Tuna Measure

**WCPFC-SC18-2022/MI-IP-09**
**7 July 2022**

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# Executive Summary

During 2021, two workshops on the development of a new WCPFC Tropical Tuna Measure were held. These workshops requested specific analyses from the SSP to help inform Commission members on options for that Measure (Attachment 2 of the TTMW1 report; Attachment 1 of the TTMW2 report). In addition, SC17 requested specific analyses relating to skipjack, bigeye and yellowfin. These requests related to target reference points are summarised in the table below and presented herein, and were provided to WCPFC18 as part of WCPFC18-2021-15.

| Source | Request |
|---|---|
| TTMW1 | **BET**<br>TRP as **average depletion 2000-2004**, determine MSY, and F, as a proportion of recent levels (2014-2017), projected to achieve this TRP. Overall, region, fish size (juvenile/adult). |
| TTMW1 | **BET**<br>TRP as **median depletion 2000-2004**, determine MSY, and F, as a proportion of recent levels (2014-2017), projected to achieve this TRP. Overall, region, fish size (juvenile/adult). |
| TTMW1 | **BET**<br>Evaluate **2007-2009 fishing level** in terms of median depletion level and the corresponding change in spawning biomass from 2012-2015 average, recent and long-term recruitment conditions |
| TTMW1 | **SKJ**<br>Evaluate applying purse seine effort 2007-2009 average, equilibrium yield v MSY, LRP risks for **50%, 48%, 46%, 44% and 42%**$\mathbf{SB_{F=0}}$**, plus 36, 38 and 40%**. |
| SC17 | **SKJ**<br>Consider how the fishing mortality estimated within the analysis is driven by the assumptions, particularly the contributions of the different gear types to the catch in Region 5 (SC17 summary report, para 277). |
| SC17 | **BET and YFT**<br>Development of yield and spawning biomass per recruit curves by fisheries sector for bigeye and yellowfin tuna (SC17 summary report, para 277, but clarified to refer only to WCPO bigeye and yellowfin). |
| SC17 | **SPA**<br>Calculate SPA outcomes for different candidate BET/YFT TRP levels presented in MI-WP-01 (SC17 summary report, para 265). |

For each analysis, a short methodological summary is provided, highlighting any interpretation of the request by the SSP that was necessary to perform the analysis. Key points to note when interpreting the results are provided. Some of these results have already been presented to SC in 2021 (see SC17-MI-WP-02) but are included here for context.

# Methods

## Skipjack and bigeye TRP related analyses

For skipjack, a full description of the work is provided in SC17-MI-WP-02. In summary, stock projections were performed under different future scenarios for purse seine fishing effort. For each, the stock was projected into the future using the following procedure:

1. Run 100 simulations for 30 years into the future for each of the 54 stock assessment models - each simulation representing a possible 'future' trajectory for recruitment;
2. Run those simulations assuming long-term recruitment patterns (future recruitment is defined by the estimated stock recruitment relationship, with variability around it defined by recruitment estimates from the stock assessment over the period 1982-2017);
3. Assume catchability remains constant into the future – i.e. no effort creep occurs in WCPO fisheries;
4. Taking into account the SC15 plausibility weightings, combine the results across each assessment model run and calculate the median level of terminal spawning biomass compared to $SB_{F=0}$;
5. Adjust the level of purse seine fishing in the future from the 2012 baseline level so that the median stock size was equivalent to the candidate TRP level at the end of the projection period, while maintaining other fisheries at 2012 levels with the exception of domestic fisheries in Indonesia/Philippines/Vietnam which were maintained at 2016-2018 average levels in the assumption that recent estimates better reflected improvements in data collection.

For the analysis of bigeye, an approach comparable to that described in SC17-MI-WP-01 was used to identify the identical scalars on purse seine effort and longline catch off 2016-2018 average fishing levels that led to the bigeye stock achieving on average the stock depletion level ($\%SB_{F=0}$) specified in the request. Corresponding change from the 2012-2015 average biomass level, yield as a % of MSY, $F/F_{MSY}$, and risk of falling below the limit reference point ($20\%SB_{F=0}$) were identified. Stock-wide fishing mortality at age was computed and adjusted by the corresponding population juvenile/adult numbers-at-age and time period to calculate the average fishing mortality across those age groups. Further technical details are provided in SC17-MI-WP-02.

## Potential consequences of candidate bigeye and yellowfin TRPs for South Pacific albacore

To evaluate the potential impact on South Pacific albacore stock status of changes in tropical longline catch under each of the candidate TRP levels presented in SC17-MI-WP-01, changes in longline fisheries to achieve each candidate bigeye or yellowfin TRP level were assumed to affect South Pacific albacore only through those longline fisheries operating in 'Region 1' of the albacore assessment model (the region between the equator and 10°S of the WCPFC-CA). About 4% of the total bigeye catch has been taken south of 10°S in recent years, so for simplicity that region is assumed to be unaffected by tropical longline effort changes. We assume that albacore catches in Region 1 of that assessment increase by the same amount as those of bigeye or yellowfin required to achieve their candidate TRP levels. This may be considered a 'worst case' scenario; refined approaches will be undertaken through the harvest strategy's multispecies framework.

## Yield-per-recruit analyses for bigeye and yellowfin

SC17 requested yield and spawning biomass per recruit curves by fisheries sector for bigeye and yellowfin tuna (SC17 summary report, para 277). Isopleths of equilibrium mean yield per recruit (YPR) and spawning potential ratio (SPR) by fishery sector (longline and purse seine) were calculated across the 2020 grid of assessment models for bigeye tuna (24 models) and yellowfin tuna (72 models) with the following settings:

1. Average, fishery specific, fishing mortality was calculated over the period 2016 to 2018.
2. Recruitment was determined from the estimated SRR for each assessment in the grid of models (i.e. the fit of the relationship to the long-term recruitment pattern for bigeye).
3. Figures are based on terminal values from 30 year deterministic projections with all fisheries projected on effort.
4. All other fisheries (PL and domestic fisheries) set at a scalar of 1.
5. YPR = Yield in terminal year divided by recruitment in terminal year (both summed over quarters).
6. SPR = $SB/SB_{F=0}$ with MULTIFAN-CL age flag 171 = 0. This is identical to $(SB/R_{fished})/(SB/R_{unfished})$ where SB/R is adult biomass in terminal year (averaged over quarters) divided by recruitment in terminal year (summed over quarters).

# Results

## Skipjack TRPs

The summary of results is presented in Table 2. Under baseline (2012) fishing levels the stock is predicted, on average, to fall slightly compared to 'recent' (2015-2018) levels (44% $SB_{F=0}$), to 42% $SB_{F=0}$. This is very slightly below 2012 depletion levels but is an equivalent % $SB_{F=0}$ value at 2 decimal places. Examining the four other median depletion levels requested by WCPFC16 (50%, 48%, 46% and 44% $SB_{F=0}$), these levels imply reductions in purse seine effort from 2012 levels of 7 to 25%, lead to predicted increases in spawning biomass from 2012 levels of between 3 and 18%, and either maintained biomass at recent assessed levels, or predict an increase in biomass by 5 to 13%. Total equilibrium yield is predicted to reduce compared to that under 2012 'baseline' levels, to 78-95% of MSY. For the three median depletion levels requested by WCPFC17 (36%, 38% and 40%), these levels imply increases in purse seine effort from 2012 levels of between 5 and 30%, and lead to predicted decreases in spawning biomass from 2012 levels of between 5 and 14%. Total equilibrium yield is predicted to increase very slightly compared to that under 2012 'baseline' levels, to 98% of MSY (reaching the flat peak of the yield curve). There was no risk of falling below the LRP associated with any of these depletion levels based on the current uncertainty framework.

Resulting stock-wide age-averaged F for juvenile and adult components of the population and median F-at-age are presented in Table 1 and Figure 1. Interpretation of the results is challenging given that future fishing mortality is strongly influenced by the required settings within the projection, in particular that future domestic fishery and pole-and-line catches continue at specified levels (2016-2018 and 2012 respectively), while purse seine is projected on effort. The composition of gears within the projected fishery and their impacts on the stock will therefore change relative to that in the historical (2012) period. This is clear when examining the relative change in fishing mortality in juvenile and adult segments of the population, with that on juveniles increasing notably at all examined depletion levels. This was driven by significant increases in fishing mortality within Region 5 of the skipjack assessment model (western tropical WCPO encompassing Indonesia and Philippines), where future domestic fishery catches continue at 2016-2018 levels (Figure 2, Figure 3).

**Table 1. Fishing mortality estimated under each median skipjack tuna depletion level ($SB/SB_{F=0}$), calculated as the stock-wide age-averaged F for juveniles and adults in 2048, presented as a multiplier from that estimated in 2012, or the average estimated over 2012-2015.**

| Median depletion level ($\%SB_{F=0}$) | | Juvenile $F_{2048}/F_{2012}$ | Juvenile $F_{2048}/F_{2012-2015}$ | | Adult $F_{2048}/F_{2012}$ | Adult $F_{2048}/F_{2012-2015}$ |
|---|---|---|---|---|---|---|
| 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 |

As requested by SC17, Table 3 provides the Annual Catch Estimates (ACE) for key Region 5 fisheries by flag and gear in 2012 and 2016-2018 (average), as used within the stock assessment model for these fisheries.

**Table 2. Median depletion levels of skipjack tuna ($SB/SB_{F=0}$) and corresponding change in biomass from 2007-2009, 2012, 2012-15 and 2015-18 average levels, change in purse seine effort (scalar), resulting median total equilibrium yield (as a percentage of MSY) and the risk of falling below the LRP. Results under baseline fishery conditions indicated by shaded row.**

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

* '2012' conditions as described in the main text. No future 'effort creep' assumed, i.e. CPUE is assumed to be consistently proportional to abundance.

** Recalculated using estimated equilibrium catch at defined fishing level

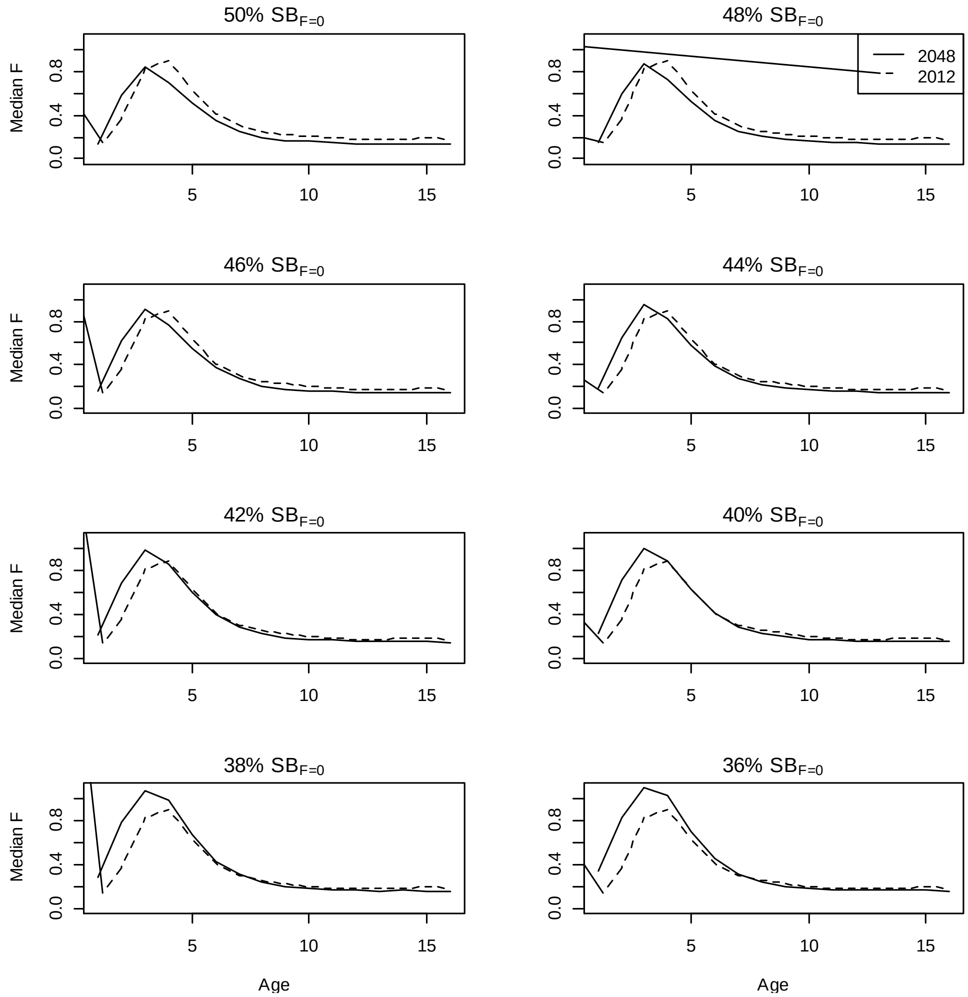


**Figure 1. Pattern of (median) overall fishing mortality-at-age (quarter) for each candidate TRP depletion level. Dotted line presents estimated 2012 F-at-age, solid line the projected 2048 F-at-age.**

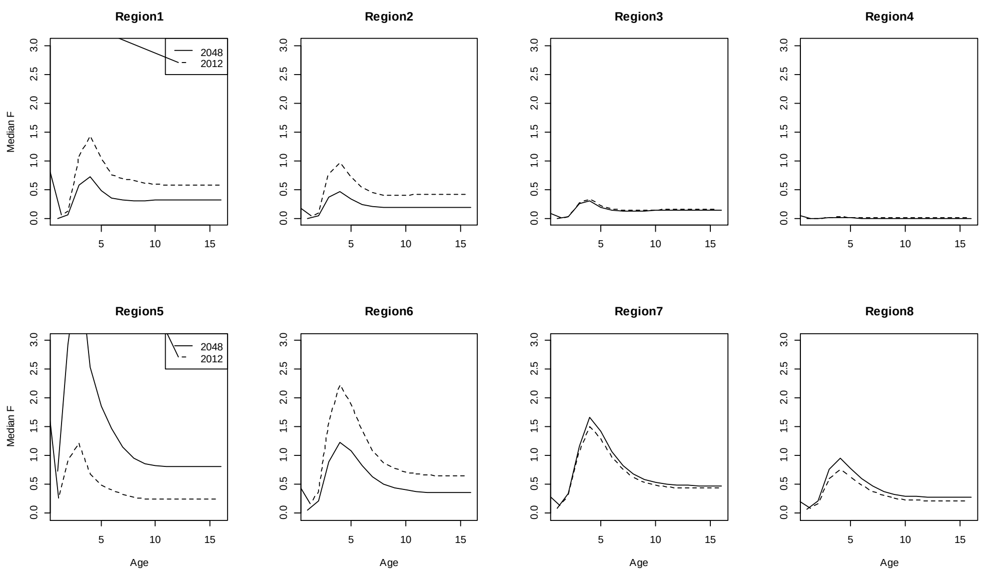


**Figure 2. Pattern of (median) fishing mortality-at-age (quarter) by skipjack model region under conditions achieving 42% $SB_{F=0}$ depletion. Dotted line presents estimated 2012 F-at-age, solid line the projected 2048 F-at-age.**

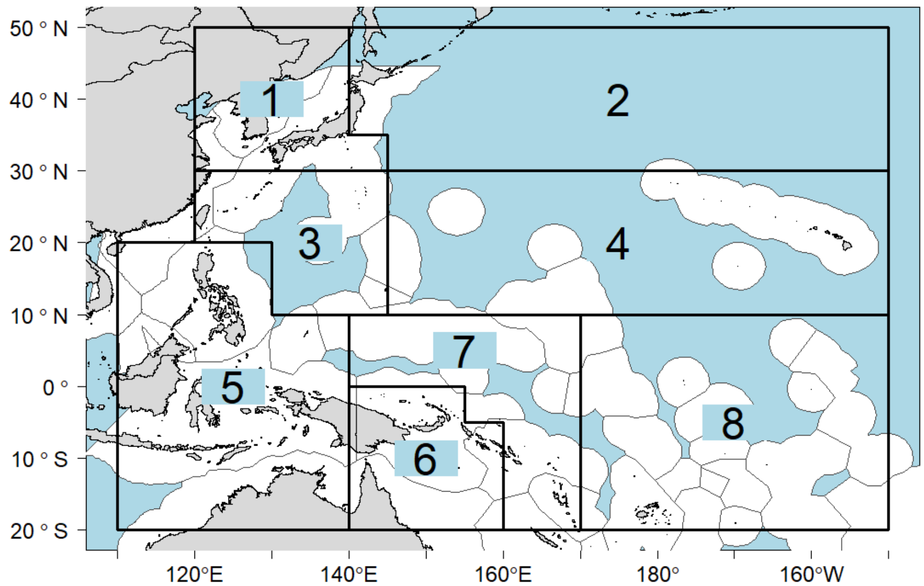


**Figure 3. The geographical area covered by the stock assessment and the boundaries for the 8 region assessment model.**

**Table 3. Table of Annual Catch Estimates for key fisheries within Region 5 of the skipjack stock assessment model for 2012 and averaged over the period 2016-2018 period.**

| flag_id | Gear | Skipjack catch (t.) used in assessments from Annual catch estimates<br>2012 | Average 2016-2018 | Increase / Decrease | % | % of total |
|---|---|---|---|---|---|---|
| ID | Gillnet | 0 | 0 | 0 | | |
| | Handline | 0 | 0 | 0 | | |
| | Hook-and-line | 0 | 38,817 | 38,817 | | |
| | Longline | 0 | 2,185 | 2,185 | | |
| | OTHER Small-scale gears | 109,732 | 93,993 | -15,739 | | |
| | Pole-and-line | 100,857 | 83,027 | -17,830 | | |
| | Purse seine | 69,058 | 91,985 | 22,927 | | |
| ID Total | | 279,647 | 310,006 | 30,359 | 11% | 8% |
| PH | Handline | 439 | 2,639 | 2,200 | | |
| | Hook-and-line | 10,600 | 9,418 | -1,182 | | |
| | Longline | 0 | 0 | 0 | | |
| | OTHER Small-scale gears | 3,078 | 5,136 | 2,058 | | |
| | Ringnet | 23,255 | 26,738 | 3,483 | | |
| | Purse seine | 39,062 | 37,229 | -1,833 | | |
| PH Total | | 76,434 | 81,161 | 4,727 | 6% | 1% |
| VN | Gillnet | 20,998 | 39,836 | 18,838 | | |
| | Longline | 0 | 0 | 0 | | |
| | Purse seine | 22,638 | 50,672 | 28,034 | | |
| VN Total | | 43,636 | 90,507 | 46,871 | 107% | 12% |
| | | | | 0 | | |
| **Total** | | **399,717** | **481,674** | **81,957** | **21%** | **21%** |

## Bigeye TRPs

Requested results are presented for bigeye under the assumption of 'recent' (Table 4, Figure 4) and 'long-term' (Table 5, Figure 5) recruitment patterns. All requested depletion levels imply stock sizes larger than those in the 'recent' period estimated within the stock assessment, by between 16 and 30%.

Under 'recent' recruitment assumptions, for the first two levels, purse seine effort and longline catch was either maintained at 2016-2018 average levels or decreased slightly, while to achieve the third level (median depletion over 2007-2009), effort and catch needed to be increased by 17% relative to that baseline (Table 4).

Under 'long term' recruitment assumptions, for the first two levels, purse seine effort and longline catch needed to be reduced relative to 2016-2018 average levels, by up to 17%, while to achieve the third level (median depletion over 2007-2009), effort and catch could be maintained at 2016-2018 levels (Table 5).

**Table 4. Fishery metrics under specified bigeye tuna depletion levels ($SB/SB_{F=0}$) where recent recruitments were assumed to continue.**

| Request | Depletion level ($SB/SB_{F=0}$) | PS/LL scalar (cf 2016-18) | Change in spawning biomass ($\%SB_{F=0}$) from 2012-2015 average | Median total equilibrium yield (%MSY) | $F/F_{MSY}$ | Risk $SB/SB_{F=0}$ < LRP | Juvenile $F_{2048}/F_{2014\text{-}2017}$ | Adult $F_{2048}/F_{2014\text{-}2017}$ |
|---|---|---|---|---|---|---|---|---|
| Average depletion 2000-2004 | 0.48 | 1 | +30% | 95% | 0.69 | 0 | 1.18 | 0.81 |
| Median depletion 2000-2004 | 0.49 | 0.96 | +34% | 94% | 0.67 | 0 | 1.13 | 0.77 |
| Median depletion 2007-2009 | 0.43 | 1.17 | +17% | 97% | 0.81 | 0 | 1.50 | 1.01 |

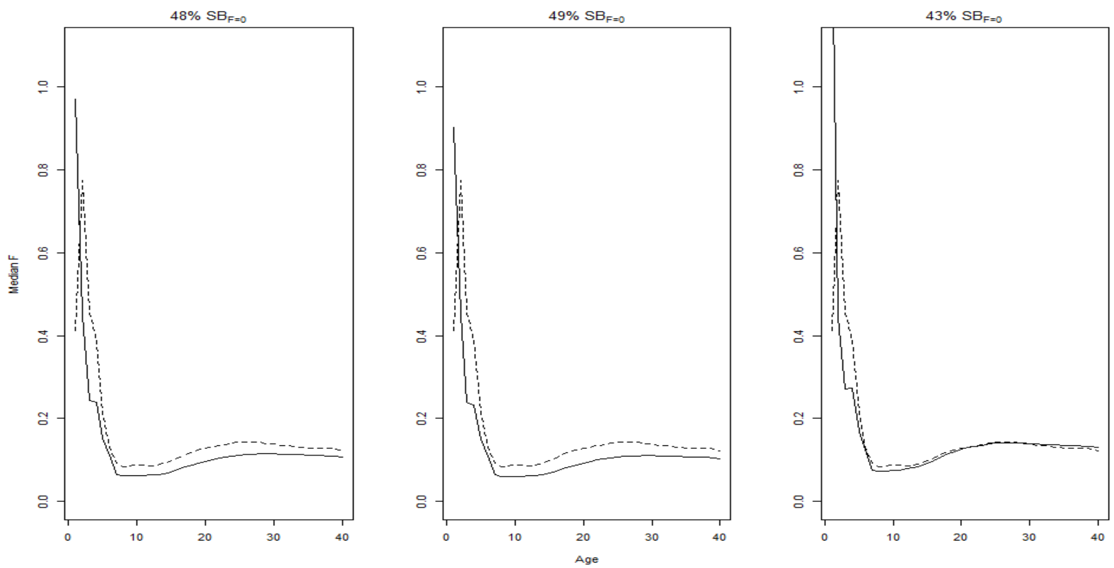


**Figure 4. Pattern of (median) overall fishing mortality-at-age (quarter) for the three bigeye proposed depletion levels. Dashed line presents estimated 2014-2017 F-at-age, solid line the projected 2048 F-at-age under the assumption that recent recruitment levels continue.**

**Table 5. Fishery metrics under specified bigeye tuna depletion levels ($SB/SB_{F=0}$) where long-term recruitments were assumed to continue.**

| Request | Depletion level ($SB/SB_{F=0}$) | PS/LL scalar (from 2016-18) | Change in spawning biomass (%$SB_{F=0}$) from 2012-2015 average | Median total equilibrium yield (%MSY) | $F/F_{MSY}$ | Risk $SB/SB_{F=0}$ < LRP | Juvenile $F_{2048}/F_{2014\text{-}2017}$ | Adult $F_{2048}/F_{2014\text{-}2017}$ |
|---|---|---|---|---|---|---|---|---|
| Average depletion 2000-2004 | 0.48 | 0.85 | +30% | 96% | 0.79 | 2% | 1.52 | 0.78 |
| Median depletion 2000-2004 | 0.49 | 0.83 | +34% | 96% | 0.78 | 1% | 1.50 | 0.76 |
| Median depletion 2007-2009 | 0.43 | 1 | +17% | 97% | 0.89 | 5% | 1.65 | 0.97 |

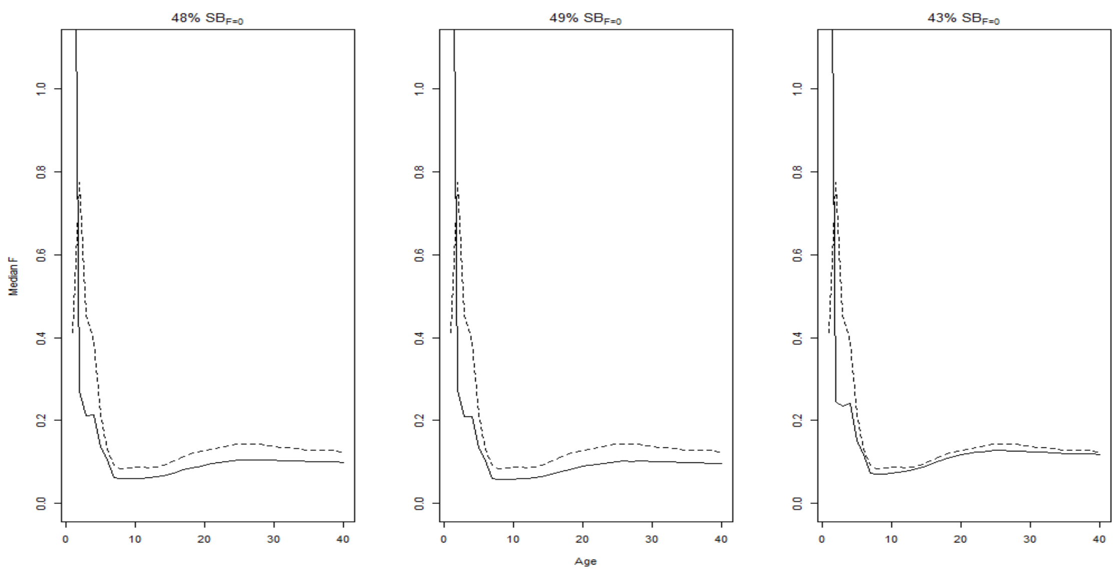


**Figure 5. Pattern of (median) overall fishing mortality-at-age (quarter) for the three bigeye proposed depletion levels. Dashed line presents estimated 2014-2017 F-at-age, solid line the projected 2048 F-at-age under the assumption that long-term recruitment levels continue.**

## Bigeye and yellowfin yield and spawning biomass per recruit curves

Isopleths for bigeye and yellowfin spawner per recruit (Figure 6) and yield per recruit (Figure 7) are presented. Note these figures will differ from those shown in the stock assessment reports because:

1. The YPR analysis shown in the stock assessment report is based on a single area approximation of the stock assessment model and uses an aggregate fishing mortality for scaling.
2. The year range for averaging F differs for the stock assessment YPR analysis.
3. In this analysis, the fishing mortality scalers have been applied either to one fishery sector or another and not uniformly across all fisheries.

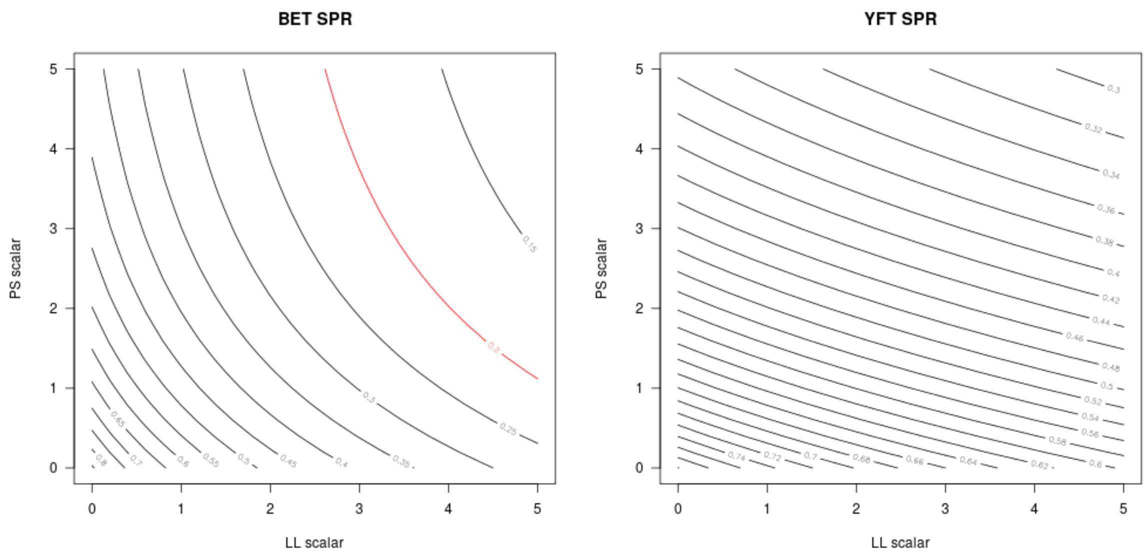


**Figure 6. Isopleths of spawning potential ratio for longline and purse seine effort scalars between 0 and 5. As a guide, the red line (left hand panel) shows SPR = 0.2.**

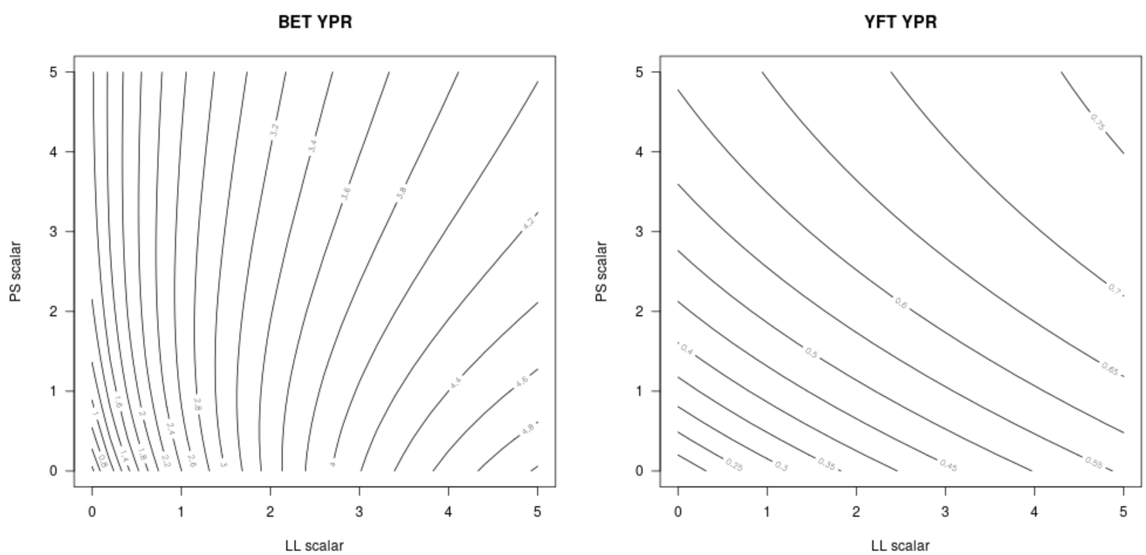


**Figure 7. Isopleths of yield per recruit for longline and purse seine effort scalars between 0 and 5.**

## Potential consequences of candidate bigeye and yellowfin TRPs for South Pacific albacore

South Pacific albacore stock status under specific conditions for candidate bigeye and yellowfin TRPs is presented in tables below for each candidate bigeye (Table 6, Table 7) and yellowfin TRP (Table 8) in the final column.

**Table 6. Median bigeye tuna depletion levels ($SB/SB_{F=0}$) assuming 'recent' recruitment conditions, and corresponding change in spawning biomass from 2012-2015 and 'recent' (2015-2018) average levels, change in purse seine effort and longline catch (scalar) from baseline (2016-2018) levels, median equilibrium yield (total yield as % of MSY), and risk of falling below the LRP (20% $SB_{F=0}$) under baseline fishery conditions (shaded row) and SC16-nominated depletion and risk levels. The equivalent depletion levels that would result for skipjack, yellowfin and South Pacific albacore for each of the candidate bigeye TRPs is provided in the last three columns.**

| BET: recent recruitment | | | | | | Notes | Equiv. SKJ $SB/SB_{F=0}$ | Equiv. YFT $SB/SB_{F=0}$ | Equiv. SPA $SB/SB_{F=0}$ |
|---|---|---|---|---|---|---|---|---|---|
| Median depletion level (%$SB_{F=0}$) | Change in SB (%$SB_{F=0}$) from 2012-2015 average | Change in SB (%$SB_{F=0}$) from 2015-2018 average | Change in fishing from 2016-2018 levels | Median total equilibrium yield (%MSY) | Risk $SB/SB_{F=0}$ < LRP | | | | |
| 48% | +30% | +17% | 0% | 95% | 0% | Base 2016-2018 conditions | 43% | 59% | 43% |
| 33% | -10% | -20% | +54% | 98% | 10% | Avg. 2012-2015 – 10% | 35% | 43% | 39% |
| 37% | 0% | -10% | +38% | 98% | 3% | Avg. 2012-2015 | 37% | 46% | 40% |
| 41% | +10% | 0% | +24% | 98% | 0% | Avg. 2012-2015 + 10% | 39% | 48% | 41% |
| 49% | +34% | +21% | -4% | 94% | 0% | Avg. depletion 2000-04 | 44% | 54% | 43% |
| 32% | -12% | -21% | +55% | 98% | 10% | 10% risk re LRP | 35% | 43% | 39% |
| 29% | -23% | -30% | +70% | 98% | 20% | 20% risk re LRP | 34% | 41% | 38% |

**Table 7. Median bigeye tuna depletion levels ($SB/SB_{F=0}$) assuming 'long-term' recruitment conditions, and corresponding change in spawning biomass from 2012-2015 and 'recent' (2015-2018) average levels, change in purse seine effort and longline catch (scalar) from baseline (2016-2018) levels, median equilibrium yield (total yield as % of MSY), and risk of falling below the LRP (20% $SB_{F=0}$) under baseline fishery conditions (shaded row) and SC16-nominated depletion and risk levels. The equivalent depletion levels that would result for skipjack, yellowfin and South Pacific albacore for each of the candidate bigeye TRPs is provided in the last three columns.**

| BET: long-term recruitment | | | | | | Notes | Equiv. SKJ $SB/SB_{F=0}$ | Equiv. YFT $SB/SB_{F=0}$ | Equiv. SPA $SB/SB_{F=0}$ |
|---|---|---|---|---|---|---|---|---|---|
| Median depletion level (%$SB_{F=0}$) | Change in SB (%$SB_{F=0}$) from 2012-2015 average | Change in SB (%$SB_{F=0}$) from 2015-2018 average | Change in fishing from 2016-2018 levels | Median total equilibrium yield (%MSY) | Risk $SB/SB_{F=0}$ < LRP | | | | |
| 43% | +17% | +6% | 0% | 97% | 5% | Base 2016-2018 conditions | 43% | 59% | 43% |
| 33% | -10% | -20% | +33% | 98% | 20% | Avg. 2012-2015 – 10% | 38% | 46% | 41% |
| 37% | 0% | -10% | +22% | 97% | 14% | Avg. 2012-2015 | 39% | 48% | 42% |
| 41% | +10% | 0% | +8% | 97% | 8% | Avg. 2012-2015 + 10% | 42% | 51% | 43% |
| 49% | +34% | +21% | -17% | 96% | 1% | Avg. depletion 2000-04 | 48% | 62% | 44% |
| 40% | +6% | -4% | +12% | 97% | 10% | 10% risk re LRP | 41% | 50% | 42% |
| 33% | -10% | -19% | +33% | 98% | 20% | 20% risk re LRP | 38% | 46% | 41% |

**Table 8. Median yellowfin tuna depletion levels ($SB/SB_{F=0}$) assuming 'long-term' recruitment conditions, and corresponding change in spawning biomass from 2012-2015 and 'recent' (2015-2018) average levels, change in purse seine effort and longline catch (scalar) from baseline (2016-2018) levels, median equilibrium yield (total yield as % of MSY), and risk of falling below the LRP (20% $SB_{F=0}$) under baseline fishery conditions (shaded row) and SC16-nominated depletion and risk levels. The equivalent depletion levels that would result for skipjack, South Pacific albacore and bigeye (under recent (R) and long-term (L) recruitment scenarios) for each of the candidate yellowfin TRPs is provided in the last three columns.**

| YFT: long-term recruitment | | | | | | Notes | Equiv. SKJ $SB/SB_{F=0}$ | Equiv. BET (R/L) $SB/SB_{F=0}$ | Equiv. SPA $SB/SB_{F=0}$ |
|---|---|---|---|---|---|---|---|---|---|
| Median depletion level (%$SB_{F=0}$) | Change in SB (%$SB_{F=0}$) from 2012-2015 average | Change in SB (%$SB_{F=0}$) from 2015-2018 average | Change in fishing from 2016-2018 levels | Median total equilibrium yield (%MSY) | Risk $SB/SB_{F=0}$ < LRP | | | | |
| 59% | +7% | 0% | 0% | 63% | 0% | Base 2016-2018 conditions | 43% | 48%/43% | 43% |
| 49% | -10% | -16% | +65% | 77% | 0% | Avg. 2012-2015 – 10% | 34% | 30%/26% | 38% |
| 55% | 0% | -6% | +29% | 70% | 0% | Avg. 2012-2015 | 38% | 40%/34% | 41% |
| 60% | +10% | +3% | -5% | 62% | 0% | Avg. 2012-2015 + 10% | 45% | 50%/45% | 43% |
| 54% | -1% | -8% | +34% | 71% | 0% | Avg. depletion 2000-2004 | 38% | 38%/30% | 40% |
| 31% | -43% | -47% | +200% | 88% | 10% | 10% risk re LRP | 26% | 8%/3% | 35% |
| NA | - | - | - | - | - | 20% risk re LRP | - | - | - |