DRAFT: Initial thoughts for approaches for 2011 stock assessments

# Bigeye tuna

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Factor | | Base 2010 model | Base 2011 model  (Reference case?) | | Sensitivity analyses | | Grid |
| Regional structure | | Six region model | Same | | None | |  |
| Temporal model domain | | 1952- present by quarter | Same | | None | |  |
| Fisheries definitions | | Reassigned all off-shore longline fleets to single fishery | New ID/PH domestic fishery definitions | | Same as 2010, but perhaps done thru a shared selectivity | |  |
| Purse seine catch | | Spill sampling estimates | Same, but with modified length frequency samples | | SBEST | | SBEST, Spill |
| Catches for Indonesia and Philippines fisheries | | Revised best estimates for domestic and longline fisheries | Revised best estimates – including new fisheries definitions. Size data included. | | None | |  |
| CPUE indices | | Based on 5x5 degree aggregated Japanese LL data – YFT offset removed  CV =0.20 and no temporal weighting of the effort deviates | CV=0.2 with temporal effort deviates  Use operational CPUE indices if available. Examine issue of scaling all indices at once to a global mean | | Exclude JP index prior to 1975/1990 R3/R4  Exclude JP index post-1990 R3/R4  JP R3 index for core area  Include the TW-DW indices for region 6 to replace the LL-ALL 6 index  Aggregated indices vs operational  TW indices for R3/R4 | | Exclude pre-1990 R3/R4 |
| Length and weight frequency data | | Down-weighted offshore data and JP length data from research and other sources. Some non-JP length data were excluded from some combined fisheries.  Weights of x and y | To be confirmed after further investigations | | Full weight | | Down-weight, Full weight |
| Tagging data | | No PTTP | Include PTTP  Include JP tagging data | | Without PPTP & JP | |  |
| Reporting rates | |  | By tagging program | |  | |  |
| Catchability trends | | No forced vessel effect | Applied if using aggregated series, estimates from SC6-WP02, use year-by-year numbers if possible  None, if using operational series | | No time series applied as sensitivity if using aggregated series | | If aggregate, Vessel effect on/off  If operational, none |
| Selectivity | | Age-based | Same | | None | |  |
| Steepness: | | Estimated | Fixed at 0.8 | | 0.65, 0.95 and estimated | | 0.65, 0.8, 0.95 |
| Growth: | | Estimated | Estimated | |  | |  |
| Natural mortality: | | Fixed | Fixed | | Increased juvenile mortality to YFT level over 1st 4 age classes  Extend the increase to the 1st 8 age classes  Estimates from Hampton M paper | | Extend the increase to the 1st 4 age classes |
| Movement: | |  |  | |  | |  |
| Comparative run with 2010 model structure | |  | Match run 3d:  No q trend  Don’t include PTTP  Steepness fixed at 0.98 | |  | |  |
| Equilibrium recruitment | | Full time series | Full time series | | Shorter time period for SRR: 1989-2009 (perhaps in separate document) | |  |
| Management advice | run 3d | | | From the grid | |  |  |

# Yellowfin tuna

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| Factor | Base 2009 model | Base 2011 model | | Sensitivity analyses | Grid |
| Regional structure | Six region model | Same | | A new regional weights for Region 3 and 5 considering the north of region 5  Region 3 only |  |
| Temporal model domain | 1952- present by quarter | Same | | None |  |
| Fisheries definitions | Non-optimal grouping of LL fisheries as with 2008 BET assessment | Same as for BET, e.g. revised LL(?) plus new ID/PH domestic fishery definitions | | Same as 2010, but perhaps done thru a shared selectivity |  |
| Purse seine catch | Spill sampling estimates | Spill, but with modified length frequency samples | | SBEST | SBEST/Spill |
| Catches for Indonesia and Philippines fisheries | Revised best estimates for domestic and longline fisheries | Revised best estimates – including new fisheries definitions | | None |  |
| CPUE indices | Based on 5x5 degree aggregated Japanese LL data – BET offset removed  Temporal variation in CV,  average CV=0.2  Catchability estimates based on operational data from R3 | CV=0.2 with temporal effort deviates  Use operational CPUE indices if available. Examine issue of scaling all indices at once to a global mean | | Exclude JP index prior to 1975/1990 R3/R4  Associated with regional weight sensitivity  Exclude JP index post-1990 R3/R4  JP R3 index for core area  Include the TW-DW indices for region 6 to replace the LL-ALL 6 index  Aggregated indices vs operational  TW indices for R3/R4 |  |
| Length and weight frequency data | 0.2\* actual N, max=50 | To be confirmed after further investigations, but same as BET | | Full weight |  |
| Tagging data | No PTTP | Include PTTP  Include JP tagging data | | Without PPTP & JP |  |
| Reporting rates |  | By program | |  |  |
| Catchability trends | Vessel effect  1.4% p.a. in region 3 and 0.5% elsewhere | ?; shifts to same penalties and timing as BET PS fisheries  Applied if using aggregated series, estimates from 2009 assessment, with year-by-year numbers if possible  None, if using operational series | | If using aggregated series, apply no time series | If aggregate, Vessel effect on/off  If operational, none |
| Selectivity | Age-based | Same | | None |  |
| Steepness: | Fixed at 0.75 | Fixed at 0.8 | | 0.65, 0.95 and estimated | 0.65, 0.8, 0.95 |
| Growth: | Estimated | Estimated | |  |  |
| Natural mortality: |  |  | | Estimates from Hampton M paper | Estimates from Hampton M paper |
| Movement: |  |  | |  |  |
| Comparative run with 2009 approach |  | Choose the reference case from 2009: CPUE Low, LL sample High, q\_incr | |  |  |
| Management advice | CPUE Low, LL sample High, q\_incr | | From the grid |  |  |
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# Skipjack tuna

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| Factor | | Base 2010 model | | Base 2011 model | Sensitivity analyses | Grid |
| Regional structure | | Three region model | | No change |  |  |
| Temporal model domain | | 1972- present by quarter | | No change |  |  |
| Fisheries definitions | | Redesigned all fisheries | | No change  ID/PH changes, consistent with BET/YFT | Combined selectivity approach, to mimic 2010 |  |
| Purse seine catch | | Spill sampling estimates | | No change | S\_BEST | SBEST / spill (comb) |
| Catches for Indonesia and Philippines fisheries | | Revised best estimates | | Improved estimates |  |  |
| CPUE indices | | Based on operational Japanese PL data  Delta-lognormal indices | | Update with 2010 data  More vessel ids  Group size effect  Search devices for OS | Binomial and adjusted binomial indices  Delta-lognormal using 2010 approach | Delta lognormal, binomial, and adjusted binomial indices |
| Length frequency data | | LF data | | Adjusted for grab bias  Include new ID/PH size data | 2010 approach | SBEST / spill (comb) |
| Tagging data | | All JP tagging  All SPC tagging but PTTP removed for final run | | PTTP included | Without PTTP |  |
| Reporting rates | | By tagging program | | No change |  |  |
| Catchability trends | | None | | No change |  |  |
| Selectivity | | Age-based | | No change |  |  |
| Steepness: | | 0.75 | | 0.8 | 0.65, 0.95  Estimated steepness | 0.65, 0.8, 0.95 |
| Growth: | | Estimated | | No change |  |  |
| Natural mortality: | | Estimated M at age | | No change |  |  |
| Movement: | | Estimated, constant movement at age | | No change |  |  |
| Management advice | | From the grid | | From the grid |  |  |
| Comparative run with 2010 approach |  | | Choose the reference case from 2010 (Run 41) | |  |  |