



To: Working Part on Temperate Tuna
From: Dr. Rishi Sharma, IOTC Stock Assessment Scientist
Date: 20th August, 2012.
Re: SS-III Review

The analysis presented in the WP meetings is a good first attempt. However, the following issues should be examined in more detail:

- 1) A more thorough investigation on catchability and selectivity needs to be examined as we know that the fleet targeted certain catches in different time periods.
- 2) Catchability is probably not constant over the entire time period, so what is the effect of this?
- 3) A BIG ISSUE: Why did you choose a dome shaped selectivity curve (double normal) as this will have a huge influence on the available Biomass (older ages are less vulnerable which is also when we have the largest Biomass, hence the results showing the large available Biomass). This alone with a low M, maybe the primary reason why this assessment differs substantially from the other assessments and for the divergence between the CPUE's in Taiwan and Korea from the observed values.
- 4) In addition, selectivity is not the same over the entire time period so what is the effect of this. Both CPUE standardization papers presented in 2012, mention the fact that targeting occurred on other species and was the cause of decline, but no effort has been taken to use this in the assessment in either the catchability or selectivity parameters (Fournier and Archibald 1982).
- 5) Sensitivity to M also needs to be addressed.
- 6) The model is highly weighted to the Japanese CPUE data, and examining different weights and effects would be useful for the overall assessment.
- 7) Lower steepness values should be examined and the outcome shown.
- 8) Contradictory Biomass trends in Figure 8 illustrate that how we weigh different data sources may have different outcomes. We need to weight alternative sources of information in the overall assessment.
- 9) A display of the actual parameter values and number of parameters used would be useful in the assessment.

If this approach is to be used, a more thorough investigation of the assumptions of M and its effect on the assessment should be made, as well as steepness (value of 0.8 is probably too high for albacore). In addition, time varying catchability (or by periods) should be attempted as well as selectivity changes should be attempted. Finally the effect of weighting the different indices should be examined (Schnute and Richards 2001).

References

Fournier, D. and Archibald, C.P. 1982. A General Theory of Analyzing Catch at Age Data. *Can. J. Fish. Aquat. Sci.* **39**: 1195-1207.

Schnute, J. T. and L. J. Richards, 2001. Use and abuse of fishery models. *Can. J. Fish. Aquat. Sci.* **58**: 10–17.