Indian Ocean Tuna Commission
Commission des Thons de l'Océan Indien
iotc ctoi

IOTC–2012–WPTmT04–INF08

Received: 20 August, 2012

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

The analysis presented in the WP meetings is reasonable. However, the following issues should be examined in more detail:

1) How does the analysis change when we fit to other CPUE indices, e.g. Japan or Korea?
2) The conclusion is incorrect, i.e. Page 1 abstract states, "Population is now reaching MSY level". The Kobe plots clearly show that overfishing is occurring and even though the Kobe plot may show that S_{MSY} is not exceeded, the uncertainty surrounding this can be quite large and could likely be below S_{MSY}
3) The fact that model doesn't converge with different values of steepness is problematic. Steepness as people know is critical surrogate for productivity and the steeper it is the more the stock can be fished. What do meta-analysis on other albacore stocks around the world use for steepness? If it is in the realm of 0.7 then it is OK. If not, we need to examine the effect of this parameter.
4) Figures 5, 6 and 7 should be ordered data (lowest to highest) as the regression between catch CPUE should not be a zigzagged line (else leave it as dots and show the trend line).
5) Given that albacore are late to mature a steepness of 0.7 maybe a little too high.
6) Catchability is probably not constant over the entire time period, so what is the effect of this?
7) Similarly, 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).
8) The selectivity for LL is quite high for the 1st age. Is this possible (Figure 9)?

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. 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.