TERMS OF REFERENCE FOR THE IOTC CPUE STANDARDISATION WORKSHOP

Workshop on standardisation, interpretation and use of CPUE series as indices of abundance for Indian Ocean tuna stocks

A workshop to deal with issues related to standardization, interpretation and use of CPUE series as indices of population abundance has been requested by most IOTC working parties, given the importance of those data sources.

This workshop should be based around a team of scientists carrying out intersessional work covering a range of issues, as presented in the ToR below. Each item in the ToR should be covered by one or more documents, with work being carried out before the workshop meeting.

Scientists working with data from any fleet for which a CPUE series could be derived would be welcome to join. Ideally, scientists working on purse seine (PS), longline (LL) and Pole and line (PL) fleets, should be able to take part and carry out the necessary work.

- Coordinator: Dr Rishi Sharma, IOTC Secretariat
- Date: TBA
- Venue: TBA

Terms of Reference
The following ToR covers the most important issues that have been higlighted by different working parties. Work should be carried out, for those factors relevant to them, for the following:

- Fleets: EU PS, JAP LL, TWN LL, KOR LL, MAD PL
- Stocks: YFT, SKJ, ALB, BET

1. Development of common guidelines for CPUE standardisation
Despite very similar methods being applied to standardise CPUE series from various fleets, details of implementation and procedure tend to differ, making sometimes difficult to compare results and analyses.

- To develop a set of guidelines, to be applied on different series. The guidelines should draw on best practices employed elsewhere, and cover model building and selection, and the extraction and output of diagnostics.

2. Fishery changes affecting CPUE series
A number of technical and operational issues have been identified over the years as likely to have an important effect on the relationship between CPUE series and biomass. Improvements in technology, widely recognized in some fleets, are likely to affect many others. Changes in targeting, sometimes driven by external factors such as piracy, are also influential but difficult to quantify.

- To discuss and analyse alternative methods for accounting for targeting changes and their effect of selectivity.
- To explore a range of scenarios of technological change and improvements in efficiency affecting various fleets and their effect on estimated population trends, especially in recent years.

3. Spatial structure and statistical issues
Choices on spatial stratification can have a large influence in CPUE standardsation, especially in settings, such as the Indian Ocean, where changes in spatial coverage and intensity of fleet activity have been observed. The change in information contained in the CPUE series at different spatial scales, and possible differences in the signal observed in various areas, are important factors that could be investigated for series covering large areas.
Some statistical questions could also be addressed, such as the method used to deal with zero catches in strata with recorded effort, could also be discussed and evaluated.

- To explore the need and effect of applying different methods of accounting for zero catch values in strata with positive effort in those series where this is applicable.

4. Sources of data

Data forms the basis for all CPUE series, and different problems have been recognised in every data series employed by IOTC working parties.

- To analyse the effect of missing data on CPUE series and evaluate the possible use of data imputation methods to complete time series.
- To evaluate the advantages (e.g. increase in explanatory power) and disadvantages (e.g. increase in variance) of various environmental variables applied to CPUE series standardisation.
- To investigate the availability and uses of additional data (e.g. VMS data) that could increase the ability of the standardisation procedure to deal with different problems.

5. Combining series of abundance and dealing with conflicts in trends

Various stock assessment methods employed by IOTC working parties can only make use of a single index of abundance for estimating population trends. In such cases, indices from different fleets are unduly combined into an unified index. This procedure can be carried out using different methods, and the relative merits of each could be explored in the specific setting of IOTC series.

- To review and test different methods of combining CPUE series.

6. Impact on advice

The interest of CPUE series in a stock assessment exercise lies in their value as indicators of biomass dynamics, leading to the provision of scientific advice on stock status. The effect of various factors affecting CPUE series on final management advice can be investigated via stochastic simulation.

- To carry out initial simulations on the effect of the most important sources of error and bias in CPUE series on management advice as provided with different stock assessment models.