

RECOMMENDATION 14/07

TO STANDARDISE THE PRESENTATION OF SCIENTIFIC INFORMATION IN THE ANNUAL SCIENTIFIC COMMITTEE REPORT AND IN WORKING PARTY REPORTS

The Indian Ocean Tuna Commission (IOTC),

RECOGNISING the importance of sound scientific advice as the centre piece for the conservation and management of tuna and tuna-like species in the Indian Ocean and adjacent seas in line with international law and the information needs of the Commission;

NOTING that participants of the first Global Summit of Tuna RFMOs in 2007 in Kobe, Japan agreed that stock assessment results be presented in a standardised "four quadrant, red-yellow-green-orange" format that is now referred as the "Kobe Plot" which is widely embraced as a practical, user-friendly method to present stock status information;

FURTHER NOTING that, at the Second Joint Meeting of Tuna RFMOs in June 2009 in San Sebastian, Spain, a "Strategy Matrix" was adopted to provide fisheries managers with the statistical probability of meeting management targets, including ending overfishing and rebuilding overfished stocks, in a standardised manner as a result of potential management actions;

ACKNOWLEDGING that the Strategy Matrix is a harmonised format for RFMO science bodies to convey advice, and that this format for presenting stock assessment results facilitates the application of the precautionary approach by providing Commissions with the basis to evaluate and adopt management options at various levels of probability of success;

RECALLING recommendations of the Kobe II Workshop of Experts to Share Best Practices on the Provision of Scientific Advice and of the Kobe III recommendations, in particular on development on research activities to better quantify the uncertainty and understand how this uncertainty is reflected in the risk assessment inherent in the Kobe II strategy matrix;

FURTHER RECALLING the provisions of the [Recommendation 12/15 on the best available science](#), that requests the provision of clear, transparent, and standardised formats for scientific advice delivered to the Commission;

TAKING INTO ACCOUNT that [Resolutions 12/01 on the implementation of the precautionary approach](#) and 13/10 [\[superseded by Resolution 15/10\] on target and limit reference points and a decision framework](#), make possible the implementation of the precautionary approach thanks to the adoption of interim target and limit reference points;

NOTING the excellent work to date by the Scientific Committee, its working parties and the IOTC Secretariat to standardise the presentation of scientific information in their annual reports, including via the '*Executive Summaries*' for each stock;

STRESSING the importance of further refining the presentation of scientific information to facilitate appropriate utilisation by the Commission;

RECOMMENDS, in accordance with paragraph 8 of Article IX of the IOTC Agreement, that:

1. In support of the scientific advice made available by the IOTC Scientific Committee, the '*Executive Summaries*' within the annual IOTC Scientific Committee report which present stock assessment results, include when possible:

Stock status

- a) A Kobe plot/chart showing:
 - i. Any Target and Limit Reference Points adopted by the Commission, e.g. F_{MSY} and F_{LIM} , SB_{MSY} and SB_{LIM} or B_{MSY} and B_{LIM} , depending on the assessment models used by the Scientific Committee, or proxies where available;
 - ii. The stock estimates, expressed in reference to Target Reference Points adopted by the Commission, e.g. as $F_{CURRENT}$ on F_{MSY} and as $SB_{CURRENT}$ on SB_{MSY} or as $B_{CURRENT}$ on B_{MSY} ;

- iii. The estimated uncertainty around estimates, provided that statistical methods to do so have been agreed upon the Scientific Committee and that sufficient data exist;
- iv. The stock status trajectory.
- b) A graphical representation showing the proportion of model outputs of the years used for advice from the last stock assessment that are within the green quadrant of the Kobe plot/chart (not overfished, not subject to overfishing), the yellow and orange quadrants (overfished or subject to overfishing) and the red quadrant (overfished and subject to overfishing).

Model outlooks

- c) Two Kobe II strategy matrices:
 - i. A first one indicating the probability of complying with the Target Reference Points adopted by the Commission, e.g. the probability of either $SB > SB_{MSY}$ or $B > B_{MSY}$ and of $F < F_{MSY}$ for different levels of catch across multiple years;
 - ii. A second one indicating the probability of being inside safe biological limits expressed through Limit Reference Points adopted by the Commission, e.g. the probability of either $SB > SB_{LIM}$ or $B > B_{LIM}$ and of $F < F_{LIM}$ for different levels of catch across multiple years;
 - iii. When the Commission agrees on acceptable probability levels associated with the target and limit reference points on a stock by stock basis, the Scientific Committee could prepare and include, in the annual report, the Kobe II strategy matrices using colour coding corresponding to these thresholds.

Data quality and limitations of the assessment models

- d) A statement qualifying the quality, the reliability and where relevant the representativeness of input data to stock assessments, such as, but not limited to:
 - i. Fisheries statistics and fisheries indicators (e.g. catch and effort, catch-at size and catch at age matrices by sex and, when applicable, fisheries dependent indices of abundance);
 - ii. Biological information (e.g. growth parameters, natural mortality, maturity and fecundity, migration patterns and stock structure, fisheries independent indices of abundance);
 - iii. Complementary information (e.g. consistencies among available abundance indices, influence of the environmental factors on the dynamic of the stock, changes in fishing effort distribution, selectivity and fishing power, changes in target species).
- e) A statement qualifying the limits of the assessment model with respect to the type and the quality of the input data and expressing the possible biases in the assessment results associated with uncertainties of the input data;
- f) A statement concerning the reliability of the projections carried out over the long term.

Alternative approach (data poor stocks)

- 2. When, due to data or modelling limitations, the IOTC Scientific Committee is unable to develop Kobe II strategy matrices and associated charts or other estimates of current status relative to benchmarks, the IOTC Scientific Committee will develop its scientific advice on available fisheries-dependant and fisheries-independent indicators and provide similar caveats as those detailed in paragraph 1(d).

Additional information and review of the structure and templates of the 'Executive Summaries'

- 3. The Commission encourages the IOTC Scientific Committee to include either in its annual report or in the detailed reports, where possible and if considered as relevant and useful, any other tables and/or graphics supporting scientific advice and management recommendations. In particular, the IOTC Scientific Committee will include, where possible, information on the recruitment trajectories, on the stock-recruitment relationship and some ratio such as yield per recruit or biomass per recruit.



4. As far as needed, the IOTC Scientific Committee shall review recommendations and templates for the Kobe II strategy matrices, plot and graphical representations as laid down in this Recommendation and will advise the Commission on possible improvements.

Conservation and Management Measures linked to [Recommendation 14/07](#) or return to the [Table of Contents](#)

Links from within [Recommendation 14/07](#)

[Resolution 15/10](#)

[Resolution 12/01](#)

[Recommendation 12/15](#)

Links from other CMMs

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