

Progress of the Indian Ocean Albacore MSE

10th IOTC Technical Committee on Management Procedures (TCMP) 9 May 2026

IOTC-2026-TCMP10-04 | Iago Mosqueira (WMR), Richard Hillary (CSIRO)

Background

- Work started in 2015 with subsequent iterations of assessment-based OMs
- Changes in structure and setup of SS3 model
 - Model increasingly complex, data remains not fully informative
- Conditioned OM on 2023 WPTmT dataset could not be used for projections
- Development of separate ABC algorithm for conditioning OMs to data
- Work in 2024 and 2025 under contract WMR and IOTC/FAO (IM)
- CSIRO contribution in kind (RH)

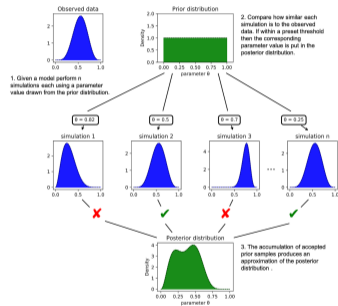


ABC Albacore Operating Model

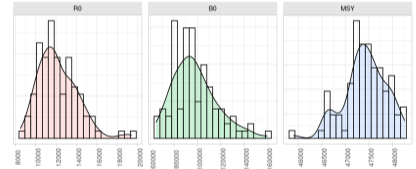
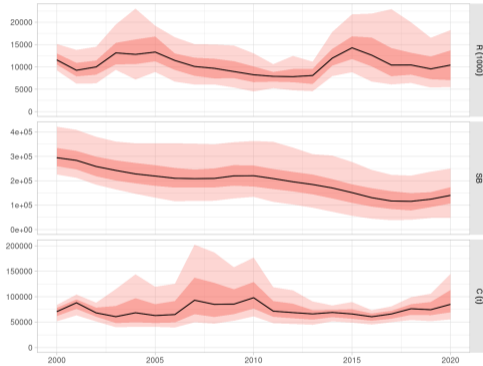
- Aims at quantifying uncertainty in dynamics, not precise estimation
- Simplified overall structure
 - Six fleets (4 LL by area, PS, Other) rather than 15
 - Aggregated over time length frequency data (LL & PS)
- Maintains important structural elements
 - Annual and with four seasons, recruitment in one
 - No spatial structure but fleets-as-areas (4) approach
 - Sexually-structured, growth and selectivity-at-age
- Conditioning start in year 2000, models all surviving cohorts
- Builds priors on parameters from assessment estimates

ABC conditioning

- ABC algorithm to condition OMs to data
- Simulates data and compares summary statistics to observations
- Probabilistic uncertainty in parameters (B_0) and derived quantities (SSB)
- Priors on either parameters and derived quantities (B_y/B_{MSY})



Albacore reference case OM - LL1 (NW) CPUE

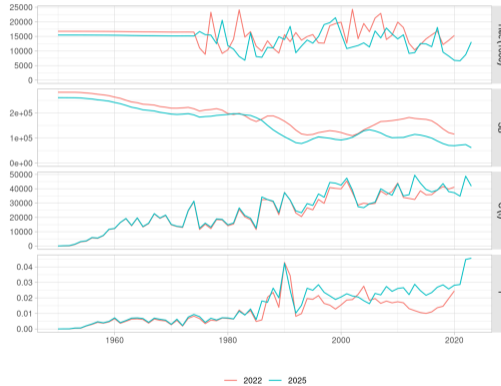


Operating Model sets

- Reference case: LL1 (NW) CPUE
- Reference set
 - LL3 (SW) CPUE
 - 1% annual increase in LL catchability
- Robustness set
 - Climate change: recruitment, growth, carrying capacity
 - CPUE quality or significance
 - Recruitment failure

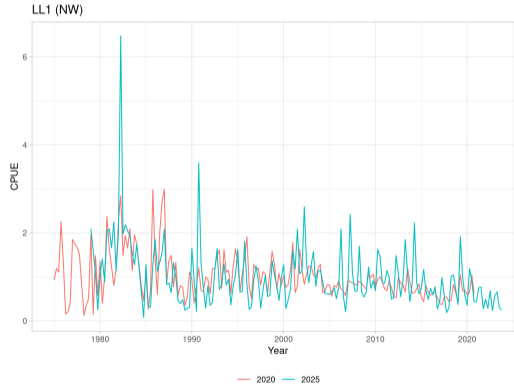
WPTmT 2025 updated dataset

- Updates to recent historical data during WPTmT 2025



WPTmT 2025 - Updated dataset

- Updates to recent historical data during WPTmT 2025
- Indices of abundance standardization methodology changed from 2022



WPTmT 2025 - Updated dataset

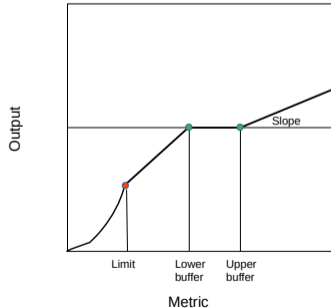
- Updates to recent historical data during WPTmT 2025
- Indices of abundance standardization methodology changed from 2022
- Attempted hindcasting update of OMs to new catch dataset
- WPM decision to recondition OM to new dataset

Management Procedures and Tuning Objectives

- Candidate management procedures
 - Model-free: `cpue.ind` + `buffer.hcr`
 - Model-based: `spict.sa` + `buffer.hcr` and `spict.sa` + `projection.hcr`
 - Combination of CPUEs LL1 (NW) and LL3 (SW)
- Management objectives and tuning
 - 60 and 70% $P(\text{Kobe}=\text{green})$, 11-15 years after start

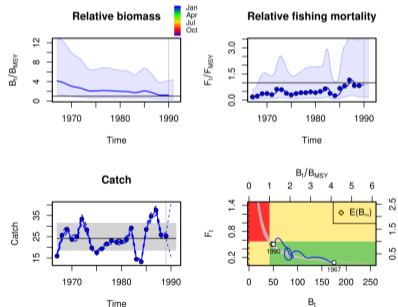
MP - LL CPUE + Buffer HCR

- Target between buffer levels, action only outside of those
- Catch decreases below lower buffer, more rapidly below limit
- Catch can increase above upper buffer, but more slowly that decreases
- Input is CPUE index



MP - SPICT + Buffer HCR

- SPICT: state-space surplus production model
- Fit to single or multiple indices
- Combined with Buffer HCR
- Depletion or B/B_{MSY} used as input to HCR



Next steps

- Building on WPM 2025, BET MSE review and WPTmT2025

OMs

- Recondition ABC OMs to updated catch and CPUE dataset (2023)
- Refine formulation Climate Change robustness OMs

MPs

- Finalize candidate MPs, including projection-based MP

MSEs

- Tune candidate MPs for 60, 70% $P(\text{Kobe}=\text{green})$

Summary

- Delayed progress in 2025
- Catch and CPUE data revision invalidated OMs
- Need to recondition OMs
- Finalize candidate MP
- Tuning and robustness runs to be conducted
- Work could not be funded in 2026, so progress on hold
- Workplan initially for 2026-2027, maybe for 2027-2028

Thank you for your attention

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