APPENDIX 8
EXECUTIVE SUMMARY: KAWAKAWA (2025)

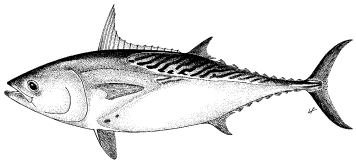

TABLE 1. Status of kawakawa (*Euthynnus affinis*) in the Indian Ocean

Area[1]	Indicators		2023 stock status determination[3]
Indian Ocean	Catch 2024 (t) Mean annual catch 2020-2024 (t)	160,272[2] 132,795	**27%**
	MSY (t) (80% CI) F_{MSY} (80% CI) B_{MSY} (t) (80% CI) $F_{current}/F_{MSY}$ (80% CI) $B_{current}/B_{MSY}$ (80% CI)	154,000 (122,000 – 193,000) 0.60 (0.48 – 0.74) 258,000 (185 – 359) 0.98 (0.82–2.20) 0.99 (0.45 – 1.20)	

[1]Stock boundaries defined as the IOTC area of competence;
[2]Proportion of catch fully or partially estimated for 2024: 28.4 %;
[3]2021 is the final year that data were available for this assessment.

Colour key	Stock overfished ($SB_{year}/SB_{MSY}< 1$)	Stock not overfished ($SB_{year}/SB_{MSY}\geq 1$)
Stock subject to overfishing ($F_{year}/F_{MSY}> 1$)	25%	23%
Stock not subject to overfishing ($F_{year}/F_{MSY}\leq 1$)	27%	25%
Not assessed/Uncertain / Unknown		

INDIAN OCEAN STOCK – MANAGEMENT ADVICE

Stock status. No new stock assessment was conducted in 2025 for kawakawa and so the results are based on the results of the assessment carried out in 2023 which examined a number of data-limited methods include C-MSY, OCOM, and JABBA models (based on data up to 2021). These models produced stock estimates that are not drastically divergent because they shared similar dynamics and assumptions. The C-MSY model has been explored more fully and therefore is used to obtain estimates of stock status. The C-MSY model indicated that the fishing mortality F was very close to F_{MSY} (F/F_{MSY}=0.98) and the current biomass B was also very close to B_{MSY} (B/B_{MSY}=0.99). The estimated probability of the stock currently being in yellow quadrant of the Kobe plot is about 27%. The analysis using OCOM model is more pessimistic and using JABBA incorporating gillnet CPUE indices is more optimistic. There has been a large increase in kawakawa catches over the last decade (**Fig. 1**). While the precise stock structure of kawakawa remains unclear, recent research provides strong evidence of population structure of kawakawa within the IOTC area of competence, with at least 4 genetic populations identified (Feutry et al., 2025[1]). This increases the

[1] Feutry et al., 2025. Genome scans reveal extensive population structure in three neritic tuna and tuna-like species in the Indian Ocean, *ICES Journal of Marine Science*, Volume 82, Issue 2, February 2025, fsae162, https://doi.org/10.1093/icesjms/fsae162

uncertainty in the assessment, which currently assumes a single stock of kawakawa. Based on the weight-of-evidence available, the kawakawa stock for the Indian Ocean is classified as **overfished** but **not subject to overfishing** (**Table 1**, **Fig. 1**). However, the assessment using catch-only method is subjected to high uncertainty and is highly influenced by several prior assumptions.

Outlook. There is considerable uncertainty about stock structure and the estimate of total catches. Due to the uncertainty associated with catch data (e.g., 28.4% of catches partially or fully estimated by the IOTC Secretariat for 2024) and the limited number of CPUE series available for fleets representing a small proportion of total catches, only data poor assessment approaches can currently be used. Aspects of the fisheries for this species, combined with the lack of data on which to base a more complex assessment (e.g., integrated models) are a cause for considerable concern. In the interim, until more traditional approaches are developed, data-poor approaches will be used to assess stock status. Continued increase in the annual catches for kawakawa is also likely to further increase the pressure on the Indian Ocean stock. Research emphasis should be focused on collating catch per unit effort (CPUE) time series for the main fleets, size compositions and life trait history parameters (e.g., estimates of growth, natural mortality, maturity, etc.).

Management Advice. The available gillnet CPUE of kawakawa showed a somewhat increasing trend although the reliability of the index as abundance indices remains unknown. Indonesia has recently revised its catch estimates for neritic tuna species. The updated catch for kawakawa differs substantially from those previously reported and used in the stock assessment. These changes are expected to have a significant impact on estimates of stock status and associated MSY-based reference quantities, which were primarily based on the earlier catch data. An updated assessment is therefore urgently required to revise stock estimates and management advice that incorporate and reflect the most recent catch information. A precautionary approach to management is recommended.

The following should be also noted:

- Accurate and consistent catch series data constitute a critical prerequisite for the robust execution of stock assessments. Additional efforts may be beneficial to enhance the reliability of the catch series data being submitted to IOTC;
- Further work is needed to improve the reliability of the catch series for some fisheries wherever necessary. Reported catches should be verified or estimated where needed, based on expert knowledge of the history of the various fisheries or through statistical extrapolation methods;
- Improvement in data collection and reporting is required if the stock is to be assessed using integrated stock assessment models;
- Limit reference points: the Commission has not adopted limit reference points for any of the neritic tunas under its mandate;
- Research emphasis should be focused on collating catch per unit effort (CPUE) time series for the main fleets, size compositions and life trait history parameters (e.g., estimates of growth, natural mortality, maturity, etc.);
- Given the limited information submitted by CPCs on total catches, catch and effort and size data for neritic tunas, despite their mandatory reporting status, the IOTC Secretariat was required to estimate 60.1% of the catches of kawakawa (in 2022), which increases the uncertainty of the stock assessments using these data. Therefore, the management advice to the Commission includes the need for CPCs to comply with IOTC data requirements per Resolution 15/01 and 15/02.

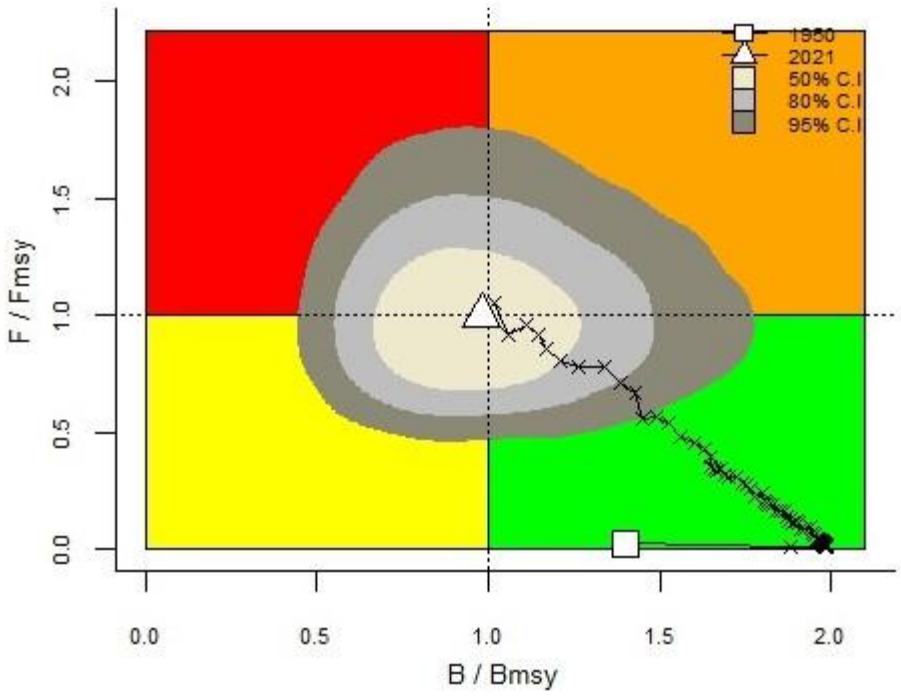

Fig. 1. C-MSY Indian Ocean assessment Kobe plot for kawakawa. The Kobe plot presents the trajectories (median) for the range of plausible model trajectories included in the formulation of the final management advice. The shaded contour lines represent 50%, 80%, and 95% confidence intervals of estimated stock status in 2021

Fisheries overview.

- **Main fisheries (mean annual catch 2020-2024)**: kawakawa are caught using gillnet (57.8%), followed by purse seine (23.5%) and line (14.2%). The remaining catches taken with other gears contributed to 4.6% of the total catches in recent years (**Fig. 2**).

- **Main fleets (mean annual catch 2020-2024)**: the majority of kawakawa catches are attributed to vessels flagged to India (28.8%) followed by I. R. Iran (26.9%) and Indonesia (16.8%). The 35 other fleets catching kawakawa contributed to 27.4% of the total catch in recent years (**Fig. 3**).

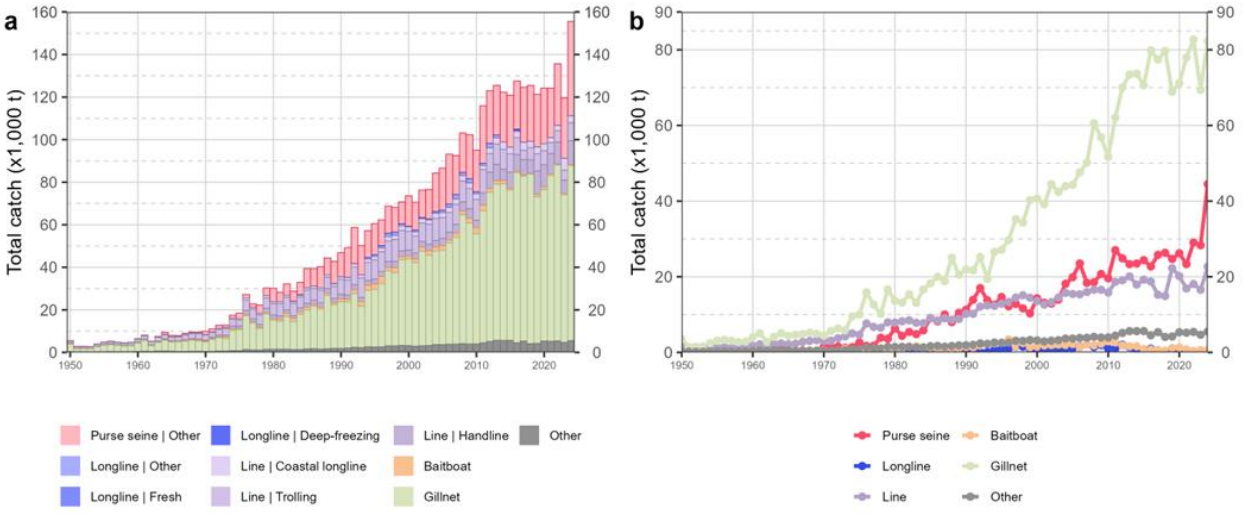

Fig. 2. Annual time series of (a) cumulative retained catches (t) by fishery and (b) individual retained catches (t) by fishery group for kawakawa during 1950-2024. Purse seine | Other: coastal purse seine, large-scale purse seine, and ring net; Longline | Other: swordfish and sharks-targeted longlines; Other: all remaining fishing gears

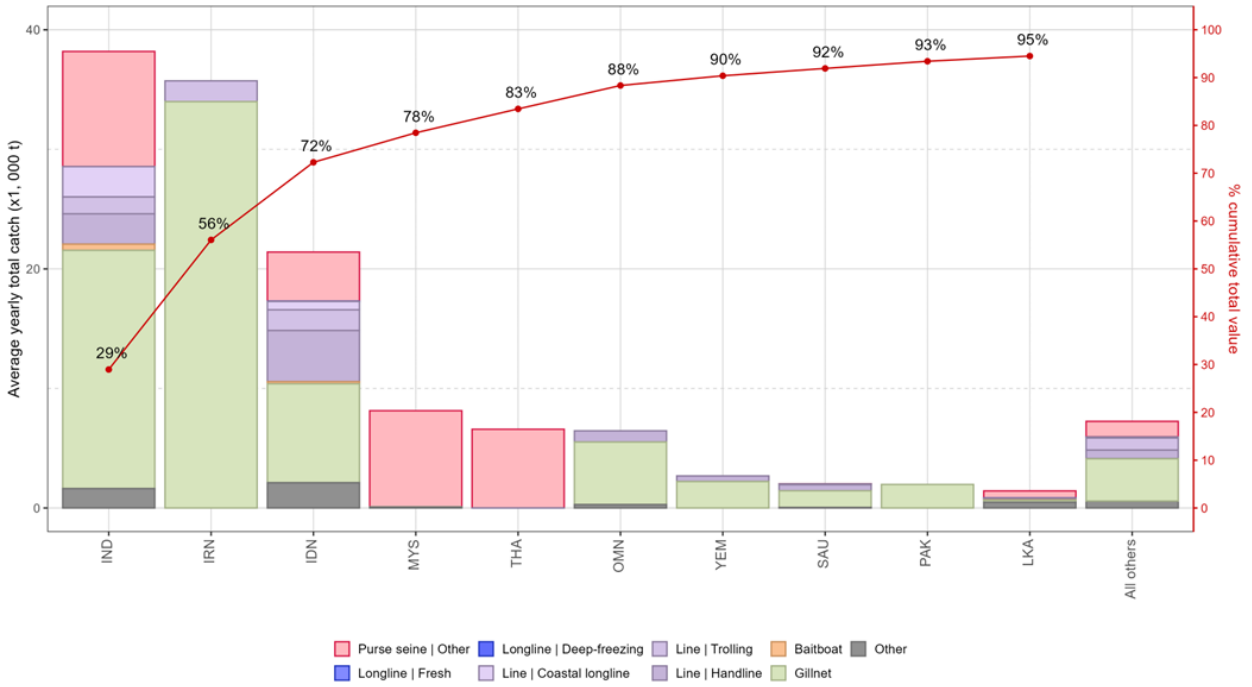

Fig 3. Mean annual retained catches (t) of kawakawa by fleet and fishery between 2020 and 2024, with indication of cumulative catches by fleet. Purse seine | Other: coastal purse seine, large-scale purse seine, and ring net; Longline | Other: swordfish and sharks-targeted longlines; Other: all remaining fishing gears