APPENDIX 11
EXECUTIVE SUMMARY: NARROW-BARRED SPANISH MACKEREL (2021)
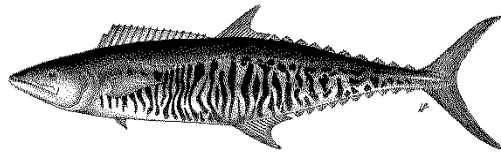

TABLE 1. Narrow-barred Spanish mackerel: Status of narrow-barred Spanish mackerel (*Scomberomorus commerson*) in the Indian Ocean.

Area[1]	Indicators		2021 stock status determination
Indian Ocean	Catch 2019[2] (t)	159, 457	73%
	Average catch 2015-2019 (t)	171,799	
	MSY (t) (80% CI)	157,760 (132,140–187,190)	
	F_{MSY} (80% CI)	0.49 (0.25–0.87)	
	B_{MSY} (t) (80% CI)	323,500 (196,260–592,530)	
	$F_{current}/F_{MSY}$ (80% CI)	1.24 (0.65–2.13)	
	$B_{current}/B_{MSY}$ (80% CI)	0.80 (0.54–1.27)	

[1] Boundaries for the Indian Ocean stock assessment are defined as the IOTC area of competence.

[2] Proportion of catch estimated or partially estimated by IOTC Secretariat in 2019: 72%

Colour key	Stock overfished(B_{year}/B_{MSY}< 1)	Stock not overfished (B_{year}/B_{MSY}≥ 1)
Stock subject to overfishing(F_{year}/F_{MSY}> 1)	73%	3%
Stock not subject to overfishing (F_{year}/F_{MSY}≤ 1)	3%	22%
Not assessed/Uncertain		

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Stock status. No new assessment was conducted for narrow-barred Spanish mackerel in 2021 and so the results are based on the assessment carried out in 2020 using the Optimised Catch-Only Method (OCOM). The OCOM model indicates that the stock is being exploited at a rate exceeding F_{MSY} in recent years, and the stock appears to be below B_{MSY}. An analysis undertaken in 2013 in the Northwest Indian Ocean (Gulf of Oman) indicated that overfishing is occurring in this area and that localised depletion may also be occurring[1]. Based on the weight-of-evidence available, the stock appears to be **overfished** and **subject to overfishing** (**Table 1**, **Fig. 2**). Catches since 2012 and also recent average catches for 2015-2019 have been above or close to the current MSY estimate of 157,76 0 t in recent years (**Fig. 1**).

Outlook. There is considerable uncertainty about the estimate of total catches. The continued increase in annual catches in recent years has further increased the pressure on the Indian Ocean narrow-barred Spanish mackerel stock. The apparent fidelity of narrow-barred Spanish mackerel to particular areas/regions is a matter for concern as overfishing in these areas can lead to localised depletion. Research emphasis should be focused on collating catch per unit effort (CPUE) time series for the main

[1] IOTC-2013-WPNT03-27

fleets, size compositions and life trait history parameters (e.g. estimates of growth, natural mortality, maturity, etc.).

Management advice. The catch in 2019 was just below the estimated MSY and the available gillnet CPUE shows a somewhat increasing trend in recent years although the reliability of the index as an abundance index remains unknown. Despite the substantial uncertainties, the stock is probably very close to being fished at MSY levels and higher catches may not be sustained.

The following should also be noted:

- Maximum Sustainable Yield for the Indian Ocean stock was estimated at 157,760 t, with catches for 2019 (159,457 t) exceeding this level.
- Limit reference points: The Commission has not adopted limit reference points for any of the neritic species under its mandate.
- Further work is needed to improve the reliability of the catch series. Reported catches should be verified or estimated, 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.
- Given the increase in narrow-barred Spanish mackerel catch in the last decade, measures need to be taken to reduce catches in the Indian Ocean.
- 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.).
- There is a lack of information submitted by CPCs on total catches, catch and effort and size data for neritic tunas, despite their mandatory reporting status. In the case of 2020 catches (reference year 2019) 72% of the total catches were either fully or partially estimated by the IOTC Secretariat, 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.
- **Main fishing gears (average catches 2015-2019)**: Narrow-barred Spanish mackerel are caught mainly using gillnet (~63%), however significant numbers are also caught using troll lines (~9.3%) and trawling (~8.7%) (**Fig. 1**).
- **Main fleets (average catches 2015-2019)**: Fisheries in Indonesia, India, I.R. Iran, and United Arab Emirates account for around two-thirds of catches of narrow-barred Spanish mackerel, while the species is also targeted throughout the Indian Ocean by artisanal and recreational fisheries.
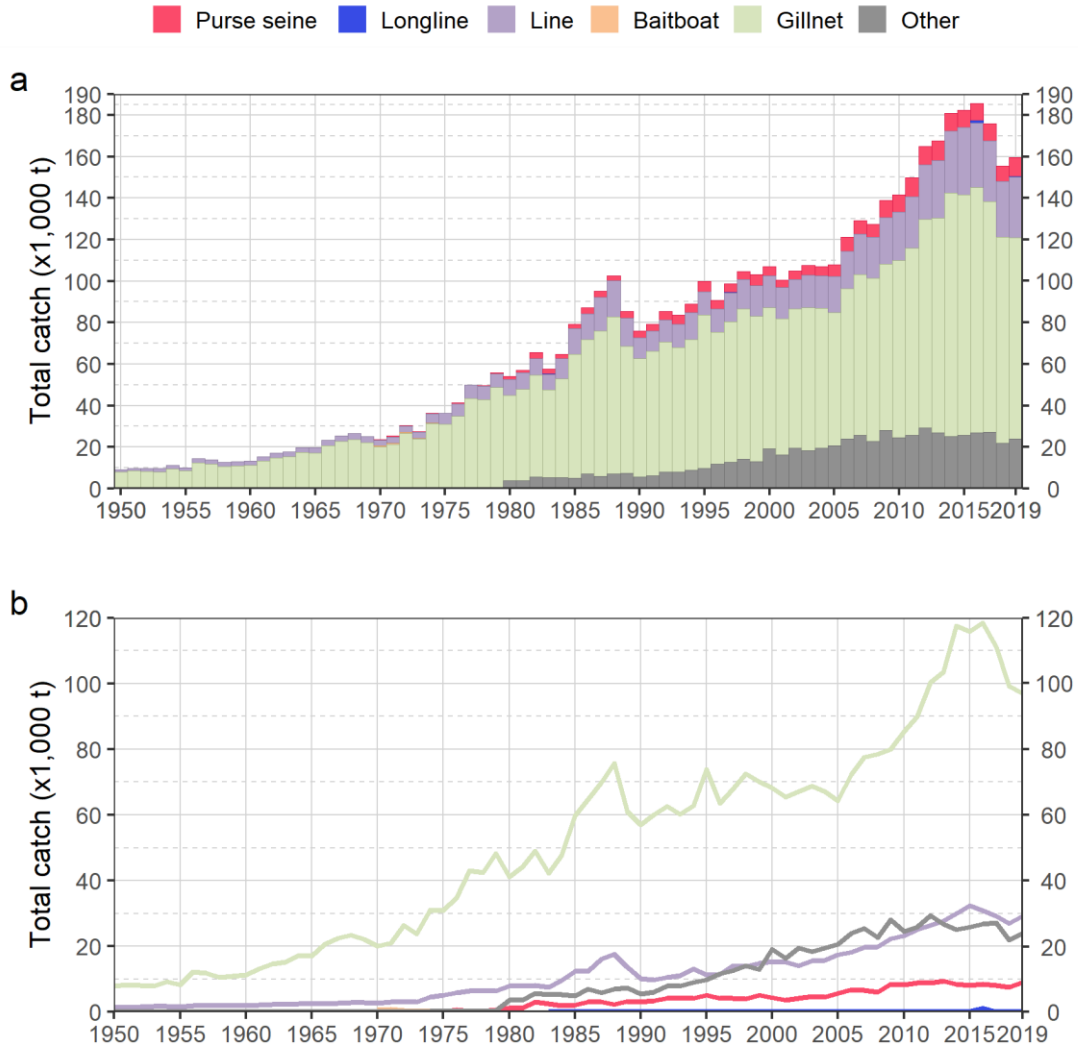
Fig. 1. Annual time series of (a) cumulative and (b) individual nominal catches (t) by gear group for narrow-barred Spanish mackerel during 1950–2019. <u>Purse seine</u>: coastal purse seine, purse seine, ring net; <u>Line</u>: coastal longline, hand line, troll line; <u>Gillnet</u>: coastal and offshore gillnets, driftnet; <u>Other</u>: all remaining fishing gears
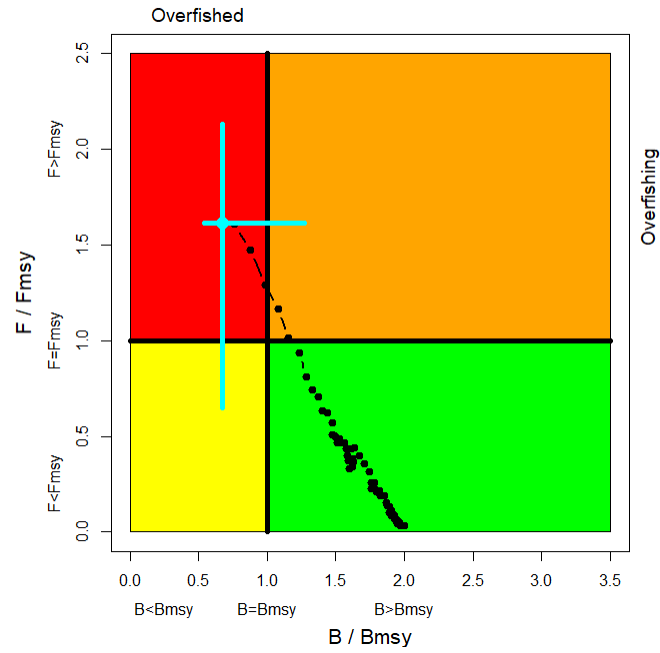
Fig. 2. Narrow-barred Spanish Mackerel OCOM Indian Ocean assessment Kobe plot. The Kobe plot presents the trajectories (geometric mean) for the range of plausible model options included in the formulation of the final management advice. The blue cross represents the estimate of stock status in 2018 (median and 80% confidence interval)