

## APPENDIX 15

### EXECUTIVE SUMMARY: INDO-PACIFIC SAILFISH (2022)



**Table 1.** Status of Indo-Pacific sailfish (*Istiophorus platypterus*) in the Indian Ocean

Area <sup>1</sup>	Indicators		2022 stock status determination
Indian Ocean	Catch 2021 <sup>2</sup> (t)	37,310	54%
	Average catch 2017-2021 (t)	32,178	
	MSY (1,000 t) (80% CI)	25.9 (20.8 – 34.2)	
	F <sub>MSY</sub> (80% CI)	0.19 (0.15 – 0.24)	
	B <sub>MSY</sub> (1,000 t) (80% CI)	138 (108–186)	
	F <sub>2019</sub> /F <sub>MSY</sub> (80% CI)	0.98 (0.65 – 1.42)	
	B <sub>2019</sub> /B <sub>MSY</sub> (80% CI)	1.17 (0.94 – 1.42)	
	B <sub>2019</sub> /B <sub>0</sub> (80% CI)	0.58 (0.47 – 0.71)	

<sup>1</sup> Boundaries for the Indian Ocean stock assessment are defined as the IOTC area of competence

<sup>2</sup> Proportion of 2021 catch estimated or partially estimated by IOTC Secretariat: 33.24%

Colour key	Stock overfished ( $B_{\text{year}}/B_{\text{MSY}} < 1$ )	Stock not overfished ( $B_{\text{year}}/B_{\text{MSY}} \geq 1$ )
Stock subject to overfishing ( $F_{\text{year}}/F_{\text{MSY}} > 1$ )	7%	39%
Stock not subject to overfishing ( $F_{\text{year}}/F_{\text{MSY}} \leq 1$ )	0%	54%
Not assessed/Uncertain		

The percentages are calculated as the proportion of model terminal values that fall within each quadrant with model weights taken into account

#### INDIAN OCEAN STOCK – MANAGEMENT ADVICE

**Stock status.** In 2022 a new stock assessment was conducted based on JABBA, a Bayesian state-space production model (using data up to 2019). Data poor methods (C-MSY and SFA) applied to SFA in 2019 rely on catch data only, which is highly uncertain for this species, and resulted in the stock status determined to be uncertain. To overcome the lack of abundance indices for this species, this assessment incorporated length-frequency data to estimate annual Spawning Potential Ratio (SPR). Normalised annual estimates of SPR were assumed to be proportional to biomass and incorporated as an index of relative abundance in the JABBA model (assuming no trends in annual recruitment in the long term). This is a novel technique applied to overcome the paucity of abundance data for SFA. The results indicate that there has been a 41% decline in SPR since 1970.  $B/B_{\text{MSY}}$  declined consistently from the early-1980s, while  $F/F_{\text{MSY}}$  gradually increased from 1980, peaking in 2018 at 1.1. The latest (2019) estimate of  $B/B_{\text{MSY}}$  was 1.17, while the  $F/F_{\text{MSY}}$  estimate was 0.98.

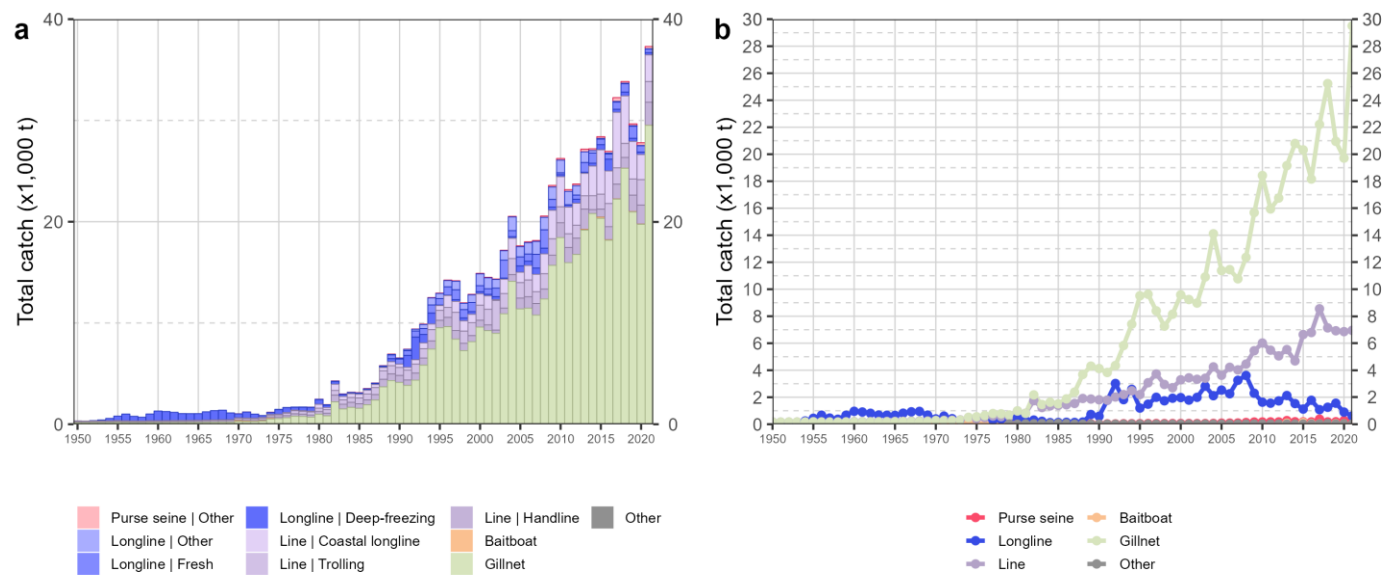
On the weight-of-evidence available in 2022, the stock status of Indo-Pacific sailfish is determined to be **not overfished nor subject to overfishing** (Table 1; Fig. 3).

**Outlook.** Catches have exceeded the estimated MSY since 2013 and the current catches (average of 31,593 t in the last 3 years, 2019-2021) are substantially higher than the current MSY estimate of 25,905 t. This increase in coastal gillnet longline catches and fishing effort in recent years is a substantial cause for concern for the Indian Ocean stock, however there is not sufficient information to evaluate the effect this will have on the resource. It is also noted that both the 2020 and 2021 catches exceed the catch limit prescribed in [Resolution 18/05](#) (25,000 t).

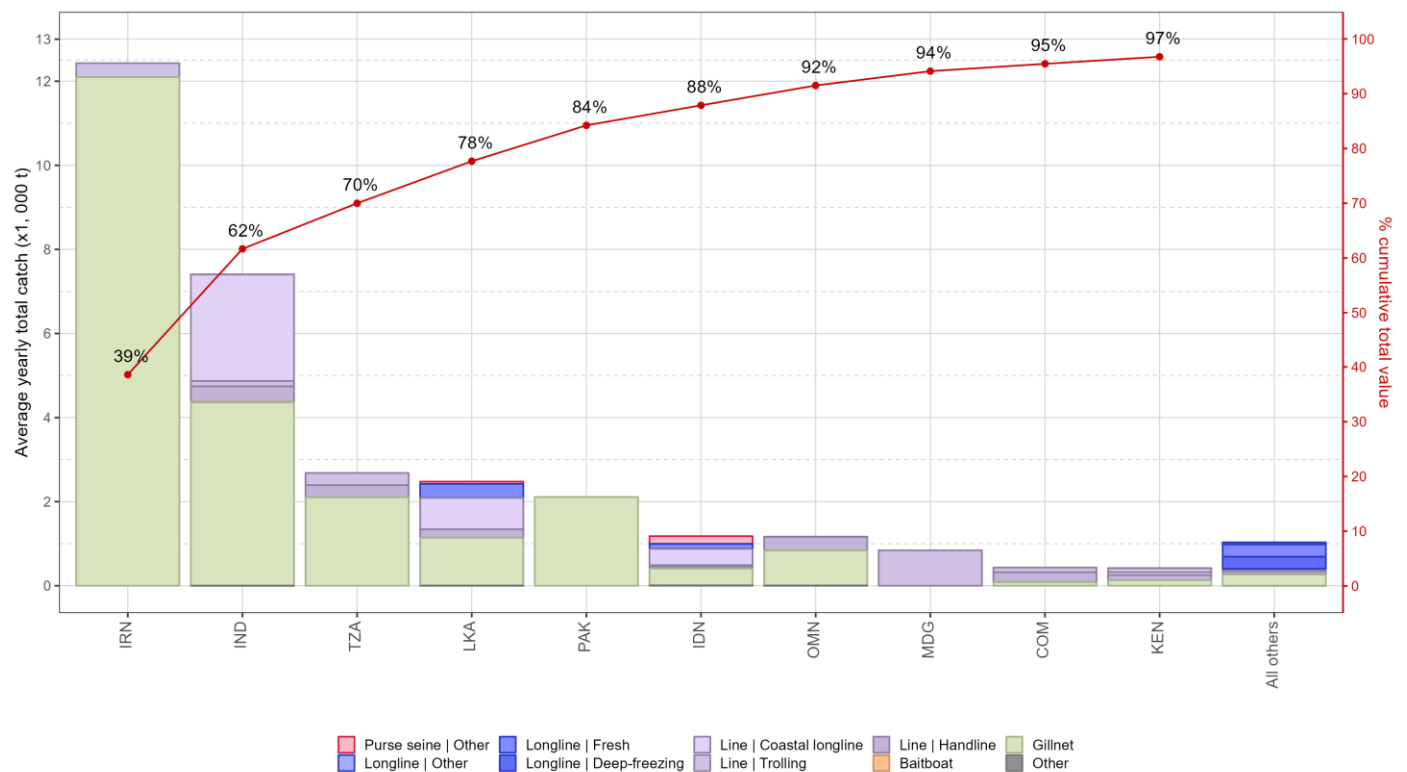
**Management advice.** The catch limits as stipulated in [Resolution 18/05](#) have been exceeded for two consecutive years since 2020. In spite of the Kobe green status of the stock, it is recommended that the Commission review the implementation and effectiveness of the measures contained in this Resolution and consider the adoption of additional conservation and management measures. The Commission should provide mechanisms to ensure that catch limits are not exceeded by all concerned fisheries. Research emphasis on further developing possible CPUE indicators from coastal gillnet and longline fisheries, and further exploration of stock assessment approaches for data poor fisheries are warranted. Given the limited data being reported for coastal fisheries, and the importance of sports fisheries for this species, efforts must be made to rectify these information gaps. The lack of catch records in the Persian Gulf should also be examined to evaluate the degree of localised depletion in Indian Ocean coastal areas

The following key points should also be noted:

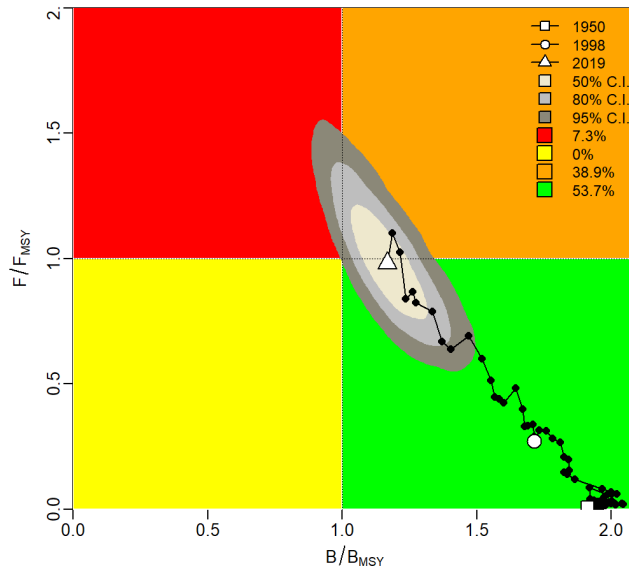
- **Maximum Sustainable Yield (MSY):** estimate for the Indian Ocean stock is 25,905 t.
- **Provisional reference points:** although the Commission adopted reference points for swordfish in [Resolution 15/10](#) on target and limit reference points and a decision framework, no such interim reference points have been established for Indo-Pacific sailfish.
- **Main fisheries (mean annual catch 2017-2021):** Indo-Pacific sailfish are caught using gillnet (73.1%), followed by line (22.6%) and longline (3.4%). The remaining catches taken with other gears contributed to 1% of the total catches in recent years (**Fig. 1**).
- **Main fleets (mean annual catch 2017-2021):** the majority of Indo-Pacific sailfish catches are attributed to vessels flagged to I. R. Iran (38.6%) followed by India (23%) and United republic of Tanzania (8.3%). The 31 other fleets catching Indo-Pacific sailfish contributed to 29.8% of the total catch in recent years (**Fig. 2**).



**Fig. 1.** Annual time series of (a) cumulative nominal catches (metric tons; t) by fishery and (b) individual nominal catches (metric tons; t) by fishery group for Indo-Pacific sailfish during 1950-2021. Longline | Other: swordfish and sharks-targeted longlines; Other: all remaining fishing gears



**Fig. 2.** Mean annual catches (metric tons; t) of Indo-Pacific sailfish by fleet and fishery between 2017 and 2021, with indication of cumulative catches by fleet. Longline | Other: swordfish and sharks-targeted longlines; Other: all remaining fishing gears



**Fig. 3.** Indo-Pacific sailfish: Kobe plot showing estimated trajectories (1950-2019) of  $B/B_{MSY}$  and  $F/F_{MSY}$ . Different grey shaded areas denote the 50%, 80%, and 95% credibility interval for the terminal assessment year. The probability of terminal year points falling within each quadrant is indicated in the figure legend.

**Table 2.** Summary of posterior quantiles presented in the form of marginal posterior medians and associated the 95% credibility intervals of parameters for the JABBA assessment of Indian Ocean Indo-Pacific sailfish.

<i>Estimates</i>	<i>Median</i>	<i>2.5%</i>	<i>97.5%</i>
$K$	276,803	215,921	371,953
$r$	0.375	0.293	0.476
$\psi$ ( <i>psi</i> )	0.964	0.827	0.999
$\sigma_{proc}$	0.052	0.034	0.088
$F_{MSY}$	0.188	0.146	0.238
$B_{MSY}$	138,402	107,961	185,977
$MSY$	25,906	20,789	34,168
$B_{1959}/K$	0.956	0.801	1.084
$B_{2019}/K$	0.584	0.472	0.709
$B_{2019}/B_{MSY}$	1.167	0.944	1.417
$F_{2019}/F_{MSY}$	0.982	0.65	1.421