



## Status of the Indian Ocean swordfish (SWO: *Xiphias gladius*) resource

TABLE 1. Swordfish: Status of swordfish (*Xiphias gladius*) in the Indian Ocean.

Area <sup>1</sup>	Indicators		2018 stock status determination
Indian Ocean	Catch 2017 <sup>2</sup> :	34,782t	
	Average catch 2013-2017:	31,405 t	
	MSY (1,000 t) (80% CI):	31.59 (26.30–45.50)	
	F <sub>MSY</sub> (80% CI):	0.17 (0.12–0.23)	
	SB <sub>MSY</sub> (1,000 t) (80% CI):	43.69 (25.27–67.92)	
	F <sub>2015</sub> /F <sub>MSY</sub> (80% CI):	0.76 (0.41–1.04)	
	SB <sub>2015</sub> /SB <sub>MSY</sub> (80% CI):	1.50 (1.05–2.45)	
	SB <sub>2015</sub> /SB <sub>1950</sub> (80% CI):	0.31 (0.26–0.43)	

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

<sup>2</sup> Proportion of catch estimated or partially estimated by IOTC Secretariat in 2018: 48%.

Colour key	Stock overfished (SB <sub>year</sub> /SB <sub>MSY</sub> < 1)	Stock not overfished (SB <sub>year</sub> /SB <sub>MSY</sub> ≥ 1)
Stock subject to overfishing (F <sub>year</sub> /F <sub>MSY</sub> > 1)		
Stock not subject to overfishing (F <sub>year</sub> /F <sub>MSY</sub> ≤ 1)		
Not assessed/Uncertain		

### INDIAN OCEAN STOCK – MANAGEMENT ADVICE

**Stock status.** No new stock assessment was carried out for swordfish in 2018, thus, the stock status is determined on the basis of the 2017 assessment and other indicators presented in 2018. In 2017 a stock synthesis assessment was conducted, with fisheries catch data up to 2015. The assessment uses a spatially disaggregated, sex explicit and age structured model. The SS3 model, used for stock status advice, indicated that MSY-based reference points were not exceeded for the Indian Ocean population (F<sub>2015</sub>/F<sub>MSY</sub> < 1; SB<sub>2015</sub>/SB<sub>MSY</sub> > 1). Most other models applied to swordfish also indicated that the stock was above a biomass level that would produce MSY. Spawning stock biomass in 2015 was estimated to be 26%–43% of the unfished levels. Last year catches are higher than the MSY level (31,590 t). On the weight-of-evidence available in 2018, the stock is determined to be **not overfished** and **not subject to overfishing**.

**Outlook.** The decrease in longline catch and effort from 2005 to 2011 lowered the pressure on the Indian Ocean stock, and despite the recent increase in total recorded catches, current fishing mortality is not expected to reduce the population to an overfished state over the next decade. There is a very low risk of exceeding MSY-based reference points by 2026 if catches are maintained at 2015 levels (<1% risk that SB<sub>2026</sub> < SB<sub>MSY</sub>, and <1% risk that F<sub>2026</sub> > F<sub>MSY</sub>) (Table 2).

**Management advice.** The most recent catches (34,782 t in 2017) are higher than the MSY level (31,590 t). The catches should be reduced to the MSY level (31,590 t).

The following key points should also be noted:

- **Maximum Sustainable Yield (MSY):** estimate for the Indian Ocean is 31,590 t.
- **Provisional reference points:** Noting that the Commission in 2015 agreed to Resolution 15/10 *on target and limit reference points and a decision framework*, the following should be noted:
  - a. **Fishing mortality:** Current fishing mortality is considered to be below the provisional target reference point of F<sub>MSY</sub> and below the provisional limit reference point of 1.4\*F<sub>MSY</sub> (Fig. 2).
  - b. **Biomass:** Current spawning biomass is considered to be above the target reference point of SB<sub>MSY</sub>, and therefore above the limit reference point of 0.4\*SB<sub>MSY</sub> (Fig. 2).
- **Main fishing gear (average catches 2013-17):** Longline catches are currently estimated to comprise approximately 69% of total swordfish catches in the Indian (Fig. 1).
- **Main fleets (average catches 2013-17):**



$SB_{2018} < SB_{MSY}$	0	0	0	0	0	0	0	8	13
$F_{2018} > F_{MSY}$	0	0	0	0	13	33	42	58	71
$SB_{2025} < SB_{MSY}$	0	0	0	0	8	33	46	63	75
$F_{2025} > F_{MSY}$	0	0	0	4	38	54	71	83	88

Reference point and projection timeframe	Alternative catch projections (relative to the average catch level from 2015* (32,129 t) and probability (%) of violating MSY-based limit reference points ( $SB_{lim} = 0.4 SB_{MSY}$ ; $F_{lim} = 1.4 F_{MSY}$ ))								
	60% (19,278 t)	70% (22,491 t)	80% (22,704 t)	90% (28,917 t)	100% (32,129 t)	110% (35,343 t)	120% (38,556 t)	130% (41,769 t)	140% (44,982 t)
$SB_{2018} < SB_{Lim}$	0	0	0	0	0	0	0	0	0
$F_{2018} > F_{Lim}$	0	0	0	0	0	0	0	13	33
$SB_{2025} < SB_{Lim}$	0	0	0	0	0	0	0	0	21
$F_{2025} > F_{Lim}$	0	0	0	0	0	21	42	63	75

\* 2015 catches, at the time of the last swordfish assessment conducted in 2017.