

2017 Status summary for species of tuna and tuna-like species under the IOTC mandate, as well as other species impacted by IOTC fisheries.

Temperate and tropical tuna stocks: main stocks being targeted by industrial, and to a lesser extent, artisanal fisheries throughout the Indian Ocean, both on the high seas and in the EEZ of coastal states.

Stock	Indicators	2012	2013	2014	2015	2016	2017	Advice to the Commission
Albacore Thunnus alalunga	Catch 2016: Average catch 2012–2016: MSY (1000 t) (80% CI): FMSY (80% CI): SBMSY (1000 t) (80% CI): F2014/FMSY (80% CI): SB2014/SBMSY (80% CI): SB2014/SB1950 (80% CI):	35,996 t 35,150 t 38.8 (33.9–43.6) - 30.0 (26.1–34.0) 0.85 (0.57–1.12) 1.80 (1.38–2.23) 0.37 (0.28–0.46)						Although considerable uncertainty remains in the SS3 assessment, particularly due to the lack of biological information on Indian Ocean albacore tuna stocks, a precautionary approach to the management of albacore tuna should be applied by capping total catch levels to MSY levels (38,800 t). Click here for full stock status summary: Appendix VIII
Bigeye tuna Thunnus obesus	Catch 2016: Average catch 2012–2016: MSY (1,000 t) (80%): FMSY (80%): SBMSY (1,000 t) (80%): F2015/FMSY (80%): SB2015/SBMSY (80%): SB2015/SBO (80%):	86,586 t 100,455 t 104 (87-121) 0.17 (0.14-0.20) 525 (364-718) 0.76 (0.49-1.03) 1.29 (1.07-1.51) 0.38 (n.a. – n.a.)					83.7%	The stock status determination did not qualitatively change in 2017. If catches remain below the estimated MSY levels estimated for the current mix of fisheries, then immediate management measures are not required. However, increased catch or increases in the mortality on immature fish will likely increase the probabilities of breaching reference levels in the future. Continued monitoring and improvement in data collection, reporting and analysis is required to reduce the uncertainty in assessments. Click here for full stock status summary: Appendix IX
Skipjack tuna Katsuwonus pelamis	Catch 2016: Average catch 2012–2016: Yield40%SSB (1000 t) (80% CI): E40%SSB (80% CI): C2016/C40%SSB (80% CI): SB2016 (1000 t) (80% CI): SB2016/SB40%SSB (80% CI): SB2016/SBO (80% CI): E40%SSB (80% CI): SBO (1000 t) (80% CI):	446,723 t 407,456 t 510.1 (455.9–618.8) 0.59 (0.53–0.65) 0.88 (0.72-0.98) 796.66 (582.65-1,059.29) 1.00 (0.88–1.17) 0.40 (0.35–0.47) 0.59 (0.53-0.65) 2,015 (1,651–2,296)					47%	The catch limit will be calculated applying the Harvest Control Rule specified in Resolution 16-02. Following Resolution 16/02, the catch limit is calculated as $[I_{max} \times E_{targ} \times B_{curr}] = 1 * 0.59 * 796,660$ t, which results in an annual overall catch limit of 470,029 t. for the period 2018–2020. Click here for full stock status summary: Appendix X
Yellowfin tuna Thunnus albacares	Catch 2016: Average catch 2012–2016: MSY (1000 t) (80% CI): FMSY (80% CI): SBMSY (1,000 t) (80% CI): F2015/FMSY (80% CI):	412,679 t 407,985 t 422 (406-444) 0.151 (0.148-0.154) 947 (900-983) 1.11 (0.86-1.36)					67.6%	As no stock assessment was conducted in 2017, the stock status determination has not changed since 2016, and gives a somewhat more optimistic estimate of stock status than the 2015 assessment as a result of the use of more reliable information on catch rates of longline fisheries and catches updated to 2016. The stock status is driven by unsustainable catches of yellowfin tuna taken over the last

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Stock	Indicators	2012	2013	2014	2015	2016	2017	Advice to the Commission
	SB2015/SBMSY (80% CI): 0.89 (0.79-0.99) SB2015/SB0 (80% CI): 0.29 (n.a.-n.a.)							five (5) years, and the relatively low recruitment levels estimated by the model in recent years. The Commission has an interim plan for the rebuilding of this stock (Resolution 17/01, which is yet to be evaluated and superseded Resolution 16/01) to achieve the recovery of yellowfin stock, with catch limitations based on 2014/2015 levels. The projections produced to advise on future catches are, in the short term, driven by the below average recruitment estimated for in recent years since these year classes have yet to reach maturity and contribute to the spawning biomass. Click here for full stock status summary: Appendix XI

Billfish: The billfish stocks are exploited by industrial and artisanal fisheries throughout the Indian Ocean, both on the high seas and in the EEZ of coastal states. While marlins and sailfish are not usually targeted by most fleets, they are caught and retained as byproduct by the main industrial fisheries, and are also important for localised small-scale and artisanal fisheries or as targets in sports and recreational fisheries.

Stock	Indicators	2012	2013	2014	2015	2016	2017	Advice to the Commission
Swordfish <i>Xiphias gladius</i>	Catch 2016: 31,407 t Average catch 2012–2016: 31,463 t MSY (1,000 t) (80% CI): 31.59 (26.30–45.50) FMSY (80% CI): 0.17 (0.12–0.23) SBMSY (1,000 t) (80% CI): 43.69 (25.27–67.92) F2015/FMSY (80% CI): 0.76 (0.41–1.04) SB2015/SBMSY (80% CI): 1.50 (1.05–2.45) SB2015/SB1950 (80% CI): 0.31 (0.26–0.43)						83%	The most recent catches (31,407 t in 2016) are at the MSY level (31,590 t). However, given the uncertainty of most recent catches from Indonesian fresh tuna longline fisheries there is a possibility that total catches could already be 39,777 t. The catches should not be increased beyond the MSY level (31,590 t). Click here for full stock status summary: Appendix XII
Black marlin <i>Makaira indica</i>	Catch 2016: 17,829 t Average catch 2012–2016: 16,638 t MSY (1,000 t) (80% CI): 9.932 (6.963-12.153) FMSY (80% CI): 0.211 (0.089-0.430) BMSY (1,000 t) (80% CI): 47.430 (27.435-100.109) F2015/FMSY (80% CI): 100.109 B2015/BMSY (80% CI): 2.42 (1.52-4.06) B2015/B1950 (80% CI): 0.81 (0.55-1.10) 0.30 (0.20-0.41)						80%	The current catches are considerably higher than MSY (9,932 t) and the stock is overfished (B2015< BMSY and currently subject to overfishing (F2015> FMSY). Even with a 40% reduction in current catches, it is very unlikely (less than 5%) to achieve the Commission objectives of being in the green zone of the Kobe Plot by 2025. Current catch levels are not sustainable and there is a need for urgent actions to decrease these catch levels. In order to enable the stock to start rebuilding, the Commission should consider a reduction of substantially greater than 40% from the current catches. Click here for full stock status summary: Appendix XIII

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<p>Blue marlin <i>Makaira nigricans</i></p>	<p>Catch 2016: 16,353 t Average catch 2012–2016: 15,859 t MSY (1,000 t) (80% CI): 11.926 (9.232–16.149) FMSY (80% CI): 0.109 (0.076–0.160) BMSY (1,000 t) (80% CI): 113.012 (71.721 – 161.946) F2015/FMSY (80% CI): 1.18 (0.80–1.71) B2015/BMSY (80% CI): 1.11 (0.90–1.35) 0.56 (0.44 – 0.71)</p>						46.8%	<p>The current catches (average of 15,859 t in the last 5 years, 2012–2016) are higher than MSY (11,926 t) estimated for 2015 and the stock is currently subject to overfishing (F2015 > FMSY). If catches of blue marlin are reduced to a maximum value of 11,704 t. (24 % reduction from average catch 2013–2015 at the time of the assessment), then the stock is expected to recover to the green zone of the Kobe Plot by 2025 (F2025 < FMSY and B2025 > BMSY) with at least a 50% probability. Click here for full stock status summary: Appendix XIV</p>
<p>Striped marlin <i>Tetrapturus audax</i></p>	<p>Catch 2016: 5,299 t Average catch 2012–2016: 4,854 t MSY (1,000 t) (80% CI): (3.26–5.40) FMSY (80% CI): (0.05–0.9) BMSY (1,000 t) (80% CI): (1.82–61.0) F2015/FMSY (80% CI): (1.32–3.40) B2015/BMSY (80% CI): (0.24–0.62) (0.09–0.32)</p>					60%		<p>Current or increasing catches have a very high risk of further decline in stock status. In order to enable the stock to start rebuilding, the Commission should consider a substantial reduction of catches. Quantitative advice will be provided after the next stock assessment which will be carried out in 2018. Click here for full stock status summary: Appendix XV</p>
<p>Indo-Pacific Sailfish <i>Istiophorus platypterus</i></p>	<p>Catch 2016: 27,975 t Average catch 2012–2016: 28,498 t MSY (1,000 t) (80% CI): 25.00 (16.18–35.17) FMSY (80% CI): 0.26 (0.15–0.39) BMSY (1,000 t) (80% CI): 87.52 (56.30–121.02) F2014/FMSY (80% CI): 1.05 (0.63–1.63) B2014/BMSY (80% CI): 1.13 (0.87–1.37) 0.56 (0.44–0.67)</p>							<p>The same management advice for 2017 (catches below a MSY of 25,000 t) is kept for the next year (2018). Click here for full stock status summary: Appendix XVI</p>

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Neritic tunas and mackerel: These six species have become as important or more important as the three tropical tuna species (bigeye tuna, skipjack tuna and yellowfin tuna) to most IOTC coastal states. Neritic tunas and mackerels are caught primarily by coastal fisheries, including small-scale industrial and artisanal fisheries, and are almost always caught within the EEZs of coastal states. Historically, catches were often reported as aggregates of various species, making it difficult to obtain appropriate data for stock assessment analyses.

Stock	Indicators	2012	2013	2014	2015	2016	2017	Advice to the Commission
Bullet tuna <i>Auxis rochei</i>	Catch 2016: 8,900 t Average catch 2012–2016: 9,099 t MSY (1,000 t) (80% CI): unknown FMSY (80% CI): unknown BMSY (1,000 t) (80% CI): unknown Fcurrent/FMSY (80% CI): unknown Bcurrent/BMSY (80% CI): unknown Bcurrent/B0 (80% CI): unknown							For assessed species of neritic tunas in Indian Ocean (longtail tuna, kawakawa and narrow barred Spanish mackerel), the MSY was estimated to have been reached between 2009 and 2011 and both FMSY and BMSY were breached thereafter. Therefore, in the absence of a stock assessment of bullet tuna a limit to the catches should be considered by the Commission, by ensuring that future catches do not exceed the average catches estimated between 2009 and 2011 (8,870 t). This catch advice should be maintained until an assessment of bullet tuna is available. Considering that MSY-based reference points for assessed species can change over time, the stock should be closely monitored. Mechanisms need to be developed by the Commission to improve current statistics by encouraging CPCs to comply with their recording and reporting requirements, so as to better inform scientific advice. Click here for full stock status summary: Appendix XVII
Frigate tuna <i>Auxis thazard</i>	Catch 2016: 83,300 t Average catch 2012–2016: 91,844 t MSY (1,000 t) (80% CI): unknown FMSY (80% CI): unknown BMSY (1,000 t) (80% CI): unknown Fcurrent/FMSY (80% CI): unknown Bcurrent/BMSY (80% CI): unknown Bcurrent/B0 (80% CI): unknown							For assessed species of neritic tunas in Indian Ocean (longtail tuna, kawakawa and narrow barred Spanish mackerel), the MSY was estimated to have been reached between 2009 and 2011 and both FMSY and BMSY were breached thereafter. Therefore, in the absence of a stock assessment of frigate tuna a limit to the catches should be considered by the Commission, by ensuring that future catches do not exceed the average catches estimated between 2009 and 2011 (94,921 t).. This catch advice should be maintained until an assessment of frigate tuna is available. Considering that MSY-based reference points for

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								assessed species can change over time, the stock should be closely monitored. Mechanisms need to be developed by the Commission to improve current statistics by encouraging CPCs to comply with their recording and reporting requirements, so as to better inform scientific advice. Click here for full stock status summary: Appendix XVIII
Kawakawa Euthynnus affinis	Catch 2016: 156,831 t Average catch 2012–2016: 158,990 t 152 [125–188] MSY (1,000 t) (80% CI): 0.56 [0.42–0.69] FMSY (80% CI): 202 [151–315] BMSY (1,000 t) (80% CI): 0.98 [0.85–1.11] F2013/FMSY (80% CI): 1.15 [0.97–1.38] B2013/BMSY (80% CI): 0.58 [0.33–0.86] B2013/B1950 (80% CI):							Although the stock status is classified as not overfished and not subject to overfishing, the Kobe strategy II matrix developed in 2015 showed that there is a 96% probability that biomass is below MSY levels and 100% probability that $F > FMSY$ by 2016 and 2023 if catches are maintained at the 2013 levels. There is a 55 % probability that biomass is below MSY levels and 91 % probability that $F > FMSY$ by 2023 if catches are maintained at around 2016 levels. The modelled probabilities of the stock achieving levels consistent with the MSY reference points (e.g. $SB > SBMSY$ and $F < FMSY$) in 2023 are 100% for a future constant catch at 80% of 2013 catch levels. If catches are reduced by 20% based on 2013 levels at the time of the assessment (170,181 t), the stock is expected to recover to levels above MSY reference points with a 50% probability by 2023. Click for a full stock status summary: Appendix XIX
Longtail tuna Thunnus tonggol	Catch 2016: 133,334 t Average catch 2012–2016: 149,224 t 140 (103–184) MSY (1,000 t) (80% CI): 0.43 (0.28–0.69) FMSY (80% CI): 319 (200–623) BMSY (1,000 t) (80% CI): 1.04 (0.84–1.46) F2015/FMSY (80% CI): 0.94 (0.68–1.16) B2015/BMSY (80% CI): 0.48 (0.34–0.59) B2015/B1950 (80% CI):						67%	There is a substantial risk of exceeding MSY-based reference points by 2018 if catches are maintained at current (2015) levels (63% risk that $B_{2018} < BMSY$, and 55% risk that $F_{2018} > FMSY$). If catches are reduced by 10% this risk is lowered to 33% probability $B_{2018} < BMSY$ and 28% probability $F_{2018} > FMSY$. If catches are capped at current (2015) levels at the time of the assessment (i.e. 136,849 t), the stock is expected to recover to levels above MSY reference points with at least a 50% probability by 2025. Click for a full stock status summary: Appendix XX

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<p>Indo-Pacific king mackerel Scomberomorus guttatus</p>	<p>Catch 2016: 45,978 t Average catch 2012–2016: 45,819 t MSY (1,000 t) (80% CI): 46 [38.9–54.4] FMSY (80% CI): 0.52 [0.40–0.69] BMSY (1,000 t) (80% CI): 66.0 [45.9–107.9] Fcurrent/FMSY (80% CI): 0.98 [0.85–1.14] Bcurrent/BMSY (80% CI): 1.10 [0.84–1.29] Bcurrent/B1950 (80% CI): 0.55 [0.42–0.64]</p>							<p>For assessed species of neritic tunas in Indian Ocean (longtail tuna, kawakawa and narrow barred Spanish mackerel), the MSY was estimated to have been reached between 2009 and 2011 and both FMSY and BMSY were breached thereafter. Therefore, in the absence of a stock assessment of Indo-Pacific king mackerel a limit to the catches should be considered by the Commission, by ensuring that future catches do not exceed the average catches estimated between 2009 and 2011 (46,787 t). This catch advice should be maintained until an assessment of Indo-Pacific king mackerel is available. Considering that MSY-based reference points for assessed species can change over time, the stock should be closely monitored. Mechanisms need to be developed by the Commission to improve current statistics by encouraging CPCs to comply with their recording and reporting requirements, so as to better inform scientific advice. Click for a full stock status summary: Appendix XXI</p>
<p>Narrow-barred Spanish mackerel Scomberomorus commerson</p>	<p>Catch 2016: 168,350 t Average catch 2012–2016: 161,951 t MSY (1,000 t) (80% CI): 131 [96–180] FMSY (80% CI): 0.35 [0.18–0.7] BMSY (1,000 t) (80% CI): 371 [187–882] F2015/FMSY (80% CI): 1.28 [1.03–1.69] B2015/BMSY (80% CI): 0.89 [0.63–1.15] B2015/B1950 (80% CI): 0.44 [0.31–0.57]</p>						<p>89%</p>	<p>There is a continued high risk of exceeding MSY-based reference points by 2025, even if catches are reduced to 80% of the 2015 levels (73% risk that B2025<BMSY, and 99% risk that F2025>FMSY). The modelled probabilities of the stock achieving levels consistent with the MSY reference levels (e.g. B > BMSY and F<FMSY) in 2025 are 93% and 70%, respectively, for a future constant catch at 70% of current catch level. If catches are reduced by 30% of the 2015 levels at the time of the assessment, which corresponds to catches below MSY, the stock is expected to recover to levels above the MSY reference points with at least a 50% probability by 2025. Click for a full stock status summary: Appendix XXII</p>

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Sharks: Although sharks are not part of the 16 species directly under the IOTC mandate, sharks are frequently caught in association with fisheries targeting IOTC species. Some fleets are known to actively target both sharks and IOTC species simultaneously. As such, IOTC Contracting Parties and Cooperating Non-Contracting Parties are required to report information at the same level of detail as for the 16 IOTC species. The following are the main species caught in IOTC fisheries, although the list is not exhaustive.

Stock	Indicators	2012	2013	2014	2015	2016	2017	Advice to the Commission
Blue shark Prionace glauca	Reported Catch 2016: 32,312 t Estimated catch 2015: 54,735 t Not elsewhere included (nei) sharks 2016: 54,495 t Average reported catch 2012-16: 30,563 t Average estimated catch 2011-15: 54,993 t Ave. not elsewhere included (nei) 2012-16: 49152 t MSY (1,000 t) (80% CI): 0.30 (0.30 - 0.31) FMSY (80% CI): 39.7 (35.5 - 45.4) SBMSY (1,000 t) (80% CI): 0.86 (0.67 - 1.09) F2015/FMSY (range): 1.54 (1.37 - 1.72) SB2015/SBMSY (range): 0.52 (0.46 - 0.56) SB2015/SB0 (range):						72.6%	Even though the blue shark in 2017 is assessed to be not overfished nor subject to overfishing, maintaining current catches is likely to result in decreasing biomass and the stock becoming overfished and subject to overfishing in the near future. If the catches are reduced at least 10%, the probability of maintaining stock biomass above MSY reference levels (B>BMSY) over the next 8 years will be increased. The stock should be closely monitored. While mechanisms exist for encouraging CPCs to comply with their recording and reporting requirements (Resolution 16/06), these need to be further implemented by the Commission, so as to better inform scientific advice in the future. Click for a full stock status summary: Appendix XXIII
Oceanic whitetip shark Carcharhinus longimanus	Reported Catch 2016: 503 t Not elsewhere included (nei) sharks 2016: 54,495 t Average reported catch 2012-2016: 303 t Not elsewhere included (nei) sharks 2012-2016: 49,152 MSY (range): Unknown							A cautious approach to the management of oceanic whitetip shark should be considered by the Commission, noting that recent studies suggest that longline mortality at haulback is high (50%) in the Indian Ocean (IOTC-2016-WPEB12-26), while mortality rates for interactions with other gear types such as purse seines and gillnets may be higher. While mechanisms exist for encouraging CPCs to comply with their recording and reporting requirements (Resolution 16/06), these need to be further implemented by the Commission, so as to better inform scientific advice. IOTC Resolution 13/06 on a scientific and management framework on the conservation of shark species caught in association with IOTC managed fisheries, prohibits retention onboard, transshipping, landing or storing any part or

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								whole carcass of oceanic whitetip sharks. Click for a full stock status summary: Appendix XXIV
Scalloped hammerhead shark Sphyrna lewini	Reported catch 2016: Not elsewhere included (nei) sharks 2016: Average reported catch 2012–2016: Not elsewhere included (nei) sharks 2012–2016: MSY (range):	77 t 54,495 t 69 t 49,152 t unknown						Despite the absence of stock assessment information, the Commission should consider taking a cautious approach by implementing some management actions for scalloped hammerhead sharks. While mechanisms exist for encouraging CPCs to comply with their recording and reporting requirements (Resolution 16/06), these need to be further implemented by the Commission so as to better inform scientific advice. Click for a full stock status summary: Appendix XXV
Shortfin mako Isurus oxyrinchus	Reported Catch 2016 : Not elsewhere included (nei) sharks 2016: Average reported catch 2012–2016: Not elsewhere included (nei) sharks 2012–2016: MSY (range):	1,631 t 54,495 t 1,503 t 49,152 t unknown						Despite the absence of stock assessment information, the Commission should consider taking a cautious approach by implementing some management actions for shortfin mako sharks. While mechanisms exist for encouraging CPCs to comply with their recording and reporting requirements (Resolution 16/06), these need to be further implemented by the Commission so as to better inform scientific advice.. Click for a full stock status summary: Appendix XXVI
Silky shark Carcharhinus falciformis	Reported Catch 2016 : Not elsewhere included (nei) sharks 2016: Average reported catch 2012–2016: Not elsewhere included (nei) sharks 2012–2016: MSY (range):	2,189 t 54,495 t 3,278 t 49,152 unknown						Despite the absence of stock assessment information, the Commission should consider taking a cautious approach by implementing some management actions for silky sharks. While mechanisms exist for encouraging CPCs to comply with their recording and reporting requirements (Resolution 16/06), these need to be further implemented by the Commission so as to better inform scientific advice. Click for a full stock status summary: Appendix XXVII
Bigeye thresher shark Alopias superciliosus	Reported Catch 2016 : Not elsewhere included (nei) sharks 2016: Average reported catch 2012–2016: Not elsewhere included (nei) sharks 2012–2016: MSY (range):	0 t 54,495 t 93 t 49,152 unknown						The prohibition on retention of bigeye thresher shark should be maintained. While mechanisms exist for encouraging CPCs to comply with their recording and reporting requirements (Resolution 16/06), these need to be further implemented by the Commission, so as to better inform scientific advice. IOTC Resolution 12/09 On the conservation of thresher sharks (family

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									Alopiidae) caught in association with fisheries in the IOTC area of competence, prohibits retention onboard, transshipping, landing, storing, selling or offering for sale any part or whole carcass of thresher sharks of all the species of the family Alopiidae. Click for a full stock status summary: Appendix XXVIII
Pelagic thresher shark Alopias pelagicus	Reported Catch 2016 : 0 t Not elsewhere included (nei) sharks 2016: 54,495 t Average reported catch 2012–2016: 66 t Not elsewhere included (nei) sharks 2012–2016: 49,152 MSY (range): unknown								The prohibition on the retention of pelagic thresher shark should be maintained. While mechanisms exist for encouraging CPCs to comply with their recording and reporting requirements (Resolution 16/06), these need to be further implemented by the Commission s, so as to better inform scientific advice. IOTC Resolution 12/09 On the conservation of thresher sharks (family Alopiidae) caught in association with fisheries in the IOTC area of competence, prohibits retention onboard, transshipping, landing, storing, selling or offering for sale any part or whole carcass of thresher sharks of all the species of the family Alopiidae. Click for a full stock status summary: Appendix XXIX

*Estimated probability that the stock is in the respective quadrant of the Kobe plot (shown below), derived from the confidence intervals associated with the current stock status. ** Range of plausible model runs.

Colour key	Stock overfished(SByear/SBMSY< 1)	Stock not overfished (SByear/SBMSY≥ 1)
Stock subject to overfishing(Fyear/FMSY> 1)		
Stock not subject to overfishing (Fyear/FMSY≤ 1)		
Not assessed/Uncertain		