APPENDIX XVIV
EXECUTIVE SUMMARY: MOBULIDS & OTHER RAYS (2025)

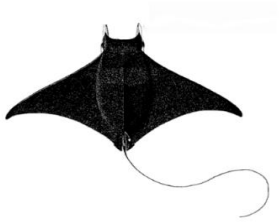

Table A 1. Rays: IUCN Red List status for all ray species that occur within the IOTC area of competence.

Family	Common name	Species	IUCN Red List status*	Interactions by Gear Type**
Mobulidae	Oceanic Manta Ray	*Mobula birostris*	EN	PS, GN, LL
	Reef Manta Ray	*Mobula alfredi*	VU	PS, GN, LL
	Sicklefin Devilray	*Mobula tarapacana*	EN	PS, GN, LL
	Spinetail Devil Ray	*Mobula mobular*	EN	PS, GN, LL
	Bentfin Devil Ray	*Mobula thurstoni*	EN	PS, GN, LL
	Longhorned Pygmy Devil Ray	*Mobula eregoodoo*	EN	PS, GN, LL
	Shorthorned Pygmy Devil Ray	*Mobula kuhlii*	EN	PS, GN, LL
Dasyatidae	Pelagic stingray	*Pteroplatytrygon violacea*	LC	
Rhinopteridae	Flapnose Ray	*Rhinoptera javanica*	EN	

* The assessment of the status level in IUCN is independent of IOTC processes
** Gear types: Purse seines (PS), Gill nets (GN), Longlines (LL)
The IUCN Red List of Threatened species. <www.iucnredlist.org>.
Downloaded on 14 July 2025.

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Stock status. The current International Union for Conservation of Nature (IUCN) Red List status for each of the mobulid and other ray species reported in the IOTC Area of Competence is provided in Table **A** 1. Information on their known interactions with IOTC fisheries is also provided. It is important to note that a number of international global environmental accords (e.g., Convention on Migratory Species (CMS), Convention on Biological Diversity (CBD)), as well as numerous fisheries agreements obligate States to provide protection for these species.

The status of rays is affected by a range of factors such as direct harvesting, bycatch, and habitat degradation. The level of ray mortality due to capture in tuna fisheries is likely to be substantial and is a major cause for concern. Mobulids are primarily caught as bycatch in purse seine and gillnet fisheries and, to a lesser extent, longline fisheries (Croll et al., 2016, Shahid et al., 2018, White et al., 2006, Ardill et al., 2011, Moazamm, 2018). Information on catches of these species is poor and often aggregated rather than reported to species level. However, information submitted to the WPEB has highlighted declines in the populations of mobulids in the Indian Ocean (Shahid et al., 2018, Moazzam, 2018, Fernando 2018, Venables et al., 2024, Fernando and Stewart, 2021). Additional population declines have been reported in coastal India (Chopra et al., 2025), Indonesia (Lewis et al., 2025; FAO 2024), Kenya (IOTC publicly available report) and possible local declines have occurred in Madagascar of M. alfredi since 2015 (Diamant et al 2025). A recent study comparing mobulid catch and mortality across ocean basins shows that the Indian Ocean dominates both reported mobulid global catches (72%, n = 191,528) and estimated global mortality (73%, n = 191,010) (Laglbauer et al. 2025 [In review]). These interactions need to be better documented throughout the IOTC Area of Competence.

Outlook. Resolution 19/03 *On the conservation of mobulid rays caught in association with the IOTC area of competence* highlights the concerns of the IOTC regarding the lack of accurate and complete data collection and reporting to the IOTC Secretariat of interactions and mortalities of mobulids in association with tuna fisheries in the IOTC Area of Competence.

In this resolution, the IOTC have agreed that CPCs shall prohibit their flagged vessels from intentionally setting any gear type for targeted fishing of mobulid rays, if an animal is sighted prior to the commencement of the set. CPCs shall also prohibit vessels from retaining any part or whole carcass of mobulid rays. However, these two provisions do not apply to vessels carrying out subsistence fisheries (which should not be selling any part or whole carcass of the rays). CPCs are required to instruct their vessels to promptly release mobulids as soon as they are seen in the gear. The IOTC also agreed that CPCs shall report information and data collected on interactions (the number of discards and releases) with mobulids by vessels through logbooks and/or through observer programmes and this data should be provided to the IOTC Secretariat by 30 June of the following year.

It is acknowledged that the impact on mobulid populations from fishing for tuna and tuna-like species may increase if fishing pressure increases or if the status of mobulid populations worsens due to other factors such as an increase in external fishing pressure or other anthropogenic or climatic impacts.

The following should be noted:

- The number of fisheries interactions involving mobulids is highly uncertain and should be addressed as a matter of priority as it is a prerequisite for the WPEB to determine a status for any Indian Ocean mobulid species.
- Available evidence indicates considerable risk to mobulids in the Indian Ocean, particularly from tuna purse seine and drift gillnet fisheries.
- Current reported interactions and mortalities are not well understood but are most likely severely underestimated.
- Maintaining or increasing fishing effort in the Indian Ocean without appropriate mitigation measures in place will likely result in further declines in a number of mobulid species. An increasing effort by tuna drift gillnet fisheries has been reported to the IOTC, which is a major cause of concern for a number of species, particularly in the northern Indian Ocean.
- Efforts should be undertaken to encourage CPCs to investigate means to reduce mobulid bycatch and at-vessel and post-release mortality in IOTC fisheries and improve data

collection and reporting for mobulids. This may include alternative data collection mechanisms such as skipper-based reporting, port sampling and cost-effective electronic monitoring systems.

RELEVANT LITERATURE

Ardill, D., Itano, D. and Gillett, R. (2011) A Review of Bycatch and Discard Issues in Indian Ocean Tuna Fisheries. IOTC-2012-WPEB08-INF20.

Croll, D. A., Dewar, H., Dulvy, N. K., Fernando, D., Francis, M. P., Galván-Magaña, F., Hall, M., Heinrichs, S., Marshall, A., McCauley, D., Newton, K. M., Notarbartolo di Sciara, G., O'Malley, M., O'Sullivan, J., Poortvliet, M., Roman, M., Stevens, G., Tershy, B. R. and White, W. T. (2016) Vulnerabilities and fisheries impacts: the uncertain future of manta and devil rays. Aquatic Conserv: Mar. Freshw. Ecosyst., 26: 562-575.

Diamant, S. Bosio, C., Rambahiniarison, J., Scarffe, C., Strogoff, M., Kiszka J.J., d´Echon, T.G., Sourisseau, E., Fidiarisandratra, L.C.M, Chervio, S., Venables, S., Flam, A., Andrianarisoa, F.R., Barba, C., Rasoamananto. I, Pierce, S.M. (2025) Occurrence of mobulid rays in North-West Madagascar. *Environmental Biology of Fishes, 108*, pp. 365-378.

Fernando, D. (2018). Status of mobulid rays in Sri Lanka. IOTC-2018-WPEB14-39.

Fernando, D. and Stewart, J.D., (2021). High bycatch rates of manta and devil rays in the "small-scale" artisanal fisheries of Sri Lanka. *PeerJ*, *9*, p.e11994.

Food and Agriculture Organization of the United Nations. (FAO) (2024). FishStatJ: Global capture production dataset (2016–2023 catches of mobulid species in Indonesia). Accepted September 13, 2024, from. https://www.fao.org/fishery/statistics/software/fishstatj/

Laglbauer, B., D'Costa, N. G., Stewart, J. D., Palacios, M. D., Cronin, M.R. et al. (2025). Global manta and devil ray population declines: Closing policy and management gaps to reduce fisheries mortality. [In review].

Lewis, S. A., Setiasih, N., Fahmi, Dharmadi, D., O'Malley, M. P., Campbell, S. J., Yusuf, M., & Sianipar, A. B. (2015). Assessing Indonesian manta and devil ray populations through historical landings and fishing community interviews. https://doi.org/10.7287/PEERJ.PREPRINTS.1334V1

Moazamm, M. (2018). Unprecedented decline in the catch of mobulids: an important component of tuna gillnet fisheries of the Northern Arabian Sea. IOTC-2018-WPEB14-30

Raje, S.G. and Zacharia, P.U. 2009. Investigations on fishery and biology of nine species of rays in Mumbai waters. Indian Journal of Fisheries 56(2): 95–101.

Shahid et al., (2018). A regional perspective on the mobulid ray interactions with surface fisheries in the Indian Ocean. IOTC-2018-WPEB14-29

Thomas, S., Kizhakudan, S. J., Remya, L., Rahangdale, S., Nair, R. J., Mahesh, V., ... & Gopalakrishnan, A. (2022). CMFRI Marine Fisheries Policy Series No. 21/2022: India Non-Detriment Finding (NDF) for Devil Rays Mobula spp. in the Indian Ocean, 2022 to 2024.

Venables, S.K., Rohner, C.A., Flam, A.L., Pierce, S.J. and Marshall, A.D., (2025). Persistent declines in sightings of manta and devil rays (Mobulidae) at a global hotspot in southern Mozambique. *Environmental Biology of Fishes*, *108*(4), pp.749-765.

White, W., Giles, J., Dharmadi, Potter, I. C. (2006) Data on the bycatch fishery and reproductive biology of mobulid rays (Myliobatiformes) in Indonesia, Fisheries Research, 82, 65-73.