

## Kuhl's Devilray, *Mobula kuhlii*

<b>Report Card assessment</b>	<b>Sustainable</b>		
IUCN Red List Australian Assessment	Least Concern	IUCN Red List Global Assessment	Endangered
Global Assessors	Rigby, C.L., Barreto, R., Carlson, J., Fernando, D., Fordham, S., Francis, M.P., Jabado, R.W., Liu, K.M., Marshall, A. & Romanov, E.		
Australian Assessors	Kyne, P.M., Heupel, M.R., White, W.T., Simpfendorfer, C.A. (Shark Action Plan) & Rigby, C.L.		
Report Card Remarks	Australian fishing pressure is managed and low across much of its range; marine parks provide refuge. Listed on CITES Appendix II, CMS Appendices I & II.		

### Summary

Kuhl's Devilray is a medium-sized pelagic ray found in tropical and subtropical waters of the Indo-West Pacific. Due to its very low biological productivity, it is highly susceptible to exploitation. Globally, population declines have occurred due its very low biological productivity, current and ongoing high levels of industrial and artisanal fishing pressure, and demand for its meat and high-value gill plates. In Australia, it is caught very infrequently in gillnet and trawl fisheries and likely released as elasmobranch retention is prohibited across



most of its range; although post-release mortality is unknown. Many parts of the species' range across northern Australia have low fishing effort that is managed and it receives significant refuge in the extensive network of marine parks. Thus, Kuhl's Devilray is assessed as globally Endangered (IUCN) and in Australia, as Least Concern (IUCN) (Kyne et al. 2021) and Sustainable (SAFS). The species is listed on CITES Appendix II and CMS Appendices I & II.

### Distribution

Kuhl's Devilray is found patchily in tropical to subtropical waters of the Indo-West Pacific from South Africa to the Solomon Islands (Lawson et al. 2017, Notarbartolo di Sciarra *et al.* 2017, Chin et al. 2019). It appears to occur in northern Australia in a wide range from Fraser Island (Queensland) to Dampier (Western Australia), though its range is not well defined due to misidentification with the closely related Long-horned Pygmy Devilray (*M. eregoodoo*) from which it has only recently been taxonomically separated (Last et al. 2016, Notobartolo di Sciarra *et al.* 2020, Kyne et al. 2021).

### Stock structure and status

The global population has declined due to current and ongoing high levels of exploitation and demand for its meat and high-value gill plates (Rigby et al. 2020). In Australia, the population is suspected to be stable due to relatively low fishing effort within its range (Kyne et al. 2021).

## Fisheries

Kuhl's Devilray is targeted and caught incidentally in industrial and artisanal coastal and pelagic fisheries and is retained for its highly valued gill plates and for its meat (except in Australia) (Rigby et al. 2020). In Australia, *Mobula* spp. are very infrequently caught in gillnets in the Queensland East Coast Inshore Fishery (Harry et al. 2011) and Gulf of Carpentaria Inshore Fishery and are considered at precautionary high risk from both fisheries based mainly on their low productivity; precautionary indicates the low frequency of interactions are not expected to have a significant or long-term detrimental impact on their sustainability (Jacobsen et al. 2019, 2021a, b). This species and/or the similar Long-horned Pygmy Devilray have been reported from pelagic gillnets in the Northern Territory Offshore Net and Line Fishery (NT 2020, Kyne et al. 2021). If it is caught, it would be released as elasmobranch retention is now prohibited across most of its range, although post-release mortality is unknown. Across northern Australia, many parts of the species' range have low fishing effort and the species would receive refuge in the extensive network of marine parks (Parks Australia 2023).

## Habitat and biology

Kuhl's Devilray is pelagic in inshore waters of the continental shelf at depths of 0–50 m (Rigby et al. 2020). Maximum size is 122 cm disc width and possibly to 135 cm disc width (DW) and males mature at approximately 103 cm DW and females by 116 cm DW (Notarbartolo di Sciara et al. 2017, Stevens et al. 2018). Litter size is one large pup (31–34 cm DW) born possibly every 1–3 years (Stevens et al. 2018, Rigby et al. 2020).

Longevity and maximum size	Longevity: unknown Max size: 122 cm DW
Age and/or size at maturity (50%)	Males: ~103 cm DW Females: 116 cm DW

**CAAB Code:** 37 041007

**Link to IUCN Page:** <https://www.iucnredlist.org/species/161439/124485584>

**Link to page at Shark References:** <https://shark-references.com/species/view/Mobula-kuhlii>

## References

- Chin, C., Rigby, C., Short, A. and White, W.T. 2019. Verified record of Kuhl's devil ray (*Mobula kuhlii*) in the Solomon Islands from citizen scientists. *Pacific Conservation Biology*: 26(1) 100–101.
- Harry, A.V., Tobin, A.J., Simpfendorfer, C.A., Welch, D.J., Mapleston, A., White, J., Williams, A.J. and Stapley, J. 2011. Evaluating catch and mitigating risk in a multispecies, tropical, inshore shark fishery within the Great Barrier Reef World Heritage Area. *Marine and Freshwater Research* 62: 710–721.
- Jacobsen, I., Dawson, A. and Walton, L. 2019. Gulf of Carpentaria Developmental Fin Fish Trawl Fishery. Level 1 ERA-Whole of Fishery Assessment. Fisheries Queensland, Department of Agriculture and Fisheries.
- Jacobsen, I., Walton, L., Pidd, A. and Lawson, A. 2021a. East Coast Inshore Fishery-Large Mesh Gillnets (Gillnets & Ring Nets). Level 2 Ecological Risk Assessment. Species of Conservation Concern. Department of Agriculture and Fisheries.
- Jacobsen, I., Walton, L. and Lawson, A. 2021b. Gulf of Carpentaria Inshore Fishery. Level 2 Ecological Risk Assessment. Species of Conservation Concern. Department of Agriculture and Fisheries.
- Kyne, P.M., Heupel, M.R., White, W.T. and Simpfendorfer, C.A. 2021. *The Action Plan for Australian Sharks and Rays 2021*. National Environmental Science Program, Marine Biodiversity Hub, Hobart.
- Last, P., White, W., Carvalho, M.R. de, Séret, B., Stehmann, M. and Naylor, G.J.P. 2016. *Rays of the World*. CSIRO Publishing, Clayton, Victoria, Australia.
- Lawson, J.M., Fordham, S.V., O'Malley, M.P., Davidson, L.N.K., Walls, R.H.L., Heupel, M.R., Stevens, G., Fernando, D., Budziak, A., Simpfendorfer, C.A., Ender, I., Francis, M.P., Notarbartolo di Sciara, G. and Dulvy, N.K. 2017. Sympathy for the devil: a conservation strategy for devil and manta rays. *PeerJ* 5:e3027.

- Notarbartolo di Sciara, G., Fernando, D., Adnet, S., Cappetta, H. and Jabado, R.W. 2017. Devil rays (Chondrichthyes: Mobula) of the Arabian Seas, with a redescription of *Mobula kuhlii* (Valenciennes in Müller and Henle, 1841). *Aquatic Conservation: Marine and Freshwater Ecosystems* 27: 197–218.
- Notarbartolo di Sciara, G., Adnet, S., Bennett, M., Broahurst, M.K., Fernando, D., Jabado, R.W., Laglbauer, B.J.L. and Stevens, G. 2020. Taxonomic status, biological notes, and conservation of the longhorned pygmy devil ray *Mobula eregoodoo* (Cantor, 1849). *Aquatic Conservation: Marine and Freshwater Ecosystems* 30(1): 104–122.
- Northern Territory Government (NT) 2020. Northern Territory Offshore Net and Line Fishery. Ecological Risk Assessment. Northern Territory Government.
- Parks Australia 2023. Australian Marine Parks. <https://parksaustralia.gov.au/marine/parks/>
- Rigby, C.L., Barreto, R., Carlson, J., Fernando, D., Fordham, S., Francis, M.P., Jabado, R.W., Liu, K.M., Marshall, A. and Romanov, E. 2020. *Mobula kuhlii*. *The IUCN Red List of Threatened Species* 2020: e.T161439A124485584.
- Stevens, G., Fernando, D., Dando, M. and Notarbartolo di Sciara, G. 2018. Guide to Manta & Devil Rays of the World. Wild Nature Press, Plymouth.