

## Importance of the Bali Strait for Devil Ray Reproduction

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**Abstract :** Muncar, located off the eastern coast of Java, is an important fishing port for small-scale fleets which land mobulid rays as retained bycatch, primarily in drift gillnets. Due to overlap with fishing grounds in the Bali Strait, three devil ray species are landed in Muncar, the spinetail devil ray *Mobula mobular*, the bentfin devil ray *Mobula thurstoni*, and the Chilean devil ray *Mobula tarapacana*, which are all listed as Endangered by the International Union for the Conservation of Nature. However, despite the importance of life-history data to better manage stocks, such information is still rare or unavailable for Indonesian mobulid ray populations. Using morphometric data, reproductive assessments, and samples collected from dead specimens at fish markets from 2015-2019, we provide information on the maturity stage, reproductive periodicity, gestation, and size at parturition. A majority of immature individuals of all three devil ray species were recorded (<10% individuals in *Mobula mobular* to <30% individuals in *Mobula thurstoni*). Pregnant females of two species, *Mobula mobular* and *Mobula thurstoni* were recorded containing embryos of various developmental stages (each with a single embryo in the left functional uterus), while for *Mobula tarapacana*, no fetuses were found. The largest embryo recorded in *M. mobular* was within the range of that previously reported for neonates of the species in Indonesia (957 cm, for a 920-994 range), and represents a near-term embryo reflecting size at parturition. Low reproductive output was confirmed for the study-species. Based on this study, we infer that the Bali Strait is likely an important location for devil ray reproduction, which raises concern for the sustainability of mobulid ray populations in the face of bycatch in drift gillnets. Potential management approaches to tackle this issue are discussed.

**Keywords :** devil ray, mobulid, reproduction, Indonesia

**Conference Title :** ICCB 2020 : International Conference on Conservation Biology

**Conference Location :** Singapore, Singapore

**Conference Dates :** November 19-20, 2020