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**Mobulidae of the Indian Ocean: an identification hints for field sampling
Draft, version 2.1, August 2010**

by

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ABSTRACT

Draft identification guide for species of Mobulidae family, which is commonly observed as by-catch in tuna associated fishery in the region is presented.

INTRODUCTION

Species of Mobulidae family are a common bycatch occurs in the pelagic tuna fisheries of the Indian Ocean both in the industrial (purse seine and longline) and artisanal (gillnets) sector (Romanov 2002; White et al., 2006; Romanov et al., 2008). Apparently these species also subject of overexploitation: most of Indian Ocean species marked as vulnerable or near threatened at the global level, however local assessment are often not exist (Table).

Status of the species of the family Mobulidae in the Indian Ocean (IUCN, 2007)

Species	Common name	IUCN Status ¹		
		Global status	WIO	EIO
<i>Manta birostris</i> (Walbaum 1792)	Giant manta	NT	-	VU
<i>Manta alfredi</i> (Krefft, 1868)	Alfred manta	-	-	-
<i>Mobula eregoodootenkee</i> (Bleeker, 1859)	Longhorned mobula	-	-	-
<i>Mobula japanica</i> (Müller & Henle, 1841)	Spinetail mobula	NT	-	-
<i>Mobula kuhlii</i> (Müller & Henle, 1841)	Shortfin devil ray	NE	-	-
<i>Mobula tarapacana</i> (Philippi, 1892)	Chilean devil ray	DD	-	VU
<i>Mobula thurstoni</i> (Lloyd, 1908)	Smoothtail mobula	NT	-	-

Lack of the data on the distribution, fisheries and biology of mobulids is often originated from the problem with specific identification of these species in the field. No comprehensive identification guide exists both at the global level and for the Indian Ocean region.

Here we present first attempt to develop such regional guide, which include all species of Mobulidae, known for the Indian Ocean.

¹ NE – not evaluated, DD – data deficient, LC – least concern, NT – near threatened, VU – vulnerable, EN – endangered, CR – critically endangered, EW – extinct in the wild, EX – extinct (IUCN, 2001)

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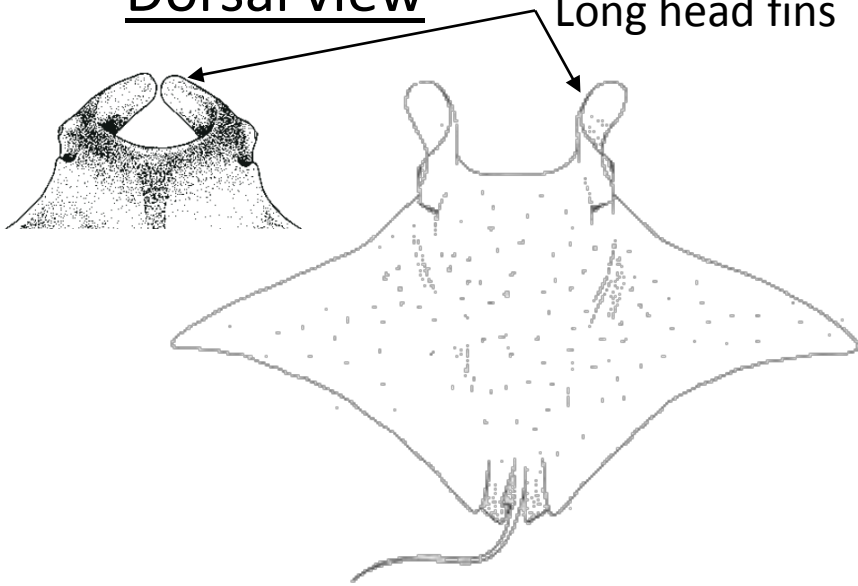
Mobulidae of the Indian Ocean: list of species (Froese and Pauly 2010)

- Manta – manta rays
 - *Manta birostris* (Walbaum, 1792) Giant manta
 - *Manta alfredi* (Kreffft, 1868) Alfred manta
- Mobula – devil rays
 - *Mobula eregoodootenkee* (Bleeker, 1859) Longhorned mobula
 - *Mobula japanica* (Müller & Henle, 1841) Spinetail mobula
 - *Mobula kuhlii* (Müller & Henle, 1841) Shortfin devil ray
 - *Mobula tarapacana* (Philippi, 1892) Chilean devil ray
 - *Mobula thurstoni* (Lloyd, 1908) Smoothtail mobula

Manta vs. Mobula

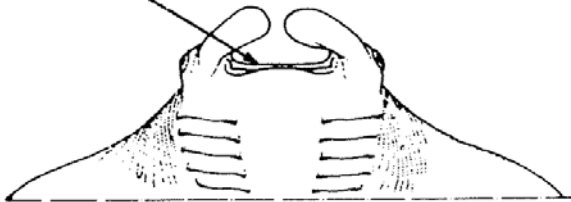
Manta (2 species)

- Dorsal view Long head fins



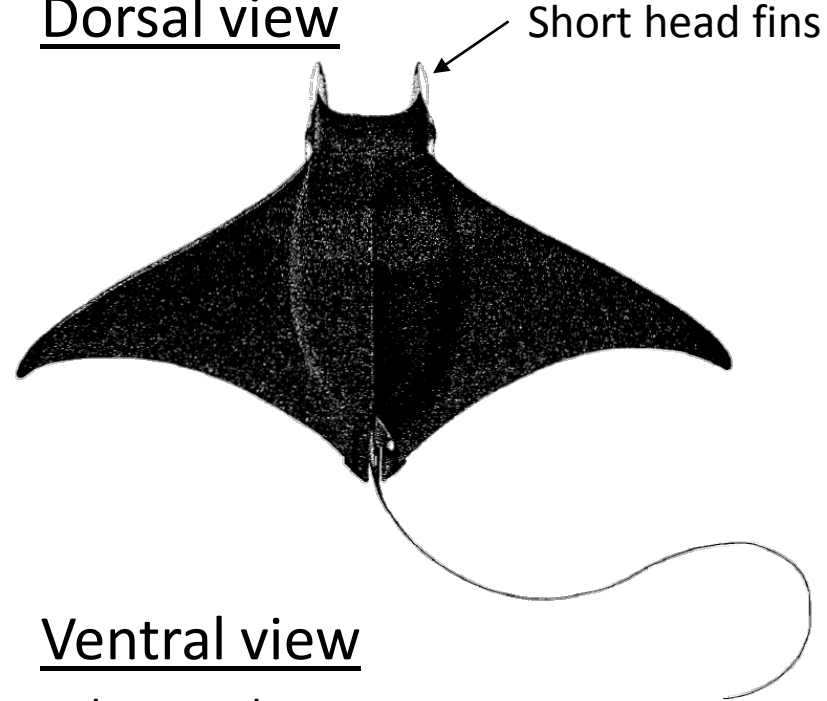
- Ventral view

Mouth terminal



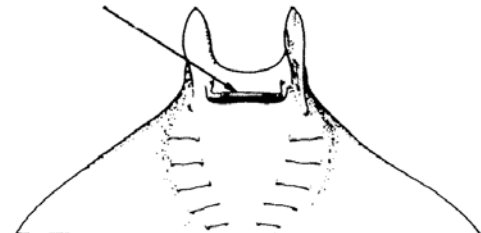
Mobula (5 species)

- Dorsal view Short head fins



- Ventral view

Mouth ventral



Manta – 2 species: colour marks

Manta birostris



- Distinct shoulder patches. Anterior edge of patches runs medially from spiracle **(1)**

Manta alfredi



- Anterior margin of shoulder patch initially emanating posteriorly from spiracle before curving medially **(1)**

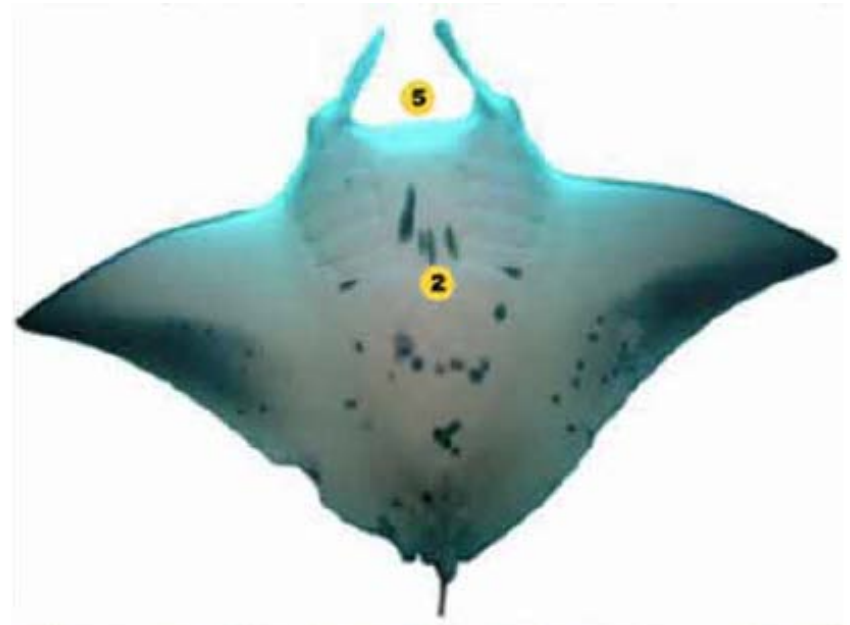
Manta – 2 species: colour marks

Manta birostris



- Distinctive dark spots on the ventral surface over abdominal region. No spots between the gill slits **(2)**
- Mouth black to charcoal grey in colouration **(5)**

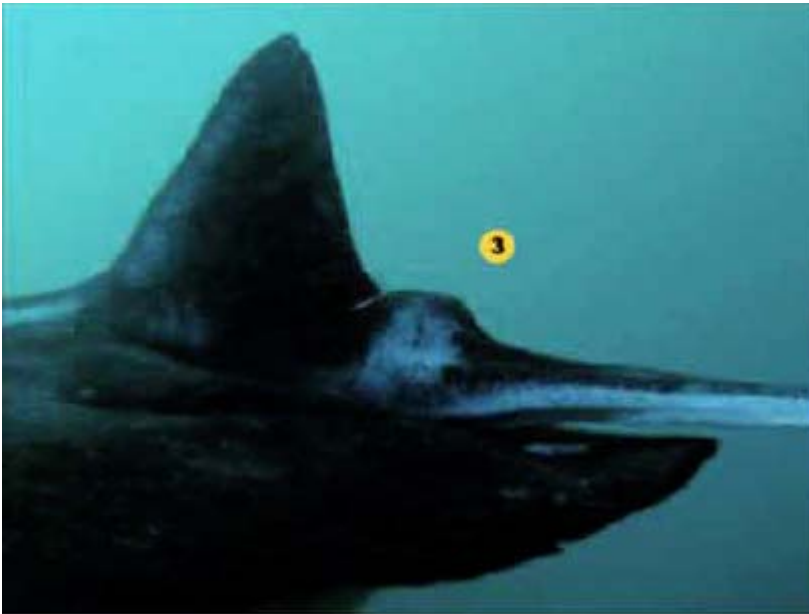
Manta alfredi



- Distinctive dark spots across the posterior half of the body and between gill slits **(2)**
- Mouth is white to light grey in colouration **(5)**

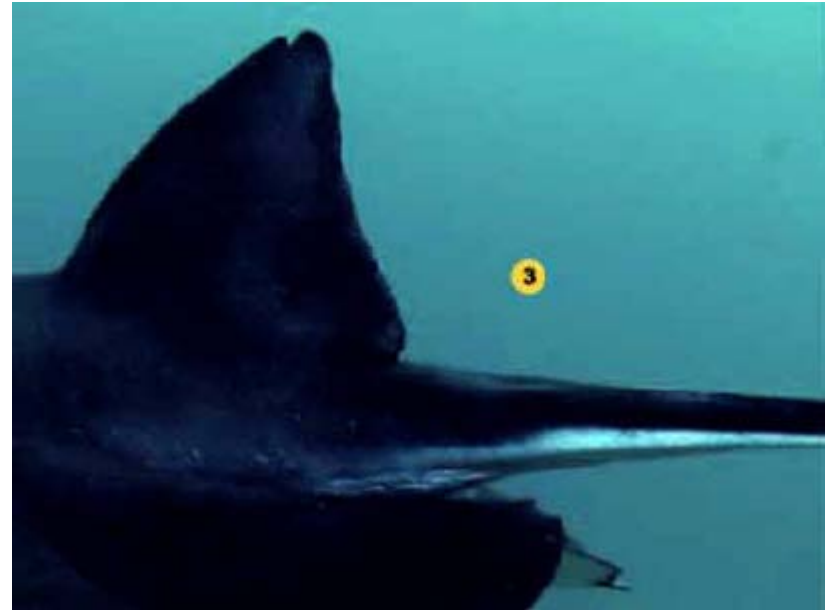
Manta – 2 species: other marks

Manta birostris



- Caudal spine mostly encased in a calcified mass present on the dorsum of the tail immediately posterior to the dorsal fin

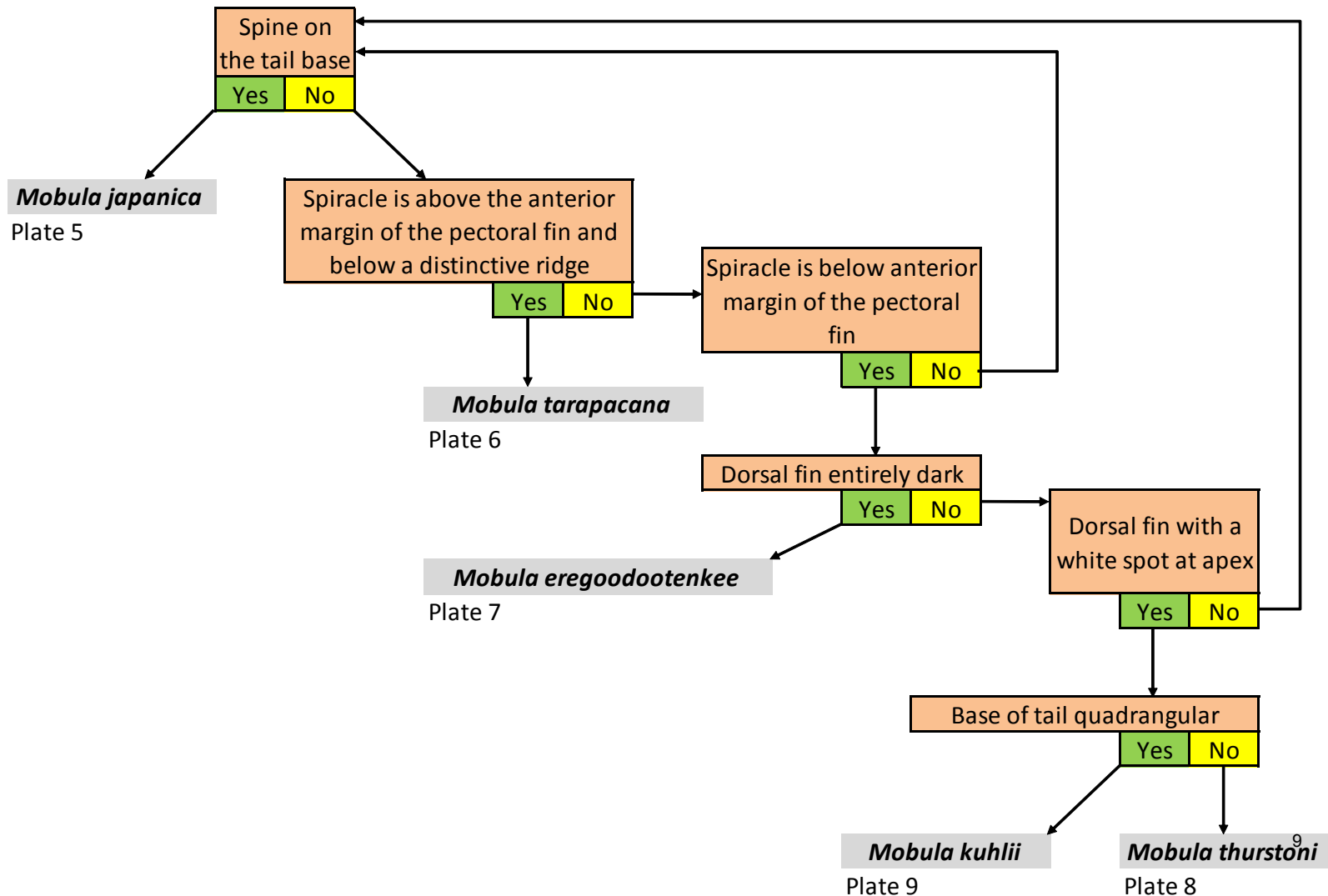
Manta alfredi



- No distinct, removable caudal spine or calcified mass present on tail

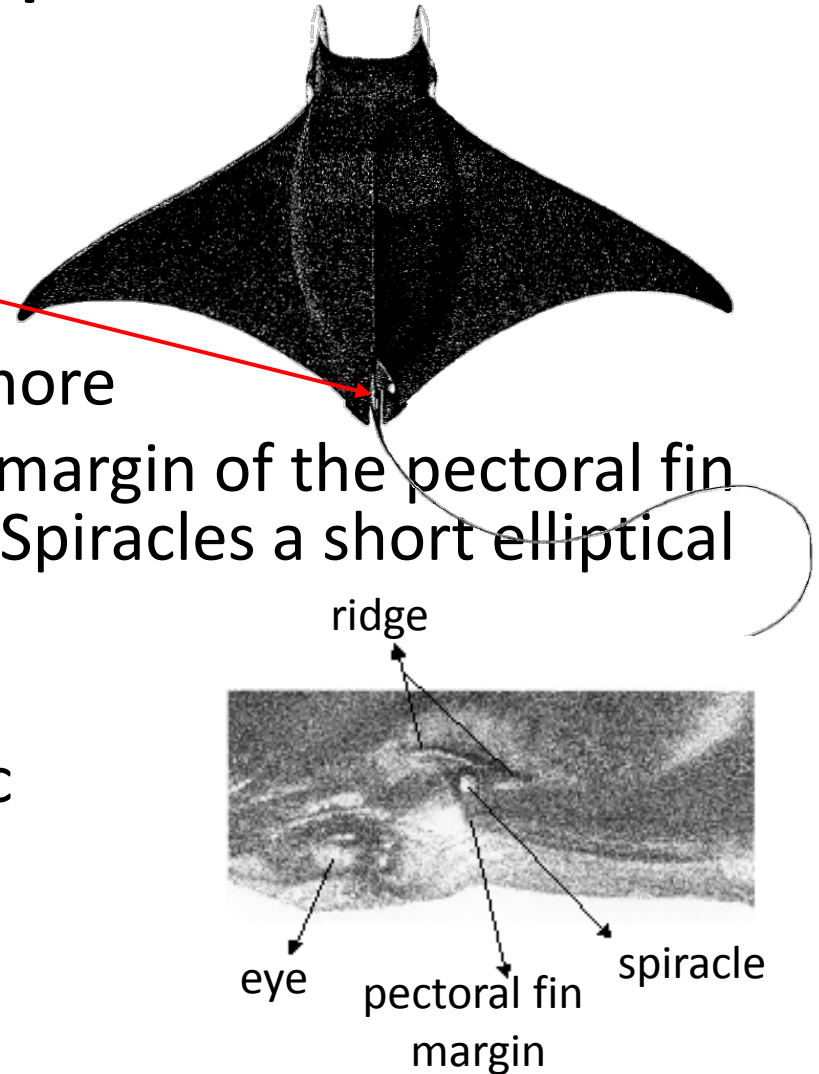
Mobula 5 species

Key to the Indian Ocean species of Mobula



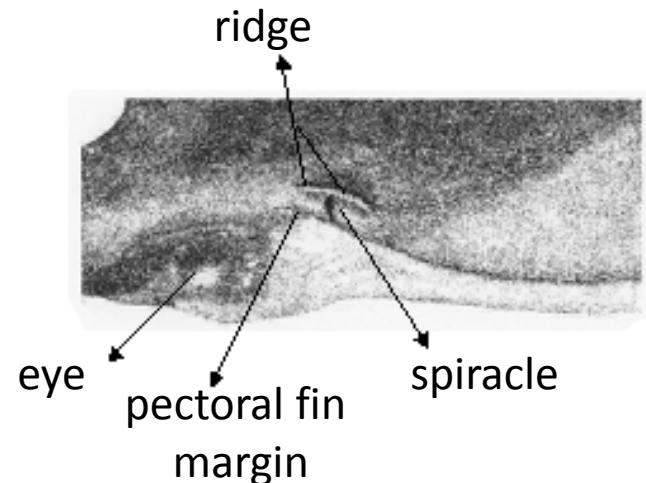
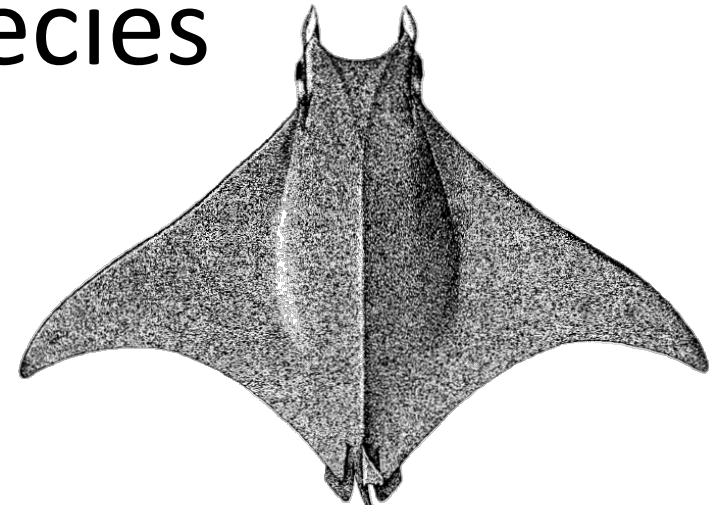
Mobula 5 species

- ***Mobula japonica***
- A spine on tail base
- Maximum size up to 3.1 to 3.7 m in disk width or more
- Spiracle is above the anterior margin of the pectoral fin and below a distinctive ridge. Spiracles a short elliptical transverse slit
- Dorsal fin white-tipped
- Tail very long: longer than disc when undamaged, rows of distinctive bumps on tail

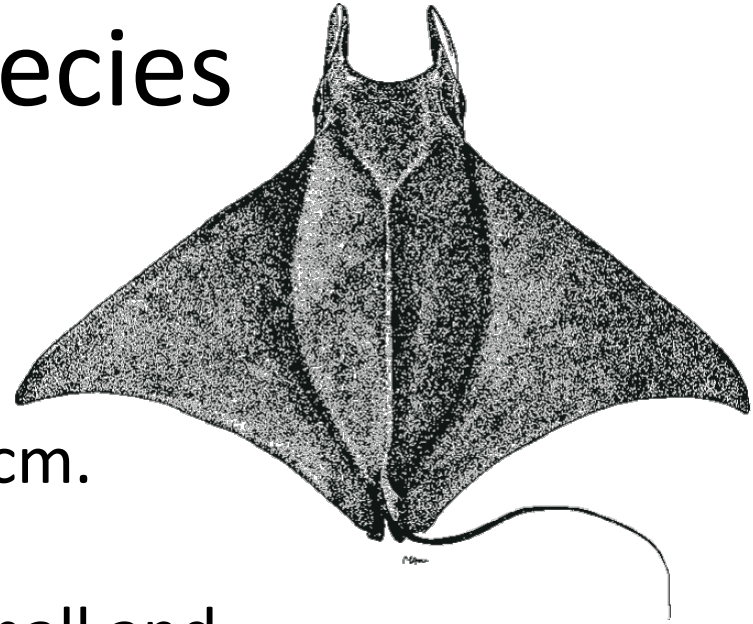


Mobula 5 species

- ***Mobula tarapacana***
- No spine on tail base
- Maximum size up to 3.1 to 3.7 m in disk width or more
- Spiracle is above the anterior margin of the pectoral fin and below a distinctive ridge. Spiracles an elongated longitudinal slit
- Dorsal fin plain
- Tail short, much shorter than disc, covered with scales, no distinctive bumps



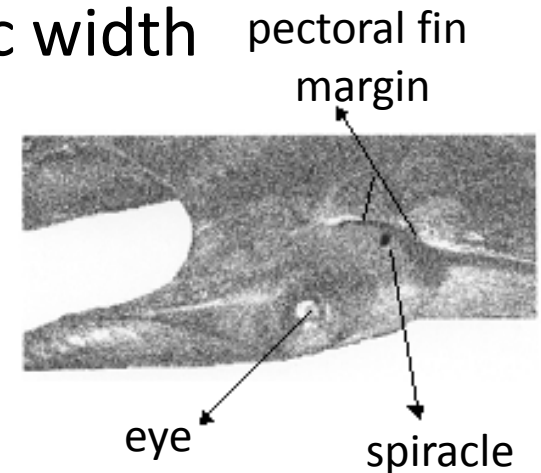
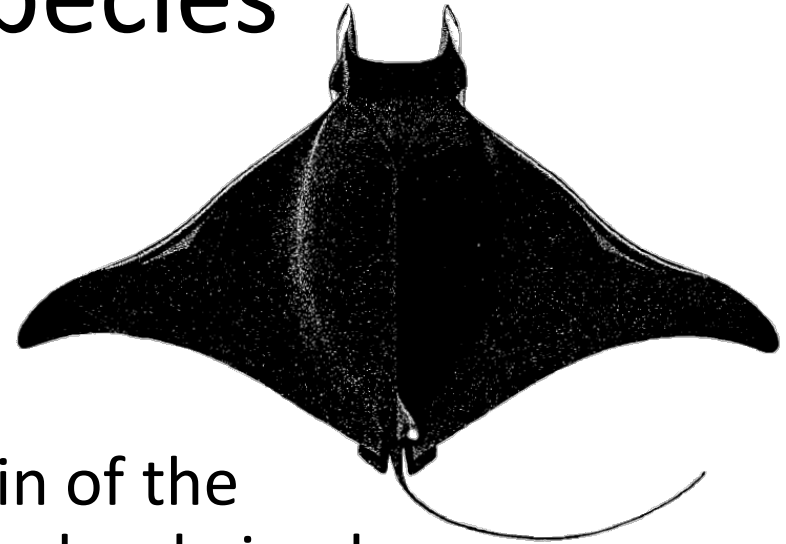
Mobula 5 species



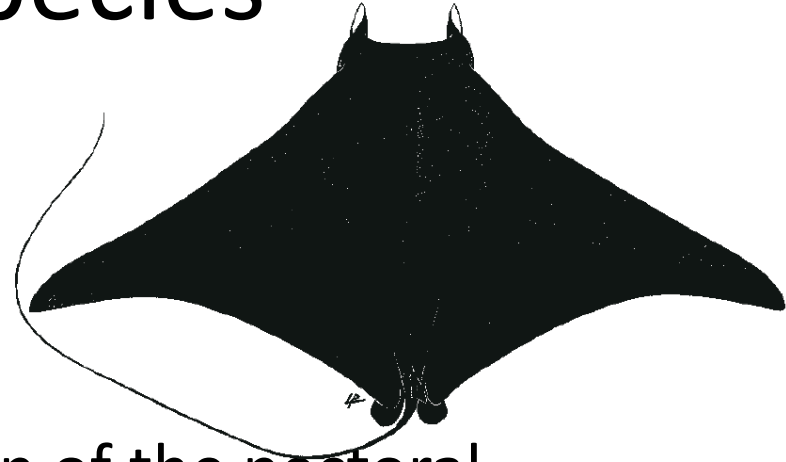
- ***Mobula eregoodootenkee***
- No spine on tail base
- Maximum disc width about 100 cm.
- Spiracle is below anterior margin of the pectoral fin. Spiracles is small and subcircular
- Cephalic-fin length from fin tip to mouth corner more than 16% of disc width
- Dorsal fin entirely dark
- Base of tail quadrangular in section

Mobula 5 species

- *Mobula thurstoni*
- No spine on tail base
- Maximum disc width ~ 2.2 cm
- Spiracle is below anterior margin of the pectoral fin. Spiracles is small and subcircular
- Cephalic-fin length less than 16% of disc width
- Dorsal fin with a white spot at apex
- Anterior margin of pectoral fins with a distinctive undulated profile: a concave separate proximal and distal convexities
- Base of tail dorso-ventrally compressed.



Mobula 5 species



- *Mobula kuhlii*
- No spine on tail base
- Disc width about 100 cm.
- Spiracle is below anterior margin of the pectoral fin. Spiracles is small and subcircular
- Cephalic-fin length less than 16% of disc width
- Dorsal fin with a white spot at apex
- Anterior margin of pectoral fins not undulated, slightly convex;
- Base of tail quadrangular

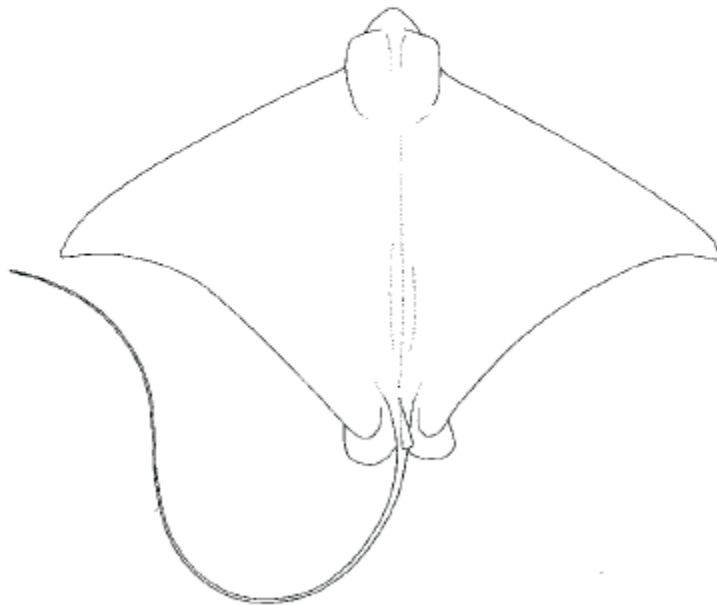
Potential confusions

Similar families occurring in the area

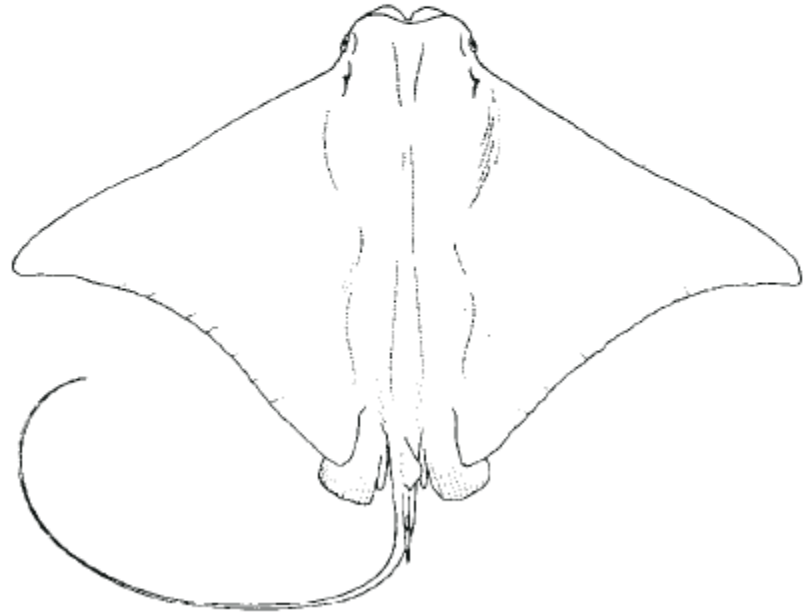
Myliobatidae: snout formed as a single rounded or rounded-angular lobe, without paired elongated cephalic fins; teeth enlarged, laterally expanded, and plate-like; no complex filter plates on inner gill openings.

Rhinopteridae: snout notched medially, formed as 2 low rounded lobes; teeth enlarged, laterally expanded, and plate-like; no complex filter plates on inner gill openings.

No other batoids in the area have elevated heads and an angular rhomboidal disc subdivided into bilobate rostral and pectoral parts, a single angular dorsal fin, and a whip-like tail without a caudal fin.



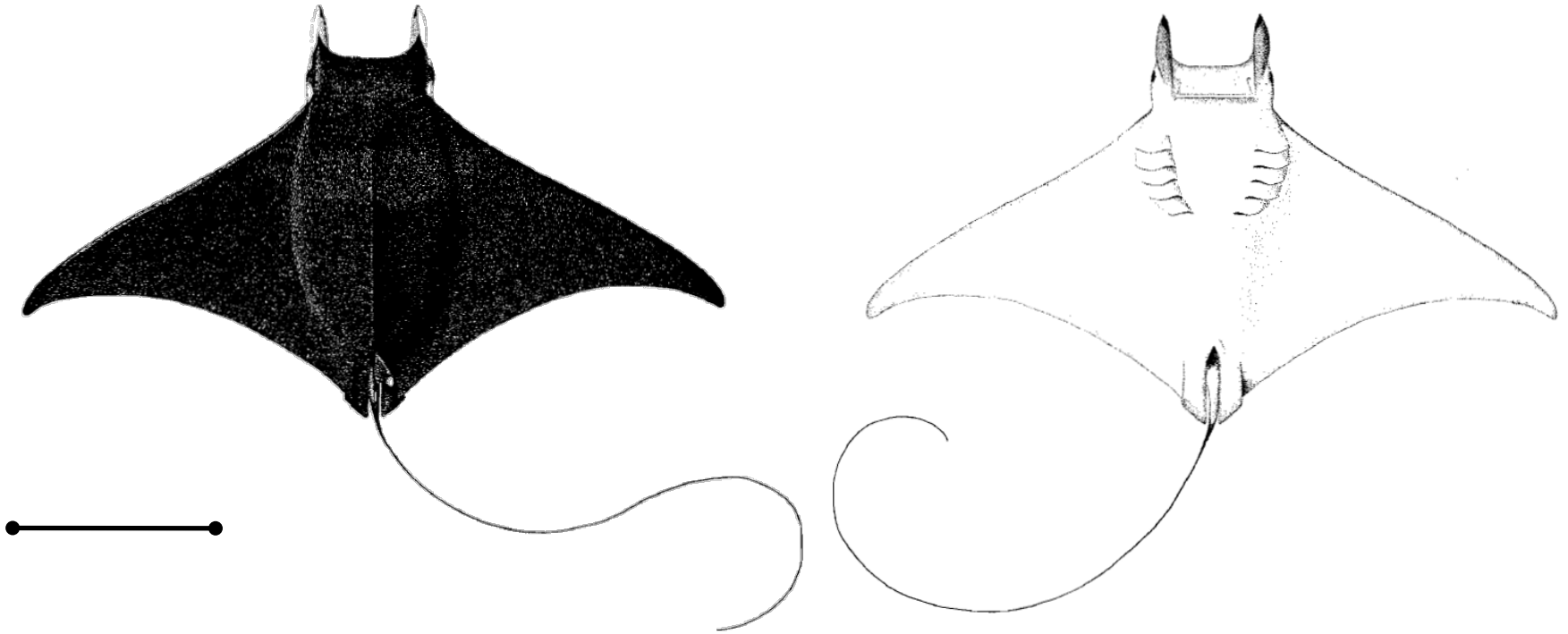
Myliobatidae



Rhinopteridae

Mobula 5 species (size of adults)

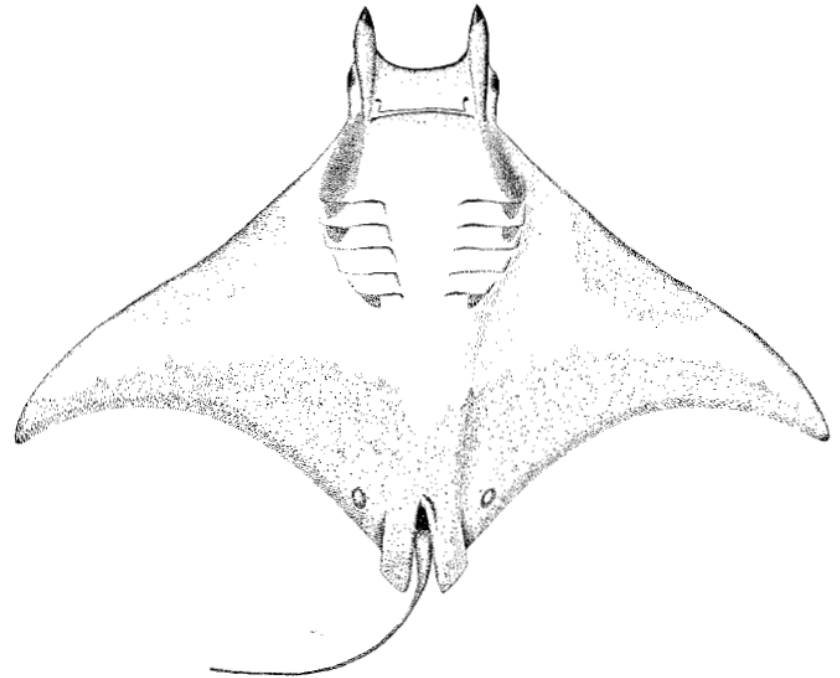
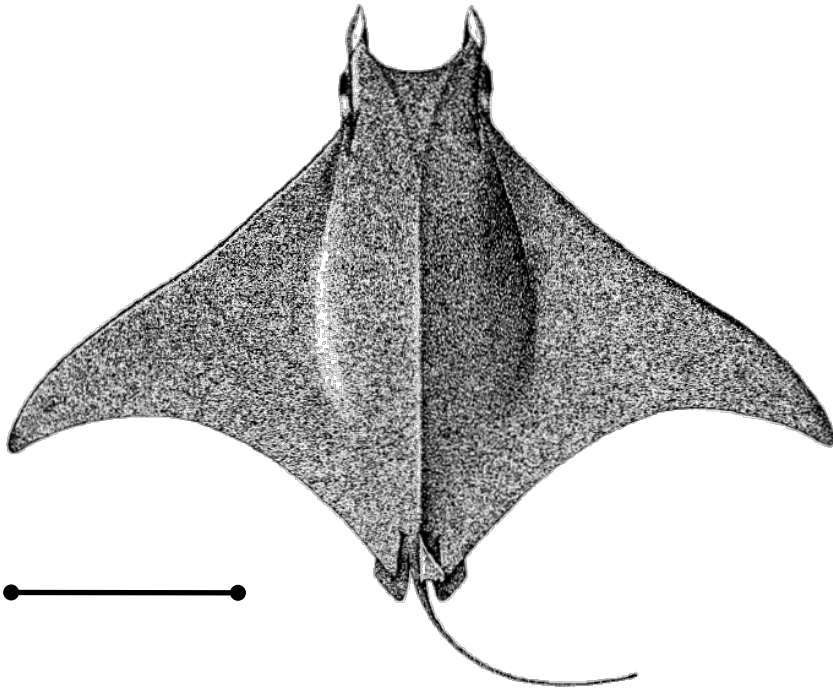
- *Mobula japonica*



Scale bar = 1 m

Mobula 5 species (size of adults)

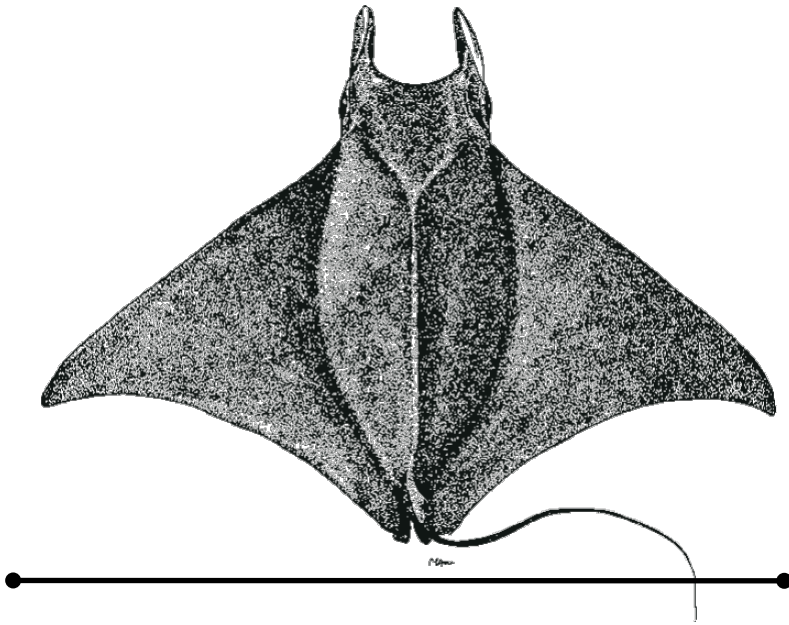
- *Mobula tarapacana*



Scale bar = 1 m

Mobula 5 species (size of adults)

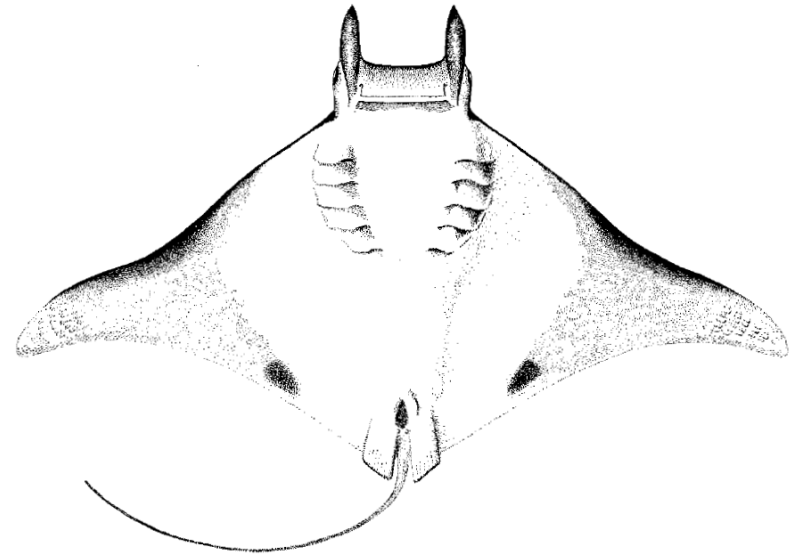
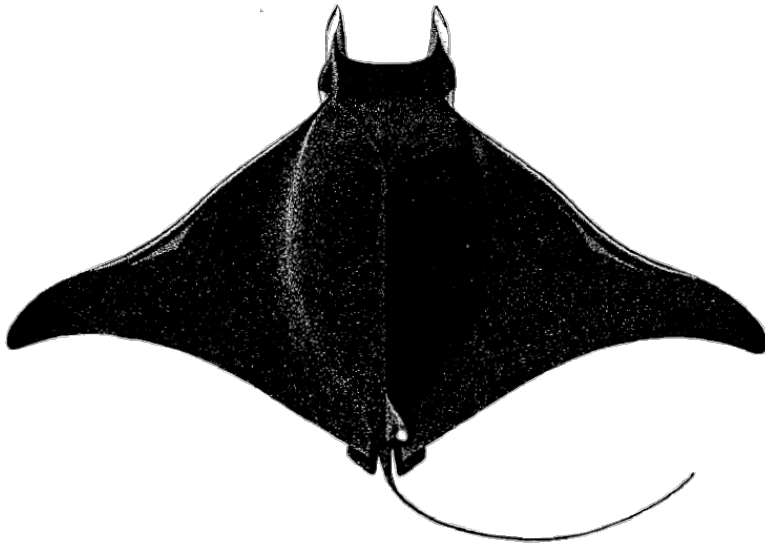
- *Mobula eregoodootenkee*



Scale bar = 1 m

Mobula 5 species (size of adults)

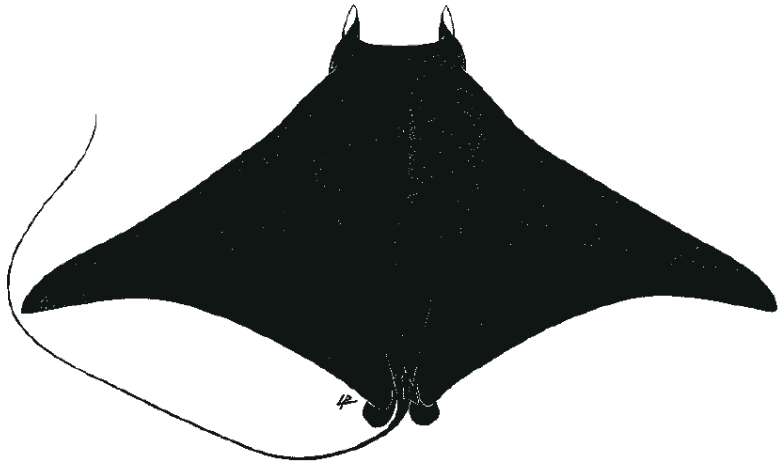
- *Mobula thurstoni*



Scale bar = 1 m

Mobula 5 species (size of adults)

- *Mobula kuhlii*



Scale bar = 1 m

ACKNOWLEDGEMENTS

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Cover pictures are from FAO, 2007