

**OCCURRENCE OF THE PIGMY DEVIL RAY, *MOBULA DIABOLUS* (SHAW)
(PISCES: MOBULIDAE), FROM THAILAND**

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ABSTRACT

First definite record of *Mobula diabolus* (Shaw), the pigmy devil ray, for Thai waters is described, based on a young female specimen, 593 mm disc width, landed at the Bangkok Wholesale Fish Market from a small fishing boat in 1981. This represents the second species of the genus for Thailand, the first being *M. japonica* (Müller et Henle) described from an immature female specimen, 661 mm disc width, by the author in 1974. The local specimen of *M. diabolus* is briefly described with morphometric data, and its photographs are given.

INTRODUCTION

During March 1980 - April 1981, the present author spent many very early mornings at the Bangkok Wholesale Fish Market observing and collecting fish specimens and gathering information about annual changes in the locally landed piscifauna. It has long been apparent that much remains to be learned about the taxonomy and distribution of even the common fishes of Thailand.

The presence of devil rays of the family Mobulidae in Thailand has long been suspected by the author. Experienced fishermen have reported strange rays with 2 cephalic horns, or flippers, at tip of the head, and the Thai name "Pla Rahu" scarcely could apply to anything but mobilids. Taxonomically and zoogeographically, however, these could be any species of the genera *Mobula* or *Manta* of the family Mobulidae.

A single specimen of genus *Mobula* was solely reported for Thailand by WONGRATANA (1974), who had come across many large individuals and purchased an immature specimen of *M. japonica* (Müller et Henle) at the Bangkok Wholesale Fish Market for only 20 baht. In the same paper a young *M. diabolus* (Shaw), 755 mm in width, was also mentioned from Cambodian waters. So far, the known distribution of the latter species ranges from the East African coast and the Red Sea to the Great Barrier Reef of Australia (WHEELER, 1975). This species was previously recorded from Penang, Malaysia, by CANTOR (1849) under the synonym *Dicerobatis eregoodoo*, and by SCOTT (1959).

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This article describes a specimen of *Mobula diabolus* definitely secured from Thai waters. It is a female, 593 mm in width, which was unloaded from a small fishing boat on March 16, 1981, at the Bangkok wholesale Fish Market. Because the species was reported to attain an extreme width length of 1.8 m (6 feet) by WHEELER (1975), but as much as 18 feet in FOWLER (1941; this account possibly belongs to *Manta* sp.), this Thai specimen is evidently an immature individual. The Thai specimens of both species are donated to and now kept at the Chulalongkorn University Museum of Zoology, Bangkok (CUMZ); the catalogue number for the specimen of *M. diabolus* is CUMZ 1987.12.22.1.

Mobula diabolus and *M. japanica* are very peculiar fish, and very little is known about them. Only isolated sightings have been reported and no established population which could be studied in detail has been found. Since both species from Thailand are very poorly known to science any new information about them would be desirable.

Another mobulid fish, monotypic *Manta biostris* or manta ray, may also be expected to occur in Thai waters. It is likely that statements of fishermen and skindivers, particularly from the Andaman Sea, about the immense "Rahu" refer to this species. However, this fish is taxonomically characterized largely by the mouth which is at the front of the head (vs. below it in *Mobula*), and by the presence of a longitudinal band of teeth in the lower jaw, but absent on the the upper jaw. These are features which must be examined to make an accurate identification when specimens are finally caught or stranded ashore.

DESCRIPTION

(Figures 1 and 2, Table 1)

In order to facilitate comparison with the earlier accounts of *Mobula japanica* and *M. diabolus*, the methods employed in Table 1 follow those of WONGRATANA (1974). Unfortunately, a mistake was found in Table 1, in WONGRATANA (1974) and I would like to take this opportunity to correct the following measurements and their proportions. Of *M. japanica* in that table (page 10), tail length incorrectly reads 114.0 mm, with proportion of 17.25% EW (extreme disc width); it should read 1140.0 mm and 172.46% EW, respectively. And of *M. diabolus*, tail length which is incorrectly given as 59.4 mm, with proportion of 7.87% EW, should read 594.0 mm and 78.68% EW, respectively.

In general appearances, *Mobula diabolus* is very similar to *M. japanica*, its sympatric congener in the Gulf of Thailand. They are, however, distinctively different as shown in the following key.

The present specimen of *Mobula diabolus* has teeth longer than broad, closely-set and arranged in a band on each jaw and ending a short distance from angle of mouth. The transverse series comprises only 56 teeth in the upper jaw and 69 in the lower jaw. The angle at acute point of the pectoral fins is approximately 35 degrees.

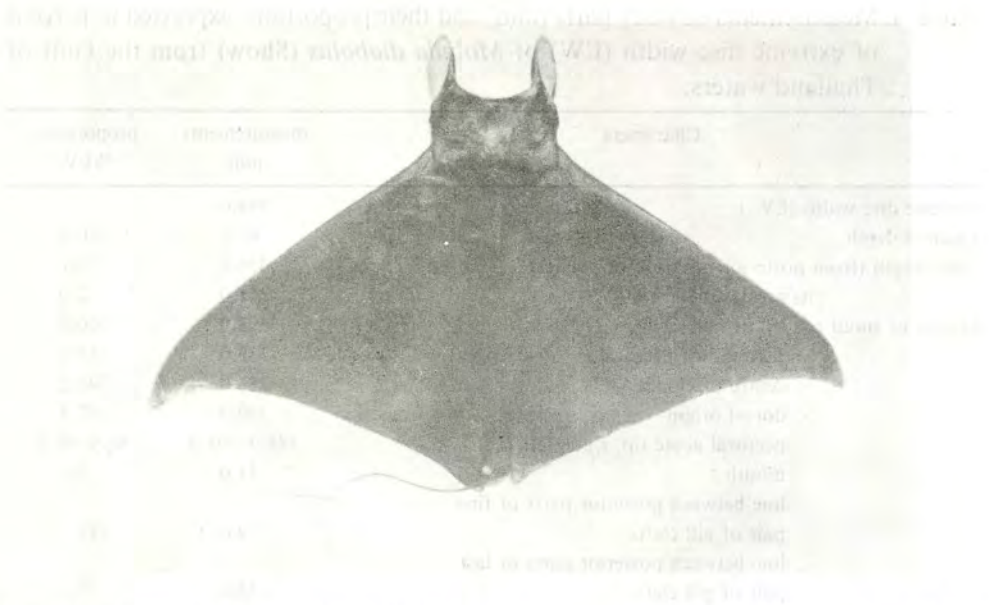


Figure 1. Photograph of upper side of *Mobula diabolus* (Shaw), CUMZ 1987.12.22.1, female, 593 mm across extreme disc width, taken after 5 years of preservation in 10% formalin.

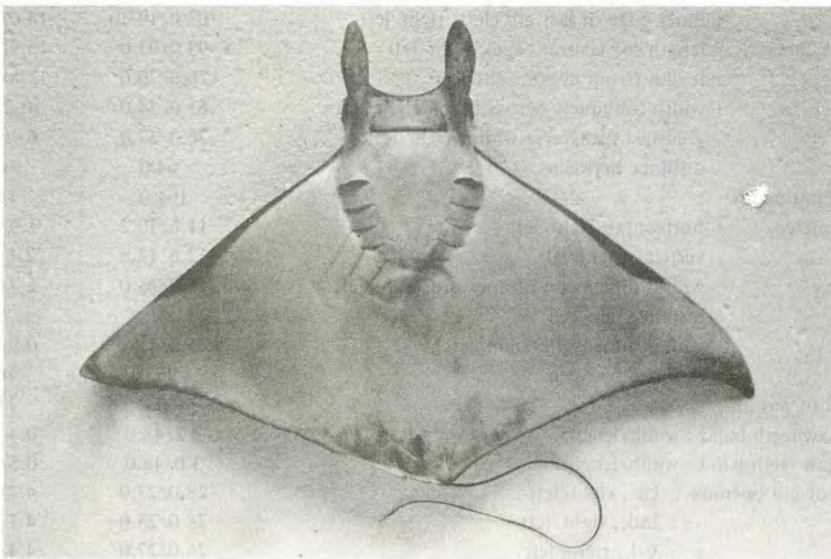


Figure 2. Underside view of the same specimen as shown in Figure 1.

Table 1. Measurements of body parts (mm) and their proportions expressed in percent of extreme disc width (EW) of *Mobula diabolus* (Show) from the Gulf of Thailand waters.

Characters	measurements	proportions
	mm	%EW
Extreme disc width (EW.)	593.0	
Greatest depth	62.0	10.4
Tail: length (from posterior insertion of pelvics)	416.0	70.1
its greatest base width	11.0	2.0
Middle of snout to: tip of tail	598.0	100.8
: rear end of pectoral (= disc length)	332.0	55.9
: centre of cloaca	286.0	48.2
: dorsal origin	280.0	47.2
: pectoral acute tip, right/left	385.0/393.0	64.9/66.2
: mouth	31.0	5.2
: line between posterior parts of first pair of gill clefts	79.0	13.3
: line between posterior parts of last pair of gill clefts	138.0	23.3
Width across head (at behind eyes)	108.0	18.2
Rictus to		
: nostrils, right/left	21.2/21.3	3.6/3.6
: tips of cephalic lobes, right/left	94.0/93.0	15.8/15.7
: inner edge of first gill cleft, right/left	45.0/45.0	7.6/7.6
: inner edge of last gill cleft, right/left	107.0/107.0	18.0/18.0
Cephalic lobes		
: length (of ventral edge), right/left	93.0/93.0	15.7/15.7
: length (from eyes), right/left	70.0/70.0	11.8/11.8
: width (obliquely across base), right/left	61.0/54.0	10.2/9.1
: greatest transverse width, right/left	36.0/37.0	6.1/6.1
: distance between	64.0	10.8
Interorbital width	104.0	17.5
Eye diameter		
: horizontal, right/left	11.6/10.2	1.9/1.7
: vertical, right/left	12.6/12.8	2.1/2.1
Nostrils		
: widest dimension of aperture, right/left	15.9/15.0	2.7/2.5
: distance between	56	9.4
Spiracles		
: widest dimension, right/left	5.2/4.6	0.9/0.8
: distance between	96.0	16.2
Breadth of mouth	66.0	11.1
Upper jaw teeth band : width/length	2.2/48.0	0.4/8.1
Lower jaw teeth band : width/length	3.0/48.0	0.5/8.1
Length of gill opening : 1st., right/left	28.0/27.0	4.7/4.5
: 2nd., right/left	28.0/28.0	4.7/4.7
: 3rd., right/left	26.0/27.0	4.4/4.5
: 4th., right/left	24.0/24.0	4.0/4.0
: 5th., right/left	16.0/17.0	2.7/2.8
Width between outer edge of paired gill cleft : 1st.	124.0	20.9
: 5th.	62.0	10.4
Outer edge of first gill cleft to last gill cleft, right/left	72.0/72.0	12.1/12.1
Inner edge of first gill cleft to last gill cleft, right/left	64.0/64.0	10.8/10.8

Table 1 (continued)

Characters	measurement mm	proportions %EW
Dorsal fin : base	36.0	6.1
: anterior margin	38.0	6.4
: superior margin	21.0	3.5
: free rare margin	4.6	0.8
Pectorals : distance from axil to axil	91.0	15.3
: anterior margin, right/left	334.0/338.0	56.3/57.0
: posterior margin, right/left	297.0/288.0	50.1/48.6
Pelvics : outer edge of base to transverse distal tips, right/left	38.0/38.0	6.4/6.4
: distance between	4.9	0.8
: least breadth, right/left	17.6/17.6	3.0/3.0

These are within the normal ranges of the species.

Colouration when fresh: Regular dark purple reflections on upper surface, continued onto most parts of inner surface of cephalic fins, anterior submarginal edges of pectoral fins, and whip-like tail. Tip of dorsal fin whitish. Lower surface largely silvery white. Inside of mouth pure white, but greyish silvery at its lower edge.

KEY TO THE THAI SPECIES OF *MOBULA*

- 1a. A serrated spine on back at base of whip-like tail which is longer than twice of body; dorsal fin originating vertically above pelvic fin origin, tip of dorsal fin terminating behind tips of pectoral and pelvic fins; spiracles large and situated just above front tip of pectoral fins *M. japonica*
- 1b. No spine as such, tail only slightly longer than body; dorsal fin origin vertically behind pelvic fin origin, tip of dorsal fin terminating well before tips of pectoral and pelvic fins; spiracles forming slit-like apertures and situated below anteriormost part of pectoral fins *M. diabolus*

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REFERENCES

- CANTOR, T. 1849. Catalogue of Malayan fishes. *Jour. Asia. Soc. Bengal* 18(2): 1-1443.
- FOWLER, H.W. 1941. Contributions to the biology of the Philippine Archipelago and adjacent regions. *Bull. U.S. Nat. Mus.* No. 100, 13: 1-859.
- GARMAN, S. 1913. The Plagiostomia (sharks, skates, and rays). *Mem. Mus. Comp. Zool.* 36: 1-515.
- SCOTT, J.S. 1959. *An Introduction to the Sea Fishes of Malaysia*. Ministry of Agriculture, Kuala Lumpur, 180 pp.
- WHEELER, A. 1975. *Fishes of the World: An Illustrated Dictionary*. Macmillan publishing Co., Inc., New York, 366 pp.
- WONGRATANA, T. 1974. First record of *Mobula japonica* (Müller et Henle), a little Known devil ray from the Gulf of Thailand (Pisces : Mobulidae). *Nat. Hist. Bull. Siam Soc.* 25(3 & 4): 1-13.