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Short Communication

Morphometric characteristics of deepwater stingray *Plesiobatis daviesi* (Wallace, 1967) collected from the Andaman Sea

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Abstract

The present paper reports on the morphometric characteristics of two specimens of *Plesiobatis daviesi* collected during the deep-sea fishery resource survey of FORV *Sagar Sampada* in the northeastern Andaman Sea off Diglipur (13^0 14' N lat; 93^0 09' E long.) at 320 m depth and off Mayabandar (12^0 48' N lat; 93^0 07' E long.) at 369 m depth.

Keywords: Andaman Sea, deepwater stingray, *Plesiobatis daviesi*

Introduction

Plesiobatis daviesi (Wallace, 1967) belongs to monotypic family Plesiobatidae (Rajiformes) which was established by Nishida (1990). The species was formerly included under the genus *Urotrygon* (Nelson, 2006). *P. daviesi* is well distributed in the Indo-West and Central Pacific Oceans from South Africa to Hawaii (Froese and Pauly, 2009). Nair and Soundararajan (1973) reported *P. daviesi* (female; 534 mm TL) for the first time from Indian waters off Mandapam in the Gulf of Mannar (08^0 58' N lat. 79^0 16' E long.), southeast coast of India. Like most of the deep-sea organisms, studies on deepwater stingray *P. daviesi* are limited. This communication presents the morphometric characteristics of two female *P. daviesi* specimens collected from the northeastern Andaman Sea.

Material and Methods

An exploratory deep-sea fishery survey (cruise: No. 252) was carried out by FORV *Sagar Sampada* in the Andaman Sea (Fig. 1) of the Indian EEZ during 2007. Trawling was carried out during daytime using EXPO and HSDT nets at depths ranging from 300 to 700 m. A female *P. daviesi* measuring 156 cm total length (TL) with two spines, disc width 78 cm and weighing 15 kg (Fig. 2 and 3) was collected from the northeastern Andaman waters off Diglipur (13^0 14' N lat; 93^0 09'E long.) at 320 m depth and another one with a single spine measuring 92.5 cm TL and weighing 3 kg was collected off Mayabandar (12^0 48' N lat; 93^0 07' E long.) from 369 m depth. The specimens were identified following Wallace (1967) and Compagno (1986). Morphometric measurements were taken from formalin preserved (5%) specimens and comparisons (as % of TL) with earlier reports were made. Specimens were deposited in the National Biodiversity Referral Museum, CMFRI, Cochin, India (GA.7.6.1.1).

Results and Discussion

P. daviesi is mainly found on continental and insular slopes at a depth of about 275-680 m and is reported to attain at least 270 cm TL (Compagno, 1986; Nelson, 2006; White *et al.*, 2006). *P. daviesi* can be identified from the following characters: snout pointed, broadly angular and markedly produced; snout length > 6 times orbit diameter, tail with a lobe-like caudal fin, upper and lower caudal present. No dorsal fin or skin folds on side or undersurface of tail. Upper surface of the disc covered with prickles. The morphometric characteristics of the present specimens match with the representative described from South African waters even though slight variations were observed in certain characteristics (Table 1). This includes the

inter-orbital length, which was higher (7.0-7.4% TL in the present study) compared to 4.2-5.9% of TL reported by Wallace (1967); slightly smaller eyes, eye length 1.68-1.73% TL compared to 2.06% TL observed by Nair and Soundararajan (1973). Snout length (pre-orbital) 10.7-11.2% in eye length and 18-19.5% TL. Nair and Soundararajan (1973) reported similar variations in the morphometric characters of *P. daviesi* collected from Gulf of Mannar. However most of the morphometric characteristics showed variations within the limit described by Wallace (1967).

Stingrays usually have single spine in the tail but the presence of two spines is relatively common in certain rays. Occurrence of multiple spines in *Dasyatis sabina, D. pastinaca*, *Ateobatus narinari* and *Urolophus halleri* are reported (Russel, 1955; Halstead, 1970; Teaf and Lewis, 1987). *P. daviesi* normally has a single sting/spine on dorsal side of the tail and can inflict a painful wound if handled (White *et al.,* 2006). One of the specimens collected from the Andaman Sea had two stings and there are no morphometry reports of *P. daviesi* with multiple spines for comparison. However certain species of

Table 1. Morphometric comparison (% of total length) of *Plesiobatis daviesi* (Wallace, 1967) captured from Andaman Sea with that of earlier reports

Characteristics	Wallace (1967)	Nair and Soundararajan (1973)	Present specimen (double spine)	Present specimen (single spine)
Total length (cm)	*	53.4	156	92.5
Disc width	53.7-59	56.93	50.32	54.05
Disc length	54.2-58.5	57.12	53.00	52.97
Pre-caudal length	*	*	75.48	75.13
Pre-narial length	*	*	15.61	15.78
Pre-oral length	18.6-19.5	20.97	18.39	19.46
Pre-orbital length	17.4-19.8	19.1	17.95	19.46
Pre-spiracle length	*	*	19.23	20.54
Pre-gill length (from 1st gill)	*	26.4	24.84	25.41
Pre-gill length (from 5th gill)	*	*	29.29	31.89
Eye length	*	2.06	1.68	1.73
Eye height	*	*	0.46	0.73
Interorbital width	4.2-5.9	6.93	7.38	7.03
Internarial width	7.8-9.8		7.55	7.68
Spiracle length	*	4.12	3.23	3.78
Interspiracle width	8.3-9.2	9.55	8.47	8.76
Mouth width	5.8-7.1	5.99	6.45	6.05
First gill slit length	*	*	2.04	1.76
Second gill slit length	*	*	2.03	1.76
Fifth gill slit length	*	*	1.32	1.43
Distance between first pair of gill slits	12.4-14.1	12.73	13.50	12.76
Distance between fifth pair of gill slits	8.1-9.3	7.86	7.70	8.65
Lower caudal fold length	*	*	24.84	24.86
I sting length	*	*	10.84	11.89
II sting length	*	*	10.84	0.00
I sting width	*	*	0.59	0.65
II sting width	*	*	0.87	0.00
Anterior pelvic length	*	*	6.77	6.49
Pelvic width	*	*	4.65	4.32
Pelvic inner margin	*	*	5.29	4.22
Snout to spine origin	72.3-73.7	72.28	71.80	74.05
Tail length	*	49.62	51.53	50.59

*indicates NA

Urolophids, which are the closest group to *Plesiobatis* are reported to have two spines and in some rare instances, some species from Indonesian waters have 3 spines (White, 2009, personal communication). All the variations in comparison with Wallace (1967) were within the limit range and not enough to describe as a new species (Table 1) and two specimens collected from Andaman Sea did not differ much in their morphometric characteristics. Perhaps genetic studies and DNA sequence comparison with similar species from other parts of world may confirm whether the two specimens of *P. daviesi* have morphometric variation due to zoogeographical factors. More specimens are needed for a detailed study on the species.

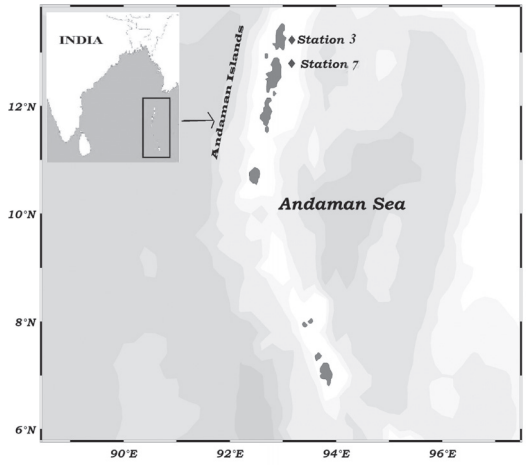

Fig. 1. Map of northeastern Andaman Sea showing sampling sites of *Plesiobatis daviesi* by FORV *Sagar Sampada* (St. 3 and St. 7)

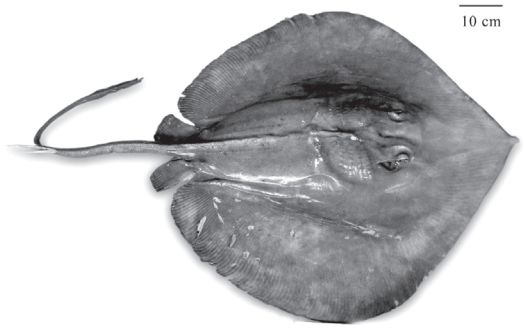

Fig. 2. *Plesiobatis daviesi* female with two spines (156 cm TL)

Fig. 3. Enlarged spine image

The gut content analysis of the two *P.daviesi* specimens collected showed semi-digested teleosts and shrimps. White *et al*. (2006) reported that the fish feeds primarily on small fishes, crustace-ans, cephalopods and numerous mesopelagics suggesting a possible feeding migration into water column. There is no targeted fishery for *P. daviesi*, though incidental occurrences in deepwater trawls and longlines have been reported from Taiwan and Indonesia. The IUCN Red List status has classified the species as least concern (IUCN, 2009).

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