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Note

A note on the taxonomy of Blue eye skate *Raja miraletus* Linnaeus, 1758 (Chondrichthyes: Rajiformes, Rajidae) recorded off Cochin, Kerala

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Abstract

A female specimen of the blue eyed skate *Raja miraletus* Linnaeus, 1758, measuring 48.9 cm total length was landed at the Cochin Fisheries Harbour on 10th August 2003. The morphometric measurements of this specimen matched with those of the syntype of *R. ocellifera* deposited in the British Museum and *Raja ocellifera* recorded by Samuel (1963).

The genus *Raja* is represented by five species in Indian waters – *Raja mamillidens, R. reversa, R. johannis–davisi, R. powelli* and *R. andamanica* (Misra 1952, 1969). The twin eye skate, *R. ocellifera* (Regan, 1906) was recorded from India off Cochin by Samuel (1963) during an offshore cruise of R V *Conch*. On 10th August 2003, during a routine fishery observation at the Cochin Fisheries Harbour, Kerala, a single female specimen of the blue eye skate *Raja miraletus* Linnaeus, 1758, measuring 48.9 cm total length was obtained. The specimen was caught off Cochin from a depth of 50 m by a drift gillnet unit. The specimen has been deposited in the CMFRI Biodiversity Museum. (GA.11.1.21.17).

Description: Disc quadrangular, 1.62 times longer than broad, slightly shorter than tail length. Snout 2.5 times the interorbital length. Disc has straight antero–lateral margins and rounded corners. Snout tip slightly blunt, its anterior end spinous/granulated on dorsal and ventral side. Rostral cartilage visible through the body wall of the anterior region. Pelvic fins bilobed. Methods for making measurements and counts were adopted from Hubbs and Ishiyama (1968) and Wallace (1967) with slight modifications.

Eyes directed antero–laterally, are prominently convex on the inner sides and project beyond the surface of the body. Four thorns, each situated anteriorly and on the ventro–lateral sides on the bony ridge of the orbit; a naked space in between. The spiracle lies behind the eye, its large oval aperture with fringes on its inner margin. The area behind the spiracle is raised in a semi circular pattern with a slope towards the lateral sides (Fig. 1).

Mid–dorsal region of the disc with 9 thorns; on either side of the 8 th and 9th ones is a raised bony hump like

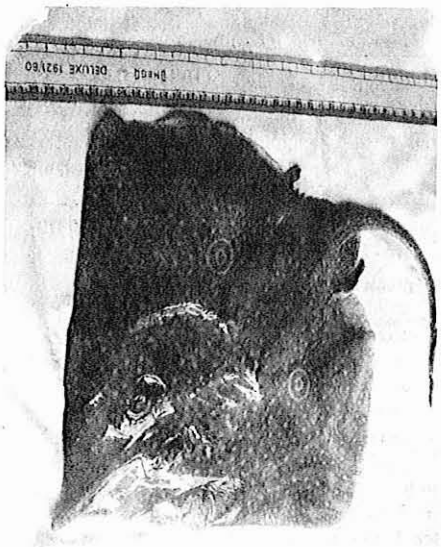

Fig. 1. *Raja miraletus* Linnaeus 1758

structure followed by a row of median abdominal thorns bordered by a row of thorns on either side. Tail elongated, narrow, tapering towards the tip, convex on the dorsal side and more or less flattened on the ventral side. A median row of thorns extends from the base of caudal region to base of the first dorsal; on either side of these, 4 rows of spines, the size of which decreases from the middle of the tail to the outer sides. On either side of the two dorsal fins, only two rows of thorns till the tip of the tail. Two dorsal fins on the median axis on the posterior part of tail, which are similar in size and shape. Caudal fin small and extends as a fold of skin near to the tip of

the tail. Mouth semicircular, ventral; upper jaw protruded with teeth set in bands in a parallel along the jaws, visible externally.

Colour: In fresh condition, dorsal surface dark brown at the centre, lighter towards outside. Numerous white spots cover the body all over the disc. Two conspicuous ocellae one on either side behind the middle region and placed postero–lateral to the semi–circular ridge.

Discussion

R. miraletus was first described by Linnaeus (1758) from the Mediterranean Coast. Regan (1906) described a specimen from Algoa Bay, northeast of Bird Island, Natal, South Africa (40 fathoms) as *Raja ocellifera*. The syntype deposited in the BMNH (BMNH 1905.6.8.14 (1)) was got re-examined by Dr. Patrick Campbell, Curator, Lower Vertebrates, BMNH. The morphometric measurements of the present specimen *R. miraletus* from India are in close agreement with those of the syntype of *Raja ocellifera* examined and those of *R. miraletus* obtained from the Mediterranean and Cape (Table I.). The syntype varied with that of *R. ocellifera* from S. Atlantic in the base length of the first dorsal fin. Also, the distance between inner ends of both the first and both the fifth pair of gill slits was measured mistakingly as the inner distance between the first and fifth gill slits as 37 mm (8 % of TL).

The description of the present specimen matches well with that of Samuel (1963). Comparing the morphometric measurements of the present specimen with that of the 26 specimens from the Cape (Table I), variations were seen in the characters *viz.* snout to greatest width of the disc, interspace between dorsal bases and between inner ends of 1st and 5th pair of gill slits. Mc Eachran *et al.* (1989) who studied the morphological variation within

Table 1. *Morphometric measurements (cm) of* Raja miraletus *(as % total length)*

Characters	Regan (1906)	Wallace (1967)			Present study	
	R. ocellifera	*R. ocellifera*	*R. miraletus*	*R. miraletus*	*R. miraletus*	*R. miraletus*
	BMNH	*(N = 2)*	*(N=5)*	*(N=1)*	*(N=26)*	*(N=1)*
	1905.6.8.14(1), SYNTYPE	S. Atlantic	Mediterranean	Cape	India	
Total length	100.00	100.00	100.00	100.00	100.00	100.00
Length of disc	52	*	*		51	49
Snout to greatest width of disc	30	*	*		26	30
Snout to origin of first dorsal	80	80.6 – 84.2	72.2		81	82
Snout to origin of second dorsal	*	*	*		88	88
Snout to anterior end of orbit	12	*	*		11	15
Disc width	72	*	*		68	65
First dorsal base	6	0.4 -2.2	4.4	4.6	6	5
Interspace between dorsal bases	1	*			0.8	3
Second dorsal base	5	*			6	5
Interorbital	*	*			4	6
Distance between spiracles	6	*			6	6
Snout to tip of lower jaw	12	*			12	18
Snout to anterior end of cloaca	46	*			44	51
Width of mouth	9	*			8	10
Between inner ends of 1 st pair of gill slits	*	14.1 – 15.1	12.7	12	15	20
Between inner ends of 5 th pair of gill slits	*	6.7 – 7.1	5.9	5.8	7.6	11
Between inner ends of 1 st and 5 th pair of gill slits	8	*	*	*	*	*

R. miraletus, over its entire distributional range – the Mediterranean and Western and Southern Africa, reported that "no significant differences in ocellar shape or tail length were found between the South African sample and the other samples despite the suggestions of Norman (1935), Wallace (1967) and Hulley (1969)". They observed that interorbital distance and distance between the first gill slits increase, while snout length decreases in species reported from Mediterranean to South African waters. Moreover, some of the characters displaying geographical variation within *R. miraletus* appear to be clinical, some appear to converge at the latitudinal extremes of the range of the species and others appear to vary randomly. Mc Eachran *et al.* (1989) therefore concluded that "considering the subtleness of the variation and clinical nature of some of the variables, *R. miraletus* is considered as a polymorphic species of at least three parapatrically or allopatrically distributed populations: the Mediterranean, the West African and the South African populations."

Since the morphometric measurements of *R. miraletus* recorded by the author from Indian waters matches with that of the syntype of *R. ocellifera* deposited in the British Museum and *R. ocellifera* recorded by Samuel (1963), the author disagrees with the view of Mc Eachran *et al.* (1989) and Hulley (1970) that *R. ocellifera* recorded from Kerala coast by Samuel (1963) "is questionable". Further, Stehmann (1976) stated that for topographical and climatic reasons, the northern Indian Ocean was not a centre of radiation of skates, and that skates that occur there migrated from centres of radiation in the Atlantic and western Pacific Ocean. This could possibly be the reason for the presence of this skate in Indian waters.

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