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Frist Record of Sewelle's Cowray *Rhinoptera sewelli* (Misra, 1946) from Middle East coast of India

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Abstract

The Sewelle's cowray *Rhinoptera sewelli* (Misra, 1946) was recorded for the first time along the Visakhapatnam waters, Middle East coast of India. A detail description of species is given with illustrations. Eight specimens were collected from trawl catches of Visakhapatnam coast, East coast of India during the months of July, August and September of 2012. *R. sewelli* distinguished from its congeners mainly by the rows of the teeth; In *R. sewelli* teeth in nine rows in both jaws; two small serrated tail spines above its basal portion. The present study confirms the occurrence of *Rhinoptera sewelli* (Misra, 1946), from Middle East coast of India, the current geographical distribution and extends the range of the occurrence of this species to Bay of Bengal

Keywords: Sewelle's cowray, *Rhinoptera sewelli*

1. Introduction

Rays of the family Rhinopteridae, commonly known as cow or bull rays, are rare in Indian waters. It's distributed in warm temperate and tropical seas except around oriental Pacific Island. [2, 3, 4, 5]. Few are caught and none have been previously recorded by [1]. They are semi-pelagic and gregarious, often forming large schools [6, 7]. They are euryhaline, utilizing river and estuarine habitats as well as the open ocean, where they are found on continental and inshore shelves. They are frequently encountered in salinities ranging from 17 to 37 ppt [8]. In the family Rhinopteridae only one genus *Rhinoptera* represented by about 10 species is currently recognized. Genus *Rhinoptera* has that only five of the 11 nominal species of *Rhinoptera* are valid species [9]. These five species are strongly allopatric with widespread geographic ranges believed to reflect their high mobility [10]. The extreme differentiation in *R. steindachneri* at a regional geographic scale may be evidenced of more than five valid species in the genus *Rhinoptera*. Species of cownose rays are very similar to one another and most of the classification work is based on number of teeth plate rows or series; dentition is very variable in some species and the family is in urgent need of revision [11, 12; 13]

2. Materials and methods

Rhinoptera sewelli specimens were collected between September 2011 to September 2012 from trawl bycatches. Meristic and morphometric measurements followed by [14, 15, 16, 17]. Fourty six body measurements were taken to the nearest millimeter and weighed to the nearest gram. Number of teeth and spines were counted. The specimens were preserved in 5% formaldehyde and deposited in the department of marine living resources, Andhra University, Visakhapatnam, east coast of India.

3. Results

Eight specimens (five males and three females) of length range 368 to 725 mm Disc Width were collected in the months of October of 2011 and July, September and October of 2012. Body measurements and rows of teeth in both jaws were compared to the previous author [1]. All the eight specimens are having nine rows of teeth in both jaws. First time recorded this species from Kerala coast [17], this is the first report from east coast. Based on these observations we conclude this species is prevalent in Indian waters and also Misra [1] reported this species fifty years back. So, we can conclude that this is a new record from Indian waters. Cow nose ray fish samples collected to a single species and identified as *Rhinoptera sewelli* (Fig.1-4). The taxonomic position of the species is as follows. This species not yet reported so far from east coast of India.

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Classification

Class : Chondrichthyes
 Subclass : Neoselachii
 Cohort : Batoidea
 Suborder : Myliobatoidei
 Order : Myliobatiformes
 Family : Rhinopteridae
 Genus : *Rhinoptera*
 Species : *sewelli*

Rhinoptera sewelli Misra, 1946 (Fig 1-7)

Common name: Sewelle's cowray

Head broad and prominent, its anterior profile deeply concave with a soft bilobed subrostral fin on its lower surface. Eyes and spiracles laterally situated, eyes round, posterior to eye large spiracles present. Nasal lobules broad conical; nasal valves separate, the lower margin of the nasal valve is straight; the margin of the nasal valve is finely denticulated; wide straight edged nasal curtain with a strongly fimbriated posterior margin overlaps mouth. Oro nasal grooves present; mouth wide and straight, upper lip fringed; numerous papillae

covering lower lip. Teeth: Nine rows in either jaws, in both jaws teeth are arranged as 333/333, those in the central row are wider than the antero posterior direction. All the teeth are hexagonal, narrow median rows in both jaws. Five pairs of gill openings small, sub equal last smallest, each gillslit medially concave, proximally straight to weakly convex Disc lozenge shaped, deep dorso ventrally, its length 0.63 times to disc width. The anterior margin of the pectorals is convex, the posterior concave. Outer angles pointed and hind angles straight. Rayed portion of pectorals not united with rostral fins at sides of head. A pair of narrow bone like structures on dorsal side of body behind 5th pair of gillslits. The ventrals are tetragonal, considerably projecting beyond the pectorals. The dorsal commences at the termination of the ventrals and extends far beyond their apex. Tail long whip like with two serrated spines, the anterior side is greatly compressed, the rest is flagelliform.

Colour

Disc greenish grey dorsally, becoming lighter at the edges of the disc. Whitish below; tail dark grey in colour.

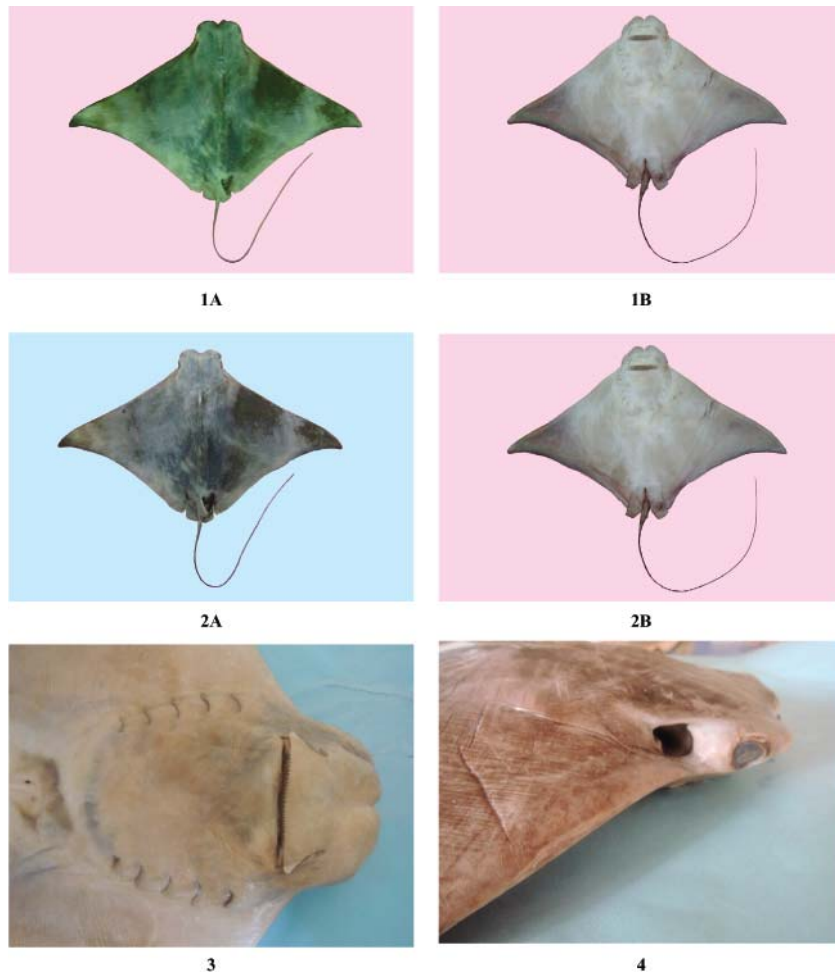


Fig. 1. *Rhinoptera sewelli*- Female 476 mm DW

1A. Dorsal view 1B. Ventral view

Fig. 2. *Rhinoptera sewelli*- Male 368 mm DW

2A. Dorsal view 2B. Ventral view

Fig. 3. Ventral view of head Fig. 4. Lateral view of head



Fig 5: *Rhinoptera sewelli*- Dorsal view of tail with dorsal fin and spine



Fig 6: *Rhinoptera sewelli*- upper jaw 9 series of teeth



Fig 7: *Rhinoptera sewelli*- lower jaw 9 series of teeth

4. Discussion

In the present study well agreement with that of [1]. *R. sewelli* distinguished from its congeners mainly by the rows of the teeth in the genus *Rhinoptera*. 7 rows present in *R. quadriloba*, *R. lalandii*, *R. javanica*, *R. neglecta*, *R. marginata*, *R. adspersa*, *R. jussieui*, *R. jayakari*, *R. peli*; teeth in 15 rows in upper and 19 in the lower in *R. polyodon* and teeth in 14 rows in the lower jaw in *R. encenadae*. Based on the previous records of *Rhinoptera sewelli*, it seemed to limit its expansion rate in the Indian coasts. However the present report further extends its distribution range to Bay of Bengal. *Rhinoptera sewelli* (Misra, 1946) from Indian waters there were no previous reports about taxonomy, biology, ecology and molecular studies. This suggests that a systematic taxonomic study of this group in Indian waters, with wide regional sampling, molecular studies.

Table 1: Morphometric data of species of *Rhinoptera sewelli*, represented in the catches of Visakhapatnam

Disc width in mm DW	<i>R. sewelli</i> , n=8	
	368-725	
As percentage of Disc Width	Min-Max	Mean±SD
Total length	144.14-161.52	149.40-5.23
Disc length	58.59-68.82	63.09-3.65
Snout to anterior cloaca	50.63-56.07	53.49-2.04
Tail length	91.45-111.50	100.50-7.55
Prenasal length	7.03-9.00	8.43-0.74
Inter nasal width	7.42-8.97	8.26-0.47
Nasal Curtain width	2.34-3.45	2.86-0.47
Pre oral length	9.57-12.90	11.30-1.35
Mouth width	10.16-13.04	11.93-0.92
Pre 1st gillslit length	15.63-19.49	17.85-1.47
Pre Vth gillslit length	22.66-27.14	25.65-1.49
width of first gillslit	1.75-2.98	2.32-0.35
width of second gillslit	1.76-2.99	2.32-0.35
width of third gillslit	1.76-2.99	2.32-0.35
width of fourth gillslit	1.76-2.99	2.32-0.35
width of fifth gillslit	1.52-1.90	1.71-0.14
Distance between 1st gillslits	14.65-16.85	15.96-0.73
Distance between 2nd gillslits	13.67-16.58	15.09-0.78
Distance between 3rd gillslits	12.50-15.21	13.61-0.79
Distance between 4th gillslits	11.71-13.58	12.31-0.55
Distance between 5th gillslits	10.15-11.08	10.64-0.28
Gill length	9.51-10.90	10.42-0.44
Pectoral fin anterior margin	62.07-69.78	64.71-2.48
Pectoral fin outer margin	51.03-52.99	51.14-0.59
Pectoral fin inner margin	5.22-6.52	5.77-0.45
Pectoral fin posterior margin	42.57-50.52	46.92-3.18
Pectoral fin base length	45.22-50.00	48.26-1.69
Pelvic fin outer margin	7.03-10.20	8.82-0.97
Pelvic fin inner margin	2.14-7.49	4.75-1.56
Pelvic fin posterior margin	4.34-7.04	6.00-0.90
Pelvic fin base length	6.25-9.23	7.59-1.12
Clasper outer length	1.17-3.59	1.89-0.96
Clasper inner length	3.12-5.65	4.35-0.89
Cloaca end - clasper end length	3.71-6.89	5.25-1.59
Pre orbital length	6.05-8.15	7.21-0.83
Inter orbital width	10.34-11.72	11.05-0.44
Eye diameter	1.64-4.34	2.12-0.98
Pre spiracle length	7.61-10.79	8.78-1.01
Inter spiracular width	13.28-18.48	15.18-1.49
Spiracle length	4.69-6.25	5.42-0.51
Snout to pectoral fin origin	11.03-13.66	12.37-0.76
Snout to pectoral fin insertion	57.17-63.66	61.00-2.18
Pre dorsal length	51.56-56.37	53.94-1.89
Dorsal fin height	3.91-4.97	4.66-0.32
Dorsal fin base	6.30-8.24	7.44-0.82
Pre spine length	58.79-64.62	61.39-2.55

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