



Note

First record of the moray eel *Gymnothorax dorsalis* Seale, 1917 (Anguilliformes: Muraenidae) from Indian waters

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ABSTRACT

Gymnothorax dorsalis Seale, 1917 is one of the unpatterned brown elongate moray eels found in Indo-Pacific region. The present paper reports this species for the first time from Indian waters on the basis of two specimens collected from Shankarpur Fishing Harbour in West Bengal. Detailed descriptions, morphological measurements and meristic counts of the species are reported. Conspecific differences in different geographical locations are also presented.

Keywords: Bay of Bengal, First occurrence, Indian coast, Moray eel, Unpatterned

Members of the family Muraenidae are commonly known as moray eels, found in shallow to moderately deep areas in tropical and subtropical seas around the world where they inhabit in holes and crevices; some are found in sandy or mud bottoms; and few species in estuarine areas (Smith, 2012). Among the order Anguilliformes, the family Muraenidae differs from other family in the absence of pectoral fin, gill opening represented by a small lateral opening, lateral line lacks pores except in head region, supraorbital canal having three pores except in genus *Anarchia* which has 4 pores. The family comprises 197 valid species under 15 genera belonging to two subfamilies (Smith, 2012). Genus *Gymnothorax* Bloch, 1975 belongs to subfamily Muraeninae which has non-confluent vertical fins with tail tip as in subfamily Uropterygiinae. Most members of the family possess wide range of colour with different types of patterns (Bohlke and Smith, 2002). Attractive colour pattern, makes some species ideal candidate in ornamental fish trade and in some countries like Taiwan, Portugal and Vietnam they are used as food fish (Loh *et al.*, 2011). Though most of the moray eels have attractive colour patterns, some species reported from Indo-Pacific region have no distinctive colour pattern and are mostly brown in colour (Bohlke, 1997; 2000). During local survey around northern part of the east coast of India, the authors encountered two specimens of moray eels of similar category which were identified as *Gymnothorax dorsalis* (Seale, 1917), which is reported for the first time from Indian waters. Earlier from the northern part of the east coast of India one species of brown unpattern moray eel *Strophidon sathete* (Hamilton, 1822) was reported (Barman *et al.*, 2007) and very recently

Gymnothorax prolatus (Sasaki & Amaoka, 1991) has been reported by Mohapatra *et al.* (2015) from the same region. This article provides a brief description of the species *G. dorsalis* collected from Bay of Bengal along the coast of India.

Two specimens of *G. dorsalis* (total length, TL 460-490 mm) were collected from Shankarpur Fishing Harbour, West Bengal, India. Fishes were collected in trawler operating at a depth of 81 m (20° 36' N - 87° 49' E); After the collection, photographs were taken in fresh condition and morphometric measurements taken using digital calipers and recorded to the nearest 0.1 mm. Head pores and dentition were observed and counted under microscope (Leica EZ4). Vertebrae counted with the help of digital X-ray. Taxonomic key by Bohlke (1997) was followed for identification of the species. Specimens were deposited in the museum of Marine Aquarium and Regional Centre, Zoological Survey of India, Digha, West Bengal with accession number MARC/ZSI/ F3663.

Gymnothorax dorsalis Seale, 1917

Description: Body elongated and cylindrical (Fig. 1), head elongated and pointed but slightly compressed, posterior part of the body and tail compressed. Morphometric measurements of different body parts in proportion and percentage of TL and head length (HL) presented in Table 1. Snout short and broad, mouth large and close completely; upper jaw slightly overhanging on lower jaw, lips papillose, eyes closer to snout than rictus. Teeth slightly curved and long (Fig. 2), intermaxillary teeth six in outer rows, 2 - 3 long fang like teeth on middle of



Fig. 1. *Gymnothorax dorsalis* Seale, 1917 (MARC/ZSI/ F3663)

Table 1. Morphometric measurements of *G. dorsalis*

Characters	Bohlke, 1997 N= 6 (TL: 450-822+)	Present study, 2014 N=2 (TL: 460-490)
Proportion in TL		
Pre-anal length	2.3-2.3	2.3-2.35
Head length	8.4-9.3	8.90-9.01
Depth at gill opening	24-27	27.05-27.22
Depth at anus	24-31	30-24-30.66
Proportion in HL		
Upper jaw	2.7-3.3	3.09-3.23
Snout length	6.7-8.3	7.84-7.85
Eye	12-20	12.22-12.75
Interorbital area	9-11	9.6-10.2
Percentage of TL		
Pre-anal length	43-44	42.4-43.4
Head length	11-12	11.08-11.22
Pre-dorsal	7.7-9.6	8.26-9.18
Depth at gill opening	3.2-4.1	3.67-3.69
Depth at anus	3.2-4.1	3.26- 3.30
Percentage of HL		
Upper jaw	30-37	30.90-32.35
Lower jaw	30-35	30-30.39
Snout length	12-15	12.72-
Eye	5.0-8.0	7.84-8.18
Interorbital space	8.8-11	9.80-10.36

intermaxilla. Maxilla with two rows of sharp conical teeth, outer rows with 19 - 20 small teeth and inner rows with 5 large teeth; sharp long vomerine teeth 9 in numbers. Lower jaw with inner rows of 4 large teeth and outer rows of 19 teeth. Short tubular shaped anterior nostril present on tip of snout; rounded posterior nostril located above anterior margin of eyes. Diameter of gill opening larger than eyes and located below middle part of the body. Origin of dorsal fin anterior to gill opening; anal fin origin anterior to anus; dorsal and anal fin low and united with caudal fin. Supraorbital pores 3; infraorbital pores 3, only species of *Gymnothorax* having 3 infraorbital pores (Fig. 3); mandibular pores 6; branchial pores 2 (Fig. 4). Vertebrae 8-63-159.

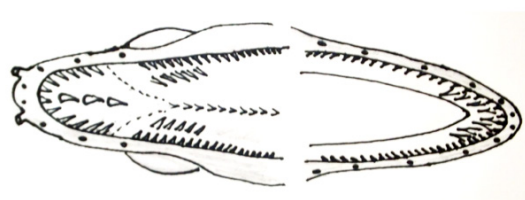


Fig. 2. Teeth pattern of *G. dorsalis* Seale, 1917

Colour in fresh: body greyish dorsal part more dark and ventral part pale, nostrils, chin and gill opening whitish; fins black and darker on posterior side. In preserved condition body dark brown both dorsally and ventrally; gill opening, chin and nostrils pale; fins dark, black in posterior part.

Distribution: The unpattern coloured moray eels, (*G. dorsalis*) are mostly reported from Indo-Pacific region (Fig. 5), with records from Hong Kong (type locality), Straits of Malacca, Malaysia, Taiwan and Indonesia (Bohlke, 1997). Present investigation first time reports this species from Bay of Bengal along the coast of India.

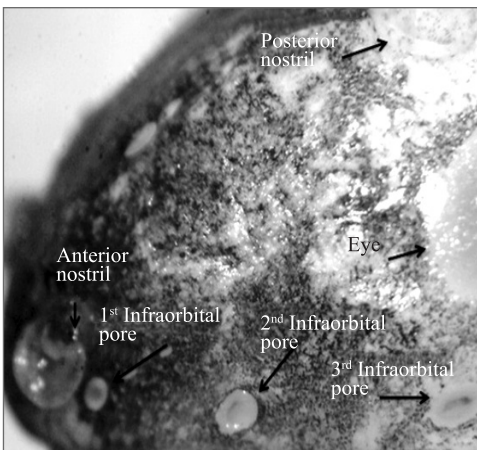


Fig. 3. Microscopic view of infraorbital pores of *G. dorsalis* Seale, 1917

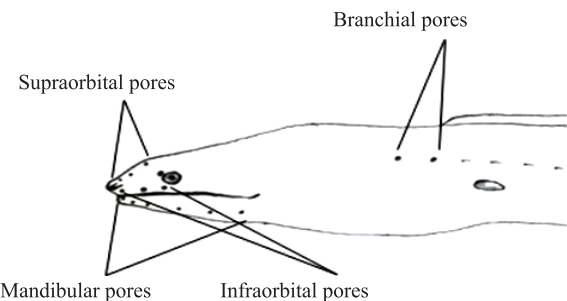


Fig. 4. Head pores of *G. dorsalis* Seale, 1917

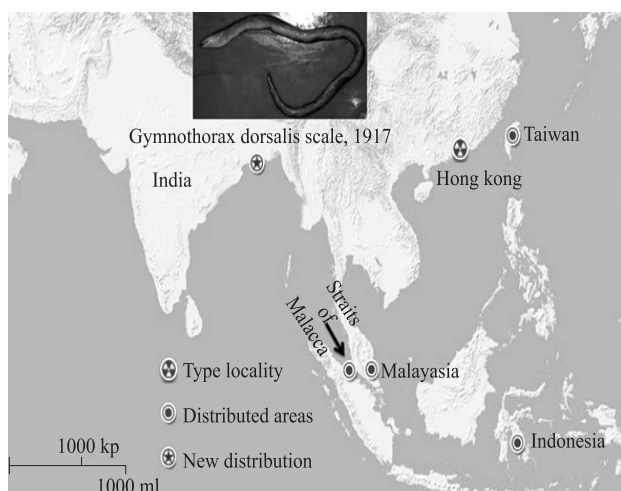


Fig. 5. Distribution map of *G. dorsalis* indicating collection points

Remarks: Moray eel species of Indo-Pacific region with indistinctive colouration (uniformly brown) are divided into two groups, one group of short and stout body with less than 150 total vertebrae and another group of elongated body with more than 150 vertebrae (Bohlke, 1997). There are 16 indistinct coloured species of morays reported with 8 in each group (Bohlke, 1997; 2000). Present paper reports for the first time, the occurrence of *G. dorsalis* from Indian coast, which belongs to the elongated group with 154 - 163 vertebrae (Bohlke, 1997; 2000). Among uniformly brown coloured moray eels, *G. dorsalis* is the third species after *S. sathete* and *G. prolatus* reported from Indian coast. Both *G. dorsalis* and *S. sathete* are similar in location of anus (present well before mid body) and eyes (close to snout tip than rictus). *G. dorsalis* markedly differ from the above two species with pale brown body having dark fins, body depth at gill opening 24 - 27 in TL; total vertebrae 154 - 163. In *S. sathete* body and fins are dark brown, extremely long, depth at gill opening 25 - 49 in TL, vertebrae 186 - 208 (Bohlke, 1997). *G. dorsalis* has three infraorbital pores (4 in *G. prolatus*) and 154-163 nos. of total vertebrae (182-187 in *G. prolatus*). The morphometric data of present species matches well with earlier description of Bohlke (1997) from a different location (Table 1).

The present report of *G. dorsalis* from Indian coast extends its distributional record further westwards in the Indian Ocean.

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