



Short Communication

Notes on the record of *Gymnothorax pseudotile* Mohapatra *et al.*, 2017 (Muraenidae: Muraeninae) from the Sundarbans, West Bengal, India

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Abstract

A moray eel, *Gymnothorax pseudotile* Mohapatra *et al.*, 2017, is recorded for the first time from the Sundarbans. Only one individual was collected from fishermen along with other materials. Brief notes on diagnostic characters, habitat ecology and behaviour as observed are presented in this paper.

Keywords: Conservation, *Gymnothorax pseudotile*, Habitat Ecology, Hotspecks, Sundarbans

Introduction

Indian Sundarbans, an extensive series of coastal mangrove forest, is characterised by high species richness and abundance in ichthyofauna. About 350 species of fishes belonging to 225 genera, 86 families distributed in 25 orders have been recorded from this region (Mishra and Gopi, 2017). However, only two species of moray eels are known to occur in Sundarbans till date, viz., *Gymnothorax tile* (Hamilton) and *Strophidon sathete* (Hamilton). The family Muraenidae is one of the most divergent groups of true eels, with 207 valid species in 16 genera and two subfamilies (Eschmeyer and Fong, 2017), of which 45 species are known from Indian waters, including Andamans (Rajan *et al.*, in press).

In the present study, a recently described species of moray eel, *Gymnothorax pseudotile* Mohapatra *et al.*, 2017, is recorded from the waters of Sundarbans for the first time. The description is based on one specimen collected from the buffer region of the Sundarban Tiger Reserve (STR) which is morphologically similar in all accounts to *G. pseudotile*, described from Digha, West Bengal (Mohapatra *et al.*, 2017).

Material and Methods

One specimen was collected from the buffer zone of Sundarbans Tiger Reserve (STR), West Bengal, India (22°04.957' N / 088°45.473' E) while conducting a survey on sawfishes (Pristidae) in the region. The fish were caught in a 'Benthi' net (Figure 1), a sort of purse seine, that was being operated by local fishermen within the permissible area (Figure 2).

The fish specimen was preserved in 10% formaldehyde and later shifted to 70% ethanol. Methods used are those of Bohlike (1989). Measurements were recorded to the nearest millimetre using a digital calliper. Vertebral count was made through radiography. The specimen was photographed prior to preservation (Figure 3, Figure 4) and deposited with National Zoological Collection, Zoological Survey of India (Z.S.I.), Kolkata. It is compared with the holotype and two paratypes held at the Fish Division, Z.S.I., Kolkata. Identification was following standard literatures (Bohlke *et al.*, 1999; Mohapatra *et al.*, 2017). Its behaviour was observed by keeping in an aquarium for considerable time.

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Figure 1. Motorised fishing boat near Bally-1 Island, buffer area of STR.



Figure 2. Entire haul of a 'Benthi' net including *Gymnothorax* sp.

Results

The study reveals the new record of *Gymnothorax pseudotile* Mohapatra *et al.* 2017 from the Sundarbans, West Bengal, an UNESCO Heritage site.

Taxonomic account

Order ANGUILLIFORMES Berg, 1943
 Family MURAENIDAE Rafinesque, 1810
 Genus *Gymnothorax* Bloch, 1795
Gymnothorax pseudotile Mohapatra *et al.*, 2017

2017. *Gymnothorax pseudotile* Mohapatra, Smith, Ray, Mishra and Mohanty, *Zootaxa*, **4286** (4): 587, Figure 1-3.

Material examined: ZSI F 12558/2, 1 ex, 330 mm TL, Near Bally-1 Island, Sundarbans Tiger Reserve, 31/12/2017, Priyankar Chakraborty.

Diagnostic characters: Body robust; anus at about mid body; head long: snout blunt with large eye located slightly closer to rictus than to the tip of the snout, lower jaw slightly shorter than upper jaw; gill opening broadly rounded, positioned below lateral midline; dorsal-fin origin above posterior half of gill opening; both dorsal and anal fin low with a pale margin; Intermaxillary teeth in 3 longitudinal rows, consisting of a median row of 3 depressible fang like teeth and single row of 6 teeth on each side. Infraorbital pores 3. Predorsal vertebrae-12, Preanal vertebrae-57, total vertebrae-127. Dark brown dorsally with small white dots scattered all over and ventral part pale whitish with small brown spots without reticulations. Dorsal and anal fin with pale margin. Head pores except branchial pores circled with dark brown.

Comparisons and proportional measurements of different body parts are given in Table 1.

Distribution: This species was only known from Digha, West Bengal. But, currently its range is extended to the Sundarbans Tiger Reserve, South 24 Paraganas, West Bengal.

Table 1. Proportional measurements of type materials and the collected specimen

Character	Collected Specimen	Holotype*	Paratypes*
Total Length	330 mm	470 mm	337-364 mm
Preanal in TL	1.89	2.0	1.9-2.0
Predorsal in TL	8.2	7.5	7.3-8.2
Head in TL	8.0	7.2	7.2-7.9
Body depth at GO in TL	21.0	16.8	16.8-21.1
Body depth at anus in TL	21.4	16.8	16.7-19.4
Snout in HL	6.5	5.9	6.0-7.1
Upper jaw in HL	3.0	3.1	3.1-3.4
Lower jaw in HL	3.1	3.3	3.3-3.6
Eye diameter in HL	11.49	13.0	11.4-12.8

* The proportions are following Mohapatra *et al.* (2017).



Figure 3. Intermaxillary teeth of the collected specimen (before preservation).



Figure 4. Photograph of the collected specimen before preservation.

Discussion

The species closely resembles *Gymnothorax tile* (Hamilton, 1822) which is also found in the region and possibly coexisting as both the species were collected from the same site. Both possess similar colour pattern. But has a more forward occurring dorsal fin origin, correspondingly fewer predorsal vertebrae (7-11), and distinctly different dentition (Mohapatra et al., 2017). The distinct differences between the two species are tabulated below (Table 2).

Habitat, Ecology and Behaviour

They are known in the region as ‘Tele-ban’, but the name usually refers to *G. tile* including this eel having small white spots all over. Benthic creatures, like eels, are more active during the night than during the day and almost exclusively caught on ‘Benthi’ nets except for some large specimens (>50 cms) which are occasionally caught on hook and line, called ‘Doun’, mostly caught during night. Though locally consumed, major use of ‘Tele-ban’ is for crab feed or crab bait which is done after salting and drying the fish. When stressed, they regurgitate their food which gives some idea of the prey items consumed which are mostly crustaceans like shrimps and occasionally fish of the family Engraulidae (on two occasions). They can swim backwards with ease. No conspecific aggression was observed when kept in an aquarium and though they would go into a feeding frenzy when food is given, but never even accidentally bite each other. It was also observed that the fish rely on tactile senses more than smell or sight. They would scour the floor of the tank for food and when a body part touched the food item, very swiftly bend the body towards the direction of the food and consume it. On the other hand, if food is dangled from top, they wouldn’t be able to pin point the location and move around ‘aimlessly’. The fish were able to distinguish the tactile sensations of conspecifics or that of other species from that of food items. This elaborate behaviour shows that they are truly benthic and hunt on the floor of the estuaries where they live.

Sundarbans’ estuarine fish diversity including marine species has been well documented in the last few decades (Mahapatra et al., 2014), but, still more needs to be investigated and much taxonomic work needs to be done (Mishra and Gopi, 2017). The discovery of the species presented in this paper shows the need for Sundarbans’ ichthyofauna and other estuarine and marine fauna to be inventoried thoroughly and documented, to analyse

Table 2. Distinction between the two cryptic species from Sundarbans, West Bengal

<i>Gymnothorax pseudotile</i> Mohapatra et al., 2017	<i>Gymnothorax tile</i> (Hamilton, 1822)
Dorsal fin origin above the posterior half of gill opening.	Dorsal fin origin above or before the anterior half of gill opening.
Dorsal and anal fins are low and have a pale margin.	Dorsal and anal fins are high and of same colour as of body, but no pale margin.
Intermaxillary teeth in 3 rows.	Intermaxillary teeth in 5 rows.

and update inventories periodically. Any future work in Sundarbans' estuarine/marine biodiversity conservation, in the protection of species, will greatly benefit from a clear understanding of the estuarine and marine fauna present. Research into the presence and distribution of species within Sundarbans and the identification of biodiversity hot-specks need to be prioritized for protection.

The study provides the first record of *Gymnothorax pseudotile* Mohapatra et al., 2017 from the Sundarbans, West Bengal suggesting a greater range of distribution including estuarine waters, the earlier record being from marine zone near Digha, West Bengal.

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