Short Research Article

An addition for the ichthyofaunal of India Mangroves (Sunderban Biosphere Reserve)

Abstract

Plaintail turkeyfish, *Pterois russelii* Bennett, 1831 had been reported from coastal parts of West Bengal, but so far not been recorded from India Mangroves. The current communication adds *P. russelii*, as a new record to the ichthyofaunal diversity of the Indian Mangroves, as well as Sunderban Biosphere Reserve. The specimen was collected from Canning fish landing area during local survey focused for the study of mangrove-associated fishes of Sunderban. Canning is located at the Transitional zone of Sunderban Biosphere Reserve. This is the first record of *P. russelii* from any Indian Mangrove areas.

Keywords: Canning, Ichthyofauna, Indian Mangrove, *Pterois*, Sunderban Biosphere Reserve, Turkey fish, West Bengal

1. Introduction

Sunderban is the largest single mangrove patch of the world and Indian part of Sunderban covers an area of 2114 sq. km [1]. Majestic mangroves of Indian Sunderban is popular worldwide due its fish faunal resources and small riverine channels, mangrove swamps acting as a natural nursery ground is the main reason behind the fact. Sunderban Biosphere Reserve, bears about 350 species of Fishes from 225 genera belonging to 86 families [2].

Family Scorpaenidae comes under the largest diverse order, Perciforms and mostly represented by the rock or reef associated fishes [3; 4]. Pterois is a genus of turkeyfishes under Scorpaenidae, represented by 12 valid species globally [5; 6]. So far only five of the species has been recorded from Indian Region and only two of them, namely *P. russelli* Bennett, 1831 and *P. volitans* (Linnaeus, 1758) has been recorded from West Bengal State [7; 8]. From all Indian mangrove patches Scorpaenidae is presented by only one species, *S. guamensis* (Quoy & Gaimard 1824) from Andaman & Nicobar Islands [9]. Indian Sunderban is devoid of any Scorpionfishes, henceforth this is the first record of Scorpaenidae, *P. russelli* from Indian Sunderban as well as this communication provides first evidence for finding Pterois from Indian mangrove habitats.

2. Material and Methods

The specimen of *Pterois russelli* Bennett, 1831 was collected from the Matla River, Canning (22°19'10.92"N; 88°40'27.58"E) which is located at the transitional zone of Sunderban Biosphere Reserve on 06th November, 2021 - during local survey to study mangrove associated ichthyofaunal of Indian Sunderban (Fig 1). After collection, specimen was brought to the laboratory for photography and there after all the morphometric measurements were taken (upto .01 mm) and preserved in the 10% Formaldehyde solution. Lengths measurements were taken using electronic calipers. The preserved specimen is deposited in the National Zoological Collections of the Zoological Survey of India, Sunderban Regional Centre. The specimen was

identified Following Allen & Erdmann, 2008 [10]. Taxonomic classification of this species is followed by World Register of Marine Species [3].

3. Results

The details of the newly reported species is given below:

Phylum : Mollusca
Class : Actinopteri Cope, 1871
Order : Perciformes Bleeker, 1863
Family : Scorpaenidae Risso, 1827
Genus : Pterois Oken, 1817

***Pterois russelii* Bennett, 1831**

Common Name - Plaintail turkeyfish
IUCN status – Least Concern (IUCN Red List 3.1, Date assessed: 03 March 2015)
Commercial usage – Minor commercial and Public aquarium, venomous [11]

1831. ***Pterois russelii*** Bennett [E. T.] (ex Russell), Proceedings of the Committee of Science and Correspondence of the Zoological Society of London 1830-31, 1:128 (Coromandel coast, India, eastern Indian Ocean), No Type specimen preserved.

3.1. Material examined: 1 semi adult, Matla River, Canning, West Bengal, India (22°19'10.92"N; 88°40'27.58"E), 06.11.2021, Collector: Dr. J.S. Yogesh Kumar, Accession Number: NZC/ZSI/SbRC/KN5151 (Deposited in the National Zoological Collections of ZSI-Sunderban Regional Centre) (Fig 2).

3.2. Description: Length - Head Length (HL) 51.2 cm; Eye Diameter 7 cm; Inter Orbital Length 9.7cm; Snout Length 20.7cm; Pectoral Fin Length 106.4 cm; Pelvic ¬Fin length 58.4 cm; Anal Fin Length 21.3 cm; Pre-dorsal Length 49.5 cm; Pre-anal Length 97.4 cm; Pre-pectoral Length 53.1 cm; Pre-pelvic Length 57 cm; Body Depth 51 cm; Upper Jaw Length 24.4 cm; Caudal Peduncle Length 21.5 cm; Caudal Peduncle Depth 14.3 cm; Caudal Fin Length 46.8 cm.

Fin - Dorsal-fin with XIII spine, 11fin rays; anal-fin with III spine, 8 fin rays; pelvic-fin with I spine, 5 fin rays; pectoral-fin with 13 fin rays and caudal fin with 14 soft rays. Scales: Number of lateral-line scales 28; scales above lateral line 10; scales below lateral line 14; scale rows between last dorsal-fin spine base and lateral line 9; predorsal-fin scale rows 4; cheek scale (horizontal) row 3; cheek scale (oblique) row 6; cheek scale (vertical) row 4. Gill: Gill rakers 5 + 11 (2 rakers on hypobranchial).

3.3. Coloration & Shape - Body selender and elongated, Laterally compressed, depth moderate. Caudal peduncle short, low, depth less than the length. Head large, length greater than body depth. A pair of short barbells on tip of snout (visible in fresh specimen). A long tentacle on supra ocular characterized with wavy lateral ridges. There are two small leaf-like flaps on pre opercle margin. A very small skin flap present anterodorsally on orbit surface. Two medium sized tentacle present on both side of upper lip of lip joining portion. Head and body covered with small cycloid scales. Jaws, snout, interopercular and occipital area without scales. Out of 13 dorsal spines 6th one is longest, in the anal fin 3rd spine is much longer than other (Fig 2).

3.4. Comments - *Pterois russelii* Bennett, 1831 is a mostly a reef associated fish. However, present collection locality of the species is full muddy bottom. The collection time was during end high tide and water column height was almost 6 - 8 feet. Sanity level of river water was 3.7 ppt and pH of the water was 8.3 with a water temperature of 21.3°C. The specimen has been collected from a local catch at the mentioned coordinates from a local fisherman using hand rowed country craft and floating trap nets for collecting fishes.

4. Discussion

Pterois is a genus mainly occupying benthic habitats and can be found in the marine reef areas [12]. *P. russelli* has been recoded from almost all of the coastal states of India, West Bengal, Orissa, Andhra Pradesh, Tamil Nadu, Kerala, Goa, Gujrat [11]. And all this states except west Bengal has reef areas and for that reason finding *P. russelii* from this areas would not raise any question regarding its presence. As for the state of West Bengal, P. russelii has been reportd from Digh and which is a typically marine side and so it is possible to find the species there. Although evident is also there of *P. russelli* being present from muddy substratum, but it is quite uncommon or rare to find this species from a mangrove habitat [13]. As also previously mentioned only one Pterois species is present from Indian mangroves. Sen *et al.*, 2021 reported such a reef fish named *Abudefduf vaigiensis* (Quoy & Gaimard, 1825) from the Indian Sunderban and raised a question about the presence of hidden rocky substratum in the area [14]. But there collection locality is far south in Sunderban, but Canning (present collection) is almost 80 km northwards in the Sunderban and siltation is far high at this point of Matla river and thus *P. russelii* favoring muddy substratum may be a reason behind this finding from an mangrove ecosystem. As for the Matla river , it is only getting water from the sea, almost acting like a backwater system and fresh water mixing is very less during the winter season and during this collection time the salinity was quite high compared to the other time as it was during high tide and a winter season when the rainfall is less making fresh water discharge even less and raising the salinity. During the collection time temperature is also higher than the normal (IMD-http://imdkolkata.gov.in/acwc/rfdistribution/view), so it might have been possible that the fish is coming far from south, directly from the sea. Therefore, these raises a question on how much pure marine species are coming, inland to this far distance from sea and how they are tolerating a high level of salinity variation ? To answer this question, further investigation by collecting data on ichthyofaunal diversity as well as physio-chemical data on different river channels are required.

Sunderban being such an productive ecosystem harbors a lot of fish fauna and even 70 percent of Sunderbans financial support has been drawn from aquatic natural resources. A lot of work has been done to study the ichthyofaunal resources from several decades ago. However, even now this new record provides an evidence of inadequate data. Therefore, a long term and continuous study to record the Ichthyofaunal diversity would be necessary for understanding the long-term effects on the ecosystem and ichthyofaunal resources. This study reports the presence of *P. russelii* from Sunderban Biosphere Reserve as well as from Indian mangroves and adds to the rockfishes diversity catalogue of Indian Mangroves.

Reference

1. FSI. State of Forest Report Mangroves. Forest Survey of India (Ministry of Environment &Forests). Dehradun. 2017;55-61.

2. Mishra SS, Gopi KC. Fish diversity of Indian Sundarban. In: Fauna of Sundarban Biosphere Reserve. Zoological Survey of India, Kolkata. 2017; 107-127.
3. WoRMS Editorial Board. World Register of Marine Species. Accessed 2022-04-08. Available: https://www.marinespecies.org. doi:10.14284/170
4. Love MS. Life history aspects of 19 rockfish species (Scorpaenidae: Sebastes) from the Southern California Bight. NOAA Technical Report NMFS 87. 1990; 1 – 38.
5. Matsunuma and Motomura. Pterois paucispinula, a new species of lionfish (Scorpaenidae: Pteroinae) from the western Pacific Ocean. Ichthyol. Res. 2014;62: 327-346.
6. Matsunuma and Motomura. Redescriptions of Pterois radiata and Pterois cincta (Scorpaenidae: Pteroinae) with notes on geographic morphological variations in P. radiata. Ichthyol. Res. 2015; 63(1): 145-172.
7. Chandra K, Raghunathan C, Mondal T. Faunal Diversity of Biogeographic Zones : Coasts of India. 2020; 1-807. (Published by the Director, Zool. Surv. India, Kolkata).
8. Yennawar P, Mohapatra A, Tudu PC. An account of Ichthyofauna of Digha coast, West Bengal. Rec. zool. Surv. India. 2017; 117(1): 4-21.
9. Mishra SS, Gopi KC, Kosygin L, Rajan PT. Ichthyofauna - Fishes. In: Faunal Diversity of Mangrove Ecosystem in India. 2019; 539-586. (Published by the Director, Zool. Surv. India, Kolkata)
10. Allen GR, Erdmann MV.. Pterois andover, a new species of scorpionfish (Pisces: Scorpaenidae) from Indonesia and Papua New Guinea. Int. J. Ichthyol. 2008; 13(3-4):127-138.
11. Froese R, Pauly D. (eds.) Fishbase, world wideweb electronic ublicationAvailable:http://www.fishbase.org version(04/2022)
12. Galloway KA, Porter ME. Mechanical properties of the venomous spines of Pterois volitans and morphology among lionfish species. Journal of Experimental Biology. 2019; 222(6): 197- 905.
13. Kuiter RH, Tonozuka T. 2001. Pictorial guide to Indonesian reef fishes. Part 1. Eels-Snappers, Muraenidae - Lutjanidae. Zoonetics, Australia. 1-302.
14. Sen A, Sreeraj CR, Raghunathan C, Chandra K. First report of the fish family Pomacentridae (Damsel fishes) from Sunderban biosphere reserve, India. International Journal of Fisheries and Aquatic Studies. 2021; 9(1): 142-145

Fig 1: Map of showing the collection sites from Sunderban Biosphere Reserve.

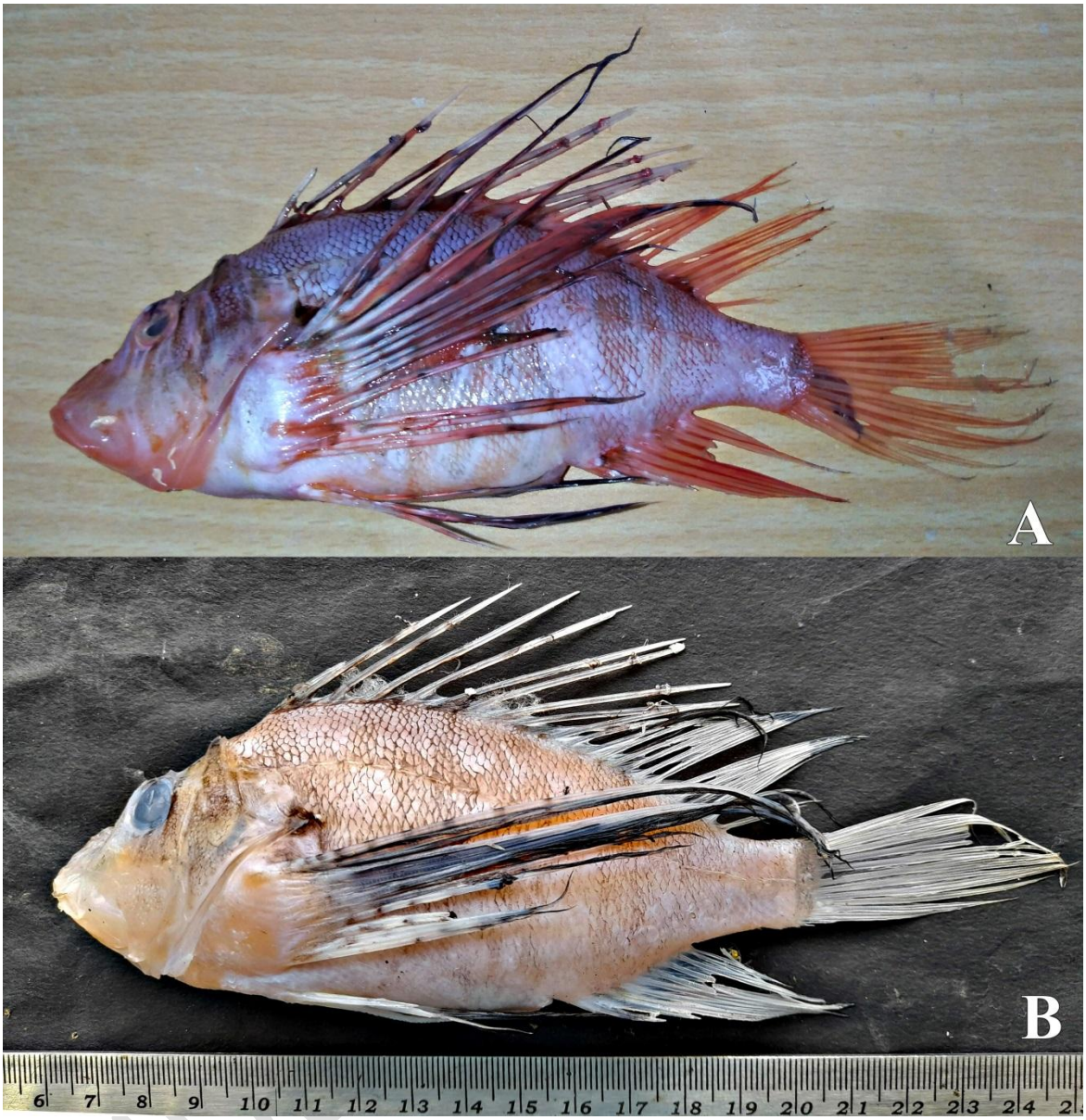

Fig 2: *Pterois russelii* Bennett, 1831: A – Fresh & B – Preserved specimen, deposited in Zoological Survey of India, Sunderban Regional Centre.