

Short Research Article

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

Abstract

Plaintailturkeyfish, *Pterois russellii* 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. russellii*, as a new record to the ichthyofaunal diversity of the Indian Mangroves, as well as Sunderban Biosphere Reserve. The specimen was collected from [the](#) Canning fish landing area during [a](#) local survey focused ~~for~~ [on](#) the study of mangrove-associated fishes of Sunderban. Canning is located ~~at~~ [in](#) the Transitional zone of Sunderban Biosphere Reserve. This is the first record of *P. russellii* 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~~ [in](#) the world and [the](#) Indian part of Sunderban covers an area of 2114 sq.km [1]. Majestic mangroves of Indian Sunderban ~~is~~ [are](#) popular worldwide due ~~to its~~ [their](#) fish faunal resources and small riverine channels, mangrove swamps acting as a natural nursery ground ~~is~~ [are](#) 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 [is](#) mostly represented by the rock or ~~reef~~ [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~~ [have](#) been recorded from Indian Region and only two of them, namely *P. russellii* Bennett, 1831 and *P. volitans* (Linnaeus, 1758) ~~has~~ [have](#) 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. russellii* from Indian Sunderban as well as this communication provides [the](#) first evidence for finding *Pterois* from Indian mangrove habitats.

2. Material and Methods

The specimen of *Pterois russellii* 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 [the](#) local survey to study mangrove associated ichthyofaunal of Indian Sunderban (Fig 1). After collection, [the](#) specimen was brought to the laboratory for photography, and thereafter 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 By~~ Allen & Erdmann, 2008 [10]. ~~The~~ taxonomic classification of this species is followed by ~~the~~ World Register of Marine Species [3].

3. Results

The details of the newly reported species ~~is-are~~ 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-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 9.7 cm; Snout Length 20.7 cm; 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, 11 fin 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 slender 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 ~~the~~ snout (visible in ~~the~~ fresh specimen). A long tentacle on supra ocular characterized ~~with-by~~ wavy lateral ridges. There are two small leaf-like flaps on ~~pre-pre~~-opercle margin. A very small skin flap ~~is~~ present anterodorsally on ~~the~~ orbit surface. Two ~~medium-medium~~-sized tentacles ~~sare~~ present on both sides ~~of the~~ upper lip of ~~the~~ lip joining portion. ~~The~~ Head and body ~~are~~ covered with small cycloid scales. Jaws, snout, interopercular and occipital area without scales. Out of 13 dorsal spines 6th, one is ~~the~~ longest, ~~and~~ in the anal fin, 3rd spine is much longer than ~~the~~ other (Fig 2).

3.4. Comments - *Pterois russelii* Bennett, 1831 is a mostly a ~~reef-reef~~-associated fish. However, ~~the~~ present collection locality of the species is ~~the~~ full muddy bottom. The collection time was during ~~the~~ end ~~of~~ high tide and ~~the~~ water column height was almost 6 - 8 feet. ~~Sanity~~ ~~The sanity~~ level of river water was 3.7 ppt and ~~the~~ 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-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. russelii* has been recorded from almost all of the coastal states of India, West Bengal, Orissa, Andhra Pradesh, Tamil Nadu, Kerala, Goa, ~~and~~ Gujrat [11]. And all ~~this-these~~ states except ~~west-West~~ Bengal ~~has have~~ reef areas and for that reason finding *P. russelii* from ~~this these~~ areas would not raise any question regarding its presence. As for the state of West Bengal, *P. russelii* has been reported ~~ed~~ from Digh and which is a typically marine side and so it is possible to find the species there. Although ~~evident-evidence~~ is also there of *P. russelii* being present from ~~the~~ muddy substratum, ~~but~~ it is quite uncommon or rare to find this species ~~from-in~~ a mangrove habitat [13]. As also previously mentioned only one Pterois species is present ~~from-in~~ 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-their~~ 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 freshwater 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 freshwater discharge even less and raising the salinity. During the collection time temperature is also higher than the normal (IMD-<http://imd.kolkata.gov.in/acwc/rfdistribution/view>), so it might have been possible that the fish is coming far from ~~the~~ south, directly from the sea. Therefore, ~~these this~~ raises ~~a-the~~ question ~~on~~ ~~of~~ how ~~much-many~~ pure marine species are coming inland to this far distance from ~~the~~ 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-is~~ required.

Sunderban being such ~~an~~ productive ecosystem harbors a lot of fish fauna and even 70 percent of Sunderban's 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-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. *Pteroispaucispinula*, a new species of lionfish (Scorpaenidae: Pteroinae) from the western Pacific Ocean. Ichthyol. Res. 2014;62: 327-346.
6. Matsunuma and Motomura. Redescription of *Pteroisradiata* and *Pteroisincincta* (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. *Pteroisandover*, 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 wide web electronic publication Available: <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. Kuitert 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

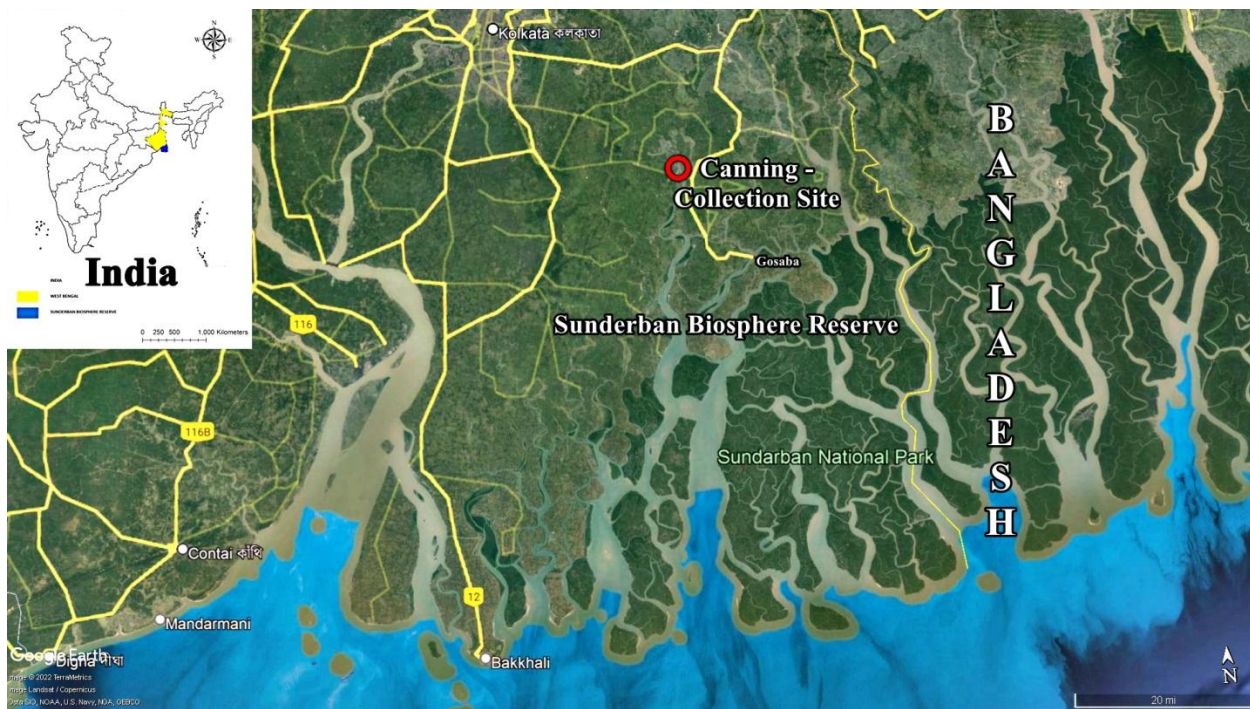


Fig 1: Map of showing the collection sites from Sunderban Biosphere Reserve.

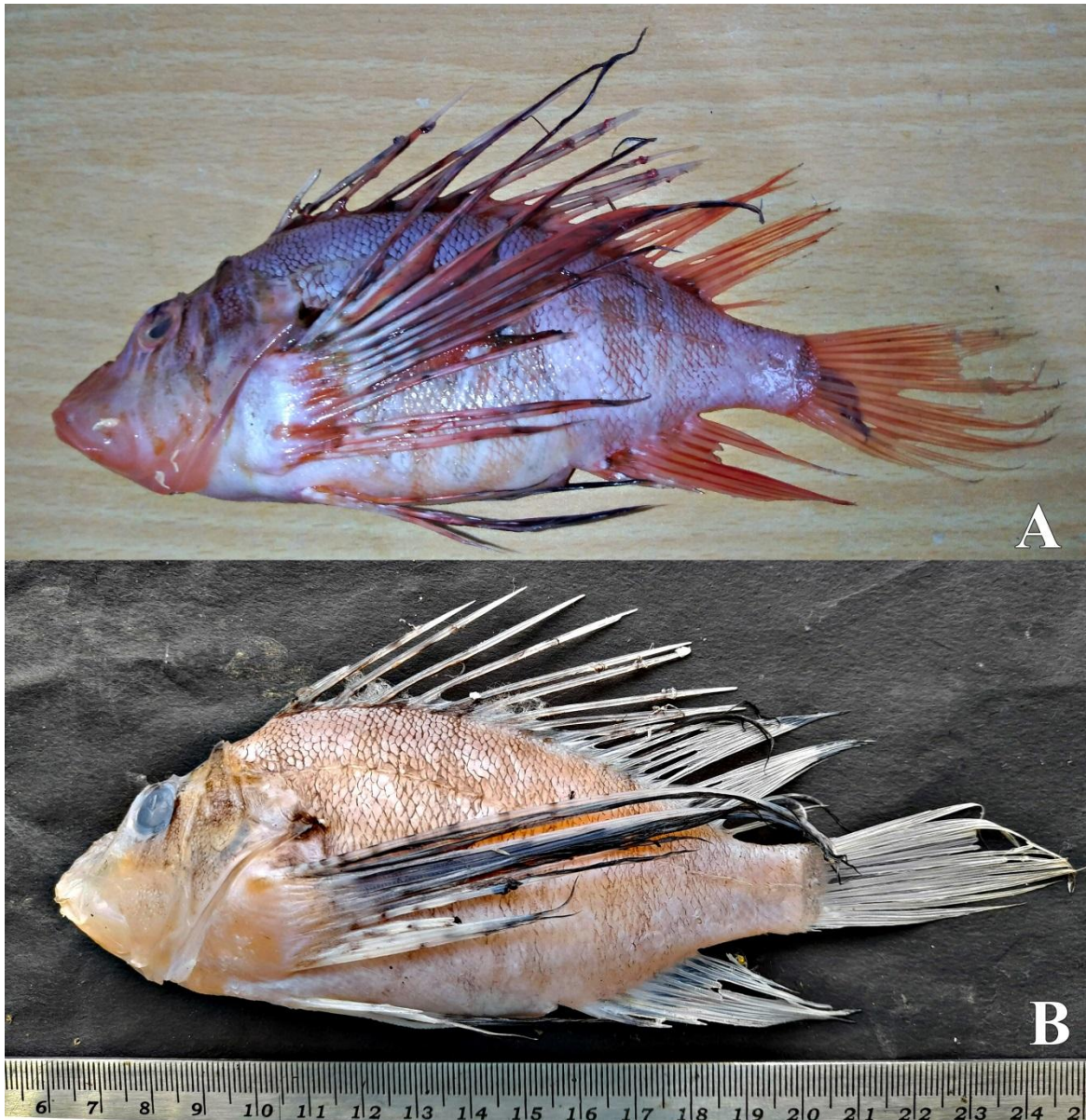


Fig 2: *Pterois russelii* Bennett, 1831: A – Fresh & B – Preserved specimen, deposited in Zoological Survey of India, Sunderban Regional Centre.