

# New record of *Satyrichthys milleri* Kawai, 2013 (Peristediidae) from Gulf of Mannar, Bay of Bengal

## Abstract

A specimen of *Satyrichthys milleri* Kawai, 2013 with the standard length of 221 mm was collected from Tuticorin fishing harbour, south east coast of India on 23rd October 2014. It was collected by bottom trawlers at a depth ranges from 200-250 m. This is the first attempt to provide a detailed description of the species from the Gulf of Mannar. This record was compared with the first reported specimen in order to compare the external morphology with known specimen. The present study constitutes an extension of the known distributional range of this species from the Andaman to the Gulf of Mannar.

**Keywords:** Fishing harbor, Trawler, Depth, Range extension, Gulf of Mannar

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## Introduction

The *scorpaeniform* armoured sea robin (Peristediidae) generally, the entire genus from deep waters of tropical and temperate oceans of the world, the depths ranging from about 50 to 800m.<sup>1,2</sup> Peristediidae characterized by a body entirely enclosed by four rows of spinous bony plates (scutes) on each side and a large bony head with spines and ridges; each first infraorbital (lacrymal) anteriorly extending in distinct rostral projections; barbels on the lower jaw and pectoral fins with the two ventral most fin rays free and enlarged.<sup>1,3</sup>

About 33 peristediidae species in six genera (*Gargariscus* Smith 1917, *Heminodus* Smith 1917, *Paraheminodus* Kamohara 1958, *Peristedion* Lacepede 1801, *Scaliscus* Jordan 1923 and *Satyrichthys* Kaup 1873).<sup>1</sup> Kawai<sup>1</sup> revised the genus-level classification of the armoured sea robins in a comprehensive study on the phylogeny of peristediid fishes and separated the two closely related genera *Satyrichthys* and *Scaliscus*.

The Indo-Pacific genus *Satyrichthys* Kaup, 1873<sup>1</sup> are characterized by their lack of upper jaw teeth, possession of a smooth lateral margin of the head, posterior bony plates in the lower lateral rows separated on the ventral midline, no branched barbels on the lower jaw except for the posterior-most lip and chin barbels and fewer than 20 soft rays in the dorsal and anal fins.<sup>1,2</sup> In his recent review of the genus *Satyrichthys* recognizes seven species: *Satyrichthys* was revised by Kawai<sup>2</sup> who found seven valid species *Satyrichthys moluccensis*, *Satyrichthys lateps*, *Satyrichthys Rieffeli*, *Satyrichthys Welchi*, *Satyrichthys Clavilapis*, *Satyrichthys Longiceps* and *Satyrichthys Milleri*.<sup>2</sup> The report of *S. milleri* described in the present study is the first documentation for Tuticorin coast, Gulf of Mannar.

## Materials and methods

*Satyrichthys milleri* was collected from Tuticorin fishing harbour, Gulf of Mannar On 23rd October 2014 from the by-catch landed by deep sea trawler. The specimen was caught approximately 50Km east of Tuticorin (8°44'46.97"N and 78°37'24.10"E) in Gulf of Mannar at a depth of 200- 250m (Figure 1).

## Measurements and Counts

The specimens were injected with 5% formalin and brought to the laboratory in containers filled with 5% formalin for detailed

examination. The morphometric character of the specimen was measured with a digital vernier calliper with an accuracy of 0.1mm by Kawai et al.<sup>4</sup>

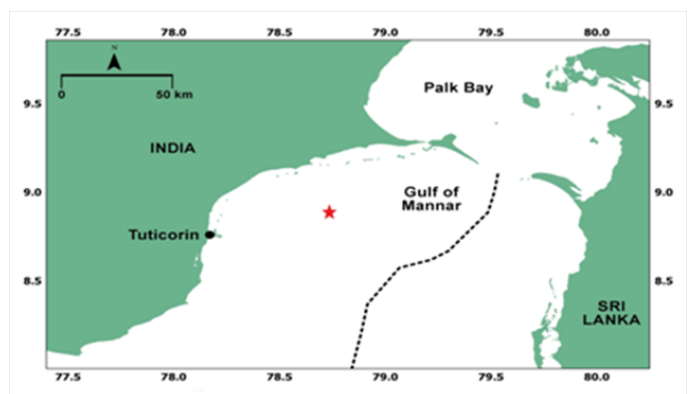


Figure 1 Study Area (red).

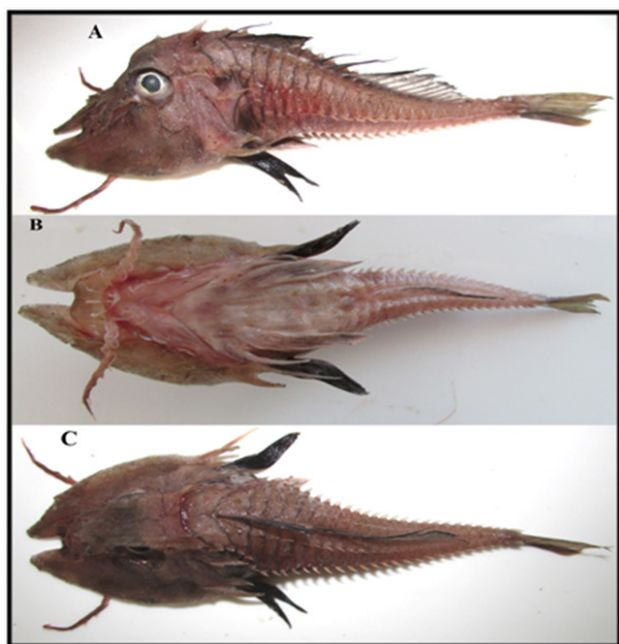
## Result

### Description

Body fusiform covered with bony plates; Head large depressed and extremely expanded around lateral edges; Mouth large, inferior; Posterior tip of upper jaw not reaching to below anterior border of orbit, lower jaw reaching below anterior border of orbit and jaws; vomer and palatine toothless; Flat and triangular rostral projections on both sides being parallel, length as long as its width at base. No rostral, small and stout post temporal spine with ridge. Longitudinal ridge are running from preopercle to rostral projection; Two opercular spines one uppermost smaller and lowermost larger with a ridge. Gill rakers on the first arch resemble a stick with minute spines on inner side (Figure 2A). The morphometric characters and meristic counts of the collected specimens were taken and compared with existing specimens were shown in Table 1.

### Barbels

Barbels present on the lip and chin; in lips three unbranched barbels on the anterior side and single long branched barbels on the posterior side; four unbranched on chin (Figure 2B).



**Figure 2** Side (A), Ventral (B) and Dorsal (C) view of *Satyrichthys milleri* from Gulf of Mannar.

**Table 1** Morphometric and meristic characters of *Satyrichthys milleri* off Gulf of Mannar

Characters (mm)	SL %	Kawai, 2013
Standard Length	221.22	- 59.9-265
Body Depth	45.02	20.35 20.3-27.2
Body Width	26.18	11.83 11.8-19.6
Head Length	95.44	43.14 41.8-49.3
Head Depth	44.89	20.29 20.3-25.9
Head Width	76.28	34.48 34.8-47.2
Distance from Snout to Dorsal Fin	90.54	40.92 40.8-47.7
Distance from Snout to Anal Fin	118.03	53.35 54.1-60.6
Distance from Snout to Anus	104.12	47.06 47.7-53.5
Snout Length	46.58	21.05 21.0-24.1
Rostral Projection Length	16.45	7.43 7.5-10.6
Longest Barbel Length	66.13	29.89 30.4-45.2
Upper Jaw Length	28.97	13.09 13.7-17.5
Lower Jaw Length	35.01	15.82 15.4-19.3
Orbital Diameter	18.58	8.39 8.7-13.2
Inter Orbital Width	19.73	8.91 9.0-11.9
Pectoral Fin Length	47.02	21.25 16.2-22.4
Length of Upper Detached Pectoral Fin Ray	34.12	15.42 18.2-24.9
Length of Lower Detached Pectoral Fin Ray	44.61	20.16 14.7-20.7
Pelvic Fin Length	43.82	19.8 21.3-27.1
Length of First Dorsal Spine	20.99	9.48 8.1-12.9
Caudal Peduncle Length	25.15	11.36 11.0-14.2
Caudal Peduncle Depth	10.6	4.79 3.2-4.2

### Bony plates

Body bony plates arranged in four horizontal rows, each plate with one sharp backwardly directed spine. The dorsal rows reached up to caudal peduncle, anterior most bony plate in dorsal row largest and ventral row ends before the anus; Anterior five bony plates in upper lateral row small; no plates with a small forwardly directed spine; Lower lateral row terminating on caudal peduncle (Figure 2A & 2C).

### Fins

Dorsal fin originates between first and second bony plates in dorsal row end and on anterior portion of caudal peduncle. Anal fin originating posterior to anus; Pectoral fin reaching to base of first anal fin ray; lower two rays completely free and greatly thickened, upper ray longer than lower. Pelvic fins reaches up to anus; caudal fin weakly emarginated (Figure 2A & 2C).

### Colour

In fresh specimen, head and body dark brown dorsal and pectoral fins, except for free rays and posterior half of longest barbels blackish. Anal, pelvic and caudal fins were dark brown and two free pectoral fin rays brown in colour (Figure 2A).

### Distribution

Previously, it's known from East China Sea, Taiwan, Philippines, Indonesia, Andaman Sea, Vanuatu and Fiji (Depth of 259–860 m) and present record of Gulf of Mannar from Bay of Bengal (200-250).

### Remark

*Satyrichthys milleri* is distinguished from its congeners by having equilateral-triangular rostral projections, four lip and four chin barbells and no anterior directed spines on the upper lateral row of the caudal peduncle.

### Discussion

*Satyrichthys* is easily distinguished from all congeners in lacking antrorse spines on the posterior bony plates of the lower lateral row and triangular rostral projections. The four (rarely five) lip barbels in *S. milleri* also differs from the two (rarely one) in *S. clavilapis*, two in *S. longiceps* and *S. rieffeli* and three in *S. moluccensis*.

In addition, *S. milleri* is separable from all species of *Satyrichthys*, except *S. laticeps*, in having 4 chins. The present record of *Satyrichthys milleri* was newly invented species previously known from East China Sea, Taiwan, Philippines, Indonesia, Andaman Sea, Vanuatu and Fiji, in depth ranges from 259-860 m and the nearest known record of *Satyrichthys milleri* is from the Andaman Sea.

Previously, there was no record from this genus *Satyrichthys*, this is the first inventory adds to our knowledge of species diversity of Gulf of Mannar from Bay of Bengal, especially southeast coast of India. It is assumed that the southeast coast of India contains as many species as the entire western Indian Ocean because of, the long stretch of coral islands along the Gulf of Mannar and Andaman Nicobar Islands increases the chance of species abundance and richness in the southeast coast of India. During recent years, great numbers of species have been described recorded from the east coast of India.<sup>5-12</sup>

The evident bio-inventory trend shows that in a near future number of fauna species will be documented from Indian waters mainly through exploration of new fishing ground or habitat shift of species from the native regions due to the climate influence migration. The present study is raising the better understanding of the behavior of the deep-sea fishes diversity in the south east coast of India to the researchers.

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## Conflicts of interest

None.

## References

1. Kawai T. Phylogenetic systematics of the family Peristediidae (Teleostei: Actinopterygii). *Species Diversity*. 2008;13:1–34.
2. Kawai T. Revision of the peristediid genus *Satyrichthys* (Actinopterygii: Teleostei) with the description of a new species. *S milleri* sp nov *Zootaxa*. 2013;3635(4):419–438.
3. Miller GC, Richards WJ. Peristediidae. In: Carpenter KE (Ed.), The living marine resources of the Western Central Atlantic. Volume 2: Bony fishes part 1 (*Acipenseridae* to *Grammatidae*). FAO Species Identification guide for fishery purposes and American society of ichthyologists and herpetologists special publication No. 5. FAO Rome, USA. 2002;2(5):1278–1285.
4. Kawai T, Imamura H, Nakaya K. *Paraheminodus kochiensis* Kamohara, 1957 (Teleostei: Peristediidae), a junior synonym of *Paraheminodus murrayi* (Günther 1880), with a comparison of *Paraheminodus murrayi* and *Paraheminodus laticephalus* (Kamohara 1952). *Ichthyol Res*. 2004;51:73–76.
5. Kannan K, Arumugam G, Sathakkathullah MS, et al. First record of *Parapercis clathrata* (Perciformes: Pinguipedidae) from Indian waters. *Marine Biodiversity Records*. 2012;5(54):1–3.
6. Zacharia, PU, Kannan K. First record of Polka-dot ribbonfish *Desmodema polystictum* (Pisces: Trachipteridae) from Indian waters. *Marine Biodiversity Records*. 2012;5(8):1–4.
7. Kannan K, Sureshkumar K, Ranjith L, et al. First record of the two-stripe goby, *Valenciennesa helsdingenii* (Gobiidae Gobiiformes) from the southeast coast of India. *ZooKeys*. 2013;323:91–97.
8. Kannan K, Joshi KK, Sajan John, et al. New record of *Neobythites multistriatus* (Pisces: Ophidiidae) from Bay of Bengal, south-east coast of India. *Marine Biodiversity Records*. 2013;6:83e.
9. Kannan K, Sajan John, Joshi KK, et al. First record of *Neobythites stefanovi* (Teleostei: Ophidiidae) from Indian waters. *Marine Biodiversity Records*. 2013;6:71e.
10. Kannan K, John Sajan, Johnson JA, et al. First record of *Striated fusilier* *Caesio striata* Ruppell 1830 (Teleostei: Caesionidae) from Indian waters. *Marine Biodiversity Records*. 2013;6(106):1–3.
11. Kannan K, Ranjith L, Joshi KK, et al. First record of *Grammonus robustus* Smith & Radcliffe 1913 (Ophidiiformes: Bythitidae) from Indian waters. *Marine Biodiversity Records*. 2014;7(57):1–4.
12. Ranjith L, Kannan K, Suresh Kumar K, et al. Description on *Cheilodipterus macrodon* (Lacepede 1802) (Perciformes: Apogonidae) from Gulf of Mannar, Southeast coast of India. *Thalassas*. 2015;31(2):55–60.