

## FIRST RECORD OF A SHRIMP GOBY, *MYERSINA YANGII* (ACTINOPTERYGII: GOBIIFORMES: GOBIIDAE), FROM INDIAN WATERS

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**Abstract.** A shrimp-associated goby, *Myersina yangii* (Chen, 1960), is reported from the east coast of India, based on a single specimen. It measured 61.16 mm in standard length. This finding represents the second record of the genus *Myersina* and the first record of *M. yangii* from Indian waters. The species is discussed herein with its meristic and morphometric characteristics.

**Keywords:** range extension, shrimp-associate, east coast of India, new record, *Myersina*, *Cryptocentrus*

### INTRODUCTION

Shrimp gobies are small gobies having facultative or obligate relation with alpheid shrimps (Decapoda: Caridea) and live commensally for their mutual benefit (Allen and Erdmann 2012, Hoese et al. 2016). According to Karplus and Thompson (2011) more than 20 genera of gobies have been reported to live in association with burrowing alpheid shrimps and that many of them are not taxonomically related and do not represent a monophyletic group. However, as presented in Allen and Erdmann (2012), Indo-Pacific shrimp gobies are currently represented by 11 genera, viz. *Amblyeleotris* Bleeker, 1874, *Cryptocentrus* Valenciennes, 1837, *Cryptocentroides* Popta, 1922, *Ctenogobiops* Smith, 1959, *Lotilia* Klausewitz, 1960, *Mahidolia* Smith, 1932, *Myersina* Herre, 1934, *Psilogobius* Baldwin, 1972, *Stonogobiops* Polunin et Lubbock, 1977, *Tomiyamichthys* Smith, 1956, *Vanderhorstia* Smith, 1949. Winterbottom (2002) redefined the genus *Myersina* and separated it from the genus *Cryptocentrus*. According to Greenfield and Randall (2018), there were nine valid species of the genus *Myersina*, viz., *Myersina adonis* Shibukawa et Satapoomin, 2006, *Myersina balteata* Greenfield et Randall 2018, *Myersina crocata* (Wongratana, 1975), *Myersina filifer* (Valenciennes, 1837), *Myersina lachneri* Hoese et Lubbock, 1982, *Myersina macrostoma* Herre,

1934, *Myersina nigrivirgata* Akihito et Meguro, 1983, *Myersina pretoriusi* (Smith, 1958), and *Myersina yangii* (Chen, 1960). Only one species of this genus, *M. filifer*, have hitherto been recorded from Indian waters (Ray et al. 2018, Roy et al. 2019). During a visit to Royapuram fishing harbor located in southern India, a female specimen of *Myersina yangii* was encountered in bycatch of trawl landing. The presently reported study provides the first record of *M. yangii* from Indian waters.

### MATERIALS AND METHODS

A single female goby specimen was collected from trawl bycatch of Royapuram fishing harbor (13°07'24.49"N, 080°17'52.20"E), Tamil Nadu, east coast of India on 22 December 2018. The identification of the specimen was based on the morphometric and meristic characters given by Chen (1960) and Winterbottom (2002). The specimen is also compared with two other species described by Shibukawa and Satapoomin (2006) and Greenfield and Randall (2018). Measurements were made by using Mitutoyo CD-6"ASX digital caliper to the nearest 0.1 mm, and the results were expressed in % of standard length (SL) following Greenfield and Randall (2018). Lateral scales, opercular pores, and fin rays were counted with the aid of a stereo zoom microscope. Pores and sensory papillae in terms of their nomenclature followed

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Akihito et al. (1984). The specimen was deposited and cataloged in the National Marine Biodiversity Museum at ICAR—Central Marine Fisheries Research Institute, Kochi, India (GB: 31.66.93.6).

## RESULTS

The genus *Myersina* can be defined by the presence of an elongate first dorsal fin, at least in adult males, two preopercular pores, sensory papillae on cheek in a well-developed transverse pattern, gill membranes fused in the ventral midline and either fused to the isthmus or forming a free fold over it, cycloid scales only on the body, and midline of predorsal region scaleless (Winterbottom 2002). Owing to presence of these characters, the collected specimen is identified as *Myersina yangii*.

Family GOBIIDAE

### *Myersina yangii* (Chen, 1960)

(Fig. 1; Table 1)

**Material examined.** GB: 31.66.93, 6 ex. ♂, 61.16 mm SL, Royapuram fishing harbor, Chennai, Tamil Nadu coast, India (13°07'24.49"N, 080°17'52.20"E), P. Kodeeswaran, 22 December 2018.

**Type locality:** Taiwan.

**Diagnosis.** Apart from presence of generic characters mentioned above, the specimen is diagnosed by the following meristics. First dorsal fin with six spines, second dorsal fin with one spine and 11 soft rays; anal fin with one spine and 11 soft rays; segmented caudal-fin rays 8 + 8 including 7 + 7 branched rays; pectoral fin with 18 rays; pelvic fin with 1 spine and 5 rays. Lateral scales 86, transverse scales 38 from origin of first dorsal fin, 33 from origin of second dorsal downward. Body with cycloid scales, midline of predorsal region scaleless. Spinous dorsal fin produced into filaments, first spine longest. Gill membranes fused in ventral midline. Sensory pores paired. Pores E, F, and H on anterior oculoscapular canal

and pore M located on preopercular canal. Morphometry data presented in Table 1.

**Coloration.** Body with combination of pale brown and red color. Black diagonal bar from end of spinous dorsal fin to anus, located on both sides of body. No dark lateral longitudinal band on body. Pale diagonal stripe visible from upper lip going backwards and upwards below eye and ending on predorsal area. Spinous dorsal fin with pale brown fin membrane, dusky patch on fourth spine, followed by black margin. Soft dorsal fin and anal fin with pale brown fin membrane, both fins with two median white lines. Caudal fin membrane pale brown, distal margin black. Pectoral fin translucent. Operculum with bluish iridescent patches.

## DISCUSSION

At present, eight genera of shrimp-associated gobiid fishes, viz. *Cryptocentrus*, *Mahidolia*, *Amblyeleotris*, *Ctenogobiops*, *Myersina*, *Stonogobiops*, *Vanderhorstia*, and *Tomiyamichthys* have been reported from Indian coastal waters (Rajan et al. 2013, Praveenraj et al. 2017, Roy et al. 2019). Only three species have been hitherto recorded from the coastal waters of peninsular India, viz., *Amblyeleotris gymnocephala* (Bleeker, 1853) from West Bengal (Chatterjee et al. 2013), *Mahidolia mystacina* (Valenciennes, 1837), and *Myersina filifer* (Valenciennes, 1837). The genus *Myersina* is represented by one species, i.e., *M. filifer*; known from West Bengal (Ray et al. 2018) and Odisha coast (Roy et al. 2019). The presently reported record of *M. yangii* is the first documentation of the species from Indian waters. The specimen was identified as *M. yangii* based on diagnostic characters presented in the results. The specimen also matches well the general shape and coloration pattern of fig. 1 of Chen (1960) and fig. 5 of Greenfield and Randall (2018) of *M. yangii*. The genus *Myersina* was erected by Herre (1934) to



**Fig. 1.** *Myersina yangii*, 61.16 mm SL, GB: 31.66.93.6, Kasimedu, Chennai, India

**Table 1**  
Morphometric characters of *Myersina yangii* (Chen, 1960) (GB: 31.66.93.6) from Kasimedu, Chennai, India

Morphometric character	Value	
	Absolute [mm]	Relative (%SL)
Standard length	61.16	
Head length		26.0
Head width		11.8
Head depth		17.5
Snout length		4.5
Eye diameter		8.6
Interorbital width		3.4
Jaw length		11.3
Body depth at pelvic-fin origin		17.6
Body depth at anal-fin origin		16.9
Pre dorsal length		33.4
Pre pelvic length		27.5
Caudal peduncle length		15.4
Caudal peduncle depth		10.4
Length of 1st dorsal-fin base		21.0
Length of 2nd dorsal-fin base		31.2
Length of anal-fin base		27.9
Pectoral fin length		20.9
Pelvic fin length		22.2
Caudal fin length		30.1
1st dorsal fin 1st spine length		28.9
1st dorsal fin 2nd spine length		19.9
1st dorsal fin 3rd spine length		17.3
1st dorsal fin 4th spine length		13.3
2nd dorsal fin 1st spine length		11.1
2nd dorsal fin 1st ray length		13.5
2nd dorsal fin longest ray length		18.4
Anal spine length		7.5
Length of 1st anal fin ray		11.0
Length of pelvic fin spine		12.1
4th pelvic-fin ray length		19.3
5th pelvic-fin ray length		19.9
Height of pelvic fin frenum		5.5

%SL = percentage of standard length

accommodate *Myersina macrostoma* from Philippines (Winterbottom 2002). Winterbottom (2002) redefined *Myersina* based on the presence of an elongate first dorsal fin in adult males, two preopercular pores, sensory papillae on the cheek in a well-developed transverse pattern, gill membranes fused in the ventral midline and either fused to the isthmus or forming a free fold over it, cycloid scales only on the body, and a scaleless midline of the predorsal region. At present, nine species are recognized within the genus *Myersina*. While seven species were placed in this genus by Winterbottom (2002), later, Shibukawa and Satapoomin (2006) and Greenfield and Randall (2018) described two additional new species, viz., *Myersina adonis* and *Myersina balteata*. Larson and Murdy (2001) treated *Gobius papuanus* Peters, 1876 under *Myersina*, but

Hoese et al. (2016) placed it in the genus *Tomiyamichthys*. Although Shibukawa and Satapoomin (2006) and Greenfield and Randall (2018) agreed with Winterbottom (2002) in stating that ‘the differences between *Myersina* and *Cryptocentrus* do not appear to be clear’ as they share similar morphological characters, they placed their new species in the genus *Myersina*.

The species *M. yangii* has a dark bar across the body from the end of the first dorsal fin to the origin of the anal fin. The other species with a dark band across the body is *M. balteata*. The comparison between these two species was given by Greenfield and Randall (2018), which shows that *M. yangii* has 85–95 longitudinal scales (vs. 62 scales in *M. balteata*), 11 soft fin-rays in the second dorsal fin (vs. 10 in *M. balteata*), 11 soft fin-rays in the anal fin (vs. 9 in *M. balteata*), and absent long longitudinal band along the midline of the body from head to caudal-fin base (vs. present in *M. balteata*). Among other *Myersina* species, *M. yangii* resembles only *M. pretoriusi* in having 11 soft fin-rays in the anal fin (vs. 9 or 10 in other species), but differs from *M. pretoriusi* in coloration pattern having mid-body bar from second dorsal fin origin to anal-fin origin and lacking a pale spot on second dorsal-fin spine (Greenfield and Randall 2018).

*Myersina yangii* has been known from Taiwan (Chen 1960) and the Andaman Sea along south-western Thailand (Satapoomin 2011) and also from the Philippines (Greenfield and Randall 2018, photographed) so far. The present report of *M. yangii* constitutes the first record from India, which forms a westward range extension towards the east coast of India, Bay of Bengal from the Andaman Sea along Thailand coast.

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