

# First record of the speckled Maori wrasse, *Oxycheilinus arenatus* (Valenciennes, 1840) (Actinopterygii: Perciformes: Labridae), from Indian coastal waters

Arumugam MURUGAN<sup>1</sup>, Gopalan MAHADEVAN<sup>2</sup>, Ronald FRICKE<sup>3</sup>

1 Centre for Marine Living Resources and Ecology, Ministry of Earth Sciences, Atal Bhavan, Puthuvype, Kochi, India

2 Centre of Advanced Study in Marine Biology, Annamalai University, Parangipettai, Tamil Nadu, India

3 Staatliches Museum für Naturkunde in Stuttgart, Stuttgart, Germany

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Corresponding author: Gopalan Mahadevan ([marinemahadevan@gmail.com](mailto:marinemahadevan@gmail.com))

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## Abstract

The labrid fish species *Oxycheilinus arenatus* (Valenciennes, 1840) is recorded for the first time from India's southeast coast. A total of three specimens were collected as trawl bycatch at Tuticorin, Tamil Nadu, southeast coast of India, in December 2021. The standard length of the specimens ranged from 15.42 to 19.5 cm SL. The presently reported finding of this species from the southeastern coast of India expands and confirms the known distribution range of *O. arenatus*, which was previously not known from India.

## Keywords

new record, Tamil Nadu, Teleostei, trawl bycatch, wrasses

## Introduction

The fish family Labridae, commonly called wrasses, is a diverse, highly conspicuous, and important component of the ichthyofauna; most of the species (82%) are found in the tropical and subtropical Indo-Pacific region (Thresher 1991; Bellwood and Wainwright 2002). The Labridae is the second largest family of marine fishes in the world (after Gobiidae), with 565 species in 67 genera (Fricke et al. 2022a). Labridae fishes include some of the smallest (<40 mm total length) to the largest (>1 m) fishes on reefs, which feed on a range of invertebrates and also include species that feed exclusively on coral polyps or mucus (Randall et al. 1998). The genus *Oxycheilinus* was originally described by Gill (1862) who designated *Cheilinus arenatus* Valenciennes, 1840 as the type species. Westneat (1993) provided

characters to distinguish it from *Cheilinus*, and it is now accepted as valid by most recent authors (Randall et al. 2003). Westneat (1993) diagnosed *Oxycheilinus* as sharing the following unique characters: lower pharyngeal jaw with posterior shelf, hyomandibula with smooth lateral rim, horizontal color stripe present, and pattern of pelvic-fin pigmentation; also, the following homoplastic features: lateral processes on raised mesethmoid, three to five holes in neural arch of preural centrum 2, lower pharyngeal jaw with concave ventral surface, urohyal with single spike, and dorsal fin with anterior dark spot. In Indian waters, fishes of the genus *Cheilinus* have usually been reported from coral-reef and seagrass ecosystems, especially in the Gulf of Mannar and Palk Bay region (Murugan and Durgekar 2008). The Indo-Pacific labrid genus *Oxycheilinus* includes ten valid species (Fricke et al. 2022b), characterized by dor-

sal-fin rays IX, 10, anal-fin rays III, 8, a moderately shallow body, thin mid-lateral stripe, and elongated blotch at front of dorsal fin between 1<sup>st</sup> and 3<sup>rd</sup> spines, interrupted lateral line, 6 predorsal scales, cheek and opercle with two rows of scales, ventral and posterior margins of pre-opercle naked, body covered with relatively large scales, large canine teeth in the front of jaws, and anterior tip of lower jaw extending beyond anterior tip of upper jaw (Gill 1862; Westneat 2001; Randall and Khalaf 2003; Kuiter 2012; Fukui et al. 2017).

During our surveys on the fish diversity of Tamil Nadu coastal waters, India, we collected three specimens of *Oxycheilinus arenatus* (Valenciennes, 1840) for the first time from the bycatch of trawl landings at Tuticorin, southeast coast of India. These specimens are described in the present paper.

## Materials and methods

The field surveys were conducted on a monthly basis at various major trawl fish landing centers in the Gulf of Mannar, Tamil Nadu, India (Fig. 1) during December 2020. Three specimens of *O. arenatus* (15.42–19.5 cm SL) were collected from the bycatch of bottom trawlers targeting shrimp (code end mesh size range, 18–25 mm) at Tuticorin (08°52'46.42"N, 078°26'05.49"E). The trawling was carried out on nearshore and offshore fishing grounds at depths ranging from 40–100 m, at a distance of 1–50 km from the shore. After the collection, the fish were photographed, and preserved in a 10% formaldehyde solution. The specimens were deposited in the Centre of Advanced Studies in Marine Biology, Annamalai University, Reference Museum, Parangipettai, India (CASMBARM). The comparative material was borrowed from the Canadian Museum of Nature, Ottawa, Canada (CMNFI), the Museum of Comparative Zoology, Harvard College, Cambridge, MS, USA (MCZ), and the Muséum national d'histoire naturelle, Paris, France (MNHN). Morphometric measurements were

carried out using a digital Vernier caliper of 0.01 mm accuracy. The vertebrae numbers were counted using X-ray images. The specimens were identified to species level by following previously published keys Fischer and Bianchi (1984), Westneat (2001), Parenti and Randall (2018), and Dewa et al. (2020, 2021). Measuring methods follow Randall and Khalaf (2003), Randall et al. (2003), and Fukui and Motomura (2015, 2016). The results were expressed in % of standard length (SL), and measuring the head length (HL) follows Greenfield and Randall (2018). The genus and species classification follows Fricke et al. (2022b); the family classification follows van der Laan et al. (2014).

**Materials examined.** CASMBARM/232116487-89, 3 specimens (17.7–19.5 cm SL), Tuticorin fishing harbor, Tamil Nadu, India, depth below 40 m, coll. A. Murugan, 15–24 December 2020. Comparative material: CMNFI 1973.0244.40, 1 specimen, Comoros, Grande Comore Island, 1973; MCZ 5854, 1 specimen, Mauritius, leg. Nicholas Pike; MNHN A-8284, holotype of *Cheilinus arenatus* Valenciennes, 1840, La Réunion, leg. Eydoux et Souleyet; MNHN A-8285, 1 specimen, Madagascar.

## Results

### Systematics

#### Family Labridae Cuvier, 1816

#### Genus *Oxycheilinus* Gill, 1862

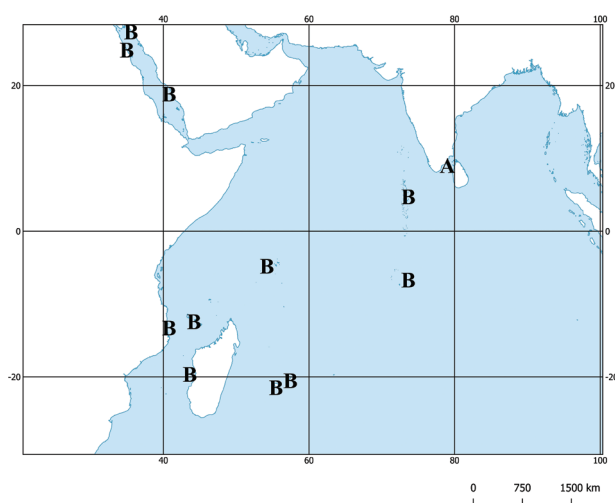
#### *Oxycheilinus arenatus* (Valenciennes, 1840)

Figs. 1–3; Table 1

*Cheilinus arenatus* Valenciennes, 1840: 101, pl. 397 (Réunion, western Mascarenes, southwestern Indian Ocean).

*Cheilinus notophthalmus* Bleeker, 1853: 493 (Jakarta, Java, Indonesia).

**Description.** Apart from the presence of the generic characters mentioned above, the specimens are diagnosed by the following characters: Dorsal fin IX, 10–11; anal fin III, 8–9; pelvic-fin rays I, 5; pectoral-fin rays of left and right sides 11/11–12/12 (2 uppermost rays unbranched); caudal-fin rays 13–14 (upper and lower 2 rays unbranched); pored lateral-line scales 22 (13 on anterior lateral line, 9 on posterior lateral line); vertical scale rows 2 + 7; number of scales on black streak 19; pored scales on black streak 8; predorsal scales 6; gill rakers 5 + 6 = 11; branchiostegal rays 5; vertebrae 10 + 12 = 22 (Fig. 2). Body elongate, laterally compressed. Snout short, profile moderately rounded. Eye small; pupil slightly elongate. Interorbital space slightly convex, naked. Head and body covered with scales. Predorsal scales reaching anterior end of orbit. Opercular margins scaleless. Last scale of anterior lateral line located just below base of 4<sup>th</sup> dorsal-fin soft ray. First scale of posterior lateral line located just above base of 2<sup>nd</sup> anal-fin soft ray. Head laterally compressed, mouth terminal, gape oblique; posterior margin of lower lip extending beyond vertical through that of upper



**Figure 1.** Geographical distribution of *Oxycheilinus arenatus* in Indian Ocean, (A) New record from Tuticorin, India and (B) Previous records.

lip; posterior margin of maxilla extending beyond vertical through anterior margin of orbit; teeth in jaws affixed to outer edge of bony ridge; 2 pairs of large, slender, curved canine teeth anteriorly in each jaw; 16–18 small conical teeth fixed posteriorly on each bony plate behind upper- and lower-jaw canine teeth. Tongue slender, rounded, its upper surface covered with small papillae. Gill rakers thick, short, compressed; rakers on upper limb slightly shorter than those on lower limb; gill membranes free from isthmus. Posterior end of pectoral fin not reaching anus. Pelvic-fin origin and dorsal-fin origin almost on same vertical. Caudal fin truncate, with central part of medium edge slightly rounded, and upper and lower rays elongate. 9<sup>th</sup> dorsal-fin spine and 7<sup>th</sup> soft dorsal-fin ray longest; 3<sup>rd</sup> anal-fin spine and 4<sup>th</sup> soft anal-fin ray longest; 1<sup>st</sup> pelvic-fin soft ray longest (Table 1).

**Color.** Upper part of body light red, abdomen white. Sides with mottled pattern reaching from upper side of head to upper back, consisting of small, scattered orange or dark brown spots at low density. Dark vertical black band at center of body extending from posterior margin of eye to caudal-fin base. Small white spots scattered at high density above vertical band. Large black spot on membranes of first four dorsal-fin spines. Membranes between first four dorsal-fin soft rays otherwise pale green, with white lines and irregularly arranged white spots. Membranes between 4–10 dorsal-fin soft rays whitish translucent. Pectoral-fin base bright yellow, fin membranes transparent. Pelvic-fin base and anal-fin membranes white, fins mottled with light red. Medium caudal-fin membranes white-translucent, mottled with light red, upper and lower lobes yellow (Fig. 3).

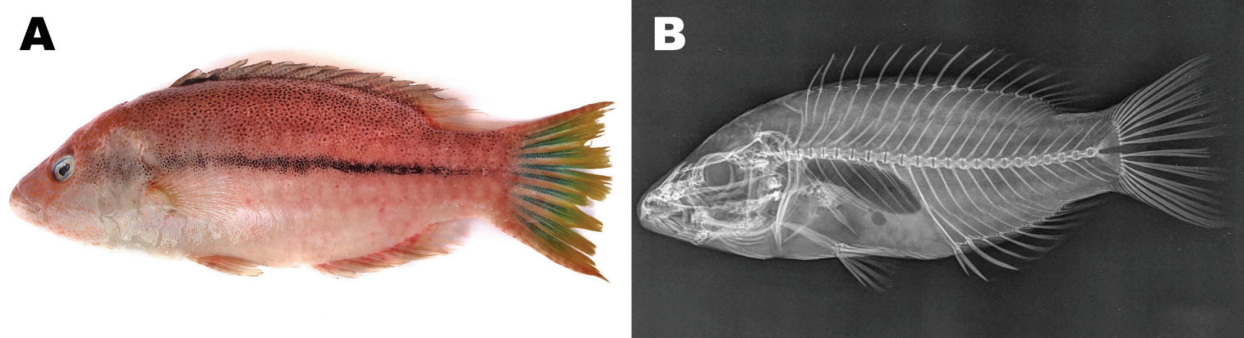
**Remarks.** *Oxycheilinus arenatus* (Valenciennes, 1840), commonly known as speckled Maori wrasse, is known from the Red Sea and the Indo–West Pacific: East Africa, Seychelles, Madagascar, and Mascarenes east to Marshall Islands and Samoa, north to Ryukyu Islands (Japan). Generally, from the conservation point of view, they are considered ‘Least concern’ (Liu and To 2010). In the Red Sea and Indian Ocean, the species was previously recorded from La Réunion (Valenciennes 1839, as *Cheilinus arenatus*; Fricke et al. 2009), Chagos Archipelago (Winterbottom et al. 1989, as *Cheilinus arenatus*), Mauritius (Günther 1862, as *Cheilinus arenatus*), Seychelles (Smith and Smith 1963, as *Cheilinus arenatus*), Maldives (Randall and Anderson 1993, as *Cheilinus arenatus*; Anderson et al. 1998), Mozambique (Gell and Whittington

2002), Red Sea (Randall and Khalaf 2003; Golani and Fricke 2018), Madagascar (Fricke 1999; Fricke et al. 2018). The current findings represent a range extension of ca. 700 km to the northeast of the closest previously known region (Maldives), and the first record of this species from India. *Oxycheilinus arenatus* is widespread in the Indo–West Pacific and was probably previously overlooked in Indian waters. Apparently, the species is very rare in India.

This species is found in caves of steep outer reef drop-offs from 25 to at least 46 m with rich invertebrate growth such as large gorgonians or soft corals (Froese and Pauly 2022). It is naturally rare and has been rarely documented due to its cryptic occurrence in deep reefs. The lower

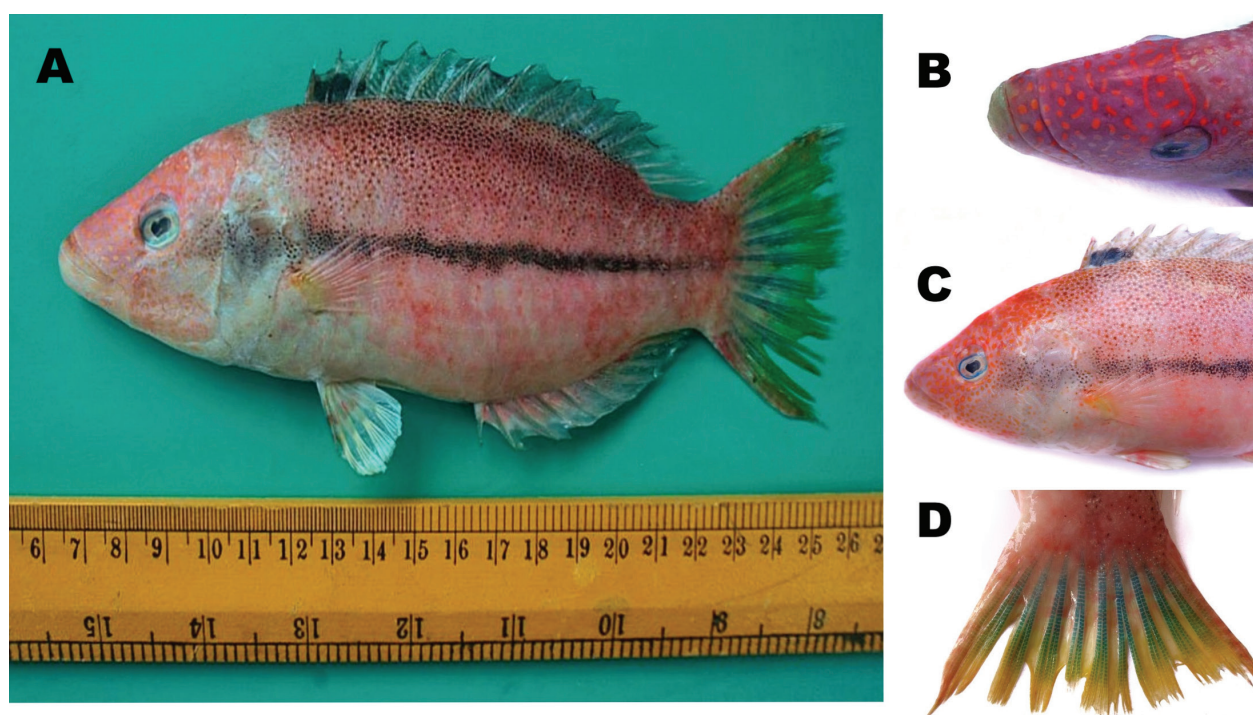
**Table 1.** A comparison of morphometric characters of *Oxycheilinus arenatus* collected from Indian coastal waters and from Amami-oshima island, Ryukyu Islands, Japan.

Character	This study ( <i>n</i> = 3)				Dewa et al. 2021 ( <i>n</i> = 1)	
	Absolute value [mm]		%SL		Abs. value [mm]	%SL
	Range	Mean	Range	Mean		
Total length (TL)	177–195	186				
Standard length (SL)	142–157	151			128.7	
Head length			37.32–38.85	38.02		39.2
Head depth			28.16–29.29	28.64		
Snout length			14.08–15.28	14.65		14.1
Snout to end of preoperculum			27.46–28.02	27.73		
Orbit diameter			7.04–7.64	7.30		9.9
Upper-jaw length			10.56–12.10	11.31		12.9
Lower-jaw length			11.97–12.73	12.42		13.3
Caudal-peduncle depth			16.90–18.44	17.54		14.4
Caudal-peduncle length			12.67–14.01	13.37		12.9
Pectoral-fin length			14.78–16.56	15.64		16.4
Pelvic-fin length			12.67–14.64	13.84		11.3
Dorsal-fin length			4.90–5.70	5.30		
Dorsal-fin base length			50.70–53.50	52.17		53.6
Anal-fin base length			4.90–5.70	5.30		
Pelvic-fin base length			4.20–5.00	4.66		
Anal-fin length			26.76–26.82	26.67		
Anal-fin width			35.21–35.32	35.35		
Opercular length			9.80–11.46	10.66		
Interorbital width			14.08–15.28	14.66		
Predorsal length			45.19–47.75	46.53		
Prepectoral length			38.02–41.54	39.74		
Prepelvic length			45.07–47.88	46.49		
Preanal length			69.71–72.21	70.76		
1 <sup>st</sup> anal-fin spine length			4.90–5.70	5.33		5.1
2 <sup>nd</sup> anal-fin spine length			7.04–7.64	7.30		10.4
3 <sup>rd</sup> anal-fin spine length			9.80–11.97	10.62		11.2



**Figure 2.** Freshly preserved *Oxycheilinus arenatus* (A) (CASMBaurm/232116489) and (B) X-ray of the adult Speckled Maori wrasse with 22 vertebrae (10 abdominal + 12 caudal).





**Figure 3.** *Oxycheilinus arenatus* (A) collected from Tuticorin, India (CASMBaurm/232116487); (B) Head; (C) Dorsal fin and (D) Caudal fin.

extent of the depth distribution range is unknown. The collecting depth of the Indian specimens below 40 m well agrees with the previously known depth range.

## Conflict of interest

The authors declare that they have no conflict of interest.

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