

New record of the Oriental armoured gurnard *Scalicus orientalis* (Fowler 1938) from La Réunion, southwestern Indian Ocean (Teleostei: Peristediidae)

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Abstract

The Oriental armoured gurnard *Scalicus orientalis* (Fowler 1938) is recorded from La Réunion, southwestern Indian Ocean, based on a specimen collected during a volcanic eruption in April 2007. The specimen was previously misidentified as *Satyrichthys investigatoris* (non Alcock, 1898), a junior synonym of *Scalicus hians* (Gilbert & Cramer, 1897); the occurrence of that species cannot be verified and has to be excluded from the fish fauna of La Réunion.

Keywords: Armoured gurnard, La Réunion, Mascarenes, Geographical distribution, BIOLAVE2007 biodiversity expedition.

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Introduction

Armoured gurnards of the family Peristediidae are small to medium sized benthic fishes, which occur in marine waters on the lower continental shelf and upper continental slope at depths of 50-1,324 m (Teague 1961; Miller 1967a, b; Castro-Aguirre and García-Domínguez 1984; Richards 1999; Miller and Richards 2003; Kawai and Yabe 2006; Kawai 2008, 2016; Bussing 2010; Tenda and Kawai 2012; Ho et al. 2013; Ono and Kawai 2014; Richards and Miller 2016; Fricke et al. 2017). They apparently use their detached pectoral-fin rays and rostral projections to detect buried prey in the sand. The family is currently arranged in the order Scorpaeniformes (Laan et al. 2014; Nelson et al. 2016). It includes six valid genera (Kawai 2008): *Gargariscus* Smith 1917 (with a single valid species in the eastern Indian Ocean and western Pacific); *Heminodus* Smith 1917 (with a single valid species in the eastern Indian Ocean and western Pacific; see Kawai and Nakaya 2007; Kawai and Causse 2017); *Paraheminodus* Kamohara 1958 (with four valid species in the Indo-West Pacific; see Kawai et al. 2008); *Peristedion* Lacepède 1801; *Satyrichthys* Kaup 1873 with seven valid species in the Indian Ocean and western Pacific; see Kawai 2013, 2014); and *Scalicus* Jordan 1923 (with six valid species in the Indo-West Pacific; see Kawai 2019).

The genus *Scalicus* Jordan, 1923, is characterised within the family by a combination of the following characters: upper jaw toothless, lateral margin of head smooth, posterior pairs of lower lateral rows of bony plates separated from each other, barbels on lower jaw not branched except for posteriormost lip and chin barbels, and counts of dorsal and anal fin soft rays greater than 19 (Kawai 2019). It includes a total of 6 valid species distributed in the Indo-West Pacific (Kawai 2019; Fricke et al. 2020): *Scalicus engyceros* (Günther 1872) (Günther 1872: 663, Hawaiian Islands, as *Peristethus engyceros*; holotype: BMNH 2010.2.1.1) from the western and central Pacific; *S. hians* (Gilbert & Cramer 1897) (Gilbert & Cramer 1897: 419, pl. 41 (Hawaiian Islands, as *Peristedion hians*; lectotype: USNM 47730, selected by Kawai 2019:[6]), *S. orientalis* (Fowler, 1938) (Fowler 1938: 127, fig. 61, Makyan Island, Indonesia, as *Nemaperistedion orientale*; holotype: USNM 98876), *S. paucibarbatulus* Kawai, 2019 (Kawai 2019: [8], figs, Kyushu-Palau Ridge; holotype; BSKU 30455), *S. quadratorostratus* (Fourmanoir & Rivaton, 1979) (Fourmanoir & Rivaton 1979: 423, fig. 15, Ile des Pins, New Caledonia, as *Peristedion quadratorostratus*; lectotype: MNHN 1978-0478, as selected by Kawai 2019: [13]), and *S. serrulatus* (Alcock, 1898) (Alcock 1898: 153, Andaman Sea, as *Peristethus serrulatum*; lectotype:

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ZSI F.296/1, as selected by Kawai 2019: [16]), all from the Indo-West Pacific. During the BIOLAVE2007 Expedition, a single specimen of *S. orientalis* was collected off the southeast coast of La Réunion. The new record of the species is reported in the present paper.

Material and Methods

Biometrical counts and measurements follow Kawai et al. (2004, 2008), Ono and Kawai (2014) and Kawai (2016), nomenclature of head spines follows Miller (1967a), descriptive methods follow Kawai (2016). The standard length (SL) is measured from the anterior tip of the premaxilla to the end of the caudal-fin base. The genus and species classification follows Fricke et al. (2020); citation of references follows Fricke (2020). The specimen is deposited in the fish collection of the Muséum d'Histoire Naturelle, Saint-Denis, La Réunion, France (MNHRE), former acronym MHN RUN.

Comparative materials: *Scalicus hians* (Gilbert & Cramer, 1897): SMNS 24769 (1), Taiwan, Kueishan Island, 24°50'15"N 121°58'06"E.

Results

Systematic ichthyology: The present paper follows the classifications provided by Nelson et al. (2016) and Laan et al. (2014):

Superclass Gnathostomata

Class Actinopterygii

Subclass Neopterygii

Division Teleostei

Order Scorpaeniformes

Family Peristediidae Jordan & Gilbert 1883

Genus *Scalicus* Jordan 1923

Scalicus orientalis (Fowler, 1938)

(Figs. 1-3, Tables 1-2)

Common name: Longhorn armoured gurnard

Synonymy: *Satyrichthys investigatoris* (non Alcock 1898): Durville et al. 2009: 953. Fricke et al. 2009: 42

Material: MNHRE P-547, 1 specimen, 176.3 mm SL, southwestern Indian Ocean, La Réunion, south coast, 11.5 km south of Anse des Cascades (community of Sainte Rose), ca. 27°17'19"S 55°49'09"E, depth unknown (specimen found floating on surface), Expedition BIOLAVE2007, 8-11 April 2007.

Description. Measurements and proportions are given in Table 1.

D VII + 21; A 21; P1 16 + 1 + 1; P2 I,5. Gill rakers 7 + 1 + 20. Bony plates in dorsal row 29; bony plates in upper lateral row 34; bony plates in lower lateral row 27 (Fig. 1); bony plates in ventral row 26; bony plates before anus 2. Groups of barbels (lip + chin) 5 + 3; branches of filamentous barbel 25-28.

Rostral projection long triangular (Fig. 2), rostral projection width 1.33 in rostral projection length; posterior part of filamentous barbel with membrane on each base of the branches, filamentous barbel length 35.2% SL; posteriormost chin barbel simple at base; antrorse spines on posterior bony plates of upper lateral row absent.

Colour when fresh: (Fig. 3) Head and body rose, centres of scals lighter, lower sides white. Eye dorsally dark grey. Filamentous barbel red, distally on dorsal side dark grey. Fins red, dorsal fin distally blackish, pectoral fin mottled with grey.



Figure 1. *Scalicus orientalis* (Fowler, 1938), MHN RUN P-547, 1 specimen, 176.3 mm SL, southwestern Indian Ocean, La Réunion, south coast. Lateral view. Photograph by Gregory Salvan, Muséum d'Histoire Naturelle, Saint-Denis.



Figure 2. *Scalicus orientalis* (Fowler, 1938), MHN RUN P-547, 1 specimen, 176.3 mm SL, southwestern Indian Ocean, La Réunion, south coast. Head, dorsal view. Photograph by Gregory Salvan, Muséum d'Histoire Naturelle, Saint-Denis.



Figure 3. *Scalicus orientalis* (Fowler, 1938), MHN RUN P-547, 1 specimen, 176.3 mm SL, southwestern Indian Ocean, La Réunion, south coast. Fresh colouration. Photograph by Thierry Mulochau.

Colour in preservative: (Figs. 1-2) Head, body and all fins yellowish, except for black margin of dorsal fin; peritoneum dark grey; eye dark grey. Pectoral fin distally with dark brown margin.

Distribution: La Réunion (Mascarene Islands). Outside the area, Socotra (Yemen); Maldives; Andaman Sea; Sumatra, Java and Maluku (Indonesia); Philippines; Taiwan to southern Japan; Western Australia; New Caledonia (Fig. 4).

Remarks: This interesting deep-water specimen was collected during the BIOLAVE2007 Expedition. It was floating on the surface after an apparent underwater explosion during a volcanic eruption in April 2007. It well agrees with *Scalicus orientalis* (Fowler, 1938) as defined and described by Kawai (2019) (see Table 2).

This finding represents the first record of the species from the southwestern Indian Ocean; relative to the closest previous known distribution area the new locality is situated 3,725 km south (Socotra), and 3,475 km

southwest (Maldives), respectively. The depth of occurrence is unknown, but the species is expected to live at similar depths as previously reported specimens, i.e. 357-510 m (Paxton et al. 2006; Kawai 2019; Psomadakis et al. 2020).

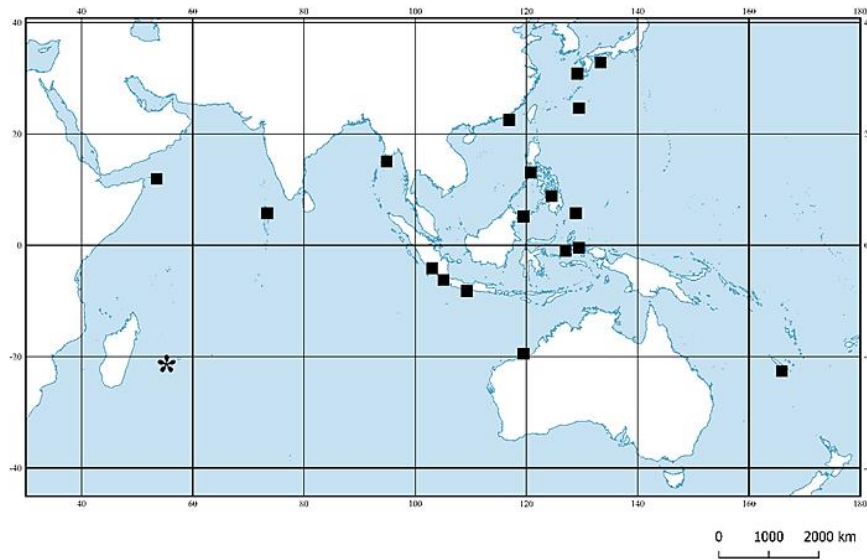


Figure 4. Geographical distribution of *Scalicus orientalis* (Fowler, 1938) in the Indo-West Pacific. (*) new record; (■) other localities.

Table 1. *Scalicus orientalis* (Fowler, 1938), La Réunion, southwestern Indian Ocean. Measurements and proportions.

	MHN RUN P-547	
	Measurement [mm]	Proportion [% of SL]
Standard length	176.3	
Body depth	26.4	15.0
Body width	25.3	14.4
Head length	61.5	34.9
Head depth	27.2	15.4
Head width	42.4	24.0
Snout to dorsal fin	62.8	35.6
Snout to anal fin	80.7	45.8
Snout to anus	71.9	40.8
Snout length	30.4	17.2
Rostral projection length	15.2	8.6
Rostral projection width	11.4	6.5
Interspace between rostral projections	7.6	4.3
Filamentous barbel length	62.0	35.2
Upper jaw length	26.2	14.9
Lower jaw length	22.8	12.9
Orbit diameter	16.6	9.4
Interorbital width	10.6	6.0
Pectoral-fin length (joined fin only)	18.6	18.6
Upper detached pectoral-fin ray length	19.7	19.7
Lower detached pectoral-fin ray length	14.5	14.5
Pelvic-fin length	31.9	18.1
First dorsal-spine length	16.7	9.5
Caudal-peduncle length	19.4	11.0
Caudal-peduncle depth	5.1	2.0

Table 2. Comparison of materials of *Scalicus orientalis* (Fowler, 1938).

	MHNRUN P-547, 1 specimen, La Réunion	Other material (33 specimens, Kawai 2019), Socotra and Maldives east to Philippines and Japan
Dorsal-fin spines	VII	VII
Dorsal-fin rays	21	20-23
Anal-fin rays	21	20-23
Connected pectoral rays	16	13-16
Dorsal bony plaques	29	29-31
Upper lateral bony plates	34	34-37
Lower lateral bony plates	27	23-27
Ventral bony plates	26	25-27
Lip barbels on left side	5	5-6
Lip barbels on right side	5	5
Chin barbels on left side	3	3-4
Chin barbels on right side	3	3
Filamentous barbel branches, left side	25	22-31
Filamentous barbel branches, right side	28	22-31
Posteriormost chin-barbel branches, left side	1	1-2
Posteriormost chin-barbel branches, right side	1	1-2
Upper gill rakers	7	5-8
Lower gill rakers (including middle one)	21	18-22
	Proportions [% of SL]	
Body depth	15.0	23.9-21.2
Body width	14.4	10.1-15.3
Head length	34.9	36.7-40.4
Rostral projection length	8.6	7.0-10.6
Rostral projection width	6.5	4.7-6.6
Orbit diameter	9.4	8.8-11.6

The specimen was previously misidentified as *Satyrichthys investigatoris* (non Alcock, 1898), a junior synonym of *Scalicus hians* (Gilbert & Cramer, 1897), by Durville et al. (2009). *Scalicus hians* is known from South Africa and East Africa east to the Hawaiian Islands and north to southern Japan. So far, the occurrence of that species cannot be verified. It is unknown from the Mascarene Islands, and has to be excluded from the fish fauna of La Réunion.

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