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A new species of the genus *Hypleurochilus* (Teleostei: Blenniidae) from Trindade Island and Martin Vaz Archipelago, Brazil

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Abstract

A new species of the genus *Hypleurochilus*, endemic to Trindade Island and Martin Vaz Archipelago, off Brazil, is described. *Hypleurochilus brasil* sp. n. differs from its congeners in color pattern and anal-ray counts. A recent study shows a close relationship between *H. brasil* sp. n. and *H. fissicornis*. This new species is recorded from 3 to 15 m depth, solitary or in small groups (up to 10 individuals), always in small holes or associated with sea-urchins and sponges on the rocky reefs. *Hypleurochilus brasil* sp. n. is the eleventh recognized species of *Hypleurochilus* and the third species of this genus reported from the Brazilian Province.

Key words: combtooth blenny, endemism, oceanic islands, reef fish, South Atlantic

Introduction

Ten species of the genus *Hypleurochilus* Gill, 1861 are currently recognized as valid. All are restricted to the Atlantic Ocean and the Mediterranean Sea. In the most recent review of the genus, Bath (1994) reports seven species from the western Atlantic: *H. bermudensis* Beebe & Tee-Van, 1933, *H. caudovittatus* Bath, 1994, *H. fissicornis* (Quoy & Gaimard, 1824), *H. geminatus* (Wood, 1825), *H. multifilis* (Girard, 1858), *H. pseudoaequipinnis* Bath, 1994 and *H. springeri* Randall, 1966. Three other species occur in the eastern Atlantic: *H. aequipinnis* (Günther, 1861), *H. bananensis* and *H. langi* (Fowler, 1923). Two species (*H. fissicornis* and *H. pseudoaequipinnis*) are known from Brazil (Bath 1994; Floeter *et al.* 2008; Rangel & Guimarães 2010). *Hypleurochilus bananensis* (Poll, 1959) is the only species of the genus that occurs in the Mediterranean Sea.

Trindade Island and the Martin Vaz Archipelago lie about 1 160 km off the Brazilian coast, making them the most remote islands of Brazil (Figure 1). Fringing reefs of encrusting coralline algae and rocky boulders compose the main shallow habitats of the islands, sheltering a high richness and biomass of reef fishes (Pinheiro *et al.* 2011). There are four species of Blenniidae known to occur at these islands (Gasparini & Floeter 2001; Pinheiro *et al.* 2009): *Ophioblennius trinitatis* Miranda Ribeiro, 1919; *Scartella poiti* Rangel, Gasparini & Guimarães, 2004, *Entomacrodus* sp. and *Hypleurochilus* sp.; the latter three being endemic to these islands. Herein, we describe the species of *Hypleurochilus* as new, it being the 11th (eleventh) recognized species of *Hypleurochilus* known from the Atlantic Ocean and the third from Brazilian waters.

Material and methods

All specimens were collected using hand nets. Methods of counting and measuring follow Bath (1994). Morphometric and meristic data for the type series are presented in Table 1 and counts of dorsal- and anal-fin rays for Brazilian species of *Hypleurochilus* are given in Table 2. In the description, meristic values for the holotype are

provided first, followed by the range of counts for all type specimens (holotype plus paratypes) in parentheses. Clearing and staining — diafanization — follow Dingerkus & Uhler (1977). Type specimens were deposited in the fish collections of Universidade Federal do Espírito Santo (CIUFES), Universidade Estadual de Campinas (ZUEC), Laboratório de Biologia do Nécton e Ecologia Pesqueira, Universidade Federal Fluminense (LNEP-UFF) and California Academy of Sciences (CAS).

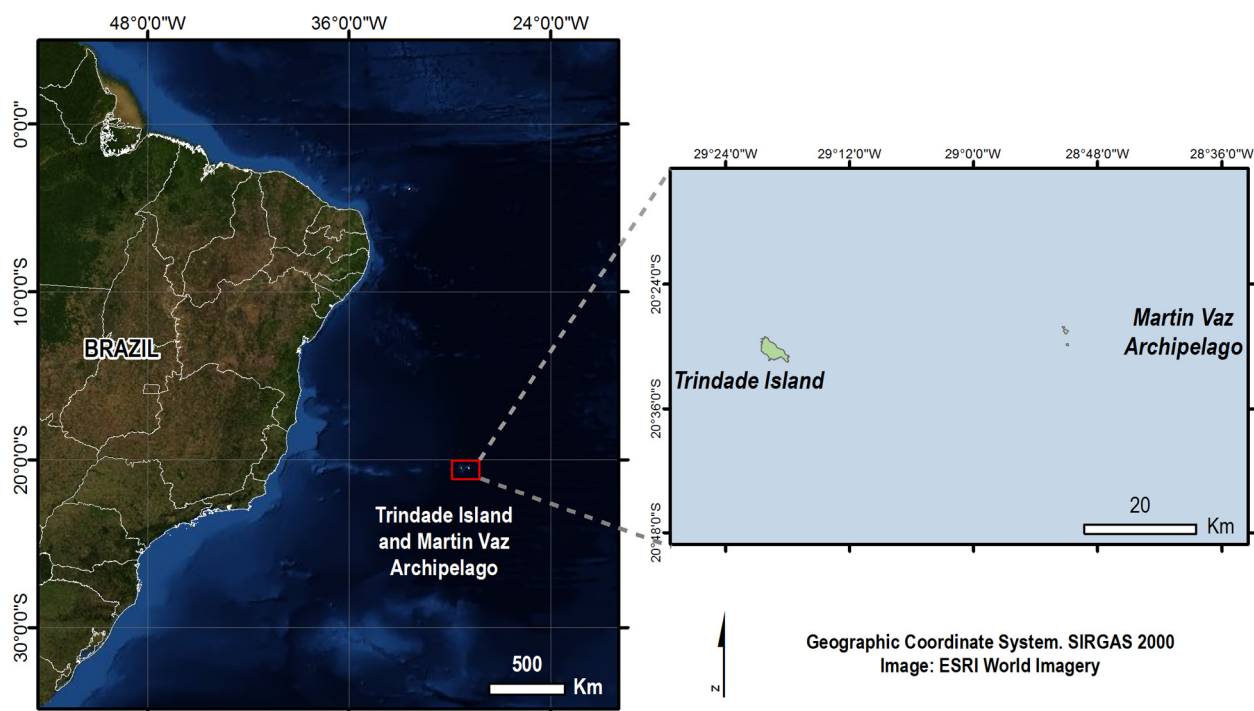


FIGURE 1. Map of the Brazilian Coast, Western South Atlantic. Square indicates Trindade Island and Martin Vaz Archipelago, volcanic formations lying about 1160–1207 km, respectively, off Brazil. Type-locality of *Hyleurochilus brasil*.

TABLE 1. Occurrence percents of number of dorsal- and anal-fin rays of *Hyleurochilus brasil* sp. nov. (9 individuals analyzed), *H. pseudoaequipinnis* (91) and *H. fissicornis* (22) (data for *H. pseudoaequipinnis* and *H. fissicornis* are from Bath 1994).

Species	Segmented dorsal rays				Segmented anal rays			
	11	13	14	15	14	15	16	17
<i>H. brasil</i>		55.5	44.4			33.3	66.6	
<i>H. pseudoaequipinnis</i>	1.1	63.4	34.4	1.1	3.23	59.14	37.63	
<i>H. fissicornis</i>			13.6	86.4			9.1	90.9

Taxonomy

Hyleurochilus brasil sp. n.

Brazil blenny (Figures 2–4, Tables 1 and 2)

Hyleurochilus fissicornis (non Quoy & Gaimard, 1824): Gasparini & Floeter 2001 (misidentification).

Holotype. CIUFES 1901, male, 30.85 mm SL, Ponta da Calheta, Ilha da Trindade, Espírito Santo, Brasil, 20°30'S, 29°20'W, depth 8 m, collected by T. Simon and R. Macieira, 19 Nov 2009.

Paratypes. ZUEC 6353, female, 26.9 mm SL, Ponta da Calheta, Ilha da Trindade, Espírito Santo, Brazil, 20°30'S, 29°20'W, depth 10 m, collected by H.T. Pinheiro, 03 May 2009; LNEP-UFF 300, male, 18.5 mm SL,

Ponta da Calheta, Ilha da Trindade, Espírito Santo, Brazil, 20°30'S, 29°20'W, depth 8 m, collected by H.T. Pinheiro, 10 May 2009; CIUFES 1945, male, 21.45 mm SL, Ponta da Calheta, Ilha da Trindade, Espírito Santo, Brazil, 20°30'S, 29°20'W, depth 8 m, collected by H.T. Pinheiro, 10 May 2009; CIUFES 1925, male, 17.6 mm SL, Ponta da Calheta, Ilha da Trindade, Espírito Santo, Brazil, 20°30'S, 29°20'W, depth 8 m, collected by H.T. Pinheiro, 10 May 2009; CIUFES 1946, male, 19.5 mm SL, Ponta da Calheta, Ilha da Trindade, Espírito Santo, Brazil, 20°30'S, 29°20'W, depth 8 m, collected by H.T. Pinheiro, 10 May 2009; CIUFES 1938, female, 15.4 mm SL, Ponta da Calheta, Ilha da Trindade, Espírito Santo, Brazil, 20°30'S, 29°20'W, depth 8 m, collected by H.T. Pinheiro, 10 May 2009; CAS 235154, 21.45 mm SL, Ponta da Calheta, Ilha da Trindade, Espírito Santo, Brazil, 20°30'S, 29°20'W, depth 8 m, collected by H.T. Pinheiro, 10 May 2009; CAS 235155, 19.65 mm SL, Ponta da Calheta, Ilha da Trindade, Espírito Santo, Brazil, 20°30'S, 29°20'W, depth 8 m, collected by H.T. Pinheiro, 10 May 2009.

Comparative material. *Hypleurochilus fissicornis*: CIUFES 1055, 1086, MNRJ 20822; *Hypleurochilus pseudoaequipinnis*: CIUFES 783, MNRJ 20498, LNEP-UFF 087, 099.

Diagnosis. *Hypleurochilus brasil* differs from its congeners by the following combination of characters: pelvic-fin rays I, 3, dorsal fin predominantly XII,13, anal fin II, 15 or 16 (usually 16), absence of blackened stripes, nape green or white and presence of numerous tiny red spots along body, diminishing in size posteriorly (Figures 3 and 4).



FIGURE 2. *Hypleurochilus brasil*, Preserved holotype CIUFES 1901. Photo by R. Macieira.

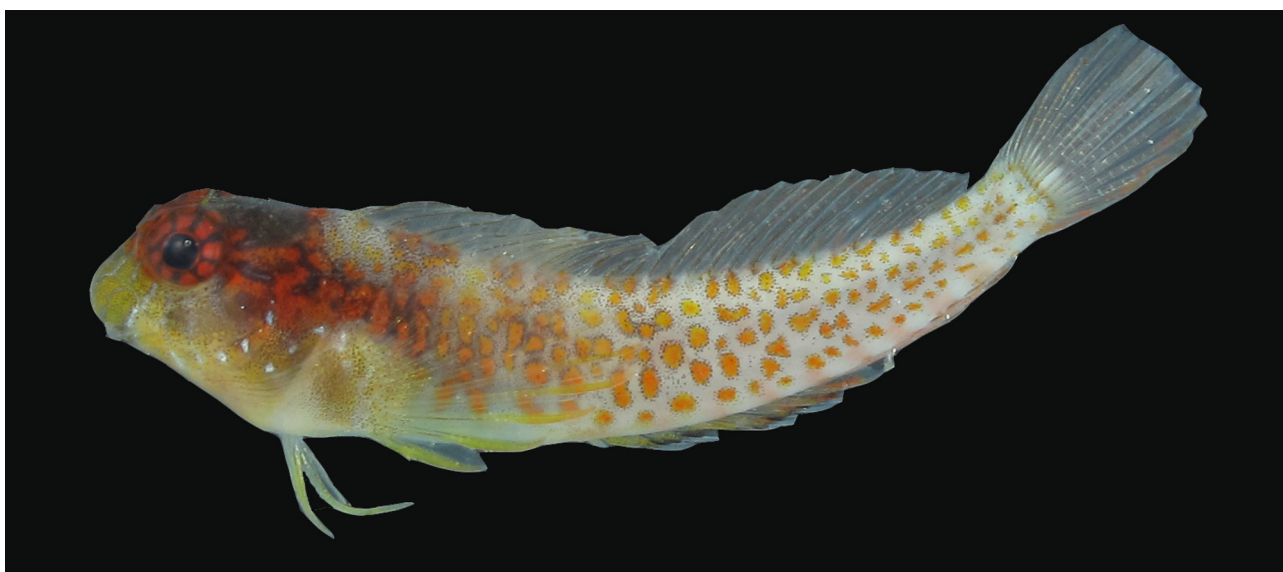


FIGURE 3. *Hypleurochilus brasil*, Paratype (ZUEC 6353). Photographed shortly after death (up to 2 hours). Photo by H. Pinheiro.

Description. Dorsal-fin rays XII, 13 or 14, 13 in 5 specimens and 14 in 4 specimens; anal-fin rays II, 15 or 16, 15 in 3 specimens and 16 in 6 specimens; branched caudal-fin rays 8, total segmented caudal-fin 12; pectoral-fin rays 14; pelvic-fin rays I, 3; precaudal vertebrae 11, caudal vertebrae 25. Gill opening ending at or slightly above dorsal end of the pectoral fin base. Lateral line straight and short, with 24 distinct tubes, never extending beyond the first segmented dorsal ray. One to four cirri present on anterior nasal opening and one or two on top of eyes.

Body moderately elongate, without scales. Head length 3.18 (2.98–4.14) in SL, orbit diameter 4.09 (2.84–4.64) in head length, pectoral-fin length 3.74 (2.73–3.9) in SL and pelvic-fin length 6.11 (4.61–7.69) in SL (Table 2). Horizontal mouth situated low on the head; maxilla reaching posteriorly to a vertical through the centre of eye. Incisiform teeth 25 in the upper jaw and 24 or 25 in the lower jaw. Two large curved canine teeth posteriorly on each side of dentary, at end of incisiform series, and in upper and lower jaws. Cephalic sensory pores arranged in two rows inferior and posterior of eye, one row above superior lip, two rows below lower lip; two arrow-shaped rows on nape, one right posterior to eyes and one slightly anterior to dorsal fin.



FIGURE 4. *Hypleurochilus brasil* in its natural habitat on the rocky reef of Trindade Island. Photo by R. Macieira.

Colour in life. Individuals shortly after death (approx 2 h) and alive are shown in Figures 3 and 4 to illustrate the colour pattern of the new species. The body is translucent with pale brown tint in juveniles and strongly orange in adults, both with many red spots along sides of body. Adults with transverse pale and dark bars on head and posterior part of body. Nape variable in coloration, green or whitish in juveniles, black in adults. Black pupil surrounded by red iris with black stripes giving the appearance of spokes in a wheel. Snout pale yellow with whitish or bluish streaks. Operculum and pre-operculum bordered with series of white dots. Pectoral, pelvic and anal fins, and basal part of caudal fin yellow, without dots or spots. Dorsal and caudal fins hyaline.

Colour in alcohol. Body pale brown, red spots in live specimens turn brown (Figure 2). Top of head dark brown. Snout with brownish streaks. Fins pale. Series of white dots on the operculum and pre-operculum disappear.

Etymology. The name of the new species refers to the vivid red spots that are like incandescent pieces of a brazing. Brazil's country name (Brasil in Portuguese), where the species is endemic, originally has a similar

derivation. The name of the country was given in recognition of the reddish colour of the wood of a large Brazilian native tree (*Caesalpinia echinata* – “Pau-Brasil” in Portuguese), very abundant in the past. The name is treated as a noun in apposition.

TABLE 2. Sex and measurements (in mm) of the holotype and paratypes of *Hypleurochilus brasil* sp. nov.

	Sex	Standard length	Head length	Eye diameter	Pectoral fin length	Pelvic fin length
Holotype	Male	30.85	9.4	2.3	8.25	5.05
Paratype	Female	26.9	6.5	1.4	6.9	3.5
Paratype	Male	18.5	4.55	1.6	4.8	3
Paratype	Male	21.45	6.15	1.95	6.5	3.5
Paratype	Male	17.6	6	2.05	5.1	3
Paratype	Male	19.5	6.55	1.8	5.8	3.9
Paratype	Female	15.4	5.1	1.5	4	2.2
Paratype	Juvenile	21.45	7.1	2	7.85	4.65
Paratype	Juvenile	19.65	5.65	1.75	5.9	4.15

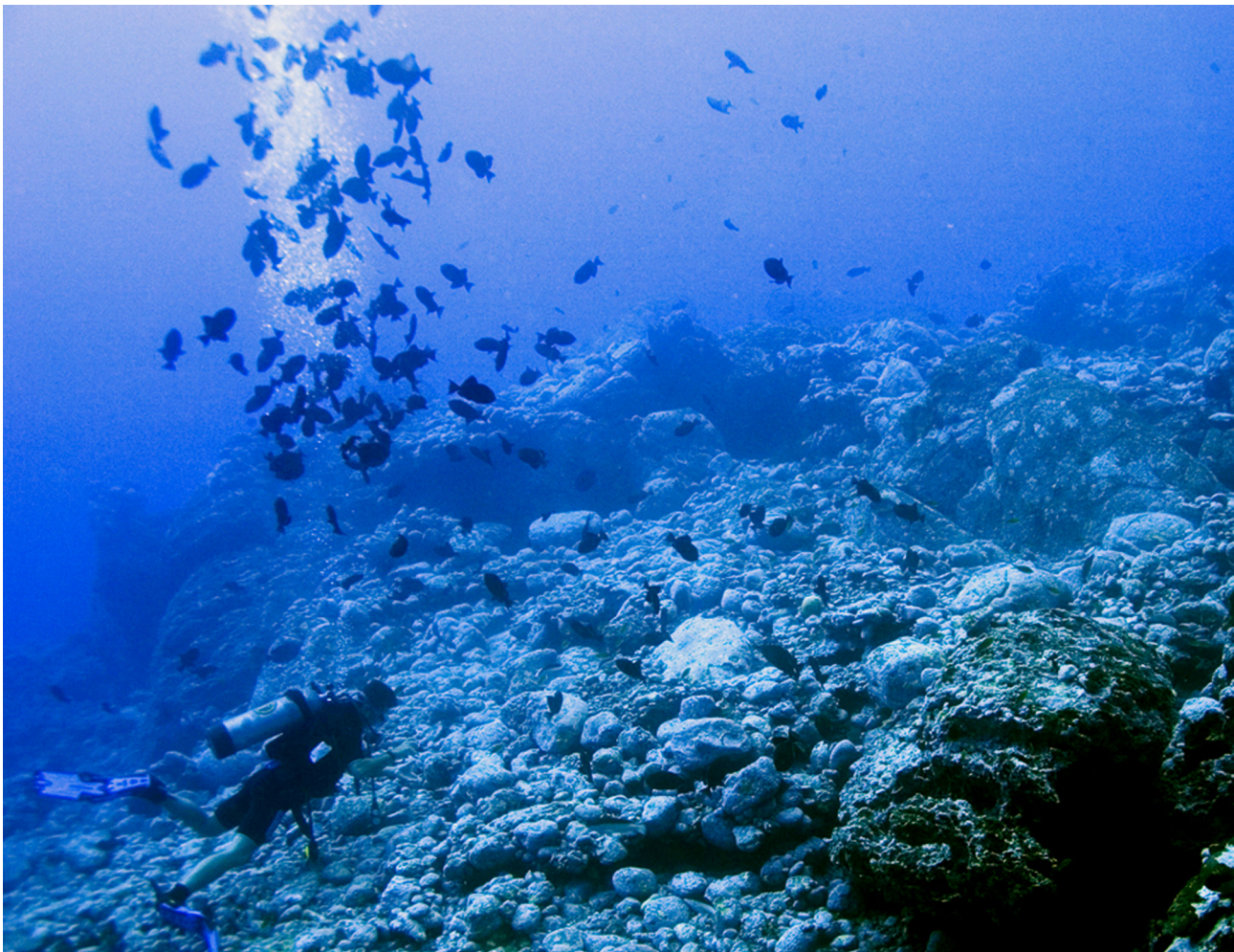


FIGURE 5. Type-locality of *Hypleurochilus brasil*, rocky shore at Trindade Island. Photo by R. Francini-Filho.

Distribution and habitat. *Hypleurochilus brasil* sp. n. is known only from the type locality (Figure 5), and is considered to be endemic to Trindade Island and the Martin Vaz Archipelago. This species was recorded from 3 to 15 m depth, it was found either solitary or in small groups (up to 10 individuals), always in small holes or associated with sea-urchins and sponges on the rocky reefs (Figure 4).

Remarks: *Hypleurochilus brasil* is distinguished from *H. langi*, *H. bananensis*, *H. springeri*, *H. bermudensis*, *H. aequipinnis* and *H. pseudoaequipinnis* by having pelvic-fin rays I, 3 (versus I, 4). It differs from *H. caudovittatus*, *H. fissicornis*, *H. germinatus* and *H. multifilis* by dorsal fin predominantly XII,13, anal fin II, 15 or 16 (usually 16), absence of black stripes and presence of numerous tiny red spots along body (Figures 3 and 4), diminishing in size posteriorly. Its peculiar coloration (vivid orange spots, nape green or white) is different from all congeners except *H. springeri* and some *H. aequipinnis*. A recent phylogenetic analysis shows a low level of divergence between *Hypleurochilus brasil* sp. n. and *H. fissicornis* (0.6–0.8%; Levy *et al.* 2013). These two species differ in number of dorsal and anal-fin rays (Table 1).

Hypleurochilus brasil was misidentified as *H. fissicornis* by Gasparini & Floeter (2001) and is considered as *Hypleurochilus n. sp.* by Levy *et al.* (2013).

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