

# *Lecanogaster gorgoniphila*, a new species of clingfish (Teleostei: Gobiesocidae) from São Tomé and Príncipe, eastern Atlantic Ocean

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Fricke, R. & P. Wirtz 2017. *Lecanogaster gorgoniphila*, a new species of clingfish (Teleostei: Gobiesocidae) from São Tomé and Príncipe, eastern Atlantic Ocean. *Arquipélago*. Life and Marine Sciences 35: 1-10.

The clingfish *Lecanogaster gorgoniphila* new species, an unusual species associated with gorgonians, is described on the basis of 7 specimens and colour photographs from São Tomé Island, São Tomé and Príncipe, eastern Atlantic Ocean. The species is small, probably not exceeding 28 mm total length; it is characterized by having 4-5 dorsal-fin rays, 3-4 anal-fin rays, 21-23 pectoral-fin rays, and 11-14 principal caudal-fin rays; 12-14 rakers on third gill arch, very small, partially fused; papillae in centre of pelvic disk forming a round patch; pelvic disc region B with 5-6 rows of papillae; head relatively short, its length 2.4-3.4 in SL, and relatively narrow, its width 4.5-7.4 in SL; colouration of head and body variable in life, usually dorsally reddish white, ventrally rose, with eight bright red bars with scattered white spots. The new species is compared with other species of the eastern Atlantic genera *Lecanogaster* and *Diplecogaster*; a key to the species of the genus *Lecanogaster* Briggs, 1957 is presented.

*Key words:* clingfishes, São Tomé Island, distribution, identification key, gorgonians

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## INTRODUCTION

The clingfishes of the family Gobiesocidae are distributed worldwide in tropical and temperate seas, some also living in freshwater streams of the tropics. They occur on hard substrata, usually on rocky bottom or in coral reefs, mostly in shallow waters. Clingfishes are characterized by possessing an adhesive disc formed by the pelvic fins, the head depressed, the skin naked, one dorsal and anal fin each, and several specialized osteological characters. The family was revised by Briggs (1955), who distinguished 9 species from the eastern Atlantic and the Mediterranean, all belonging to the subfamily Lepadogastrinae. In addition, there was a single species of Chorisochisminae from the southeastern Atlantic

[*Chorisochismus dentex* (Pallas 1769) from South Africa]. Briggs (1957) described 2 additional species of clingfishes from West Africa, Smith (1964) described *Apletodon knysnaensis* from South Africa, which was later found to be a junior synonym of *Apletodon pellegrini*. Blache et al. (1970) distinguished 2 species of clingfishes from tropical West Africa. Briggs (1986) found that *Lepadogaster microcephalus* Brook, 1890 is a junior synonym of *Apletodon dentatus* (Facciola 1887); he distinguished 8 nominal species of clingfishes from the northeastern Atlantic and Mediterranean, some having several subspecies. Briggs (1990) recorded 8 species of clingfishes from the eastern tropical Atlantic. Hofrichter &

Patzner (1997) described *Apletodon incognitus* from the northwestern Mediterranean Sea and the Azores. Vakily et al. (2002) listed 5 clingfish species from northwestern Africa. Henriques et al. (2002) synonymized *Lepadogaster zebrinus* with *L. lepadogaster* and recognised *L. purpurea* as a valid species, based on their revisional study of this species group. *Lepadogaster candolii* was recently reclassified as *Mirbelia candolii* by Almada et al. (2008: 1155), as *Mirbelia candollei*. Fricke (2007) described *Apletodon wirtzi* from Sao Tomé and Príncipe; *A. barbatus* was described by Fricke et al. (2010) from the Cape Verde Islands, and *Diplecogaster tonstricula* from the Canary Islands and Senegal by Fricke et al. (2015). In a recent review of the Gobiesocidae of the eastern Atlantic, a total of 13 species was recognized to occur in the area (Fricke et al. 2016). Subsequently, *Diplecogaster umuturali* was described from Turkey by Bilecenoğlu et al. (2017).

The clingfish genus *Lecanogaster* was first described by Briggs (1957: 204) on the basis of *L. chrysea* Briggs, 1957 from Ghana as the type species by original designation; the genus was considered as monotypic. Besides some other characters, the genus is characterised by a low number of dorsal- and anal-fin rays, absence of incisors or canines in the jaws, absence of a spine in subopercular region, a relatively high number of gill rakers, disc relatively large, papillae present on central anterior region of disc, a slightly developed fleshy pad on lower pectoral base, 28 vertebrae, and a distinctive shape of bony disc supports. Briggs (1990) considered *L. chrysea* as restricted to Ghana; however, Olivar (1987) recorded larvae of *L. chrysea* from northern Namibia. Both Briggs's (1957) and Olivar's (1987) records were obtained near the estuaries of large rivers. Fricke et al. (2016) still treated the genus *Lecanogaster* as monotypic, with *L. chrysea* as the only species.

An unusual species of clingfish that was associated with gorgonians was observed in February 2017 by the second author at São Tomé Island. It turned out to represent a second, undescribed species of *Lecanogaster*, which is described in the present paper.

## MATERIALS AND METHODS

Specimens of the new species were collected by wiping the surface of large gorgonians (*Leptogorgia* spp. and *Muriceopsis* spp.), at a depth range of 17 to 34 m, with a hand-held aquarium net. One specimen was obtained from a sea-whip *Stichopathes occidentalis* Brook, 1889 in 30 m depth.

Methods follow Briggs (1955) and Hofrichter & Patzner (1997). The abbreviation 'SL' refers to the standard length (measured from the tip of the snout to the middle of the caudal fin base), 'TL' to the total length (measured from the tip of the snout to the end of the caudal fin). The adhesive disc is divided into 3 different areas: region A is the anterior portion, region B the posterior portion, and region C the centre of the disc (as illustrated by Briggs, 1955). In the description, data of the holotype are given first, followed by data of the paratypes in parentheses. Fin rays are counted using the method of Fricke (1983), where spines are expressed as Roman numerals, unbranched soft rays are expressed as lower case Roman numerals and branched rays as Arabic numerals. Subspecies classification is no longer used, following the method of Fricke et al. (2007); valid taxa of the species group formerly treated as subspecies are raised to species level. Specimens cited in the present paper are deposited in the following collections: BMNH (The Natural History Museum, London); CCML (Colección Ictiologica, Departamento de Biología Animal, Ciencias Marinas, Facultad de Biología, Universidad de La Laguna, Tenerife, Spain); MGAB (Muzeul de Istorie Naturală 'Grigore Antipa', Bucharest, Romania); MNHN (Muséum National d'Histoire Naturelle, Paris, France); MZUF (Università di Firenze, Museo Zoologico e Historia Naturale de la Specola, Firenze, Italy); SMNS (Staatliches Museum für Naturkunde Stuttgart, Germany); ZMUC (Københavns Universitet, Zoologisk Museum, Vertebrater, Fiskesamlingen, Copenhagen, Denmark); ZSM (Zoologische Staatssammlung München, Germany).

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RESULTS

TAXONOMY

*Lecanogaster gorgoniphila*, n. sp.

TYPES

Holotype. ZSM 465550, 27.4 mm SL, Eastern Atlantic Ocean, São Tomé and Príncipe, São Tomé Island, Santana, 0°14'45"N 6°44'50"E, 30-34m depth, P. Wirtz, 6 Feb. 2017.

Paratypes. MNHN 2017-0003, 2 specimens, 22.2-23.6 mm SL, same data as the holotype, 9 Feb. 2017. ZSM 46542, 1 specimen, 22.7 mm SL, same data as the holotype, 4 Feb. 2017. ZSM 46454, 3 specimens, 16.8-19.6 mm SL, same data as the holotype, 7 Feb. 2017.

DIAGNOSIS

A species of *Lecanogaster* with 4-5 dorsal-fin rays, 3-4 anal-fin rays, 21-23 pectoral-fin rays, and 11-14 principal caudal-fin rays; 12-14 rakers on third gill arch, very small, partially fused; papillae in centre of pelvic disk forming a round patch; pelvic disc region B with 5-6 rows of papillae; head relatively short, its length 2.4-3.4 in SL, and relatively narrow, its width 4.5-7.4 in SL; colouration of head and body variable in life, usually dorsally reddish white, ventrally rose, with eight bright red bars with scattered white spots.

DESCRIPTION

Dorsal-fin iv (iv-v); anal-fin iii (iii-iv); pectoral-fin xxii (xxi-xxiii); caudal-fin (vi),xiv,(vi) [(v),xi-xii,(v)]. Gill rakers on 3rd arch 14 (12-14), very small, partially fused. Vertebrae 13 + 15.

Teeth small, conical, slightly recurved, in patches towards the front of each jaw, narrowing to a double line of teeth laterally.

Head lateral line system with 3 pores in nasal canal, 2 pores in postorbital canal, 3 pores in lacrymal canal, and 3 pores in mandibular canal (Fig. 3).

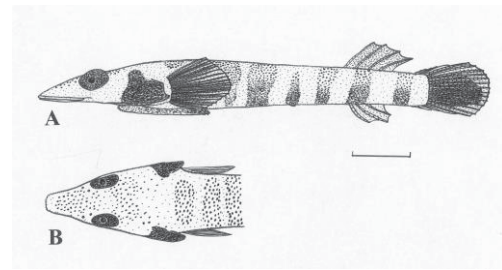


Fig.1. *Lecanogaster gorgoniphila* new species, ZSM 46550, holotype, 27.4 mm SL, Eastern Atlantic Ocean, São Tomé and Príncipe, São Tomé Island. **A** Lateral view; **B** dorsal view. Bar 4 mm.

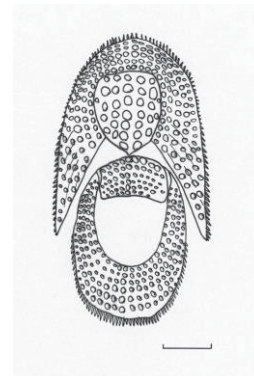


Fig. 2. *Lecanogaster gorgoniphila* new species, ZSM 46550, holotype, 27.4 mm SL, Eastern Atlantic Ocean, São Tomé and Príncipe, São Tomé Island. Disc, ventral view. Bar 1 mm.

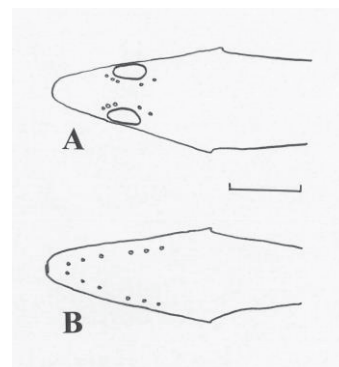


Fig. 3. *Lecanogaster gorgoniphila* new species, ZSM 46550, holotype, 27.4 mm SL, Eastern Atlantic Ocean, São Tomé and Príncipe, São Tomé Island. Head pores. **A** dorsal view; **B** ventral view. Bar 4 mm.

Maximum body depth 11.7 (10.3-19.4)% SL [8.6 (5.2-9.8) in SL]. Maximum head width 21.9 (15.3-21.6)% SL [4.5 (4.6-6.5) in SL]. Maximum (horizontal) orbit diameter 8.0 (5.5-8.8)% SL [3.6 (3.8-5.9) in head length]. Snout elongate, rounded (Fig. 1b). Preorbital length 10.2 (11.4-13.8)% SL [2.9 (2.3-3.5) in head length]. Interorbital distance 6.6 (8.1-10.4)% SL [4.4 (3.9-7.0) in head length]. Upper jaw length 11.0 (14.0-15.3)% SL [2.7 (2.1-2.9) in head length]. Anus situated closer to the anal-fin origin than to the disc (closer to disc than to anal fin in one paratype); distance between disc and anus 21.5 (15.3-19.9)% SL, distance between anus and anal-fin origin 11.3 (12.8-17.4)% SL. Preanus length 63.5 (59.6-71.6)% SL [1.6 (1.4-1.7) in SL]. Caudal-peduncle length 12.0 (12.3-13.3)% SL [8.3 (7.5-8.1) in SL]. Caudal-peduncle depth 9.1 (8.8-10.7)% SL [11.0 (9.3-11.4) in SL].

Predorsal-fin length 78.8 (74.9-82.0)% SL [1.27 (1.22-1.34) in SL]. Preanal-fin length 79.9 (74.2-86.5)% SL [1.25 (1.16-1.34) in SL]. Prepectoral-fin length 33.9 (33.2-48.6)% SL [3.0 (2.1-3.0) in SL]. Predisc length 20.8 (21.1-26.6)% SL [4.8 (3.8-4.7) in SL]. Disc length 22.6 (19.8-37.8) % SL [4.4 (2.6-5.0) in SL]. Disc membrane inserting at base of 20th (18th-20th) pectoral-fin ray. Disc with 5 (5-6) rows of papillae in region A, 6 (5-6) rows of papillae in region B, and 6 (4-6) rows of papillae in region C (Fig. 2). Papillae in centre of pelvic disc forming a round patch. Lateral papillae in disc region A present. Caudal-fin length 14.6 (14.3-17.6)% SL [6.8 (5.7-7.0) in SL].

Colour in life. (Figs. 4-6) Ground colouration of head and body variable, usually dorsally reddish white, ventrally rose, with eight bright red bars with scattered white spots. Bars partially also covered with brown or black pigment spot, mostly in anterior dorsal parts of head and body. Eye dorsally yellow, ventrally whitish, iris green. Anterior half of snout bright orange. Occipital region with three orange blotches. Dorsal-fin rays white, caudal fin white, with a large central red blotch. Disc orange.

Colour in preservative. (Fig. 1) Head and body pale, with pigment spots on anterior dorsal parts of head and body; caudal fin with a central, purple blotch.

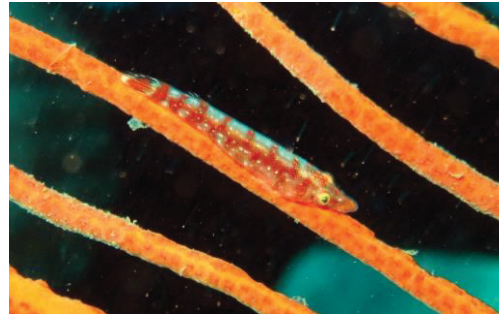


Fig. 4. *Lecanogaster gorgoniphila* new species, São Tomé and Príncipe, São Tomé Island, Santana, underwater photograph of ZSM 46550, holotype. Photograph P. Wirtz.



Fig. 5. *Lecanogaster gorgoniphila* new species, São Tomé and Príncipe, São Tomé Island, Santana, underwater photograph of ZSM 46542, paratype. Photograph P. Wirtz.



Fig. 6. *Lecanogaster gorgoniphila* new species, São Tomé and Príncipe, São Tomé Island, Santana, colouration of ZSM 46454, paratypes immediately after collection. Photograph P. Wirtz.

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ETYMOLOGY

The name refers to the close association with gorgonians that was observed for this species. The name stems from gorgonia (gorgonian), and the Greek φίλη (friend); it is used as a noun in apposition.

DISTRIBUTION

Eastern Atlantic Ocean: São Tomé and Príncipe, São Tomé Island. The species was collected and observed at 30-34 m depth, in commensal association with gorgonians gorgonians.

COMPARISONS

*Lecanogaster Lecanogaster gorgoniphila* n. sp. shares with *L. chrysea* the characters of the genus, i.e. a low number of dorsal- and anal-fin rays, absence of incisors or canines in the jaws, absence of a spine in subopercular region, a relatively high number of gill rakers, disc relatively large, papillae present on central anterior region of disc, and a slightly developed fleshy pad on lower pectoral base.

The new species differs from *L. chrysea* by having 3-4 anal-fin rays (versus 5 in *L. chrysea*), gill rakers on third arch 12-14 (versus 7 in *L. chrysea*), a relatively short head, its length 2.4-3.4 in SL (versus 2.2-2.4 in SL in *L. chrysea*), a relatively narrow head, its width 4.5-7.4 in SL (versus 3.8-4.4 in SL in *L. chrysea*), the papillae in the centre of the disc forming a round patch (versus arranged in upside down T shape in *L. chrysea*), and 5-6 rows of papillae in disc region B (versus 4 rows in *L. chrysea*).

From species of the similar eastern Atlantic genus *Diplecogaster*, which is distinguished from *Lecanogaster* by the absence of a fleshy pad on lower pectoral-fin base, as well as a characteristic disc-supporting skeleton, the new species is also distinguished by its 4-5 dorsal-fin rays (versus 9 rays in *D. ctenocrypta* and *D. tonstricula*, or 7 rays in *D. pectoralis*), 3-4 anal-fin rays (versus 8 rays in *D. ctenocrypta* and *D. tonstricula*, or 6-7 rays in *D. pectoralis*), 21-23 pectoral-fin rays (versus 24-25 in *D. tonstricula*, 25 in *D. ctenocrypta*, 25-26 in *D. pectoralis*), 11-14 principal caudal rays (versus 19-21 in *D. bimaculata*, 16 in *D. ctenocrypta*, 21-22 in *D. pectoralis*), 12-14 gill rakers on third arch (versus 7-11 in *D. bimacula-*

*ta*, 18 in *D. ctenocrypta*, 7-10 in *D. euxinica*, 6-9 in *D. megalops*), disc length 2.6-4.4 in SL (versus 4.7-5.2 in *D. tonstricula*), head width 4.5-7.4 in SL (versus 4.2 in SL in *D. tonstricula*, 3.2-3.7 in S in *D. megalops*, 3.6-4.2 in SL in *D. pectoralis*), eye diameter 3.6-5.9 in head length (versus 3.2-3.5 in *D. tonstricula*, 3.5 in *D. ctenocrypta*, 2.3-3.6 in *D. megalops*), disc region A with 5-6 rows of papillae (versus 3 rows in *D. tonstricula*, 4 rows in *D. ctenocrypta*), disc region B with 5-6 rows of papillae (versus 4 rows in *D. tonstricula* and *D. ctenocrypta*, 3 rows in *D. pectoralis*), disc region C with 4-6 rows of papillae (versus 2 rows in *D. tonstricula*), and lateral papillae in disc region A present (versus absent in *D. tonstricula*).

The species of *Lecanogaster* may be distinguished with an identification key (see below). Species of *Lecanogaster* and the similar genus *Diplecogaster* are also compared in Table 1.

DISCUSSION

The new species was classified in the genus *Lecanogaster* as it agrees with the generic characters given by Briggs (1957) within the subfamily Lepadogastrinae: low number of dorsal- and anal-fin rays, absence of incisors or canines in the jaws, absence of a spine in subopercular region, a relatively high number of gill rakers, disc relatively large, papillae present on central anterior region of disc, a slightly developed fleshy pad on lower pectoral base, 28 vertebrae, and a distinctive shape of bony disc supports.

The similar genera *Lecanogaster* and *Diplecogaster* are both distributed in the eastern Atlantic (Fig. 7). While *Lecanogaster* is found in the equatorial region between Ghana and Namibia (now including São Tomé and Príncipe), *Diplecogaster* occurs further towards the north, from Senegal and the Cape Verde Islands northward to the Faroes and Norway, including the Mediterranean and Black seas. No distributional overlap has been observed between these genera.

The new species *Lecanogaster gorgoniphila* is the only clingfish species that was found to be associated with gorgonians and sea whips. The habitat of the other species in the genus, *L. chrysea*, remains unknown, though the species was collected in or near estuaries both in Ghana

Table 1. Comparison of counts and proportions of the species of *Lecanogaster* and *Diplecogaster*. Character states significantly differing from those of the new species are printed in **bold face**.

	<i>L. gorgoniphila</i> <i>sp. nov.</i>	<i>L. chrysea</i>	<i>D. tonstricula</i>	<i>D. bimaculata</i>	<i>D. ctencroptia</i>	<i>D. euxinica</i>	<i>D. megalops</i>	<i>D. pectoralis</i>
Maximum SL (mm)	27	21	23	49	16	48	26	27
Dorsal-fin rays	4-5	5-6	<b>9</b>	5-7	<b>9</b>	5-8	4-5	<b>7</b>
Anal-fin rays	3-4	<b>5</b>	<b>8</b>	4-6	<b>8</b>	4-7	3-4	<b>6-7</b>
Pectoral-fin rays	21-23	21-23	<b>24-25</b>	20-25	<b>25</b>	21-26	22-25	<b>25-26</b>
Principal caudal-fin rays	11-14	10-12	14-15	<b>19-21</b>	<b>16</b>	12-14	10-15	<b>21-22</b>
Gill rakers on 3rd arch	12-14	<b>7</b>	13-16	<b>7-11</b>	<b>18</b>	<b>7-10</b>	<b>6-9</b>	8-11
Disc length in SL	2.6-4.4	4.1-4.7	<b>4.7-5.2</b>	3.4-4.3	3.9	3.2-4.8	3.4-4.0	3.9-4.6
Head length in SL	2.4-3.4	<b>2.2-2.4</b>	2.7-2.8	2.4-3.1	2.5	2.3-3.3	2.6-3.0	2.5-2.8
Head width in SL	4.5-7.4	<b>3.8-4.4</b>	<b>4.2</b>	3.2-4.8	6.0	3.1-4.7	<b>3.2-3.7</b>	<b>3.6-4.2</b>
Eye diameter in head length	3.6-5.9	3.5-4.4	<b>3.2-3.5</b>	3.7-4.9	<b>3.5</b>	3.2-6.1	<b>2.3-3.6</b>	3.2-3.9
Fleshy pad on lower pectoral base	Present	Present	<b>Absent</b>	<b>Absent</b>	<b>Absent</b>	<b>Absent</b>	<b>Absent</b>	<b>Absent</b>
Papilla rows in disc region A	5-6	4-5	<b>3</b>	4-7	<b>4</b>	3-7	4-5	3-5
Papilla rows in disc region B	5-6	<b>4</b>	<b>4</b>	3-5	<b>4</b>	<b>3-5</b>	5-7	<b>3</b>
Papilla rows in disc region C	4-6	5	<b>2</b>	5-9	5	4-9	3-4	6
Position of anus	Usually closer to anal fin than to disc	Closer to anal fin than to disc	Closer to anal fin than to disc	In middle between disc and anal fin	Much closer to anal fin than to disc	In middle between disc and anal fin	In middle between disc and anal fin	In middle between disc and anal fin
Lateral papillae in disc region A	present	present	<b>absent</b>	present	present	present	present	present
Distribution	São Tomé	Ghana to Namibia	Canary Is., Senegal	Mediterranean to Norway	Canary Is.	Black Sea	South Africa	Canary Is., Madeira,

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Fig. 7. Geographical distribution of the species of *Lecanogaster* and *Diplecogaster* in the eastern Atlantic Ocean, Mediterranean and Black seas. **A** *Lecanogaster gorgoniphila* n. sp.; **B** *L. chrysea*; **C** *Diplecogaster bimaculata*; **D** *D. ctenocrypta*; **E** *D. euxinica*; **F** *D. megalops*; **G** *D. pectoralis*; **H** *D. tonstricula*.

and Namibia (Briggs 1957; Olivar 1987). In the Indo-West Pacific, three species of *Discotrema* Briggs, 1976, *Lepadichthys lineatus* Briggs, 1966, and *Unguitrema nigrum* Fricke, 2014 are associated with crinoids (Briggs 1976; Craig & Randall 2008; Allen & Erdmann 2012; Fricke 2014), and some of them have special disc adaptations to attach to the crinoid branches, including little hook-like structures on the disc papillae in *Unguitrema* (Fricke 2014). Such adaptations were not found in *Lecanogaster gorgoniphila* n. sp., but the body is slender and the disc is relatively narrow and covered with numerous papillae on all

available surfaces, possibly in order to attach to the relatively smooth gorgonian branches.

Several gobiesocid fishes are known to be associated with invertebrates. One of the first such associations reported was that of *Lepadichthys lineatus* Briggs, 1966 with crinoids (Fishelson 1966). Species of *Discotrema* and *Unguitrema* are also associated with crinoids (Craig & Randall 2008; Fricke 2014). A few other fish species are known to be associated with gorgonian seaweeds, including seahorses of the genus *Hippocampus* (Syngnathidae) (Whitley 1970, Lourie & Randall 2003), and gobies of the genera *Bry-*

*aninops*, *Lobulogobius* and *Pleurosicya* (Gobiidae) (Larson 1985, 1990; Allen & Erdmann 2012). Breder (1946) coined the term "deceptive resemblance" for this type of camouflaging behaviour, as the species avoid detection by predators by their resemblance to structural organisms of the habitat like plants, corals, sponges and seaweeds, and Randall (2005) considered this is a kind of mimicry, i.e. fish mimicking the structure of such organisms.

The species probably feeds on crustaceans associated with its host gorgonians. Gorgonians harbour a rich fauna of crustaceans on both side of the Atlantic (Spotte et al. 1995, Wirtz & d'Udekem d'Acoz 2001), including São Tomé Island (Wirtz & d'Udekem d'Acoz 2008). At the collection site of *L. gorgoniphila*, gorgonians with a gobiesocid had few or no shrimps, while gorgonians without gobiesocid usually had numerous associated shrimps.

#### Key to the Species of the Genus *Lecanogaster* Briggs, 1957

- 1a. Anal-fin rays 5; gill rakers on third arch 7; head relatively long, its length 2.2-2.4 in SL; head broad, its width 3.8-4.4 in SL; papillae in disc region B in 4 rows.....*Lecanogaster chrysea*  
 1b. Anal-fin rays 3-4; gill rakers on third arch 12-14; head shorter, its length 2.4-3.4 in SL; head narrower, its width 4.5-7.4 in SL; papillae in disc region in 5-6 rows.....  
 .....*Lecanogaster gorgoniphila*, n. sp.

#### Comparative material

*Diplecogaster bimaculata*: SMNS 12541, 1 specimen, France, Pyrénées Orientales, Racou, 22 km SSE Perpignan, 42°32'30"N, 3°1'E, 5 m depth, M. Grabert, Sep. 1991; SMNS 13177, 1 specimen, Italy, Giglio Island, Bay of Campese, at Faraglione, 42°22'N, 10°52'E, 20 m depth, I. Koch, 28 Apr. 1992; SMNS 14049, 2 specimens, Italy, Giglio Island, Bay of Campese, at Tralicci, 42°22'N, 10°52'E, 8 m depth, I. Koch, 18 Apr. 1993; SMNS 19061, 2 specimens, Northern Cyprus, Karavas Alsavcak Bay, 9 km W Kyrenia/Girne, 35°21'13"N, 33°13'15"E, 0-1 m depth, R. Fricke, 19 May 1997; SMNS 19204, 2 spec., Italy, Giglio Island, Bay of Campese, 42°22'35"N, 10°52'58"E, 10 m depth, I. Koch, 14 June 1985; SMNS 20347, 1 specimen, Tunisia,

4 km E Tabarca, 6 km E Bone/Annaba, 36°57'22"N, 8°47'52"E, 0-6 m depth, R. Fricke, 23 May 1998.

*Diplecogaster megalops*: ZMUC P9031, holotype, South Africa, off Durban, 120 fms depth, T. Mortensen, 22 July 1929.

*Diplecogaster pectoralis*: SMNS 11916, 4 specimens, Azores Islands, Faial Island, Horta, 38°32'N, 28°38'W, P. Wirtz, Dec. 1990; SMNS 20163, 8 specimens, Madeira, off Hotel Roca Mar, Caniço de Baixo, 40-70 m depth, P. Wirtz, 22 Sep. 1996; SMNS 21202, 2 specimens, Madeira, Porto Novo, 1-2 m depth, P. Wirtz, 16 Oct. 1998; ZMUC P9034, holotype, off La Luz, Gran Canaria, 100 fms depth, T. Mortensen, July 1929.

*Diplecogaster tonstricula*: ZSM 40089, holotype, 21.3 mm SL, Senegal, Dakar, 14°43.806'N, 17°32.046'W, 28 m depth, P. Wirtz, 20-24 October 2009; CCML uncat., 2 paratypes, 18.7-22.9 mm SL, Canary Islands, Fuerteventura, Morro del Jable, 28°02'42"N, 14°21'12"W, 38 m depth, R/V Ventura; ZSM uncat. [ex. 40089], 5 paratypes, 11.8-21.1 mm SL, Senegal, Dakar, 1.3 km south-south-west of La Pointe des Almades, 14°43.806'N, 17°32.046'W, 28 m depth, P. Wirtz, 20-24 October 2009.

*Lecanogaster chrysea*: BMNH 1958.7.3.1, holotype, 20.5 mm SL, Old Ningo, Ghana, Bassindale, 10 Dec. 1950.

#### ACKNOWLEDGMENTS

We would like to thank O. Crimmen (BMNH, London), A. Brito (CCML, La Laguna), T. T. Nalbant (MGAB, Bucharest), M.-L. Bauchot, R. Causse, M. Desoutter, G. Duhamel, P. Pruvost (MNHN, Paris), M. A. Krag, P. R. Møller and J. C. Nielsen (ZMUC, Copenhagen), who gave access to specimens in their care. D. Neumann and U. K. Schliewen (ZSM, Munich), and P. Pruvost (MNHN, Paris), provided catalogue numbers of the holotype and paratypes, and the former also an x-ray of a specimen of the new species. Thanks to Alberto Miranda (Atlantic Diving Center, Santana, São Tome Island) and to Hugolay Maia for diving with the second author. This study received Portuguese national funds through FCT - Foundation for Science and Technology through project UID/Multi/04326/2013.



*Lecanogaster gorgoniphila*, a new species of clingfish from São Tomé and Príncipe

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- Received 24 Sep 2017. Accepted 23 Oct 2017.  
Published online 29 Nov 2017.