



***Lepetella furuncula* sp. nov. (Vetigastropoda: Lepetelloidea): the first species of the genus discovered in the South Atlantic Ocean (northeastern Brazil)**

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ABSTRACT.—The genus *Lepetella* Verrill, 1880 is reported here for the first time in the South Atlantic Ocean (northeastern Brazil) based on the description of *Lepetella furuncula* sp. nov. The new species is compared to the majority of the Atlantic and Mediterranean congeners (*Lepetella tubicola* Verrill and S. Smith [in Verrill], 1880; *Lepetella ionica* F. Nordsieck, 1973; *Lepetella barrajoni* Dantart and Luque, 1994; *Lepetella espinosae* Dantart and Luque, 1994; and *Lepetella sierrai* Dantart and Luque, 1994), and is unique in having a scalene triangle-shaped shell in side view, a large anterior region, and an apex well posterior to the center of the shell. There is no record of specimens of *Lepetella* associated with the tubes of polychaetes off the Brazilian coast.

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Lepetelloidean gastropods comprise eight families of marine vetigastropods (Bouchet and Rocroi 2005, Bouchet and Gofas 2014), among which Bathyphytophilidae, Addisoniidae, Lepetellidae, and Pseudococculinidae have been reported thus far for the Atlantic Ocean (see Moskalev 1978, Dantart and Luque 1994, McLean and Harasewych 1995, Simone 1996, Leal and Harasewych 1999, Leal and Simone 2000, Simone and Cunha 2003, Ardila and Harasewych 2005, Roldán and Luque 2010, Lima 2014).

The family Lepetellidae includes symmetrical limpets, usually with a thin, concentrically sculptured, saddle-like shell (Haszprunar 1998) known worldwide to be associated with the empty tubes of *Hyalinoecia* (Hickman 1983, Dantart and Luque 1994, Haszprunar 1998), as well as trochiform/naticiform species that feed upon egg cases of sharks and rays (McLean 1992). *Lepetella* and *Lepetella tubicola* Verrill and S. Smith [in Verrill], 1880 (type by monotypy) were described based on the shell (Verrill 1880: 396), although Verrill (1880) found specimens living on *Hyalinoecia* tubes in deep waters of the northwestern Atlantic Ocean (Verrill 1880: 396, Dall 1882: 408, Dantart and Luque 1994: 283). In the late 19th century, the distribution of the genus was extended to Europe based on the description of *Lepetella laterocompressa* (de Rayneval and Ponzi, 1854); later, this species was discovered in the fossil

record from Italy (Dantart and Luque 1994). *Cocculina clypidellaeformis* Suter, 1908 [later recognized as a *Lepetella* (Marshall 2015)] is the only record of the genus in the Indo-Pacific region. Subsequently, *Lepetella ionica* Nordsieck, 1973 and *Lepetella postapicula* Dell, 1990 were described from European waters (Dantart and Luque 1994, Bouchet 2014). Dantart and Luque (1994) reviewed Lepetellidae fauna from Iberian waters and described three new species based on differences in the shell, radula, and external morphology. To date, the greatest species richness of *Lepetella* is known from locations in the northeastern Atlantic Ocean (Dantart and Luque 1994, Gofas et al. 2001, Sysoev 2014). Moreover, there has been no previous information published on this genus for the South Atlantic Ocean.

Here, we describe a new species of the genus *Lepetella* from the South Atlantic Ocean.

MATERIAL AND METHODS

The present paper is based on the study of specimens collected by the R/V NATUREZA using a trawling dredge between 375 and 500 m depth on the continental slope off the state of Rio Grande do Norte (northeastern Brazil) as part of benthic studies of the “Programa de Avaliação do Potencial Sustentável de Recursos Vivos na Zona Econômica Exclusiva (REVIZEE/2000–2001)”. The conchological measures presented herein are based on McLean and Harasewych (1995: 4, fig. 1). The specimens studied are deposited in the Museu de Zoologia, Universidade de São Paulo (MZSP), São Paulo, Brazil.

RESULTS

Lepetella furuncula new species

(Fig. 1)

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Type Material.—Holotype, MZSP 121234 (1.56 mm length × 0.98 mm width × 0.70 mm height), Brazil, state of Rio Grande do Norte, off Touros, 04°51′00″S, 35°06′46″W, 375 m (R/V NATUREZA, 24 November, 2001); paratype, MZSP 121235 (broken: 1.12 mm width), Brazil, State of Rio Grande do Norte, off Pipa, 06°14′24″S, 34°52′06″W, 500 m (R/V NATUREZA, 26 November, 2001).

Type Locality.—Brazil, state of Rio Grande do Norte, off Touros, 04°51′00″S 35°06′46″W, 375 m (R/V NATUREZA, 24 November, 2001).

Description.—Shell saddle-shape, oblong, profile approximately scalene triangle-shaped in side view (Fig. 1B), thin, fragile, smooth, opaque white (Fig. 1A–B). Protoconch lost, replaced by rounded calcified septum; apex swollen, broadly rounded, well posterior from center, slightly deflected backward (Fig. 1A–B, D). Teleoconch sculptured by weak, fine, irregular, narrowly spaced growth striae/lines, shallow grooves alternating between lines (Fig. 1A, C–D), and extremely smooth radial riblets (see three on anterior slope indicated by arrows in Fig. 1A). Anterior region large, wide, occupying about 74% of shell length (Fig. 1A–B). Anterior slope nearly straight and moderately inclined forming angle between 23° and 30° from base (Fig.

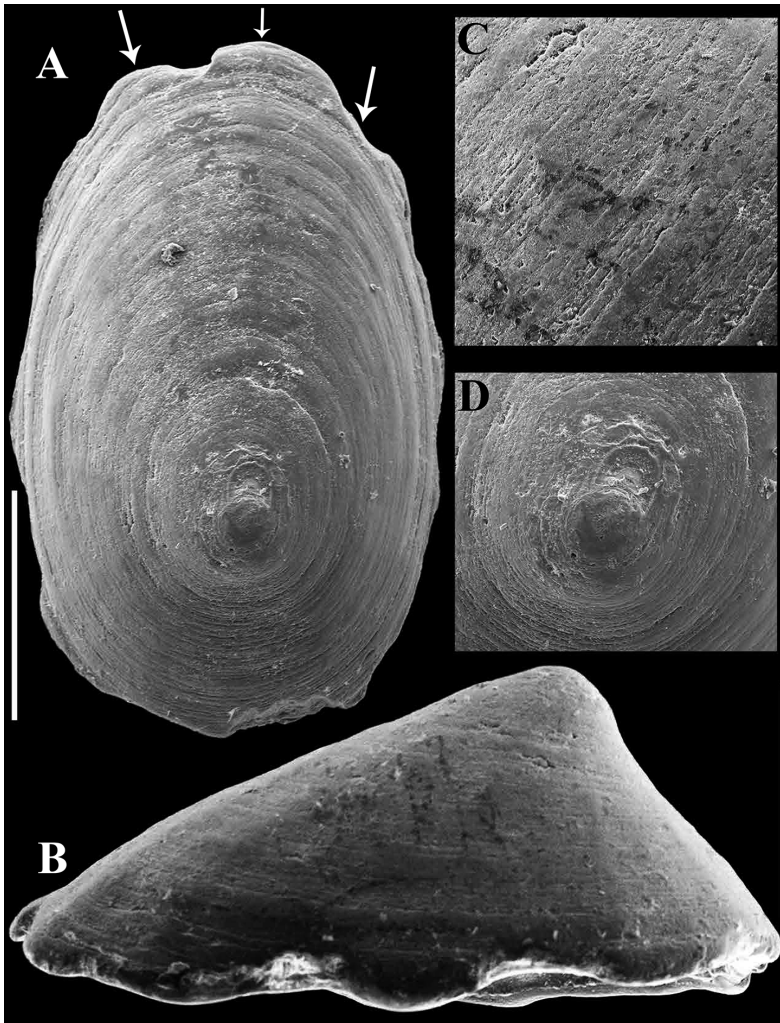


Figure 1. *Lepetella furuncula* sp. nov. (holotype – MZSP 121234): (A) dorsal view (arrows indicating riblets); (B) left view; (C) detail of concentric striae and lines in anterior region; (D) detail of apex and adjacent concentric lines. Scale bars: (A–B) 500 μm ; (C) 100 μm ; (D) 200 μm .

1B). Anterior end convex (Fig. 1A). Posterior slope short, slightly convex (Fig. 1B). Posterior end convex (Fig. 1A). Lateral slopes very slightly convex (Fig. 1A–B). Base/aperture approximately planar (except for undulated shell edge), broadly elliptical in dorsal and ventral views (Fig. 1A–B). Margin irregular, widely wavy (probably reflecting shape of substrate), rather moderately thickened, with some eroded areas (Fig. 1B). Inner surface smooth, glossy, lacking clear muscle scars.

Etymology.—“Furúnculo” (furuncle) is Portuguese vernacular—an injury to the skin forming a rounded, elevated nodule.

Geographic Distribution.—Deep waters of the southwestern Atlantic; northeastern Brazil, continental slope off the state of Rio Grande do Norte.

DISCUSSION

To date, a total of nine species of *Lepetella* have been described worldwide (Gofas 2014), six of which are from the North Atlantic Ocean (Verrill 1880, 1882, Abbott 1974, Dantart and Luque 1994). The unique shell morphology of *Lepetella furuncula* sp. nov. in comparison to known congeners justifies its description without an anatomical study.

The new species differs considerably from its North Atlantic congeners in having a shell with a profile with an approximately scalene triangle shape in side view (Fig. 1B), a large anterior region occupying about 74% of the shell length, and consequent apex well posterior to the center of the shell. *Lepetella barrajoni* Dantart and Luque, 1994, *Lepetella espinosae* Dantart and Luque, 1994, *L. ionica*, *L. laterocompressa*, *Lepetella sierrai* Dantart and Luque, 1994, and *L. tubicola* share a subconical to conical shell, with a subcentral to central apex (Verrill 1882: pl. 58 fig. 29, Abbott 1974: fig. 205, Dantart and Luque 1994).

Lepetella furuncula sp. nov. and *L. tubicola* also share an outer surface sculptured with concentric growth striae and a broadly elliptical aperture. The new species differs from *L. tubicola* in having extremely smooth riblets (Fig. 1A–B), an anterior region forming an angle between 23° and 30° (Fig. 1B) from the margin, and a broadly rounded apex (Fig. 1D). *Lepetella tubicola* has only concentric lines on the outer surface, a well inclined anterior and posterior slope (both forming an angle of about 40°), and an acute apex (Verrill 1880: 396, 1882: pl. 58 fig. 29, Abbott 1974: fig. 205). Furthermore, there is a more or less warped, thin margin in *L. tubicola* (Verrill 1880: 396), which apparently is not observed in some illustrations (Verrill 1882: pl. 58 fig. 29, Abbott 1974: fig. 205), while *L. furuncula* sp. nov. has a strongly irregular, moderately thickened margin (Fig. 1B).

Lepetella furuncula sp. nov. is similar to *L. barrajoni*, *L. espinosae*, *L. ionica*, and *L. sierrai* in the presence of weak and irregular growth lines. In contrast, *L. furuncula* sp. nov. clearly differs from these eastern Atlantic congeners based on the following characters: (1) Apex shape: the apex is swollen and broadly rounded in the new species, rather acute in *L. barrajoni* and *L. sierra*, widely flattened in *L. ionica*, and sub-rounded in *L. espinosae*. (2) Contour of anterior slope: the anterior slope is nearly straight in the new species and variably convex in *L. barrajoni*, *L. espinosae*, *L. ionica*, and *L. sierra*. (3) Angle of anterior slope: *Lepetella furuncula* sp. nov. is diagnosed by the presence of a large anterior region forming an angle between 23° and 30° from the base; the north Atlantic congeners have a narrower anterior region forming a steeper angle of about 36°–54° in *L. espinosae* (Dantart and Luque 1994: figs 21–22), 38° in *L. sierra* (Dantart and Luque 1994: fig. 29), 43° in *L. ionica* (Dantart and Luque 1994: fig. 54), and 46° in *L. barrajoni* (see Dantart and Luque 1994: fig. 35). (4) Contour of posterior slope: the posterior slope is slightly convex in the new species and slightly concave to almost straight in *L. barrajoni*, *L. espinosae*, and *L. ionica*. *Lepetella sierra* has a slightly sigmoid posterior slope. (5) Contour of base: the base is broadly elliptical in adult specimens of *L. furuncula* sp. nov., *L. barrajoni*, and *L. espinosae*, while it is oval to round in *L. ionica* and *L. sierra*. Furthermore, the lateral margin of the base of the new species is sub-flattened, while it is flat in *L. ionica* and variably convex in *L. barrajoni*, *L. espinosae*, and *L. sierra*. (6) Contour and thickness of margin: *Lepetella furuncula* sp. nov. has a widely undulated, moderately thickened margin, while *L. barrajoni*, *L. espinosae*, *L. ionica*, and *L. sierra* share a uniform, sharp, fragile

margin. (7) Riblets: There are extremely smooth radial riblets on the anterior region of *L. furuncula* sp. nov. There is no previous mention and/or illustration of riblets on the *Lepetella* shells (Verrill 1880, 1882, Abbott 1974, Dantart and Luque 1994).

Species of *Lepetella* are known to live on the outer surface and inside empty tubes of polychaetes of the genus *Hyalinoecia* [e.g., *Hyalinoecia tubicola* (O.F. Müller, 1776)] (Dantart and Luque 1994). Members of *Hyalinoecia* occur in all oceans from shallow waters to the deep sea (Paxton 1986, Lana 1991, Amaral et al. 2013). *Lepetella barrajoni*, *L. espinosae*, *L. sierra*, and *L. tubicola* are among the Atlantic and Mediterranean species described on tubes of *H. tubicola* at depths between 58 and 351 m (Verrill 1880, Dantart and Luque 1994). *Hyalinoecia juvenalis* Moore, 1911 and *H. tubicola* are the only polychaetes of that genus reported from off southern and southeastern Brazil on the continental shelf to deep waters (Amaral et al. 2013). To date, there is no information on *Lepetella* associated with the tubes of these two species along the Brazilian coast. The new species described herein was collected from muddy bottoms in which polychaete tubes were not observed.

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