

A new species of the genus *Gonyostomus* from Brazil

(Gastropoda, Stylommatophora, Strophocheilidae)

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Simone, L. R. L. 2016. A new species of the genus *Gonyostomus* from Brazil (Gastropoda, Stylommatophora, Strophocheilidae). *Spixiana* 39(1): 11–13.

Gonyostomus elinae is a new species collected from the Caboclos region of São Paulo, Brazil, extending the distribution of the genus south to the cavern environment of the central Atlantic rainforest. The new species differs from the other three species in the genus in having a different colour pattern of the shell, a wider umbilicus, smoother sculpture, and a wider aperture having a straight inner lip. The species can be already classified as endangered.

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Introduction

The genus *Gonyostomus* Beck, 1837 is endemic to southeastern Brazil, living in humid Atlantic rainforest. The genus is infrequent, and samples have been collected rarely. Because of anatomical characters, such as the absence of ureter (Leme 1973, 1975), the genus is placed within the Strophocheilidae, despite conchological similarity with some orthalicids.

Only three species are known in the genus: *Gonyostomus goniosomus* (Ferussac, 1821), the type species, occurring in the central region of Rio de Janeiro state; *G. insularis* Leme, 1974, is endemic to Buzios Island, São Paulo; and *G. egregius* (Pfeiffer, 1845), which occurs in the southern Rio de Janeiro and northern São Paulo states (Leme 1974, Simone 2006).

Recently the Museum of Zoology of the University of São Paulo (MZSP) received an important collection of molluscs collected in caves throughout Brazil, by Maria Elina Bichuette and her team of the Federal University of São Carlos. In that collection, three samples with a total of four specimens from a cave area in southern São Paulo appeared to belong to the uncommon genus *Gonyostomus*. Analysis of this material revealed that they belong to a single new species, formally described herein. This expands

the known geographic range of the genus towards the south.

Material and methods

All samples are dry shells collected inside caves, possibly carried inside by rainwater. The type material of the three previously known species of *Gonyostomus* were examined, and are figured elsewhere (Simone 2006: 202–203).

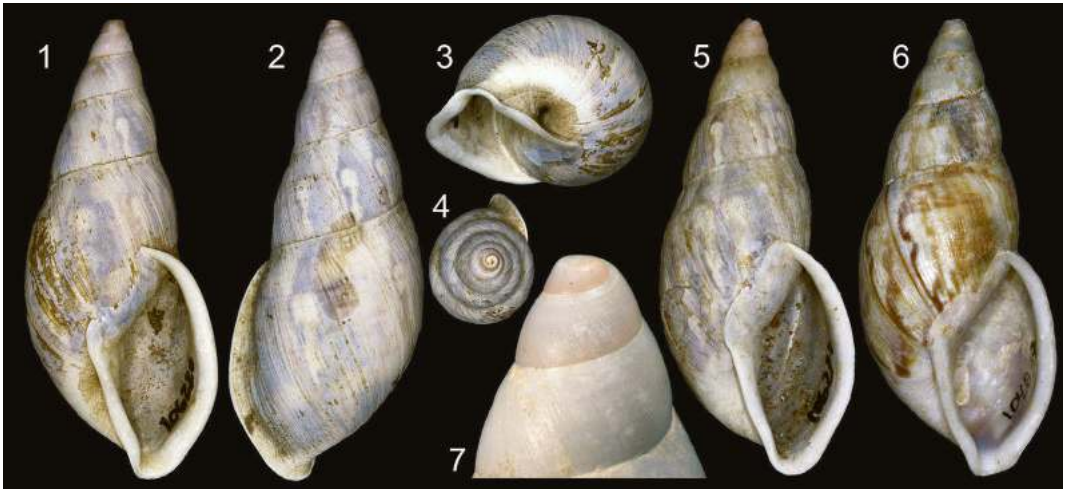
Systematics

Gonyostomus elinae spec. nov.

Figs 1–7

Type material. Holotype: MZSP 106226 (sta. LES2205) (Figs 1–4). Paratypes: MZSP 106237, 1 shell from type locality (sta. LES2204) (Fig. 5); MZSP 104837, 2 shells of uncertain locality (possibly same as the type locality) (sta. LES2068) (Figs 6–7).

Type locality. Brazil, São Paulo, Caboclos Region, Iporanga, PETAR (Alto do Ribeira State Park), Chapéu Mirim Cave, 24°25'52" S 48°35'07" W (Bichuette et al. leg., 15.vi.2008).



Figs 1–6. *Gonyostomus elinae* new species. 1. Holotype MZSP 106226, apertural view (L 46.9 mm). 2. Same, dorsal view. 3. Same, basal view. 4. Same, apical view. 5. Paratype MZSP 106237, apertural view (L 46.2 mm). 6. Paratype MZSP 104837#1, apertural view (L 40.9 mm). 7. Detail of apex in profile, MZSP 104837#2 (width at cut-off = 8 mm).

Diagnosis. Shell background colour pale beige to cream, with brownish-purple blotches occupying ~40 % of surface. Sculpture axially elongated, minute nodes arranged in spiral rows (9–10 on penultimate whorl). Aperture wide, with relatively straight inner lip. Umbilicus wide for genus.

Description

Shell (Figs 1–6). Outline fusiform; height about 47 mm, width ~42 % of length; ~5.5 whorls (Fig. 4). Background colour pale beige to cream, with brown to brownish-purple markings, blotches, occupying ~40 % of surface; blotches irregularly arranged in spiral pattern, resulting in 4 equidistant bands on last whorl (Fig. 2). Lower part of body whorl devoid of colour markings; in apertural view (Figs 1, 5, 6) large, light-coloured region, well delimited by distinct, oblique line beginning at junction of columellar and parietal areas, extending downwards, joining white peristome; in dorsal and basal views (Figs 2–3, respectively), light-coloured area forming spiral light colour band surrounding umbilicus. Protoconch of 1.5 whorls, rounded profile, with flattened superior surface, weakly carinate in superior region, sculptured by delicate net of axial and spiral lines (Fig. 7), ~10 spiral lines on first whorl; occupying ~15 % of superior shell surface in apical view (Fig. 4); diameter ~3.5 mm. Spire acuminate, occupying ~55 % of shell length; spire angle ~35–40 °; suture shallow, whorls weakly convex. Teleoconch sculpture of well-developed growth-lines and axial undulations; surface additionally wrinkled by small, axially elongated nodes on top of undulations, ar-

ranged successively in spiral lines, ~9–10 on penultimate whorl (Fig. 2); each node ~3 times as long as wide. Body whorl occupying ~ $\frac{2}{3}$ of shell length, not more elongated than previous whorls. Aperture completely white, ~twice longer than wide, elliptical; anterior notch well-developed, almost siphon-like, anteriorly directed (Fig. 3); outer lip weakly convex, edge thick, expanded, thereby increasing shell width ~15 %; edge weakly narrower superiorly, gradually becoming wider in inferior portion (Figs 1, 5, 6); edge thinner in anterior notch; superior half of inner lip almost straight, callus thin, translucent (Figs 1, 5, 6), inferior half similar to outer lip, almost straight and with uniform width along its length. Umbilicus relatively wide (Fig. 3), partially covered by expansion of inner lip; possessing shallow spiral marginal furrow.

Measurements (in mm). Holotype: 46.9 by 20.0; MZSP 106237: 46.2 by 20.1; MZSP 104837 #1: 40.9 by 18.4; #2: 36.2 by 15.2 (subadult specimen without expanded peristome).

Habitat. Found dead inside caves, possibly carried in by floods, so, considered accidental in the caves, having come from epigeal, possibly arboreal environment.

Distribution. Known only from the type locality.

Etymology. This species is named after Maria Elina Bichuette, Universidade Federal de São Carlos, who is leading a team conducting extensive projects on cave faunas and has donated several mollusc samples resulting in a significant improvement of our knowledge of the Brazilian malacofauna.

Discussion

Gonyostomus elinae can be distinguished from *G. goniostomus* and *G. insularis* in having a much wider umbilicus, blotchy colour pattern (instead of a uniform brown colour), and more uniform growth of spire (those species have some variation of the axis of the first whorls) (see Simone 2006: 203, figs 763–764). *G. elinae* is more similar to *G. egregius*, sharing with it the blotchy colour pattern and the open umbilicus; *G. elinae* differs from *G. egregius* in having a blunter protoconch with more developed carina in the first whorl (Fig. 7), more delicate protoconch sculpture, blotches on shell colour forming wider bands (those of *G. egregius* are minute and more sparse, see Simone 2006: 202, fig. 762), and in having the last whorl more uniform in relation to spire, while the last whorl of *G. egregius* is clearly broader than expected if the spire growth was uniform. Additionally, *Gonyostomus elinae* has a wide, light coloured spiral band (i. e. no markings) in the basal part of the body whorl (around the umbilicus) (Figs 1, 5, 6); the three other species have an uninterrupted pattern of colour all the way down to the periumbilical area (Simone 2006: 202–203). The new species has a completely white peristome, which is considerably more expanded than in the three previously known *Gonyostomus*. They have less expanded peristome, with light to dark pink pigmentation.

Despite the lack of information on the soft parts, the generic attribution of the new species to *Gonyostomus* is relatively simple. The rounded and sculptured protoconch is typical for the genus, local orthalicids characteristically possess more pointed protoconchs. The rounded protoconch and the anteriorly angulate aperture, typical for *Gonyostomus*, restrict the comparison to few local orthalicid genera. The new species cannot be attributed to *Moricandia* Pilsbry & Vanatta, 1898 because it is lacking the characteristic club-shaped outline of that genus, whose last whorl is narrower than the middle portion of the shell, and in lacking a clear fold at the junction of the parietal and columellar portions of the inner lip. It cannot be attributed to the genus *Eudolichotis* Pilsbry, 1896 (which only occurs in the in supra-Amazon region of northern South America), in being much more elongated, in lacking the characteristic dome-shaped spire, and in lacking a transverse fold in middle level of the inner lip.

The genus *Gonyostomus* was previously considered endemic to Southeastern Brazil, occurring near Espírito Santo, Rio de Janeiro and São Paulo. The present records of *G. elinae* are the first occurrence in southern São Paulo, extending the known

distribution of the genus by ~200 km southward to the cave environment of the middle region of the Atlantic rainforest.

The description of new species of Brazilian land snails is routine (e.g. Simone 2012, 2013), demonstrating that the regional malacofauna is still only poorly known. Preservation efforts are urgently necessary in all natural places, in order to protect the species that are not yet known. The cave area of south São Paulo has been shown particularly rich in terrestrial species, and the description of the new species provides additional motivation for preservation of the PETAR (Parque Estadual Turístico do Alto Ribeira, or Touristic State Park of High Ribeira River) region. Based on the scarcity of the material, the new species' geographic restriction, and because the surrounding area has been devastated for plantations and agriculture, *G. elinae* can be already classified as endangered.

Acknowledgements

I thank Maria Elina Bichuette, DEBE, Universidade Federal de São Carlos, for the donation of the specimens studied herein, and for helpful comments on the paper and environmental data. I thank the editor and the two anonymous referees for useful comments on the paper. FAPESP (processes 2003/00795-1 and 2008/05678-7) financially supported M. E. Bichuette's field work. Specimens were collected under IBAMA license 10215 and 28992-1.

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