Short Communication

New occurrences of *Mirinaba unidentata* (G.B. Sowerby II, 1825) from southeastern Brazil, with comments on the distribution of *M. planidens* (Michelin, 1831) (Gastropoda: Eupulmonata: Strophocheilidae)

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Abstract. Here, we report new occurrences of *Mirinaba unidentata* (G.B. Sowerby II, 1825) and review of the occurrence records *M. unidentata* and *M. planidens* (Michelin, 1831). A single shell of *M. unidentata* was collected in the Parque Estadual Caverna do Diabo, southern São Paulo state, Brazil. Moreover, material of both species deposited at the Museum of Zoology of University of São Paulo were observed. These two seem to have allopatic distributions, and not overlapping. *Mirinaba planidens* occurs in the mountain ranges shared by São Paulo, Rio de Janeiro, and Minas Gerais in southeastern Brazil, whereas *M. unidentata* occurs in the chain of mountains in southern São Paulo and southern Brazil. The regions where these species occur are approximately 500 km distant from each other. Due to the similarity of the shells and their distributions, it is tempting to think about these species as examples of divergence by allopatic speciation.

Keywords. Atlantic Rainforest, land snail, inaccurate records, allopatriy, São Paulo

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*Mirinaba* Lange de Morretes, 1952, a genus in the family Strophocheilidae Pilsbry, 1902, currently has 10 valid species (Simone 2006; Salvador et al. 2024a, b). It was originally described as a subgenus of *Strophocheilus* Spix, 1827 through shell morphology (Lange de Morretes 1952) and Latter considered to be a separate genus based on these and anatomical characters (Leme 1973). Its monophyly has been recently corroborated by morphological phylogenetic investigation (Simone 2022). *Mirinaba* species are distributed in the Atlantic Forest in the northeastern, southeastern, and southern Brazilian regions, and there has been a series of new records recently published (Birckolz et al. 2013; Birckolz & Gernet 2016; Gernet et al. 2022, 2024).

Some *Mirinaba* species—*M. erythrosoma* (Pilsbry, 1895), *M. cuspidens* (Lange de Morretes, 1952), *M. jaussaud* (Lange de Morretes, 1937), and *M. porphyrostoma* (Clench & Archer, 1930)—present a thickened medial portion of the outer lip, which can be more developed to form a tooth in *M. planidens* (Michelin, 1831) and *M. unidentata* (G.B. Sowerby II, 1825). The latter two species have a history of imprecise records in the Serra do Mar, a system of mountain ranges and escarpments shared between the states of Espírito Santo to Santa Catarina, more precisely in the Brazilian southeastern and southern regions (Oliveira & Almeida 1999; Agudo-Padron 2008; Simone 2006). Simone (2006) believed that these species have overlapping distributions in the states of Rio de Janeiro and São Paulo. Here, we record new occurrences of *M. unidentata* from southern São Paulo state, and review of the occurrence records *M. unidentata* and *M. planidens*.

A single shell of *M. unidentata* was collected on the main trail that leads to the Caverna do Diabo (24°38′13.0″S 48°
24°11.3’W) in the Parque Estadual Caverna do Diabo, Eldorado Municipality, southern São Paulo state, Brazil, on 10 February 2024. The shell was photographed with a Nikon Coolpix L820 camera and deposited in the molluscan collection of the Museum of Biological Diversity of the State University of Campinas (ZUEC-GAS 8348). The specimen was identified by comparison with the figure contained in Simone (2006), as well as the review of Bequaert (1948). Moreover, material of *M. unidentata* and *M. planidens* deposited at the Museum of Zoology of University of São Paulo (MZSP) were also studied to better differentiate these species.

**Family Strophocheilidae Pilsbry, 1902**

**Genus Mirinaba Lange de Morretes, 1952**

*Mirinaba unidentata* (G.B. Sowerby II, 1825)

*Figures 1, 2*

**Material examined.** ZUEC GAS 8348, Parque Estadual Caverna do Diabo, Eldorado Municipality, 24°38′13.0″S 048°24′11.3″W, 10/ii/2024, A.R. Batistão leg., M.S. Miranda det., 1 shell; MZSP 8014, Poço Grande, Vale do Ribeira, Ribeira Municipality, H. Hempell leg., 1 shell;

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**Figure 1.** *Mirinaba unidentata*, Museum of Biological Diversity of the State University of Campinas, ZUEC-GAS 8348, from Parque Estadual Caverna do Diabo, Eldorado Municipality. A, apertural view showing the tooth on the outer lip. B, abapertural view. C, right side. D, apical view. E, basal view.


Description of the shell collected. Shell up to 58.67 mm long × 29.66 mm width, fusiform, with a high spire, imperforate; whorls about 5, with weakly marked axial growth lines (Fig. 1A, B, E). Dorso-ventral profile flattened, greatest width 23.93 mm (Fig. 1C). Periostracum brownish, lost on first 3 whorls, with fine granulations, which become malleations on last whorl (Fig. 1A–C). Protoconch worn, inflated, smooth on the first 1½ whorls; first whorl almost immersed in apex; second and third whorl with well-marked axial ribs (Fig. 1D). Sculpture on last three whorls with well-marked axial ribs that become hidden by malleations (Fig. 1A, B). Suture shallow but well marked. Body whorl slightly convex. Aperture ½ of shell length, 31.00 × 23.93 mm, oval-elliptical in outline; peristome rose but with white where abraded. Outer lip with a well-developed, medial...
tooth, wider at the base than high. Outer lip reflected, thickened, almost straight (Fig. 1A).

**Distribution.** *Mirinaba unidentata* is recorded from Teresópolis (part of the municipality of Águas Mornas) and São Bonifácio, both close to mainland part of Florianópolis, Santa Catarina, Brazil (Bequaert 1948; Lange de Morretes 1949, 1953) (Fig. 2). *Mirinaba unidentata* has been reported from an unspecified locality in La Plata Valley, Argentina (Pilsbry 1895 in 1895–1896). Simone (2006) wrongly attributed the Brazilian records from the Teresópolis, a municipality in the state of Rio de Janeiro, Brazil. Oliveira & Almeida (1999: 28) reported shells identified as *Strophocheilus* (*Metara*) *unidentatus* from the municipalities of Paraíba do Sul (state of Rio de Janeiro) and Ponte Nova.
(Minas Gerais), but their figured shell has a length of 90 mm and is more globose, with strong, well-developed ribs and malleations, and a whitish peristome with a well-developed tooth on both lips, which corresponds well to Megalobulimus auritus (G.B. Sowerby I, 1838), rather a Mirinaba species. Therefore, records of M. unidentata from Rio de Janeiro and Minas Gerais are not valid (Fig. 2). Based on the materials examined from the municipalities of Eldorado, Iguape, Iporanga, Jacupiranga, Juquiá, Peruíbe, and Ribeira in the state of São Paulo, M. unidentata occurs about 500 km north of the previous records.

Comparison with Mirinaba planidens. Mirinaba unidentata is very similar in shell outline, sculpture, and tooth morphology to M. planidens, but it is differentiated by its smaller and shorter shell (up to 70 mm in M. planidens and 60 mm in M. unidentata), more obese body whorl, slightly deeper sutures, and relatively shorter aperture mainly due to the shortened columella, as pointed out by Bequaert (1948) (Figs 1, 3). Since these differences are difficult to observe, especially by non-specialists, these species are frequently confused, and incorrectly identified. Records of M. planidens have been confirmed from the municipalities of Nova Friburgo, Cantagalo, Teresópolis (state of Rio de Janeiro), Rio de Janeiro, and Itatiaia, as well as the Serra do Macaé region in the state of Rio de Janeiro and the municipality of Piquete in the state of São Paulo (Pilsbry 1895 in 1895–1896; Bequaert 1948; this work). All these records are in the Serra da Mantiqueira, a chain of mountains in the states of São Paulo, Rio de Janeiro, and Minas Gerais.

Haas (1935) mentioned the occurrence of S. (Strophocheilus) planidens from “Therezópolis”, Santa Catarina, without mentioning voucher material on which it was based. Oliveira & Almeida (1999: 27) recorded S. (Metara) planidens from the municipalities of Paraíba do Sul (state of Rio de Janeiro), Torres (Rio Grande do Sul), and Campo Formoso (Bahia), but the measurements and figured shell appears to be a species of Megalobulimus K. Miller, 1878. Agudo-Padrón (2008) mentioned the occurrence of M. planidens in the municipalities of Joinville (Salto Piraí), Ibirama (Altvo Vale do Itajai), and Santo Amaro da Imperatriz, all in Santa Catarina, with materials supposedly deposited at the Departamento de Ecologia e Zoologia, Centro de Ciências Biológicas, Universidade Federal de Santa Catarina. However, no collection of molluscs appears to exist in this institution (K. Saalfeld pers. comm. 2024).

Consequently, all records of M. planidens in Santa Catarina still need confirmation, and they should not be considered for the distribution of this species (Fig. 2). Mirinaba planidens and M. unidentata seem to have allopatric distri-


Simone LRL. 2022. Additions to the genus *Anthinus* occurring in Minas Gerais and Goiás regions, Brazil, with description of five new species, one of them in the new related genus *Catracca* (Gastropoda, Eupulmonata, Strophocheilidae). *PLoS ONE* **17**: e0273067. doi: 10.1371/journal.pone.0273067
