



RESEARCH NOTE

New record of *Mirinaba jaussaudi* (Gastropoda, Strophocheilidae) in Paraná state, southern Brazil, and rectification of a known locality

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Strophocheilidae Pilsbry, 1902 is a land snail family represented by eight genera, all of which are found in South America (LEME 1973; BOUCHET *et al.* 2005). The genus *Mirinaba* Morretes, 1952 is composed of 10 species, with distribution restricted to south-southeastern Brazil (SIMONE 2006). Few studies regarding this group have been carried out over the last 40 years (*e.g.*, LEME *et al.* 1979; INDRUSIAK 1985; INDRUSIAK & LEME 1985; BIRCKOLZ *et al.* 2013) and anatomical descriptions are known only for *Mirinaba antoninensis* (Morretes, 1952), *M. cadeadensis* (Morretes, 1952) and *M. curytibana* (Morretes, 1952) (INDRUSIAK & LEME 1985).

Mirinaba jaussaudi (Morretes, 1937) was originally described in the genus *Coniclus* Albers, 1850, and subsequently transferred to *Strophocheilus* Spix, 1827, being considered a subspecies of *M. planidens* (Michelin, 1831) by Bequaert (1948). Morretes (1952) elevated it to species level again and included it in the new subgenus *Metara* Morretes, 1952. Leme (1973), in a new revision of the Strophocheilidae, transferred the species to the genus *Mirinaba*.

The type locality of the species is Morungava, municipality of Sengés, Paraná state, Brazil (MORRETES 1937, 1949, 1953; BEQUAERT 1948). *Mirinaba jaussaudi* also occurs in Iretama, in the same state; and in São Paulo state, where Quaternary fossils were found inside a cave (Gruta da Pescaria) (VIEIRA & SIMONE 1990; SIMONE 2006; AGUDO 2007). This study increases the known geographical distribution of *M. jaussaudi* to a new locality in Paraná and rectify information regarding the municipality to which Gruta da Pescaria belongs.

The material analyzed consists of empty shells deposited in the malacological collection of the Museu de História Natural Capão da Imbuia (MHNCI, Curitiba, Brazil). The lots analyzed (MHNCI 790 to 796) are all from Cornélio Procopio municipality, Paraná state, with unknown collection date and collector (Figures 1-2, 4-5). Measurements of shell height, greatest width (frontal view), smallest width (lateral view), and height and width of aperture were taken with a Vernier caliper (Table 1) and compared with the same measurements of the type material of *M. jaussaudi* deposited in the malacological collection of the Museu de Zoologia da Universidade de São Paulo (MZSP,



Figures 1–5. Shells of *Mirinaba jaussaudi*. **1.** MHNCI 796, ventral view, shell height: 45.5 mm; **2.** Same, dorsal view; **3.** Holotype, MZSP 16652, ventral view, shell height: 45 mm; **4.** MHNCI 793, detail of apical sculpture, shell height: 47.8 mm; **5.** Same, detail of apertural tooth.

São Paulo, Brazil): MZSP 16652 (holotype; Figure 3) and MZSP 14131 (paratype). Data from CECAV (2016) were mapped using ArcGIS 10.1 (ESRI 2012) to determine the correct municipality of the locality Gruta da Pescaria.

According to the original description, *M. jaussaudi* has: “Shell thin, made up of 4,7 whorls; aperture small and elongated, with parallel inner and outer margins; a tooth longer than tall, well-marked on the inside, positioned midway on the outer lip; lip thin, reflexed and strongly recurved, forming a deep groove between its end and the wall of the whorl; aperture arcuate upward beginning at the end of the tooth” (MORRETES 1937: 303–304, our translation). Based on this and the measurements obtained, the shells from the present study compare well with *M. jaussaudi*. The shells collected in Cornélio Procópio are covered in ash, probably because they were collected in a place where the vegetation was burned.

Table 1. Measurements (in mm) of the shells of *Mirinaba jaussaudi* analyzed. *Fragmented shell; measurements could not be taken.

Material	Height	Greatest width	Smallest width	Aperture height	Aperture width
Holotype	45	25	20	24	15
Paratype	46	25	20	24	10
MHNCI 790	46.2	23.5	19.5	19	9.6
MHNCI 791	*	25.7	*	19.4	11
MHNCI 792	*	24	20.5	21.2	11
MHNCI 793	47.8	24.5	20.3	20.8	10.1
MHNCI 794	48.4	25	20.6	21	10.3
MHNCI 795	43	23	19.2	17.8	10
MHNCI 796	45.5	22.7	18.5	17.5	9.8

The locality Gruta da Pescaria (24°24'13" S, 48°33'02" W, according to CECAV (2016), is set in the municipality of Apiaí, São Paulo state. Vieira & Simone (1990) misquoted Iporanga, a town neighboring Apiaí, as the municipality for this locality.

Cornélio Procópio, the new locality in which *M. jaussaudi* was recorded, is 100 km north of Morungava, Sengés municipality, the formerly northernmost known locality. Localities in which the species was recorded have distinct phytogeographical formations: Morungava, Sengés, ~725 m a.s.l., is located in the southern Cerrado biome, in areas of savannah; Gruta da Pescaria, Apiaí, ~230 m a.s.l., is located in a region of *Araucaria* moist forest and transitional areas; Iretama, ~400 m a.s.l., is located in an area of *Araucaria* moist forest; Cornélio Procópio, ~520 m a.s.l., is located in a semideciduous forest region (RODERJAN *et al.* 2002; IBGE 2004) (Figure 6).

The localities where the species has been found suffer from fragmentation and alteration of native vegetation, which may hamper conservation efforts. Only about 9% of the natural vegetation that once covered Paraná state still exists, being concentrated along the coastline (RODERJAN *et al.* 2002). The sole exception is Gruta da Pescaria, localized inside the Alto Ribeira State and Tourist Park ("Parque Estadual Turístico do Alto Ribeira" [PETAR], in Portuguese), a protected area still well preserved and connected with other protected areas (RIBEIRO *et al.* 2009). The known localities of *M. jaussaudi* are disjunct, probably due to the fragmentation of the region's vegetation, located some 360 km apart from one another east to west, and 140 km north to south. To achieve a better knowledge of this species, studies of distribution, taxonomy and ecology are necessary, which may consequently lead to conservation efforts.

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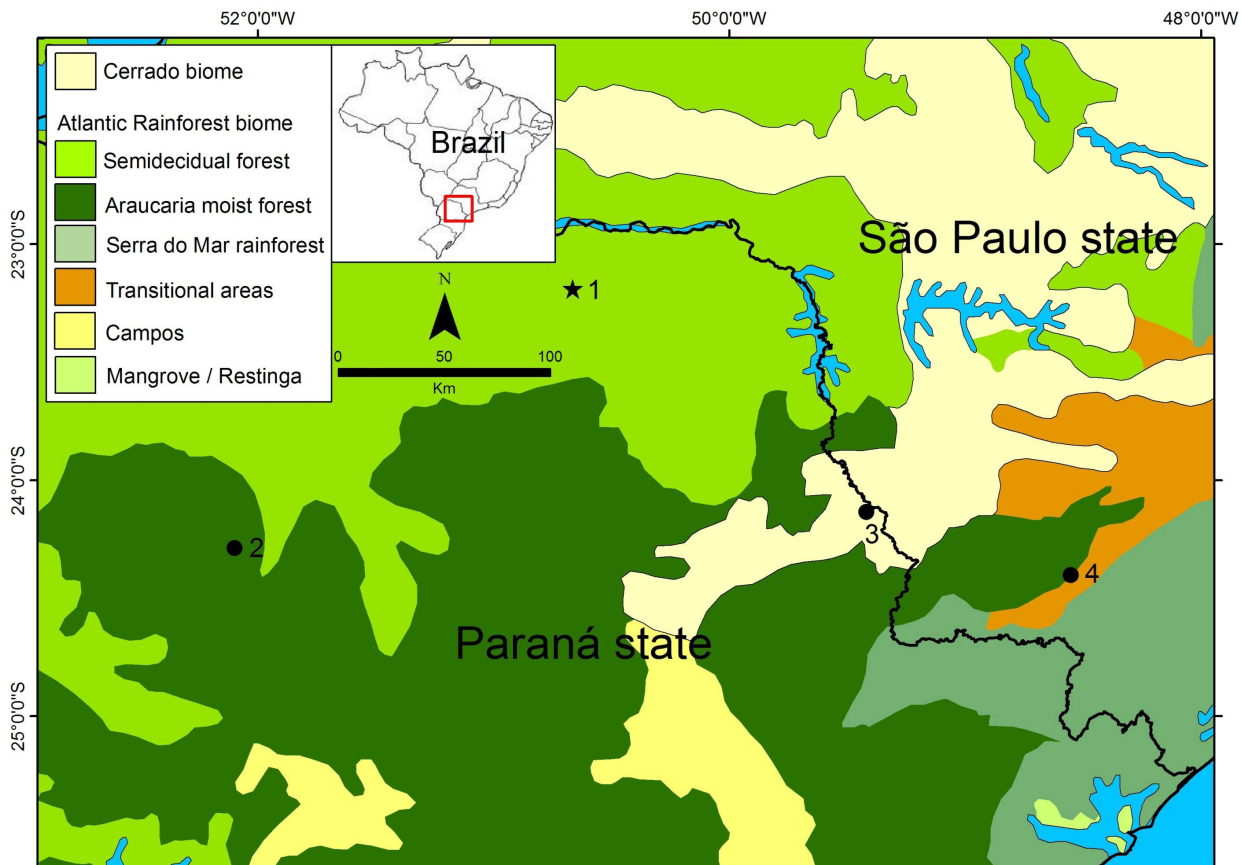


Figure 6. Localities of *Mirinaba jaussaudi*. Circles: previous records; star: new record. 1: Cornélio Procópio; 2: Iretama; 3: Morungava, Sengés (type locality); 4: Gruta da Pescaria, Apiaí. Vegetation follows IBGE (2004).

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