

Megalobulimus arapotiensis Morretes, 1952 is a junior synonym of *M. elongatus* (Bequaert, 1948)

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Abstract. The status of the *Megalobulimus arapotiensis* is reassessed. A conchological comparison of this species and *M. elongatus* reveals no significant differences. The morphology of *M. arapotiensis* falls within the range of variability known in *M. elongatus*. These similarities suggest that *M. arapotiensis* should be treated as a junior synonym of *M. elongatus*. All known occurrences of both taxa are mapped.

Key words. New synonym, Gastropoda, Strophocheilidae, Megalobuliminae

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The South American genus *Megalobulimus* Miller, 1848, currently classified within the family Strophocheilidae, subfamily Megalobuliminae, comprises approximately 80 species, with 60 of them occurring in Brazil. These species are nocturnal, inhabit leaf litter, and frequently burrow. The genus is characterized by large, conical-globose shells with thick shell walls. Species differentiation within the genus is challenging due to overlapping morphological characteristics (Bequaert 1948). Leme (1973) highlighted the difficulties in defining generic and subgeneric distinctions and accepted significant character overlap among species.

Megalobulimus elongatus (Bequaert, 1948) was first described as a subspecies of *Strophocheilus* (*Megalobulimus*) *oblongus* (Miller, 1878), now *Megalobulimus oblongus*, with Nueva Palmira, Uruguay as the type locality. Bequaert (1948) associated his new taxon with *M. oblongus* on account of conchological traits, which include a pink-colored external lip, columella, and parietal wall, and he differentiated it by its narrower shell with a higher apex and a smaller aperture compared to most other *oblongus* subspecies.

Megalobulimus arapotiensis Morretes, 1952 was described based on a single specimen from Jaguariaíva, Paraná state, Brazil (Fig. 1A). This aperture lip of this

specimen displayed a slight deformation. Morretes (1952) compared it to *M. lacunosus* (d'Orbigny 1835) but noted that *M. lacunosus* had a narrower spire and less pronounced microsculpture. While Morretes (1952) acknowledged the possibility that *M. arapotiensis* could be a variant of a known species, geographic distance was cited as justification for its description as a new species. However, no comparisons were made with other species of overlapping distribution, leading to potential misidentifications. Species with characteristics similar to *M. elongatus*, such as *M. crassus* and *M. haemastomus* (a subspecies of *oblongus*), coexist sympatrically in the southern region of South America. However, distinguishing between them requires a thorough analysis of their morphological particularities and other comparative studies.

In this study, the status of *M. arapotiensis* is reassessed. The material studied includes the type series of both *M. elongatus* and *M. arapotiensis* and all known occurrences of both taxa are mapped (Fig. 1).

Abbreviations: L = shell length; LA = aperture length; N = sample individuals; sh = shell; MCZ = Museum of Comparative Zoology; MZSP = Museum of Zoology of the University of São Paulo; USNM = National Museum of Natural History, iHSmithsonian Institution, Washington D.C.

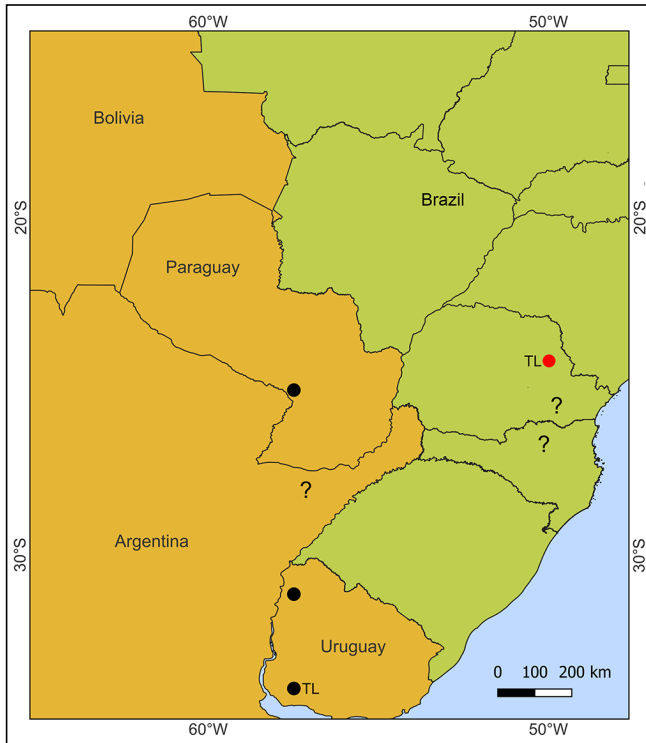


Figure 1. Confirmed records of *Megalobulimus elongatus* (●) and unconfirmed (?) and *M. arapotiensis* (●). TL: type localities of the two nominal species.

Superfamily Rhytidoidea

Family Strophocheilidae

Genus *Megalobulimus* Miller, 1878

Type species. *Bulimus garciamoreni* Miller, 1878, by monotypy.

Megalobulimus elongatus (Bequaert, 1948)

Figures 2, 3

Strophocheilus oblongus elongatus Bequaert 1948: 78—Barattini & Ledón 1949: 2.

Psiloicicus elongatus—Morretes 1952: 113; Morretes 1953: 69.

Megalobulimus (Megalobulimus) arapotiensis Morretes 1952, 118, pls 1, 2, fig. 8—Morretes 1953: 66.

Strophocheilus (Megalobulimus) oblongus elongatus—Parodiz 1957: 132; Sawaya & Petersen 1962: 33; Figueiras 1963: 4.

Megalobulimus oblongus elongatus—Quintana 1982: 84; Scarabino 2003: 2011; Agudo-Padrón 2008: 161.

Megalobulimus arapotiensis—Salgado & Coelho 2003: 157; Simone 2006: 207, fig. 782; Thomé *et al.* 2007: 20; Salvador *et al.* 2024: 155.

Megalobulimus elongatus—Salgado & Coelho 2003: 157; Simone 2006: 209, fig. 793; Thomé *et al.* 2007: 20; Agudo-

Padrón 2014: 16, fig. 11; Salvador 2019: 92; Teles *et al.* 2022: 3; Salvador *et al.* 2024: 155; Cavallari *et al.* 2024: 372.

Type locality. Nueva Palmira, Colonia, Uruguay.

Occurrence. Brazil: states of Paraná and Santa Catarina; Paraguay: department of Asunción; Argentina: province of Corrientes; Uruguay: departments of Paysandú and Colonia (Scarabino 2003; Simone 2006; Agudo-Padrón 2008; Teles *et al.* 2022) (Fig. 1).

Material examined. *Megalobulimus elongatus*: URUGUAY: COLONIA: Nueva Palmira, MCZ 76538 (holotype), 1 sh; MCZ 151446 (paratype), 1 sh; USNM 381573, 1 sh; PAYSANDÚ: Paysandú, USNM 271473 (paratype), 1 sh. PARAGUAY: no locality MCZ 175162, 1 sh; MZSP 14609 (paratype), 1 sh; DISTRICTO CAPITAL: Asunción, MCZ 179234 (paratype), 1 sh; USNM 307498 (paratype), 1 sh.

Megalobulimus arapotiensis: BRAZIL: PARANÁ, Jaguariáiva, MZSP 16654 (holotype), 1 sh.

Measurements. $N = 9$; $L = 80.7$ mm (min. 73.5 mm, max. 92.0 mm); $LA = 42.9$ mm (min. 39.0 mm, max. 49.0 mm) (Table 1).

A conchological comparison of *M. elongatus* and *M. arapotiensis* reveals no significant differences. Both species share a narrow, elongate shell, a whitish subsutural band, a pointed apex. The sculpture of the teleoconch features well-defined ribs with irregular spacing, extending from suture to suture. The protoconch of both species has a smooth first whorl, followed by the gradual development of regular ribs that do not reach the preceding suture (Fig. 3). The shell lengths average ~81 mm, with aperture lengths approximating 45% of total shell length. The morphology of *M. arapotiensis* falls within the range of variability known in *M. elongatus*. These similarities suggest that *M. arapotiensis* should be treated as a junior synonym of *M. elongatus*.

Table 1. Measurements of the material examined.

Specimen	Shell length, L (mm)	Aperture length, LA (mm)
MCZ 76538	80.0	43.5
MCZ 151446	77.5	42.0
USNM 271473	84.0	46.5
USNM 381573	78.5	41.0
MCZ 175162	79.0	40.0
MZSP 14609	73.5	39.0
MCZ 179234	92.0	49.0
USNM 307498	77.5	41.5
MZSP 16654	85.0	44.0

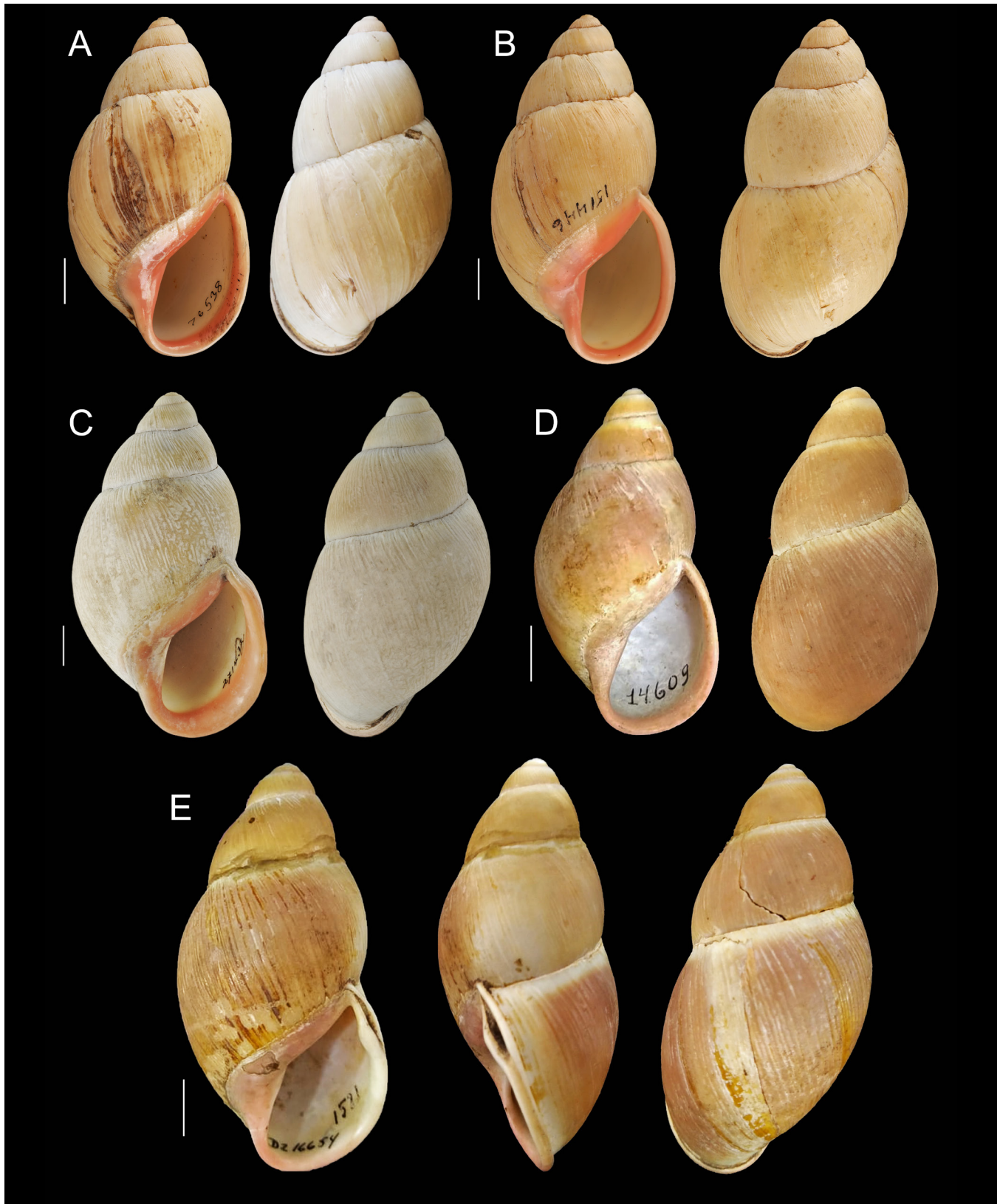


Figure 2. Shells of *Megalobulimus elongatus* (Bequaert, 1948). **A–D**, type material of *M. elongatus*: **(A)** holotype MCZ 76538; **(B)** paratype MCZ 151446; **(C)** paratype USNM 271473; **(D)** paratype MZSP 14609. **E**, holotype of *M. arapotiensis* (Morretes, 1952), MZSP 16654. Scale bars = 10 mm.

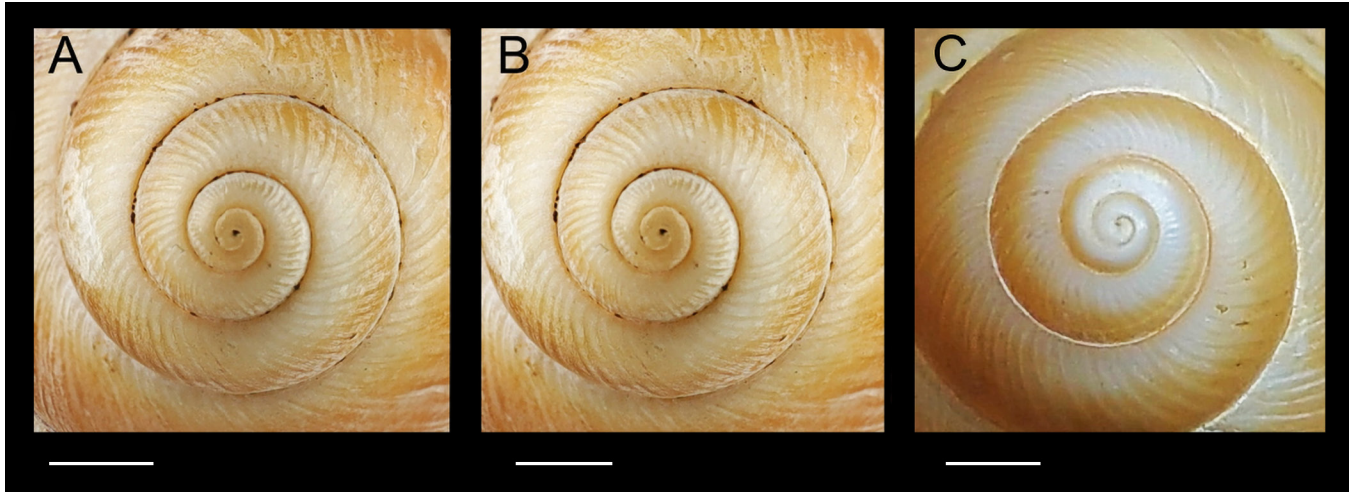


Figure 3. Protoconch of *Megalobulimus elongatus* (Bequaert, 1948). **A, B**, paratypes of *M. elongatus*: **(A)** MCZ 175162; **(B)** MCZ 151446, **C**, holotype of *M. arapotiensis* (Morretes, 1952), MZSP 16654. Scale bars = 5 mm.

Much of the known information on distribution and occurrence for the species comes from replications of data in the literature, where the material is not always correctly identified or available, or there were no further comparisons with similar species, generating confusing and uncertain information.

The recorded distribution of *M. elongatus* includes Brazil (Paraná and Santa Catarina), Paraguay, Argentina, and Uruguay, although some records lack sufficient information for confirmation (e.g. Agudo-Padrón 2008) who cited a record of the species as a subfossil in shell middens in Santa Catarina state, but provided no information on its identification. Later, however, Agudo-Padrón (2014) illustrated a live specimen, but without allowing verification of its diagnostic characteristics. Similarly, the limited data on the distribution of *M. arapotiensis* stems from its original description and subsequent replication in checklists (e.g. Morretes 1953; Salgado & Coelho 2003; Salvador *et al.* 2024). Morretes (1953), in a supplement to Morretes (1952), cited the species as occurring in Guaraúna district in Teixeira Soares municipality, Paraná (25°19'26"S 050°21'81"W) but without including an image or information on a voucher specimen. The species also said to occur in Corrientes in Entre Rios, Argentina; however, that record is doubtful (Parodiz 1957). Telles (2022) mentioned the species and its locations in southern Brazil but provided no further information.

The vegetation types where the species occurs consists of Chaco, Cerrado, and Seasonally Dry Tropical Forests. These biomes are characterized by variable physiognomies, ranging from open fields and bushes to forested areas, which

may reflect the species' distribution across these countries (Werneck 2011).

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