

On the precedence of *Paludina granulum* A. Villa & G.B. Villa, 1841 over *Assiminea littorina* var. *sicana* Brugnone, 1876 (Gastropoda: Assimineidae)

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Abstract. *Paludinella sicana* (Brugnone, 1876) is an intertidal assimineid gastropod living in the Mediterranean Sea and on the north-eastern Atlantic coast. The synonymy between *Paludina granulum* A. Villa & G.B. Villa, 1841 and *Assiminea littorina* var. *sicana* Brugnone, 1876 is here proposed; consequently, *P. granulum* takes precedence over *A. littorina* var. *sicana* and the correct name for the species, following the Principle of Priority, should be *Paludinella granulum*. As the specimen on which *P. granulum* was originally described has been destroyed, a neotype is designated. The neotype is a specimen identified by the Villa brothers, who sent it to Paulucci, and is now in the Paulucci malacological collection at the Museo di Storia Naturale di Firenze (SMA).

Key words. *Paludinella*, neotype, nomenclature, Principle of Priority

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INTRODUCTION

The assimineid genus *Paludinella* L. Pfeiffer, 1841 (Gastropoda: Assimineidae) is represented in the intertidal marine and brackish waters in the Mediterranean and on the Atlantic coasts of Europe and Morocco by two species: *Paludinella globularis* (Hanley in Thorpe, 1844) and *Paludinella sicana* (Brugnone, 1876) (van Aartsen 2008; Bank & Neubert 2017; MolluscaBase Eds 2026). They differ in their protoconchs; that of *P. globularis* is paucispiral, while in *P. sicana* the protoconch is smaller and multispiral (Gaglini 1991; van Aartsen 2008). *Paludinella sicana* was originally described by Brugnone (1876: 13, fig. 15) as *Assiminea littorina* (*Helix*) var. *sicana*, a variety that Bucquoy *et al.* (1884) raised to specific rank, as *Assiminea sicana*, which is now considered a valid species within the genus *Paludinella* (van Aartsen 2008; Bank & Neubert 2017).

TAXONOMY

Genus *Paludinella* L. Pfeiffer, 1841

Paludinella granulum (A. Villa & G.B. Villa, 1841)

Paludina granulum Villa 1836: [1], *nomen nudum*.

Paludina granulum Villa & Villa 1841: 60.

Paludina granulum—Frauenfeld 1864: 611.

Assiminia littorina (Delle Chiaje) (= *A. granulum*)—Brusina 1866: 89.

Amnicola granulum—Paulucci 1882a: 339–340, pl. 9 fig. 8.

Amnicola granulum—Paulucci 1882b: 197–198, pl. 9 fig. 8.

Paludina granulum—Westerlund 1886: 72.

Pseudamnicola granulum—Alzona & Bisacchi 1939: 143.

Pseudamnicola granulum—Alzona 1971: 35.

Paludinella (s. str.) *littorina* (Delle Chiaje) (= *A. granulum sensu* Paulucci)—Giusti & Castagnolo 1983: 231.

Original description. "26. Palud. granulum Villa — testa minutissima, ovata, tenui, laevi, pellucida, corneo-ferruginea; anfractibus 3–4 convexiusculis; apertura rotundata; peristomate simplici. — Animal Alt. mill. 1. Lat. 1 ½. Habit. in provincia Gallurae, insula Sardiniae. Legit unus ex nobis anno 1836." (Villa & Villa 1841: 60).

[26. *Palud[ina]* *granulum* Villa — very minute shell, ovate, thin, smooth, semitransparent, corneous or reddish brown; with 3–4 slightly convex whorls; aperture rounded; peristome simple. — Animal [unknown?]. Height 1 mm. Width 1 ½ [mm]. Lives in the province of Gallura, on the island of Sardinia. Collected by one of us in the year 1836.]

In 1836, Giovanni Battista Villa provided a name, *Paludina granulum*, without description, for a species from Sardinia (Villa 1836). A few years later, the Villa brothers again published this name and included a short description (Villa & Villa 1841). Later, this taxon was synonymised with "*Assiminia littorea* D[elle] Ch[iaje, 1828]" by Frauenfeld (1864: 611) and by Brusina (1866: 89), citing Frauenfeld but keeping *Assiminia littorina*, the original name by Delle

Chiaje. However, Kadolsky (2012) clarified that *A. littorea* of Frauenfeld is a misidentification of *Paludinella globularis* (Hanley in Thorpe, 1844). In a letter from Antonio Villa to Marianna Panciatichi Ximenes d'Aragona Paulucci dated 11 April 1882 (Fig. 1), now preserved at the Archivio di Stato di Firenze (State Archive of Florence), Villa sent Paulucci two shells of *Paludina granulum* that were collected in 1881 (Fig. 2C). Paulucci considered the species to be valid, and

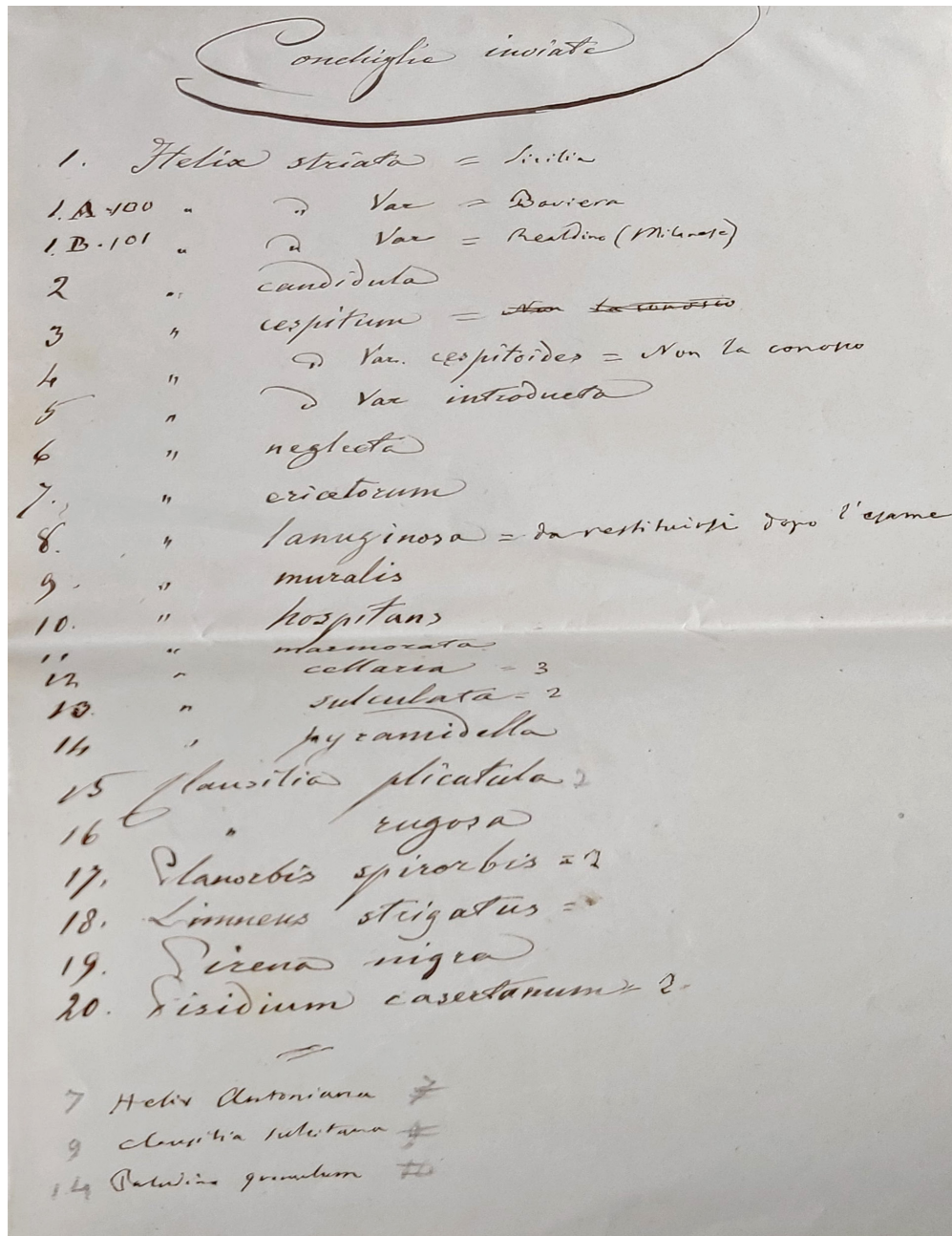


Figure 1. Excerpt from the letter by Antonio Villa to Paulucci on 11 April 1882, held at the Archivio di Stato di Firenze. At the end of the list of the terrestrial species of molluscs sent to Paulucci there is *Paludina granulum*.



Figure 2. The sample of *Amnicola granulum* donated to Paulucci by Antonio Villa on 18 April 1882. **A**, front and back of the label enclosed with the sample, handwritten by Paulucci. **B**, general view of the sample with its cardboard box, label and glass tube closed by a cork containing the two specimens. **C**, back of the label inside the tube, handwritten by Paulucci. **D**. Reproduction of plate 9 figure 8 in the papers by Paulucci (1882a, b), which shows a drawing of one the two specimens donated by Villa.

in her paper on the malacofauna of Sardinia she wrote a description of the species, which she placed in the genus *Amnicola* A.A. Gould & Haldeman, 1840, and depicted it in plate 9 (Paulucci 1882a, b) (Fig. 2D). Westerlund (1886) cited Paulucci, but assigned the species to the genus *Paludina* Lamarck, 1816, not *Amnicola*.

The name *Paludina granulum* was no longer used by nearly all authors, not even those working on the genus *Paludinella* (van Aartsen 2008; Mifsud & Cachia 2011; Callot-Girardi 2015; Glöer 2019). Alzona & Bisacchi (1939: 143) and Alzona (1971: 35) were the exceptions. They considered the Villa brothers' *Paludina granulum* to be a valid species, but not in the family Assimineidae H. Adams & A. Adams, 1856, but instead in the family Hydrobiidae W. Stimpson, 1865 and as a species of *Pseudamnicola* Paulucci, 1878. Most recently, Giusti & Castagnolo (1983) considered *Paludina granulum* to be a synonym of *Paludinella littorina*.

A possible reason for this oversight by most authors could be that Paulucci treated the taxon as a species of *Amnicola*, a genus that included otherwise freshwater taxa, and authors dealing with marine and brackish fauna overlooked it. For instance, it was not mentioned by Monterosato (1906) in his revision of brackish species, although he personally had visited the Villa brothers' collection, as he wrote in a letter to Paulucci on 9 December 1878 held at the Archivio di Stato di Firenze (Fig. 3). Another impediment to recognising *P. granulum* might have been that the Villa brothers' collection, once held by the Museo di Storia Naturale di Milano (MSNM), was destroyed in 1943 in a fire caused by bombing during the Second World War.

Our discovery in the Paulucci collection at Museo di Storia Naturale dell'Università di Firenze (SMA) of the sample of *Paludina granulum* sent to her by Antonio Villa allowed us to analyse the shells and attribute them to the genus

Mi piace molto intesa la melodia
 che ha scritto nelle sue famiglie.
 Spero che tutte andranno bene e
 che sapranno essere contenti per
 la sua musica che dei suoi prediletti
 studi.

Sono dunque a sua disposizione
 in tutto e per tutto e con la solita
 stima

Mi creda
 affezionato e devoto amico
 Monterosato

9 dicembre 1878

Alla villa di S. Quinto, questa
 ai competenti di dare un giusto pa-
 rere; certo si è che i caratteri non
 sono esposti.

Oggi vengo a Bruggen intesa
 al deposito, che Ella mi esprime
 nella sua lettera. Il servizio
 per che mi occupo ricevendo
 del suo catalogo. Son lieto
 che a prima occasione, cioè a
 prima pubblicazione, si spedisca
 a lei un esemplare con l'intenzione
 di contribuire la gentilezza
 da lei usata.

Firenze, 9 dicembre 1878
 P. Villa Anelli

Caro Paulucci

Ricevo con qualche ritardo alla
 sua gentile lettera in data del 21 che
 parla di dagli ultimi giorni di ottobre
 sono stato ospite di Palermo.

Il Dr. K. Kelt, che Ella certamente
 avrà già veduto a Firenze, ha avuto
 luogo una lettera di accenti inco-
 ntrati a Napoli in capo di Dr. P. P.

Il giorno del mio arrivo a Palermo
 che fu ieri, lo ha scritto una
 nuova memoria di Dr. Bruggen
 da me diretta, concernente una
 nuova gamma di colori. Riguardo

A Milano, dove sono stato parecchie
 settimane, ho visto i fratelli Villa.

Il più vecchio si occupa con Dr.
 lui, soprattutto per l'opera della
 Longueville tricolore, che sostiene essere
 diversa da T. megachiloides. Gli pare
 a me pare. Come, diceva l'opera,
numerata assai bene e completamente
variata?

Il suo lavoro ha però sollevato
 la ira di Libri e Benoit, come
 secolo scorso all'epoca di
 e di contrari perine di quella
 che si vedeva detto.

Figure 3. Letter by Monterosato to Paulucci on 9 December 1878, held at the Archivio di Stato di Firenze. Highlighted are the rows where Monterosato writes that he visited the Villa brothers in Milan.



Figure 4. Neotype of *Paludina granulum* A. Villa & G.B. Villa, 1841. **A**, shell in apertural, apical, umbilical, and right-side views. **B**, operculum, external surface on the left, internal surface on the right.

Paludinella. These specimens have a multispiral protoconch, a character which permits the determination as *Paludinella sicana* (Brugnone, 1876) (Gaglini 1991; van Aartsen 2008). Because the description of *Paludina granulum* A. Villa & G.B. Villa, 1841 precedes that of *P. sicana* Brugnone, 1876, it takes precedence under the International Code of Zoological Nomenclature (ICZN; International Commission of Zoological Nomenclature 1999). The reversal of precedence under Article 23.9 of the ICZN of the name *P. sicana* (Brugnone, 1876) cannot apply, as the condition of Article 23.9.1.1 of the Code is not met. Indeed, the use of *P. granulum* by Alzona & Bisacchi (1939: 143) and by Alzona (1971: 35) makes the application of Article 23.9.2 impossible (ICZN 1999) and *P. sicana* cannot be considered a *nomen protectum*.

The Villa brothers described *P. granulum* in 1841 based on a single specimen. This is apparent because the measurements for this species include those of only one specimen, while a range of measurements are reported in describing other species in the same publication; in these cases, clearly more than one shell were measured. As the entirety of the Villa brothers' collection has been destroyed, the type material is no longer extant. The sample preserved at the SMA includes two shells (Fig. 2), and one of them is here designated as neotype (Fig. 4) to better characterize this taxon also with the description and the photo of the operculum (Fig. 4B). The locality on the label written by Paulucci is "Prov. Gallura Sardegna e nel gozzo di un uccello acquatico (Villa)" [Province Gallura Sardinia and in the crop of a water bird (Villa)]. The *locus typicus* is thus confirmed "Gallura", an area in northern Sardinia in the province of Gallura Nord-Est Sardegna, Italy (Fig. 5). The assignment to the subgenus *Paludinella* follows Brandt 1974 and Birindelli *et al.* 2020.

Neotype of *Paludinella* (*Paludinella*) *granulum* (A. Villa & G.B. Villa, 1841)

Description: shell dextral, globular, very small size, yellow-brownish, with 4¼ moderately convex whorls, separated by a moderately deep suture; surface smooth; aperture subcircular, affixed to the wall of last whorl; peristome a little thickened but not reflected; umbilicus closed; protoconch small and multispiral. Operculum oligogyrous, thin, transparent, corneous; nucleus eccentric. Dimensions of shell: height = 1.65 mm; width = 1.50 mm. Dimensions of the aperture: height = 1.05 mm; width = 0.80 mm.

The neotype is stored in the malacological collection of the SMA, MZUF GC/72968.

The criteria of Article 75.3 of the ICZN Code are satisfied, and the neotype of *Paludina granulum* A. Villa & G.B. Villa, 1841 is hereby formally established.



Figure 5. *Locus typicus* of *Paludina granulum* A. Villa & G.B. Villa, 1841, the region of Gallura in northeast Sardinia. Map source: OpenStreetMap.

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