

**Two new clausiliids from South America
(Gastropoda: Pulmonata: Clausiliidae)**

Jozef GREGO

Limbová 23, SK-97401 Banská Bystrica, Slovakia; jozef.grego@mail.t-com.sk

& Miklós SZEKERES

Alföldi u. 16, H-6725 Szeged, Hungary; szekeres@brc.hu

Columbinia riedeli spec. nov. and *Temesa parcecostata dulacki* subspec. nov. are described from Colombia (Huila Department) and Peru (Huanuco Region), respectively. Based on the genital morphology of *Neniops bequaerti* (Arias, 1953), the systematic position of *Neniops* Pilsbry, 1926, within the Neniinae subfamily is discussed.

Key words: Gastropoda, Pulmonata, Clausiliidae, *Columbinia*, *Neniops*, taxonomy, Colombia, Peru.

INTRODUCTION

Recent collections have made a substantial contribution to our knowledge of the South American Clausiliidae fauna by providing important new data and resulting in the description of numerous new taxa (Grego & Szekeres, 2004; Neubert & Nordsieck, 2005; Nordsieck, 2005). Despite these advances, many of the South American clausiliid species are yet to be discovered, and the phylogenetic relationships between their genera remain to be clarified. Here we describe two new clausiliids from Colombia and Peru, which have recently been collected by Alan Pierre Infante (Bogotá) and Dulack Richards (Santiago de Chile). We also describe the genital anatomy of *Neniops bequaerti* (Arias, 1953), based on our study of alcohol-preserved material held at the Field Museum of Natural History (Chicago).

Type material from the newly described taxa has been deposited in the collections of the Natural History Museum, London (BMNH), Field Museum of Natural History, Chicago (FMNH), Hungarian Natural History Museum, Budapest (HNHM), Museum and Institute of Zoology, Polish Academy of Sciences, Warsaw (MIZ), Museo de Historia Natural "Javier Prado" de la Universidad Nacional Mayor de San Marcos, Lima (MUSM), Nationaal Natuurhistorisch Museum, Leiden (RMNH), Forschungsinstitut und Naturmuseum Senckenberg, Frankfurt am Main (SMF), Florida Museum of Natural History, Gainesville (UF), Universidad Militar Nueva Granada, Bogotá (UMNG), and Zoologische Staatssammlung, München (ZSM). Further paratypes are in the following private collections: Dulack Richards Museo Conquiliológico y Basilisco, Santiago de Chile (RI), as well as those of Charles J. Geerts, Brussels (GE), Jozef Grego, Banská Bystrica (GR) and Miklos Szekeres, Szeged (SZ).



Fig. 1-2. 1, *Columbinia riedeli* spec. nov., holotype (UF 410895), Colombia, between Timaná and Elias, actual height 15.9 mm. 2, *Temesa parcecostata dulacki* subspec. nov., holotype (MUSM 4048), Peru, Shogosh Bridge near Huancapallac, actual height 9.6 mm.

SYSTEMATICS

Neniinae

Columbinia riedeli spec. nov. (fig. 1)

Material. – Colombia, Huila Department, limestone cliffs along the road between Timaná and Elias (1°58'56" N, 75°56'54" W), 1010 m; lg. A. P. Infante, April 20, 2006. Holotype: UF 410895; paratypes BMNH 20080355, FMNH 312324, HNHM 96851, SMF 331166, GR/3, SZ/1; further paratypes from the same locality (leg. A. P. Infante, January 2004): MIZ 157955, RMNH 110001, UMNG MT-307, ZSM 20070724, GE/3, GR/8.

Diagnosis. – Differs from all other Colombian species of *Columbinia* Poliński, 1924, by its smaller size, and from the closely related *C. epistomium* (Küster, 1847) by its more extended apex, smoother surface, and stronger bent lunella.

Description. – The thin-walled, light brown shell of $7\frac{1}{2}$ to $8\frac{1}{2}$ whorls has an elongated apex with a blunt tip. Following the smooth protoconch the apical whorls are covered with straight wrinkle-like ribs that become weaker and closer spaced toward the basis. Except the rounded, densely costate neck, the last two whorls are almost smooth.

The circular peristome has a broad white margin. The strong lamella superior is continuous with, but well distinguishable from, the less emerged spiralis. Leaning close to the superior, the outer end of the lamella inferior is often visible in front view of the shell. The end of the lamella subcolumellaris, well visible through the aperture, is widely separated from that of the inferior. The plica principalis runs from the dorsolateral side to close behind the peristome. Below its inner ends starts a short, parallel plica superior. The strongly bent lunella is fused with the plica superior and the posterior remnant of the basal, resulting in a semi-circular structure on the dorsal side. The wide clausilium plate with a rounded tip is almost fully visible at an oblique view in the aperture.

Shell height 14.4–16.3 mm, shell width 3.7–4.1 mm.

Biotope. – *Columbinia riedeli* spec. nov. was collected in primary forest and at limestone outcrops among bushes.

Etymology. – This species is named after and dedicated to Adolf Riedel (Institute of Zoology, Polish Academy of Sciences, Warsaw) who has been providing valuable help and support to our work for decades.

Remarks. – Based on shell characteristics, *Columbinia riedeli* spec. nov. is similar to *C. epistomium* of the Bogota region, but differs from this species by its smaller size, elongated apex, more conspicuous neck sculpture and stronger bent lunella. The new species is also easily distinguishable from the larger and more torpedo-shaped *C. columbiana* (Poliński, 1924) and *C. blandiana* (L. Pfeiffer, 1856). In addition, the whorls of the former are smoother, whereas the latter has a more exposed lamella inferior. Assessing the distribution of the *Columbinia* species from Colombia is difficult, mainly because of the scarcity of exact localities of the available material. Nevertheless, up to now *Columbinia riedeli* spec. nov. appears to be the southernmost representative of the genus in this country.

Temesa parcecostata dulacki subspec. nov. (fig. 2)

Material. – Peru, Huanuco Region, Shogosh Bridge of the Huanuco to La Unión road near Huancapallac, 3000 m, leg. D. Richards, April 1995. Holotype MUSM 4048; paratypes RI/2, GR/1.

Diagnosis. – The new taxon can be distinguished from the nominal subspecies of *Temesa parcecostata* (Poliński, 1922) by its smaller size and densely costate sculpture.

Description. – The small, chestnut-coloured shell consists of 8 to $8\frac{1}{2}$ whorls. Except the smooth and glossy protoconch, the opaque surface is covered by sharp ribs, which are regular and very dense over the apex, but become wider spaced, uneven and undulating toward the basis. Some ribs become higher at the suture, forming a papillate pattern over the last two whorls. The sculpture of the neck and the rounded basis is not different from that of the last whorl. The ovoid aperture has a thin, weakly widened, chestnut-coloured peristome. The lamella superior is slightly retracted from the peristome margin. It is connected to the spiralis with a smooth transition. The highly positioned lamella inferior is well visible in front view of the aperture. It is widely separated from the lamella subcollellaris, which is only barely visible in an oblique view. The short plica principalis is strongest at its inner end on the dorsal side. Under it a short plica superior is connected to the dorsal lunella, which is weak and diffuse at its central part. Its lower end is widened at its fusion with the remnant of the basalis. The wide clausilium plate with a rounded tip is almost entirely visible through the aperture.

Shell height 9.5-10.1 mm, shell width 2.5-2.7 mm.

Biotope. – *Temesa parcecostata dulacki* subsp. nov. was found under small shrubs, accompanied by *Cylindronenia violacea* Neubert & Nordsieck, 2005.

Etymology. – The new subspecies is named after Dulack Richards (Santiago de Chile) who collected the type material.

Remarks. – Based on examinations of the reproductive organs, Nordsieck (2007) proposed reserving *Temesa* H. & A. Adams, 1855, for only two species, *T. clausilioides* (Reeve, 1849) and *T. gradata* Neubert & Nordsieck, 2005, and transferring the rest of the species formerly classified in this genus to *Parabalea* Ancey 1882. Since the referred anatomical studies involved only few of these species and its results have not yet been documented, for the time being the authors of this paper prefer using *Temesa* as the genus name for the taxon *parcecostata*.

The nominate subspecies of *Temesa parcecostata* has been described from Cerro Huayuncayo (3000-3100 m) near Tarma, Junín Region, which lies isolated about 180 km SSE of the type locality of *T. p. dulacki* subsp. nov. in the Huanuco Region. Another isolated occurrence of *T. parcecostata* has already been reported from the Huanuco Region (Neubert & Nordsieck, 2005), from the vicinity of Tingo María, where it lives at a much lower elevation (800 m). It remains to be clarified whether this population belongs to the nominate form or the new subspecies, which differs from the former by its smaller size and densely costate surface.

Neniops bequaerti (Arias, 1953)

Material. – Colombia, César Department, Sierra de Perija, Socorpa Mission, leg. B. Malkin, August 17, 1968 (FMNH 168529).

Genital morphology. – Four alcohol-preserved specimens were examined in which the soft tissues were badly deteriorated. The genital organs (fig. 3) could be isolated from only two of the animals. The male parts consist of a relatively short penis, and an approximately three times longer epiphallus. At their junction a coecum-like dilatation of the penis can be observed. Here the epiphallus is much narrower than the penis, but gradually widens to the same thickness towards the distal two-thirds of its length. The retractor muscle is attached to the epiphallus about midway. No penial sheath could be observed. Of the female parts the vagina is very long, having about three times the length of the penis. The free oviduct is short, about as long as the pedunculus. The bursa copulatrix and the diverticulum are of nearly equal length and width.

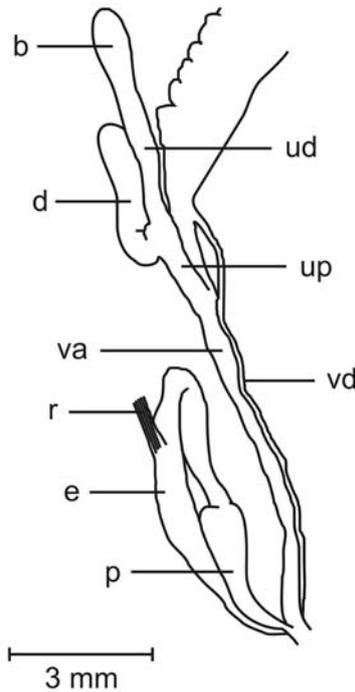


Fig. 3. Genital structure of *Neniops bequaerti* (Arias), Colombia, Sierra de Perija, Socorpa Mission. Abbreviations: b, bursa of the bursa copulatrix; d, diverticulum of the bursa copulatrix; e, epiphallus; p, penis; r, retractor muscle; ud, distal part of the pedunculus; up, proximal part of the pedunculus; va, vagina; vd, vas deferens.

Remarks. – The studied sample of *Neniops bequaerti* was collected from tree trunks on the Colombian side of the Sierra de Perija, only about 50 km SW of the type locality. This species and the closely related to *N. smithiae* (Pilsbry, 1902), which occurs in the nearby Sierra de Santa Marta of northern Colombia, differ primarily from *N. karsteniana* (Dohrn, 1860), the type species of the genus, by their smaller size and non-decollated shell. Nevertheless, their sculpture, lamellar and neck structure suggest that they belong to *Neniops* Pilsbry, 1926, where they have also been placed in a recent list of clausiliid species (Nordsieck, 2007).

The reproductive organs of *Neniops bequaerti* (Arias), and in particular the wide diverticulum, seem to suggest a close relationship of *Neniops* to the Caribbean genera of Neniinae, namely *Nenia* H. & H. Adams, 1855, and *Nenisca* Rehder, 1939, which have a similar diverticulum (Hesse, 1925; Thompson, 1998). These genera, probably together with *Paranenia* Rehder, 1939 (of yet unknown genital structure), may represent a distinct evolutionary branch within the Neniinae. Apparently, this subfamily includes groups of high diversity. Loosjes and Loosjes-van Bommel (1966) showed that the radula structure of the Peruvian genera *Gracilinenia* Poliński, 1922, and *Peruinia* Poliński, 1922, is marked-

ly different from those of all other American Neniinae, and on the basis of its shell characters Nordsieck suggested the possibility that *Symptychiella* Nordsieck, 1999, might eventually belong to a subfamily other than Neniinae (Nordsieck, 1999). Such versatility will necessitate a subdivision of this subfamily, as has recently been attempted by Nordsieck (2005, 2007), but our results obtained with *Neniops bequaerti* indicate that a reliable classification of the genera in tribes may require wider and more thorough studies.

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