

## New localities of four Bulgarian endemic Hydrobiidae species (Mollusca: Gastropoda: Risooidea)

DILIAN GEORGIEV

Department of Ecology and Environmental Conservation, Faculty of Biology, University of Plovdiv, 24 Tzar Assen Str., BG-4000 Plovdiv, Bulgaria, diliangeorgiev@abv.bg

**Abstract.** New localities of *Belgrandiella pussila* Angelov, 1959, *Belgrandiella angelovi* Pintér, 1968, *Bythiospeum copiosus* (Angelov, 1972), and *Grossuana thracica* Glöer & Georgiev, 2009 were reported in Bulgaria. Some notes on the generic position of *Belgrandiella angelovi* and *Bythiospeum copiosus* were done.

**Key words:** spring, cave, snail.

### Introduction

Most of the Bulgarian minute freshwater gastropods of Hydrobiidae Troschel 1857 are endemics and are known only from their type localities, and some of them were described only by their shell morphology (Angelov 2000). In this paper we report some new localities of four species from the genera *Belgrandiella* (Wagner, 1927), *Bythiospeum* Bourguignat, 1882 and *Grossuana* Radoman, 1973 with some notes on the systematic position of two of them.

### Material and Methods

The shells were collected by sieving river deposits with two sieves of 1x1 and 2x2 mm mesh width. Living molluscs were collected by hand and the specimens were preserved in 75% ethanol. The dissections and measurements of the shell were carried out by means of CETI stereo microscope and an eye-piece micrometer; the photographs were made with camera system with a digital adapter. The material was deposited in the collection of the author.

### Results and Discussion

#### *Belgrandiella pussila* Angelov, 1959

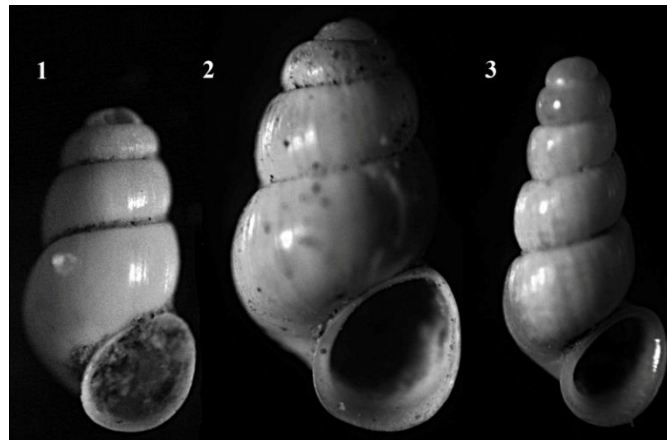
**Distribution in Bulgaria:** Species known only from the type locality – the source of Petreska River, near Lakatnik town, Stara Planina Mts. (Angelov 1959, 2000).

**Material examined:** 6 shells (1 fresh, 5 old), 07.03.2010, Temnata Dupka cave, Lakatnik town, UTM FN96, D. Georgiev leg.

**Diagnosis:** The distinctive characters of this species discerning it from the rest of the Bulgarian *Belgrandiella* are the cylindrical shell with obtuse apex and the oval small aperture (Angelov 1959). Its shell is smaller and its morphology is very different from these ones of the two other freshwater snails found in this cave (Wagner 1927): *Belgrandiella hessei* Wagner, 1927 and *Bythiospeum bureschi* (Wagner, 1927) (= *Paladilhiopsis bureschi* Wagner, 1927). From the first species it differs by the smaller aperture having a simple lip, cylindrical shell, obtuse apex, and flatter whorls, and from the second – by the smaller

number of whorls, having not so deep suture, its cylindrical shell, and simple aperture lip (Fig. 1).

**Other associated molluscs:** In the deposits of the river in Temnata Dupka cave studied we also collected and one juvenile shell of a freshwater mussel from the genus *Pisidium* Pfeiffer, 1821.



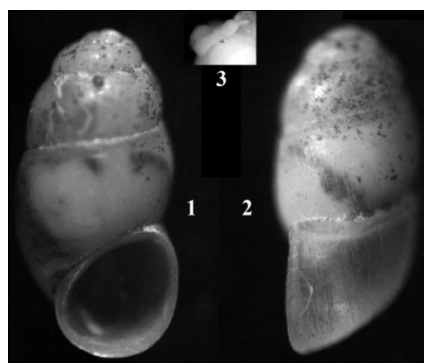
**Fig. 1.** Shells of the stygobite snails of the Temnata Dupka cave (Lakatnik): **1** – the newly recorded *Belgrandiella pussila*, **2** – *Belgrandiella hessei*, **3** – *Bythiospeum bureschi*. The shells are displayed in respective proportions.

#### ***Belgrandiella angelovi* Pintér, 1968**

**Material examined:** 24 adults, 20.09.2009, Stara Planina Mts., west of Gabrovo town, near village of Zeleno Darvo, two springs in *Fagus sylvatica* forest, UTM LH53, D. Georgiev leg.

**Diagnosis:** The main characters discerning this species from the similar *Belgrandiella zagoraensis* Glöer & Georgiev 2009 living in Sarnena Sredna Gora Mt are the opaque shell, the ovally broad aperture with louvered outer margin (versus non opaque shell, oval aperture with vertical outer margin) (Fig. 2).

**Discussion:** The anatomy of *B. angelovi* was not known till now (Pintér 1968). Here we can note down that our specimens had white mantle and a simple regularly broad penis (1 spec. dissected), sharply tapered at its distal part (which also discerns this species from the similar *B. zagoraensis* which distal penis part is tapered) (Fig. 2). The last character surely puts this species into the genus *Belgrandiella*.



**Fig. 2.** *Belgrandiella angelovi* from the new locality: **1** – shell, front view, **2** – shell, side view, **3** - penis.

***Bythiospeum copiosus* (Angelov, 1972)**

**Distribution in Bulgaria:** Known only from its type locality, the Izvora cave near Polaten, Teteven district, Stara Planina Mts. (Angelov 1972).

**Material examined:** 2 shells, 03.12.2010, Glava Panega spring, near village of Zlatna Panega, Stara Planina Mts., North Bulgaria, UTM KH67, D. Georgiev leg.

**Diagnosis:** The shell is conical, the whorls are  $4\frac{1}{2}$  - 5, the aperture has not well developed lip which discerns this species from *B. bureschi* which shell is more cylindrical, has  $4\frac{1}{2}$  - 5  $\frac{1}{2}$  whorls and its aperture has well developed lip (Fig 1, 3).

**Discussion:** Firstly this species was described as a subspecies of *B. bureschi* as *Paladilhiopsis bureschi copiosus* Angelov, 1972. The genus *Paladilhiopsis* Pavlović, 1913 is considering Boeters (1998), a synonym of *Bythiospeum* Bourguignat. Both *B. copiosus* and *B. bureschi* stat. nov. have quite different shell morphology and their localities are very far from each other so we consider *B. copiosus* as a separate species.



**Fig. 3.** *Bythiospeum copiosus* from Glava Panega spring, front (left) and back (right) side view of the shell.

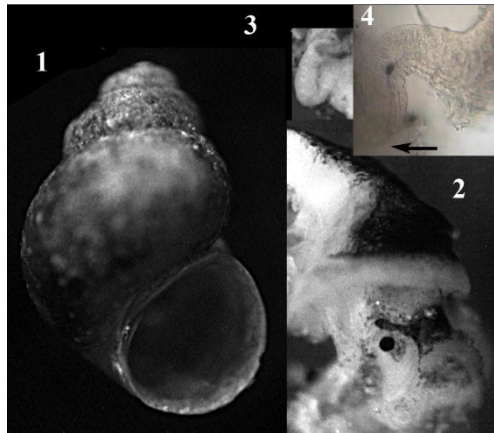
***Grossuana thracica* Glöer & Georgiev, 2009**

**Distribution in Bulgaria:** Species known only from the type locality – the source of a small river emerging from Chirpan Bunar cave near village of Bolyarino, Upper Thracian Lowland (Glöer & Georgiev 2009).

**Material examined:** 17 adults (2 males dissected) and 2 juveniles, 11.06.2010, and 8 adults, 19.12.2009, spring at Tri Voditsi fish farms near the base station of the farms, near village of Hadzievo, water temperature 14°C, oxygen 6 mg/l, UTM KG96 Angel Tsekov leg.; 4 shells, 08.06.2010, deposits of the stream inside the Chirpan Bunar cave, D. Georgiev leg.

**Diagnosis:** According to Glöer & Georgiev (2009) *G. thracica* differs from *G. codreanui* (Grossu, 1946) and *G. angeltsekovi* Glöer & Georgiev, 2009 in the penis morphology (the penis of the first species is not strongly tapered as it is in *G. thracica*, and in the second the penis is more tapered than it) and the shell of *G. codreanui* is glossy vs. silky in *G. thracica*. The aperture of *G. codreanui* is rounded oval and not angled at the top, as it is in *G. thracica*.

**Discussion:** The species *G. thracica* was described from the area where the water emerging from Chirpan Bunar cave. Our finding of shells into the cave stream deposits indicates that there is cave population of this species or at least part of the cave waters are coming from surface where other populations live.



**Fig. 4.** *Grossuana thracica* from the spring at the Tri Voditsi fish farms near village of Hadzievo: **1** – shell, **2** – soft body (the snout, eye, tentacle and mantle pigmentation are visible) with penis (up on right), **3** – penis, **4** – the louvered distal part of the penis, penis tip was showed with an arrow (light microscope photography).

**Acknowledgements.** We express our thanks to Dr Angel Tsekov who collected the *G. thracica* from the spring at Tri Voditsi fish farms, and measuring the water temperature and the oxygen dissolved at the same site, and to Ivaila Klimentova who helped the author during the work in the Temnata Dupka and Chirpan Bunar caves.

#### References

- Angelov, A. (1959). Neue Gastropoden aus den unterirdischen Gewässern Bulgariens. – Archiv für Molluskenkunde, 88(1/3): 51-54.
- Angelov, A. (1972). Neue Hydrobiidae aus Höhlengewässern Bulgariens. – Archiv für Molluskenkunde, 102(1/3): 107-112.
- Angelov, A. (2000). Mollusca (Gastropoda et Bivalvia ) aquae dulcis, catalogus Faunae Bulgaicae. – Pensoft & Backhuys Publishing, Sofia, Leiden, 54 pp.
- Boeters, H. 1998. Mollusca: Gastropoda: Risssooidea. Süßwasserfauna von Mitteleuropa 5(1/2), 76 pp.
- Glöer, P., Georgiev, D. (2009). New Risssooidea from Bulgaria (Gastropoda: Risssooidea). – Mollusca, 27(2): 123-136.
- Pintér, L. (1968). Eine neue Wasserschnecke aus Bulgarien. – Archiv für Molluskenkunde, 98(1/2): 61-63.
- Wagner, A. (1927). Studien zur Molluskenfauna der Balkanhalbinsel mit besonderer Berücksichtigung Bulgariens und Thraziens, nebst monographischer Bearbeitung einzelner Gruppen. – Annales Zoologici Muzei Polonici Historie Naturale, 6(4): 263-399.