

FIRST RECORD OF *PONTOBELGRANDIELLA* RADOMAN, 1978 (GASTROPODA: TRUNCATELLOIDEA: HYDROBIIDAE) IN SERBIA MARKS THE WESTERNMOST BORDER OF THE GENUS' DISTRIBUTION

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ABSTRACT: In this paper we report the first record of the genus *Pontobelgrandiella* from Serbia, which considerably extends its distribution to the west. The morphology of the specimens found is described and they were compared with other similar taxa. Although our specimens showed some morphological differences from other taxa, we refrained from describing a new species due to the current problems in this group and the limited significance of shell features. Reporting populations of endangered gastropods may increase the chances of their better description and more accurate identification as well as contribute to their protection and the conservation of their habitats.

KEY WORDS: faunistics; limestone; springs; stygobionts

INTRODUCTION

Pontobelgrandiella Radoman, 1978 is a genus of subterranean, operculate freshwater microgastropods, known to occur in Bulgaria and Greece (RYSIEWSKA et al. 2016, BOETERS et al. 2017). Although many *Belgrandiella* species were originally described from Bulgaria (ANGELOV 1972, 1976, GEORGIEV 2011, 2012), RADOMAN (1978) showed that they belong to new genus, *Pontobelgrandiella*, which was later confirmed by RYSIEWSKA et al. (2016). The genus was established on the basis of the characteristics of the female reproductive system, namely the presence of a single bursa copulatrix and a seminal receptacle, as well as the presence of a characteristic loop of the bursa duct (RADOMAN 1978, GLÖER 2022). The morphology of the penis is simple, with lateral wart-like outgrowths or without them (GLÖER 2022). The shells of *Pontobelgrandiella* species are simple, slightly

conical ovoid, with deep or shallow suture and usually oval aperture (GLÖER 2022). The genus can be distinguished from *Devetakia* Georgiev et Glöer, 2011, *Devetakiola* Georgiev, 2017, *Bythiospeum* Bourguignat, 1882 and related genera most easily by the far less conical shells. Other genera such as *Balkanica* Georgiev, 2011 and *Cavernisa* Radoman, 1978 are on average more ovoid (GLÖER 2022). However, the most reliable generic placement still relies on anatomical or phylogenetic data. The genus currently comprises 18 species (MOLLUSCABASE 2025). No species of *Pontobelgrandiella* has yet been reported from Serbia. The westernmost locality of *Pontobelgrandiella* so far is the type locality of *P. buresi* (Angelov, 1976), which is located near the village of Bankya, W Bulgaria and distanced ca. 150 km from the village of Resnik.

In this paper we present the first records of the genus *Pontobelgrandiella* in Serbia, which considerably extends the distributional limit of the genus to the

west. Due to the lack of living specimens and the associated unavailability of DNA studies, identification to species level was not carried out.

MATERIAL AND METHODS

Material was collected from the spring using a hand net. Sediment was then rinsed in water using a sieve which served to separate larger particles from the fine sediment and snail shells. Fine sediment containing snail shells was kept in a sock and preserved in 70% ethanol. During a roughly 30 minutes sampling time, we were only able to find empty shells because the spring head was private and inaccessible. These empty shells probably entered the large pool through a water current.

Shells were photographed using a Nikon SMZ800N stereomicroscope equipped with a Nikon DS-Fi2 camera. A Nikon DS-L3 control unit was used to set scale bars. Collected specimens are deposited at the Institute of Zoology, University of Belgrade, Faculty of Biology. The following abbreviations are used in the text: IZOO-MG – Gastropod collection of the Institute of Zoology, Faculty of Biology, University of Belgrade, Serbia; SMF – Senckenberg Forschungsinstitut und Naturmuseum, Frankfurt am Main, Germany.

RESULTS

Superfamily Truncatelloidea J. E. Gray, 1840

Family Hydrobiidae W. Stimpson, 1865

Genus *Pontobelgrandiella* Radoman, 1978

Pontobelgrandiella Radoman, 1978: 30.

Type species. *Belgrandiella nitida* Angelov, 1972, by original designation.

Remarks. GLÖER (2022) listed a total of 19 species in this genus, including a name „*Pontobelgrandiella copiosus* (Angelov, 1972)“ originally described under the genus *Belgrandiella*. This is a mistake since, in the cited original description, the taxon originally described is *Paladilhopsis buresi copiosus*, now a synonym of *Saxurinator buresi* (A. J. Wagner, 1928). Thus, the names „*Belgrandiella copiosus*“ and „*Pontobelgrandiella copiosus*“ introduced in GLÖER (2022) are both incorrect and should be abandoned.

***Pontobelgrandiella* sp. “Resnik”**

Figs 1–4

Material examined. 4 whole shells and 11 fragments, Zaječar district, spring in the village of Resnik near the town of Sokobanja (ca. 35 km N of the city of Niš), 07. Nov. 2023 (43°37'57.75"N, 21°48'55.42"E).

Description of collected specimens. Shell conical-ovoid, colouration of shells and soft body parts unknown. Based on four measured specimens, shell height ranges from 1.3 to 1.5 mm while the width ranges from 0.88 to 1.02 mm. Shell consisting of 3–4 whorls. Whorls usually strongly convex, bulging, separated by a deep suture. Protoconch and first telioconch whorl usually quite small, last two whorls

much larger. Last whorl contributes to ca. 1/2 of the total shell height. Shell surface indistinct, shiny and with only weakly developed radial growth lines. Aperture ovoid, peristome moderately thickened, especially at the columellar side. Umbilicus slit-like but clearly open (Figs 1–4).

Comparison to similar species. This species is strikingly resemblant of *Pontobelgrandiella bulgarica* (Angelov, 1972) (Figs 5–6) (described ca. 210 km east from the village of Resnik), due to the strongly convex, bulging whorls and the same aperture shape. The only large difference we could find between the two species is the shell size. *P. bulgarica* is 2.05 to 2.25 mm high and 1.15 to 1.4 mm broad (ANGELOV 1972) which is significantly larger than the specimens found in the village of Resnik. In *Cavernisa zaschevi* (Angelov, 1959) (Figs 7–9), the whorls are usually even more bulging and with a deeper suture. The last whorl is sometimes slightly detached from the penultimate and the aperture is more rounded.

Habitat. The species was found in a large spring in the village of Resnik (Figs 10–12) with an inaccessible spring head and an outlet of water in the form of a relatively large pool. The pool bottom is muddy with medium sized rocks and submerged lesser water-parsnip (*Berula erecta*). Shells were collected together with numerous living specimens of *Grossuana codreanui* (Grossu, 1946).

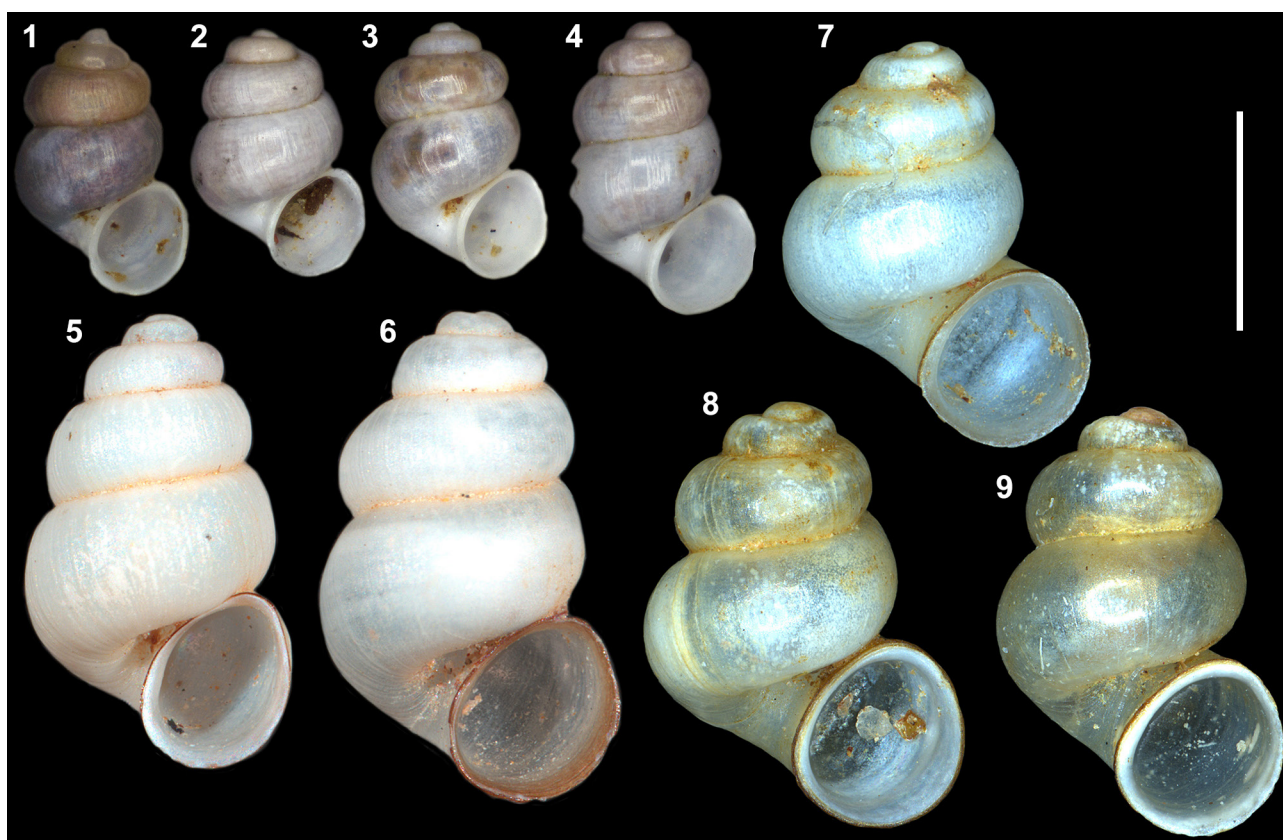
Remarks. One of four examined whole shells had a slightly larger shell with larger initial whorls, less bulging whorls and a shallower suture (Fig. 4). Due to the limited number of whole shells, our comparison with the similar genera/species is also limited.



DISCUSSION

The first record of the genus *Pontobelgrandiella* from Serbia marks the westernmost known locality of the genus. As typical for Hydrobiidae, all *Pontobelgrandiella* species are characterized by simple shells with a few taxonomically important features. This makes the identification of species (or sometimes even genus) based on morphology challenging or even impossible. We were able to clearly distinguish the specimens from the village of Resnik morphologically from all other *Pontobelgrandiella* taxa, with the exception of *P. bulgarica*. However, *P. bulgarica* is clearly larger than our specimens, and we find this feature convincing enough not to consider them conspecific. Many species within the genus were described solely on the basis of shell characters and sometimes seemingly without a strong morphological background. Although our specimens are morphologically distinct from other genera, we had very limited material (four adult whole shells), and even then we found signs of considerable morphological variability in terms of suture impression, whorl shape and size. One of four whole shells (Fig. 4), showed a

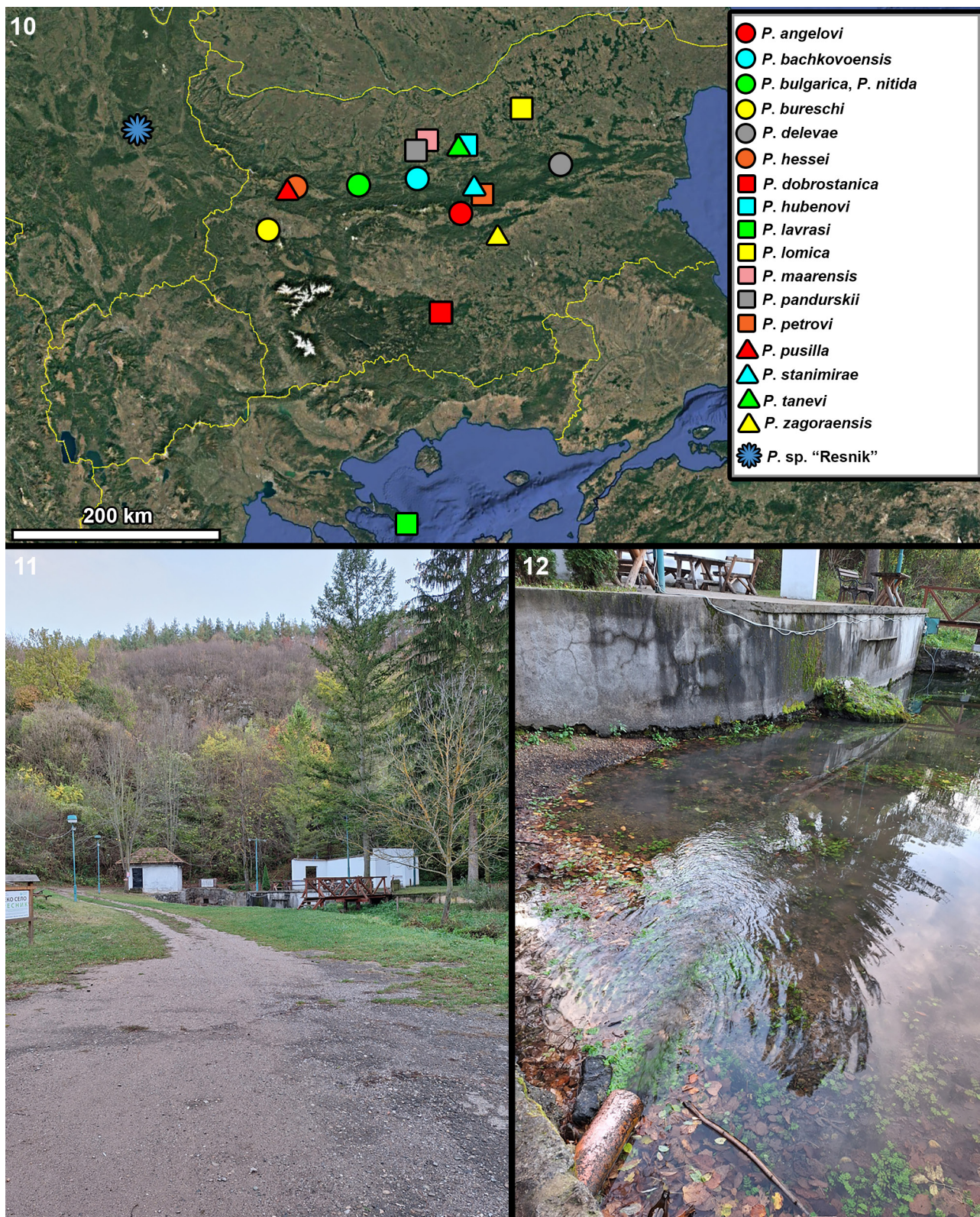
bit different shell morphology in terms of size, whorl shape and suture impression and we assume that this variability would be much higher if we had more specimens at disposal. The main part of the spring where *Pontobelgrandiella* sp. „Resnik“ was found is captivated so water abstraction can be considered the most obvious threat. The captivation is also the main reason why we could not find living specimens, since the spring zone itself was completely inaccessible. Considering that morphological variability in the Hydrobiidae can be quite high (OSIKOWSKI et al. 2018), we believe that the formal description of new species without DNA data would be premature and would not contribute to the knowledge of this challenging group of gastropods. The genetic divergence of *Pontobelgrandiella* was found to be relatively low, initially explained by the possible, relatively recent invasion of subterranean habitats (RYSIEWSKA et al. 2016), but later speculated to be due to bottlenecks in extinction events and massive reductions in population sizes (OSIKOWSKI et al. 2017). It is also speculated that *Pontobelgrandiella* may also inhabit inter-



Figs 1–9. *Pontobelgrandiella* sp. and related species: 1–4 – *Pontobelgrandiella* sp. „Resnik“ from the village of Resnik near the town of Sokobanja (IZOO-MG-023) (the last whorl of the specimen shown on Fig. 4 is damaged); 5–6 – paratypes of *Pontobelgrandiella bulgarica* (SMF 222396) (photographed by P. GLÖER, same images as used in GLÖER 2022); 7–9 – paratypes of *Cavernisa zaschevi* (SMF 161452) (photographed by P. GLÖER, same images as used in GLÖER 2022). Scale bar 1 mm

stitial habitats, which could explain the low genetic divergence due to high gene flow between populations (OSIKOWSKI et al. 2017). All this suggests that the specific diversity of *Pontobelgrandiella* is overesti-

mated, which is another reason why we refrain from describing the new species. However, we believe that reporting these populations could significantly increase the chance of later formal description and pro-



Figs 10–12. Distribution map showing type localities of all hitherto described *Pontobelgrandiella* species (11–12 – locality where *Pontobelgrandiella* sp. "Resnik" was found)



tection of their habitat. Our specimens were placed in the genus *Pontobelgrandiella* because of the overall similarity of shell morphology to this genus, but mainly because of the striking morphological similarity to *P. bulgarica*. It must be noted that *P. bulgarica* is probably not the most typical representative of its genus as it has more bulging and convex whorls, as well as a wider umbilicus than all other species. If further studies show that *P. bulgarica* belongs to some other genus, a question mark must be raised

regarding the generic placement of *Pontobelgrandiella* sp. „Resnik“ as well.

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