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A new species of *Bythinella* from Strandzha Mountain, SE Bulgaria (Gastropoda: Risooidea)

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Received 1 July 2014 | Accepted 11 July 2014 | Published online 14 July 2014.

Abstract

A new species of the genus *Bythinella* Moquin-Tandon, 1856 (Gastropoda: Risooidea: Bythinellidae), from a spring in Strandzha Mt, SE Bulgaria was described as new for science. By this there are 22 *Bythinella* species known from Bulgaria.

Key words: *Bythinella*, snail, spring, endemic, Bulgaria.

Introduction

The genus *Bythinella* Moquin-Tandon, 1856 (Gastropoda: Risooidea: Bythinellidae) are probably the most diverse of all hydrobioids in Europe (Radoman 1976; Strong *et al.* 2008). These minute snails are distributed from N-Africa (Boeters 1998) to south-eastern Turkey (Yıldırım *et al.* 2006). They are considered to have at least two centers of species richness, in France, which has a total of 42 known species (Bichain *et al.* 2007), and Balkans, especially in Bulgaria – 22 known species (Glöer and Georgiev 2009, 2011; Georgiev and Hubenov 2013). The last area is considered as not completely investigated till now (Georgiev and Hubenov 2013).

In this paper we describe a new species of *Bythinella* from a spring in Strandzha Mt, SE Bulgaria.

Material and methods

The living snails were collected in Strandzha Mts., spring near river at Nestinarka beach, Bulgaria; 42.1549° N, 27.85583° E; alt. 59 m asl. (Fig. 1) by hand and preserved in 75% ethanol. The measurements were carried out by using a stereo microscope (Zeiss) and an eye-piece micrometer, the photographs were made with a Leica digital camera system. The material is stored in the Zoological Museum Hamburg (ZMH) and in the collections of the authors.

For species delimitation in the genus *Bythinella* we followed the morphological species concept. We selected features which are intraspecifically constant but are interspecifically different (Glöer 2013). The different features used here are: (i) shell size, (ii) morphometry of the tubular gland, and (iii) the proportions of the penis and penial appendix. The main feature is the tubular gland, which can be regularly thick over the whole length, or the proximal part can be thin or thick and the distal part can be regular or bulbed. In

addition the number of loops of the tubular gland is a good distinguishing feature, which is counted here as half loops, that means in Figs. 4, 5 counted as four half loops.

Abbreviations used: H - shell height, W - shell width, AH - aperture height.

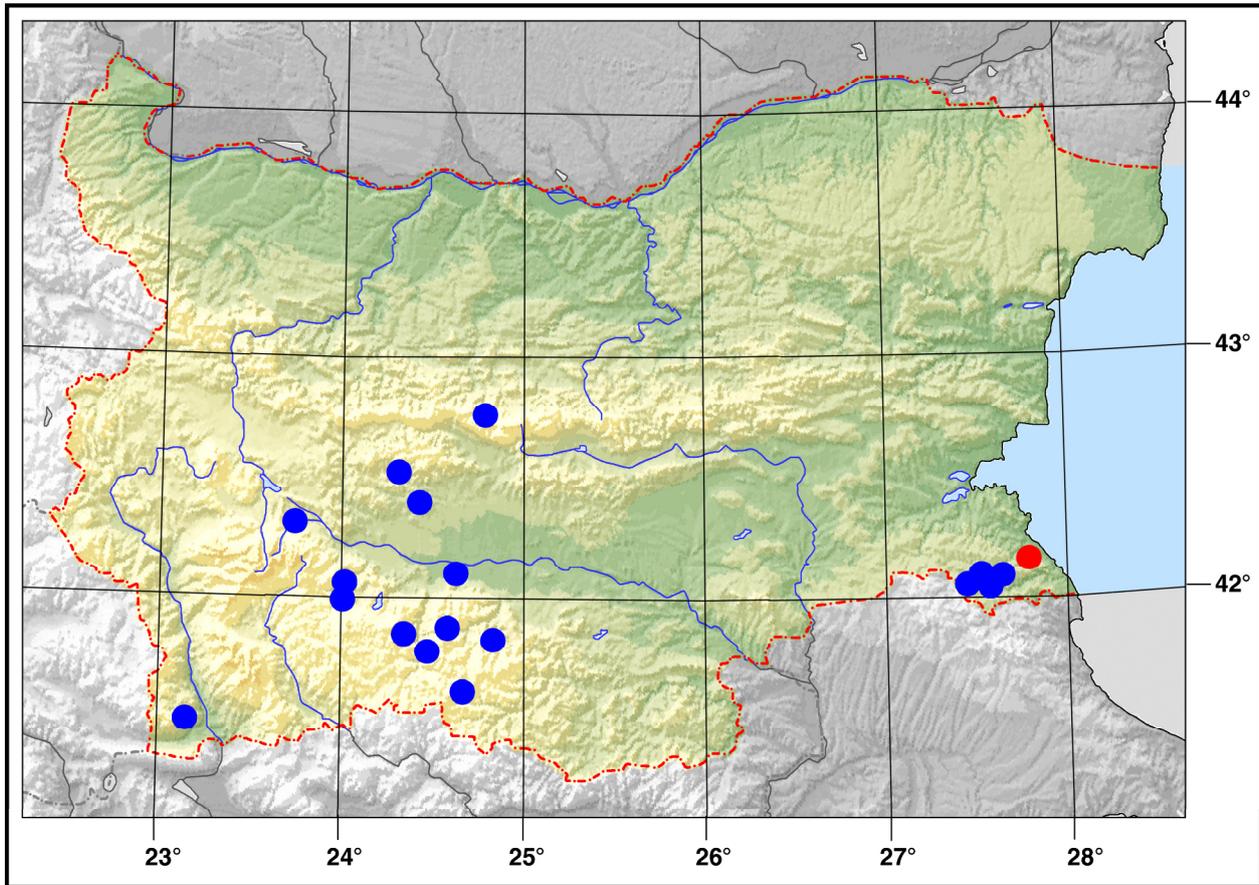


Figure 1. The known type localities of *Bythinella* spp. from Bulgaria (blue dots), sampling site of *Bythinella temelkovi* n. sp. (red dot).

Systematics

Genus *Bythinella* Moquin-Tandon, 1856

Bythinella temelkovi n. sp.

(Figs. 2-6)

Holotype: H=2.5 mm, W=1.5 mm, AH=1.2 mm. 05.06.2012 D. Georgiev leg., ZMH 79701.

Paratypes: 10 specimens ZMH 79702, 5 shells coll. D. Georgiev, 11 specimens coll. Glöer.

Locus typicus: Strandzha Mts., spring near river at Nestinarka beach, Bulgaria; 42.1549° N, 27.85583° E; alt. 59 m asl.

Etymology: Named in memory of Dilian Georgiev's colleague Dr Blagovest Temelkov (1956 – 2010) who was specialist of fossil and recent Foraminifera, and lecturer at the University of Plovdiv.

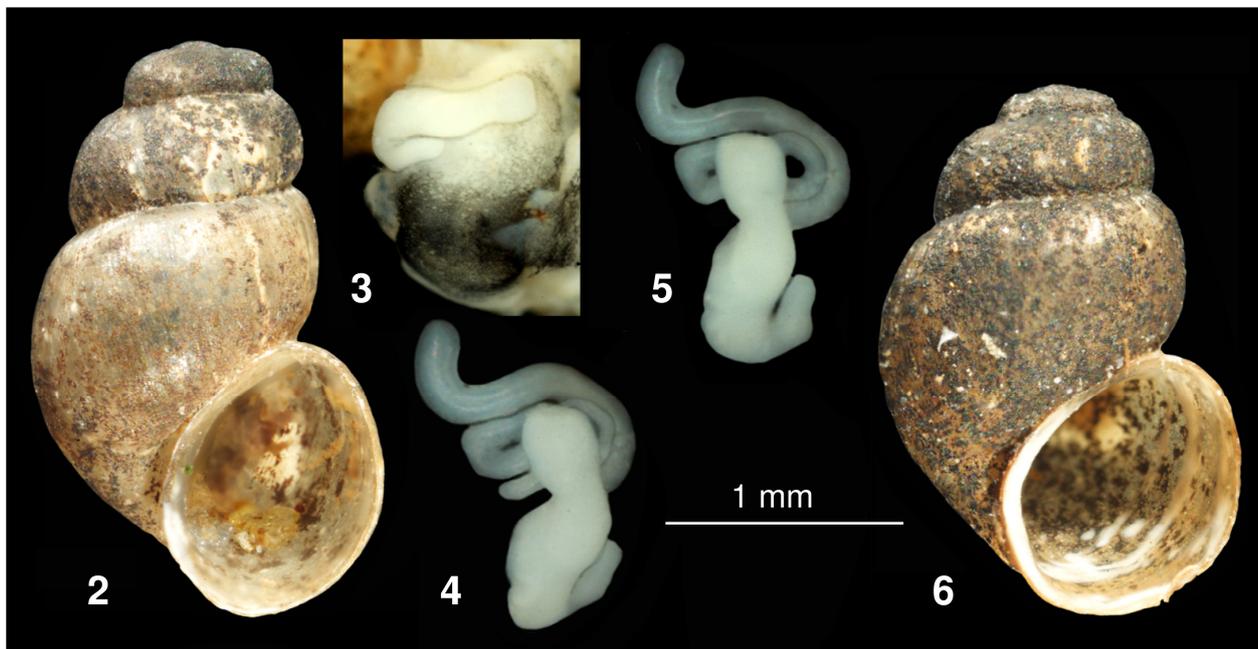
Description

Shell. The horn-coloured shell is nearly cylindrical (Figs. 2, 6). The 4.5 whorls are slightly convex with a deep suture. The surface is silky and finely striated. The apex is very small and obtuse, the umbilicus is

closed. The aperture is oval, rounded at the top, and from lateral view straight. Shell height 2.1-2.5 mm, width 1.5-1.7 mm, aperture height to shell height ratio 0.48.

Animal. The head is dark pigmented and eye spots are visible.

Anatomy. The penis is three times shorter than the penial appendix (Figs. 3-5), the tubular gland is long and regularly thick (Figs. 4, 5) with 4 half loops.



Figures 2-6. *Bythinella temelkovi* n. sp. 2: shell of holotype, 3: penis in situ, 4-5: penis and tubular gland of paratypes, 6: shell of paratype.

Differentiating features: *Bythinella temelkovi* n. sp. belongs to the small *Bythinella* species of Bulgaria which are smaller than 2.6 mm (*B. markovi* Glöer & Georgiev, 2009, *B. valkanovi* Glöer & Georgiev, 2011, *B. gloeri* Georgiev, 2009, and *B. slavayae* Glöer & Georgiev, 2011). From *B. markovi*, the new species differs by the closed umbilicus (slit-like in *B. markovi*) and the long tubular gland (short in *B. markovi*). *B. valkanovi* is much slimmer in shell shape than *B. temelkovi* n. sp. (1.1-1.4 mm in *B. valkanovi* vs. 1.5-1.7 mm in *B. temelkovi*). The tubular gland in *B. gloeri* and *B. slavayae* is not regularly thick as it is in *B. temelkovi* n. sp.

Habitat and ecology: The new species was found in shallow spring among broad leaf bush and tree vegetation, at the bank of a small stream.

Distribution: Known only from the type locality, possibly a local endemic species.

Acknowledgements

We like to thank to the two reviewers for their helpful comments.

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