New genus and two new species of stygobiotic snails from Stara Planina Mts, Bulgaria

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Abstract: Two new species, one of them belonging to a new genus are described from two caves in North Bulgaria. *Polatenia sinuiapertura* n. gen. and n. sp. was found in sand deposits at the entrance of Izvora Cave, Polaten District of Teteven Town, and *Kolevia toplensis* n. sp. found at the water catchment near Toplya Cave at vicinity of village of Golyama Zhelyazna.

Keywords: Balkans, caves, Hydrobioidea, new genus, new species

Introduction

The water caves of North Bulgaria are rich on stygobiotic snail species (Georgiev & Hubenov, 2013). This high diversity is a result of their speciation dated back about 7.5 million years ago before the Messinian Crisis (Osikovski et al., 2017).

Some stygobiotic species described by beginning and at the middle of the last century are currently a subject of monitoring by the program of Ministry of the Environment and Waters of the Republic of Bulgaria. Participating on this project I visited two caves located on the northern slope of Stara Planina Mts. The object of monitoring were three Hydrobiidae species: *Pontobelgrandiella bulgarica* (Angelov, 1972), *P. nitida* (Angelov, 1972) and *Anangelovia macrostoma* (Angelov, 1972) described by Angelov (1972) from a spring cave in Teteven Town. The *A. macrostoma* I had also detected in another locality, Toplya Cave near Golyama Zhelyazna Village (Georgiev, 2013), thus those two localities were the main target of my visit, resulting in a find of two new species, one of them belonging to a new genus.

Material and methods

Deposits of streams, emerging from two caves of Stara Planina Mts were sampled on 17–18.09.2022 (Fig. 1). Later the samples were sun dried and floated in water. The floating empty shells were collected by a strainer and a brush. Specimens were stored, identified and some photographed. Taxonomy follows Glöer (2022).


Results and discussion

Class Gastropoda Cuvier, 1795
Order Neotaenioglossa Haller, 1892
Family Hydrobiidae Troeschel, 1857
Genus *Polatenia* gen. nov.

Type species: *Polatenia sinuiapertura* Georgiev n. sp., here designated.
Remark: About seven years ago a fragmented shell of this species had been collected by the author at the same locality. Lacking the aperture made its identification impossible, nevertheless it was evident that the specimen belongs to an unknown stygobiotic species.

Description: The aperture is round, with an irregularly folded periphery curving outwards, and deeply sinuated from right lateral view. The shell is relatively large for a hydrobiid snail (height 3.0 mm), elongated conical, and with smooth shining surface. Whorls are five, fast growing, relatively flat with shallow suture. The last whorl is slightly rounded and consists about 1/2 from the shell height. Apex is small and rounded. Umbilicus is wide open and aperture edge is not contact with the wall of the last whorl.

Diagnosis: By its sinuated aperture and conical shell *Polatenia* gen. nov. is similar with *Plagygeyeria* Tomlin, 1930 but the species from this genus has strongly rounded whorls with deep suture, with surface consisting of axial ribs with fine spiral ribs (Glöer, 2022). The morphologically closest Bulgarian taxon is *Plagygeyeria procerula* (Angelov, 1965) which has no sinus on the aperture, its whorls are more rounded and regularly growing (Angelov, 1965).

Etymology: Named after Polaten District of Teteven Town, where the new species was found.

*Polatenia sinuiapertura* n. sp.

Etymology: The name of the species is derived from its specific apertural sinus, well visible in lateral view.

Type locality: Bulgaria, Stara Planina Mts, Teteven Town, Polaten District, sand deposits at the entrance of Izvora Cave, N 42.945774°, E 024.198772°, 364 m a.s.l. (Fig. 2B).
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Fig. 2. *Polatenia sinuaipertura* gen. et sp. nov: A – shell, front view and lateral view of the aperture (holotype); B – type locality (Izvora Cave, Polaten), the sampling point is shown by an arrow.

Material examined: Holotype: 1 shell, 18.09.2022, from the type locality, D. Georgiev leg., NMNH (Fig. 2A).

Description: The aperture is round, with an asymmetrically folded edge curving outwards, and deeply sinuated from lateral view. The shell is relatively large (height 3.0 mm), elongated conical, and with smooth shining surface. Whorls are five, fast growing, relatively flat with shallow suture. The last whorl is slightly rounded and consists of about 1/2 from the shell height. Apex is rounded. Umbilicus is wide open and aperture edge is not in contact with the wall of the last whorl. Soft body and operculum unknown.

Measurements: Holotype: SH = 3.00 mm, SW = 1.06 mm, AH = 0.76 mm, AW = 0.84 mm, LWH = 1.38 mm, AH/SH = 0.25, LWH/SH = 0.46, SW/SH = 0.35.


Genus *Kolevia* Georgiev & Glöer, 2015

Diagnosis: The shell is white, conical to ovate-conical with 5 whors having fine growth lines and deep suture. Last whorl is more than 50% from the total shell height and is somehow flattened at its wider part. The apex is rounded to relatively sharp. The aperture is ovoid with simple lip having brownish periphery. The operculum and the soft body are unknown (Georgiev & Glöer, 2015).

*Kolevia toplensis* n. sp.

Etymology: The species is named after the Toplya Cave from which river sand deposits the species was found.

Type locality: Bulgaria, Stara Planina Mts, near Golyama Zhelyazna Village, in sand deposits of the stream at the water catchment near Toplya Cave, N 42.948109°, E 024.487527°, 462 m a.s.l. (Fig. 3B).

Material examined: Holotype: 1 shell, from the type locality, 17.09.2022, NMNH, D. Georgiev leg., (Fig. 3A); paratypes: 3 shells, from the type locality, 17.09.2022, NMNH, D. Georgiev leg.

Description: The shell is white, conical to elongate conical with 4.5–5 whors having fine growth lines and deep suture. Last whorl is more than 50% from the total shell height and is somehow flattened at its wider part. The apex is rounded to relatively sharp. The aperture is ovoid with simple lip having brownish periphery. The operculum and the soft body are unknown. Small species (SH = 1.3–1.4 mm).

Measurements: Holotype: SH = 1.32 mm, SW = 0.74 mm, AH = 0.48 mm, AW = 0.44 mm, LWH = 0.82 mm, AH/SH = 0.37, LWH/SH = 0.62, SW/SH = 0.56;
Paratypes: SH = 1.26 mm, 1.36 mm, 1.30 mm; SW = 0.68 mm; 0.66 mm; 0.68 mm (respectively).

Differential diagnosis: Kolevia toplensis n. sp. differs from the only known species of this genus, K. bulgarica Georgiev & Glöer, 2015 by its smaller size (SH = 1.2–1.3 mm vs 2.00 mm), the more elongate shell, and its open umbilicus (vs. slit-like).

Habitat and ecology: A stygobiotic species living in subterranean karstic waters. Shells were found in sand deposits of a stream emerging from a limestone cave. Associated gastropod fauna: Stoyanovia cf. stoyanovi (Georgiev, 2013), Stoyanovia cf. kolevi (Georgiev, 2013), Anangelovia macrostoma (Angelov 1972), Pontobelgrandiella sp.

The recent discovery of two new species and even a new genus of stygobiont snails in Bulgaria, after 15 years of their intensive research (Glöer, 2022) indicates, that their diversity is still poorly known. Localities rich in a shell material of these interesting animals have to be visited repeatedly at different seasons and large quantities of river sediments has to be collected and screened to gain scientifically valuable samples. Additionally, living individuals have to be searched for anatomical and genetic studies to better understand their taxonomy and systematics. The scarcity of live specimens washed out from their hypogean habitats represents the main challenge in the field work and in their future study.

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