New subterranean freshwater gastropods of Montenegro (Mollusca: Gastropoda: Hydrobiidae), with description of one new genus and two new species

PETER GLÖER and VLADIMIR PEŠIĆ

Biodiversity Research Laboratory, Schulstr. 3, D-25491 Hetlingen, Germany. E-mail: gloeer@malaco.de.
Department of Biology, University of Montenegro, Cetinjski put b.b, 81000 Podgorica, Montenegro. E-mail: vladopesic@gmail.com.

Received 5 December 2014 | Accepted 11 December 2014 | Published online 15 December 2014.

Abstract
Two new stygobiont species of the family Hydrobiidae Troschel, 1857, i.e. Iverakia hausdorfi n. gen. n. sp. and Bythiospeum demattiai n. sp. were described. The both species have been collected from the spring Iverak near Podgorica. Descriptions and photos of the holotypes are presented.

Key words: Hydrobiidae, new species, taxonomy, Montenegro.

Introduction
To date, 28 hydrobiid species and subspecies belonging to 10 genera have been recorded in Montenegro (Glöer and Pešić 2014). Some of hydrobiid gastropods are stygobiote species, i.e. living in underground waters. The list of subterranean species of hydrobioid gastropods of Montenegro (see: Pešić and Glöer 2012, Glöer and Pešić 2014) includes 12 species from 7 genera: Bracenica Radoman 1973 (B. spiridoni), Saxurinator Schütt 1960 (S. orthodoxus), Vinodolia Radoman, 1973 (V. matjasici, V. gluhodolica), Montenegrospeum Pešić & Glöer 2013 (M. bogici), Zeteana Pešić & Glöer 2014 (Z. ljiljanae), Paladilhiopsis Pavlovic 1913 (P. tarae), and Plagigeyeria Tomlin 1930 (P. montenegrina, P. zetaprotogona zetaprotogona, P. zetaprotogona pageti, P. zetaprotogona zetadidyma, P. zetaprotogona vitoja, P. lukai). Most of these stygobiote species rarely been sampled in subterranean habitats and only being recorded on the basis of empty shells in springs which flow directly out of the ground. Shell morphology is sometimes the only way to describe such stygobiote snail species, because there is no any possibility for sampling living populations in the underground and study the anatomy of these gastropods (De Mattia 2007, Georgiev 2013).

Recently, the junior author collected in a spring near Podgorica hydrobiid snails which did not correspond to any described species. Unfortunately, we did not manage to find living specimens (despite the continued effort of sampling almost every month over the year) of the new species. Descriptions of these species are given in this paper.

Material and Methods
The specimens of new species, were collected from April to mid-November 2014, in the spring Iverak situated in the village Pričelje (42°30′17.52″ N, 19°13′17.93″ E) in the central part of Montenegro.
spring is located roughly 150 m of the Zeta river. In order to collect live specimens, the spring sediments were transported into the laboratory, soaked in tap water and left in the dark for a few days in order to leave enough time for live animals to reach the surface of the sediment. In these samples two new species have been found but only with empty shells.

Photos of the shells were taken with a Leica digital camera system. The studied material is stored in the Zoological Museum of Hamburg (ZMH).

**Figure 1.** Iverak spring (Pricelje village, Podgorica). Left (A): spring source with the spring outlet. Right (B): Spring source with deposits emerging from the underground. Photos. V. Pešić

**Systematics**

**Family Hydrobiidae Troschel, 1857**

**Genus Iverakia n. gen.**

**Diagnosis.** Shell elongated conical with a smooth surface. Aperture oval, from lateral view sinuated, the lower part moved forward. Anatomy is unknown.

**Type species.** *Iverakia hausdorfi* n. sp.

**Etymology.** Named after the spring where the new genus was detected.

**Differentiating features.** The new genus share elongated shell with a sinuated aperture with *Plagigeyeria* Tomlin, 1930 and *Paladilhiopsis* Pavlović 1913. The both genera can easily be distinguished by the shell surface which is in *Plagigeyeria* ribbed, with a strong axial sculpture, and in *Paladilhiopsis* with a spiral lines on the shell crossing the growth striae (Bernasconi 1990), not smooth as in *Iverakia* n. gen.

The similar genus *Zeteana* Glöer & Pešić 2014, described from the same type locality as *Iverakia* n. gen., conchologically resembles to snails of the new genus but clearly differs by having the slightly ribbed shell surface, with broad ribs and thin interspaces (Glöer and Pešić 2014).
Distribution. The genus is endemic to Central Montenegro and includes the only species: *Iverakia hausdorfi* n. sp. from its type locality only.

*Iverakia hausdorfi* n. sp.
(Figs. 2-3)

Type series. Holotype (ZMH 79880): Shell height 2.4 mm, shell width 1.0 mm; Montenegro, Podgorica, spring Iverak in village Pričelje, 39 m asl., 20.iv.-25.v.2014 Pešić. Paratypes (ZMH 79881): 2 ex.; 1 ex. coll. Glöer, same data and locality as holotype.

Locus typicus. Montenegro, Pogorica, spring Iverak in village Pričelje, 42°30’17.52" N, 19°13’17.93" E.

Etymology. Named after Prof dr Bernhard Hausdorf, curator of ZMH, in appreciation of his contribution to the taxonomy of the molluscs.

Description. Shell: Shell elongated cylindrical with a large and obtuse apex (Fig. 2). The regularly growing 5.5 whorls are slightly convex with a deep suture. Shell surface smooth. The aperture is ovoid, the lower edge of the aperture is moved forwards, and the outer margin is sinuated from the lateral view (Fig. 3). The umbilicus is open and deep. The shell height 2.4 mm, shell width 1.0 mm, apertural/shell height ratio 0.3.

Soft body: unknown.

Distribution. Montenegro; known only from the type locality.

Figures 2-3. *Iverakia hausdorfi* n. sp. (holotype). 2 = shell, 3 = aperture from the lateral view.
Bythiospeum demattiai n. sp.  
(Fig. 4-6)

**Type series.** Holotype (ZMH 79882): Shell height 1.7 mm, shell width 0.9 mm; Montenegro, Podgorica, spring in village Pričelje, 39 m a.s.l., 20.iv.-25.v.2014 Pešić. Paratypes (ZMH 79883): 9 shells.; 6 shells. coll. Glöer, same data and locality as holotype.

**Locus typicus.** Montenegro, Podgorica, spring Iverak in village Pričelje, 42°30’17.52”N, 19°13’17.93”E.

**Etymology.** Named after Willy De Mattia (Trieste) in appreciation of his contribution to the taxonomy of the molluscs.

**Description.** Shell: Shell elongated cylindrical with a large and obtuse apex (Figs. 4-6). The regularly growing 4.5 whorls are convex with a deep suture. Shell surface smooth. The aperture is ovoid, the outer margin is straight from lateral view (Fig. 6). The umbilicus is closed. The shell height 1.3-1.7 mm, shell width 0.7 mm, apertural/shell height ratio 0.3.

**Soft body:** unknown.

**Figure 4-6.** Shell of Bythiospeum demattiai n. sp. 4 = holotype, 5 = paratype, 6 = aperture from the lateral view.

**Differentiating features.** The specimens from the Iverak spring are tentatively ascertained to the genus *Bythiospeum* Bourguignat, 1882. However, considering that most of the numerous nominal species of *Bythiospeum* recorded from Europe are known as empty shells (Haase 1995) only one could expect that phylogenetic relationships within this group (including *Paladilhiopsis* Pavlović, 1913 as well) may be complex, and the genus is polyphyletic (Falniowski *et al.* 2014). Recently we described a new species of *Bythiospeum* Bourguignat, 1882 based on empty shells from Taban spring, situated only a few kilometres from the type locality of the new “*Bythiospeum*” species. Later on, we collected live specimens (Pešić and Glöer 2013), and ascribed *B. bogici* to a new distinct genus *Montenegrospeum* Pešić & Glöer, 2013, confirmed by molecular analysis (Falniowski *et al.* 2014). *Montengrospeum bogici* (Pešić & Glöer 2012) can easily be distinguished by the large dimensions of the shell (2.3 mm vs. 1.7 mm in *B. demattiai*) and having the circular, not ovoid, aperture. The shell of the new species resembles those of *Devetakia* Georgiev & Glöer,

_Ecol. Mont., 1 (4), 2014, 244-248_
2011 but the body whorl in the species of the latter genus known only from Bulgaria is more protruded (Georgiev and Glöer 2011).

**Distribution.** Montenegro; known only from the type locality.

**Acknowledgements**
The junior author (VP) is indebted to Bogić Gligorović and Sead Hadžiablahović for assistance and company during field work.

**References**
Bernasconi R. (1990) Revision of the genus *Bythiospeum* (Mollusca Prosobranchia Hydrobiidae) of France, Switzerland and Germany. Münchenbuchsee, 44 pp.
De Mattia, W. (2007) A new subterranean hydrobiid from a thermal spring in eastern Slovenia: “Iglica” velkovrhi n. sp. (Gastropoda: Prosobranchia: Hydrobiidae). *Mollusca*, 25 (1), 27–31.
Falniowski, F., Pešić, V. & Glöer, P. (2014) *Montenegrospeum* Pešić et Glöer, 2013: a representative of Moitessieriidae? *Folia Malacologica*, 22, 263–268
Georgiev, D. (2013) Catalogue of the stygobiotic and troglophilous freshwater snails (Gastropoda: Rissooidea: Hydrobiidae) of Bulgaria with descriptions of five new species. *Ruthenica*, 23 (1), 59–67.
Georgiev, D. & Glöer, P. (2011) Two New Species of a New Genus *Devetakia* gen. n. (Gastropoda: Hydrobiidae) from the Caves of Devetashko Plateau, North Bulgaria. *Acta Zoologic Bulgarica*, 63 (1), 11–15
Glöer, P. & Pešić, V. (2014) New subterranean freshwater gastropods of Montenegro (Mollusca: Gastropoda: Hydrobiidae). *Ecologia Montenegrina*, 1 (2), 82–88.
Haase, M. (1995). The stygobiont genus *Bythiopeum* in Austria: a basic revision and anatomical description of *B. cf. geyeri* from Vienna (Caenogastropoda: Hydrobiidae). *American Malacological Bulletin*, 11, 123–137.
Pešić, V. & Glöer, P. (2012) A new species of *Bythiospeum* Bourguignat, 1882 (Hydrobiidae,Gastropoda) from Montenegro. *Biologica Nyssana*, 3 (1), 17–20.
Pešić, V. & Glöer, P. (2013) Montenegrospeum, a new genus of Hydrobiid snails (Gastropoda: Rissooidea) from Montenegro. *Acta Zoologica Bulgarica*, 64 (4), 565–566.