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Stagnicola montenegrinus n. sp., a new species of Montenegro (Gastropoda: Lymnaeidae)

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> Abstract

Malacological investigations in the Skadar lake (Montenegro) have provided new information on the taxonomic status of the lymnaeid species in this lake. By comparing the shells as well as the anatomy of the collected material, we can introduce a new species, *Stagnicola montenegrinus* n. sp.

> Kurzfassung

***Stagnicola montenegrinus* n. sp., eine neue Art aus Montenegro (Gastropoda, Lymnaeidae).** – Malakologische Untersuchungen im Skutari See (Montenegro) ergaben neue Informationen über den taxonomischen Status der Lymnaeiden in diesem See. Durch den Vergleich der Gehäuse und der Anatomie des gesammelten Materials können wir eine neue Art vorstellen, *Stagnicola montenegrinus* n. sp.

> Key words

Stagnicola montenegrinus n. sp., Lymnaeidae, Skadar Lake, Montenegro.

Introduction

The Skadar Lake drainage basin is located between 18° 41' and 19° 47' East and 42° 58' and 40° 10' North. Skadar Lake, located in a karst terrain in the outer part of the southeastern Dinaric Alps, is the largest of the Balkan lakes and has a surface area which fluctuates seasonally from approximately 370 to 600 km^2. The lake's water level also varies seasonally from 4.7 to 9.8 m above sea level. The lake is extending in the NW-SE direction, and it is approximately 44 km long. The Bojana River connects the lake with the Adriatic Sea, and the Drim River provides a link with the Ohrid Lake. The exact origin of the lake is unknown but it probably originated by solution and tectonic processes during the Pleistocene.

The southern and southwestern sides of the lake are rocky, barren and steep having bays, in which the sublacustrine springs, so called "okos", are usually found. On the northern side there is an enormous inundated area, the boundaries of which change as water levels fluctuate. The climate at the Skadar Lake drainage basin is typically Mediterrenean, with a long, hot summer at lower and medium altitudes and a short winter with heavy and abundant rainfall.

From the Skadar Lake only three Stagnicola species are known so far: *Stagnicola palustris* (O. F. Müller, 1774), listed by Wohlberedt (1909), Jaeckel, Klemm & Meise (1958), Jovanović (1997), and Karaman (2007), and in addition *S. corvus* (Gmelin, 1791) which has only been reported on by Dhora & Welter-Schultes (1997).

With this paper the authors intended to provide the new description of *Stagnicola montenegrinus*.

Material and methods

The snails where gathered from 2005–2008 with a sieve from the banks of the waters. The samples where

Tab. 1. Distinguishing features of the European species of the genus *Stagnicola* and *Catascopia*. * for measurements see GLÖER (2002), ** for *S. terebra* (= *C. occultus*) see VINARSKI & GLÖER (2008).

Taxon	pht:prp	prostate folds	bursa duct distal part	Shell height : shell width	aperture height : shell height
*S. palustris**	1 – 1.5	1	thin	10–17.5:6–8 mm	0.44
*S. fuscus**	0.5 – 0.75	2	thin	10–25:5.5–11.5 mm	0.48
*S. turricula**	2.5 – 3	1	thin	9–16.5:4.5–7 mm	0.47
*S. corvus**	0.3 – 0.5	many	thickened	13–34:6–16.6 mm	0.50
*C. terebra**, **	1	1	thickened	9.5–17:5–7 mm	0.41
S. montenegrinus	0.25 – 0.3	3–4	thickened	10.6–21.5:4.4–9 mm	0.57

Fig. 1. The sampling sites of *Stagnicola montenegrinus* n. sp. **1**: River Crnojevica near town, upper part; **2**: Malo Blato, Bobija village; **3**: Karuč (loc. typ.); **4**: Tanki Rt.; **5**: Vranjina spring; **6**: Plavnica; **7**: Vitoja near Bozaj, lake and small ponds connected with the lake; **8**: Virpazar.

put into ethanol (75%). The dissections and measurements of the genital organs were carried out using a stereo microscope (Stemi SV 6, Carl Zeiss, Germany), the photographs were made with a digital camera (Nikon D70), and the shell heights and widths were measured using a vernier caliper.

Results

Stagnicola montenegrinus n. sp.

Material examined: River Crnojevica (n = 3), Malo Blato (n = 12), Karuč (n = 27), Tanki Rt. (n = 5), Vranjina spring (n = 4), Plavnica (n = 2), Vitoja near Bozaj (n = 16), Virpazar (n = 3) – all samples collected by V. Pešić.

Holotype: Shell 21.5 mm high, 9 mm wide, Zoological Museum Hamburg, ZMH 51396 (Fig. 2.1).
Paratypes: 4 ex. Zoological Museum Hamburg, ZMH 51397, rest in the collection Glöer.
Locus typicus: Skadar lake, Karuč (Fig. 3).
Habitat: The species lives in the littoral part; amidst a vegetation consisting of *Ceratophyllum* and *Myriophyllum*, which covers partially decomposed organic matter and red clay.
Derivation of name: montenegrinus from the country where the species lives.
Diagnosis: The shell is yellowish horn-coloured, the 5.5–6 whorls are gradually increasing with a whitish suture, the spire is pointed. The aperture is large and a little higher than the spire. Shell heigth 10.6–21.5 mm, width 4.4–9 mm, aperture height to shell height about 0.57±0.02 (n = 10).
Anatomy: The phallotheca is short and the prostate contains 3 (n=9) to 4 (n=1) folds. The praeputium has no swellings like in *S. corvus*. The ratio between pht and prp is 1:3.5–1:4.2 (n = 10). The bursa duct is thickened at the distal end. The mantle pigmentation is variable from a monochromatic black to black with white spots.

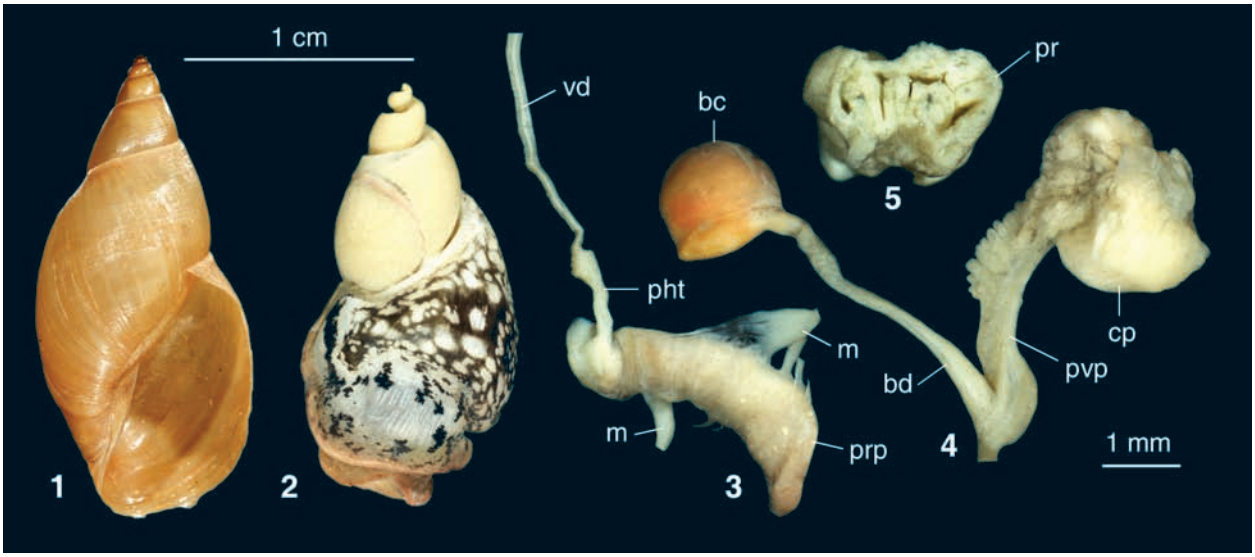

Fig. 2. 1–2: *Stagnicola montenegrinus* n. sp. – **1**: shell (holotype); **2**: mantle pigmentation; **3**: male copulatory organ; **4**: female sex tract; **5**: cross-section through prostate gland. – **bc** = bursa copulatrix, **bd** = bursa duct, **cp** = corpus pyriforme, **m** = muscle, **pht** = phallotheca, **pr** = prostata, **prp** = praeputium, **pvd** = provaginal duct, **vd** = vas deferens.

Fig. 3. Skadar Lake at Karuč, the type locality of *Stagnicola montenegrinus* n. sp.

Discussion

Worldwide there are more than a thousand names known for the lymnaeid species. Hubendick (1951) mentioned 1151 species' names with their respective type locality, of which only two species with its locus typicus in the Balkan region are listed: *Lymnaea badius* and *L. vulneratus*. The type locality of *Limnaeus badius* Küster 1862 (p. 23). (*Limnaeus*.) is the River Narenta, Dalmatia. The aperture is less higher than the spire. *Limnaea vulneratus* Küster 1862 from River Cettina, Dalmatia, has already been studied by Jackiewicz (1988). This species name is a younger synonym of *S. fuscus*.

As the aperture is higher than in other *Stagnicola* spp. it could be confused with a *Lymnaea* sp., as seen in A. & P. Reischütz (2009: 53, fig. 2). The authors depicted a shell of *Stagnicola montenegrinus* from Humsko Blato near Vitoja (Montenegro, collected in July 2007), identified as *Lymnaea* spec.

Differential diagnosis

Within the genus *Stagnicola* mainly the proportion between phallotheca and praeputium besides the number of prostate folds are mentioned as means of indentifying distinct species (e. g. Jackiewicz 1998). In these features *S. montenegrinus* n. sp. differs in the number of prostate folds from all the other known *Stagnicola* spp. The only *Stagnicola* spp. that bear a short phallotheca are *S. fuscus* and *S. corvus*. In *S. fuscus* the bursa duct is not thickened at the distal part, and the prostate gland contains only 2 folds. Only in *S. corvus* the aperture is as high as the spire, in *S. montenegrinus* the aperture is higher than the spire.

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