

## Two records of the regional endemic hydrobiid snail *Grossuana codreanui* (Grossu, 1946) in Bulgaria (Dobruja) and some nomenclatorial notes

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### > Abstract

During a sampling survey in Bulgaria (Dobruja) in October 2007 the extrem rare, endangered and regional endemic hydrobiid snail *Grossuana codreanui* (Grossu, 1946) was observed. One location was situated at the locus typicus near Balcik, the second one in a spring near Avren. Due to analysis of historical literature it was argued that the nomenclature of this taxon is maybe invalid. The probable valid name of this snail would be *Grossuana euxina* (Wagner, 1927). Finally clarification will bring the examination and comparison of material of the type localities of Grossu and Wagner. But this was not the aim of this study.

### > Kurzfassung

**Zwei Nachweise der regional endemischen Hydrobiide *Grossuana codreanui* (Grossu, 1946) in Bulgarien (Dobrukscha) mit einigen nomenklatorischen Anmerkungen.** – Bei einer Sammeltour in Bulgarien (Dobrukscha) im Oktober 2007 wurde an zwei Fundorten die extrem seltene, gefährdete und regional endemische Hydrobiide *Grossuana codreanui* (Grossu, 1946) gefunden. Ein Fundort lag am locus typicus dieser Art bei Balcik, der zweite in einer Quelle bei Avren. Durch Auswertung historischer Literatur ist es sehr wahrscheinlich, dass die Nomenklatur dieses Taxon unkorrekt ist. Der korrekte Name dieser Schnecke würde *Grossuana euxina* (Wagner, 1927) heißen. Eine endgültige Klärung würde die Sichtung und der Vergleich von Typusmaterial von den Fundorten von Grossu und Wagner ergeben. Das war jedoch nicht Inhalt der vorliegenden Studie.

### > Key words

Taxonomy, Hydrobiidae, *Grossuana*, Balkan Peninsula, Bulgaria, Dobruja.

## Introduction

The investigation of Bulgarian molluscs have a long tradition since the early 19<sup>th</sup> century and so far approximate 100 freshwater species has been recorded or described (ANGELOV 2000, HUBENOV 2007). Dobruja is a historical name for the region located between the lower Danube river and the Black Sea, including the Danube Delta, Romanian coast and the northernmost part of the Bulgarian coast (see <http://en.wikipedia.org/wiki/Dobrudja>). Except of the Danube system the freshwater habitats in the Dobruja are mainly restricted to swamps, small springs and few small rivers. Relatively few species are known for this area (GROSSU 1986, HUBENOV 2007). Otherwise especially the investigations of springs generate endemic crenobiont and stygobiont species. One of these regional

endemic species is the hydrobiid snail *Grossuana codreanui* (Grossu, 1946).

The present study reports two new records of this rare species in Bulgaria (Dobruja) and summarise the knowledge previously published. In a comprehensible way the nomenclatorial confusion will be discussed.

## Material and methods

In October 2007 the author sampled different localities in respect to freshwater mollusc species. At each station a hand net was used to sieve the uppermost sediments. Furthermore individuals were also collected



**Fig. 1.** Localities of *Grossuana codreanui* (Grossu, 1946) during previous (numbers 1 to 5) and own studies (numbers 1 and 6). The locality numbers refer to the text.

from stones and other hard substrates. The collected species were preserved with 70% ethanol and a standard proceeding of samples was carried out in the laboratory

## Results and Discussion

At two localities the regional endemic hydrobiid snail *Grossuana codreanui* (Grossu, 1946) was found (see Fig. 1, 2 and 3).

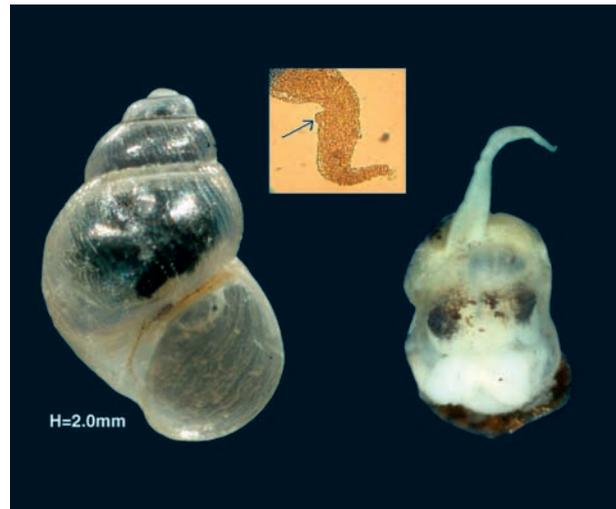
Location 1 (Fig. 1 and 4): Fountains and springs at the Botanical Garden near Balchik, 43,403°N; 28,150°E, 23<sup>rd</sup> October 2007, leg./det. M. L. Zettler

associated molluscs: *Theodoxus fluviatilis*, *Pisidium casertanum*

Location 6 (Fig. 1 and 5): Spring at the south edge of Avren, cattle watering, 43,1234°N; 27,6625°E, 27<sup>th</sup> October 2007, leg./det. M. L. Zettler

associated molluscs: *Galba truncatula*, *Pisidium casertanum*, *P. personatum*

Several springs and fountains of the Botanical Garden near Balchik (Fig. 4) are colonised by *G. codreanui* (Fig. 2). GROSSU (1946) described this species from



**Fig. 2.** *Grossuana codreanui* (Grossu, 1946) from the springs in the Botanical Garden of Balchik. On the right hand side a male with penis is illustrated. The small picture (arrow) shows the weak outgrowth on the left side, which is a characteristic feature for the genus. (Photos: P. Glöer & M. L. Zettler).

the spring Ac-Bunar just few ten meters above the Botanical Garden. Due to the closeness and the frequent occurrence in several basins in the whole area I decided to describe the sampling place as identical with the locus typicus.

The second location, the spring near Avren (Fig. 3 and 5), is new to science. This place was strongly used by agricultural aspects. Especially the cattle (here mainly sheeps) pollute this small spring. Waste and other utilisation destroy this small habitat as well (see also SZAROWSKA et al. 2006).

## Nomenclature

Superfamily	Rissooidea J. E. Gray, 1847
Family	Hydrobiidae <sup>1</sup> Troschel, 1857
Subfamily	Horatiinae <sup>2</sup> Radoman, 1973
Genus	<i>Grossuana</i> Radoman, 1973
Species	<i>Grossuana codreanui</i> (Grossu, 1946)

## Locus typicus

Spring Ac-Bunar near Balchik (Bulgaria) [Loc. 1 in Fig. 1]

<sup>1</sup> sensu SZAROWSKA et al. (2007)

<sup>2</sup> sensu SZAROWSKA et al. (2007)



**Fig. 3.** *Grossuana codreanui* (Grossu, 1946) from the spring near Avren. On the right hand side two males with penis are illustrated. The small picture (arrow) shows the weak outgrowth on the left side, which is a characteristic feature for the genus. (Photos: P. Glöer & M. L. Zettler).

### Records and history

[Fig. 1 with locality numbers]

1916 – HESSE: Monastery of Aladscha near Varna (Bulgaria) [Loc. 4] and spring Reka Devna near Beloslav (Bulgaria) [Loc. 5] as *Pseudamnicola miliaria* (Frauenfeld, 1863) (determined by Wagner).

1927 – WAGNER: He revised the former species from the same localities and described a new subspecies *Pseudamnicola conciella euxina* n. subsp.

1946 – GROSSU: Spring Ac-Bunar near Balcik (Bulgaria) [Loc. 1] as *Paladilhiopsis codreanui* n. sp.

1956 – GROSSU: Spring Ac-Bunar near Balcik (Bulgaria) [Loc. 1] and spring near lake Techirghiol (Romania) [Loc. 2] as *Pseudamnicola codreanui* (Grossu, 1946).

1958 – JAECKEL et al.: Dobruja as *Pseudamnicola codreanui* (Grossu, 1946). Further they listed the subspecies *P. consociella euxina* Wagner, 1927 for Bulgaria.

1960 – URBANSKI: Zlatni Peseci (= Uzun kum) north of Varna (Bulgaria) [Loc. 3] as *Pseudamnicola conciella euxina* Wagner, 1927. He supposed the synonymy of *P. codreanui* (Grossu, 1946).

1973 – RADOMAN: He introduced the new genus *Grossuana* including the species *G. codreanui* (Grossu, 1946).

1983 – RADOMAN: He wrongly declared the spring near Techirghiol (Romania) [Loc. 2] as the locus typicus of *Grossuana serbica codreanui* (Grossu, 1946). Two localities in Bulgaria and several in Serbia of this subspecies were listed, but only the

spring south of the Beloslav Lake [Loc. 5] is situated in the region of Dobruja.

1986 – GROSSU: Spring Ac-Bunar near Balcik (Bulgaria) [Loc. 1] and spring near lake Techirghiol (Romania) [Loc. 2] as *Grossuana codreanui* (Grossu, 1946).  
2000 – ANGELOV: Spring Ac-Bunar near Balcik (Bulgaria) [Loc. 1] as *Pseudamnicola codreanui* (Grossu, 1946).

2006 – SZAROWSKA et al.: Spring near lake Techirghiol (Romania) [Loc. 2] as *Grossuana serbica codreanui* (Grossu, 1946). They wrongly declared this location as the locus typicus, probably caused by the mistake of RADOMAN (1983).

2007 – HUBENOV: *Pseudamnicola codreanui* (Grossu, 1946) is regional endemic for the northern Black Sea coast (Dobruja).

2007 – SZAROWSKA et al.: Spring near lake Techirghiol (Romania) [Loc. 2] and near Jasenovo (Bulgaria) as *Grossuana codreanui* (Grossu, 1946). The last location is not in the area of Dobruja and not shown in figure 1. All molecular data confirm that *Grossuana* is a distinct genus belonging to the family of Hydrobiidae and subfamily of Horatiinae. The authors distinguished four species of the genus. These are *G. codreanui* (Grossu, 1946), *G. serbica* (Radoman, 1873), *Belgrandiella haesitans* (Westerlund, 1881) and *Orientalina delphica* (Radoman, 1973). The authors stated: “Each of the five populations studied are molecularly distinct, although they may either represent distinct species or belong to the same species.” That means the species status is not yet finally established.

It should be proven that *Pseudamnicola conciella euxina* Wagner, 1927 and *Paladilhiopsis codreanui* Grossu, 1946 are really conspecific. For that purpose



**Fig. 4.** One of several spring basins within the Botanical Garden of Balcik where *Grossuana codreanui* occurs together with *Theodoxus fluviatilis*. The locus typicus of *G. codreanui* is the spring Ac-Bunar and is situated about one hundred meters above from here. (Photo: U. Jueg).

it would be necessary to examine and compare *Grossuana*-material from the type locality of GROSSU and WAGNER. It was not the aim of this study to do it, but in case that they are conspecific (note also the high closeness of the localities) it has to be stressed that WAGNER (1927) described the subspecies *Pseudamnicola conciella euxina* nineteen years earlier than GROSSU. Due to the nomenclature rules the name of *Grossuana codreanui* would be invalid and the right name is probably *Grossuana euxina*<sup>3</sup> (Wagner, 1927). Further it has to be noted that molecular differences between the four *Grossuana*-species distinguished by the study of SZAROWSKA et al. (2007) don't allow a final decision of distinctness (see above). If they are the same species the oldest available name would be *Grossuana haesitans* (Westerlund, 1881).

The rissoid fauna of the Balkan is still poorly unknown and the study of hydrobiid snails without anatomical (and recently without molecular data) is simply impossible. In the revision of nomenclatural and taxonomical status of taxa (here the genus *Grossuana*) the reviser should usually base his decision on study



**Fig. 5.** Spring near Avren where *Grossuana codreanui* occurs together with *Galba truncatula*, *Pisidium casertanum* and *P. personatum*. The spring shows strong anthropogenic use and pollution by using as cattle watering. (Photo: U. Jueg).

of name-bearing types, which was not possible in this study. Nevertheless the present study shows (1) two new records of this highly endangered hydrobiid species with few information on anatomy and ecology and (2) the confusion of the nomenclature used so far.

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<sup>3</sup> As supposed by Urbanski (1960) already.

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