

**BITHYNIA DANUBIALIS, A NEW SPECIES  
FROM THE BULGARIAN DANUBE  
(GASTROPODA: RISSOOIDEA: BITHYNIIDAE)**

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From Bulgaria only *Bithynia tentaculata* and *B. leachii* are known (ANGELOV 2000). New samples of *Bithynia* species from the Bulgarian part of the Danube revealed a new species, *B. danubialis*. It has been compared with the *Bithynia* species of the surrounding countries. Because the southernmost records of *B. leachii* are known from Hungary we suppose that the findings, mentioned by ANGELOV (2000), are possibly distinct from *B. leachii*.

Key words: freshwater snails, new description, *Bithynia*, Danube, Bulgaria

## INTRODUCTION

In Bulgaria there are only two species from the genus *Bithynia* LEACH, 1818 recorded, *Bithynia tentaculata* LEACH, 1818, and *Bithynia leachii* (SHEPPARD, 1823) (ANGELOV 2000, HUBENOV 2005). *B. leachii* was reported by ANGELOV (2000) but it has never been anatomically proven. *Bithynia rumelica* WOHLBEREDT, 1911 has been described as a new species from a thermal spring (water temperature 20 °C) in the Rhodope Mountains near the town of Krichim (WOHLBEREDT 1911). The taxonomic status of this species is unclear. It was considered to be a synonym of *Bithynia leachii* by ANGELOV (2000), but no individuals or even empty shells of this species were found after an intensive search (GEORGIEV 2010), so *B. rumelica* can be supposed to be extinct in the country.

In the neighbouring Greece there occur seven *Bithynia* spp., and nine *Pseudobithynia* spp., and from Turkey are four *Bithynia* species mentioned (GLÖER & YILDIRIM 2006), and four more with an unclear taxonomical status (YILDIRIM 1999). From Montenegro seven *Bithynia* spp. are known (GLÖER & PEŠIĆ 2007) as yet. This shows that the family Bithyniidae is not well investigated in Bulgaria because in the surrounding countries much more species are known.

This paper is intended to (i) expand the knowledge about the biodiversity of Bulgaria and (ii) to describe the new species mentioned above.

## MATERIALS AND METHODS

The freshwater snails were collected by sieve ( $2 \times 2$  mm) at the littoral zone of the Bulgarian sector of the Danube River and preserved in 75% ethanol. In addition, living snails were also collected by hand on the banks of the Danube, when the water levels were lowered, under wet water vegetation on the sand and mud. The dissections and measurements of the genital organs and the shells were carried out using a stereo microscope (Zeiss), the photographs were made with a Leica digital camera system. The type material is stored in the Zoological Museum of Hamburg (ZMH). The species has been compared with all known Bithyniidae of Greece, Turkey and Montenegro.

Family BITHYNIIDAE GRAY, 1857  
Genus BITHYNIA LEACH, 1818

Type species: *Bithynia tentaculata* (LINNAEUS, 1758)

***Bithynia danubialis* sp. n.**  
(Fig. 2)

Material examined: 30 ex., DILIAN GEORGIEV leg. 14.05.2009 and 21.07.2011 (10 specimens dissected).

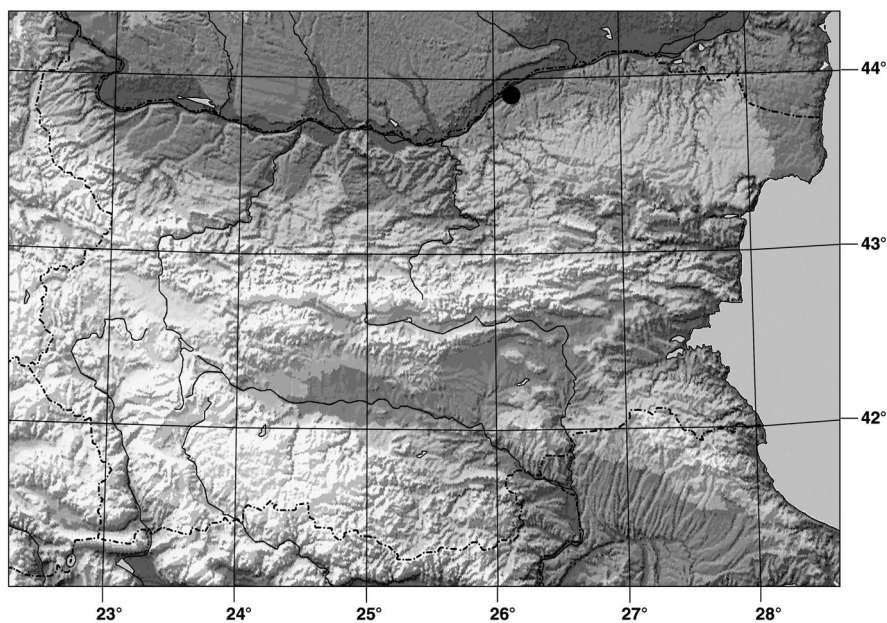


Fig. 1. The sampling site of *Bithynia danubialis* sp. n. (dot)

Holotype: shell height 6.5 mm, width 4.4 mm, ZMH 79308.

Paratypes: 5 ex., ZMH 79309, 5 ex. coll. GLÖER, rest coll. GEORGIEV

Locus typicus: Bulgarian sector of the Danube River at the village of Marten (Russe town area) N43° 56' 19.4"; E26° 05' 20.7"

Habitat. Littoral zone of the Danube River.

Distribution. Only known from the type locality as yet. But it possibly will be dispersed by the current in most of the Bulgarian and Romanian Danube River sectors down to the Danube Delta.

Associated gastropods. *Theodoxus danubialis* (C. PFEIFFER, 1828), *Viviparus* sp., *Bithynia tentaculata* (LINNAEUS, 1758), *Lithoglyphus naticoides* (C. PFEIFFER, 1828), and *Esperiana daudebartii* (PREVOST, 1821).

Etymology: named after the Danube River where the species was found.

Description. Shell glossy and light yellowish to horn-coloured, surface finely striated, 4.5–5 whorls which are slightly convex with a clear visible but not deep suture, umbilicus closed, the aperture height takes 0.5 of the shell height, edge of aperture sharp, thickened at the columella (Fig. 2.1), outer margin of aperture slightly sinuated (Fig. 2.2). The females are as large as the males, thus a sexual dimorphism is not visible. The operculum is oval and slightly angled at the top (Fig. 2.3). Shell height  $6.46 \pm 0.4$  mm ( $s = 0.35$ ), width  $4.51 \pm 0.4$  mm ( $s = 0.17$ ).

Morphology of the penis. The distal part of the penis is as long as the penial appendix (Fig. 2.5). The flagellum is approximately four times longer than the penis (Fig. 2.6).

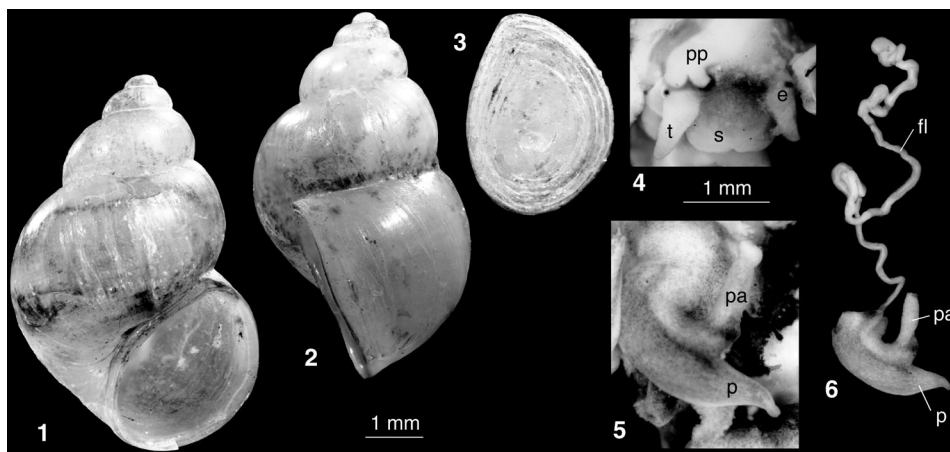


Fig. 2. *Bithynia danubialis* sp. n.: 1–2 = the shell (holotype), 3 = operculum, 4 = pseudopenis in situ, 5 = penis in situ, 6 = penis with flagellum. Legend: e = eye, fl = flagellum, p = penis, pa = penial appendix, pp = pseudopenis, s = snout, t = tentacle

Differentiating features. From *Bithynia tentaculata*, which also occurs in Bulgaria, the new species can be distinguished by the deeper suture, the more convex whorls and the sinuated margin of the aperture, which is in *B. tentaculata* straight. The penis morphology is similar to that of *Bithynia transsilvanica* BIELZ, 1853 (GLÖER & FEHÉR 2004, = *B. troschelii*), which occurs in Romania (GLÖER & SÎRBU 2005), but the whorls of *B. transsilvanica* are more convex, the suture is deeper and the operculum is rounded. In addition *B. danubialis* sp. n. is, however, smaller in height than *B. tentaculata* and *B. transsilvanica*.

Notes on the ecology. The species was found on sandy bottom at the littoral zone of the Danube, the river banks were dominated by *Salix* sp., and *Populus* sp. Maybe this new species survives short periods of desiccation on the banks under wet water vegetation, and mud, like other *Bithynia* spp. do.

Remarks. In some females we found specimens with a pseudopenis (Fig. 2.4), a very small, not completely developed penis. This phenomenon can be found in species of the genus *Pseudamnicola*, too (GLÖER *et al.* 2010).

## DISCUSSION

Considering the publication of GLÖER, FALNIOWSKI and PEŠIĆ (2010) all *Bithynia* species from Greece have more convex whorls with a deep suture. In Montenegro the only *Bithynia* species which is a little similar to *B. danubialis* sp. n. is *B. radomani*, but the penis morphology is distinct from the latter species and *B. radomani* is much larger (more than 10 mm in height) (GLÖER & PEŠIĆ 2007). Thus no *Bithynia* sp. could be found which is similar to the new species *Bithynia danubialis* sp. n.

ANGELOV (2000) reported of some interesting localities of *B. leachii* in the country (except Danube) as: “marshes around Sofia, springs near village of Opitsvet (Sofia region), in marshes near Kyustendil, Beloslav lake”. We consider all the localities reported for *Bithynia leachii* have to be explored again. The northernmost samples are known from Hungary (GLÖER & FEHÉR 2004), while in the Carpathian Basin in Romania this species does not occur (GLÖER & SÎRBU 2005). It is doubtful that *Bithynia leachii* really lives in Bulgaria, so all these locations could hold some more undetected species.

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