

ЦРНОГОРСКА АКАДЕМИЈА НАУКА И УМЈЕТНОСТИ  
ГЛАСНИК ОДЈЕЉЕЊА ПРИРОДНИХ НАУКА, 16, 2005.

ЧЕРНОГОРСКАЯ АКАДЕМИЯ НАУК И ИСКУССТВ  
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CONTRIBUTION TO THE KNOWLEDGE  
OF THE SLUGS OF SERBIA  
(Gastropoda: Stylommatophora;  
Arionidae, Milacidae)

*Abstract*

During our investigations of the gastropods (Mollusca, Gastropoda) in Serbia, four species of slugs have been found on the Golija Mt., among them 2 species new for the fauna of Serbia: *Arion lusitanicus* Mabille, 1868 (fam. Arionidae) i *Tandonia bosnensis* Wiktor, 1986 (fam. Milacidae).

By this way is the number of known species of slugs in Serbia elevated to 23 species belonging to 6 genera and 4 families, respectively.

**Key words:** taxonomy, Gastropoda, slugs, Arionidae, Milacidae, Serbia.

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PRIOLOG POZNAVANJU GOLAĆA SRBIJE  
(Gastropoda: Stylommatophora;  
Arionidae, Milacidae)

*Izvod*

U toku naših istraživanja Gastropoda Srbije na planini Goliji nađene su četiri vrste golaća od kojih su dve nove za faunu Srbije, *Arion lusitanicus* Mabille, 1868 (fam. Arionidae) i *Tandonia bosnensis* Wiktor, 1986 (fam. Milacidae). Na taj način se je broj poznatih puževa golaća na teritoriji Srbije popeo na 23 vrste iz 6 rodova odnosno 4 familije.

Daljim istraživanjima očekuje se još povećanje broja poznatih golaća u Srbiji s obzirom da je samo njen mali deo istražen, što se tiče ove grupe puževa.

**Ključne reči:** taksonomija, Gastropoda, golaći, Arionidae, Milacidae, Srbija.

INTRODUCTION

Previous investigations of the fauna of the slugs in Serbia have been scarce. We can recognize three phase in these investigations:

First phase: This phase includes the first investigations over the 30<sup>th</sup> years of twenty century provided by WAGNER (1931, 1931a, 1937, 1937a), who described two new species, *Tandonia serbica* (Wagner, 1931) and *Tandonia kusceri* (Wagner, 1931) from the locality St. Petka near Niš. This material has been previously collected by **Ljudevit Kuscer** in 1912, sending later it to WAGNER for determination. Later (1937) WAGNER mentioned from the same locality the third species, *Limax maximus* Linne, 1758.

Second phase includes the studies of JAECKEL et al. (1958) with collaborators, who presented the check list of all known Gastropoda in Serbia, among them 9 species of slugs.

Third phase included investigations of the slugs between 1970 till the end of twenty century. In this period various authors investigated the slugs in Serbia: RÄHLE (1977), WIKTOR (1982, 1996, 1997), JOVANOVIĆ (1995). But these investigations have been provided over relatively limited area of Serbia, neighborhoods of the towns (Beograd

(Avala Mt.), Užice (=Titovo Užice)( Partizanske Vode), Marina Kutina (between Gadžin Han and Gornji Dušnik).

The greatest contribution to the Knowledge of the slugs in Serbia was given by WIKTOR (1996) who investigated the slugs from western part of Serbia (Užice (Partizanske Vode), Zlatibor Mt., Zlatar Mt., Tara Mt. (Kremna), as well as from the eastern and southern part of Serbia: Vlasina Mt., Kosovo (Shar Mt.; Rugovska klisura canyon, Prizren, Peć), increasing by this way the number of known slug species on 21 belonging to 6 genera and 4 families, respectively.

## RESULTATS AND DISCUSSION

During our short investigations of the gastropods on Golija Mt in Serbia, we found 4 species of slugs: *Limax cinereoniger* Wolf, 1803, *Arion subfuscus* (Draparnaud, 1805), *Arion lusitanicus* (Mabille, 1868) i *Tandonia bosnensis* Wiktor, 1986. Among them, *Arion lusitanicus* Mabille, 1868 and *Tandonia bosnensis* Wiktor, 1986 are found at the first time in Serbia.

For this reason, we presented some short data regarding these two species.

Familia Arionidae Gray, 1840

Genus Arion Ferussac, 1819

### ARION LUSITANICUS Mabille, 1868

*Arion lusitanicus* Mabille, 1868: 134; Wiktor, 1996: 6, fig. 1;

MATERIAL EXAMINED: Golija Mt., near the locality Golijska Reka, July 1994, 5 exp. (leg. Božana Karaman).

SHORT DESCRIPTION: Body length 60 mm ( after preservation). Genitalia agrees with its description of LIKHAREV & WIKTOR (1980) and WIKTOR (1996).

DIAGNOSTICAL CHARACTERS: Atrium short, with elongated ligula in its innterior part. Oviductus long and musculous. Epiphallus as long as oviductus (= slightly shorter that oviductus, fide WIKTOR, 1996). On the border between atrium and epiphallus appears a ring-like swelling.

**DISTRIBUTION:** Species with large distribution in Europe, although it was described from Portugal. The natural areal is Iberian Peninsula including southern France and Italy. As synantropic species is distributed in Great Britain, Germany, Switzerland, Bulgaria and Russia (LIHAREV & WIKTOR, 1980). It was introduced into Sweden and Slovenia (RIEDEL & WIKTOR, 1974; WIKTOR, 1983). In Croatia and Slovenia was found in the isolated localities (Delnice and Postojna) (WIKTOR, 1996), in Macedonia was found near one fountain bellow the dam on Mavrovsko jezero Lake (leg. Snežana Stanković). We suppose that this species was introduced into Serbia, because was found in this isolated small area only.

As WIKTOR mentioned already (1996), this species with very large ecological tolerance, was originally a forest species, and later has been adapted to the biotopes strongly degraded due to human activities.

Familia Milacidae Ellis, 1926

Genus *Tandonia* Lessona & Pollonera, 1882

*TANDONIA BOSNENSIS* Wiktor, 1986

Fig. 1.

*Tandonia bosnensis* Wiktor, 1986: 162, figs. 11-13; Wiktor, 1987: 228, figs. 107-109.

**MATERIAL EXAMINED:** Serbia: Golija Mt., near the locality Golijska Reka, July 1994, 1 exp. (leg. Božana Karaman).

**SHORT DESCRIPTION:** Body length 32 mm (after preservation). Genitalia mainly agree with description and figures of WIKTOR (1986; 1996).

**DIAGNOSTIC CHARACTERS:** Mantle short. Copulatory organ relatively of small size. Atrium short. Vagina short, surrounded by lobe-shaped accessory glands. Epiphallus and penis are forming one elongated tubular structure without borders between penis and epiphallus. Vas deferens long and thin, opens rather asymmetrically but apically to epiphallus. Spermatheca and spermatheca-duct formed the organ 2.5 times as long as penis along with epiphallus.

WIKTOR (1987) mentioned that longer spermatheca and spermatheca-duct he was found in only one other known species, *Tandonia jablanicensis* (Wagner, 1930) from Croatia.

DISTRIBUTION: This is the first known new locality outside the type locality (Trebević Mt. above Sarajevo, Bosnia & Herzegovina).

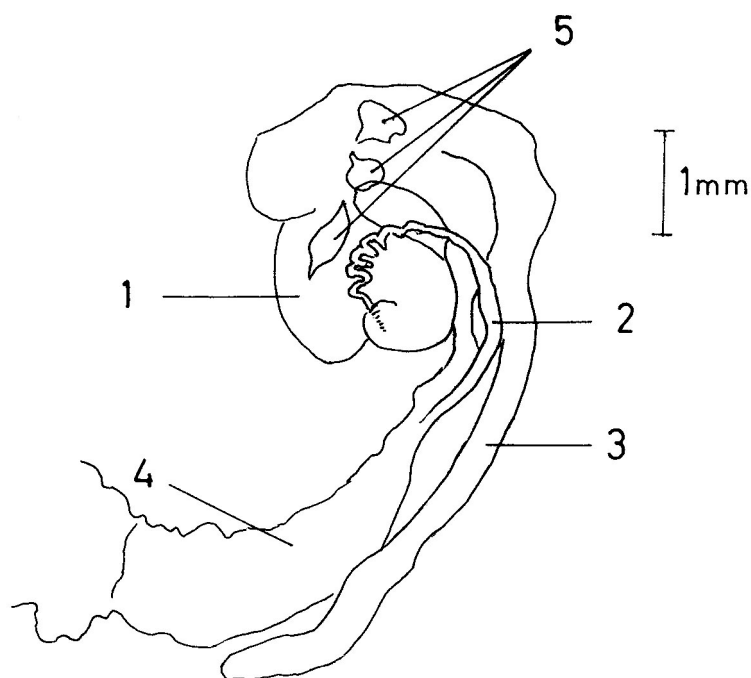


Fig. 1. *Tandonia bosnensis*, Wiktor, 1896. Genitalia: 1= penis;  
2= vas deferens; 3= spermatheca-duct and spermatheca;  
4= spermoviductus; 5= accessory glands.

### CONCLUSIONS

Present fauna of slugs (Mollusca, Gastropoda) in Serbia was still only partially known, provided by several scientists only (WAGNER, WIKTOR, RÄHLE, JOVANOVIĆ). During our investigations of slugs in Serbia, we established four species of slugs: *Limax cinereoniger* Wolf, 1803, *Arion subfuscus* (Draparnaud, 1805), *Arion lusitanicus* Mabile, 1868 i *Tandonia bosnensis* Wiktor, 1986. Among them, the species *Arion lusitanicus* Mabile, 1868 i *Tandonia bosnensis* Wiktor, 1986 are

established at the first time for Serbia. Based on present investigations, the number of known slugs in Serbia is elevated to 23 species, belonging to 6 genera and 4 families.

The further, more detailed investigations in Serbia will elevate the present number of slug taxa by the species present in the adjacent regions and still not found in Serbia itself.

#### LITERATURA

- JAECKEL et al. 1958. Die Land- and Süßwasser-Mollusken der Nördlichen Balkanhalbinsel. -- Abhandlungen und Berichte aus den Staatlichen Museen für Tierkunde - Forschungsstelle-Dresden, 23: 141-205.
- LIKHAREV I. M. & A. WIKTOR. 1980. The fauna of slugs of the USSR and adjacent countries (Gastropoda terrestria nuda).-- Fauna SSSR (NS 122) Molluskii III, 3 (5); 1- 438 pp. (in Russian).
- JOVANOVIĆ, B. 1995: Diverzitet puževa (Gastropoda, Mollusca) Jugoslavije sa pregledom vrsta od međunarodnog značaja. In: Biodiverzitet Jugoslavije sa pregledom vrsta od međunarodnog značaja (Stevanović, V., Vasić, eds.)-- Biološki Fakultet Beograd, pp. 291-305.
- RÄHLE, W. 1977. Limaciden aus dem südlichen Jugoslawien (Gastropoda: Pulmonata).-- Archiv für Molluskenkunde, 107: 225-247.
- RIEDEL, A. & WIKTOR, A. 1974. Fauna Polski, 2. Arionacea slimaki krazalkowate i slinikovate (Gastropoda: Stylommatophora), 139 pp., Warszawa.
- WAGNER, H. 1931. Diagnosen neuer Limaciden aus dem Naturhistorischen Museum in Wien.-- Zoologischer Anzeiger, 95: 194-202.
- WAGNER, H. 1931a. Die in die Unterfamilie Parmacellinae gehörenden Formen des Naturhistorischen Museums in Wien, 46: 57-76.
- WAGNER, H. 1937. Die in die Unterfamilie Limacinae gehörenden Formen des Naturhistorischen Museums in Wien. Festschrift zum 60. Geburtstag v. Prof. Dr. E. Strand, Riga, 2: 373-390.
- WAGNER, H. 1937a. Die Vertreter der Familien Arionidae und Trigonochlamydididae in Naturhistorischen Museum in Wien. Festschrift zum 60. Geburtstag v. Prof. Dr. E. Strand, Riga, 2: 391-396.
- WIKTOR, A. 1982. Contribution to the knowledge of the slugs of Yugoslavia (Arionidae, Milacidae, Limacidae, Agriolimacidae-Gastropoda, Pulmonata).-- Annales Zoologici, 36: 465-489.
- WIKTOR, A. 1983. The slugs of Bulgaria (Arionidae, Milacidae, Limacidae, Agriolimacidae -Gastropoda, Stylommatophora).-- Annales Zoologici, 37: 71-206.

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- WIKTOR, A. 1986. New for science Milacidae (Mollusca, Pulmonata). -- Malakologische Abhandlungen, 11: 155-165.
- WIKTOR, A. 1987. Milacidae (Gastropoda, Pulmonata), systematic monograph.-- Annales Zoologici, 41 (3): 153-319.
- WIKTOR, A. 1996. The Slug of the Former Yugoslavia (Gastropoda terrestria nuda- Arionidae, Milacidae, Limacidae, Agriolimacidae). Annales Zoologici, 46 (1-2): 1-107.
- WIKTOR, A. 1997. Endemism of slugs within the Balkan Peninsula and adjacent islands (Gastropoda: Pulmonata: Arionidae, Milacidae, limacidae, Agriolimacidae). Genus, 8 (1): 205-221.

