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FAUNA OF GASTROPODA (MOLLUSCA) OF THE WATERS OF JUŽNA MORAVA DRAINAGE SYSTEM (SERBIA & MONTENEGRO)

Abstract

The river Južna Morava, going through the southern part of Serbia, together with the river Zapadna Morava is forming the river Velika Morava, one tributary of Danube river. The waters of Južna Morava river are settling the moderate number of water snails.

The investigations of the water snails in the Južna Morava River and its tributaries have been provided during the years 2001 -2003. The material was collected during all four seasons from 23 tributaries of Južna Morava, consisting of 2127 specimens belongong to 15 species, 11 genera and 7 families, respectively. Among them, the most abundant species was *Holandriana holandrii* (C. Pfeiffer, 1828), but *Galba truncatula* (O. F. Müller, 1774), *Planorbis carinatus* (O. F. Müller, 1774) and *Lithoglyphus naticoides* (C. Pfeiffer, 1828) were very rare.

Key words: taxonomy, Gastropoda, Južna Morava, Serbia.

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FAUNA GASTROPODA (MOLLUSCA) SLIVA JUŽNE MORAVE (SRBIJA I CRNA GORA)

Izvod

Reka Južna Morava, koja protiče kroz južni deo Srbije i sa Zapadnom Moravom formira Veliku Moravu, koja se, pak, uliva u Dunav, predstavlja interesantan hidrološki objekat sa prilično skromnom faunom vodenih puževa.

Istraživanja Gastropoda u vodama Južne Morave i njenih pritoka vršena su tokom 2001, 2002. i 2003. godine. Materijal je sakupljen tokom sva četiri godišnja doba iz 23 pritoke Južne Morave i sakupljeno je 2131 primeraka slatkovodnih puževa iz 15 vrsta, 11 rodova odnosno 7 familija. Od nađenih vrsta, najbrojnija je bila *Holandriana holandrii* (C. Pfeiffer, 1828) sa 1231 primerkom nađenim na 84 lokaliteta, dok je od vrste *Galba truncatula* (O. F. Müller, 1774), *Lithoglyphus naticoides* i *Planorbis carinatus* nađen samo po 1 primerak na 1 lokalitetu.

Ključne reči: taksonomija, Gastropoda, sliv Južne Morave, Srbija

INTRODUCTION

The fauna of water gastropods (Gastropoda, Mollusca) have been only partially studied in the waters of Serbia, recently usually in passing, only: JOVANOVIĆ (KARAMAN) (1990, 1993, 1995, 1995a, 1998); KARAMAN (2001, 2001a); KARAMAN & ŽIVIĆ (2001); REH et al. (1997); ŽIVIĆ et al. (2001). Some data regarding the water snails of Morava river with its tributaries (Južna-, Zapadna- and Velika Morava) have been published by several authors : MÖLLENDORF (1873); NIKOLAJEVIĆ (1907); HESSE (1929); TOMIĆ (1959) and RADOMAN (1976, 1983).

There are only a very scarce data regarding the water snails from Morava river drainage system. MÖLLENDORF (1873) mentioned *Radix peregra* and *Ancylus fluviatilis*; NIKOLAJEVIĆ (1907) mentioned *Esperiana esperi*; TOMIĆ (1957) cited *Holandriana holandrii*, *Viviparus* sp., *Lithogliphus* sp. and *Esperiana* sp.).

MATERIAL AND METHODS

The material studied in this work has been collected by Mg. *Ivana Živić* from the Biological Faculty in Belgrade, Serbia, who gave us at disposition for study. She collected the water gastropods in Južna Morava drainage system in the periods of February till November during the years 2001- 2003 in many rivers and tributaries (Bucinska, Crvena, Gaberska, Gradska, Gazdarska, Južna Morava, Jablanica, Jerma, Jošanica, Lužnica, Moravica, Nišava, Razgojnski potok, Saselska, Toplica, Temska, Tisovik, Turija,Veternica, Visočica, Vlasina, Vošanja and Vrla). The collecting of material was realized on various number of localities on each river or its tributary, the most of them in Južna Morava (64), Nišava river (49) and Moravica (35), and the less number in water streams of Bucinska, Gradska, Gazdarska, Razgojnski brook and Tisovik (only 1) (fig. 1). Totally, on 224 localities have been collected 2131 specimens of water gastropods belonging to 15 species, 9 genera and 8 families, respectively.

In the Museum of Natural History in Belgrade is deposited the collection of freshwater gastropods collected by Dr. LAZAR DOKIĆ, containing by the way, the species *Esperiana esperi* from Nišava river and *Ancylus fluviatilis* from Jošanica river, both from Serbia.

TAXONOMICAL REVIEW OF ESTABLISHED TAXA

Classis Gastropoda
Ordo Neritoidea
Familia Neritidae

THEODOXUS DANUBIALIS (C. Pfeiffer, 1828)
THEODOXUS TRANSVERSALIS (C. Pfeiffer, 1828)

Ordo Neotaenioglossa

Familia Hydrobiidae
LITHOGLYPHUS NATICOIDES (C. Pfeiffer, 1828)

Familia Melanopsidae
ESPERIANA DAUDEBARTII ACICULARIS (Ferussac, 1823)

ESPERIANA ESPERI (Férussac, 1823)
HOLANDRIANA HOLANDRII (C. Pfeiffer, 1828)

Ordo Ectobranchia

Familia Valvatidae
VALVATA PISCINALIS (O. F. Müller, 1774)

Ordo Pulmonata

Familia Lymnaeidae
GALBA TRUNCATULA (O. F. Müller, 1774)
RADIX AURICULARIA (Linnaeus, 1758)
RADIX PEREGRA (O. F. Müller, 1774)

Familia Physidae
HAITIA ACUTA (Draparnaud, 1805)

Familia Planorbidae
PLANORBIS PLANORBIS (Linnaeus, 1758)
PLANORBIS CARINATUS (O. F. Müller, 1774)
GYRAULUS ALBUS (O. F. Müller, 1774)
ANCYLUS FLUVIATILIS O. F. Müller, 1774

ECOLOGY AND DISTRIBUTION

Fig. 1. Number of specimens of gastropods collected on various water streams

Name of water streams (rivers and torrents)	Number of localities	Number of specimens
Bucinska	1	1
Crvena	7	14
Gaberska	8	229
Gradska	1	6
Gazdarska	1	2
Južna Morava	64	655
Jablanica	7	13
Jerma	5	120
Jošanica	4	41

Lužnica	3	5
Moravica	35	358
Nišava	49	494
Razgojnski potok	1	1
Saselska	2	25
Toplica	8	33
Temska	8	79
Tisovik	1	1
Turija	4	6
Veternica	4	5
Visočica	2	3
Vlasina	2	4
Vošanja	5	17
Vrla	2	19
Total: 23	224	2131

Fig. 2. The presence of specimens of various species of gastropods in studied area

Species	**Number of localities**	**Number of colleced specimens**	**Average number of sampled specimens pro stream**
Theodoxus danubialis	14	183	13,07
Theodoxus transversalis	8	291	36,37
Lithoglyphus naticoides	1	1	1
Esperiana daudebartii acicularis	9	16	1,77
Esperiana esperi	13	137	10, 53
Holandriana holandrii	84	1282	15,26
Valvata piscinalis	7	14	2
Radix auricularia	4	6	1,5
Radix peregra	49	91	1,85
Galba truncatula	1	1	1
Haitia acuta	24	87	3,62
Planorbis planorbis	5	10	2
Planorbis carinatus	1	4	1
Gyraulus albus	3	5	1,66
Ancylus fluviatilis	2	3	1,5

The highest average number of collected specimens of gastropods collected on one locality was of *Theodoxux transversalis* (36.37 speci-

mens), and the lowest average were of *Lithogliphus naticoides*, *Galba truncatula* and *Planorbis carinatus* (1 specimen) (fig. 2).

Fig.3. Distribution of species in various water streams

Name of water stream	**Name of sampled species**
Bucinska	*Holandriana holandrii*
Crvena	*Theodoxus danubialis* *Holandriana holandrii* *Radix peregra*
Gaberska	*Holandriana holandrii* *Haitia acuta* *Ancylus fluviatilis*
Gradska	*Holandriana holandrii*
Gazdarska	*Radix peregra*
Južna Morava	*Theodoxus danubialis* *Theodoxus transversalis* *Lithoglyphus naticoides* *Fagotia esperi* *Esperiana daudebartii acicularis* *Holandriana holandrii* *Haitia acuta* *Radix auricularia* *Radix peregra* *Gyraulus albus* *Valvata piscinalis*
Jablanica	*Haitia acuta* *Radix peregra* *Gyraulus albus*
Jerma	*Holandriana holandrii*
Jošanica	*Holandriana holandrii* *Haitia acuta* *Radix peregra*
Lužnica	*Radix peregra*
Moravica	*Holandriana holandrii* *Haitia acuta* *Radix peregra* *Ancylus fluviatilis*
Nišava	*Theodoxus danubialis* *Theodoxus transversalis* *Esperiana esperi* *Esperiana daudebartii acicularis*

	Holandriana holandrii *Haitia acuta* *Radix peregra* *Planorbis planorbis* *Gyraulus albus*
Razgojnski potok	*Haitia acuta*
Saselska	*Holandriana holandrii*
Toplica	*Holandriana holandrii* *Haitia acuta* *Radix auricularia* *Radix peregra* *Planorbis planorbis* *Planorbis carinatus*
Temska	*Theodoxus danubialis* *Holandriana holandrii*
Tisovik	*Radix peregra*
Turija	*Radix peregra*
Veternica	*Radix peregra*
Visočica	*Radix peregra*
Vlasina	*Radix peregra*
Vošanja	*Radix peregra*
Vrla	*Radix peregra*

The highest number of species was found in the rivers Južna Morava, Nišava and Toplica (fig. 3).

BIOGEOGRAPHICAL DISTRIBUTION OF ESTABLISHED TAXA OF WATER GASTROPODS

Esperiana esperi (Férussac, 1823) = SE-European-pontic -pannonian
Esperiana daudebartdii acicularis (Ferussac, 1823) = SE-European-pontic -pannonian
Lithoglyphus naticoides (C. Pfeiffer, 1828) = SE-European-pontic
Theodoxus danubialis (C. Pfeiffer, 1828) = SE-European-pontic-balkanic
Holandriana holandrii (C. Pfeiffer, 1828) = Balkanic
Theodoxus transversalis (C. Pfeiffer, 1828) = region of Danube
Haitia acuta Draparnaud, 1805 = Mediterranean- W-European
Radix auricularia (Linnaeus, 1758) = Palearctic
Radix peregra (O. F. Müller, 1774) = Palearctic

Valvata piscinalis O.F. Müller, 1774 = Palearctic
Ancylus fluviatilis O.F.Müller, 1774 = Palearctic
Galba truncatula (O. F. Müller, 1774) = Holarctic
Planorbis planorbis (Linnaeus, 1758) = Holarctic
Planorbis carinatus (O. F. Müller, 1774) = European-balkanic-pontic
Gyraulus albus (Müller, 1774) = Holarctic

CONCLUSION

Based on our investigations of the material of water gastropods in Južna Morava drainage system in hands, we can conclude that the settlemen of species in various water streams is very variable. In all studied water streams (23) and on 224 localities, 2131 specimens of water gastropods belonging to 15 species, 9 genera and 7 families, respectively, were found. The water streams: Toplica, Moravica, Nišava and Južna Morava were settled with the highest number of Gastropoda taxa, but many other water streams were settled with only one species (Vrla; Veternica, etc.).

Regarding the biogeographic distribution of collected taxa of Gastropoda in studied water streams, 3 taxa are with Holarctic distribution, 4 taxa are with Palearctic distribution, and other taxa are of remarkably smaller areal of distribution (SE European-pontic, SE-European-pontic - pannonian, Balkanic, etc.).

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