

The Molluscs of the Medieval Settlement at the Village of Zlatna Livada (Bulgaria) with Notes on the Landscape Dominated the Area

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Abstract. In the current study we report a total of 99 specimens of terrestrial snails from which the species *Zebrina detrita* dominated with 76 specimens. All other species were represented by 4-8 specimens each. As a whole the xerophilic species were most abundant - 84 specimens (*Z. detrita* and *Helix figulina*). The rest of the specimens were representatives of mesophilic species. The registered freshwater mussels were from the genera *Unio* and *Anodonta*, and the marine ones were *Ostrea edulis*, *Mytilus galloprovincialis*, and *Lima hians*.

Keywords: medieval settlement, shells, Bulgaria.

Introduction

Molluscs (Mollusca: Gastropoda et Bivalvia) are commonly used as indicator for the reconstruction of environmental conditions in archeology (GULYÁS & SÜMEGLI, 2005). Many species are connected to specific habitats and their existence is strongly tied to moisture and vegetation (for terrestrial species), the type of water basin (freshwater) and salinity (marine species). Having hard calcareous exoskeleton they provide abundant materials for paleontological and archaeological research. Many of the larger species of molluscs have been used in the past (and now) by human for food or making tools and jewelry, while other molluscs used to live in the ancient

settlements and their surroundings (DOLUKHANOV & SHUKUROV, 2004; LUBELL, 2004; GULYÁS & SÜMEGLI, 2005; HAIMOVICI, 2005; DIMITRIJEVIĆ, 2006).

This study was aimed on: 1. determination of the species composition of the molluscs, collected during excavations; 2. analysis of the proportions of different species; 3. collecting data about the village, through the analysis of environmental groups of molluscs; 4. investigation of possible traces of human activity on the shells; 5. obtaining data of the origins of the shells.

Material and Methods

The investigated shells of molluscs were

collected during the archaeological excavations in the period 1997-2011. The material was stored at the Trakian University, Department "Anatomy" of the Faculty of Veterinary Medicine, Stara Zagora city.

Species were identified using a reference collection of shells. For specimen was considered any gastropod shell or every valve of the shell, except the fragments of *Anodonta* sp. For the specimens of the genus *Unio* is not used the method of minimal number of individuals but were counted only the number of valves or fragments of them.

Study Area

Excavations of the medieval settlement in the land of the village of Zlatna livada (municipality of Chirpan town) were organized (with interruptions) from 1997 to 2011 due to the construction of the highway road "Maritsa ". The settlement is located on non-bay terrace, north of the Maritsa River, at the "Byalata Voda" area named on the powerful karst spring, which today supplies with water all the villages surrounding the town of Chirpan. The road in this part of the highway almost repeated the route of the ancient road from Philippopolis, through the Adrianopolis, to the capital of the Empire - Konstantinopolis.

The settlement was not fortified but during the excavations was established the plan of the construction of housing. According the materials, the medieval village origins were around the spring at the end of the Xth century. During the excavations were recorded remains of dwellings from the late Neolithic and Chalcolithic stage to and Late Iron age. The settlement has been abandoned by its residents probably before the events related to the Fourth Crusade and the crusader raids at Philippopolis (today Plovdiv) at the beginning of the thirteenth century.

There were several types of housing - with stone foundations, ramshackle semi-dugged or ramshackle underground houses. The walls were flimsy in height, and the roofs were made of lightweight materials - straw and probably cane slabs, pressed

down under a stone. Furthermore, during the study were recorded the remains of three necropols, multiple outbuildings, common household ovens strongly dug into the ground, and more than 100 pits. Their initial purpose was possibly to preserve the food. Precisely by the pits (after the abandoning) was the majority of osteological material because they were used as a place for garbage.

Results and Discussion

During the excavations in the area of medieval settlement near the village of Zlatna livada were registrated a total of 158 specimens of 10 species of molluscs - 5 species of terrestrial snails, 2 species of freshwater mussels and 3 of saltwater musells (Table 1, Fig. 1).

Terrestrial snails

We found a total of 99 specimens of terrestrial snails (Gastropoda), from which strongly dominated *Zebrina detrita*: 76 individuals (76.8% of all gastropods and 48.1% of all molluscs). All other species were represented with approximately similar numbers - 4 to 8 individuals (Table 1). Generally dominate the xerophilous species, inhabitants of open grassy areas (*Z. detrita* and *H. figulina*) - a total of 84 individuals (84.8% of all gastropods). Other gastropods belong to the group of the mesophilic species, inhabitants of the bush or forest communities, which are drought resistant (15.2% of all gastropods). There was lack of shells of highly moisture-loving species.

There was no any human activity on all the shells registered. We assume that the found species were part of the fauna around the settlement. So we can conclude that around the village were prevailed dry and open areas, full of grass or grass-shrub vegetation on limestone rocks (xerophilic dominant species *Z. detrita* and *H. figulina* are also calciphilic). There have been small wetland areas, probably around a river or stream occupied by shrubs and/or trees, habitat for the small number of identified individuals from the mesophilic group (but drought-resistant) of species: *Helix lucorum*, *Cepaea vindobonensis*, and *Monacha* sp.

Freshwater mussels

From the freshwater mussels dominated individuals of the genus *Unio* - inhabitants of running freshwaters, usually medium and large rivers with sandy or sandy-muddy bottom. The material represented the shell fragments or whole shells, some of which have been determined as *U. pictorum* (Fig. 2-5,6). Some shells had thick deposits of limestone - a fact showing that they lived in very hard waters. On the external edge of many shells were found damages, caused by human activity - scraping the edge due to some transverse movements opposite of the line of the valves. They may were use as tools, such as tanning animal skins. It should be noted that the rate of wear is significantly less than that found in the Azmashka mound (Neolith) (GEORGIEV *et al.*, 2009). During the Neolithic in Lower Volga and Ural rivers species of *Unio* were collected for food (DOLUKHANOV & SHUKUROV, 2004), here we can also assume the use of river mussels in this way.

In Eneolithic settlements in Romania and Moldova (Kukutenska culture) HAIMOVICI (2005) reported that river mussel *Unio* were used for food, and their shells in pottery (which could be also explanation of the specific damages we found on shells).

Sporadic use of the three types of river mussels as an alternative food source was reported by DIMITRIJEVIĆ (2006) for the Neolithic culture in Vinča (Belo Brdo, Serbia).

We found two fragments of shells of a swamp mussel *Anodonta* sp. (Fig. 2-7) Widespread today in this area is *A. cygnea* and it can be supposed that the remains we registered could belong to this species.

Marine mussels

We have registered remains of four specimens of sea shells belonging to three species: *Ostrea edulis* (edible oyster, Fig. 2-2,3) - 2 specimens, *Mytilus galloprovincialis* - black shell (Fig. 2-4) - 1 specimen, and *Lima hians* - 1 specimen (Fig. 2-1). The large size of the oysters indicated their possible origin from a saltier and warmer sea, and the *Lima hians* is Mediterrenian species which is not found in the Black Sea region. Those facts indicate that they were brought in the village from the nearby Aegean Sea. The Black mussel is found both in the Black and in the Mediterranean seas so the origin of the shell in the settlement was unclear. In the past the Mediterranean mollusc species (and other species) were carried by people in the far north, such as the Romanian part of the Dobrogea (HAIMOVICI, 2007).

Table 1. Species, number of specimens and habitats of the molluscs from the excavations.

Species	Number	Preferred habitat
Gastropoda	99	
<i>Zebrina detrita</i> (Müller, 1774)	76	Dry grass and bush open areas
<i>Cepaea vindobonensis</i> (Férussac, 1821)	6	Wet bush and forest areas, often near rivers
<i>Helix pomatia</i> Linnaeus, 1758	4	Bush and tree areas, resistant to drought
<i>Helix figulina</i> Rossmässler, 1839	8	Dry grass and bush open areas
<i>Monacha</i> sp.	5	Wet bush and forest areas, resistant to drought
Bivalvia	59	
<i>Unio pictorum</i> (Linnaeus, 1758)	42	Rivers with sandy bottom
<i>Unio</i> sp.	12	Rivers with sandy bottom Standing or slow running waters with muddy bottom
<i>Anodonta</i> sp.	1	bottom
<i>Ostrea edulis</i> Linnaeus, 1758	2	Salt water (Black Sea, Mediterranean)
<i>Lima hians</i> (Gmelin, 1791)	1	Salt water (Mediterranean)
<i>Mytilus galloprovincialis</i> (Lamarck, 1819)	1	Salt water (Black Sea, Mediterranean)
Total	158	

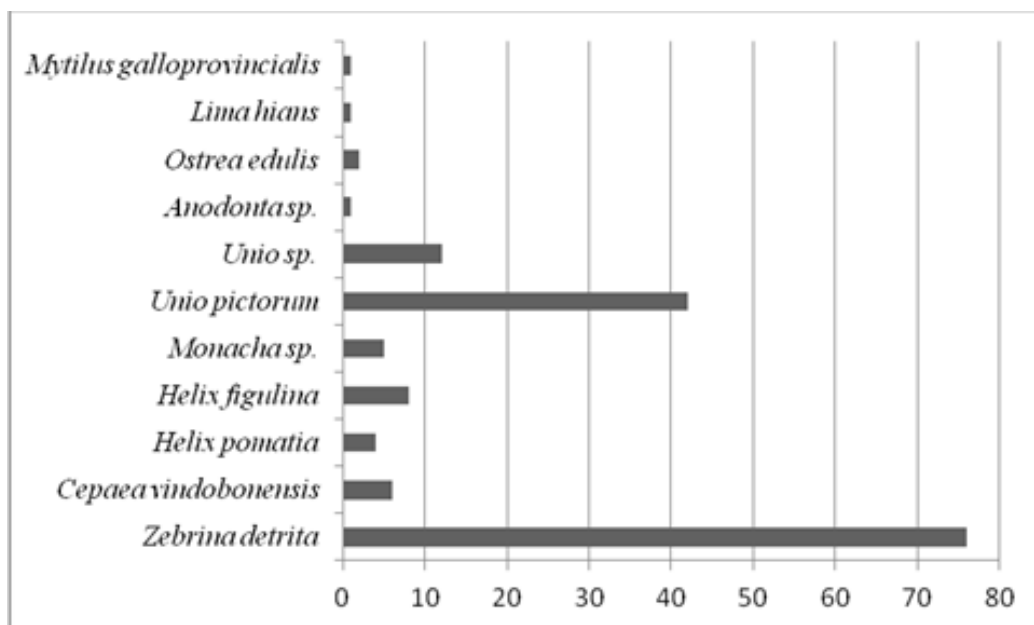


Fig. 1. Proportions of the specimens from each mollusc species from the excavations of the medieval settlement near Zlatna Livada.



Fig. 2. Mussels from the excavations of the medieval settlement near Zlatna Livada: 1 - *Lima hians*, 2, 3 - *Ostrea edulis*, 4 - *Mytilus galloprovincialis*, 5, 6 - *Unio pictorum*, 7 - *Anodonta sp.*

Conclusions

1. In the excavations of the medieval settlement near the village of Zlatna Livada were recorded 10 species of molluscs - 5 species of snails (Gastropoda) and 5 species of mussels (Bivalvia).

2. As a number of specimens found the terrestrial gastropods *Zebrina detrita* and the river mussels *Unio pictorum* dominated.

3. Based on the local ecological groups of mollusc species, it can be assumed that in the areas of the studied medieval settlement

dominated open fields with dry-loving plants - grass or grass-shrub vegetation, with patches of more humid parts from a reduced landscape occupied by mesophilic woody shrubs.

4. The valves of the river mussel (*Unio pictorum*, *Unio* sp.) were used as a tool in the Neolithic and continued to serve in a similar way in the Middle Ages.

5. Sea mussels *Ostrea edulis* and *Lima hians* have a Mediterranean origin and probably were brought to the village from the nearby Aegean Sea.

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References

- GEORGIEV D., KOSTOV D., VLADOVA D. 2009. Molluscs (Mollusca: Gastropoda, Bivalvia) from the Azmashka Mound, Upper Trakia Plain, South Bulgaria. - *Trakia Journal of Sciences*, 7(2): 74-79.
- DIMITRIJEVIĆ V. 2006. Vertebrate fauna of Vinča - Belo Brdo (excavation campaigns 1998-2003). - *Starinar*: 245-269.
- DOLUKHANOV P., SHUKUROV A. 2004. Modelling the Neolithic dispersal in northern Eurasia. - *Documenta Praehistorica*, 31: 35-48.
- GULYÁS S., SÜMEGI P. 2005. Statistical, archeomalacological evaluation of the shellfish fauna of the Early Neolithic (Körös) site of Nagykörű, NE Hungary. IX. - *Geomatematikai ankét, mórhalom*. Május: 20-21.
- HAIMOVICI S. 2005. The relation between the Ariusd culture from Transylvania and cucuteni culture from Moldova and Basarabia pointed out by the study of the archaeozoological material discovered in malnaș băi site. - *Analele Științifice ale Universității "Al.I. Cuza" Iași, s. Biologie animală*. Vol. LIII: 261-266.
- HAIMOVICI S. 2007. Mediterranean species discovered among the animal remains from Dobrogea province, neolithic-eneolithic period. - *Analele Științifice ale Universității "Al.I. Cuza" Iași, s. Biologie animală*, Vol. LI: 291-302.
- LUBELL D. 2004. Prehistoric edible land snails in the circum-Mediterranean: the archaeological evidence. - *Petits animaux et sociétés humaines, Du complément alimentaire, XXIVe rencontres internationales d'archéologie et d'histoire d'Antibes*, pp. 77-98.

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