



Palaeontology: Original Contribution

DOMESTIC AND WILD ANIMALS FROM THE NEOLITHIC PERIOD IN THE “AZMASCHKA” SETTLEMENT HILL NEAR STARA ZAGORA

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ABSTRACT

The excavations at “Azmaschka” settlement hill mark an important stage in the history of prehistoric analysis in our country. They provide a possibility for the acquisition of filler stratigraphic archaeological findings about the settlement for the study of all material relics from the past life and culture of its occupants. The bone material was studied and its species were identified. The following methods of analysis were used: osteometric and odontometric method, method for determining the minimum number of individuals, method for identifying the species of sheep and goat bones.

A total number of 1 548 bone fragments of wild and domestic animals, was analysed and identified. They belong to at least of 434 individuals. The bones of the wild mammals found amount to presentation from 192 or 12.40% from total number of bones, and these from domestic animals amount to 1 356 or 87.40%. Human bones were also identified, as well as a number of mollusca (snails and mussels).

The correlation between the wild and domestic animals found and the identity of the particular species provide a basis for the analysis of the character and development of animal breeding in the “Azmaschka” settlement hill near Stara Zagora. Judging from the number of bones found cattle was the animal most commonly bred in the settlement.

Key words: archaeosteology, osteometric, mammals, neolith, settlement hill

INTRODUCTION

Archaeological research on various historical objects is constantly performed in Bulgaria. These objects are invariably related with the osteological studies on the found animal and anthropological bone material. This is a relatively new direction in the development of anatomy, namely, archaeosteology. The bone fossils discovered and collected during excavations are a valuable source of information for the clarification of a number of questions related to the study of the way of life that existed in a particular period of past times.

From osteological material, the animal species variety can be assessed. Which of them were more widely spread? What was the spread range of domestic and wild animals? The extinction and emergence of specific species can also be determined. Another question would be about the influence of

climatic peculiarities on the species' populations, having in mind these factors have always been crucial in species' emergence or extinction.

Bone fossils give interesting information on the origins, domestication, and evolution of both domesticated and wild animals. The osteological and osteometric tests provide exciting knowledge on the physical type of the animals that lived in a given age. The gradual changes that happen in time can be traced, especially if a longer time period is observed. These changes would be greatest in domestic animals, since they are subjected to deliberate influences from humans.

Such domestic animal bones have been found on nearly all prehistoric sites (1, 2, 3, 4, 5, 6). In the species variety of bones, cattle, pigs, and smaller herbivores have the greatest share. From the wild animals, the greatest share falls to bones of wild boar, deer, and doe (2, 3, 5).

The aim of the current study is to do species-based differentiation of the discovered bone material, and determine its age. The data from the studies can be compared with similar

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research from other geographic regions, which existed in the same time period. This would allow us to determine the influence of various climatic conditions on the phenotype of domesticated and wild animals.

MATERIALS AND METHODS

Materials

Overall description of the village mound

The Azmashka village mound is located 6 kilometres east of the town of Stara Zagora, in the land of the village Hrishteni, in the region of the former nitro-fertilizer factory. It is situated in an "azmak", from which its name comes. Its height, measured from the height of the "azmak" is approximately 7 meters. It takes up an area of about 10 decacres (1 hectare).

The mound has been reported in earlier literatures. In the preliminary studies of its surface, materials from different ages were found: from the Neolithic, Copper, first half of Bronze, and an insignificant number of pottery shards from the Roman epoch.

The excavations rescued the Mound from destruction, since an installation needed by the nitro-fertilizer factory was planned to be built on that location. This specific archaeological study marks an important stage in the history of prehistoric studies in Bulgaria. Its significance is in the simultaneous uncovering of the cultural layers of the village on its entire territory. This excavation method allows full stratigraphical data for the settlement to be collected, and to include all material findings standing for the

culture of its previous inhabitants. The ultimate goal of the excavations was to thoroughly study the way of living and culture of the village's inhabitants throughout different ages of its habitation.

Previous stratigraphical data show that life at the Azmashka Mound began together with the life in the Karanovo I village. What is different is the fact that life at the Azmashka Mound lasted for longer, and that is why the village's culture was more developed. This life span has been exhibited through the cultural layers of the four habitation levels. They contribute to the enrichment of the stratigraphical data obtained from other settlements that existed in the Neolith and Eneolith in the lands of Bulgaria or the whole Balkan Peninsula.

Animal bone material

The archaeological material obtained during the excavations included mostly large amounts of pottery, work tools, and weapons. They were made from local materials, located in closer and farther areas near the village. In the Azmashka Mound, large quantities of bone material were found, which are the objects of the current research. The bones were found in the first three levels of habitation.

The collected bone fragments belong to four prehistoric periods: Early Neolith /6000-5500 BC/, Early Halcolith /4900-4500 BC/, Late Halcolith /4500-3850 BC/, and early Bronze Age /3300-1950 BC/, **Table 1**.

Table 1. Animal bones and mollusca distribution from Azmaschka settlement hill

	<i>Early Neolith</i>		<i>Early Halcolith</i>		<i>Late Halcolith</i>		<i>Early Bronze</i>		<i>Common</i>
	n	%	n	%	n	%	n	%	
<i>Mollusca</i>	120	7.19	84	3.47	52	1.83	4	11.43	260
<i>Birds</i>					3	0.11			3
<i>Mammals</i>	1548	92.81	2334	96.53	2792	98.06	31	88.57	6704
<i>Common</i>	1668		2418		2847		35		6967

Nearly all of the discovered bones were food remnants. They were very fragmented, and some of them bear the signs of thermal processing. Fully intact bones were a rare find, mostly bones of very small animals.

Methods

During the species differentiation of the osteological bone material, the following methods were used:

1. Osteological differences between the Ovis and Capra genera, according to Gromova. (7).
2. Species differentiation of fragments from distal tibia for sheep and goats by Zd. Kratochvil (8).
3. Establishment of the domestic animals' age by R. Barone (9).
4. Method for determining the minimal number of individuals by Sh. Bekeni. (10).

RESULTS AND DISCUSSION

Animal bones from the Early Neolith

The species-differentiated bone material from the early Neolith had the largest share of all finds. It consisted of 1548 species-determined bones and bone fragments originating from at least 634 individuals. They were found in the deepest horizons. The bones belonged primarily to mammals and only three of them originated from birds. A total of 120 shells of molluscs (Mollusca) were differentiated, which are not an object of the current research.

Birds

In the material from the early Neolith, only three bones belonging to birds were found, originating from two individuals. Five pieces remained unidentified because of their excessive fragmentation.

Wild mammals

A total of 192 bones were differentiated – 12.40% of the total number of species-differentiated mammal bones. These bones originated from no less than 140 individuals or 32.26% of the total minimal numbers of individuals. The distribution of the bone fragments and the minimal numbers of individuals per animal species are presented on **Table 2**.

Table 2. Bones distribution and minimal number of individuals in early Neolith.

<i>Mammals</i>	<i>Bones</i>			<i>Individuals</i>		
	<i>n</i>	<i>%</i>	<i>% of group</i>	<i>n</i>	<i>%</i>	<i>% of group</i>
Wild						
<i>Fox</i>	14	0.91	7.29	9	2.07	6.43
<i>Wolf</i>	1	0.07	0.52	1	0.23	0.71
<i>Wild cattle</i>	3	0.19	1.56	2	0.46	1.43
<i>Wild boar</i>	86	5.56	44.79	58	13.37	41.43
<i>Deer</i>	60	3.87	31.25	48	11.06	34.29
<i>Stag</i>	28	1.82	14.58	22	5.07	15.71
<i>Common wilds</i>	192	12.42	100.00	140	32.26	100.00
Domestic						
<i>Cattle</i>	893	57.69	65.85	118	27.19	40.14
<i>Pig</i>	149	9.63	10.99	64	14.75	21.77
<i>Sheep</i>	250	16.14	18.44	73	16.82	24.83
<i>Goat</i>	45	2.90	3.32	27	6.22	9.18
<i>Dog</i>	19	1.22	1.40	12	2.76	4.08
<i>Common domestic</i>	1356	87.58	100.00	294	67.74	100.00
<i>Common mammals</i>	1548			434		

The discovered wild mammals bones belonged to two orders: carnivores and ungulates (hoofed mammals). The carnivores were represented by two species, while ungulates – by four. The distribution of the early Neolith material according to bone types and animal types is presented on **Table 3**.

The largest number of discovered bones originated from wild boars. Their number was 86, which was 45% of the group, or 5.55% of the total number of bones. Then followed fossils of doe – 60, representing 31.25% of the group, deer – 28 or 14.58% of the group, fox

– 14, tur – 3, and wolf – 1 lower jaw. (**Figure 1** and **Figure 2**).

Only three bone fragments of tur were identified at the Azmashka Mound -clavicula, radial bone and tarsal bone. Bones of tur have been found in many other prehistoric settlements in Bulgaria. (**Figure 3**) They encompass the Neolith and Halcolith periods. The highest quantity of them was discovered at Yassa Tepe – 0.24% of the bones. These bones appear in higher amounts in Rakitovo – 4.39%, in Golyamo Delchevo – 3.78%, the Kazanlashka Mound – 2.14%.

Table 3. Kind of bones and mammals distribution. Early Neolith

	Domestic mammals					Wild mammals					Comm on	
	<i>Cattle</i>	<i>Sheep</i>	<i>Goat</i>	<i>Pig</i>	<i>Dog</i>	<i>Wild boar</i>	<i>Deer</i>	<i>Stag</i>	<i>Fox</i>	<i>Wolf</i>		<i>Wild cattle</i>
Horn	22		11				6	2				41
<i>Cranium</i>	7		5	2		2	2	1				19
<i>Maxilla</i>	16	9	2	10		8						45
<i>Mandibula</i>	62	75	5	57	9	29	6	3	8	1		255
<i>Atlas</i>	7	6		6		2	2	1				24
<i>Axis</i>	10	7	2	4		2	1	1				27
<i>V.cerv.</i>	12			4				1				17
<i>V.th.</i>	9			1								10
<i>V.lumb.</i>	3	1										4
<i>Sacrum</i>	2											2
<i>Costae</i>	12	1		3								16
<i>Scapula</i>	41	23	3	15		13	1				1	97
<i>Humerus</i>	66	26	5	13	3	9	1	2	2			127
<i>Radius</i>	78	21	2	4		2		2			1	110
<i>Ulna</i>	20	11	1	3		1			1			37
<i>Os carpi</i>	4			1		1						6
<i>Mc</i>	56	8		3		2	8	2				79
<i>Ph.1</i>	100	4	1	3		2	4	4				118
<i>Ph.2</i>	45			1		1		1				48
<i>Ph.3</i>	18	6		1				1				26
<i>Os coxae</i>	4	5	3	2		1			1			16
<i>Acetabul</i>	14	1		3		1	1		1			21
<i>Femur</i>	19	9		2	2				1			33
<i>Patela</i>	2											2
<i>Tibia</i>	54	18	1	3	5	1	14	5				101
<i>Talus</i>	68	3		4		6	7					88
<i>Calcaneus</i>	56	3	1	3		2	2				1	68
<i>Os centroquart.</i>	19											19
<i>Mt</i>	67	13	3	1		1	5	2				92
Common	893	250	45	149	19	86	60	28	14	1	3	1548

**Fig. 1** Axis. Cattle. Early Neolith. Dimension 2304X1728**Fig. 2** Acetabulum. Cattle. Early Neolith. Dimension 2304X1728



Fig. 3 *Calcaneus. Bos primigenius Boj. (wild cattle). Early Neolith. Dimension 2304X1728*

In neighbouring countries, such as Romania, Yugoslavia, and Greece, the tur was found in a few instances, in relatively low amounts, percentages being under 1%. According to research by Bokonyi, the animal was widely spread in Hungary, and served as a common object for hunting in the Neolith.

The distribution by bone types was the following: the highest number of bones comprised the mandibles – 255, humeri – 127, first phalanx – 118, radial bones – 110, and tibias – 101. It should be noted that short bones were best preserved, since they have a thicker compact bone substance. This, of course, has its logical explanation.

Domesticated mammals

Domesticated mammals were represented by five animal species. In the material from the early Neolith, cattle bones were dominant – 893 of them, or 65.85% of the whole group (Table 2). The cattle bones were distributed evenly among all components of the skeleton (Table 3). A significant number of bones originating from the fingers – I, and II phalanxes were found. They were followed by radial bones – 78, talus bones – 68, humeral bones and lower jaws – 66 and 62, respectively. A large part of them was very fragmented, belonging primarily to young



Fig. 4 *Mandibula-swine. Early Neolith. Dimension 2304X1728*

animals, while another part of the bones underwent only partial measuring. (Figure 4 and Figure 5).



Fig. 5 *Cranium-deer. Early Neolith. Dimension 2304X1728*

Sheep took the second place in the numbers of discovered bones and bone fragments – 250 bones, representing 18.44% of the group and 16.14% of the total number of bones. The bones of the limbs were best preserved – metacarpal and metatarsal, as well as skull bones and horns. The bone fossils of goats were significantly less than those of sheep – only 45 of them, comprising 3.32% of the whole group.

The least number of discovered bones belonged to dogs – 19 total, 9 mandibles, 5 tibias, and 3 humeri. Dogs were at a very early stage of domestication, which explains the low quantities of the materials found in the excavations.

The performed osteological study on the Azmashka Village Mound for the Neolith period gave us detailed information on the species variety of animals, and the osteometric research allowed us to study their physical types and compare the numbers of domesticated and wild animals.

CONCLUSIONS

In the Azmashka Village Mound near the town of Stara Zagora, together with the other archaeological finds – pottery, tools, and other, large amounts of bone material were found, which was the object of the current research.

Nearly all of the bones were food leftovers from the settlement's former inhabitants in their respective ages. Most of the bones were very fragmented, and some of them bore signs of thermal processing, with signs of burning, which changed their colour from brown to black. Others had signs of being

worked on with sharp tools.

No fully intact skeletons were found. Complete bones were preserved only from the parts of the skeleton that were smaller. The tubular bones of the limbs were very fragmented, as were the bones of the skull and the ribs. We assume that this was due to the relatively weaker compact bone tissue that builds these bones, as well as to the long periods that they spent underground and in the storage of the Archaeological museum, from the time of excavation, up to now.

Traces of processing were found in some of the bones. We found cuts by the lengths of the metapodia of the limbs, probably done with the aim of extracting the bone marrow. On some tarsal (heel) bones, there were traces of polishing. For some of the doe horn extuberances, we could find small circular grooves carved into their bases. For some of them, there were signs of polishing of the tips. We assume that these bones were used as tools (awls, needles, and other). We also found several mandibular canals opened by their lengths, from large and small ruminants.

The number of fossils found belonged to the early Bronze Age (3300 – 1 900 BC). These were the lowest, since they were very close to the surface and vulnerable to atmospheric influences.

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