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## ANIMAL REMAINS OF MIHAJLOVAC-KNJEPIŠTE; AN EARLY NEOLITHIC SETTLEMENT OF THE IRON GATE GORGE

*Abstract.* – An analysis of animal bones from the early neolithic settlement Mihajlovac-Knjepište, covering both the wild fauna and domesticated specimens. Results confirm the site to be a typical early neolithic one considering caprovine-based animal husbandry.

The animal husbandry and hunting of the Mesolithic and Early Neolithic of the Iron Gate gorge of the Danube in Northeast Yugoslavia are well-known now.<sup>1</sup>

The characteristic features of the early neolithic animal husbandry are the same in Southeast, East Central and South Europe. This animal husbandry that was based on caprovines was first described by Boessneck from Thessaly<sup>2</sup> and Higgs from Greek Macedonia.<sup>3</sup> The same type of early neolithic animal husbandry was also described from Hungary,<sup>4</sup> however, none of the three authors pointed out its Near Eastern origin. In fact, it was clear that the leading species – sheep and goat – were domesticated in Southwest Asia but nobody thought about the possibility of a caprovine-based animal husbandry being imported to Europe from Anatolia or another region of Southwest Asia. This was first explicitly stated in 1971 and 1973.<sup>5</sup>

The similarity of the early neolithic animal husbandry of Greece to that of the Carpathian Basin was certainly a surprise. Nevertheless, one succeeded to fill up this geographic gap with early neolithic sites of a similar, i. e. caprovine-based

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<sup>1</sup> Bökönyi, 1970, 1702; 1975, 167; 1978a, 85; 1978, 53

<sup>2</sup> Boessneck, 1962, 50

<sup>3</sup> Higgs, 1962, 271

<sup>4</sup> Bökönyi, 1964, 87

<sup>5</sup> Bökönyi, 1971, 643; 1973, 168

animal husbandry. From Greece Knossos, Crete,<sup>6</sup> Lerna<sup>7</sup> and Achilleion,<sup>8</sup> from Yugoslav Macedonia Anzabegovo,<sup>9</sup> from the Vojvodina Nosa<sup>10</sup> and Ludas-Budžak,<sup>11</sup> and finally from Bulgaria Chevdar<sup>12</sup> and Karanovo (own unpublished results) yielded such sites. In Hungary Gyálarét,<sup>13</sup> Röske-Lúdvár,<sup>14</sup> Deszk-Olajkút,<sup>15</sup> Lánycsók-Égettmalom<sup>16</sup> produced proofs of a similar animal husbandry. In Southern Europe the caprovine based animal husbandry went as far as Italy,<sup>17</sup> South France<sup>18</sup> and Spain<sup>19</sup> to the west.

Nevertheless, there were two early neolithic, Starčevo sites which showed a somewhat different picture, the uppermost phase of Lepenski Vir<sup>20</sup> and the early phase of Divostin.<sup>21</sup> In both sites, cattle precede the caprovines though, in Lepenski Vir by a wide margin (62. 1 to 13. 4 per cent), and in Divostin only by one sixth.

The comparatively high ratio of cattle and the decrease of the number of caprovines is thought to be the result of a stronger forestation of the area.<sup>22</sup> Nevertheless, it did not seem to be a good explanation because the light cattle dominance observed in early neolithic Körös sites<sup>23</sup> only occurred at the end phase of the culture signalling the big switchover from imported caprovines to locally domesticable cattle and pig. (Unfortunately the sample of Starčevo itself<sup>24</sup> cannot be used for comparison because it clearly is a mixed assemblage.)

As a result, one supposed that both in Lepenski Vir III and Divostin the problem was with the improper collecting of the animal bones resulting in an overrepresentation of the large bones of cattle, and in the underrepresentation of the small caprovine bones.

<sup>6</sup> Jarman - Jarman, 1968, 241

<sup>7</sup> Gejvall, 1969, T. 5

<sup>8</sup> Bökönyi, 1989b, 315

<sup>9</sup> Bökönyi, 1976, 313

<sup>10</sup> Bökönyi, 1984, 29

<sup>11</sup> Bökönyi, 1974, 436

<sup>12</sup> Dannel, 1974, 34

<sup>13</sup> Bökönyi, 1974, 364; 1969, 226

<sup>14</sup> Bökönyi, 1974, 396; 1969, 226

<sup>15</sup> Bökönyi, 1969, 226; 1971, 641

<sup>16</sup> Bökönyi, 1981, T. 2

<sup>17</sup> Whitehouse, 1971, 6; 1977-82, T. 1; Bökönyi, 1983, T. 1; 1985, 185; 1988-89, 371; Sorrentino, 1983, 149

<sup>18</sup> Poulain - Josien, 1975, 409; Ducos, 1976, 165; Geddes, 1981a, Fig 2; 1981b, 227; Bökönyi - Kretzoi, 1983, T. I

<sup>19</sup> Munoz, 1973, 369

<sup>20</sup> Bökönyi, 1970, T. 1

<sup>21</sup> Bökönyi, 1988, T. 17. 1

<sup>22</sup> Bökönyi, 1984, 28

<sup>23</sup> Bökönyi, 1989a, 15

<sup>24</sup> Clason, 1980, 152; Lazić, 1988, 27

In order to eliminate such bias Dr. S. Stanković, the excavator of the site, collected even the tiniest bone fragments, and Table 1 clearly demonstrates how successful his collecting work was.

Table 1. The fauna list

	specimen	per cent
cattle – <i>Bos taurus</i> L.	853	37,10
sheep – <i>Ovis aries</i> L.	137	
goat – <i>Capra hircus</i> L.	35	1440
sheep/goat – <i>Ovis/Capra</i>	1268	62,64
pig – <i>Sus scrofa</i> dom. L.	5	0,22
dog – <i>Canis familiaris</i> L.	1	0,04
<b>domestic animals</b>	<b>2299</b>	<b>100,00</b>
aurochs – <i>Bos primigenius</i> Boj.	83	16,50
chamois – <i>Rupicapra rupicapra</i> L.	8	1,59
red deer – <i>Cervus elaphus</i> L.	110	21,87
roe deer – <i>Capreolus capreolus</i> L.	21	4,18
wild swine – <i>Sus scrofa</i> fer. L.	20	3,98
brown bear – <i>Ursus arctos</i> L.	6	1,19
fox – <i>Vulpes vulpes</i> L.	1	0,21
brown hare – <i>Lepus europaeus</i> Pall.	6	1,19
birds – <i>Aves</i>	5	0,99
pond tortoise – <i>Emys orbicularis</i> L.	2	0,40
carp – <i>Cyprinus carpio</i> L.	7	1,39
cyprinid – <i>Cyprinidae</i>	1	0,20
great sturgeon – <i>Huso huso</i> Brandt	10	1,99
pike-perch – <i>Lucioperca sandra</i> L.	1	0,20
catfish – <i>Silurus glanis</i> L.	41	8,15
fishes – <i>Pisces</i>	181	35,98
<b>wild animals</b>	<b>503</b>	<b>100,00</b>
<b>total</b>	<b>2802</b>	

domestic: wild = 82,05 : 17,95

The fauna list shows a typical husbandry of the northern type of the Early Neolithic of the southeastern and southern regions of Europe. The overwhelming majority of the animal bones come from caprovines, mainly from sheep (the sheep : goat ratio is 79.65 : 20.35 percent). Cattle stand on the second place with 37.10 per cent, and pig is third with 0.22 per cent. (The comparatively high cattle and low pig ratio distinguishes this animal husbandry from that of the Early Neolithic of the Southern Balkans and puts it into the northern type.) The dog is quite unimportant, represented by one single bone fragment.

The importance of animal husbandry compared to hunting is obvious looking at the fauna list: almost five sixths of the occurring bones come from domestic and only one sixth of them from wild animals. In this respect, the picture is very similar to that of the early neolithic sites of Greece and Southern Yugoslavia.

In the wild sample ungulates represent nearly half of the bones suggesting a well-expressed meat hunting. The number of wild carnivore species and also their frequencies are quite small. The pond tortoise's shell fragments are certainly not intrusive because one of them is burnt. Fishing also played an important part in securing human foodstuffs, and among the fishes remnants of rather large specimens occurred.

The wild fauna is surprisingly different from that of Lepenski Vir or Vlasac. First of all the number of species is much smaller in Mihajlovac-Knjepište, secondly the real forest species are a little less frequent than there, at the same time the aurochs is conspicuously numerous, pointing to an open landscape with forested steppe. The importance of fishing has remained due to the vicinity of the Danube.

Unfortunately, although the state of preservation of the Mihajlovac-Knjepište bones is rather poor, they provide some valuable information about the animals kept in or hunted around the settlement.

Among the cattle bones the occurring three horn core fragments (one of them is juvenile) point to large, long horn cores and also the postcranial bones come from large animals which stand very close to the wild form. It is not surprising because practically all of them are remains of freshly domesticated animals. It is also possible that even local cattle domestication took place in the settlement.

The male sheep have heavy, helically twisted horns with triangular cross-section ("copper sheep"; Fig. 1). The females have short, untwisted horn cores ("turbary sheep") or are hornless (Fig. 2). Interestingly enough, the distribution of the horn cores and frontal fragments shows a 1 : 1 sex ratio and a high frequency of immature (juvenile and subadult) sheep. The number of specimens are undoubtedly small, however, they certainly follow a clear trend (see Table 2).

Table 2. The distribution of sheep horn core types

	"palustris"	hornless	"copper sheep"	unidentifiable	total
juvenile	0	0	2	0	2
subadult	2	1	5	1	9
adult	1	1	1	0	3
unidentifiable	–	4	1	0	5
total	3	6	9	1	19

The two whole sheep bones, two metatarsals with the greatest length 131 and 131,5 mm give some information about the absolute size of the sheep. The withers heights of the two sheep determined with Haak's indexes<sup>25</sup> are 59.61 and 59.83 cm that fall into the range of variation of neolithic sheep of Central and Southeast Europe.<sup>26</sup>

<sup>25</sup> Haak, 1965, 66

<sup>26</sup> Bökönyi, 1977, 66

In the goat sample all horn cores (Fig. 3) are twisted. There is a very large specimen among them showing the fact that these early goats were close in horn size to the wild form. Nevertheless, their horn form had already changed. The pig was represented by small fragments and the only dog bone, a proximal femur half, also comes from a small specimen.

The aurochs bones mostly come from small to medium-size animals, only a mandible fragment with a 46 mm M<sub>3</sub> points to a larger one. The only horn core fragment represents a juvenile bull.

The occurrence of chamois is undoubtedly evidenced by a horn core (Fig. 4) that (with its 97 mm greatest length) is clearly a male. At the same time, the 127 mm long metacarpal points to a female.

The chamois occurs both in Lepenski Vir<sup>27</sup> and in Vlasac<sup>28</sup> in the Iron Gate gorge, and in other medium-range mountains of the Balkans.

Both the red deer and roe deer are not particularly large, and their antlers point to mediocre trophies (Fig. 5). A red deer antler fragment shows axe blows with which one wanted to separate it from the skull (Fig. 6).

The only wild boar canine is rather small, the postcranial bones also reveal small dimensions.

The brown bear bones, among them an adult left maxilla fragment, are rather small, and this is valid for the only red fox bone, an adult right humerus proximal fragment.

The brown hare's bones point to medium-size animals, and the unidentified bird bones belong – according to their size – at least to two individuals.

Among the fishes the occurrence of the skull fragments of a great sturgeon are particularly interesting. A recently caught great sturgeon found in the comparative zoological collection of the Hungarian Museum of Agriculture was somewhat smaller than this one, but its full length was 280 cm and its fresh weight made out 174 kg. This shows that the individual of Mihajlovac–Knjepište could easily weigh 200 kg. Such monsters were quite common in the Danube earlier and the weight of their fully developed individuals reached 1500 kg.

Besides the great sturgeon large catfishes also lived in the Danube in the Neolithic. The diameters of their vertebrae vary between 36.5 and 45 cm, Lepenski Vir<sup>29</sup> and Vlasac<sup>30</sup> some of them weighing as much as 140–180 kg.

Pike-perch and carp, and another cyprinid were fishes of secondary importance.

Summarizing: in Mihajlovac–Knjepište of the Iron Gate gorge a typical early neolithic animal husbandry was found that was based on caprovines but containing also cattle, pig and dog. The inhabitants ate the meat of all five domestic species preferring the meat of immature animals as demonstrated in Table 3.

<sup>27</sup> Bökönyi, 1970, 1703

<sup>28</sup> Bökönyi, 1978, 36

<sup>29</sup> Bökönyi, 1970, 1704

<sup>30</sup> Bökönyi, 1975, 49

Table 3. Kill-off pattern of domestic animals

	neonate		juvenile		subadult		adult		mature		total	
cattle	2	0.76 %	131	49.81 %	70	26.62 %	57	12.67 %	3	1.14 %	263	100.00 %
sheep-goat	16	4.28 %	72	19.25 %	189	50.54 %	91	24.44 %	6	1.60 %	374	100.00 %

Table 3 shows at the same time that the meat was the main and probably only exploitation of the three most important domestic species (pigs and dogs were so rare that they could not be checked from this viewpoint). Nevertheless, there was a difference in the kill-off patterns of cattle and caprovines: while in cattle the juvenile animals were preferred, among caprovines animals killed in their subadult age were even in an absolute majority. This has yet to be explained.

The main aim of hunting was securing meat reserves and also raw materials, or first of all antlers, hides, bones, sinews. Fishing also completed the diet of the inhabitants.

ЖИВОТИЊСКИ ОСТАЦИ СА ЛОКАЛИТЕТА МИХАЈЛОВАЦ-КЊЕПИШТЕ  
РАНОНЕОЛИТСКО НАСЕЉЕ КОД ГВОЗДЕНИХ ВРАТА

Резиме

Аутор доноси резултате анализе костију животиња пронађених на локалитету Михајловац-Књепиште код Гвоздених врата. Анализа обухвата и дивљу фауну и домаће животиње, нудећи реконструкцију начина исхране и једног сегмента живота у овом праисторијском насељу. Осим тога, она пружа доказе да је реч о типичном ранонеолитском гајењу животиња, пре свега ради меса, а у којем доминантну врсту представљају овце и козе. Рад је опремљен исцрпном библиографијом која се тиче ове теме.

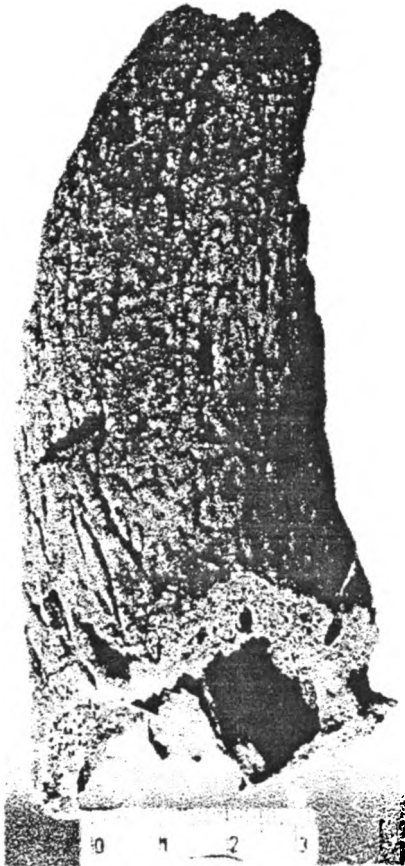
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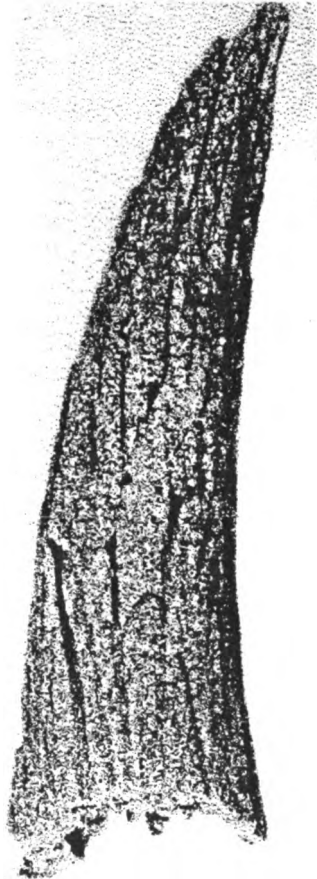
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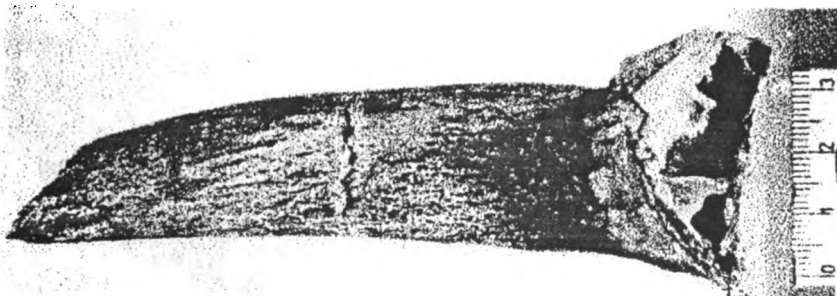
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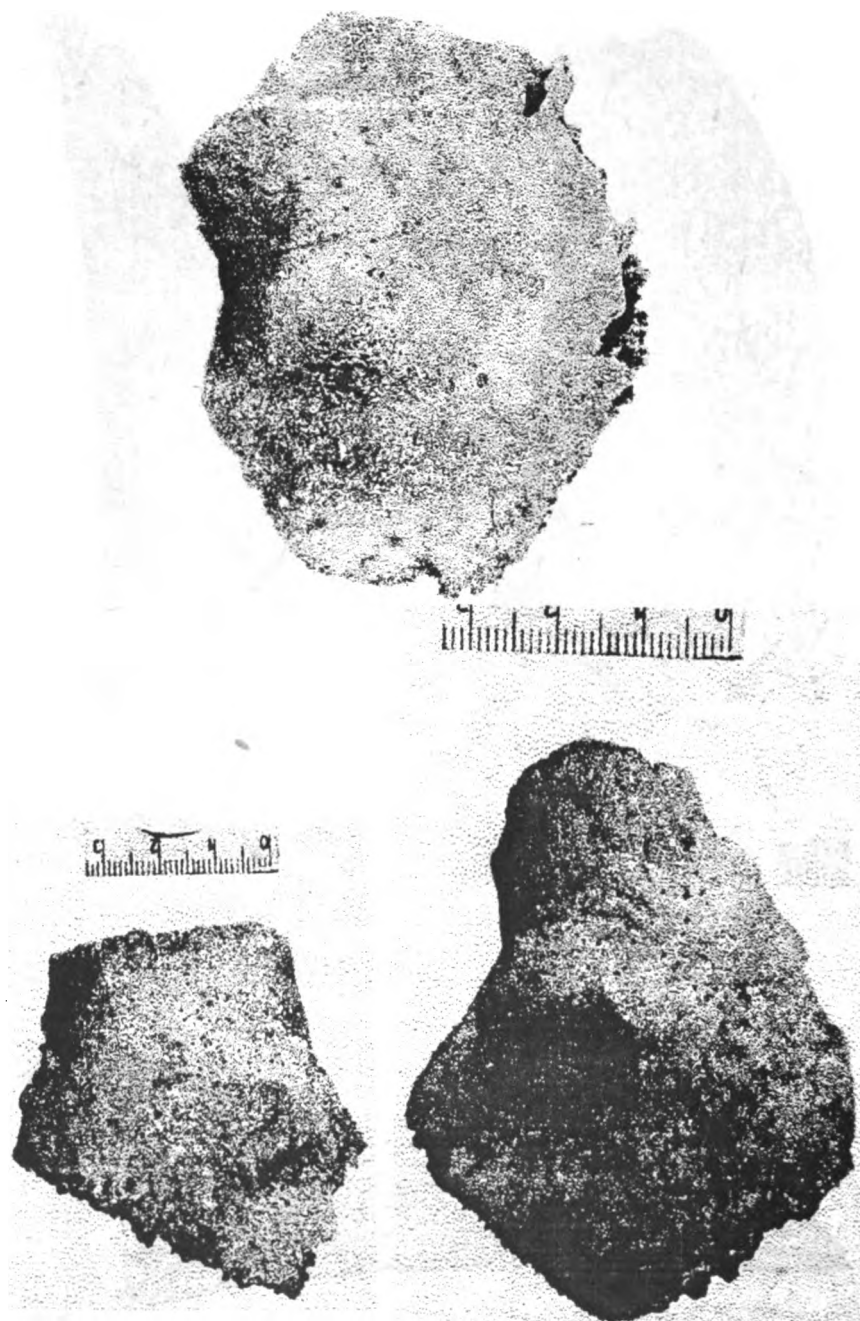
*Fig. 1 "Copper sheep" horn core*



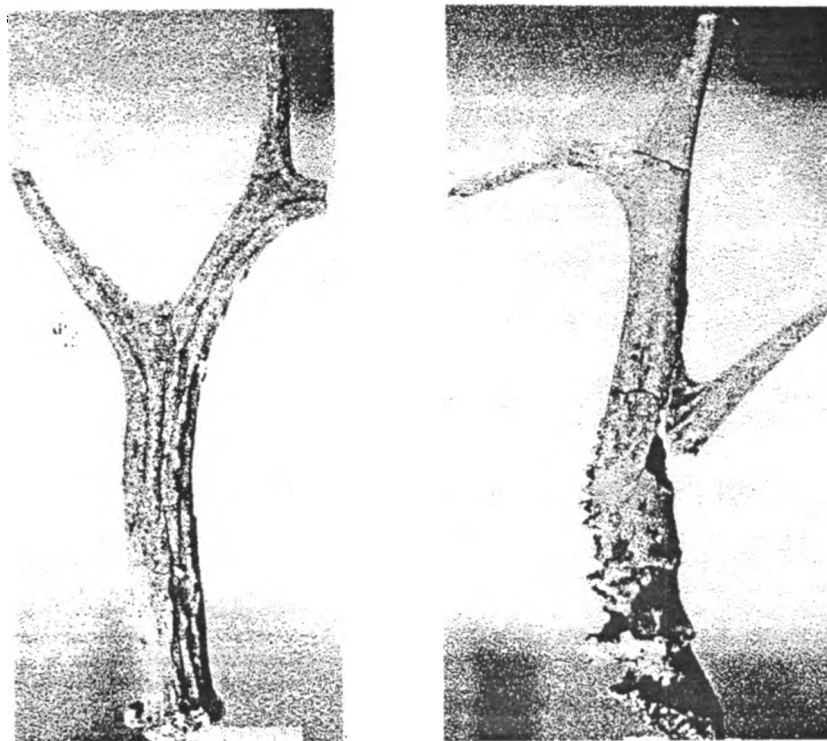
*Fig. 3 Goat horn core*



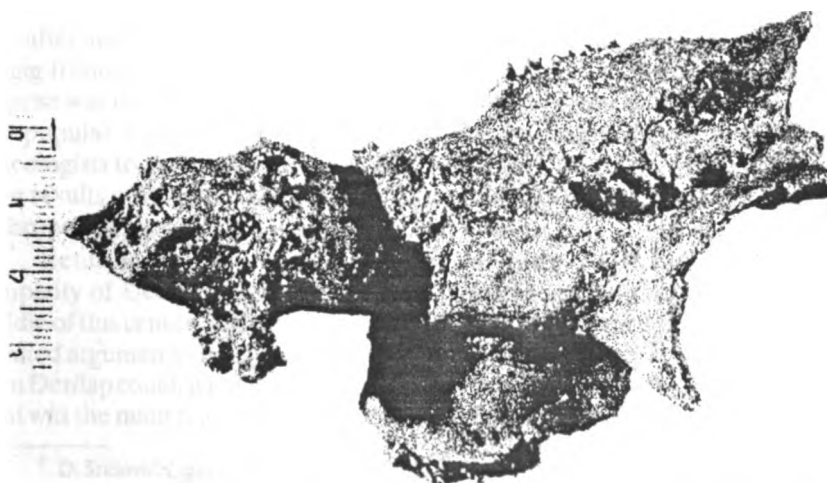
*Fig. 4 Chamois horn core*



*Fig. 2 1-3 Frontal bone fragments of hornless sheep*



*Fig. 5 Roe-deer antlers*



*Fig. 6 Red deer brain-skull fragment with the lower part of the antler (on the pedicle axe cut marks)*

