

## Late Pleistocene mammal fauna from the Late Palaeolithic butchering site Cosăuți 1, Moldova

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Abstract. The Late Palaeolithic settlement Cosăuți 1 (Moldova), dated for ca. 19 000-17 000 BP, yielded about 34 000 determined remains of large and small mammals. People hunted mainly reindeer (*Rangifer tarandus*) and horse (*Equus latipes*). The faunal structure, character of bone preservation, and their accumulation as well as the diversity of large mammals in Cosăuți 1 indicate that here we are possibly dealing with a butchering and killing site of the Late Gravettian age.

Key words: archaeozoology, large mammal fauna, small mammals, Gravettian, Eastern Europe.

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### I. INTRODUCTION

Cosăuți 1, also known in the literature under the names Cosoutsy, Cosseoutsy or, Cosautzi (e.g. BORZIAC 1991, 1996), is a Late Palaeolithic settlement, situated on the second terrace of the right bank of the middle part of the River Dniester, about 500 m in a north-western direction from the village Cosăuți, ca. 10 km from Soroca, northern Moldova.

This multilayered site, excavated from 1981 to 1991 under the leadership of Ilie BORZIAC (Institute of Archaeology, Chișinău, Moldova) and from 1994 to 1995 (in collaboration with P. HAE-SAERTS, M. OTTE, P. NOIRET, I. LOPES BAYON from Belgium and V. CHIRICA from Romania), is composed of 21 cultural layers (total thickness of 18 m) of Late Palaeolithic age. The site yielded more than 70 thousand flint artefacts, including numerous tools, about 300 bone, horn and tusk implements, more than 50 objects connected with the imitative art activities of the Palaeolithic man, as

well as the grave of a child. In general, the archaeological materials indicate the complex of the East Gravettian culture. Geological, palaeobotanical, and palaeozoological surveys were also carried out. The radiocarbon and TL dating of the majority of layers (16 dates carried out in various laboratories) indicated that the site was settled between ca. 22 000 BP and ca. 12 000 BP (BORZIAC and DAVID 1986; BORZIAC and KOVALENKO 1989; BORZIAC 1991, 1994; BORZIAC *et al.* 1998) although the youngest TL dates are very problematic (BORZIAC and KOVALENKO 1989).

The palaeozoological material analysed in this work comes from the upper part of the section, from layer VIII (the oldest) to layer I (the youngest). Radiocarbon dating of layers V-I fluctuates around 17 000 BP (layer V – 17 030 ± 180 BP, BORZIAC and KOVALENKO 1989; layer IV – 17 100 ± 150 BP, BORZIAC 1989; layer III – 17 840 ± 550 BP, BORZIAC and KOVALENKO 1989; layer I – 17 200 ± 300 BP, BORZIAC and KOVALENKO 1989) when TL dates are not taken into consideration. Lower layers from VIII to VI are probably only slightly older (layer VI – 18 140 ± 165 BP and 18 935 ± 160 BP, both dates from charcoal wood, BORZIAC 1996). This probably means that the fauna from layers VIII-I was accumulated during the relatively short time span of about 2 000 years between ca. 19 000 BP and 17 000 BP, just after the phase of maximum development of the ice-sheet during the last Ice Age period.

## II. MATERIAL

The Cosăuți 1 site yielded more than 65 000 remains of mammals, among which around 34 000 were determined to the species level. While most of the bones of large mammals are remnants of animals hunted by Palaeolithic man, the occurrence of small mammals is random as a result of the natural death of an animal and/or comes from owl pellets. Smaller mammals, which are good indicators of past environment, were obtained as a result of screening and washing of sediments. The most numerous remains were collected in layers IV-II, while more than 60% of larger bones were found in the cultural layers III, IIIA, and IIIB (Fig. 1). Most of the bones are fragmented to a high degree, only teeth and smaller bones being preserved undamaged. Complete skulls are absent.



Fig. 1. Accumulation of large mammal bones, mainly reindeer (*Rangifer tarandus*), in layer III.

## III. DESCRIPTION

The list of mammals comprises about 26 species, some of which being represented by single specimens (Table I). The majority of remains belong to large mammals, among which hares, ungulates and polar foxes were certainly objects of hunting by inhabitants of Cosăuți 1. Especially interesting are the following species:

Table I

Species composition and frequencies of mammals from Cosăuți 1, layers I-VIII  
(number of remains /number of individuals)

Species	Layer										Total
	I	II	III	IIIA	IIIB	IV	V	VI	VII	VIII	
<i>Sorex</i> sp.						4/2					4/2
<i>Lepus europaeus</i> (PALLAS, 1778)		1/1	2/1			15/1					18/2
<i>L. tanaiticus</i> GUREEV, 1964	31/3	12/4	67/3	1/1	6/2	314/4					431/17
<i>Lepus</i> sp.	33	13	16	2	9	9	3	8		3	96
<i>Ochotona spelaea</i> OWEN, 1846		3/1	3/2			4/2					10/5
<i>Marmota</i> sp.						4/1	2/1				6/2
<i>Spermophilus suslicus</i> GÜLDENSTAEDT, 1770	2/1		5/3			4/2					11/6
<i>Spalax leucodon</i> NORDMANN, 1840			2/2			7/1		2/1			11/4
<i>Dicrostonyx gulielmi</i> (SANFORD, 1870)			2/1			1/1					3/2
<i>Lagurus lagurus</i> (PALLAS, 1773)	5/2	4/2	7/4			19/12					35/20
<i>Arvicola terrestris</i> (LINNAEUS, 1758)		1/1	1/1			3/2	1/1				6/5
<i>Microtus arvalis</i> (PALLAS, 1778)		8/3	9/5			6/3	2/1				25/12
<i>M. gregalis</i> (PALLAS, 1779)	1/1	141/75	30/17	38/21	30/15	62/34					302/163
<i>M. oeconomus</i> (PALLAS, 1776)	3/2	85/49	19/11	5/3		19/10					131/75
<i>Canis lupus</i> LINNAEUS, 1758						12/1	14/2				26/3
<i>Canis</i> sp.							2/1				2/1
<i>Alopex lagopus</i> (LINNAEUS, 1758)		18/3	18/3	7/2	24/3						67/11
<i>Vulpes vulpes</i> (LINNAEUS, 1758)		2/2									2/2
<i>Alopex/Vulpes</i>		13	12	2	15	5					47
<i>Ursus arctos</i> LINNAEUS, 1758		1/1					3/1	3/1			7/3
<i>Mammuthus primigenius</i> (BLUMENBACH, 1799)			8/1	1/1	5/1	1/1					15/4
<i>Equus latipes</i> GROMOVA, 1949	91/2	361/7	296/6	105/4	264/5	274/5	97/5	185/6	19/1	1/1	1693/42
<i>Coelodonta antiquitatis</i> (BLUMENBACH, 1807)			2/1				1/1	2/1			5/2
<i>Capreolus capreolus</i> (LINNAEUS, 1758)	3/1										3/1
<i>Cervus elaphus</i> LINNAEUS, 1758	4/1						2/1				6/2
<i>Alces alces</i> (LINNAEUS, 1758)								1/1			1/1
<i>Rangifer tarandus</i> (LINNAEUS, 1758)	1794/ 8	3830/ 22	12070/ 58	2817/ 15	5810/ 41	1529/ 12	795/ 9	2712/ 21	24/ 1	63/ 1	31600/ 188
<i>Rupicapra rupicapra</i> (LINNAEUS, 1758)						2/1					2/1
<i>Bison priscus</i> (BOJANUS, 1827)	34/1	8/1	2/1	2/1		49/1	28/1	22/2	5/1		150/9

*Lepus tanaïticus* GUREEV, 1964

The remains of hares from Cosăuți 1 (Table I) comprise almost all larger postcranial bones and skull fragments. On the basis of morphological features indicated by GUREEV (1964) they were described as belonging to *Lepus tanaïticus*, a taxon close to *Lepus timidus* LINNAEUS, 1758, and characteristic species of hare in the Late Pleistocene of Eastern Europe (GUREEV 1964; KUZ'MINA 1971; REKOVETS 1985).

Measurements of some bones are as follows: length of P2/-M3/ (N=3) – 19.1-20.1-21.0 mm; length of P/3-M/3 (N=11) – 20.6-21.6-22.4 mm; length of P/3-P/4 (N=11) – 8.8-9.5-10.1 mm; height of P/3 (N=7) – 19.0-20.0-21.0 mm; width of lower epiphysis of humerus (N=6) – 12.0-12.7-13.2 mm; femur (N=3) – 21.0-21.5-28.0; tibia (N=5) – 16.6-17.0-17.1 mm; the greatest diameter of the articulation part of the scapula (N=3) – 11.6-12.2-12.5 mm.

In the Cosăuți 1 site, *Lepus* remains are very common and most probably the hare was an object of hunting by people as in the case of ungulate species from this locality. In Moldova remains of *Lepus tanaïticus* were also found in other late Palaeolithic sites. However, in the Late Gravettian layer of Brynzeni I (PASCARU 1997a) and in the Duruitoarea Veche site (DAVID 1999) remains of Pleistocene hare are very scarce.

*Canis* sp.

Among remains of wolf (*Canis lupus*) from layer V a fragment of mandible with C, P/1, P/2, P/4 and M/1 (Fig. 2) and one isolated M/1 are especially interesting because of their distinctly smaller sizes (the length of 2 M/1: 26.0 and 27.0 mm; width 12.5 and 10.5 mm, respectively) in comparison with other wolf remains from Moldova (DAVID 1980). It is possible that these remains come from an animal during the course of domestication processes.

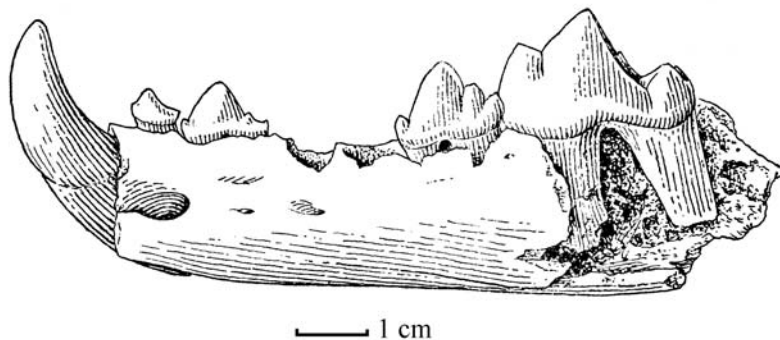


Fig. 2. *Canis* sp. – fragment of left mandible from layer V.

*Alopex lagopus* LINNAEUS, 1758

The remains of smaller carnivores (115 specimens) belong almost exclusively to the polar fox (*Alopex lagopus*) (Table II). A relatively large number of its remains indicates probably that polar foxes were hunted for their fur by the Palaeolithic people in Cosăuți 1.

*Equus (Equus) latipes* GROMOVA, 1949

Remains of a Pleistocene horse represent all parts of the skeleton including skull or mandible fragments and occupy the second place in number (Table I). Most of the bones are broken or frag-

Table II

Measurements of teeth and mandibles of *Vulpes vulpes* and *Alopex lagopus* from Cosăuți 1

Dimension (mm)	<i>Vulpes vulpes</i>			<i>Alopex lagopus</i>		
	Cosăuți 1 n=1	Recent Moldova, n=2		Cosăuți 1		
		n	Range	M		
Length of the aboral border of the M <sup>2</sup> – oral border of the canine alveolus	57.0	57.2	57.0	1	51.5	–
Length of cheek-tooth row Pm <sup>1</sup> -M <sup>2</sup>	54.0	54.0		2	49.0	49.0
Length of premolar row	41.0	39.3	38.2	4	35.2-37.4	36.6
Length of P <sup>4</sup>	15.3	14.5	13.2	10	11.2-13.0	12.04
Breadth of P <sup>4</sup>	6.5	6.4	6.8	10	5.6-6.5	6.1
Length of M <sup>1</sup>	9.8	9.2	9.8	7	7.3-8.8	8.1
Breadth of M <sup>1</sup>	12.5	12.0	11.2	7	9.8-10.6	10.2
Length of M <sup>2</sup>	6.0	5.5	4.6	5	4.2-5.0	4.6
Breadth of M <sup>2</sup>	9.0	8.3	7.2	5	7.0-7.4	7.3
Length to <i>process articularis</i>	–	109.0	101.0	1	86.0	–
Length of the aboral border of the M <sub>3</sub> – oral border of the canine alveolus	–	71.6	65.0	3	59.0-61.0	59.7
Length of cheek-tooth row P <sub>1</sub> -M <sub>3</sub>	–	60.8	54.0	3	49.3-50.6	49.9
Length of premolar row P <sub>1</sub> -P <sub>4</sub>	32.6	36.0	30.5	3	29.0-29.6	29.3
Length of molar row M <sub>1</sub> -M <sub>3</sub>	–	25.4	24.2	5	20.0-22.0	21.3
Length of M <sub>1</sub>	15.2	15.5	14.6	7	13.1-14.2	13.6
Breadth of M <sub>1</sub>	5.4	6.0	5.8	5	5.0-5.7	5.3
Length of M <sub>2</sub>	6.8	7.0	6.8	3	5.0-5.6	5.3
Breadth of M <sub>2</sub>	4.6	5.2	5.0	3	3.7-4.2	3.9
Length of diastema	–	7.0	3.6	4	1.5-2.0	1.75
Height of the mandible behind C <sub>1</sub>	10.0	10.7	10.1	3	8.0-10.0	8.9
Height of the mandible behind M <sub>1</sub>	14.8	16.0	14.3	3	11.0-14.0	12.3
Greatest thickness of the body of jaw (below M <sub>1</sub> )	7.0	7.0	6.6	3	5.8-6.4	6.1

mented, only teeth and smaller bones being completely preserved (Fig. 3). They represent subadult and adult animals, while senile specimens are almost absent. A few fragments of mandible and some isolated milk teeth belong to specimens of ca. one year of individual age. One fragment of first phalanx (without proximal epiphysis) and diaphysis of one metatarsus belong to a very young specimen (age of few weeks). Measurements of horse bones from Cosăuți 1 (Table III) are within the range of measurements characteristic of other late Palaeolithic sites from Moldova (DAVID 1974, 1980) and the Ukraine (BELAN 1985, 1986).

The morphological features and measurements indicate that we are dealing with *Equus* (*Equus*) *latipes*, a species which was widely distributed and numerous during the Late Pleistocene of Eastern Europe, including Moldova, being one of most frequently hunted animals (DAVID 1980; KUZ'MINA 1980, 1997; BELAN 1985, 1986; ALEKSEEVA 1990).

Table III

Measurements of teeth and bones of *Equus latipes* from Cosăuți 1

Dimension (mm)	Cosăuți 1 Moldova			Ukraine (BELAN 1985)		
	n	Range	M	n	Range	M
Length of P <sup>3</sup> (P <sup>4</sup> )	18	29.0-33.0	30.3	–	–	–
Breadth of P <sup>3</sup> (P <sup>4</sup> )	18	29.4-32.2	30.4	–	–	–
Length of protocon	15	11.0-16.8	14.1	–	–	–
Length of M <sup>1</sup> (M <sup>2</sup> )	14	25.5-28.5	26.7	–	–	–
Breadth of M <sup>1</sup> (M <sup>2</sup> )	14	26.7-30.6	28.4	–	–	–
Length of protocon	13	10.8-16.2	13.3	–	–	–
Length of M <sup>3</sup>	11	26.0-31.0	28.4	16	27.0-31.5	29.4
Breadth of M <sup>3</sup>	10	23.2-25.8	24.8	16	23.0-28.5	25.0
Length of protocon	11	12.6-16.1	14.6	16	14.0-18.0	15.7
Length of cheek-tooth row P <sub>2</sub> -M <sub>3</sub>	2	170.0; 171.1	–	2	170.0; 174.5	–
Length of premolar row P <sub>2</sub> -P <sub>4</sub>	2	92.0; 93.0	–	5	89.5-103.5	95.7
Length of molar row M <sub>1</sub> -M <sub>2</sub>	1	84.0	–	2	79.5; 85.5	–
Length of P <sub>3</sub> (P <sub>4</sub> )	22	26.5-33.0	29.3	12	26.5-34.5	30.25
Breadth of P <sub>3</sub> (P <sub>4</sub> )	22	17.5-20.5	19.0	12	16.0-20.5	18.3
Length of M <sub>1</sub> (M <sub>2</sub> )	24	24.0-31.0	27.5	13	25.5-34.5	29.6
Breadth of M <sub>1</sub> (M <sub>2</sub> )	24	14.8-20.3	17.9	13	15.5-21.5	16.5
Length of M <sub>3</sub>	12	31.0-35.0	33.3	2	30.5-32.0	31.25
Breadth of M <sub>3</sub>	12	13.0-16.2	15.3	2	16.0; 17.0	–
Length of talonid	12	6.0-8.0	7.4	1	6.0	–
Humerus – breadth of the trochlea	1	84.0	–	9	73.0-85.5	78.9
Radius – breadth of the proximal end	1	94.5	–	6	84.5-95.0	88.3
Radius – breadth of the distal end	2	82.5; 84.4	–	5	77.0-85.0	80.6
Tibia – breadth of the distal end	2	79.5; 82.4	–	11	74.0-86.5	78.0
Astragalus – greatest height	2	59.2; 64.2	–	12	59.0-68.5	63.7
Calcaneus – greatest length	1	119.4	–	12	107.0-123.5	116.2
Metacarpus – breadth of the proximal end	2	52.4; 56.0	–	9	51.0-56.5	54.3
Metacarpus – breadth of the distal end	4	52.2-53.5	52.8	8	50.7-53.5	52.4
Metatarsus – breadth of the distal end	1	59.0	–	7	50.5-58.0	54.5
Phalanx I (hind leg) – greatest length	2	92.0; 86.5	–	15	81.0-91.0	86.9
Phalanx I (hind leg) – breadth of the proximal end	2	61.4; 60.5	–	15	58.0-67.0	61.7
Phalanx I (hind leg) – smallest breadth of diaphysis	2	39.8; 39.4	–	15	36.0-41.0	38.5
Phalanx III (front leg) – breadth of the proximal end	2	52.5; 51.0	–	15	45.5-53.0	48.0
Phalanx III (front leg) – greatest length	3	50.0-59.0	54.3	–	–	–
Phalanx III (front leg) – breadth	2	82.0; 104.0	–	–	–	–
Phalanx III (front leg) – length of the proximal articular surface	3	49.0-60.0	54.7	–	–	–
Phalanx III (front leg) – breadth of the proximal articular surface	2	27.3; 29.0	–	–	–	–
Phalanx III (hind leg) – greatest length	3	56.0-59.5	54.7	–	–	–
Phalanx III (hind leg) – greatest breadth	1	92.0	–	–	–	–
Phalanx III (hind leg) – length of the articular surface	3	49.0-51.0	49.8	–	–	–
Phalanx III (hind leg) – breadth of the articular surface	3	23.0-27.0	25.3	–	–	–



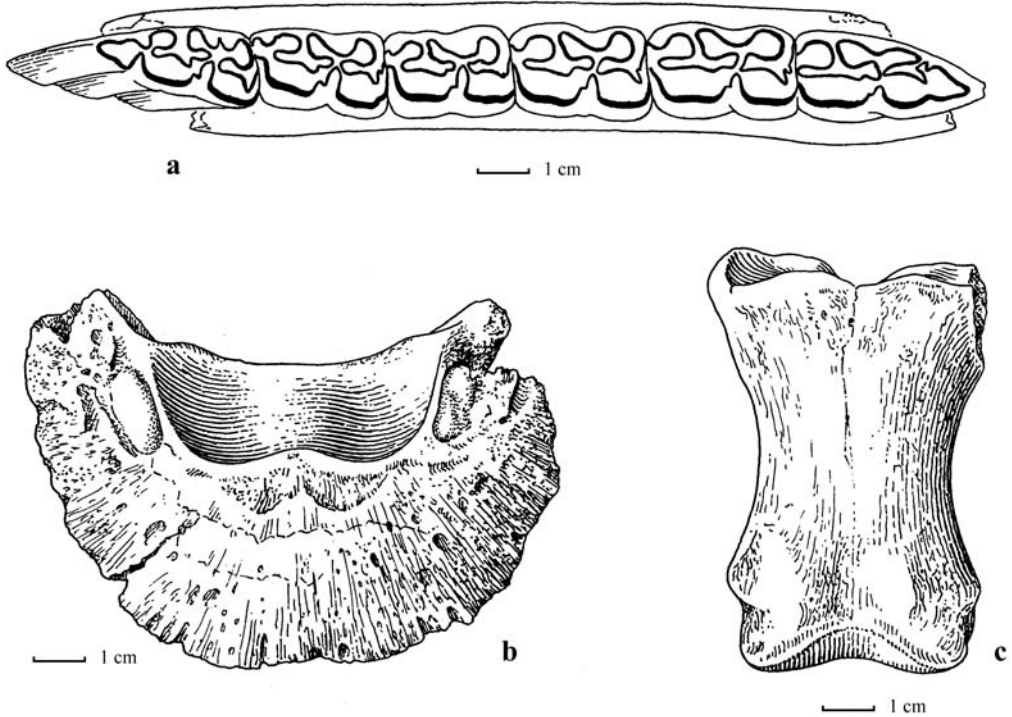


Fig. 3. *Equus latipes*. a – fragment of mandible; b – third phalanx; c – first phalanx.

### *Rangifer tarandus* (LINNAEUS, 1758)

Remains of reindeer (*Rangifer tarandus*) comprise all parts of skeletons. However, only some bone categories (e.g. metapodials, alstragals, phalanxes) are represented by several dozens specimens. The majority of bones were found in high concentration of various skeletal elements (Fig. 1), most of them being broken or fragmented. Complete skulls are absent, better preserved skull fragments belong to *os frontale*. More than 240 fragments of antlers were collected including the fully developed antlers with many tines, including specimens still attached to the skull (ca. 100 specimens) (Fig. 4a, b), which might have resulted from humans dismembering reindeer carcasses. According to BINFORD (1981) the primary butchering of caribou (*Rangifer tarandus*) includes the removal of the antlers, this being done by breaking the cranium around the base of the antlers. They belong to specimens of various individual age, this being confirmed by the presence of antlers in spike form as well as large specimens of various shape, size, and many tines (Fig. 4c). Shed antlers are extremely rare. It seems that the Palaeolithic man from Cosăuți 1 did not collect antlers because of their abundance and accessibility. Also, teeth are very common in the assemblages, being found in mandibles or maxillas or isolated (more than 1 000 specimens). They are at different stages of wear and thus derive from specimens of various individual age.

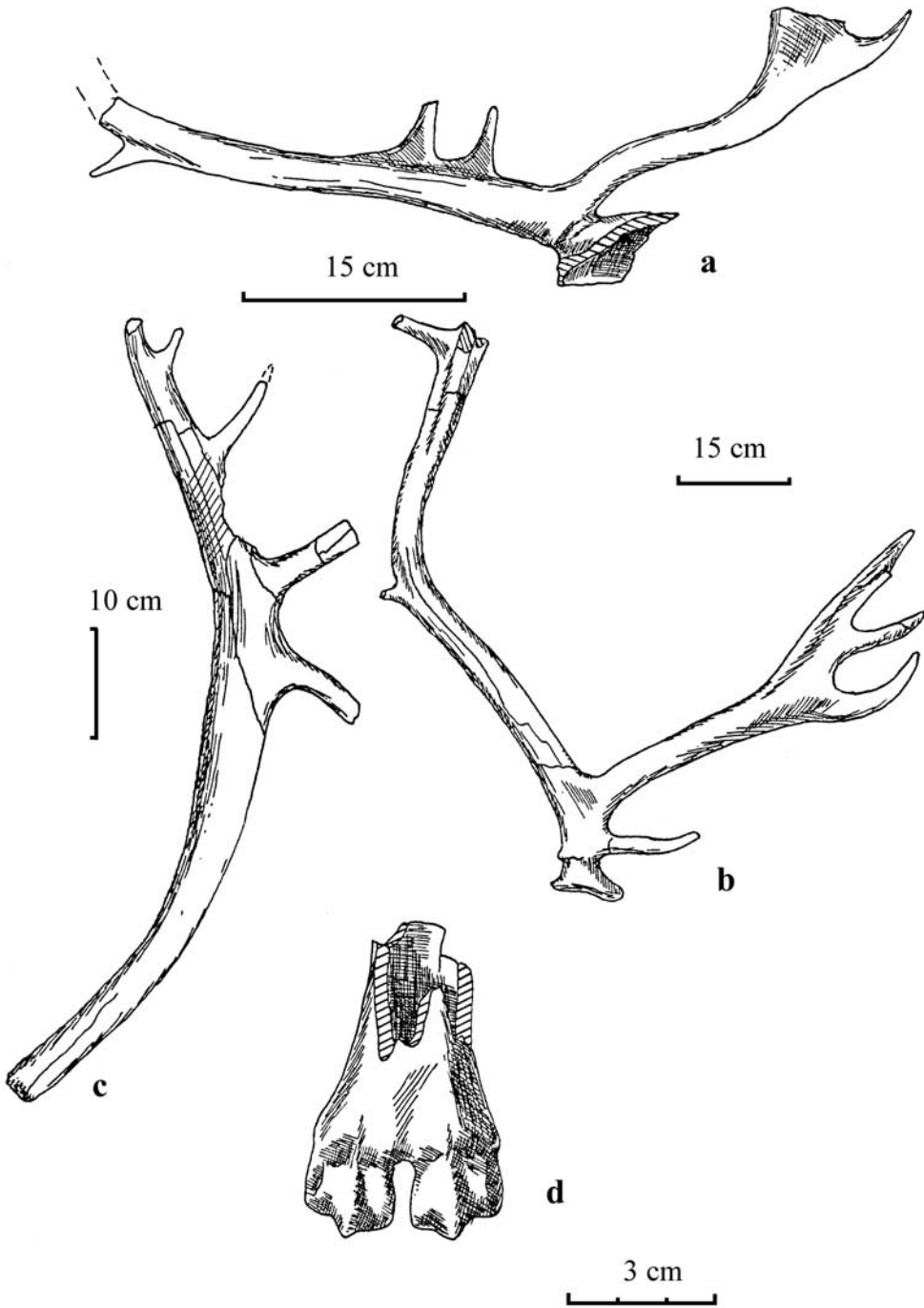


Fig. 4. *Rangifer tarandus*. a and b – fully developed antlers still attached to fragments of skull; c – fragment of antler with many tines; d – distal, broken part of metapodium.



Measurements of reindeer bones from Cosăuți 1 (Table IV) lie within ranges observed for other late Palaeolithic localities from Moldova (DAVID 1980; DAVID and CROITOR 1997), the Ukraine (BELAN 1983), Upper Don area (SABLIN and KUZ'MINA 1992), and North Urals (KUZ'MINA 1971).

All the above data indicate that reindeer remains belong to specimens of various age, ranging from very young specimens (a few weeks) to individuals 10-12 years old. Lack of embryos and just born offsprings explicitly indicates that during fawn and/or just after it (between the end of May to the second half of August) the reindeer did not occur in the vicinity of the Cosăuți 1 site. Such seasonal migrations were also characteristic of other regions of South-Eastern Europe during the Late Pleistocene (DAVID 1980; BELAN 1983; ALEKSEEVA 1990).

Table IV

Measurements of some bones of *Rangifer tarandus* from Cosăuți 1 and Late Pleistocene remains from the Ukraine and North Urals (Russia)

Dimension (mm)	Moldova (Cosăuți 1)			Ukraine (BELAN 1983)			North Urals (KUZ'MINA 1971)		
	n	Range	M	n	Range	M	n	Range	M
	13	58.0-74.3	65.2	6	61.5-68.5	64.6	–	–	–
Length of cheek-tooth row P <sup>2</sup> -M <sup>3</sup>	6	94.0-106.0	97.8	4	98.0-104.5	100.1	–	–	–
Length of premolar row P <sup>2</sup> -P <sup>4</sup>	11	42.0-48.0	45.5	6	45.0-48.0	47.6	–	–	–
Length of molar row M <sup>1</sup> -M <sup>3</sup>	10	52.4-58.0	54.4	7	49.5-56.5	52.8	–	–	–
Length of cheek-tooth row P <sub>2</sub> -M <sub>3</sub>	8	97.0-110.0	103.8	2	108.5; 119.0	–	4	97.5-105.0	101.2
Length of premolar row P <sub>2</sub> -P <sub>4</sub>	15	42.0-52.4	46.3	7	45.0-51.0	47.9	–	–	–
Length of molar row M <sub>1</sub> -M <sub>3</sub>	20	56.0-68.0	61.3	3	64.0-68.0	66.5	–	–	–
Length of M <sup>3</sup>	76	21.0-27.6	24.6	7	23.0-27.0	25.4	–	–	–
Length of diastema	4	82.0-87.0	83.7	5	70.0-78.0	71.2	–	–	–
Height of mandible in diastema	11	14.5-19.0	16.1	6	14.0-18.0	16.6	–	–	–
Height of mandible in front of M <sub>1</sub>	4	30.0-32.0	31.0	1	30.0	–	–	–	–
Thickness of mandible in front of M <sub>1</sub>	6	16.5-20.2	18.2	1	20.5	–	–	–	–
Humerus – breadth of distal end	12	40.0-52.0	45.4	5	44.5-50.5	47.2	27	41.0-51.2	45.1
Radius – length	1	268.0	–	–	–	–	2	236.5; 263.5	–
Radius – breadth of proximal end	72	39.0-50.5	44.4	10	43.0-50.5	49.9	4	44.0-48.7	45.6
Radius – breadth of distal end	53	38.6-48.0	43.0	9	39.5-47.5	42.5	14	39.0-47.0	42.0
Metacarpus – breadth of proximal end	32	29.5-37.2	33.4	–	–	–	17	31.4-37.2	34.3
Metacarpus – breadth of distal end	107	38.0-45.5	41.1	11	34.5-41.0	37.9	14	37.5-44.0	41.0
Tibia – length	1	308.0	–	–	–	–	4	285.0-328.0	306.0
Tibia – breadth of proximal end	6	55.0-60.0	57.7	5	58.0-64.0	61.2	6	53.3-68.0	61.2
Tibia – breadth of distal end	109	31.2-45.3	39.8	10	38.5-43.0	39.8	30	36.3-47.0	40.2
Calcaneus – length	22	87.6-102.8	92.3	9	87.5-98.0	92.7	35	82.5-106.5	95.9
Astragalus – length	136	40.4-53.3	45.2	12	43.5-47.8	44.7	103	40.8-52.8	45.6
Metatarsus – breadth of proximal end	12	27.0-33.0	30.3	4	28.0-32.0	29.4	12	25.7-34.2	30.8
Metatarsus – breadth of distal end	73	38.0-46.0	40.2	3	38.0-44.5	40.3	3	40.5-45.4	42.6
Phalanx I – length	32	46.0-54.5	49.2	34	45.0-55.0	49.45	–	–	–
Phalanx I – breadth of proximal end	32	19.0-24.0	20.8	33	19.5-23.5	20.85	–	–	–
Phalanx II – length	37	33.2-39.5	36.0	37	31.0-42.0	36.2	–	–	–

*Bison priscus* (BOJANUS, 1827)

Steppe wisent (*Bison priscus*) is one of the most numerous large mammal species in Cosăuți 1 (Table I). Most bones (e.g. a fragment of a horn, almost complete scapula, a fragment of mandible with P/2-P/4, astragalus, some phalanxes) belong to adult specimens. Only one calcaneus (without *tuber calcanei*) belongs to a specimen of two years old and one fragment of metacarpus to a calf of few weeks old.

Measurements of some remains are as follows: alveolar length of P/2-P/4 – 59.0 mm; length of M/3 (N=2) – 45.0 and 49.0 mm; width 17.0 and 18.5 mm; width of distal epiphysis of tibia – 70.0 mm; length of astragalus – 78,2 mm; length of phalanx I – 36,3 mm; length of phalanx II (N=4) – 45.0-48.2-52.0 mm; width of proximal part of phalanx II (N=4) – 36.8-37.8-39.8 mm.

In the territory of Moldova remains of *Bison priscus* are common and relatively numerous at the Palaeolithic sites (DAVID 1980).

*Rupicapra rupicapra* (LINNAEUS, 1758)

One fragment of mandible with P/2, P/3, Pd/4, M/1 (Fig. 5) was found in layer IV (Table I). Measurements are as follows: height of mandible in the middle part of diastema – 11.0 mm; in the front of P/2 – 13.2 mm; width of mandible in the middle part of diastema – 6.8 mm; in the front of M/1 – 11.6 mm; length and width of teeth: P/2 (5.0 and 3.0 mm), P/3 (9.8 and 5.0 mm), Pd/4 (18.0 and 7.8 mm), M/1 (15.0 and 7.4 mm).

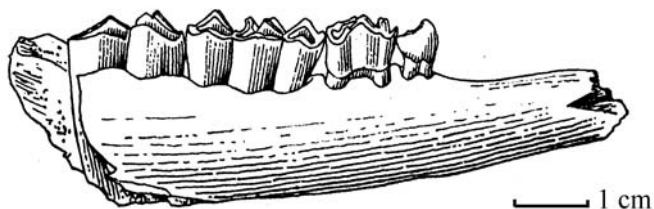


Fig. 5. *Rupicapra rupicapra* – fragment of right mandible from layer IV.

Chamois (*Rupicapra rupicapra*) is described from Late Pleistocene of Moldova for the first time. At present it lives in rocky areas, above the timberline of higher mountain ranges in Europe, Asia Minor, and Caucasus. However, there is some evidence that in Late Pleistocene *Rupicapra rupicapra* also lived in upland and piedmont territories (NADACHOWSKI 1976; P. WOJTAL and G. LIPECKI, *personal communication*). Its appearance in Cosăuți 1 indicates a cold climate and the presence of rocky places in the vicinity of the site. The nearest Late Pleistocene finds of this species are located in neighbouring mountain and piedmont areas of Romania (TERZEA 1979).

## IV. DISCUSSION AND CONCLUSIONS

The palaeontological survey in Cosăuți 1 fortunately yielded both large and small mammal remains (PASCARU 1997b; DAVID and PASCARU 2000). While larger species are useful for reconstruction of hunting strategies of humans, small mammals are important for reconstruction of the past environment. Particular species of rodents, connected with special types of biotopes (e.g. tundra, steppe, forest, rocky areas etc.) are very useful for this purpose. The Cosăuți 1 small mammal as-

semblage is a typical Late Pleistocene community with characteristic co-existence of tundra (e.g. *Dicrostonyx gulelmi*) and steppe species (e.g. *Lagurus lagurus*) with predominance of taiga-tundra species (e.g. *Microtus gregalis* and *Microtus oeconomus*) (NADACHOWSKI 1989). The small mammal assemblage suggests the presence of a steppe-tundra environment with moist habitats and cold and dry climate in the vicinity of the locality.

Many Late Palaeolithic sites in Europe are connected with utilisation of mammal species, such as reindeer or horse. In Moldova, Duruitoarea Veche, another locality dated as about 19 000 BP to 17 000 BP, yielded numerous bone remains (ca. 10 000 specimens) with a distinct predominance of reindeer and horse (DAVID 1999). For instance, some Central European archaeological sites, i.a. Moravany complex (Slovakia), Sagvar (Hungary) or, Grubgraben (Austria) are also predominated by middle-sized herbivores. At Sagvar and Grubgraben reindeer and horse remains predominate (VÖRÖS 1982; LOGAN 1990). In the Moravany complex, such as in Cosăuți 1, the reindeer is a mainly utilized mammal species. However, it must be pointed out that at Moravany Lopata II there were no horse remains (LIPECKI and WOJTAL 1998). All the above mentioned sites were inhabited by groups of Late Palaeolithic hunters. The mammoth remains are very rare at these sites. However, this does not exclude mammoth hunting. For example, at Moravany-Lopata II in a storage pit, mammoth bones were found (LIPECKI and WOJTAL 1998).

The faunal structure and diversity of large mammals in Cosăuți 1 indicate that we are possibly dealing with butchering and killing site of Late Gravettian age. However, this supposition requires further detailed archaeozoological and taphonomic studies.

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