MAMMAL FAUNA FROM THE UPPER PALEOLITHIC SITE OF RAŞCOV-8 (REPUBLIC OF MOLDOVA)

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Abstract. The fossil mammal remains and archaeological context from the multilayered Upper Paleolithic site Raşcov-8 are rendered in the present paper. The Paleolithic stone implements belong to Epigravettian and Epiauregnacian cultures (21,000 – 18,000 years B. P.). The most abundant teeth and bones belong to reindeer - *Rangifer tarandus constantini* and horse - *Equus caballus* ssp. that shows morphological affinities with *E*. cf. *transilvanicus* from Romania. Some scarce remains belong to brown bear - *Ursus arctos*, wolf - *Canis lupus*, and mammoth - *Mammuthus primigenius*. The composition of the mammal assemblage from Raşcov-8 suggests that ancient hunters preferred as prey vulnerable juvenile and senile individuals of large sized mammal species.

Keywords: Late Paleolithic, Epigravettian, Epiaurignacian, reindeer, horse, Republic of Moldova.

Rezumat. Fauna de mamifere din aşezarea paleolitic superioară Raşcov-8 (Republica Moldova). Articolul prezintă resturile de mamifere fosile şi contextul arheologic din aşezarea pluristratigrafică paleolitic superioară Raşcov-8. Artefactele paleolitice din Raşcov-8 aparţin culturilor epigravetiană şi epiaurignaciană (21 000 – 18 000 BP). Rămăşiţele osteologice cele mai numeroase aparţin renului - *Rangifer tarandus constantini* şi calului - *Equus caballus* ssp. care din punct de vedere morfologic este foarte asemănător cu *E*. cf. *transilvanicus* din România. Rămăşiţele ursului brun - *Ursus arctos*, lupului - *Canis lupus* şi mamutului - *Mammuthus primigenius* sunt reprezentate prin piese mai puţin numeroase. Caracteristica asociaţiei complexului de mamifere din Raşcov-8 probează faptul că vânătorii paleolitici vânau în primul rând exemplarele vulnerabile, juvenile sau senile, ale speciilor de talie mare.

Cuvinte cheie: Paleolitic superior, epigravetian, epiaurignacian, ren, cal, Republica Moldova.

INTRODUCTION

The Upper Paleolithic site Raşcov-8 is situated on the southern border of a cluster of multilayered Paleolithic sites from the middle part of the Dniester River. This site is peculiar because it is situated at a certain distance from the river, being placed on the third terrace of the Dniester left side tributary, the Bugornaya.

First surface findings from Raşcov-8 were collected by N. A. Chetraru in 1958. Later, in 1971, G. V.. Grigorieva and I. K. Ivanova carried out a stratigraphical study of the site and reported two culture layers (GRIGORIEVA, 1974; CHETRARU et al., 1986). The regular excavations in Raşcov-8 on the area of 50 square meters are carried out by one of us (S. C.) since 2005. The excavations revealed six culture layers representing the middle part of the Late Paleolithic. According to the underlying paleosoil dated by the interstadial Bryansk (Shtilfrid «B») and typological characteristics of flint artifacts, the cultural layers from Raşcov 8 fall within the time span from 21,000 to 18,000 years B.P.

Beside Paleolithic layers, the uppermost deposits of the site have yielded a Getic burial with cremation and two levels with Cucuteni-Tripolie artifacts. The Aeneolithic osteological complex includes several skeletal remains of one individual of cattle (juvenile), one first phalanx of red deer and four skeletal fragments of horse.

The first Epigravettian cultural level is lying on Pleistocene clays formed on the border of slack water (A. L. Chepalyga, personal communication to S. C.). The second layer is characterised by similar cultural identity. This conclusion is supported by the backed bladelets and micropoints with vertical retouch found in both layers. The sample of artifacts (Figs. 1:1-18) includes also flint scrapers on flake, burins on retouched truncation and transverse, points-borers, handles made of antler for tool fixation, and a part of spearhead made of mammoth ivory. The first layer yielded a number of osteological remains belonging to two individuals of reindeer (Table 1), one of which is mature and another is juvenile. Very few remains of wild horse (fragments of metapodials) belong to a single individual.

Table 1. Number of bone remains and individuals reported from the Paleolithic layers of Raşcov-8; bn, number of bones; ind, number of individuals.
Tabel 1. Numărul de oase şi de indivizi descoperiţi în nivelurile paleolitice de la Râşcov-8; bn, număr de oase; ind, număr de indivizi.

Species	layer I		layer II		layer III		layer IIIa		layer IV		layer V	
	bn.	ind.	bn.	ind.	bn.	ind.	bn.	ind.	bn.	ind.	bn.	ind.
Rangifer tarandus	16	2	39	2	70	3	46	3	6	1	1	1
Cervus elaphus					1	1	2	1			1	1
Equus caballus	4	1	10	1	57	3	6	1				
Ursus arctos							3	1				
Canis lupus											1	1
Mammuthus primigenius					11	1					3	1

The third culture layer rests on thick deposits of gravel and boulders and consists of two levels. The upper level is very rich in findings that were found undisturbed inside the layer. The lower level covers gravel aggregations and is partially preserved. The third culture layer is particularly important, since it proves the presence of Epiaurignacian in

the stratigraphical column under two Epigravettian layers. The findings from this layer are numerous, mostly represented by osteological remains. Among flint-stone artifacts, the core-shaped scrapers (tip rabot), carinate scrapers on robust flakes, the scraper on «avivage» of «á museau» type are particularly interesting (Figs. 1: 19-33).

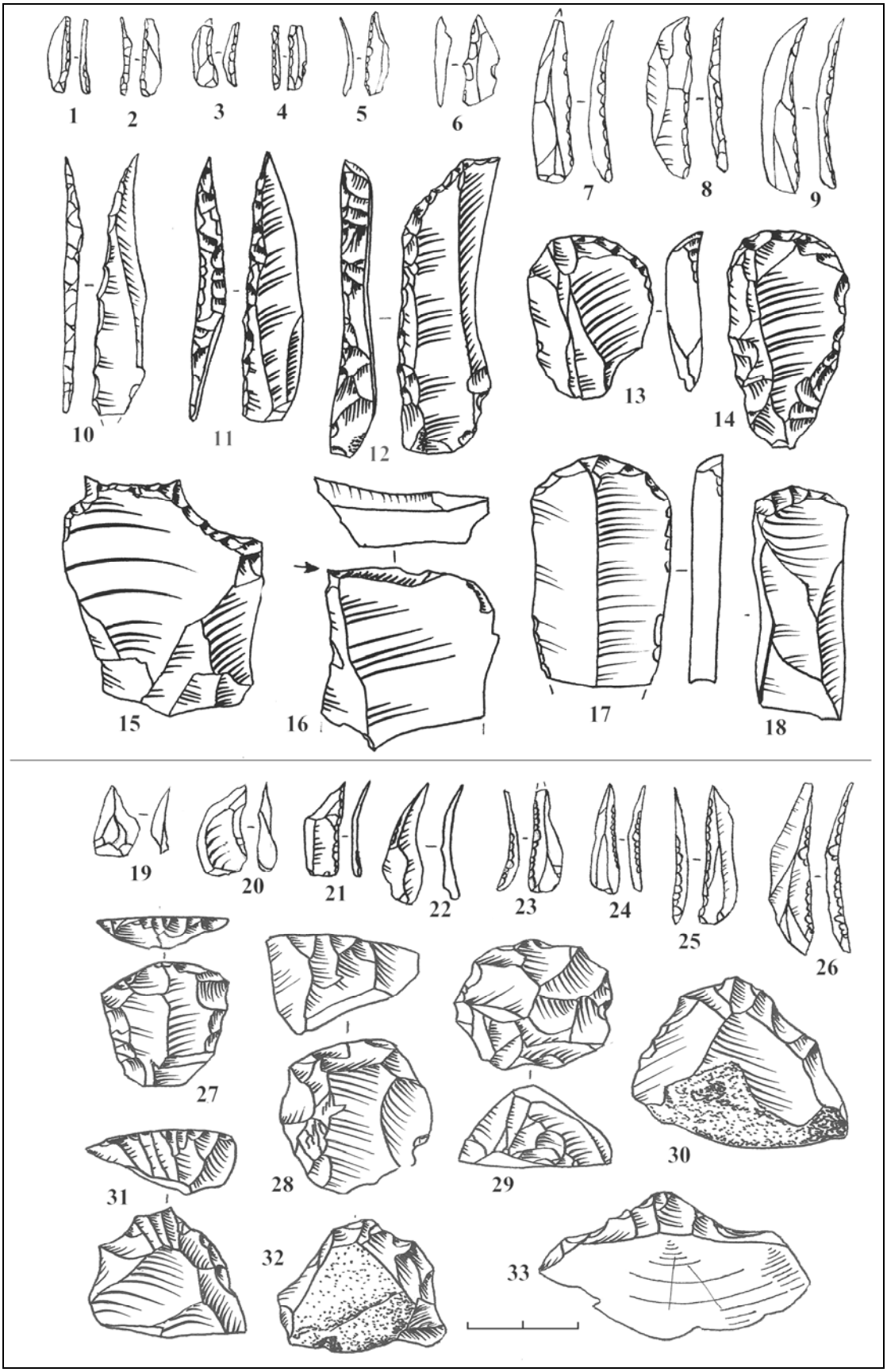

Figure 1. Stone implements from the Upper Paleolithic site Raşcov-8.
Figura 1. Unelte din piatră din situl paleolitic superior Râşcov-8.

The core-scrapers are naturally connected with Dufour bladelets and flakes with curved profile, two of which are close to the Sagaidak-Muralovka type. The bladelets on retouched truncation are also quite expressive. The character of retouch certainly is not of Gravettian type, since the section face is not extended over all thickness of billet. The same type of retouch is seen on the majority of bladelets missing the sharp end. Only three fragments of plates are marked by vertical truncating retouching. Among other tools, we note the presence of dihedral burins and burins on retouched truncation. This layer has yielded the richest osteological material that represents six individuals of reindeer (one of which is juvenile and one from level 3A is senile), four individuals of wild horse (one of which is juvenile and two individuals are senile; one senile individual comes from the level 3A), two fragments of left lower hemimandible of brown bear, two bone fragments of red deer, and several fragments of postcranial bones and one molar of juvenile mammoth.

The fourth culture bed is situated under the deposit of gravel and boulders. This layer is sharp outlined stratigraphically with real thickness up to 10 cm. All findings were unearthed from the loess loam with smallest inclusions of charcoal. The tool collection from this layer includes the large number of flint flakes and small chips, as well as burins on retouched truncation, but the piece of acicular micropoint on retouched truncation represents a special interest, resembling a needle-shaped microtip from the Ciutuleşti site. The osteological material from the fourth layer is poor and represented by some isolated teeth, talus, and a shed antler of reindeer.

The lowermost fifth and sixth cultural layers are deposited at the base of loess-like loams over fossil soils underlain by alluvial deposits. The traces of prehistoric man presence are very scant and mostly represented by mammoth bones, charcoal and few flint-stone artifacts. Beside mammoth skeletal remains, the fifth layer has yielded an acetabulum of wolf, a piece of antler of reindeer and a distal part of antler that belongs to red deer.

The lower fossiliferous level underlying cultural strata has yielded several postcranial bones of wild horse. The state of preservation of material from this level is different: bones are partially damaged, but mostly complete and are not crushed as the osteological material from the cultural layers; radius and ulna are articulated. The fossiliferous stratum under flagstone yielded a fragment of scapula of bison, three deeply worn lower incisors of a wild horse.

The fossils from Paleolithic layers are badly damaged and have a poor state of preservation, therefore in many cases the biometrical description of specimens is impossible. Here we present a description of the best represented species from Raşcov 8, the wild horse and the reindeer.

SYSTEMATIC DESCRIPTION

Wild horse – *Equus caballus* ssp.

Table 2. Measurements of horse (*Equus caballus* ssp.) remains from Raşcov-8.
DAP, anteroposterior diameter; DLM, lateromedial diameter.
Tabel 2. Măsurătorile fosilelor de cal ((*Equus caballus* ssp.) de la Râşcov-8.
DAP, diametrul anteroposterior; DLM, diametrul lateromedial.

Measurements	layer II	layer III
Scapula		
Maximal length	330.+	
Maximal breadth	170.0	
Narrowest DAP	75.0	
Distal DAP	97.8	
DAP of articulation	61.3	
DLM of articulation	52.0	
Tibia		
Distal DLM	80.0	
Distal DAP	50.0	
Radius		
Distal DLM		76.5
Distal DAP		44.0
Phalanx II		
Medial length		49.4
Maximal length		51.8
Proximal DLM		62.7
Proximal DAP		36.4
DLM of diaphysis		52.4
Distal DLM		56.5
Distal DAP		29.2
Third lower molar (M_3)		
Crown length		33.0, 35.3
Crown breadth		15.5, 16.5
Second lower premolar (P_2)		
Crown length		35.4
Crown breadth		17.0

Description. The wild horse from Raşcov-8 is characterized by rather large cheek teeth (Table 2), as Upper Pleistocene *E. latipes* from Eastern Europe and larger than in modern *E. przewalskii* (Fig. 2A). One can note that the second lower premolar from Raşcov-8 corresponds to the smaller specimens from Brânzeni-1 and is quite close to the dimensions of P_2 of *E.* cf. *transilvanicus* from Romania.

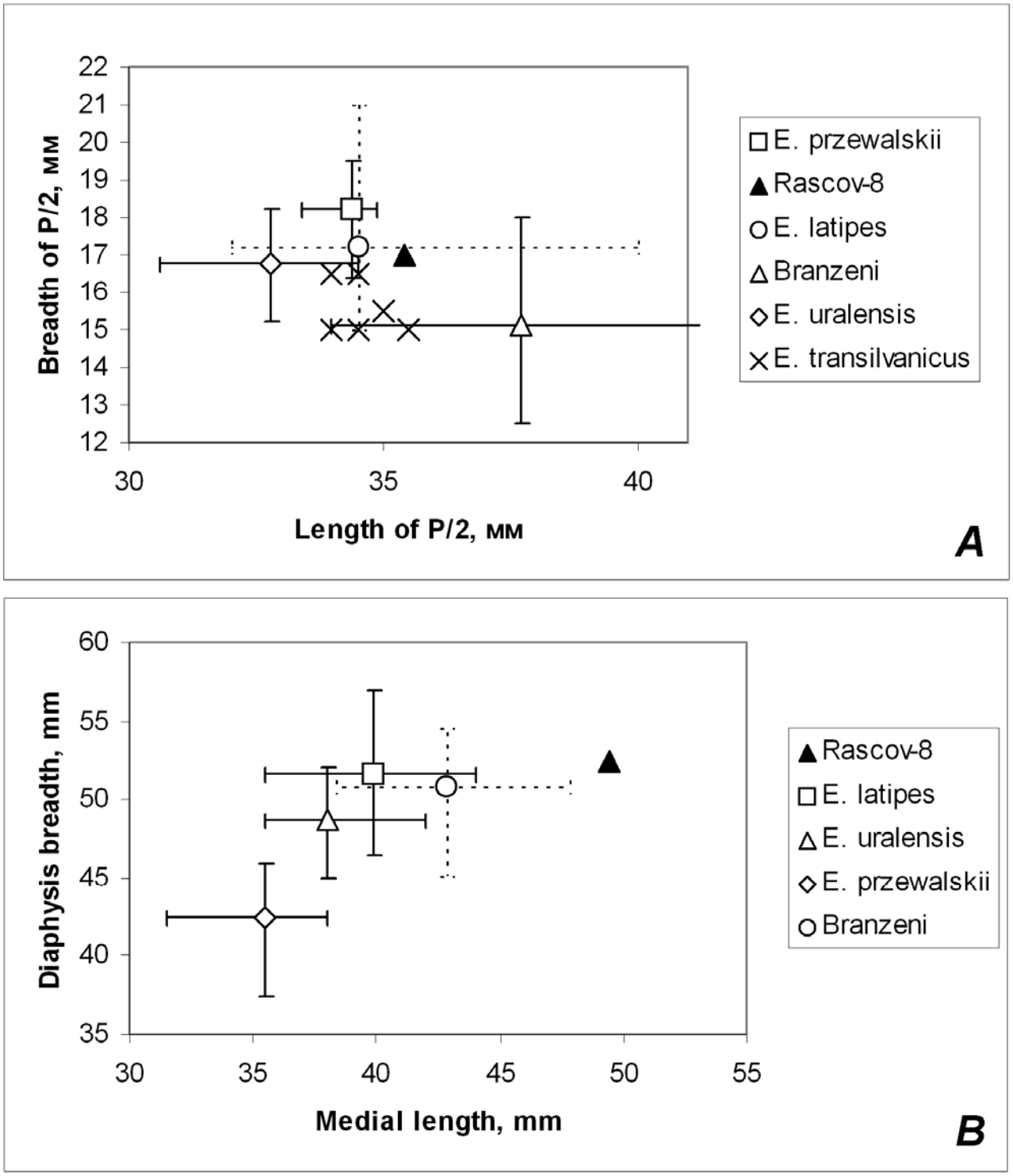

Figure 2. Measurements of remains of horse *Equus caballus* ssp. from Raşcov-8 compared to the Upper Pleistocene and modern wild horses of Eurasia. A - the lower second premolar (P_2); B - the second phalanx of anterior limb. Data on *E. latipes*, *E. uralensis* and *E. przewalskii* are adapted from KUZMINA (1977); data on *E.* cf. *transilvanicus* are adapted from SAMSON (1975); data on *E. latipes* from Brânzeni-1 are adapted from DAVID (1974).

Figura 2. Măsurătorile fosilelor de cal *Equus caballus* ssp. De la Râşcov-8 comparate cu cele ale cailor din Pleistocenul superior şi cu ale cailor moderni sălbatici din Eurasia. A - al doilea premolar inferior (P_2); B - a doua falangă a membrului anterior. Datele privind *E. latipes*, *E. uralensis* and *E. przewalskii* au fost prelucrate după KUZMINA (1977); datele despre *E.* cf. *transilvanicus* au fost prelucrate după SAMSON (1975); datele despre *E. latipes* de la Brânzeni-1 au fost prelucrate după DAVID (1974).

The horse from Raşcov-8 is distinguished from the oriental Upper Pleistocene and Holocene horses by peculiar proportions of the second phalanx, which is rather long and slender. The second phalanx from Raşcov-8 is significantly longer than in Late Pleistocene *E. latipes* from Eastern Europe (including the sample from Brânzeni-1, Moldova) and *E. uralensis* from the Ural Area. The second phalanx from Raşcov 8 is also longer than in modern *E. przewalskii* (Fig. 2B). The maximal length of the second anterior phalanx from Raşcov-8 (51.7 mm) falls within the range of length variation of *Equus* cf. *transilvanicus* from Romania (50.5-55.0 mm, four specimens; data from SAMSON, 1975). The lateromedial diameter of the specimen from Raşcov-8 (52.4 mm) just slightly exceeds the breadth of diaphysis of *Equus* cf. *transilvanicus* (46.0-52.0 mm; *ibidem*).

Comments. The large number of species of Upper Pleistocene horses in Northern Eurasia (GROMOVA, 1949; SAMSON, 1975; KUZMINA, 1997) creates a certain taxonomical and systematical confusion. Possibly, the majority of Upper Pleistocene Eurasian species could be regarded as subspecies of *Equus caballus*. Since this important and complicate question is beyond the scope of this study, we report the equine form from Raşcov-8 as *E. caballus* ssp. The remarkable length of the second phalanx approaches the horse from Raşcov-8 to "*E.* cf. *transilvanicus*" from Romania. Obviously, the scanty material does not give firm evidences for definite conclusions on morphological affinity and systematical position of the Paleolithic horse from Raşcov-8. It is noteworthy that *E. latipes* from Brânzeni-1 is characterized by somewhat longer and slender second phalanxes if compared to *E. latipes* from Russia (nonetheless, the measurements of the sample from Brânzeni-1 and Russia broadly overlap; Fig. 2B), and possibly this character shows a transitional condition between Russian and Romanian Upper Pleistocene horses.

Reindeer – *Rangifer tarandus constantini* FLEROV

Description. A part of the fossils of reindeer from Raşcov-8 are described in an earlier communication (CROITOR, 2010a). Here we propose a detailed morphological description of the shed antler discovered in the fourth layer (Fig. 3).

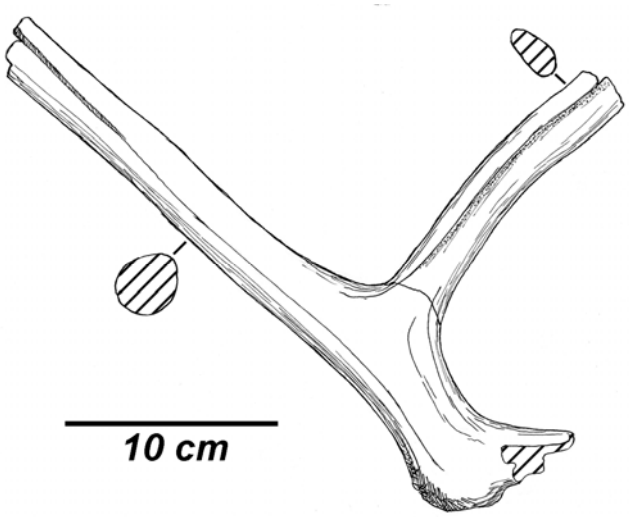

Figure 3. The left shed antler of reindeer *Rangifer tarandus constantini* from the layer IV of the Upper Paleolithic site Raşcov-8.
Figura 3. Corn stâng de ren *Rangifer tarandus constantini* din nivelul IV al sitului paleolitic superior Râşcov-8.

The specimen represents a proximal part of a left shed antler with the missing distal part of antler beam, the completely destroyed basal tine and the broken distal part of second tine. The antler surface is smooth. The outline of antler base is circular (43.2×39.3 mm). The antler burr is destroyed. The basal tine is situated very close to the burr. The second tine is situated at 117.4 mm from the antler base. The distance between the basal tine and the second tine is comparatively small as in all Eurasian reindeer (GEIST, 1998). This tine is compressed from the side; therefore the shape of its cross-section is oval. The diameters amount to 34.4×24.1 mm at tine's base and 32.6×22.0 mm at 14 cm from the base where the tine is broken. The angle of second ramification is almost right. The beam is almost cylinder-shaped and just slightly compressed from the sides. Its diameters above the second tine amount to 38.4×33.8 mm. The antler could belong to a female or to a young male. From the eco-morphological point of view, it represents the "*cylindricornis*" or tundra type of reindeer.

Measurements of postcranial bones from Raşcov-8 (Table 3, Fig. 4) fall within the range of variation of the reindeer from Cosăuţi and exceed the variation range of the reindeer from Brânzeni-1, as one can note in the case of distal epiphysis of metatarsus (Fig. 4C). Since the sexual dimorphism in size of postcranial skeleton in fossil reindeer is clearly visible, we could reveal the sexual appurtenance of the reindeer individuals: the layer II contains remains of a juvenile female and a mature male; the layer III contains remains of a juvenile male, a mature male, and a mature female; the remains of three mature females, one of which is senile, were unearthed from the layer IIIa; and the remains discovered in the layer IV belong to a mature male (the shed antler is not considered).

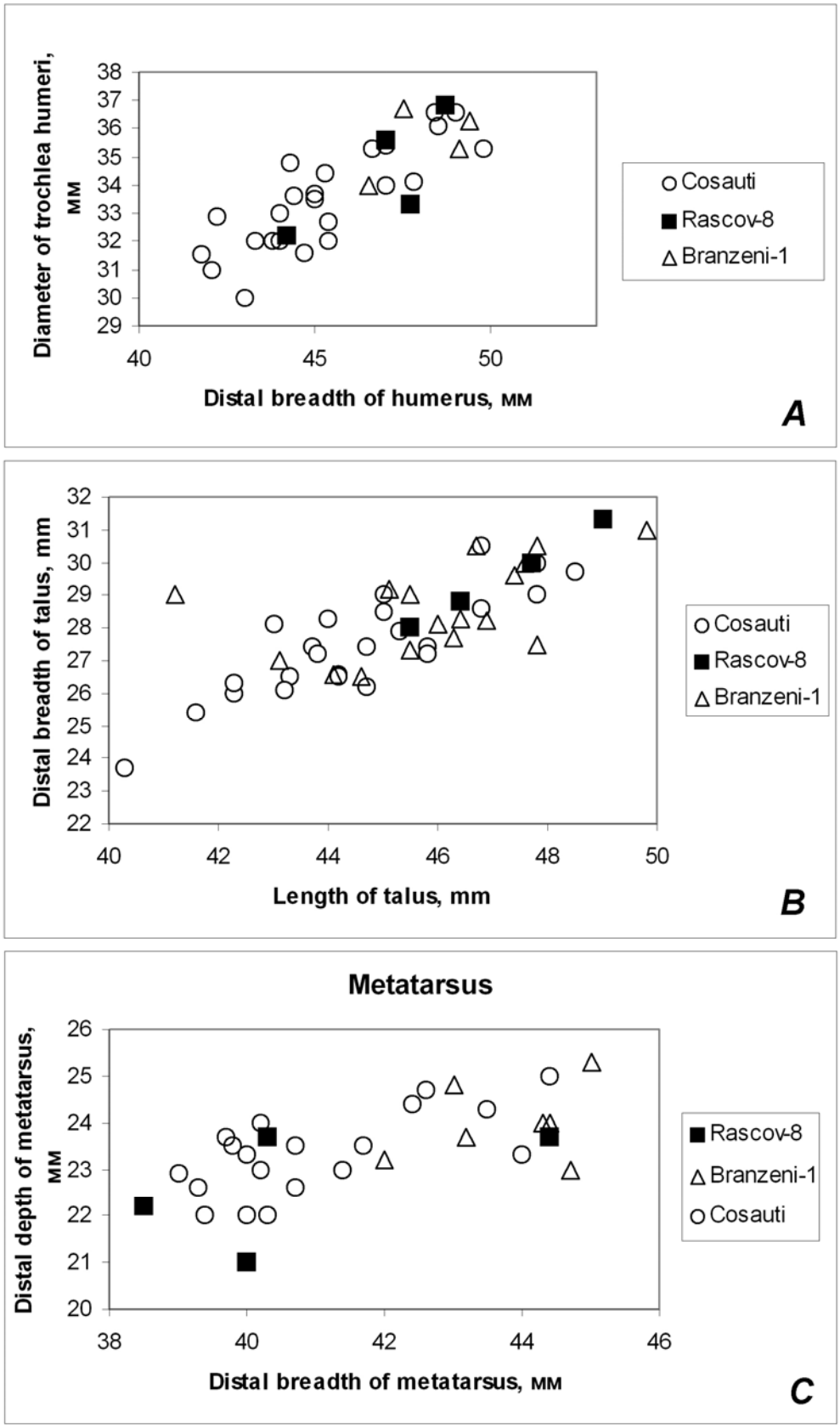

Figure 4. Measurements of remains of reindeer from Raşcov-8 compared to the samples of Upper Pleistocene reindeer from Cosăuţi and Brânzeni-1 (data adapted from CROITOR, 2010b).
A - the distal epiphysis of humerus; B - the talus; C - the distal epiphysis of metatarsus.
Figura 4. Măsurătorile fosilelor de ren de la Râşcov-8 comparate cu fosilele de ren din Pleistocenul superior de la Cosăuţi şi Brânzeni-1 (date prelucrate după CROITOR, 2010b).
A - epifiza distală a humerusului; B - talusul; C - epifiza distală a metatarsului.

Table 3. Measurements of reindeer (*Rangifer tarandus constantini*) remains from Raşcov-8.
Tabel 3. Măsurătorile fosilelor de ren (*Rangifer tarandus constantini*) de la Râşcov-8.

Measurements	layer II	layer III	layer IIIa	layer IV
Humerus				
Distal DLM	48.7	47.7, 47.0	44.2	
Distal DAP	53.6	51.0, 53.4	42.0	
D of trochlea humeri	36.8	33.3, 35.6	32.2	
Radius				
Proximal DLM	42.9	47.6		
Proximal DAP	25.0	26.4		
Distal DLM	46.5	40.0		
Distal DAP	33.1	26.9		
Metacarpus				
Distal DLM		42.5		
Tibia				
Distal DLM	39.2	38.7, 38.2		
Distal DAP	30.8	32.5, 33.1		
Talus				
Maximal length	45.5	46.4, 49.0		47.7
Distal DLM	28.0	28.8, 31.3		30.0
Distal DAP	28.5	24.2, 26.2		25.2
Metatarsus				
Distal DLM	44.4	38.5	40.3, 40.0	
Distal DAP	23.7	22.2	23.7, 21.0	

Comments. The new osteological material confirmed the conclusion that the reindeer from Raşcov-8 is similar to the tundra-steppe form *Rangifer tarandus constantini* reported at Cosăuţi (CROITOR, 2010a). This subspecies is characterized by very large cheek teeth and lower incisors, relatively narrow facial part of skull, slender antlers missing large palmations, and short limbs with robust epiphyses (FLEROV, 1934; ERMOLOVA, 1978). *R. tarandus constantini* was an open landscape gregarious grazer superficially resembling modern tundra reindeer. The subspecies evolved in the conditions of a dry and continental climate of Eastern Siberia and during the last Glaciation extended its area of distribution to Western Europe (CROITOR, 2010b). The remains of *R. tarandus constantini* from Raşcov-8 represent the earliest record of this subspecies on the territory of Moldova. *R. tarandus constantini* arrived on the territory of modern Moldova about 19,000–20,000 years ago and replaced *R. tarandus* cf. *guettardi* characterized by comparatively smaller cheek teeth (CROITOR, 2010a).

REMARKS ON HUNTING STRATEGY

Apparently, the Raşcov-8 settlement had a seasonal character. The skull fragments of juvenile and female individuals of reindeer with antler basal part attached found in the layers III and IIIa suggest that the animals were hunted during winter or spring seasons. Since the reindeer from Cosăuţi and Raşcov-8 was a gregarious tundra-steppe form, their annual biological cycle included also the seasonal migrations. One can assume that the herds of reindeer migrated to the North during the summer season and remained in the Middle Dniester Area only for the winter season. Therefore, the shed antler from the layer IV, apparently, belongs to a young male, since adult males shed their antlers soon after mating season (FLEROV, 1952; SOKOLOV, 1959).

The sex and age of reindeer individuals from Raşcov-8 suggest that ancient hunters were rather unselective: the sample contains both sexes of various individual ages. Possibly, a slight selection focused upon large adult males may be suggested, since males in the sample from Raşcov-8 are more frequent than in natural populations. The male/female ratio of reindeer from Raşcov-8 is similar to that found in Duruitoarea Veche (CROITOR, 2010b). Nonetheless, the presence of a senile female and juveniles define still a rather opportunistic character of hunting on reindeer.

The demographic situation in larger mammals from Raşcov-8 is different. Three of six recorded individuals of horse are senile, and one individual is juvenile. Apparently, the attention of hunters was focused upon weak and defenseless individuals. The senile individuals are most vulnerable in this sense, because juveniles are protected by their mothers. The remains of a juvenile mammoth are also very suggestive of strong prey selection in favour of the most vulnerable individuals of larger mammals. As a conclusion, one can say that the prey selection is stronger with respect to larger mammals, while smaller prey is hunted more or less opportunistically. A similar pattern of prey selection is reported for pack hunting predators, such as the African wild dog *Lycaon pictus* (PALMQUIST et al., 1996). Such a specific prey selection may suggest that inhabitants of Raşcov-8 settlement were exposed to rather limited human resources that constrained them to hunt upon vulnerable juvenile and senile individuals in larger prey species.

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