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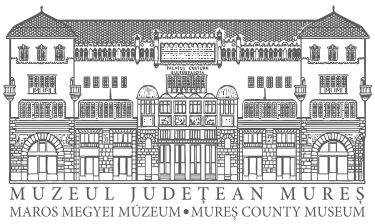

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CONTENTS

NEOLITHIC ARCHAEOZOOLOGY AT TÂRGU MUREŞ

Imola KELEMEN*

The small number of animal remains (60 fragments) discovered at the Neolithic site of Târgu Mureş have a kitchen midden aspect and except for one pig vertebra all come from wild and domestic individuals of Bos sp. (cattle and aurochs). The material outlines a population with a balanced maintenance based on both hunting and animal husbandry, possibly in the midst of domestication.

Keywords: archaeozoology, animal remains, Neolithic, Criş culture, aurochs
Cuvinte cheie: arheozoologie, resturi animaliere, neolitic, cultura Criş, bour

The animal bones identified at the Neolithic site in the courtyard of the former Petru Maior University in Târgu Mureş have all come from a single feature interpreted as a natural ditch. 60 animal remains were collected, all of them being in a strongly weathered and fragmented state. With only one exception, an atlas belonging to a pig (*Sus scrofa*), all were identified as from the *Bos* genus, either the *taurus* (domestic cattle) or the *primigenius* (aurochs) species. Separating the two of them on the anatomical level is very difficult in general, and particularly in this period when domesticating is in its full progress. In some cases we were able to differentiate them, the rest on the other hand were handled in the common group of *Bos sp.* The animal remains have the aspect of kitchen middens: several cutmarks were visible on one of them and a cattle's *humerus* was clearly broken up for the marrow in it. None of the bones have visibly gone through boiling or burning processes.

Bos taurus/primigenius (cattle and aurochs). Separating the bones of aurochs from those of the domesticated individuals is a difficult task in all periods, but especially in materials from the Neolithic, since this is exactly the time of the cattle's domestication. The two species' anatomical characteristics and in particular the morphology of their bones have not yet changed enough to classify them as *taurus* or *primigenius*.[1] Domesticated males can have the same proportions as wild females, or adult domestic individuals the same as not fully grown wild ones. To avoid any confusion, those remains that could not have been classified in neither of the species (see metrical data in Table 3) would be managed in the common group *Bos sp*.

Among the cattle, a minimal number of five individuals have been identified: an infant, a juvenile, two subadults and an adult. On the other hand, only one adult aurochs has been denoted in the lot. On one cattle bone, a *tibia*, some cut marks were visible, and another, a *humerus*, has clearly been broken for the marrow in it. These, along with others are obvious remains of food.

Sus scrofa (pig). Only one bone remain has been identified as coming from this species, an incomplete atlas. In determining wild boar bones from the Neolithic, we find ourselves in front of

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[1] The separation of aurochs and domestic cattle bones has been done with the help of: Kobryń–Lasota-Moskalewska 1989; Bökönyi 1972, Bökönyi et al. 1964, Červený 1990.

	NISP	%	%	MNI	%	%
Bos taurus (domestic cattle)	12	20	20.3	5	71.4	83.3
Bos primigenius (aurochs)	3	5	5.1	1	14.3	16.7
Bos sp. (cattle)	44	73.3	74.6	-	-	-
Bos taurus/primigenius (domestic cattle/aurochs)	59	98.3	100	6	85.7	100
Sus scrofa (pig)	1	1.7		1	14.3	
Total	60	100		7	100	

Table 1. The distribution of the animal bones at Târgu-Mureș.
Abbreviations: NISP = Number of Identified Specimens; MNI = the Minimal Number of Individuals.

	Bos taurus (domestic cattle)	*Bos primigenius* (aurochs)	*Bos sp.* (cattle/aurochs)	*Sus scrofa ferus* (wild boar)
Mandibula			4	
Dens			11	
Atlas				1
Scapula			3	
Humerus	2	1	2	
Radius	1		1	
Ulna	1			
Pelvis	2		1	
Tibia	2		4	
Calcaneus	3	1		
Ossa tarsi/carpi			1	
Metacarpus			6	
Metapodium			1	
Phalanx I.		1	1	
Phalanx II.	1			
Vertebra			1	
Long bone fragments			4	
Flat bone fragments			1	
Unidentified			3	
TOTAL	12	3	44	1

Table 2. The anatomical distribution of the animal bones at Târgu Mureș.

the same problem that cattle bones have caused. Separating the wild and domestic individuals of this species may seem easier today, especially if we can see and compare their fur colour, bristle length and body mass. But in the Neolithic the two subspecies did not have such different looks and on the level of bone morphology the two are very much alike. Measurements of whole skulls would help us in some way, but in archaeological excavations, usually only fragments of skulls are discovered, rarely complete ones.[2] Accordingly, the *Sus scrofa* atlas recovered from Târgu Mureș does not provide accurate information about the subspecies of wild boar. The measurements taken of it are listed in Table 3.

In conclusion, the relatively small archaeozoological material from Târgu Mureș suggests a Neolithic population for whom hunting seems to be an important occupation. In this moment, they may also very well have been in the middle of cattle and pig domestication process. This small batch of animal remains does certainly not reflect the full spectrum of animal husbandry at this site, but it may offer a taste of what the economy was built on. Accordingly, it projects a community relying mostly on middle and big sized mammals that provided food and other primary and secondary products for them. They most probably kept a batch of domestic or half-domestic animals that they would herd afield, and which would thus still mix with wild individuals. The members of this community obviously practiced hunting too, hunting and husbandry assuring them a balanced maintenance.

[2] Albarella et al. 2009, 104.

Atlas	**GL**	**LAd**	**GLF**	**BFcr**	**BFcd**
Sus scrofa	40,6	19,5	37,9	53,8	45,4
Humerus	**SD**	**Bd**	**BT**		
Bos primigenius		≈101			
Bos taurus	46,2				
Bos taurus		90,8	80,3		
Radius	**Bp**	**BFp**			
Bos taurus	86,2	77,8			
Tibia	**Bd**	**BFd**			
Bos taurus	≈74	52,4			
Ph. I.	**GL**	**Bp**	**SD**	**Bd**	
Bos primigenius	≈82,2	≈44,3	37,6	40,7	
Ph. II.	**GL**	**Bp**	**SD**	**Bd**	
Bos taurus	49	40,1	32,5	33,3	

Table 3. The metrical data of measurable *Sus scrofa* (pig), *Bos taurus* (cattle) and *Bos primigenius* (aurochs) bones (in mm) at Târgu-Mureș.[3]

The Criș culture is relatively well researched from the point of view of archaeozoology, several materials have been analysed from all over the country, especially from Banat, Oltenia[4] and Transylvania.[5] The animal bone discoveries of a few sites in Muntenia[6] and Moldova have also been studied.[7]

Most of the archaeozoological analysis of the animal bones coming from sites in Transylvania belonging to the Criș culture in the Neolithic are collected in a well structured volume.[8] In it, twelve sites are presented[9] from which the nearest to Târgu Mureș are Iernut (Mureș County), Gura Baciului and Livada (Cluj County). At Iernut and Livada the materials – much like in our case – were not very considerable in number: there were only 76 pieces analyzed at Iernut and 110 at Livada. The site Gura Baciului, on the other hand served 522 animal bone fragments for study.

At Livada, remains of hunted animals occur, too, but the majority of the bones still come from domestic mammals. Among these, cattle are the most represented, with sheep/goats far behind them and pigs on the third place. In the group of wild animals, deer bones are the most numerous, but two aurochs individuals appear, too, both of them being adults over 4 years old.

At Iernut, the situation is very similar, with mostly domestic mammals' remains and a small percent of wild animals. Among the domestic ones cattle hold the first position again, but in this case (just like at Târgu Mureș) pigs follow. The third place is taken by sheep/goats and the fourth by dogs. The only wild mammal identified at the site is an *Equus,* considered as wild horse. Other wild species were determined also, e.g. moles, gophers, mallards or mollusks.

[3] Measurements taken after Driesch 1976.

[4] Bolomey 1973; 1976; 1980; 1986; Trâncă-El Susi 1986.

[5] See Bindea 2008 and footnote 9.

[6] Frînculeasa et al. 2015.

[7] Necrasov–Știrbu 1978; 1980.

[8] Bindea 2008.

[9] Gura Baciului (HU: Bácsi-torok), near Cluj Napoca, Cluj county; Leț (HU: Lécfalva), Covasna county; Zăuan (HU: Szilágyzovány), Sălaj county; Ocna Sibiului (HU: Vízakna), Sibiu county; Tășnad (HU: Tasnád), Satu Mare county; Tărtăria (HU: Tatárlaka), Alba county; Livada (HU: Dengeleg), Cluj county; Turia (HU: Torja), Covasna county; Șeușa (HU: Sóspatak), Alba county; Lesiana Cave, near Șuncuiuș, Bihor county; Iernut (HU: Radnót), Mureș county; Suplacu de Barcău (HU: Berettyószéplak), Bihor county.

The majority (91.55 %) of the remains at Gura Baciului belong to domestic animals in the following order: cattle (51.44 %), sheep/goats (39.37 %) and pigs (0.72 %). Among the wild ones (8.45 %) there is a large variety of species, the most fragments belonging to red and roe deer. Aurochs occupy only the third place, along with wild boar, beaver and European brown hare, all of them showing a single bone fragment. Interestingly, bird bones occur, too, most of them coming from chickens, but there is also woodcock, jackdaw, crane and goose.

Taking into consideration the small number of animal bone remains found at Târgu Mureş, no precise conclusions about the economy or the animal breeding of the community can be drawn. Still, the species identified at the site represent the most common ones of the Neolithic, when the domestication process occurs in the Carpathian Basin. In south-west Asia, when the first domesticated animals appear, small ruminants (sheep and goats) are preferred the most, long before cattle or pigs. But when the process reaches the Carpathian Basin, the communities are not always able to satisfy all their needs in alimentation and at the same time, increase the animal supply only by imported, ready domesticated individuals, so they are forced to domesticate the wild species that existed in their own environment, in this case aurochs and wild boars. Soon, the tamed version of these species, cattle and domestic pigs, take over the primal positions of the small ruminants.[10] The animal bone material presently analysed, however poor, may reflect this very situation. On the other hand, though we were able to positively identify only a few bone fragments belonging to aurochs, the individual's age (adult) tells us exactly a fragment of the domestication story. Accordingly, those who want to tame an animal, take the young individuals, which are exclusively the ones that can be domesticated, a process during which they are forced to bring down the adults that protect the young.[11]

At the same time, the age groups of the domestic cattle reflect a type of animal breeding that is not characteristic to the beginning of domestication anymore, when the animals were merely kept for their meat. The detection of subadult and adult individuals in the archaeozoological material tells us that the communities are beginning to discover the other uses of this animal besides alimentation, such as providing milk or their utility in fieldworks and transportation.

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ABBREVIATIONS

AARGNews	Aerial Archaeology Research Group Newsletter
Acta	Acta. Muzeul Naţional Secuiesc, Sfântu Gheorghe
ActaArchHung	Acta Archaeologica Academiae Scientiarum Hungaricae, Budapest
ActaMB	Brukenthal. Acta Musei, Sibiu/Hermannstadt
ActaMN	Acta Musei Napocensis, Cluj-Napoca
ActaMoldMer	Acta Moldaviae Meridionalis. Anuarul Muzeului Judeţean Vaslui
ActaMP	Acta Musei Porolissensis, Zalău
ActaMT	Acta Materialia Transylvanica. Technical Sciences Department of the Transylvanian Museum Society, Cluj-Napoca/Kolozsvár
ActaPraehistA	Acta Praehistorica et Archaeologica
ActaSic	Acta Siculica, Sf. Gheorghe/Sepsiszentgyörgy
ActaTS	Acta Terrae Septemcastrensis, Sibiu
AISC	Anuarul Institutului de Studii Clasice Cluj
AJA	American Journal of Archaeology
Aluta	Aluta. Studii şi cercetări
AmJPhysAnthropol	American Journal of Physical Anthropology
AnatRec	Anatomical Record. American Association of Anatomists
Angustia	Angustia. Muzeul Carpaţilor Răsăriteni, Sfântu Gheorghe
AnMuzOlt	Anuarul Muzeului Olteniei
AnnForRes	Annals of Forest Research
AnnHN	Annales Historico-Naturales Musei Nationalis Hungarici, Budapest
ANsachs	Archäologie in Niedersachsen
AnthrK	Anthropológiai Közlemények, Budapest
Antiquity	Antiquity. A Quarterly Review of Archaeology
Apulum	Apulum. Acta Musei Apulensis, Alba Iulia
ArchAust	Archaeologia Austriaca
ArchBulg	Archaeologia Bulgarica, Sofia
ArchÉrt	Archaeologiai Értesítő, Budapest
ArchHist	Archaeologia Historica, Brno
ArchHung	Archaeologia Hungarica, Budapest
ArchKorr	Archäologisches Korrespondenzblatt, Römisch-Germanischen Zentralmuseum Mainz
ArchPol	Archaeologia Polona,
Areopolisz	Areopolisz. Történelmi és társadalomtudományi tanulmányok, Székelyudvarhely
Argesis	Argesis. Studii şi comunicări, Piteşti
ASz	Agrártörténeti Szemle
AusgrFuWestf	Ausgrabungen und Funde in Westfalen-Lippe

AVes	Arheološki vestnik, Ljubljana
BÁMÉ	A Béri Balogh Ádám Múzeum Évkönyve, Szekszárd
Banatica	Banatica, Muzeul Banatului Montan, Reşiţa
BAR (I.S./B.S.)	British Archaeological Reports, International Series / British Series, Oxford
BerRGK	Bericht der Römisch-Germanischen Kommission
BMI	Buletinul Monumentelor Istorice, Bucureşti
BMJT (S.A.)	Buletinul Muzeului Judeţean Teleorman (Seria Arheologie), Alexandria
BuletinCIVA	Buletinul Cercului de Istorie Veche şi Arheologie „Vladimir Dumitrescu", Sibiu
BulletinPeabody	Bulletin of the Peabody Museum of Natural History
CA	Cercetări Arheologice
CCAR	Cronica Cercetărilor Arheologice din România
CommArchHung	Communicationes Archaeologicae Hungariae, Budapest
Cumania	Cumania. A Bács-Kiskun Megyei Múzeumok Közleményei, Kecskemét
CurrSwedA	Current Swedish Archaeology
CsSzMÉ	Csíki Székely Múzeum Évkönyve, Csíkszereda
Dacia (N. S.)	Dacia. Recherches et décuvertes archéologiques en Roumanie, I–XII (1924–1948), Bucureşti; Nouvelle série (N. S.): Dacia. Revue d'archéologie et d'histoire anciene, Bucureşti
DissArch	Dissertationes Archaelogicae ex Instituto Archaeologico Universitatis de Rolando Eötvös Nominatae, Budapest
DolgKolozsvár (Ú.S.)	Dolgozatok az Erdélyi Nemzeti Múzeum Érem- és Régiségtárából, (új sorozat, 2006–), Kolozsvár
DolgSzeged	Dolgozatok a Szegedi Tudományegyetem Régiségtudományi Intézetéből, Szeged
Drobeta	
EJA	European Journal of Archaeology
EphemNap	Ephemeris Napocensis, Cluj-Napoca
FI	File de Istorie. Muzeul de Istorie al Judeţului Bistriţa-Năsăud, Bistriţa
FolAnt	Folia Anthropologica, Szombathely
FolArch	Folia Archaeologica, Budapest
Gallia	Gallia. Fouilles et monuments archéologiques en France metropolitaine
Georeview	Georeview. Scientific Annals of Ştefan cel Mare University of Suceava, Geography Series
Germania	Germania. Anzeiger der Römisch-Germanischen Kommission des Deutschen Archäologischen Instituts
Hierasus	Hierasus. Muzeul Judeţean Botoşani
HOMÉ	A Herman Ottó Múzeum Évkönyve, Miskolc
HTRTÉ	A Hunyadmegyei Történelmi és Régészeti Társulat Évkönyve, Déva
HZ	Historische Zeitschrift
IJOsteo	International Journal of Osteoarchaeology
Istros	Istros. Muzeul Brăilei
JAHA	Journal of Ancient History and Archaeology

JAMÉ	A Nyíregyházi Jósa András Múzeum Évkönyve, Nyíregyháza
JASc	Journal of Archaeological Science
JAT	Journal of Ancient Topography – Rivista di Topografia Antica
JbAS	Jahrbuch Archäologie Schweiz
JbRGZM	Jahrbuch des Römisch-Germanischen Zentralmuseums, Mainz
JCerEnvD	Journal of Ceramics and Environmental Design
JHumEvol	Journal of Human Evolution
JNES	Journal of Near Eastern Studies
JOM	JOM. The Journal of The Minerals, Metals & Materials Society
JRA	Journal of Roman Archaeology
JRomPotSt	Journal of Roman Pottery Studies
JSchrVgHalle	Jahresschrift für Mitteldeutsche Vorgeschichte Halle (Saale)
KJb	Kölner Jahrbuch für Vor- und Frühgeschichte
KM	Keresztény Magvető. Az Erdélyi Unitárius Egyház Folyóirata, Kolozsvár
KRRMK	A Kaposvári Rippl-Rónai Múzeum Közleményei
KuBA	Kölner und Bonner Archaeologica
Levant	Levant. Journal of the Brithish School of Archaeology in Jerusalem and the British Institute at Amman for Archaeology and History
MacActaA	Macedoniae Acta Arhaeologica, Prilep
Marisia	Marisia (V–), Studii şi Materiale, Târgu Mureş
Marisia-AHP	Marisia: Archaeologia, Historia, Patrimonium, Târgu Mureş
MCA	Materiale şi Cercetări Arheologice, Bucureşti
MFMÉ	A Móra Ferenc Múzeum Évkönyve, Szeged
MMMK	A Magyar Mezőgazdasági Múzeum Közleményei
MTAK (II)	A Magyar Tudományos Akadémia II. Társadalmi-Történeti Tudományok Osztályának Közleményei (1950–1966), A Magyar Tudományos Akadémia II. Filozófiai és Történettudományi Osztályának Közleményei (1966–1981)
NMMÉ	Nógrád Megyei Múzeumok Évkönyve, Salgótarján
OxfJA	Oxford Journal of Archaeology
PBF	Prähistorische Bronzefunde, Stuttgart
ProblemeKfsNsg	Probleme der Küstenforschung im südlichen Nordseegebiet
ProcPrehistSoc	Proceedings of the Prehistoric Society
PZ	Praehistorische Zeitschrift
RCRFA	Rei Cretariae Romanae Fautorum Acta, Tongeren
RevBis	Revista Bistriţei, Complexul Judeţean Muzeal Bistriţa-Năsăud
Sargetia (S.N.)	Sargetia. Acta Musei Devensis, Deva
SCA	Studii şi Cercetări Antropologice
SCIV(A)	Studii şi Cercetări de Istorie Veche (şi Arheologie 1974–), Bucureşti
SlovArch	Slovenská Archeológia, Bratislava
SMMK	A Somogy Megyei Múzeumok Közleményei, Kaposvár
StAntArch	Studia Antiqua et Archaeologica, Iaşi
Starinar	Starinar. Arheološki Institut Beograd

StCercNum	Studii şi cercetări de numismatică, Bucureşti
StComSM	Studii şi Comunicări Satu Mare
StComVrancea	Vrancea. Studii şi comunicări, Focşani
StudiaAA	Studia Antiqua et Archaeologica, Iaşi
SUBB-Historia	Studia Universitatis Babeş–Bolyai, series Historia, Cluj-Napoca
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WMMÉ	A Wosinsky Mór Múzeum Évkönyve, Szekszárd
ZBf	Zeitschrift für Balkanforschung