

# EARLY BRONZE AGE AND ROMAN PERIOD ELK (*ALCES ALCES* LINNÉ, 1758) REMAINS FROM THE AREA OF BUDAPEST, HUNGARY

## KORA BRONZKORI ÉS RÓMAI KORI JÁVORSZARVAS (*ALCES ALCES* LINNÉ, 1758) MARADVÁNYOK MAGYARORSZÁGRÓL, BUDAPEST KÖRZETÉBŐL

ANNA ZSÓFIA BILLER

Budapest History Museum - Aquincum Museum 1031 Budapest, Záhony utca 4.

E-mail: [biller.anna@aquincum.hu](mailto:biller.anna@aquincum.hu)

### Abstract

This article presents recently unearthed bones of European elk in Hungary. Bones of this large cervid regularly occur in Pleistocene assemblages. Archaeological finds of this species, however, are curiosities in our area as the natural distribution of elk has been much further north during the Holocene. Elk remains found in the Csepel–Duna-dűlő site (Early Bronze Age, Bell beaker culture) and in the XI. district of Budapest, preventive excavations at the Allee shopping center (early Roman Imperial Period) probably originate from stragglers.

### Kivonat

A cikk a jávorszarvasok újabb régészeti előfordulásait mutatja be Magyarországon. E nagytestű szarvast számos maradvány képviseli pleisztocén leletgyűtéseken. A hazai holocén leletanyagban azonban kuriózumnak számít, mert természetes élettere ma jóval északabbra helyezkedik el. Kóborló egyedek maradványait sikerült azonosítani a korabronzkori Harangedényes-kultúra Csepel–Duna-dűlői telepén, valamint a XI. kerületi Allee bevásárlóközpont építését megelőző feltáráson előkerült egyik kora császárkori objektumban..

KEYWORDS: EUROPEAN ELK (*ALCES ALCES*), RARE SPECIES, HUNGARY, EARLY BRONZE AGE, BELL BEAKER CULTURE, EARLY ROMAN IMPERIAL PERIOD

KULCSSZAVAK: EURÓPAI JÁVORSZARVAS (*ALCES ALCES*), RITKA ÁLLATFAJ, MAGYARORSZÁG, HARANGEDÉNYES-KULTÚRA, KORA-CSÁSZÁRKOR

### Introduction

The *Cervoidea* superfamily, which includes the family of present-day Cervidae, appeared in the Oligocene in Eurasia and North America, and became especially important during the Pleistocene. This superfamily can be sub-divided into five families: the *Moschidae*, the *Palaeomerycidae*, the *Hoplitomerycidae*, and *Cervidae*. To date only the *Cervidae*, *Antilocapridae* (pronghorn) and *Moschidae* family (represented by a single species in the Himalayan region) have survived, the others went extinct. The family of cervids or deers (*Cervidae*) consists of four subfamilies (*Hydropotinae*, *Muntiacinae*, *Capreolinae*, *Cervinae*), 19 genera, and includes 54 species. Since the Pleistocene, elks have been the largest species in this family (Géczy 1993, 406-408).

Elks prefer the riverine wetlands, marshes, dense wooded environments with bushy undergrowth. They occur in hilly areas, but avoid steep hillsides. After the Ice Age elks were distributed as far south as the Alps. Subsequently, however, only stragglers seem to have wandered into Eastern Central Europe. Today eight subspecies of elk are distributed in North America (4, a.k.a. moose), Siberia, Manchuria and Mongolia (3) and in Europe (1). European elk is common in Scandinavia, the north of Eastern Europe including Poland, and it occurs in the hilly regions of Slovakia (**Fig. 1.**).



**Fig. 1.:** The geographical distribution of the elk/moose today (graphics by the author)

**1. ábra:** A jávorszarvas elterjedésének földrajzi eloszlása napjainkban (a szerző rajza)

Elks are the largest living cervids: the bull's shoulder height is above 2 m, its total body length is more than 2.5 m and its weight may exceed 450 kg. The female is slightly smaller and has no antlers. Elks occasionally form herds, but both males and females tend to be solitary animals (Pearson & Burton 1986, 187). They are not territorial; their movements occasionally cover broad geographical areas. However, their occurrence in the Holocene archaeological material (including the modern fauna) has been very infrequent in Hungary.

**Table 1.:** Pleistocene elk finds in Hungary**1. táblázat:** Pleisztocén jávorszarvas maradványok Magyarországon

Faunal Phase	Site	Reference
Varbó faunal phase (Prae-Würm)	Lambrecht-barlang IV–V layer	Jánossy 1979, 125
	Tarkői kőfülke 2-7 blocks	Jánossy 1979, 126
	one layer of Ságvár–Horhos	Jánossy 1979, 148
Subalyuk faunal phase (Lower Würm)	Kiskevélyi-barlang layer 4	Vörös 2000, 151
	Lambrecht-barlang layer III,	
	Poroszló–Tisza river bed	
Szeleta faunal phase (Würm I)	Büdöspeszt-barlang	Vörös 2000, 151
	Herman Ottó-barlang layer 2	
	Szelim-barlang layer 3. „C”	
	Fegyvernek–Tisza river bed	
	Kiskunfélegyháza–Téglagyár	
	Ikrény–Rába river bed	
	Ságvár	
	Szolnok–Tisza river bed	
	Tizsakécske–Tisza river bed	
	Tizasüly–Tisza river bed	
	Vezseny–Tisza river bed	
Istállóskő faunal phase (Middle Würm: Würm II-II/III)	Istállóskői-barlang layer III	Jánossy 1979, 141
	Jankovics-barlang	Vörös 2000, 151-152
	Kiskevélyi-barlang layer 3	
	Peskő-barlang	
	Pilisszántói II. kőfülke layer 7	
	Solymár–Kőfejtő	
	Szelim-barlang layer B2	
	Tarkői kőfülke Block II upper „2”	
	Bodrogkeresztúr–Henyé	
	Dunaszekcső	
	Füzesabony–Kavicsbánya	
	Füzesabony–Homokbánya	
	Fokoru–Tisza river bed	
	Kőtelek–Tisza river bed	
	Lovas–Festékbánya	
	Madaras–Téglagyár	
	Mályi–Kavicsbánya	
	Nagybátony	
	Nagymaros	
	Pilismarót–Öreges-dűlő	
	Polgár–Tisza river bed	
	Romhány	
	Szolnok–Sárnyak–Tisza river bed	
Szolnok–Sokorú–Tisza river bed		
Tiszalök–Rázom puszta		
Tószegi-szikla–Tisza river bed		



**Fig. 2.:** The phalanx I from Tiszalúc–Sarkad in the collections of the Hungarian National Museum (graphics by the author)

**2. ábra:** Jávorszarvas 1. ujjperce - Tiszalúc – Sarkad, a Magyar Nemzeti Múzeum gyűjteményéből. (a szerző rajza)

### *Elk remains from the Ice Age of Hungary*

Pleistocene the conditions were favorable for this species in the Carpathian basin therefore its rate of incidence is high (Table 1.). Pleistocene occurrences of elk are connected to two periods in Hungary: the first is the middle Pleistocene Biharian faunal stage, where the earliest elk species originated (Osztramos, Tarpa hill, Solymár–Ördög Cave, Győrújfalú), while the second the Upper Pleistocene Utrecht faunal stage, when the number of elk remains increased tenfold at some sites. Elk is known from the relatively early Riss-Würm and Würm periods even in the form of its worked bones (Dobosi & Vörös 1979). The last third of this fauna phase (Würm III) is an exception, because elk occurred with varying intensities (Vörös 2000, 151). By the maximum of the Würm III period (Pilisszántó fauna phase) elks disappeared from the fauna of Hungary.

### *Elk in the Holocene of Hungary*

Between the Mesolithic and the Iron Age several settlements yielded elk finds in Europe (Topál & Vörös 1984, 83-84; Vörös 2000, 157-158), and during the Neolithic and Copper Age rare elk finds were reported from sites in the Alpine Foreland in Switzerland and Austria and the Copper Age/Early Bronze Age settlement of Ig in the Ljubljana Marshland Slovenia (Bartosiewicz 2005, 340).

Until now a single find of elk was known from the territory of Hungary following the Holocene emergence of agriculture. It was identified from Level K2 at Tiszalúc–Sarkad (Middle-Copper Age, Hunyadihalmi group). Approximately two thirds of the animal bone material found at the site was identified, 92.68% of those remains originating from domestic animals and only 7.32 % representing game. Cattle (40438) is overwhelmingly dominant among the domestic species, and after the cattle are the pig remains (3543). Among small ruminants (1675), the

aegagrus type goats are present in great number. The domestic horses (116) and dogs (44) are of small size. Single finds of Persian Lion, Mesopotamian fallow deer and elk (phalanges I; Fig. 2.) are very interesting colouring faunal elements in the Holocene macromammalian fauna (Vörös 1987, 127).

### *The elk phalanx II from Csepel–Duna-dűlő*

The distribution of the species was the smallest during the Bronze Age in Europe. No elk bones were known from Hungary representing this time period. Excavations at Csepel–Duna-dűlő took place in 2013, yielding 1448 animal remains. They were dated to the Middle Neolithic, the Late Copper Age and the Early Bronze Age, respectively. Stratigraphic dating for some bones remains questionable.

A total of 606 remains could be attributed to the Early Bronze Age (ca 2700/2500–1900/1800 BC) Bell beaker culture. The bones originated from all parts of the body (head, trunk, meaty limbs and dry limbs, including phalanges) and probably are food refuse.

Among the mammals only 3,8 % of the identifiable bones originated from wild species. The number of the horse remains (212) was the highest, followed by cattle (147), small ruminants (42), pig (15) and dog (4). Among game the number of aurochs bones (14) were the highest, followed by red deer (5), roe deer (1) and elk (1). The elk middle phalanx (Fig. 3.) was found in a pit (Stratigraphic Unit 193) along with 78 other animal bones including aurochs (1) and red deer (1). Domesticates in this feature were represented by cattle (10), small ruminants (7), pig (1) and horse (37). In addition remains of a carp were also found. Some highly fragmented remains (1 bone of a dog-size mammal and 19 bone fragments of large ungulates) could not be accurately identified.



**Fig. 3.:** The phalanx II from Csepel–Duna-dűlő (graphics by the author)

**3. ábra:** Jávorszarvas 2. ujjperce - Csepel–Duna-dűlő (a szerző rajza)



**Fig. 4.:**

The elk radius from Budapest–Október 23. utca (graphics by the author)

**5. ábra:**

Jávorszarvas orsócsont - Budapest – Október 23. utca (a szerző rajza)

***The elk radius from Budapest–Október 23. utca***

During the Iron Age and Roman Period elk remains began occurring more commonly in Central Europe, e. g. in the form of characteristic “axes” made from elk antler found at Late BA/Hallstatt

Period Brixlegg–Hochkapelle, and Innsbruck–Hötting in neighbouring Austria (Bartosiewicz 2005, 347). An elk antler knife handle from the Iron Age type site of Hallstatt is kept in the Naturhistorisches Museum, Wien. Until now, however, elk remains illustrating this increasing trend were missing from the Carpathian basin.

**Table 2.:** Summary of Holocene elk bone measurements (mm)**2. táblázat:** A holocén jávorszarvas csontok méretadatai (mm-ben)

Archeological site	Tiszalúc–Sarkad, 1974	Csepel–Duna-dűlő, 2013	Budapest–Október 23. utca, 2007
Period	Middle Copper Age (Hunyadihalmi group)	Early Bronze Age (Bell Beaker culture)	Early Roman Imperial (1st–2nd c. AD)
Skeletal part	Phalanx I	Phalanx II	Radius
fragment length	complete	complete	268.0
greatest length	73.5	66.0	-
breadth of the proximal epiphysis	31.5	31.0	79.0
depth of the proximal epiphysis	36.0	39.0	46.0
smallest breadth of the diaphysis	23.5	22.0	49.0
smallest depth of the diaphysis	19.0	29.0	-
breadth of the distal epiphysis	28.5	24.0	-
depth of the distal epiphysis	23.0	35.0	-

In District XI of Budapest a car park was excavated prior to the construction of the Allee Shopping Centre in 2007 (Beszédes & Horváth 2008, 141-157). Small additional excavations also took place in 2008–2009 (Beszédes & Horváth 2008, 155; Beszédes 2010, 113-114). A total of 11,873 animal remains were recovered from the almost 400 features during the 2007 field season. They represented seven major periods (Neolithic, Copper Age, Bronze Age, Iron Age, Roman Imperial Period, Ottoman Period and Early Modern Age). The 2008–2009 excavations yielded an additional 160 and 29 remains respectively. The site offered an opportunity for the long-term diachronic study of animal exploitation in the same location.

Altogether 5239 animal remains were dated to the Roman Imperial Period. The majority came from provenances representing the second half of the 1st century and the first part of the 2nd century AD. The indigenous Celtic population of the settlement lived here undisturbed under Roman rule. Because of the formation of the urban settlements in the region which began in the 2nd century the settlement was abandoned by the 3rd century (Beszédes & Horváth 2008, 154-155).

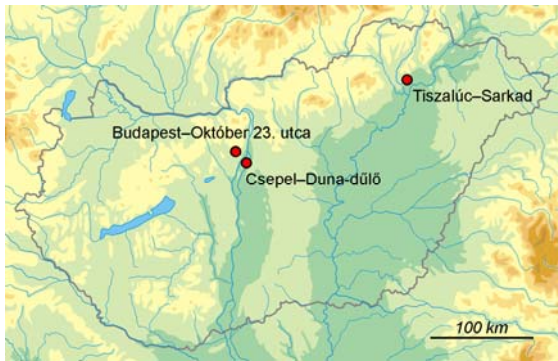
Animal bones originated from all parts of the body and must have been leftovers of meat consumption. Among the domestic mammals the number of cattle bones (1157) was the highest. There were remains of pigs (708), small ruminants (615), horses (301), dogs (119) and a cat (1) as well. The contribution of wild mammals was very low. In addition to the single elk bone, the remains of red deer (116), wild boar (21), aurochs (6), roe deer (6), hare (5), fox

(2), wolf (1), badger (1), hamster (1), and squirrel (1) bones were found.

A left elk radius proximal fragment (**Fig. 4.**) came to light from a Early Roman Imperial Period pit, which was dated by the vast majority of artefacts representing the 1st-2nd century AD. Prehistoric shards occurred only sporadically (Feature 8). In the pit 73 animal remains were found: cattle (8), small ruminants (3), pig (5), horse (11), dog (23). Wild mammals included red deer (3). There was a non-identifiable bird bone, as well as some poorly preserved bone splinters from small (13) and large ungulates (5).

### *The significance of elk remains in Hungary*

The newly discovered Early Bronze Age (Csepel–Duna-dűlő) and early Roman Imperial Period (Budapest–Október 23. utca) elk remains are the first occurrences of the species in Hungary from these two archaeological periods, increasing the number of known Holocene finds to three (**Fig. 5.**). The measurements taken on the three bone specimens following the protocol published by Angela von den Driesch (1976) are summarized in Among the elk remains from Hungary Pleistocene finds far outnumber Holocene osteological evidence. This may be the complex result of changes in the climate and vegetation as well as a general decrease in elk stocks due to deforestation and agricultural expansion.

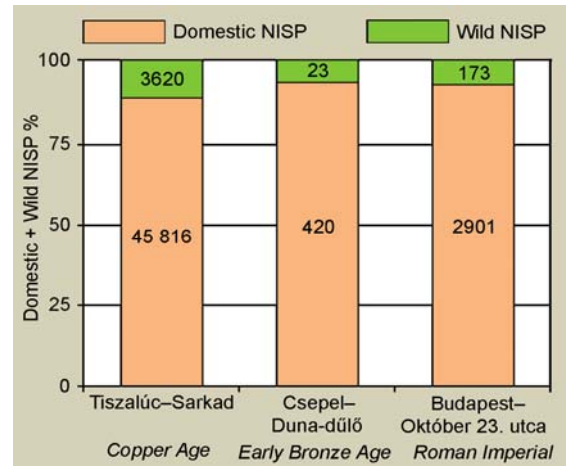


**Fig. 5.:** Holocene elk bone occurrences in Hungary (base map: Visy ed. 2003)

**5. ábra:** Holocén jávorszarvas lelőhelyek (alaptérkép Visy ed. 2003. alapján)

Given the rarity of Holocene elk finds in Hungary, the matter of sampling must also be briefly addressed, especially because the three sites that yielded these bones represent different orders of magnitude in terms of the number of identifiable specimens (NISP). Among the mammalian remains, the largest assemblage of Tiszalúc–Sarkad yielded 7.3% wild animal remains. Due to the recovery of almost 50,000 bones, the taxonomic richness of the site was also impressive including rare remains of Persian Lion and Mesopotamian fallow deer in addition to the elk phalanx under discussion here (Vörös 1987). Even if the contribution of wild mammal bones to this Copper Age assemblage did not reach 10%, it seems that hunting was of at least cognitive importance at the site. The two later sites where elk was found relied steadily on domesticates in meat provisioning (wild mammals: Csepel–Duna-dűlő: 5.6%, Budapest–Október 23. utca: 4.9%; **Fig. 6.**). At these two settlements, especially in the small bone assemblage from Csepel–Duna-dűlő the occurrence of elk is far more surprising, showing that the odd stragglers killed by ancient people would be difficult to predict on a purely statistical basis.

A Chi square test carried out on all three assemblages shown in **Fig. 6.** has proven that due to its large, representative size, the Tiszalúc–Sarkad assemblage stood out with its slightly higher percentage of wild animals. The set of three sites therefore is not homogeneous in terms of the domestic/wild dichotomy ( $\chi^2=15.758$ ,  $df=2$ ,  $P=0.0003$ ). Removing the unusually rich Copper Age assemblage from the calculation showed that the remaining two smaller sites, Csepel–Duna-dűlő and Budapest–Október 23. utca, were not significantly different from each other in their small percentages of wild mammals ( $\chi^2=0.348$ ,  $df=1$ ,  $P=0.555$ ). The occurrence of elk in the “ordinary” food refuse of these “agrarian” settlements is therefore even more surprising.



**Fig. 6.:** The percentual contribution of domestic and wild mammalian remains to the three Holocene assemblages that yielded elk remains

**6. ábra:** A házi- és a vademlős maradványok százalékos megoszlása a három vizsgált jávorszarvasos holocén lelőhelyen

### Conclusions

The occurrence of elk in Hungary during milder Holocene periods may be related to climatic/vegetation changes. Elks, however, tend to roam over broad areas regardless of the actual climate. In addition, one may speculate of exotic imports in the Roman Period, although hunting by the indigenous Celtic population may be a more realistic source of the find under discussion here. To date no medieval elk remains have been found in the territory of present-day Hungary. Sporadic bones from this later time period occurred in Lower Austria and a single medieval find was reported from the lowlands of Romania, while elk was still mentioned as royal game in mountainous Transylvania in the 16th century (Bartosiewicz et al. 2010, 95). In general, because elks migrated into our territory only occasionally, fewer fell victim to opportunistic hunting and thus there is a rather slim chance to recover elk remains from ancient settlements. Elk, never-the-less, has always had a broad geographical range, stragglers cover long distances. Four such individuals were killed in Hungary between 1979 and 1981, as this rare visitor is not even listed as an endangered species. Their occurrence can definitely be attributed to random migration (Topál and Vörös 1984, 84–86), also a possible source of the chance find of elk bones known from archaeological sites in Hungary.

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