EARLY IRON AGE SETTLEMENT AT GYŐR-MÉNFŐCSANAK–SZÉLES-FÖLDEK IN THE LIGHT OF ARCHAEOZOOLOGICAL FINDS (NORTHWEST HUNGARY)

A GYŐR-MÉNFŐCSANAKON FELTÁRT KORA VASKORI TELEPÜLÉS AZ ARCHAEOZOOLÓGIAI LELETEK TÜKRÉBEN

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Abstract

By putting it in an archaeological context, the paper deals with the analysis of the Early Iron Age (Ha C-D) animal bone material of the site which has been unearthed at Győr–Ménfőcsanak. The results of archaeological and archaeobotanical examinations are also supported by archaeozoology; the natural environment of the Early Iron Age lowland settlement contained belts of forests and groves, in addition to the cultivated areas. One part of the settlement provided a suitable place for the people for farming and livestock keeping. The inhabitants of the agrarian settlement carried out subsistence farming. In keeping domestic animals, ruminants (cattle 35.7%) and sheep and goats (collectively 29.86%) were prevalent, yet, keeping of hens – which were rare in those days – has been proved by not only a few bones but also the eggshell fragments of them. The ratio of animals hunted and fished for barely exceeds 10%, yet, numerous species – among them the brown bear which is met with sporadically in flatland and even beaver and sturgeon – can be found.

Kivonat

A tanulmány a Győr–Ménfőcsanakon feltárt lelőhely kora vaskori (Ha C-D) állatcsont anyagának régészeti kontextusba helyezett elemzésével foglalkozik. A régészeti és archeobotanikai vizsgálatok eredményeit az archeozoológia is alátámasztja: a kora vaskori síktelepülés természetes környezetét a megművelt területeken túl erdős-ligetes övezetek alkották. A település határának egy része a lakosság számára alkalmas helyet nyújtott a mezőgazdálkodásra és állattartásra. Az agrárjellegű település lakói önellátók voltak, háziállattartásukban a kérődzők (szarvasmarha (35,7%), juh és kecske (együttesen 29,86%) domináltak, de az ebben az időben még nagyon ritka tyúk tartását nemcsak néhány csontja, hanem tojáshéj töredékei is igazolták. A vadászott–halászott állatok aránya alig haladja meg a 10%-ot, azonban számos faj, köztük a síkvidéken csak elvétve előforduló barnamedve, de a hód és a viza is megtalálható.

KEYWORDS: NORTHWEST HUNGARY, MÉNFŐCSANAK, HALLSTATT CULTURE, ARCHAEOZOOLOGY, FISH BONES, EXAMINATION OF EGGS

KULCSSZAVAK ÉSZAKNYUGAT-MAGYARORSZÁG, MÉNFŐCSANAK, HALLSTATT KULTÚRA, ARCHAEOZOOLÓGIA, HALCSONTOK, TOJÁSVIZSGÁLAT

Introduction

The research of Early Iron Age settlements could be enriched by a significant material of finds between 2009 and 2011. South of the city centre of Győr, the systematic excavation of another part of the already known archaeological site complex to be found on the confines of Ménfőcsanak – which was once an independent village – took place. The excavation was performed under the guidance of the archaeologist Gábor Ilon, by the archaeologists, technicians and site helpers of the National Heritage Protection Centre (hereinafter called "NÖK") – which was closed down at the end of 2014 – of the Hungarian National Museum and of the team of the regional bureau N° 2 of NÖK, based in Szombathely. After the liquidation of NÖK, the complete material of finds from the region – thus, also the one being the subject-matter hereof – has been transferred to the central repository of the Hungarian National Museum that can be found in Daróci utca. Important groups of finds of several archaeological periods came to light in the above years.

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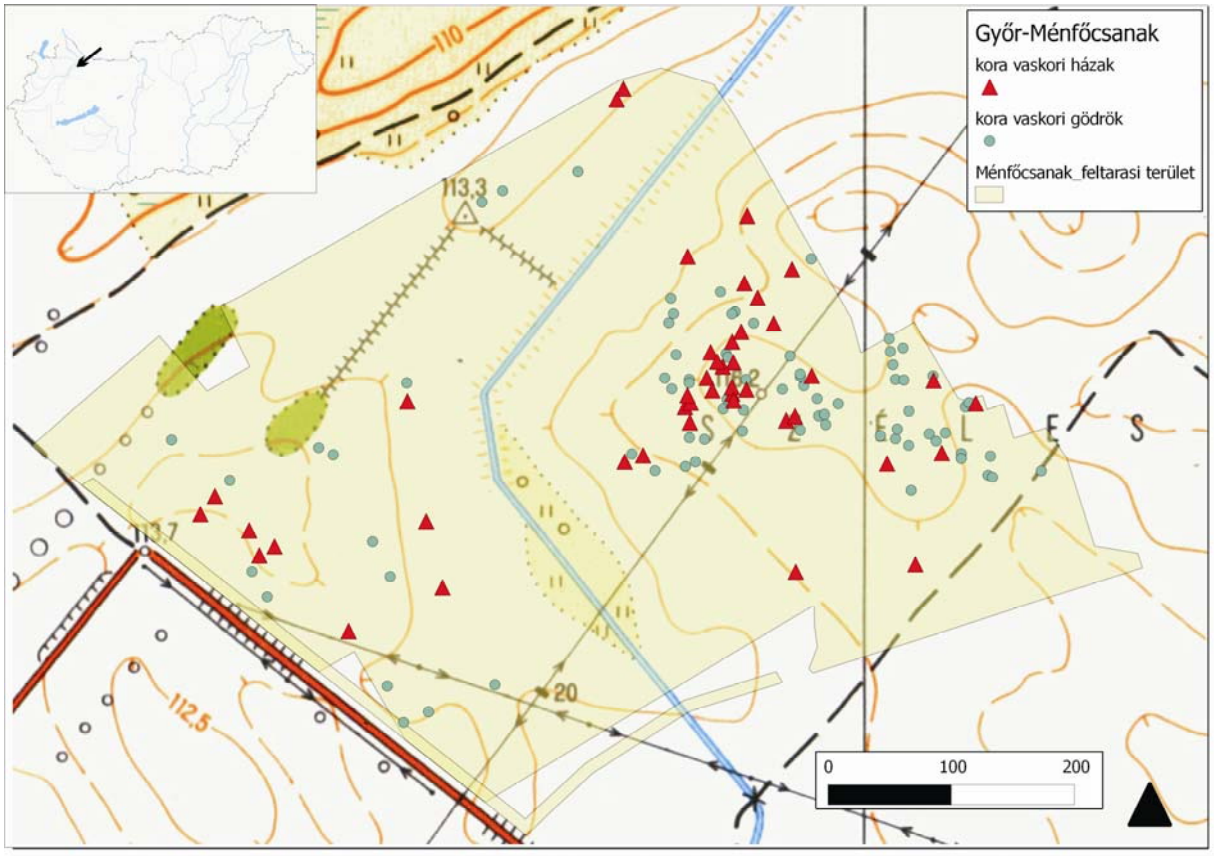

Fig. 1.: The site Győr-Ménfőcsanak with the Early Iron Age objects, houses (red), pits (blue) (the map was drawn up by Éva Ďurkovič and István Eke)

1. ábra: Győr-Ménfőcsanak lelőhely a kora vaskori objektumokkal. A térképet Ďurkovič Éva és Eke István készítette.

The site has been known in archaeological research from the 19th century on. After the emergence of the first sporadic relics from the Bronze and Iron Ages, several explorations have been performed in the area; including those under the guidance of Sándor Mithay and András Uzsoki (1968). In the 1990s, the research workers of the Archaeological Institute of the Hungarian Academy of Sciences assisted, besides András Figler, Eszter Szőnyi and Péter Tomka, in the preventive excavations of the route of motorway M1 (Jerem et al. 1992; for more details, see Ďurkovič 2014, 18-21). The material of animal bones to be disclosed within the scope of the following study is the result of an excavation of an extent bigger than ever before, carried out between 2009 and 2011. It forms an integral part of the material of finds of the Early Iron Age (Ha C-D) settlement which has been explored on an area of almost 28 hectares. It adds to its significance that the material of finds of this kind from numerous preceding excavations has, unfortunately, not been disclosed to date (**Fig. 1.**).

The full area of the Early Iron Age settlement which has been unearthed at Győr–Ménfőcsanak is not known. Based upon its situation and surroundings, it fits completely into the Early Iron Age system of settlements according to our current knowledge. The lowland settlements of the eastern Hallstatt culture can also be found on the terraces of bigger or smaller rivers. The needs of the people who made a living by farming could be met in the neighbourhood of the settlement, such as the source of water, the land that could be cultivated as well as raw materials for building and handicraft. 238 features from the Early Iron Age have been unearthed at the site. Interpretation and determination of the archaeological features have been carried out according to the evidence of already known lowland settlements of the Early Iron Age. Accordingly, square semi-subterranean building or parts of them could be reconstructed. The overwhelming majority of pits in the settlement served presumably as pits for storing food or waste. Post-structure houses – built on the surface – cannot be separated and reconstructed, in spite of several thousand of postholes which have been unearthed in the settlement. At the same time, the semi-subterranean buildings also had a structure rising above the ground (see, for instance, the reconstructions of Late Iron Age houses by Lőrinc Tímár: Tímár 2010). Determining the functions of

the objects is partly hypothetical and is founded on analogies. The semi-subterranean buildings can be interpreted as dwelling houses and/or farm buildings. Regarding the question of dwelling houses, we can see different opinions in the archaeological literature even nowadays. Determining the function of Early Iron Age buildings with a rectangular ground plan – with a pit dug into the ground – is not unambiguous; presumably no uniform answer or definition exists (see, for instance, Lauermann 1996, for the weaving houses determined as farm buildings at Győr–Ménfőcsanak see Ďurkovič 2015a). The majority of settlement pits may have been used for storage; based upon the material of finds of them partly for storing food as, for instance, the corn storage pit unearthed at Sopron-Krautacker (Schwellnus 2012, 531: object N° 205) and for dumping waste, respectively. In some cases they can be evaluated as raw material extraction pits, i.e. clay extraction pits (Schwellnus 2011, 363: Sopron–Krautacker, Stegmann-Rajtár 1996, 453: Bratislava–Dúbravka, Ďurkovič 2014, 47: Győr–Ménfőcsanak). The features indicating different buildings and pits formed an irregular system. Although the disturbance of objects made the analysis more difficult, smaller units and households may still be presumed. Similar smaller units have been reconstructed at the settlements Göttlesbrunn and Horn by M. Griebl and next to Wien-Oberlaa by Ch. Ranseder, respectively as well as at the Early Iron Age settlements Sereď and Smolenice by S. Müller (Müller 2012). For more details on the smaller households that may be presumed at Győr–Ménfőcsanak see the work by Eva Ďurkovič (2015b). In accordance with the conditions of the area, higher lying parts of the settlement have shown denser and more intensive occupancy (Fig. 1). As reflected by the archaeological finds, this area , in fact the small stream running through the area excavated, i.e. the right high bank of the Pándzsa brook which has been controlled by now, was probably inhabited over a longer period of time. In the lower lying region of the eastern bank of the stream the archaeological features formed a relatively loose structure. This part of the settlement provided a place suitable for farming and livestock keeping.

Pottery represented a significant part of the archaeological material of finds from the Early Iron Age settlement at Győr–Ménfőcsanak. The overwhelming majority of it is hand-built pottery, so-called household pottery. Although examination of pottery has not been possible so far, from the material extraction pits excavated as well as the analogies the conclusion can be drawn that the people who lived here made their articles for personal use all by themselves. Most of the types of utensils are represented through pots and bowls. Wheel-thrown wares, which have came to light sporadically, reflect the development of potter's craft (for detailed publication of the archaeological material of finds of the Early Iron Age settlement see Ďurkovič 2014, 62-108). Similarly to the majority of Early Iron Age sites, only a few metal finds have been unearthed at this site too. Among the flint implements, which can be assigned to this period with certainty, grinding and rubbing stones have been found in the first place. In addition to these objects, the examination of archaeobotanical samples has also shown the significance of farming. The importance of growing grains has become – among others – evident from the samples determined. (Examination results of the soil samples of the pit-house N° 210/7124 have revealed the majority of the species of grain – see Pető, Kenéz 2015, Fig. 6, 5; Ďurkovič 2016 in press). Based upon the results, the natural environment of the settlement contained belts of forests and groves, in addition to the cultivated areas (Pető 2013, 14).

From the examination of the Early Iron Age settlement part excavated at Győr–Ménfőcsanak and its archaeological relics the conclusion can be drawn that the inhabitants of the agrarian settlement carried out subsistence farming. Beyond the food grown, they could provide for themselves through handicraft (potter's craft and textile making – for more details see Ďurkovič 2015) and hunting and fishing. At the same time, the types of objects occurring within the material of finds have also confirmed that the people who lived in the settlement had constant contact with the Early Iron Age communities that lived in the neighbourhood. Based upon the evaluation of the material of finds and the results of the C14 examinations, which have already been published, the settlement part excavated at Győr–Ménfőcsanak was inhabited over the entire period of the Early Iron Age (Ďurkovič 2014, 141-154).

Archaeozoological finds

An animal bone material in large quantity has come to light at the site Győr–Ménfőcsanak. A part of it originates from objects which date back to the Early Iron Age. The group of finds consisting of 2,926 pieces contains, beyond the bones of domestic animals, the remains of many species hunted, fished for or gathered, among them those of shellfish. In addition to careful collecting by hand, flotation of the soil samples of 33 features has also been performed; 29 of them contained animal bones too. As an exception, the eggshell remains are also part of the archaeozoological analysis as they carry important information about the knowledge of livestock keeping of the people of the Early Iron Age.

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Species	NISP	%	Minimum Number of Individuals
Cattle *(Bos taurus* L.*)*	902	35,7	10
Sheep *(Ovis aries* L.*)*	24	0,95	4
Goat *(Capra hircus* L.*)*	5	0,2	3
Sheep or goat (Caprinae G.)	725	28,71	15
Pig *(Sus domesticus* Erxl.*)*	335	13,27	14
Horse *(Equus caballus* L.*)*	112	4,44	4
Dog *(Canis familiaris* L.*)*	141	5,59	8
Hen *(Gallus domesticus* L.*)*	3	0,12	1
Domestic animals	***2247***	***88,98***	***59***
Red deer *(Cervus elaphus* L.*)*	170	6,73	7
Beaver *(Castor fiber* L.*)*	16	0,63	3
Roe deer *(Capreolus capreolus* L.*)*	13	0,51	3
Brown hare *(Lepus europaeus* Pall.*)*	7	0,28	2
Brown bear *(Ursus arctos* L.*)*	2	0,08	1
Red fox *(Vulpes vulpes* L.*)*	17*	0,04	1
European pond terrapin *(Emys orbicularis* L.*)*	9	0,36	1
Hunted species	***218***	***8,63***	***18***
Common carp *(Cyprinus carpio* L.*)*	1	0,04	1
Cyprinidae	5	0,2	1
Northern pike *(Esox lucius* L.*)*	1	0,04	1
European sturgeon *(Huso huso* L.*)*	1	0,04	1
Sturgeon (Acipenseridae sp.)	2	0,08	1
Zander *(Sander lucioperca* L.*)*	2	0,08	1
Fish (Pisces sp.)	28	1,11	-
Harvested species	***40***	***1,59***	***6***
Suidae	5	0,2	-
Anseriformes	2	0,08	1
Bird (Aves sp.)	13	0,52	-
Domestic or hunted species	***20***	***0,8***	***1***
Rodent (Rodentia sp.)	4	-	1
Other species	***4***	-	***1***
Small ungulate	145	-	-
Large ungulate	156	-	-
Other mammalia	7	-	-
Non identifiable bones	***308***	-	-
Riverine mussel (Unio sp.)	83	-	-
Snail (Gastropoda sp.)	6	-	-
Total	**2926**	**100**	**85**
* skeleton part			

Fig. 2.: List of species of the site

2. ábra: A lelőhely fajlistája

Beyond the list of species obtained from the data of animal bones, we are also seeking an answer to the question if our results tally with the results of other examinations in view of the one-time surroundings of the settlement. According to this, there may have been belts of forests and groves, beyond the cultivated areas.

Of the archaeozoological finds, the number of bones which can be determined at least on the level of a family or perhaps an order is 2,529. Fish bones, which cannot be determined, are also included in this category due to their significance. Accordingly, the major part of the material of finds (89%) is made up of the remains of domestic animals, yet, the amount of bones of species hunted and fished for is not negligible either (258 pieces). The joint ratio of species hunted and fished for comes to 10% in view of the determinable bones (**Fig. 2.**). Thus, it can be said that hunting and fishing only complemented the amount of meat which was obtained from slaughtering domestic animals. Nonetheless, they play an important role, because, in addition to the customs of meat consumption and hunting, we can draw a conclusion from the existence of them to the ecosystem in the surroundings of the one-time settlement, which was – as it appears from the list of species too – abundant in species. Due to the intermediate size of them, it cannot be decided regarding some bones of the material of finds if we are speaking about the domesticated or wild form of the given species, i.e. cattle and domestic pigs were smaller than aurochs and wild boars in the archaeological periods. The ratio of bones of this kind comes to 0.8%. Smaller amounts of bones of birds, which cannot be precisely attributed to species, have also come to light.

Most pieces in the material of finds can be interpreted as kitchen waste. Related bones of species kept for their meat have come to light only in a few cases among the bones chopped up more or less, i.e. 4-5 pieces at most. This means that the leftovers, the bones, of meat consumed were, in fact, thrown away and the animals or skeletal parts of the animals were not buried/dug into the ground as a whole. The latter can only be seen in case of dogs and foxes which did not play a role in meat consumption; fairly big related remains of several dogs and a fox have been found.

The anatomical breakdown of bones can be seen in **Fig. 5.**

Domestic animals

Based upon the quantity of bones, the order of frequency of domestic animals is as follows: cattle, small ruminants (more sheep, less goats), domestic pigs, dogs, horses, and hens.

Based upon the quantity of bones, the most frequent species was cattle; the 902 bone finds of them come to 35.7% of the determinable bones. The cattle bones originate from at least 10 individual animals of different ages. The majority of them were full-grown (adultus) specimens. Moreover, even older, maturus age, specimens occurred.

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Fig. 3.: Animal bones from the Early Iron Age – 1 Broken shinbone of a dog, 2 Metatarsal bone of a red deer, 3 Jaw of a roe deer, 4 Thighbone of a beaver, 5 Jawbone of a brown bear with teeth, 6 Cleithra of a pike (the one on the left of the Early Iron Age (STR 7317), the other ones of the Late Bronze Age, Tumulus culture (STR 7765), Photograph of the bones of the pike: Alice M. Choyke

3. ábra: Kora vaskori állatcsontok: 1: törött kutya sípcsont; 2: gímszarvas lábközépcsont; 3: őz állkapocs; 4: hód combcsont; 5: barnamedve állcsont fogakkal; 6: csuka zárcsontok (bal oldali kora vaskori (STR 7317); a többi késő bronzkori (halomsíros kultúra (STR 7765). Fotó a csuka csontokról: Alice M. Choyke

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The number of almost full-grown (subadultus), young (juvenilis) and very young (infantilis < 1 year) individual animals was much lower. The mixed breakdown by age refers to the varied utilisation of the species; young animals were only slaughtered for their meat, whereas the power of older specimens and also cow's milk may have been used before using their meat. As the remains of full-grown specimens are in a majority, secondary utilisation of the species may have prevailed. The gender and withers height of 4 cattle could be determined on the basis of intact metacarpal and metatarsal bones by twos; the animals between 105 and 119 cm, on an average around 110 cm (Nobis 1954, Calkin 1960), were cows of small and medium stature which was typical in the Iron Age (Bökönyi 1974, 115, Fig. 9). Chop-marks can be found on 2% of the cattle bones, i.e. cut-marks and cleaver-marks. The majority of bones chopped up are ribs, but one can even find a few jaws, vertebrae as well as rump bones and forearm bones among them. Chewing marks by carnivores can be observed on a few finds, on bones rich and poor in meat alike.

Among small ruminants sheep and goats can be found alike. The bones of the two species are very similar. Hence, they can be clearly distinguished only in some cases. Of the sheep and goat bones of the material of finds 24 belonged to sheep and 5 to goats. It could not be determined of the remaining 725 bones which of the two small ruminant species they originate from. The bones of them provide collectively about 30% of the determinable finds. Thus, they are the second most frequent species after cattle. Notwithstanding that the number of bones of small ruminants lag slightly behind those of cattle, the number of individual animals is much higher than that of cattle; of 22 individual animals there were at least 4 sheep and 3 goats. Two of the sheep were full-grown specimens, one an almost full-grown and another one a young specimen. Two of the goats were also full-grown; only one animal was of juvenilis age. The breakdown by age of individual animals which can only be described as small ruminants is heterogeneous; almost the same quantities of bones of young and full-grown individual animals have come to light. Yet, the bones of individual animals of almost full-grown (subadultus) age have also been found. Younger animals were probably raised and slaughtered for their meat, whereas the secondary use of older animals may have also been important (wool, milk). The withers height could be estimated from five intact sheep bones, it was between 65 and 68 cm (Teichert 1975) which slightly exceeded the average value typical of the Iron Age (Bökönyi 1974, 171, Fig. 49). Chop-marks can only be seen on a few bones; for the most part they are vertebrae which may have been damaged on cleaving the vertebral column in two. There are jaws and ribs too. The quantity of chewed bones of small ruminants lags slightly behind that of cattle; spoke-bones and shinbones are the most frequent of them. A few more forearm bones are chewed finds of body regions containing meat. Among the finds which do not contain meat or contain only a very little of it, jaws as well as metacarpal and metatarsal bones can be found.

Its 335 finds make the domestic pig the third most frequent species at the site in view of the quantity of bones; they provide 13.27% of the determinable bones. However, its number of individual animals is higher than that of cattle. The majority of the at least 14 specimens are young (juvenilis) pigs, which refers to the primary utilisation of meat of the species. Yet, the bones of a full-grown and an older individual animal could also be found. Some intact bones made the estimation of the withers height possible; the pigs at the site were tall specimens of a size between 76 and 83 cm (Teichert 1969) which approximates the lower size limit of wild boars. Cleaver marks can be observed on the jaws, ribs and forearm bones. Chewed bones could also be found; chewing marks by dogs can be seen on the ends of several long bones.

The horse is the rarest animal among the mammal domestic animals in terms of meat consumption. The 112 finds of it equals 4.44% of the determinable bones. The lowest number of individual animals also amounts to 4 all in all. The remains of full-grown specimens are in majority among the bones. Although chop-marks can only be detected on a few bones, consumption of the meat of the species can be proved hereby. The bones of younger individual animals also refer – indirectly – to the utilisation of meat. Chewing marks by dogs can also be observed in the group of finds of kitchen waste character. This means that a part of the waste was unburied and dogs could get access to it. They originate by far the greater part from the shin and the ends of the feet which contain almost no meat. Yet, they can also be observed on one cervical vertebra. The withers height of the given specimen can be estimated by means of an intact metacarpal bone; with its height of some 127 cm (Vitt 1952) this horse is considered a horse of short stature in the Iron Age. The withers height of Iron Age horses can be put at 130-142 cm by far the greater part (Bökönyi 1974, 246, Table 3).

Among the 141 (5.6%) dog bones, 3 partial dog skeletons could actually be found, in addition to the objects which only contained a few dog bones. Beyond the dog skeletons, the bones of at least 5 individual animals could be identified, thus, the presence of altogether 8 dogs at least can be proved. The withers height can be estimated by means of the long bones of the partial skeletons; all three dogs were of average size of 49-52 cm (Koudelka 1884), had a similar physique and bodily structure.

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At least one of these three dogs was verifiably a male dog, on the strength of its baculum. Three vertebrae in the lumbar region of the spine of the latter specimen ossified together as a consequence of irregular bone proliferation (spondylitis). The movements of the animal were probably rigid and it had difficulty standing up and suffered pains. The right thighbone of the animal was broken in its lifetime; traces of healing can be seen on the bone, however, it did not knit together. A fracture healed through axis deviation can be seen on the shinbone and the splinter-bone of another dog (**Fig. 3/1.**). The forearm bone of one of the dogs was chewed by another dog. This means that other dogs could get access to the carcasses. There are no direct proofs of the consumption of dog meat. Less and less bones which were broken or chopped up can be found after the Bronze Age. Yet, the results of other sites indicate that dog meat was consumed by the Scythians or even the Celts from time to time (Tugya 2010a, Tugya 2010b). The right half of the cleaved skull of a dog has also come to light in the fill around the fireside of one of the houses at Sopron–Krautacker (Jerem et al 1984, 155). Isolated local examples of the consumption of dog meat were not unknown even in 20th century Europe. Dogs chewed bones in large numbers at the site; chewed red deer and roe deer finds have come to light in addition to the bones of cattle, small ruminants, pigs, and horses. The quantity of bones which were completely eaten up by the dogs cannot even be estimated. In the first place, they made probably the smaller bones and the remains of younger individual animals disappear without a trace.

There are only three hen bones (0.12%) which probably originate from the same full-grown individual animal. This species was quite rare in the Early Iron Age; the earliest known hen bones can be dated back to the Late Bronze Age in the Carpathian Basin (Tugya 2016). Small hen bones with a thin wall can completely be eaten up – especially in case of young individual animals – by dogs or even people, thus, further reducing the chances that bones remain and can be found. Keeping hens is confirmed not only by the bones of them at Ménfőcsanak, but also by the eggshell remains of them – propagation of the species is indicated by the hatched eggshell fragments. The thickness of the shell of hen's eggs is generally between 0.3 and 0.35mm. It is typical of the hatched eggs that the mamillae terminate in a crater-like cavity on the internal mamillary layer of the shell.

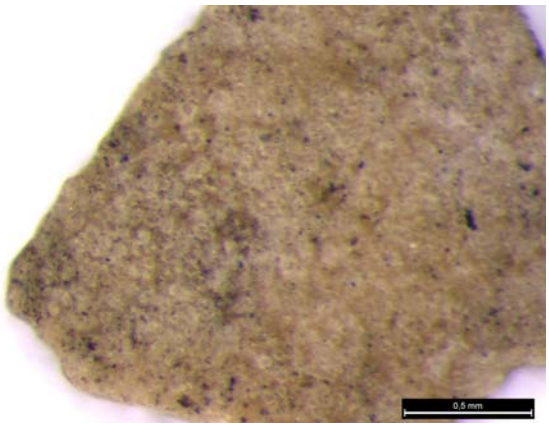

Fig. 4.: Eggshell fragment of a hatched hen's egg (60x magnification). Photo: Beáta Tugya

4. ábra: Kiköltött tyúktojás héjtöredéke (60x-os nagyítás). Fotó: Tugya Beáta

If an intact mamillary layer can be seen – the little calcareous supports (mamillae) are rounded-off – it means that the egg was not hatched (Jakab 1980, 312). In a hen's egg, the number of mamillae falling upon 1mm2 may be put at 57-173 (Sidell 1993, 13). 14 small eggshell fragments have come to light from the stratigraphic unit 7124; some of them are smaller than 1 mm2 and even the biggest one is of only 3x4mm size. In spite of the extremely small size of the fragments, a part of the samples could be analysed. The mamillary layer was craterlike in several cases, proving that the remains of a hatched egg came to light (**Fig. 4.**).

Species hunted, fished for and gathered

Based upon the quantity of bone finds, the order of frequency of species hunted and fished for is as follows: red deer, beaver, roe deer, European pond turtle, brown hare, carp varieties, brown bear, fox, and other fishes. Of the big games of the Carpathian Basin, the remains of aurochs and wild boar are missing from the material of finds.

The surroundings of the site were the natural habitat of red deer. One of the proofs for it is that this material from the Early Iron Age contains much more finds of red deer – in view of their quantity as well as ratio – than other groups of finds which contain generally a few pieces, 1-2 dozen at most. Those 170 pieces determined represent 6.73% of the complete material of finds which can be determined. The quantity of the finds of the species exceeds that of horses and it is higher in itself than the quantity of all the other species hunted and fished for taken all together. Antlers can also be found among the finds, yet, the feature of them is slightly higher than 10% in addition to bones. Thus, the outstanding quantity of deer finds is not due to gathering of cast antlers.

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	Cattle	Sheep	Goat	Sheep or goat	Pig	Horse	Dog	Hen	Red deer	Roe deer	Brown hare	Brown bear	Red fox	Beaver
Antler									18	1				
Horn core	7	5	2	2										
Cranium+horn core	4	1	1	3										
Cranium+antler	24								2					
Cranium	23	1		5	16	2	6		3	1				
Nasal	5			1	2									
Maxilla	17			5	17	2	7		8			1		
Premaxilla	5			4					1					
Jaw	87			68	33	11	12		12	4				4
Hyoid	1													
Tooth	47			39	25	10	5		9					
Cleithrum														
Atlas	5			4	1	1	2		1					
Axis	9			4		2	2		1					
Cervical vertebrae	16			13	1	2	8							
Thoracic vertebrae	25			10	12		4		1					
Lumbal vertebrae	13			11	1	1	3							
Sacrum	2						1							
Vertebra indet.	2			2										
Costa	121			111	55	3	23		3					1
Scapula	27	1		19	20	2	5		5	1				
Humerus	43	6		31	33	7	9		7		1			
Radius	43	1		81	16	8	6		9		1			3
Ulna	10	1		9	16	2	5		3					3
Radius+ulna	4			7		1				1				
Carpus	7					1								
Metacarpus	31	3	1	41	4	9	3		13					
Pelvis	21			9	10	11	7		4					1
Femur	57			38	17	7	8	1	2		1			3
Patella	2													
Tibia	84			81	17	8	11	1	13		3			
Fibula					8									
Tarsus	7													
Astragalus	10		1	1	4	1			10					
Calcaneus	13			3	4	2	1		3					
Metatarsus	40	5		41	12	6	7	1	20	5	1	1		1
Metacarpus/metatarsus	2			25	1		1							
Phalanx I	26			4	7	7			12					
Phalanx II	9			1	1	2			8					
Phalanx III	6				1	2			1					
Penis bone							2							
Coracoideum														
Long bone	38			52	1				1					
Flat bone	9					2								
Skeleton							3						1	
Total	*902*	*24*	*5*	*725*	*335*	*112*	*141*	*3*	*170*	*13*	*7*	*2*	*1*	*16*

Fig. 5.: Anatomical breakdown of the animal bone material of the site Győr–Ménfőcsanak from the Early Iron Age

5. ábra: Győr-Ménfőcsanak lelőhely kora vaskori állatcsont anyagának anatómiai megoszlása

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The majority of bones originate from body regions which do not contain any meat or contain almost no meat, i.e. skull, including the jawbone and jaw, as well as the ends of legs. The red deer finds originate from at least 7 individual animals; all of them were full-grown animals, with the exception of a young and an almost full-grown specimen. There are cut-marks on several reed deer finds; skeletal bones were chopped more rarely, whereas antlers oftener, as a basic material. Chewing marks can be seen on four finds. It rarely occurs that the size of individual specimens can be estimated. One intact metatarsal bone has come to light in the material of finds (**Fig. 3/2.**), originating from an individual animal with a withers height of approximately 129 cm (Godynicki 1965). It size matches that of today's red deer; the withers height of stags comes to 115-150 cm, whereas that of hinds to 105-130 cm in the Carpathian Basin (Páll 1982).

The 13 roe deer bones represent 0.51% of the finds and originate from at least 3 full-grown individual animals. Only one of the finds is an antler, the other ones are skeletal bones, i.e. jaws (**Fig. 3/3.**) and long bones. Similarly to the red deer, bones which contain almost no meat are in a majority. On one roe deer jaw chewing marks caused by a carnivore can be seen.

The quantity of beaver bones exceeds that of the roe deer; those 16% finds equal 0.63%. Of the at least 3 individual animals 2 were full-grown and one was young. The chop-marks to be seen on several finds show the utilisation of meat. Chewing marks caused by a carnivore can also be observed on some finds (**Fig. 3/4.**). Several chop-marks of different types were left on two jaws; cut-marks and cleaver marks alike.

Those 7 brown hare bones indicate 0.28% of the determinable finds; one young and one full-grown individual animal can be identified. Hare was hunted in the first place for its meat; however, the not too precious fur of it may have also been used.

Two bones of the brown bear hunted for its fur have been found; the fragment of the jawbone of a full-grown individual animal with an incisor and a canine sitting inside (**Fig. 3/5.**) and a metatarsal bone (metatarsus III.) which also indicates a full-grown animal. A chop-mark can be seen on the jawbone. Bear finds are fundamentally rear and at the sites in the Great Hungarian Plain especially as contiguous forests in higher lying areas serve as the habitat of the species. A bear which left its habitat provisionally may have been brought down or the people may have hunted even in far off areas or had even trade relationships through which they got access to the bearskin, even as dressed hide, containing the bones which were found. They may have used the fur of the bear and the consumption of its meat cannot be excluded either; the chopped jawbone may also be indicative of it.

17 contiguous bones of a full-grown fox have been found in one of the objects. Similarly to the bear, this species was also hunted for its fur even if no marks of skinning could be detected on its bones.

Only shell fragments of the European pond turtle have been found, plastron and carapace alike. As the bones of the species are missing, these are not the remains of an animal which hibernated, unsettled the object through digging in the same, where it then perished. In spite of the fact that its bones – or rather chopped bones – have not been found, its meat may have been consumed.

The total of fish bones is 40, a part of them originating from dredging. Its presence is a proof of fishing and consumption of fish. The remains of several fish species have been found; among them one bone each or some bones of carps, pikes, sturgeons and other carp and sturgeon varieties. At the sites in fluvial surroundings the number of them may reach even thousand pieces through dredging the complete fill of the objects. The only intact and measurable cleithrum has been found in the Early Iron Age building recorded as stratigraphic unit N° 7317 (**Fig. 3/6.**); the chord on the cleithrum (cl. c. l.; Morales and Rosenlund 1979) is 52.1mm long. This bone also originates from a pike of relatively small stature with a complete length of about 55 cm (Bartosiewicz 1990). Yet, its size makes it possible to estimate even with the naked eye how much bigger the individual animals the fragmental cleithra of which were found in the sacrificial pit of stratigraphic N° 7765, included in the Tumulus culture (Bz C phase) (Ilon 2014), had been (**Fig. 3/6**.). While smaller fishes could be obtained by gathering in stagnant waters after the rise too, the presence of pikes of this size is indicative of active fishing (hook and harpoon).

Shellfish may have been gathered seasonally in the nearby Pándzsa brook and the inundation area of the river Rába too, but they may have also deposited spontaneously in stagnant waters. Due to its high protein contents, shellfish was probably a valuable additional foodstuff. None of the cockleshells was pierced or formed which indicates that shellfish played a role in nutrition in the first place. Marks of burning or roasting and those of ash could not be detected on the cockleshells, i.e. they were either consumed raw (Gulyás 2009, 42, 46) or only the shellfish flesh was roasted or cooked.

Bone and antler tools

Another paper will deal in details with the bone and antler tools of the Early Iron Age found at the site. The scope of this study does not make the discussion and analysis of them possible. Two dozen tools have been found, 7 of them were made

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of the antlers of red deer and 17 of the skeletal bones of various species. Two of the antlers were used with safety as objects. One of them was an antler pick and the other one was a tool hollow inside and high polished outside with 3 small holes in its upper part. In one of the holes even an iron rivet remained.

The inside of the other antlers was often hollowed out and they were polished outside. They are considered as raw material for tools. There are also chisel- and awl-like pierced objects with polished surface among the skeletal bones.

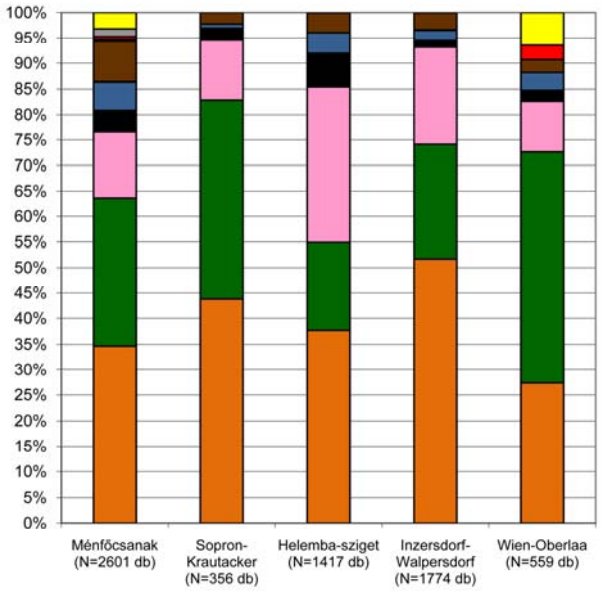
Comparison

The quantity of animal bones at sites which can be classed among the Hallstatt culture in the Carpathian Basin lags for the most part behind that of Ménfőcsanak. Moreover, only an insignificant number of animal bones analyses have, unfortunately, been published until now. The common characteristic of lowland settlements is that keeping of domestic animals prevails, but hunting is demonstrable at every site, the ratio of it being generally under 10-15% (**Fig. 6.**).

Comparing of the sites is made more difficult by the fact that the bone material of a few sites where the number of bones is at least 500, i.e. of a statistically reliable quantity, is known. Cattle are the most frequent species in case of the majority of the sites (e.g. at Helemba-Sziget (Bökönyi 1974, 367), Sopron–Krautacker (Jerem et al 1984, 151, Table. 3), at the Late Hallstatt Period La Téne culture site of Inzersdorf–Walpersdorf (Pucher 1998, 57, Tab. 1)). However, small ruminant was the prevalent species instead of cattle at the site Wien 10, Oberlaa (Czeika 2006, 350, Tab. 8). The sequence of species is generally as follows: cattle, small ruminants, domestic pig, horse, and dog. Based upon the examination of the bone material of nine Hallstatt Period settlements in Slovenia, the sequence of species was in 6 cases as follows: cattle, small ruminants, and domestic pig. The quantity of pig bones was in two cases higher than that of small ruminants and there was only one case where small ruminants were the most frequent species instead of cattle (Bartosiewicz 1996, 29, Table 1). 46 pieces of animal bones – bones of cattle, sheep and pigs – have come to light from the fill of a Late Hallstatt Period dwelling house in Csönge. Most of the bones originate here from sheep, whereas the smallest quantity of them from cattle (Fekete 1989, 135).

The classic sequence can be seen at the site Letenye–Egyeduta, where 17 bones have been found in two objects: the sequence of cattle, small ruminants and pigs can be established (Horváth 2012, 133).

Although in lower numbers, but the remains of horses and dogs can still be found in lowland settlements. Remains of hens – that proved to be rear in the Early Iron Age – have been found at the sites in Ménfőcsanak and Walpersdorf. The quantity of them is insignificant, only two or three pieces, however, they are all the more important.



	Ménfőcsanak (N=2601 db)	Sopron-Krautacker (N=356 db)	Helemba-sziget (N=1417 db)	Inzersdorf-Walpersdorf (N=1774 db	Wien-Oberlaa (N=559 db)
Cattle	902	156	535	918	153
Small ruminants	754	139	243	397	253
Pig	335	42	433	338	56
Horse	112	8	92	25	12
Dog	141	3	58	34	19
Hen	3			2	
Game	209	8	55	59	14
European pond terrapin	9				
Bird	13			1	16
Fish	40		1		
Riverine mussel	83				36

Fig. 6.: Comparison of the animal bone material of lowland settlements from the Early Iron Age
6. ábra: Kora vaskori síktelepek állatcsont anyagának összehasonlítása

Of the species hunted, red deer was the most significant everywhere, but bones of roe deer and brown hare could also be found in lower number. Of the big games of the Carpathian Basin, bones of aurochs and wild boar have only been found at every 2 sites of the four lowland settlements (Helemba–sziget, Inzersdorf–Walpersdorf). All four sites are situated in the neighbourhood of the Danube or its tributaries and the site of Sopron–Krautacker lies along the Ikva brook. Yet, the quantity of fish bones unearthed is very low. An appreciable quantity of fish bones and fish scale is only available from Ménfőcsanak, owing to the soil samples taken from the fill of the objects and elaboration thereof after dredging. No fish bones have been found at the sites Sopron–Krautacker, Wien–Oberlaa and Walpersdorf, only one (!) has been found even at Helemba as opposed to those 40 fish bones of Ménfőcsanak of which several fish species could be determined.

Summary

The archaeozoological results correspond to the archaeological observations and archaeobotanical examinations. The archaeological features formed a relatively loose structure in the lower lying region of the eastern bank of the stream running through the area unearthed. This part of the settlement provided a suitable place for the people for farming and livestock keeping. Keeping cattle and small ruminants on a large scale necessitated the existence of extended grazing grounds. The floodplain forests surrounding the streams had a beneficial effect on pig farming. Based upon the results, the natural environment of the settlement contained belts of forests and groves, in addition to the cultivated areas. They provided an excellent habitat for red deer, roe deer, and brown hare. Nearness of the site to water is shown by the fact that a relatively high quantity of bones of beavers and the shells of European pond turtles has also been found.

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