Publikationen des Deutschen Archäologischen Instituts

Tivadar Vida, Daniel Winger (Volume editors), Szólád I: Das langobardenzeitliche Gräberfeld: Mensch und Umwelt

Erika Gál
Mammalian and bird remains from the Langobard period cemetery of Szólád

Römisch-Germanische Forschungen Band 76

https://doi.org/10.34780/822c-21u6

Herausgebende Institution / Publisher:
Deutsches Archäologisches Institut

TIVADAR VIDA / DANIEL WINGER
(HERAUSGEBER)

SZÓLÁD I

DAS LANGOBARDENZEITLICHE GRÄBERFELD: MENSCH UND UMWELT

RGK

TIVADAR VIDA / DANIEL WINGER
(HERAUSGEBER)

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RÖMISCH-GERMANISCHE FORSCHUNGEN

BAND 76

zugleich

MONUMENTA GERMANORUM ARCHAEOLOGICA HUNGARIAE

BAND 7

RÖMISCH-GERMANISCHE KOMMISSION
DES DEUTSCHEN ARCHÄOLOGISCHEN INSTITUTS ZU FRANKFURT A. M.

INSTITUT FÜR ARCHÄOLOGISCHE WISSENSCHAFTEN DER
EÖTVÖS LORÁND UNIVERSITÄT ZU BUDAPEST

INSTITUT FÜR ARCHÄOLOGIE, GEISTWISSENSCHAFTLICHES
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Szólád I

Das langobardenzeitliche Gräberfeld: Mensch und Umwelt

HERAUSGEGEBEN VON

TIVADAR VIDA UND DANIEL WINGER

MIT BEITRÄGEN VON

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HEINRICH THIEMEYER, TÜNDE TÖRŐCSIK, TIVADAR VIDA UND
DANIEL WINGER

REICHERT VERLAG • WIESBADEN • 2022

XVI, 358 Seiten mit 187 Abbildungen, 4 Diagrammen, 29 Tabellen und 73 Tafeln

Bibliographische Information der Deutschen Nationalbibliothek

Die Deutsche Nationalbibliothek verzeichnet diese Publikation in der Deutschen Nationalbibliographie; detaillierte bibliographische Daten sind im Internet über <http://dnb.d-nb.de> abrufbar.

ISBN: 978-3-7520-0654-4

Redaktion: Hans-Ulrich Voß, Römisch-Germanische Kommission Frankfurt a. M.
Formalredaktion: Johannes Gier, Römisch-Germanische Kommission Frankfurt a. M.
Bildredaktion: Oliver Wagner, Römisch-Germanische Kommission Frankfurt a. M.
Satz: Susanne Biegert, Bonn
Druck: Bonifatius GmbH Druck – Buch – Verlag, Paderborn
Printed in Germany
Printed on fade resistant and archival quality paper (PH 7 neutral) • tcf

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Mammalian and bird remains from the Langobard period cemetery of Szólád

By Erika Gál

INTRODUCTION

Between 2005–2007, and in 2010, an international team of archaeologists, conducted by Tivadar Vida (Institute of Archaeology, Hungarian Academy of Sciences) and Uta von Freeden (Romano-Germanic Commission, German Archaeological Institute), carried out research excavations at Szólád near the southern shore of Lake Balaton in Hungary *(fig. 1)*. A total of 45 graves were unearthed in the Langobard period cemetery dated to the 6th century AD. The burial community has been described as presenting both biological and cultural heterogeneity in a recent integrative study including anthropological, molecular genetics, and isotopic analyses. It has also been suggested that the site was inhabited for only some 20 years in accordance with the historical evidence concerning the Langobards' short residence in Pannonia[1].

Fig. 1. Location of Hungarian Langobard sites mentioned in the paper.

Although zooarchaeological evidence of these people of postulated north-western origin is known from a rather great number of Langobard period cemeteries in Transdanubia[2], the majority of scarce finds were only described as archaeological items, bringing, therefore, little information regarding the human-animal relationship and the biometrical feature of species. Besides the detailed presentation of the animal bone assemblage from Szólád, an attempt for summarising archaeozoological data from the Hungarian Langobard period cemeteries is also made in this paper.

MATERIAL AND METHODS

Of the 45 excavated graves at Szólád, 31 contained remains of mammalian and avian origin *(tab. 1)*. This assemblage, including over 300 remains, could be assigned to four mammalian and two avian species, respectively. Usually, small portions of animals represented by disarticulated remains were donated to the buried people, but partial and complete skeletons of pig, domestic hen, and domestic goose, as well as pond turtle were also unearthed. In addition, eggs (most probably from domestic hen) and artefacts made from various raw materials were found in several graves.

Complete skeletons are especially important finds as they provide information to the taphonomic history of the cemetery as well as biological (sex, age and phenotype) and metrical data regarding the slaughtered animals and the skeletal parts. The skeletons of pond turtles are likely to represent intrusive specimens rather than buried animals relevant to the cultural-historical interpretation of the cemetery.

1 Alt et al. 2014. – Amorim et al. 2018.

2 Bartosiewicz 2015. – Bóna / Horváth 2009. – Bökönyi 1974. – Koncz 2014.

Since egg laying is connected to the breeding season of fowls kept under natural conditions, the number of graves containing egg remains – combined with the data from graves including fish remains[3] – provides information regarding the seasonal occupation of the cemetery.

Utensils were produced from bone, antler, and tusk. A special example is the bracelet made from elephant ivory from Grave 38[4], and the combs, which were the most frequent artefact, found in 25 graves[5]. Their accurate identification and description require a specialist, and so I only give general information about them in this paper.

I used the international standards by Elisabeth Schmid[6], as well as Louis Chaix and Patrice Méniel[7], for identifying the age category of animals based on the development of teeth and long bones, respectively. The sizes of bones measured according to the standard given by Angela von den Driesch[8] are summarised in *Appendix 1*.

Animal remains came to light from the following graves:

Grave 1 (male from an archaeological point of view)
Artefact: fragment of a comb (red deer antler [*Cervus elaphus* Linnaeus, 1758]).

Grave 2 (male, 2–3 years old)
Pig (*Sus domesticus* Erxleben, 1777): skull fragment of an about one year old individual; metacarpi III and IV from a two year old animal; five rib fragments.
Domestic hen (*Gallus domesticus* Linnaeus, 1758): eggshells.

Grave 3 (male, 45–60 years old)
Caprines: humerus of an about 2 years old individual.
Domestic hen: almost complete skeleton (lacking the distal leg bones) of an adult fowl; eggshells.
Artefact: comb (red deer antler).

Grave 4 (male, 30–40 years old)
Cattle (*Bos taurus* Linnaeus, 1758): fragments of skull and long bone diaphysis; proximal fragment of humerus from an adult animal; four chopped rib pieces.
Caprines: fragments of long bone diaphysis.
Domestic hen: partial skeleton of a juvenile chicken; eggshell fragments.
Artefact: small *ad hoc* chisel made from long bone diaphysis of cattle, a rib spatula made from split cattle rib with shiny and burnt surface, and a comb (red deer antler).

Grave 5 (male, 30–40 years old)
Pig: partial skeleton of a juvenile (few months old) pig.
Horse (*Equus caballus* Linnaeus, 1758): proximal fragment of femur from an adult (older than 3 years) animal.

Fig. 2. Pair of pig (or wild boar) tusk found in Grave 6.

Domestic hen: eggshell fragments.
Pond turtle (*Emys orbicularis* Linnaeus, 1758): two partial skeletons of not yet fully grown individuals.
Artefact: fragment of a comb (red deer antler).

Grave 6 (male, 8–12 years old)
Pig: two fragmented lumbar vertebrae from a subadult animal with marks from burning.
Artefact: pair of pig (or wild boar, *Sus scrofa* Linnaeus, 1758) tusks *(fig. 2)*; fragment of a comb (not determined, bone / antler).

Grave 7 (male, 12–15 years old)
Goose (*Anser* cf. *domesticus*): partial skeleton of an adult bird.
Artefact: fragment of a comb (red deer antler).

Grave 8 (female, 3–5 years old)
Domestic hen: partial skeleton of a juvenile chicken; eggshell fragments.
Artefact: fragment of a comb (red deer antler).

3 Bartosiewicz in this volume.
4 Koncz / Bollók 2020, 264, Fig. 4.
5 The determination of the combs was carried out by Zsuzsanna Tóth, Institut of Archaeological Sciences, Eötvös Loránd University, Budapest, Múzeum krt. 4B.
6 Schmidt 1972, 77, tab. X.
7 Chaix / Méniel 2001.
8 von den Driesch 1976.

Fig. 3. Antler knife(?) found in Grave 10. The enlarged picture in frame shows the place of a possible suspension hole near the base of object.

Grave 9 (female, 20–25 years old)
Domestic hen: eggshells from seven eggs.
Artefact: comb (red deer antler).

Grave 10 (male, 3–5 years old)
Cattle: fragmented astragalus.
Pig: two fragmented lumbar vertebrae from a subadult animal.
Horse: metatarsus from a subadult (less than 2 years old) animal.
Artefact: knife(?) made from the antler tine end of red deer (most probably bone) *(fig. 3)*; comb (red deer antler).

Grave 11 (male, 35–45 years old)
Cattle: distal fragment of humerus and a carpal bone from an at least one year old animal.
Horse: third molar (M_3) from an adult (older than 3.5 years old) specimen; metatarsus fragment and proximal phalanx from a subadult (less than 2 years old) animal.
Domestic hen: three eggs.
Artefact: comb (red deer antler).

Grave 12 (male, 1.5–4 years old)
Pig: skull and scapula fragments of a more than 1.5 year old female specimen.
Artefact: comb (red deer antler).

Grave 13 (male, 35–50 years old)
Cattle: five rib fragments and a carpal bone.
Pig: fragment of a thoracic vertebra from a subadult individual; four rib fragments, and the proximal fragment of metatarsus IV.
Artefact: fragment of a comb (red deer antler).

Grave 14 (male, 13–17 years old)
Cattle: fragment of a rib placed at the legs.
Caprines: four thoracic and two lumbar vertebrae from a younger than 4–5 year old animal placed at the legs.
Artefact: fragment of a comb (red deer antler).

Grave 15 (male, 13–17 years old)
Domestic hen: eggshells.
Artefact: comb (red deer antler).

Grave 16 (male, ≥ 45 years old)
Pig: partial skeleton (left side radius, ulna, carpals, two rib segments, and the right-side femur and patella) with heating marks of an about 3 years old animal *(fig. 4)*.
Artefact: fragment of a comb (red deer antler).

Fig. 4. Pig ulna, radius and femur found in Grave 16.

Fig. 5. Antler case(?) found in Grave 22.

Fig. 6. Runners made from cattle radius (top) and horse radius (bottom), Grave 27.

Fig. 7. Antler container(?) found in Grave 27. Black circles indicate the place of incisions.

Grave 17 (female, 45–60 years old)
Domestic hen: sternum (under a small bronze vessel), ulna, and long bone diaphysis from an adult fowl (at the bottom of grave).

Grave 18 (male, 12–16 years old)
Sheep (*Ovis aries* Linnaeus, 1758): humerus from an adult (older than 3 years) specimen and two rib pieces.
Domestic hen: eggshell fragments.
Artefact: fragment of a comb (red deer antler).

Grave 20 (male, 25–35 years old)
Pig: tooth from the mandible.
Domestic hen: eggshells from five eggs.
Artefact: fragment of a comb (not determined, bone / antler).

Grave 21 (female, 17–25 years old)
Cattle: molar tooth (LM_3) of an adult (older than 2.5 years) animal; skull and metatarsus fragments.
Artefact: fragment of a comb (red deer antler).

Grave 22 (male, 40–50 years old)
Cattle: skull and tooth fragments.
Caprines: cervical vertebra and humerus diaphysis fragment from a fully grown (older than 4–5 years) specimen.
Artefact: case(?) made from the antler tine end of a red deer *(fig. 5)*; comb (red deer antler).

Grave 25 (female, 30–40 years old)
Pig: partial skeleton (a scapula, four thoracic vertebrae, six rib fragments, and both pelvises) of a juvenile (few months old) specimen placed to the eastern end of the grave.
Domestic hen: almost complete skeleton (lacking the head) of a juvenile chicken placed to the eastern end of the grave; eggshell fragments.
Artefact: comb (red deer antler).

Grave 26 (female, 20–40 years old)
Pig: partial skeleton (two lumbar vertebrae, four metatarsi and six phalanges) of a subadult (about 2 years old) animal.

Grave 27 (male, 40–55 years old)
Horse: fragment of lower premolar or molar tooth.
Artefact: runner made from the radius of a juvenile (few months old) cattle (*fig. 6*, top); runner made from the radius of an adult horse (*fig. 6*, bottom); container(?) made from antler beam of red deer *(fig. 7)*; comb (red deer antler).
The horse tooth and the runners were found in the filling layers of the grave, and therefore they are not assigned to the Langobard finds.

Grave 29 (female, 40–60 years old)
Cattle: rib segment displaying marks from burning; placed to the right of the head.
Caprines: an almost complete lumbar vertebra and rib displaying marks from burning from a fully grown (older than 4–5 years) animal; placed to the right of the head.
Domestic hen: eggshell fragments.

Grave 30 (female, 30–40 years old)
Pig: partial skeleton (femur, both patellae and lumbar vertebra) from a subadult (younger than 3 years old) animal; placed at the feet.
Domestic hen: *in situ* egg *(fig. 8)* and eggshell fragments.
Artefact: comb (red deer antler).
In addition to the Langobard period finds, a horse radius from a juvenile (about one year old) specimen was found in a robbed pit between Layers 2 and 3. It is poorly preserved, especially its surface that is rather damaged.

Grave 31 (female, 35–45 years old)
Cattle: upper premolar tooth, fragment of a flat bone.
Artefact: fragments of a comb (most probably made from antler).

Grave 34 (indet. sex, 3–5 years old)
Caprines: left ilium from an adult specimen placed next to the head.
Artefact: fragments of a comb (red deer antler).

Grave 38 (female, 5–6 years old)
Cattle: rib segment found left from the head, outside of the grave.
Caprines: fragment of a long bone diaphysis found left from the head, outside of the grave.
Pig: rib segment found left from the head, outside of the grave.
Domestic hen: eggshell fragments.
Artefact: bracelet made from elephant(?) ivory.

Grave 42 (male, 4–8 years old)
Caprines: unossified epiphysis of a thoracic vertebra from a juvenile or subadult (younger than 4–5 years old) individual.
Pig: humerus of a juvenile (few months old) specimen placed to the eastern end of the grave.
Artefact: fragments of a comb (red deer antler).

Grave 45 (male, 30–40 years old)
Goose: almost complete skeleton, lacking the distal part of the wing *(fig. 9)*.
Artefact: fragments of a comb (red deer antler).

Fig. 8. Egg from domestic hen found *in situ* in Grave 30.

Fig. 9. Goose skeleton found in Grave 45.

RESULTS

Of the 45 graves uncovered in the cemetery of Szólád, 31 contained any type of remains of animal origin. Twelve graves contained bone, egg, and artefacts alike. 15 graves contained complete or fragmented egg(s) from domestic hen. Artefacts were found in 27 graves. Grave 1, which was attributed to a male from an archaeological point of view, contained only a fragment of a comb. The distribution of finds according to the identified species and skeletal parts as well as the age and sex of the buried person are summarised in *Tables 1–3*.

Animal bones

Animal bones were found in 28 graves, from which four mammalian (cattle, sheep or goat, pig, and horse) and two avian species (domestic hen and goose) as well as a reptile (pond turtle) were identified. 16 graves contained the remains of a single species, while at least two species were represented in 11 graves.

Cattle were identified from ten graves (six male graves, four female graves). The remains mostly represented the skull, ribs and the meaty limb. The ageable remains indicated the slaughter of adult animals.

Sheep or goat remains were found in nine graves (six male graves, two female graves, and one of undetermined sex). Except for the complete humerus of sheep found in Grave 18, the remains of caprines could not be identified to species level. The mentioned humerus indicated a sheep with a height of 56.6 cm at withers according to Teichert's method[9]. This size points to a sheep with a rather small stature in comparison with the 64.5 cm tall sheep identified from the Migration Period site of Mezőkövesd[10], but also drops behind the Iron Age specimen from Mezőcsát–Hörcsögös[11], whose withers height was 60.3 cm. Skull remains were not recognised from caprines, except for a number of bones from the axial skeleton and the pelvic girdle, as well as ribs and long bones rich in meat, such as the humerus and the radius. Similar to the cattle, the ageable individuals indicated that the adult caprines were killed.

Pigs, the most frequently occuring species, was identified in 13 graves (nine male graves, four female graves). Not just disarticulated remains, but partial or complete skeletons were often placed into the graves. Contrary to bovids, the majority of the pig remains represented juvenile and subadult individuals. All the body parts, including the dry limb, were found.

Horses were identified from three male graves only. The femur fragment from Grave 5 and the lower tooth from Grave 11 represent meaty body parts including the mandible, but the metatarsi and the phalanx found in Graves 10 and 11 represent terminal bones without economic value. Horse remains originated from juvenile, subadult, and adult individuals alike. Nevertheless, the only complete long bone (a metatarsus in Grave 10), based on which the withers height could have been calculated, belonged to an undeveloped horse. Due to the yet unossified epiphyses, the eventual greatest length of the bone is unknown. The radius, coming from a robbed pit of the female Grave 30, is not assigned to the Langobard assemblage.

Additionally, a single horse skeleton without a skull was found in Grave 13, where the animal had been placed above the 4.5 m deep male burial[12]. According to its special character, it is distinguished from food donations and artefacts; this specimen is described and discussed in a separate paper by Krya Lyublyanovics[13].

Domestic hen bones were found in five graves (two male graves, three female graves). Graves 3, 8, and 25 contained almost complete skeletons where only the head and/or the feet of the bird were cut off, while Graves 4 and 17 contained only a few remains from the fowl. Similar to the horses, all age groups were represented in this species. Fully grown individuals were rare, however.

The distal leg bones, such as the tarsometatarsi and phalanges of the bird placed into Grave 3, were missing. Neither contained any skeletal part medullary bone tissue, therefore this specimen could not be sexed based on the presence of cock spur or medullary bones tissue – the two most frequently used indicators[14]. The other adult individual from domestic hen was found in Grave 17. According to the dimensions of the ulna, the only complete long bone in this grave, this bird was a female.

Geese were identified from two male graves. Grave 7 contained a few bones from the right side of a fully grown fowl, while a complete skeleton of a similar adult bird, including the head and distal leg bones, was found in Grave 45 *(fig. 9)*. Goose husbandry was already practiced by the Romans[15], and the rather abundant animal bone assemblage found in the Roman town of Tác–Gorsium in Pannonia also contained a number of domestic geese remains[16]. Since there is no evidence for systematic hunting at Szólád,

9 Teichert 1975.
10 Bökönyi 1974, 514.
11 Bökönyi 1974, 504.
12 von Freeden / Vida 2007, 270–273, fig. 7. – Vida 2017, 48, fig. 9.
13 Lyublyanovics in this volume.
14 Serjeantson 2009, 47–53.
15 Serjeantson 2009, 293.
16 Bökönyi 1984, 15; 94–95.

Grave	Animal bone – species and age category	Egg	Artefact and/or symbol	Age (y/m)	Sex
1			Comb (fr)		Male*
2	Pig (juv.+ad.)	1		2–3 y	Male
3	Sheep or goat (subad.), **domestic hen (ad.)**	1	Comb (c)	45–60 y	Male
4	Cattle (ad.), sheep or goat, domestic hen (juv.)	1	Rib spatula and *ad hoc* chisel; Comb (c)	30–40 y	Male
5	**Pig** (juv.), horse (ad.), **pond turtle**	1	Comb (fr)	30–40 y	Male
6	Pig (subad.)		Pair of pig or wild boar tusk; Comb (c)	8–12 y	Male
7	Domestic goose (ad.)		Comb (fr)	12–15 y	Male
8	**Domestic hen** (juv.)	1	Comb (fr)	3–5 y	Female
9		7	Comb (c)	20–25 y	Female
10	Cattle (ad.), pig (subad.), horse (subad.)		Antler handle(?); Comb (c)	3–5 y	Male
11	Cattle (ad.), horse (subad.+ad.)	3	Comb (c)	35–45 y	Male
12	Pig (ad.)		Comb (c)	1,54 y	Male
13	Cattle (ad.), pig (subad.)		Comb (fr)	35–50 y	Male
14	Cattle, sheep or goat (juv./ subad.)		Comb (fr)	13–17 y	Male
15		1	Comb (c)	13–17 y	Male
16	Pig (subad.)		Comb (fr)	≥ 45 y	Male
17	Domestic hen (ad.)			45–60 y	Female
18	Sheep (ad.)	1	Comb (fr)	12–16 y	Male
20	Pig	5	Comb (fr)	25–35 y	Male
21	Cattle (ad.)		Comb (ic)	17–25 y	Female
22	Cattle, sheep or goat (ad.)	2	Antler container(?); Comb (c)	40–50 y	Male
25	Pig (juv.), **Domestic hen** (juv.)	1	Comb (ic)	30–40 y	Female
26	Pig (subad.)			20–40	Female
27	Horse		Two bone runners; Antler container(?); Comb (c)	40–55 y	Male
29	Cattle, sheep or goat (ad.)	1		40–60 y	Female
30	Pig (juv.), horse	2	Comb (ic)	30–40 y	Female
31	Cattle		Comb (fr)	35–45	Female
34	Sheep or goat (ad.)		Comb (fr)	3–5 y	Indet.
38	Cattle, sheep or goat, pig	1	Bracelet	5–6 y	Female
42	Pig (juv.), sheep or goat (juv./ subad.)		Comb (fr)	4–8 y	Male
45	**Domestic goose** (ad.)		Comb (fr)	30–40 y	Male

Tab. 1. Distribution of mammalian and avian remains in the cemetery of Szólád. Bold letters indicate skeletons. Abbreviations: c = complete; ic = inclomplete; fr = fragment.

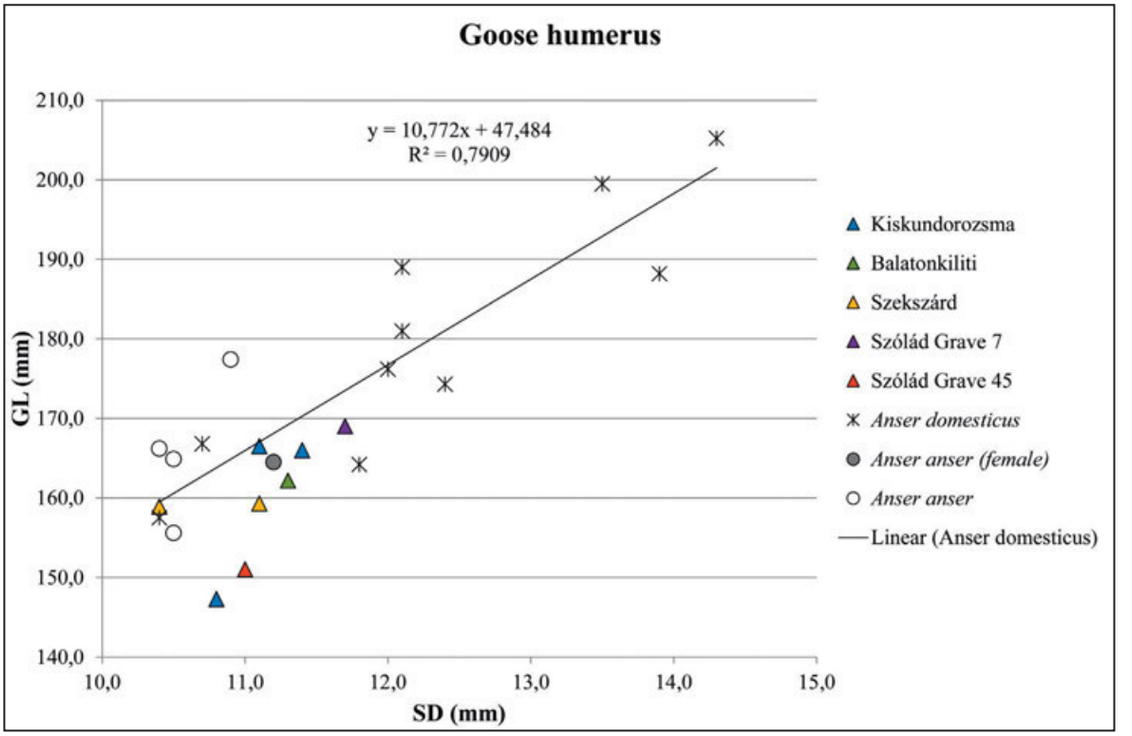

Fig. 10. Size variation in humerus from grey-leg goose and domestic goose.

the two aforementioned specimens found in graves are tentatively assigned to the domestic form. The presence of wild geese, however, cannot be totally excluded, especially considering the wet meadows and reed beds near Lake Balaton.

Humeri seem to be one of the best preserved long bones in graves. Therefore, the dimensions of the complete goose humeri found in Graves 7 and 45 were compared with the sizes of Avar Period specimens from a number of sites in Hungary, as well as with the measurements of recent grey lag geese (*Anser anser* Linnaeus, 1758) and modern domestic geese (*Anser domesticus* Linnaeus, 1758) in order to estimate its sex. The results illustrated on *figure 10* show that the specimen from Grave 45 is one of the smallest individuals among the Migration Period geese[17]. Its dimension falls below the single sexed specimen of grey lag goose and the smallest individuals of domestic goose that are assigned to females according to the sexual dimorphism reflected in size. Contrarily, the specimen from Grave 7 seems to be the most robust individual among the Migration Period geese. The three biggest sizes falling to the upper right part of the plot diagram are attributed to male domestic geese.

Finally, the filling of Grave 5 contained two fragmented skeletons of subadult pond turtles. According to the stratigraphic position of the remains, it is likely that these specimens represent intrusive animals.

Eggs

A total of 29 complete or fragmented eggs were recovered from 15 graves. Usually, a single egg was donated to the buried person, but two, three, five, or even seven eggs were also found in a number of graves. The latter case was noted in Grave 9, which did not include any animal bones. Therefore, the unusually great number of eggs may have substituted meat. Grave 20, into which five eggs were placed, contained a single pig tooth aside the eggs. According to the share of eggs, people seem to have received this type of grave good independently of their sex and age. The distribution and location of eggs within the graves is summarised in *table 2*.

Artefacts

Aside from the ivory ring and combs, eight artefacts were found in the cemetery of Szólád. Grave 4 contained a small *ad hoc* chisel and a rib spatula, both made from the skeletal parts of large ungulates.

17 Gál in preparation.

Grave	No. of egg(s)	Location within the grave	Sex	Age (y)
2	1		Male	2–3 y
3	1		Male	45–60 y
4	1		Male	30–40 y
5	1		Male	30–40 y
8	1		Female	3–5 y
9	2 5	In the front of legs 10 cm over the formation level, N-E corner of the grave	Female	20–25 y
11	3	East, at the end of legs	Male	35–45 y
15	1	At the end of the left leg	Male	13–17 y
18	1	Under the legs, between Levels 3 and 4	Male	12–16 y
20	5	At legs	Male	25–35 y
22	1 1	Under the formation level, 3-4 cm from the radius West from the legs	Male	40–50 y
25	1	In the estern end of grave	Female	30–40 y
29	1	At the right side of the head	Female	40–60 y
30	2	At the abdomen	Female	30–40 y
38	1	Left from the head, outside of grave	Female	5–6 y

Tab. 2. Distribution and location of eggs in the cemetery of Szólád.

Grave No.	Sex	Species	Skeletal part	Tool type	GL	GB	GD	Note
4	Male	Large ruminant	Long bone diaphysis	Chisel	59.5	22.3	11.8	Small *ad hoc* chisel
		Large ruminant	Rib	Rib spatula	28.0	18.7	3.6	Split rib fragment with polished and burnt surface
6	Male	Pig/Wild boar	Lower canines	Helmet decoration	88.1 92.1	17.3 18,3	9.2 9.6	Naturally worn off at the top; damaged at the base
10	Male	Red deer	Antler tine	Handle(?)	255.0*	27.0	27.3	Poorly preserved
22	Male	Red deer	Antler tine	Container(?)	265.0*	26.2	27.1	Restored
27	Male	Cattle	Radius	Runner	244.1	68.2	37.8	From disturbed layer
		Horse	Radius	Runner	307.5**	73.8	39.4	From disturbed layer
		Red deer	Antler beam	Container(?)	152.0	47.6	43.4	Restored

Tab. 3. List of artefacts (except for combs and the bracelet) found in in the cemetery of Szólád.
Abbreviations regarding the sizes of objects: GL = greatest length, GB = greatest breadth, GD = greatest depth.
* Measured along outside of the curve ** The calculated withers height (Vitt 1952) for this horse is 127.0 cm.

The pair of pig (or wild boar) tusks found in Grave 6 were placed at the legs of the 8–12-year-old burried boy and has been identified as a helmet decoration[18]. Both tusks are naturally worn down and sharpened at the top due to the contact with the upper canines, while the bases are smashed. This damage is likely due to their application to the helmet *(fig. 2)*.

The tine of red deer antler found in Grave 10 is polished on the surface, but the spongious tissue was only partly removed(?) from the cut off antler piece. The base of the object is fragmented, but the remains of an emerging margin could be identified. Concerning the very small opening at the edge of base, it is difficult to state whether it represents the remains of a hole or an accidental fragmentation. The point of the tine seems to have been slightly worn down or fashioned *(fig. 3)*. Grave 22 included a similar object both in shape and size *(tab. 3)*, but the spongious tissue was entirely removed from the antler tine, which in this case resulted in a thin-walled, container-like artefact. The object was recovered in small pieces and later restored *(fig. 5)*.

Finally, two bone runners and an antler cylinder were found in Grave 27 *(figs 6; 7)*. Nevertheless, only the latter could be assigned to the Langobard period assemblage. Contrary to the two previously described antler objects, this artefact was carved from the beam of a red deer antler. The original size and shape of the object is unknown due to the bad preservation, but the sharp cut mark at one end, as well as the removed spongious tissue from the antler tube, indicates that this article might have also served as a container. Unlike in the case of artefacts found in Graves 10 and 22, fine notches could be noted near both ends of the object. One group of these marks include five parallel lines that most probably represent cut marks *(fig. 7,1)*. The other group of incisions consists of five semi-circular lines *(fig. 7,2)* that might represent a basic decoration.

DISCUSSION

Pig and domestic hen contributed in the greatest extent to the grave donations at Szólád, most probably due to their frequency at the settlement. It is worth mentioning, however, that these two species were the most common animals in the cemeteries within the Roman Empire as well[19]. Pig and domestic hen would also point to a sedentary way of life of people inhabiting Szólád. The presence of bovids, on the other hand, point to the exploitation of grazing fields around the settlement. As long as sheep remains have been identified from several Langobard period cemeteries in Hungary, the material from Szólád brings the first evidence for cattle breeding connected to this period in Pannonia *(tab. 4)*.

According to the age group of animal offerings, cattle and sheep (and goat, if any of caprine remains belonged to this species) were not slaughtered in the first months of their life, but rather kept for secondary exploitation such as milking, traction, and wool harvest for at least one or two years. In contrast, pigs, as a single-purpose meat species, were often killed at juvenile and subadult ages *(tab. 1)*.

Among poultry, domestic hen seems to have been much more frequently slaughtered than domestic goose. This may be explained both by the abundance and prolific character of domestic hen, and the secondary exploitation of geese for their plumage. Notable is in this respect the lack of distal wing bones, such as the carpometacarpus and manual phalanges, in the goose skeleton found in Grave 45. The primary wing feathers, which can be used as dusters or quill pens, are carried on these skeletal parts[20].

It is also worth mentioning that Grave 45 is a male grave, as is Grave 7, the other burial with a goose donation. In the Langobard period cemetery of Ménfőcsanak, the only remains from geese were also found in a male burial (Grave 227)[21]. Geese remains or skeletons seem to have been more typical of male than female graves in the Avar Period cemeteries[22].

Both domestic hen and geese represent species primarily slaughtered for their meat. Even when the skeletons of these birds were found almost complete in graves, the lack of head and/or the distal wing and leg suggest that body parts without economic value were removed before placing the carcass in the burial. Besides representing food donation, birds might have also been accompanying animals to the dead, similarly to dogs and horses. Nevertheless, burying a pet with its owner was typical of uncommon avian species, such as falcons, in Europe. Thirty-four graves with hawks, dated to 500–1000 AD, were found in Sweden[23]. Similar cases have not been noted so far in any of the Langobard cemeteries.

Horses were rarely donated to buried people at Szólád. Since meat supply seems to have been based on cattle, caprines, pig, and poultry keeping, the horse may have

18 Vida 2017, 46, fig. 5.
19 Serjeantson 2009, 340–341, fig. 14,3.
20 Serjeantson 2009, 191–192; 200–201, fig. 8,4.
21 Bartosiewicz 2015, 249–250, fig. 1.
22 Gál in preparation.
23 Serjeantson 2009, 345.

Cemetery	Cattle	Sheep/ goat	Pig	Horse	Dog	Goose	Domestic hen	Bird*	Fish	Pond turtle	Egg	Reference code
Gyönk		1									1	1
Hegykő		1	1		1							1, 2
Kajdacs			2	1	2			2				1
Kápolnásnyék		1						1				1, 2
Ménfőcsanak			1		1	1	1		1	1	1	3
Rácalmás			1				1	2				1
Szentendre			1	2				1	1		4	1
Szólád	10	9	13	4		2	5		4	1	15	
Tamási			1					3			7	1
Vörs		1	1				1					2
Total	**10**	**13**	**21**	**7**	**4**	**3**	**8**	**9**	**6**	**2**	**28**	

Tab. 4. Distribution of animal remains by the number of their occurrence in graves in the Langobard cemeteries of Hungary. Reference codes: 1 = Bóna / Horváth 2009; 2 = Bökönyi 1974; 3 = Bartosiewicz 2015.
* without species identification.

been valued more as a saddle horse or used in animal traction; its occurrence among slaughtered animals is not expected, with the exception of old or injured individuals. Horse remains, which may be interpreted as food offering, were so far described only from Grave 4 at Kajdacs. The horse ribs were found near the head of the buried woman in this case. At Szentendre, Grave 47 represented a horse burial, while the female Grave 26 contained a single mandible with patina traces at the bottom[24].

Contrary to a number of Langobard cemeteries in Hungary[25], dog was not identified in Szólád at all. This species, however, must have been present at the settlement according to the advanced animal husbandry carried out at Szólád. It is likely that dog carcasses were buried in other parts or outside the settlement rather than having a symbolic meaning and added to the graves of buried people.

Unimproved cattle and caprines farrowed at the end of winter as their offspring could have started grazing the new grass in spring. The lack of remains from calves and lambs at Szólád reduces the potential of seasonal dating of burials. Domestic hen, however, offers information on the seasonal use of the cemetery both by the presence of eggs (and fish) in some graves, and the remains of juvenile chickens.

As already mentioned in the previous paper on fish remains by László Bartosiewicz[26], there is a great probability that in unimproved domestic hen, which were bred during the Migration Period, egg laying peaked in March–April, and chickens began their lives in the lightest months of the year. Therefore, those 15 graves that contained eggs *(tab. 2)* may generally be considered late winter to late summer burials. Nevertheless, Graves 4, 8, and 25 included both eggs and juvenile chickens *(tab. 1)*. Since it was suggested that the ossification of chicken bones takes about 19–27 weeks in older breeds[27], the most likely date of the latter three graves is August–September.

The variety of personal belonging found in graves includes combs that were found both in male and female graves *(tab. 1)*. The number and selection of other artefacts, however, is rather limited and characteristic of male graves only *(tab. 3)*. Analogues are also hardly known from other Langobard period cemeteries in Hungary. A bone pin with a hole made from a bird bone was found in the female Grave 18 at Tamási.[28] The only antler pendant(?) represented by a dotted plate carved from a red deer antler rose was also identified from a female burial (Grave 73) in the cemetery at Bezenye.[29]

Nevertheless, apart from the elephant ivory bracelet found in Grave 38, the pair of tusks interpreted as a helmet decoration from Grave 6, as well as the antler objects found in Grave 10, 22, and 27 represent rather interesting artefacts at Szólád. These unique finds are first described

24 Bóna / Horváth 2009, 62; 102–103; 116, figs 69 and 80.
25 Bartosiewicz 2009. – Bóna / Horváth 2009.
26 Bartosiewicz in this volume.
27 Serjeantson 2009, 39, tab. 3,2.
28 Bóna / Horváth 2009, 146–147, fig. 106; 298, pl. 63,16.
29 Bóna / Horváth 2009, 19–20, fig. 4; 236, pl. 1,6.

here from a Langobard period cemetery in Hungary. So far, a single, wild boar tusk with traces of rust was identified from the female Grave 68 at Szentendre. This specimen, however, beyond that it came impaired, was found together with a number of utensils, such as a knife and scissors and a whetstone (most probably placed into a bag) at the right arm of the dead[30]. It is likely, therefore, that this tusk in an iron socket either had a practical function, or it was an amulet, rather than a special cloth decoration.

Nonetheless, helmet ornaments were recognised from a number of 6th–7th century cemeteries in Bavaria[31]. In addition, they were also found in the 4th–5th century Grave 2 of a postulated Germanic soldier in Monceau-le-Neuf (North France), and in the 5th century Grave 90 of an old man in Schwanenstadt, Upper Austria[32]. A common feature of these adornments with the Szólád helmet decoration is that they all came from male graves. Most of them were recovered from around the head of the buried people. The only exception is the French grave, where the tusks were found in a clay vessel at the legs of the warrior, similar to the burial at Szólád. It has therefore been suggested that the boy at Szólád was not buried with the helmet on his head, but that it was placed at the end of the coffin[33]. Further finds from Gallia and Pannonia will probably shed light as to whether this variant was meant as a different burial custom compared to the widespread tradition in Bavaria.

It has also been suggested that the size of the tusk would relate with the age of the helmet owner[34]. The largest dataset published so far would indeed confirm this suggestion[35], similar to the sizes of tusks from Szólád. There are some exceptions, however, such as the 85- and 76-mm long tusks in Grave 59 (adult man) unearthed in Bruck-Künzing, Deggendorf, and the 88- and 81-mm long tusks in Grave 36 (mature man) excavated at Peigen, Pilsting, which were the smallest recorded. Moreover, it was noted that the tusks found in Grave 90 (senior man) in Schwanenstadt were heavily polished at their base[36]. Thusly, one should also consider the random shortening of these artefacts when curated, especially in the case of helmets worn for decades.

Also, most of the tusks were assigned to (male) wild boars[37]. Nevertheless, the separation of domestic and wild forms of pig is rather difficult, especially if we consider the possible backcrosses and hybrids typical in this species. Therefore, the sizes of young wild boars and adult domestic pigs would overlap to a certain point. The dimensions of teeth found at Szólád fall well apart from the measurements of modern wild boar trophies *(fig. 11)*. Taking into account the frequency of remains from domestic pig and the lack of hunted animals in the cemetery, this specimen can be assigned to the domestic rather than the wild form.

The antler objects that came to light at Szólád also represent peculiarities. The handle-like tool coming from Grave 10 was found above the burial, on a level with a disturbed layer. Therefore, it most likely originates from a later period, e. g., the Avar Period, when taken into account the rather large number and variety of antler tine implements described from this era. An attempt for the classification of these tools based on the shape of object, the condition of spongiosa in the tine, and the placement of holes carved into the antler has recently been made by István Vörös[38]. Since the implement found at Szólád is broken at the base, and therefore both the condition of the spongiosa and the existence of hole(s) is uncertain *(fig. 3)*, even its tentative assignment to Type 2 (antler case) or Type 3 (antler knife) fails[39]. Nevertheless, the narrowing, worn off shape of the tip may have resulted from its use for piercing tinned leathers as suggested in the case of Type 3[40].

The other two antler objects found at Szólád, however, were placed next to the head (Grave 22) and the right shoulder (Grave 27) of the buried people, respectively. Both their place within the grave and the careful fashioning (polished cortical surface and removed spongiosa from the antler piece) would suggest their significant role as personal belongings. Concerning the artefact found in Grave 22, Type 2 (antler case) among the aforementioned Avar Period antler tine objects, seems to have been the closest analogy according to the completely removed spongiosa from the antler tine *(fig. 5)*. These containers may or may not have been drilled through at the base, but the opening of objects – that is the base of tine – was closed by an antler or wooden stopper. *In situ* finds indicated that short iron pieces, such as awls, were kept in these cases, but their employment as boxes for ointment has been also suggested[41].

The shape and size of the antler tube found in Grave 27 most resembles the cylindrical salt containers known from a few, but widely located Early Medieval sites in Europe from Spain to Sweden and from England to Russia[42]. These

30 Bóna / Horváth 2009, 126–127, fig. 88; 287, pl. 52,6.
31 von Freeden / Lehmann 2005. – Möslein 2014.
32 Nagy 2005, 102.
33 About the new interpretation of the rule of boar-tusk on the coffin-end in the graves see: von Freeden 2020, 265–284.
34 Nagy 2005, 102.
35 Möslein 2014.
36 Möslein 2014, 378.
37 von Freeden / Lehmann 2005. – Möslein 2014.
38 Vörös 2017.
39 Vörös 2017, 203–204, fig. 58,2.3.
40 Vörös 2017, 204.
41 Vörös 2017, 203–204, fig. 58,2.
42 Tesch 2007.

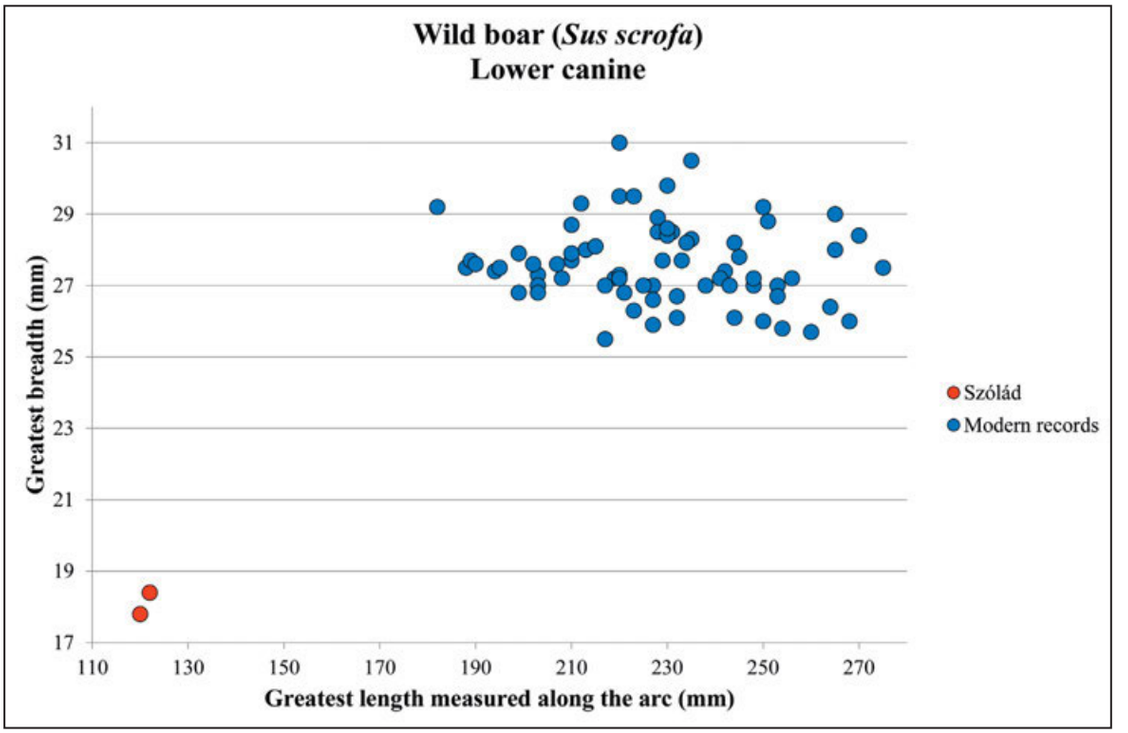

Fig. 11. Size variation in wild boar tusk. The measurements of modern specimens were collected from Bakkay et al. 1971, 322–325.

containers, however, seem to have been richly decorated. Moreover, the majority of them either have perforations at the edges or display a narrow ridge through which a hole was drilled. Only one specimen from Sweden and one from Spain have been described as being open all the way through. It has been suggested that the content was kept in a piece of linen inside these cases[43]. In the Szólád specimen, only the narrower end of the tube is partly preserved as the straight cut mark points to. Remains of suspension holes could not be noted on this end, or on the wider and fragmented end of the tube. The fine lines near this wider opening, however, may have represented incised decoration *(fig. 7,2)*.

The coeval cemetery of Peigen yielded an antler object that combines the features of artefacts from Grave 10 and Grave 27 from Szólád. The find, unearthed from around the legs of a young woman(?) placed into Grave 232, represents an antler tine end. The base of the object does not seem to have been worked, while the tip is broken. The spongious tissue was not removed from the tine, but notches were recognised close to the narrow end of the implement. The object was tentatively identified as a stamp[44].

Animal remains found in Langobard period graves in Hungary were not always identified on a species level, therefore the zooarchaeological material is rather poor *(tab. 4)*. In contrast, a fairly high number of 5th to 6th century cemeteries in Germany yielded animal bones and eggs. In addition to the rather frequent horse and dog (double) burials, remains of meat-providing-mammals and domestic hen (Grossörner, Merxleben, and Rathewitz), and goose (Erfurt), as well as eggs from domestic hen (Allstedt) were described[45]. The domestic hen found in Grave 18 at Rathewitz was represented by an almost complete skeleton whose head and distal bones, such as the tarsometatarsi, were lacking, just as in the case of fowls found in Graves 3 and 25 at Szólád. Consequently, the mostly quantitative, rather than qualitative, differences noted between the two regions might even decrease with further excavations in Hungary and the involvement of zooarchaeologists in the study of finds.

43 Tesch 2007, 230.
44 von Freeden / Lehmann 2005, 192, pl. 171,4.
45 Müller 1980.

CONCLUSIONS

Szólád is the best represented Langobard period cemetery in Hungary and its adjacent areas from an archaeozoological point of view. The diversity of remains and species identified from the graves suggest a well-developed animal husbandry based on the exploitations of domestic mammals and birds.

Cattle is first identified from a Langobard period cemetery in Pannonia, while the size of sheep points to a small type of this species. Except for pig, which is a single-purpose animal, the age group of other species at slaughtering evidence their secondary exploitation. The lack of distal wing bones from the goose skeleton may be due to the removal of the wing tip from the carcass, suggesting its use as an object or the use of the detached feathers from the wing.

Neither the occurrence and number of egg donations, nor the type of bird species can be associated with the age or sex of buried people. It is noteworthy, however, that the almost complete goose skeleton was found in a male grave. The presence of goose seems to be linked rather to male than female burials in the Migration Period, though this correlation needs further documentation and demonstration.

Nevertheless, both the helmet tusk decoration and the antler objects came from male graves and were first identified from a Langobard period cemetery in Pannonia. Moreover, the antler containers seem to have been special finds even in a larger context of the study area. Either representing symbolic grave goods or having been used as containers for certain material (e. g. metal equipment, salt or ointment), they seem to have been rare finds and typical of males, who might have had a special occupation and role within the population.

ACKNOWLEDGEMENTS

I am grateful to Tivadar Vida, Uta von Freeden, and Daniel Winger for having invited me to identify the mammalian and avian assemblage found in the cemetery of Szólád, as well as the inspiring conversations. Special thanks are due to curators Mihály Gasparik (Hungarian Natural History Museum) and Andrea Kőrösi (Museum of Hungarian Agriculture) who provided access to the comparative bird bone collections under their custody. Last but not least, I wish to thank László Bartosiewicz and Daniel Winger for sharing their published and unpublished results with me and thereby helping the completion of this paper.

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Figs. 1–11: Authors.

APPENDIX 1. BONE MEASUREMENTS (MM) ACCORDING TO VON DEN DRIESCH 1976.

Bone	Side	GL	Lm*	Bp	Dp	SD	Bd	Dd	Grave	Age (y/m)	Sex
Cattle (*Bos taurus* Linnaeus, 1758)											
dentes LM3	dex	32.6		13.9					21	17–25 y	Tendency female
humerus	dex						80.5		11	35–45 y	Male
humerus	sin						86.5		4	30–40 y	Male
Sheep (*Ovis aries* Linnaeus, 1758)											
humerus	sin	132.2		32.4		13.3	26.5	22.8	18	12–16 y	Indet.
Pig (*Sus domesticus* Erxleben, 1777)											
dentes UM3		32.6		18.5					12	12–18 m	Male
scapula	sin		33.8	24.3	21.9	11.5			12	12–18 m	Male
metacarpus III		80.9		17.8		15.5	18.2		2	2–3 y	Indet.
metacarpus IV		82.6		17.1		14.4	18.8		2	2–3 y	Indet.
Horse (*Equus caballus* Linnaeus, 1758)											
dentes LM3	sin	31.3		14.4					11	35–45 y	Male
radius	dex	307.5				37.7	73.9	39.6	27	40–55 y	Male
phalanx proximalis		80.4				31.9	43.5		11	35–45 y	Male
Domestic(?) goose *(Anser* cf. *domesticus)*											
humerus	sin	151.0				11.0	22.6	13.9	45	30–40 y	Male
humerus	dex	169.0		34.8		11.7	23.5	14.2	7	12–15 y	Indet.
radius	sin	139.9				4.2	10.0		45	30–40 y	Male
radius	dex					4.1	9.7		45	30–40 y	Male
ulna	dex	147.4		14.7	19.7	7.9	14.9	10.9	45	30–40 y	Male
ulna	sin	149.1		14.9	19.1	8.1	15.2	11.2	45	30–40 y	Male
femur	sin	77.6	73.4	19.5	12.6	7.9			45	30–40 y	Male
femur	dex	78.4	73.4	19.9		8.3	19.2	14.6	45	30–40 y	Male
femur	dex	80.0	75.2	22.0	5.7	8.0	20.2	16.5	7	12–15 y	Indet.
tibiotarsus	dex	141.9		24.2			8.1	15.8	45	30–40 y	Male
tibiotarsus	sin						8.2	16.1	45	30–40 y	Male
tarsometatarsus	dex	86.1		17.3		7.8	18.9		45	30–40 y	Male
Domestic hen (*Gallus domesticus* Linnaeus, 1758)											
ulna	sin	55.0				3.3			17	45–60 y	Female

* GLP in the mammalian scapula

ABSTRACT

Of the 45 excavated graves at the sixth century cemetery at Szólád, 31 contained remains of mammals (cattle, sheep or goat, pig, and horse) and birds (domestic chicken and domestic goose), as well as various bone, tusk, and antler artefacts. Szólád seems to be special among the Langobard period cemeteries not only for furnishing a rich and diverse bone assemblage, but also for bringing the first evidence for cattle breeding in the Langobard period Pannonia. The frequency of pig, domestic chicken, and egg remains pointed otherwise to a sedentary way of life of the people inhabiting Szólád. The occurrence of avian bones and eggs did not show any sex or age-related pattern, but a complete goose carcass was found only in a male burial, similar to Grave 227 in the coeval cemetery at Ménfőcsanak. Several special artefacts, unique to the Langobard period of Pannonia, also came to light only in male burials. The pair of wild boar tusk found in Grave 6, according to parallels from the German region, has been interpreted as a decoration of the leather helmet owned by the 6–12 year-old-boy buried in the grave. Contrary to the burial customs in Bavaria, however, the boy at Szólád was not buried with the helmet on his head, but the helmet was placed by the leg. The antler objects found in Graves 22 and 27 represent even rarer finds. They were produced by removing the spongious tissue from the antler tubes from the tine end and the beam of red deer antler, respectively. The resulted cylindrical utensils may have served as containers for certain material (e.g. metal equipment, salt, or ointment). On the surface of the bigger object found in Grave 27, incisions consisting of five semi-circular lines – most probably representing a basic decoration – were noted.

ZUSAMMENFASSUNG

Im Gräberfeld des 6. Jahrhunderts von Szólád lagen in 31 von 45 Gräbern Überreste von Haustieren (Rind, Schaf oder Ziege, Schwein und Pferd) und Geflügel (Haushuhn und Hausgans) sowie unterschiedliche Knochen-, Hauer- und Geweihgegenstände. Im Kreis der früher bekannten langobardenzeitlichen Gräberfelder ragt das von Szólád nicht nur durch sein reiches und variables Fundmaterial hervor, sondern unterscheidet sich von den übrigen auch darin, dass man sich dort neben der sesshaften Lebensweise, die durch die Häufigkeit der Schweine-, Haushuhn- und Eierfunde gekennzeichnet ist, auch mit Rinderhaltung beschäftigt hat, wofür dies das erste Beispiel in dieser Epoche in Pannonien ist. Das Vorkommen des Geflügels und der Eier weist kein auf Geschlecht oder Alter hinweisendes Muster auf, eine ganze Hausgans wurde jedoch auch in Szólád nur in ein Männergrab gelegt, wie in Grab 227 von Ménfőcsanak. Gleichfalls nur in Männergräbern wurden gewisse besondere tierische Fundtypen mit Bearbeitungsspuren gefunden, einzigartig in Pannonien. Das Hauerpaar vom Wildeber in Grab 6 wird – gemäß den bekannten Parallelen aus germanischem Gebiet – zum Schmuck des Lederhelms des verstorbenen 8−12jährigen Jungen gehört haben, aber anders als bei den bayrischen Bestattungsbräuchen hatte man den Helm bei den Füßen des Toten abgelegt und nicht auf den Kopf gesetzt. Noch seltenere Funde bedeuten die Geweihgegenstände in Grab 22 und 27 aus dem Ende bzw. der Stange vom Damhirsch. In beiden Fällen war der schwammige Bestand sorgsam aus den Geweihstücken entfernt worden und auf diese Weise ein hohles Behältnis geschaffen worden, in dem Salz, Salbe oder ähnliches Material aufbewahrt worden sein konnte. Auf dem größeren Zylinder aus der Geweihstange (Grab 27) finden sich auch als Schmuck zu deutende Ritzungen.

ÖSSZEFOGLALÁS

A szóládi 6. századi temetőben 45 sír közül 31-ből kerültek háziállatok (szarvasmarha, juh vagy kecske, sertés és ló) és baromfiak (házityúk és házi lúd) maradványai, valamint különféle csont-, agyar- és agancseszközök napvilágra. A korábban ismert langobárd kori temetők köréből a szóládi nem csak gazdag és változatos leletanyaga révén emelkedik ki, hanem abban is különbözik a többitől, hogy a sertés-, házityúk- és tojás-leletek gyakorisága által jellezett letelepült életmód mellett szarvasmarhatartással is foglalkoztak, amire először találunk példát ebből a korszakból Pannóniában. A szárnyasok és tojások előfordulása nem mutat nemhez vagy korhoz utalható mintázatot, azonban egész házi ludat Szóládon is csak férfisírba helyeztek, hasonlóképpen a ménfőcsanaki 227. sírhoz. Szintén csak férfi sírokból kerültek napvilágra bizonyos állati eredetű, de megmunkálás nyomát viselő, különleges le-

lettípusok, egyedülállóként Pannóniából. A 6. sírban talált vadkanagyar-pár – germán területről ismert párhuzamok szerint – az elhunyt 8-12 fiúgyermek bőr sisakjának díszítéséhez tartozhatott, de ellentétben a bajorországi temetkezési szokásokkal, a sisakot a halott lábaihoz, nem a fejére helyezték. Ennél is ritkább leleteknek bizonyulnak a 22. és 27. sírban talált agancstárgyak, amelyek gímszarvas agancsvégből, illetve agancsszárból készültek. Mindkét esetben gondosan eltávolították a szivacsos állományt az agancsdarabokból üreges tartályt alakítva ki e képpen, amelyben sót, kenőcsöt vagy hasonló anyagot tárolhattak. A nagyobbik, agancsszárból készült hengeren (27. sír) díszítésként is értelmezhető karcolások láthatók.