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Short communication

Something new about the castle life. An archaeozoological perspective to castle and economy at the Deserted Castle Pustýhrad/Pusztavár in Zvolen/Zólyom

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ABSZTRAKT

A tanulmány a közép-szlovákiai Zólyomban (Zvolen) Pusztavár-Alsóvár lakótoronyának kutatásából származó leletek elemzésével foglalkozik. Az Alsóváron található lakótorony építése és használata a 13. századra, fokozatos pusztulása a 14. század elejére tehető. A vár a híres középkori Zólyomi erdő területén található. Az elhagyott várból származó csontleletek 3633 darabot tartalmaztak, amelyek súlya körülbelül 19,3 kg. A sorozatban a háziállatok domináltak (szarvasmarha, sertés, juh/kecske, kutya, macska stb.), és kevesebb a vadászott állat (őz, gímszarvas, nyúl, mókus stb.). Szerepelnek köztük társállatfajok, békák és a malakofauna maradványai is. A madárcsont leletek között nemcsak a háziasított fajok (házi tyúk, lúd, kacsa, házi galamb), hanem vadon élők is (fácán, fürj, szajkó, sólyom stb.) előkerültek. A régészeti maradványok túlnyomórészt konyhai hulladékot képeztek, de lehetővé teszik a vár környéke természeti környezetének feltárását is. Végül az elemzés betekintést nyújtott a lakosok étkezési szokásaiba is, és tanúskodhat a vizsgált vár gazdasági körülményeiről.

KULCSSZAVAK

Szlovákia, Pusztavár-Alsóvár, késő középkor, állatcsontok, étkezési szokások

ABSTRACT

The paper focuses on the results of the archaeozoological analysis of finds from the research of a residential tower at the Deserted Castle – Lower Castle (Pustýhrad – Dolnýhrad/Pusztavár – Alsóvár) in Zvolen in Central Slovakia. The construction and use of the residential tower at the Lower Castle are dated to the 13th century with its gradual dissolution at the beginning of the 14th century. The castle is in the famous medieval outskirts of the Zvolen Forest. The osteological remains from the Deserted Castle contained 3,633 fragments weighing roughly 19.3 kg. The series was dominated by domestic animals (cattle, pig, sheep/goat, dog, cat, etc.), with fewer hunted animals (roe deer, red deer, hare, squirrel, etc.). There were also remains of commensal species, frogs, and malacofauna. The archaeozoological finds also included bones of birds, which belonged not only to the domestic species (domestic hen, goose, duck, domestic pigeon), but also wild species (pheasant, quail, jay, falcon, etc.). The archaeological fauna samples featured predominantly kitchen waste, but they also allow us to explore the natural environment in the castle vicinity. Finally, the analysis has also provided insights into the eating habits of inhabitants and can testify to the economic reality of the surveyed castle.

KEYWORDS

Slovakia, Deserted Castle – Lower Castle, Late Middle Ages, animal bones, eating habits

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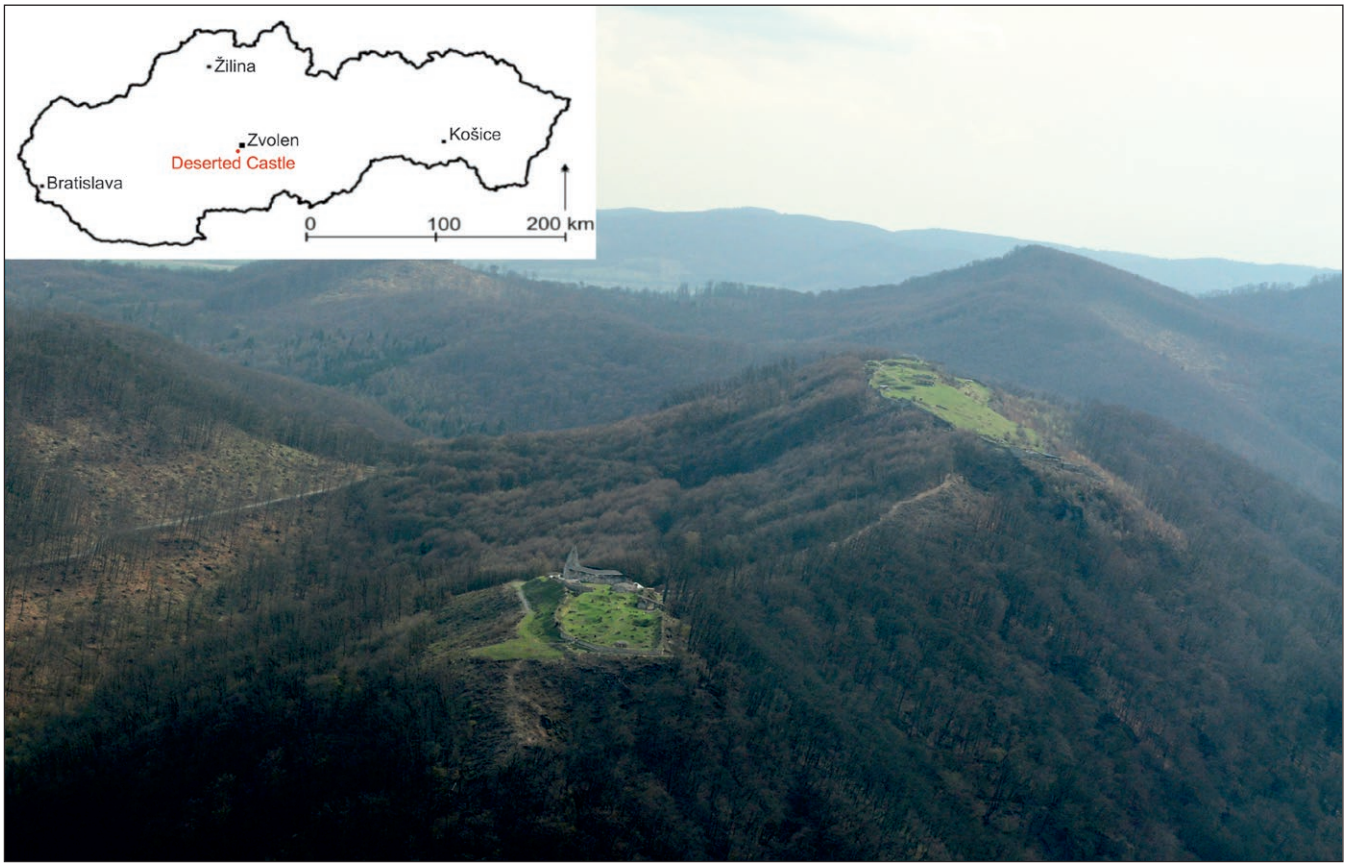


Fig. 1. Deserted Castle (Pustý hrad), Zvolen District, Slovakia. Aerial view. Up right: Upper Castle; Down left: Lower Castle. Photo by Jan Beljak

1. kép. Zólyom-Pusztavár, Szlovákia. A légifotón jobbra: a Felsővár; balra: az Alsóvár. Fotó: Ján Beljak

INTRODUCTION

In the 12th and 13th centuries, differences in the social differentiation based on quantity and quality of food and eating habits start to be profiled more distinctly.[1] In that period, the first cookbooks are created, and they are one of the main sources for the interpretation of eating habits in various social groups.[2] Dry-cured pork was a meal of all people and a sought-after delicacy in the 12th and 13th centuries. It is confirmed, e.g. by archaeozoological analyses from Bohemia and Moravia, where a higher proportion of pig than cattle occurs.[3] A change, however, comes in the 14th and 15th centuries. Consumption of meat in general increased, also among lower social classes. It was probably associated with lower production of cereals after a demographic decline when fields were transformed to pastures and meadows. It was a strong impulse for meat trade – not only in the nearby vicinity but also on further markets. This phenomenon can be observed also in the Kingdom of Hungary, mainly concerning the export of cattle.[4] Rich social classes substituted pork for beef, veal and bovine meat. This type of meat became a lucrative article, which not everybody could afford. This change also brought lamb and mutton meat to the fore. It was not so much appreciated for its quality, but the animals were bred for milk and mainly wool. Mutton became that type of meat that made a difference between the urban lifestyle and country diet.[5]

The published analyses of animal osteological material from the castles in the territory of Slovakia are very modest and focus mainly on the biodiversity of species at individual sites, the quality of meat at the most, while – based on analyses – they try to create a picture of social differences. The studies of the animal osteological material obtained using archaeological research are strongly criticized – either regarding the dating of the material or application of various processes in calculations of quantification methods. As for the archaeozoological analyses from the castles of the High Middle Ages, there are very few comparable results. We will mention them in detail in the evaluation. Nevertheless, these sites or find complexes are dated widely between the 13th and the 17th centuries. Also, numerous materials are still waiting to be processed and published.

[1] Montanari 2004.
[2] Kühtreiber 2010, 66.
[3] Kyselý 2016, 227.
[4] Dvořáková 2015, 248–252.
[5] Montanari 2004, 82–83.

In this article, we will focus on new analyses that could complement the picture of the castles from the High Middle Ages in Slovakia. Our focus is on the archaeozoological material from the Deserted Castle (Pustý hrad), Zvolen district *(Fig. 1)*. The article does not aim to publish the archaeozoological analysis in detail. Its goal is to point to its importance in the interpretation of the life on the high medieval Deserted Castle in Zvolen regarding the meat component in the diet of the inhabitants. In particular, the animal osteological assemblage from the interior of the massive residential tower standing at the southern end of the Lower castle's area at the Deserted Castle was analyzed. The medieval cultural layers in the tower can be dated to the 13th – early 14th century.[6]

DESERTED CASTLE (PUSTÝ HRAD) IN ZVOLEN (MIDDLE SLOVAKIA)

The origin and beginnings of the stone castle can be associated with the establishment of the Zvolen County, a large unit of territorial administration, which was administered by an officer appointed by the king – a *comes* – seated in Zvolen. The Zvolen County was probably established as early as the beginning of the 12th century. The most remarkable construction activities in the area of the Zvolen Castle – as Deserted Castle was called then – are documented in the 13th and 14th centuries. The castle area was abandoned in the 15th century and gradually lost its fortifying function.[7]

Interest in the research at the site has been evident since the 18th century.[8] A modern archaeological investigation carried out every year since 1992 has explained its importance as the seat of the Zvolen County and a popular place for relaxation and hunting of then Hungarian rulers in the High Middle Ages. A long-term excavation at the Deserted Castle was initiated by the archaeologist Václav Hanuliak, who focused his scientific effort on the Upper Castle.[9] Since season 2009, the supervision of the excavations was taken over by the Institute of Archaeology (Slovak Academy of Sciences) in Nitra. Most attention was first focused on the Lower Castle;[10] however, the excavation gradually moved back to the Upper Castle, where – in 2015 – it was possible to complexly unearth a unique medieval cistern[11] and identify new construction stages of the castle's construction.[12]

Residential tower of the Lower Castle

The residential tower[13] is a natural dominant at the Lower Castle *(Fig. 2)* and with its ground plan of 19.9×19.9 m and a wall thickness of 3.3 m on the lower storey level belongs to the largest residential castle towers in medieval Hungary *(Fig. 3)*. Sizes of prismatic residential towers at e. g. the castle of Serednje (Šeredné, today's Ukraine – 18.5×18.5 m) and in Bratislava[14] (23×23 m) were comparable. The inner space of the tower at the Lower Castle was divided into four-five storeys *(Fig. 4);* the lowest one with an interior area of almost 180 m^2 (13.3×13.3 m) was the best preserved. It was entered directly from the courtyard and was probably used for storage purposes. The second storey of the tower was used as a residential space and to it led the main (elevated) entrance from the courtyard. A torso of a window with remains of a side seat uncovered right above the entrance to the lower storey was discovered there. The other two storeys were preserved as torsos. The third floor was probably the central residential/ceremonial hall of the whole building. The upper part of the preserved southern wall points to the additional structure to the original tower which might have been built in the second half of the 13th century (after the building had been damaged by the Tatar invasion – 1241?).

Analysis of the find contexts and sources proved that the tower of the Lower Castle was constructed in the first decades of the 13th century and its prime and main period of use fall in the second half of the same century. It is documented mostly by the pottery uncovered in the lower cultural layers *(Fig. 5),* from which also an assemblage of animal bones was obtained. For the layers dating the uncovered metal artifacts from the 13th century are significant. They included clothes accessories suggesting a higher social class and a coin of Andrew III of Hungary (1290–1301). In the destruction layers of debris which probably occurred after the extinction of the original residential function of the tower, only an assemblage of younger pottery from the High Middle Ages (second half of the 14th century – early 15th century) was found. Cultural layers and debris were separated by ashy extinction layers. The upper layer can be associated with the year 1306 when the castle was occupied by Anjou's army during the fights for the Hungarian throne. The decline in the importance of the residential tower at the Lower Castle is, thus, associated with the beginning of the 14th century, which is confirmed also by the discovered finds.

We will never find out who lived in the residential tower of the Lower Castle. However, there was not a more representative masoned space at the castle of Zvolen than the residential tower of the Lower Castle until the representative residential area with a palace in the northern part of the Upper Castle (so-called Donč's castle) started to be built in the second half of the 13th century and rebuilt in the 14th century. Since the written sources inform of frequent visits by the last Hungarian kings of the Árpád dynasty and the Deserted Castle in Zvolen is considered as the main royal seat of King Béla IV (* November 1206 – † 3 May 1270),[15] we can only assume where the Árpád nobility spent most of their time when staying at the castle.

[6] Beljak et al. 2014.
[7] Beljak et al. 2015; Beljak et al. 2018.
[8] Beljak et al. 2011, 265–278.
[9] Beljak Pažinová–Beljak 2020, 55.
[10] Beljak et al. 2014.
[11] Beljak et al. 2016, 7–12.
[12] Beljak–Beljak Pažinová 2018, 212–235.
[13] Beljak et al. 2014, 126–137.
[14] Štefanovičová–Fiala 1965, 77–110.
[15] Szűcs 1993, 28.

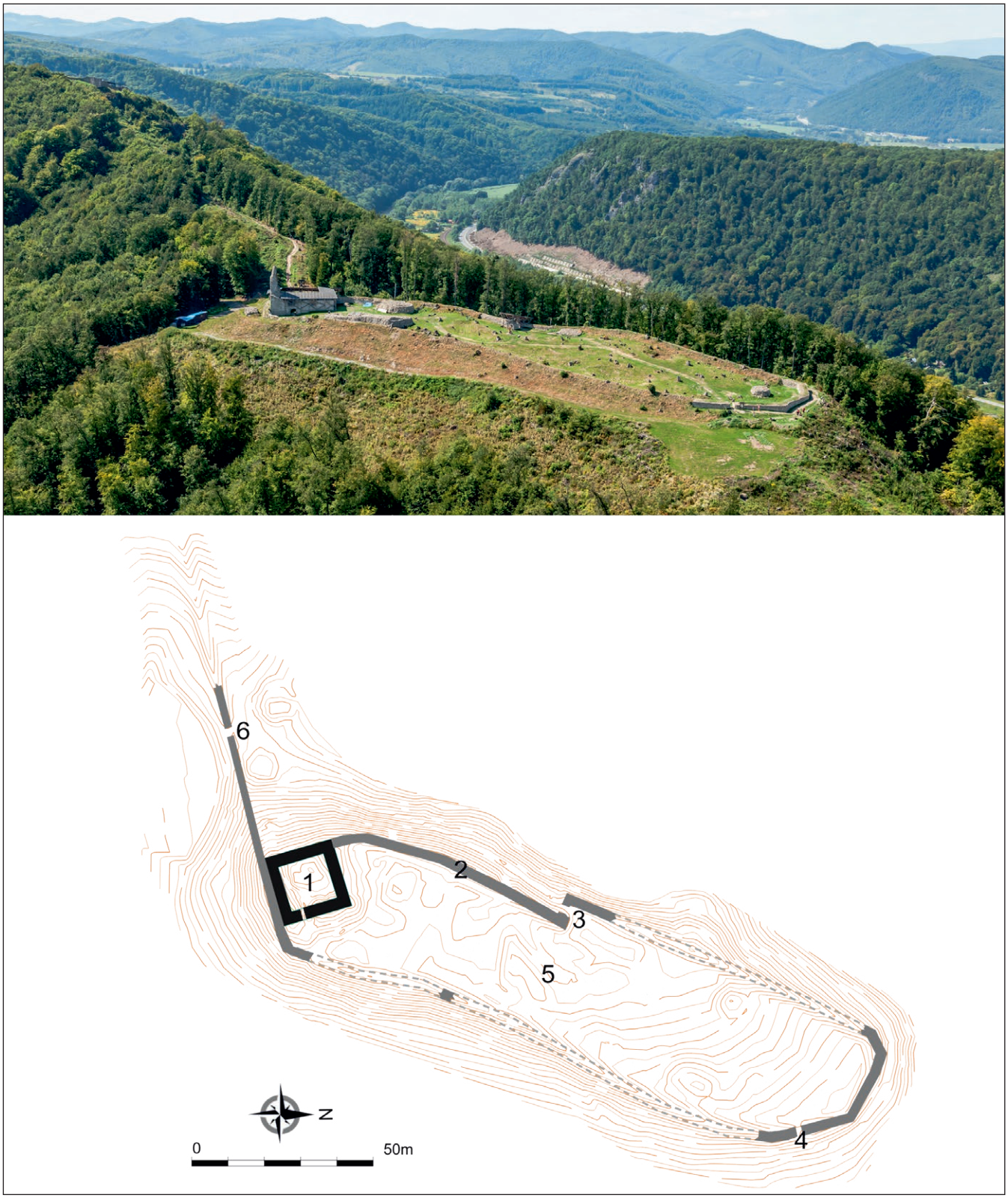


Fig. 2. Deserted Castle – Lower Castle (Pustý hrad – Dolný hrad), Zvolen District, Slovakia. Up: Aerial view of the castle area. The residential tower is in the rear of the castle. Photo by Jan Beljak; Down: Ground plan of the castle with excavated areas and the building development (light grey: 2nd half of the 13th century; dark grey: 1st half of the 13th century). 1: residential tower (Keep); 2: curtain wall; 3: entrance gate; 4: sally port; 5: bailey; 6: first gate trough rampart. Authors Ján Beljak and Michal Šimkovic

2. kép. Zólyom-Pusztavár, Szlovákia. Fent: légifotó a vár területéről. A lakótorony a vár hátsó részén található. Lent: A vár alaprajza a feltárt területekkel és az építési periódusokkal (világos szürke: 13. század 2. fele; sötét szürke: 13. század első fele). 1: lakótorony; 2: falköpeny; 3: bejárati kapu; 4: vészkijárat; 5: udvar; 6: feljáró az első kapuhoz. Készítette: Ján Beljak és Michal Šimkovic

Fig. 3. Deserted Castle – Lower Castle (Pustý hrad – Dolný hrad), Zvolen District, Slovakia. Left: view of the residential tower front façade from the bailey. Right: the posterior façade of the residential tower, view from the south. Photo by Ján Beljak

3. kép. Zólyom-Pusztavár, Szlovákia. Balra: a lakótorony elülső homlokzatának nézete az udvar felől. Jobbra: a lakótorony hátsó homlokzata, déli nézet. Fotó: Ján Beljak

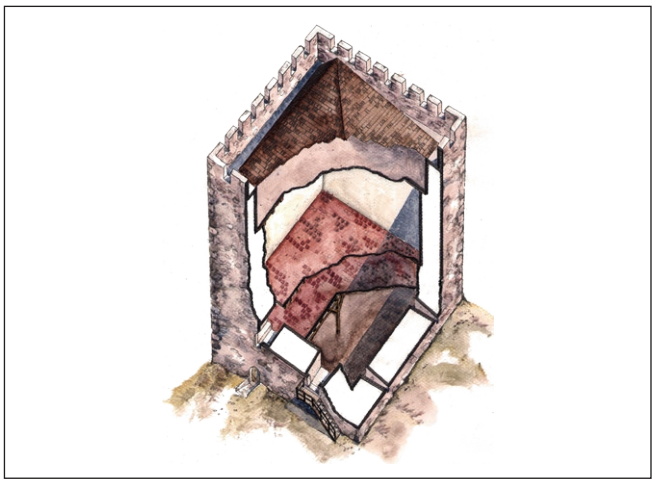


Fig. 4. Deserted Castle – Lower Castle (Pustý hrad – Dolný hrad), Zvolen District, Slovakia. Interior illustration of the Late Medieval residential tower. Author M. Šimkovic

4. kép. Zólyom-Pusztavár, Szlovákia. A késő középkori lakótorony belső szerkezete. Készítette: M. Šimkovic

Fig. 5. Deserted Castle – Lower Castle (Pustý hrad – Dolný hrad), Zvolen District, Slovakia. Left: Interior of the residential tower during the excavation in 2013. Right: Interior of the residential tower today. Photo by Ján Beljak

5. kép. Zólyom-Pusztavár, Szlovákia. Balra: a lakótorony belseje a 2013-as ásatás alatt. Jobbra: a lakótorony napjainkban. Fotó Ján Beljak

METHODOLOGY

The osteological material was found in the interior of the residential tower of the Lower Castle at the Deserted Castle in Zvolen. The cultural layers with the animal bones were dated mainly to the 13th century or early 14th century at the latest. The material was manually collected and sieved. 3633 fragments of bones, shells or fish remains weighing approx. 19.3 kg were analysed *(Tab. 1)*. A rather high number of bones were not determined, or the fragments were classified in the categories of large, medium and small mammals. These 2344 fragments (68.3%) weighed about 7 kg (36.4%). To have a better idea of the considerably fragmentary condition of the undetermined bones, average values were calculated. Average weight of an undetermined fragment was approx. 1.4 g, for fragments from the category of small mammals it was 0.6 g, in the category of medium-sized mammals it was 2.4 g and the average weight of a fragment from the category of large mammals was 7.6 g.

The anatomic-taxonomic analysis was carried out based on available publications of veterinary doctors, anatomists and archaeozoologists[16] and using our comparative assemblage. The fragments which were impossible to classify in a type were classified in auxiliary categories commonly used in archaeozoological practice: large mammals (size of horse, cow, red deer), medium mammals (size of sheep/goat, pig, deer, larger dog, etc.) and small mammals (size of rodents) based on the size, weight and structure of the fragment. The group of small ruminants identified as *Ovis/Capra* includes both species of the *Caprinae* subfamily – sheep and domestic goat. Where possible, determination of bones was carried out after.[17] The osteometric data were measured and recorded according to Angela von Driesch.[18] From the measured sizes, heights at the withers were calculated.[19] To estimate the age of the animals, two methods were used – by the epiphyseal plate fusion[20] and tooth eruption and abrasion.[21]

Quantification methods of NISP (number of identified specimens) and MNI (minimum number of individuals) were used for the interpretation of the osteological analysis. NISP belongs to the traditionally most frequently used quantification indicators in archaeozoology.[22] Regarding the various degree of fragmentation of bones from large and small animals or their different anatomy, even NISP values contain a certain level of distortion. Individual bones/fragments were considered a unit, although it was possible to put fragments together and attribute them to one bone (for instance loose epiphyses belonging to the given diaphysis). In jaws, mandibles or maxillae with teeth were considered as units.

The value of MNI for each species was calculated by a combined method, the so-called matching. The minimum number of individuals was detected based on the number of individual anatomic elements and their parts with regard to the symmetry of animals, in combination with the fragmentary state of the given bone as well as to sex and defined age.

For interpreting the osteological material, the quality of the meat was also studied. The division into individual categories of meat quality – A, B and C – was done after V. Páral, M. Riedlová and J. Unger,[23] V. Páral, Z. Měchurová and M. Riedlová[24] and V. Páral and M. Pyszko.[25] The focus is on the number of muscles covering individual anatomic elements. The best quality meat was classified in category A and it included muscles from thighs, backs, shoulders and necks. Category B of meat quality contains muscles from chests, forearms and knees. Category C of meat quality is represented by distal portions of legs (bones of *autopodium*) and skull with the least amount of muscles.

EVALUATION OF THE OSTEOLOGICAL ANALYSIS

The considerably rich biodiversity of species was detected in the analysed osteological material *(Tab. 1)*. Twelve species of domestic animals including three species of poultry and pigeon as well as twelve species of wild animals including eight wild bird species were identified.

Bones of commensal animals, such as rats (*Rattus* sp.) and unidentified rodents (*Rodentia* sp.) were also discovered in the tower's interior. Further, undefined families of frogs *(Ecuadata),* fish (*Pisces* sp.) with identified Wels catfish *(Silurus glanis)* and gastropods were detected. From the family of gastropods *(Gastropoda),* only shells of bush snail *(Bradybeana fruticum)* were classified more precisely, others were classified in the family of true glass snails (*Zonitiadae* sp.). One fragment from an unidentified mollusc (*Bivalvia* sp.) was found in the analysed assemblage.

Domestic animals

Domestic species constituted 80.8% of the determined fragments and their weight was approx. 11 kg. The detected domestic species included cattle *(Bos taurus),* goat *(Capra hircus),* sheep *(Ovis aries),* sheep/goat *(Ovis/Capra),* domestic pig *(Sus domesticus),* domestic dog *(Canis familiaris)* and domestic cat *(Felis domesticus)*. Poultry was represented by domestic duck *(Anas platyrhyncos),* hen *(Gallus domesticus)* and probably also (domestic?) goose *(Anser domesticus?)*. Domestic pigeon *(Columba domesticus)* was present in the collection as a representative of bred animals.

[16] Kolda 1951; Schmid 1972; Červený 1999; Tomek–Bocheński 2000; Popesko 2007; Adams–Crabtree 2008; Bocheński–Tomek 2009; France 2009.

[17] Boessneck 1969; Payne 1973, 281–303; Halstead–Collins 1995; Halstead et al. 2002, 545–553; Adams–Crabtree 2008.

[18] von den Driesch 1976.

[19] Vitt 1952, 163–205; Teichert 1969, 237–292; von den Driesch–Boessneck 1974, 325–348; Harcourt 1974, 151–175.

[20] Zoetis et al. 2003, 86–110; Reitz–Wing 2008.

[21] Payne 1973, 281–303; Grant 1982, 91–108; Payne 1987, 609–614; Hillson 2005.

[22] Grayson 1984; Klein–Cruz-Uribe 1984; Kyselý 2004a, 279–296; Lyman 2008; Reitz–Wing 2008, 202–204.

[23] Páral et al. 1994, 199–205.

[24] Páral et al. 1995, 417–425.

[25] Páral–Pyszko 2011, 19.

Tab. 1. Deserted Castle – Lower Castle (Pustý hrad – Dolný hrad), Zvolen District, Slovakia. Characteristic of archaeozoological material according to quantification methods

1. táblázat. Zólyom-Pusztavár, Szlovákia. Az archeozoológiai anyag mennyiségi meghatározási módszerek szerinti jellemzői

	Species	Species (latin name)	NISP	% NISP of determinate	MNI	% MNI of determinate	Weight (g)
Domestic mammals	Cattle	*Bos taurus*	362	28.1	10	11.1	7709.13
	Goat	*Capra hircus*	6	0.5	1	1.1	48.32
	Sheep	*Ovis aries*	40	3.1	3	3.3	315.82
	Sheep/goat	*Ovis/Capra*	286	22.2	12	13.3	1382.77
	Domestic pig	*Sus domesticus*	196	15.2	6	6.7	1365.55
	Domestic dog	*Canis familiaris*	1	0.1	1	1.1	1.13
	Domestic cat	*Felis domesticus*	6	0.5	1	1.1	14.24
Domestic birds	Domestic duck	*Anas platyrhynchos*	1	0.1	1	1.1	2.93
	Goose (domestic?)	*Anser domesticus?*	12	0.9	2	2.2	15.37
	Hen	*Gallus domesticus*	116	9.0	9	10.0	87.38
	Domestic pigeon	*Columba domesticus*	16	1.2	4	4.4	7.39
Wild mammals	Red deer	*Cervus elaphus*	72	5.6	2	2.2	1257.57
	Brown Hare	*Lepus europaeus*	14	1.1	1	1.1	10.59
	Red squirrel	*Sciurus vulgaris*	3	0.2	1	1.1	1.08
	Wild boar	*Sus scrofa*	1	0,1	1	1.1	11.86
Rodents	Rat sp.	*Rattus sp.*	33	2.6	7	7.8	5.72
	Rodents sp.	*Rodentia sp.*	22	1.7	5	5.6	2.23
Wild birds		*Aves sp.*	80	6.2	15	16.7	37.51
Frogs		*Ecuadata sp.*	3	0.2	1	1.1	0.35
Fishes	Catfish	*Silurus glanis*	2	0.2	1	1.1	6.09
	Fishes sp.	*Pisces sp.*	9	0.7	1	1.1	1.45
Gastropods		*Gastropoda sp.*	7	0.5	4	4.4	1.05
Molluscs		*Bivalvia sp.*	1	0.1	1	1.1	0.61
	Indet.		1041				1439.07
	Small mammal		102				57.44
	Medium mammal		693				1636.73
	Large mammal		508				3882.22

In the NISP quantification method for domestic mammals, cattle prevailed, followed by the category of sheep/goat including separately determined species of sheep and goat. The pig was the third most frequent group. The same order was confirmed in the quantification method of weight. Regarding the determined minimum number of individuals (MNI), the order of the most frequent animals was different. Most individuals belonged to sheep/goat, cattle followed, and pig was third again. Among the bred poultry, the hen was most frequent (by NISP, MNI as well as weight).

We were able to calculate the heights at the withers of domestic animals for two domestic animal species only. The height of the withers for pigs varied between 63 and 75 cm (based on the calculation from the humerus, metacarpal bone V and calcaneus) and sheep's height at the withers was 56–73 cm (calcaneus and metacarpal bone). These values do not differ from the height of animals determined at other sites from the High Middle Ages in Central Europe.[26]

Based on the determined age, it was possible to create an age profile of the slaughtered animals found at the site *(Fig. 6)*. It must be emphasized that the Deserted Castle in Zvolen had a function of a royal castle, so the age profile rather points to the quality of meat and popularity of individual types of meat with members of the royal family, or the court members staying there. In general, we can say that adult animals prevailed; however, the composition of age categories was different in individual species. Cattle was most

[26] Bökönyi 1974; Vörös 2000, 90–92; Nývltová Fišáková et al. 2016, 95–176; Bielichová–Labuda 2017, 30–69.

frequently represented in adult age (six individuals, *adultus*), two young calves *(juvenis)* were present, a juvenile individual *(subadultus)* as well as an older animal *(maturus)*. Pigs were slaughtered mainly in older age (four individuals, *maturus*); the categories of *subadultus* and *adultus* were represented by one individual each. The goat was represented only by a very young individual *(juvenis)*. As for sheep, mainly adult and older individuals are present *(adultus, senilis)*. In the category of sheep/goat, all age categories were detected. Mostly, young and juvenile animals (three *juvenils*, four *subadultus*) were slaughtered, followed by older and old animals (two *maturus*, two *senilis*) and one adult animal. This age profile could be evidence of an economy focused on wool and milk. Regarding the function of the castle, however, it is more probable that goat and lamb meat was preferred on the festive table. It could also be indirect evidence of the economy in the castle background from where the supplies of meat came. Looking at the age profile of hen, we find out that there are mostly adult individuals together with young chicks.

Sex profile was elaborated for two species – pig and hen. The pig was represented by one identified male of undetermined age. Among the individuals of hen, two females were identified. A hypothesis occurs that hens did not have to be provided from the near vicinity; they could have been bred at the castle because of eggs, although the presence of medullary bones was not confirmed in the analysed assemblage.

Looking at the quality of meat *(Fig. 7)* determined based on the number of muscles on relevant anatomic elements, we can state the following: cattle is significantly represented by parts of skeleton included in category C of meat quality (53.3%). All found parts of the goat skeleton were of C meat quality; however, we must take into consideration that there were only six bone fragments, which is not statistically reliable. Domestic pig was represented mainly by category B (40.9%) and C (34.2%) of meat quality. Sheep and sheep/goat are an exception. With sheep, B quality prevailed (42.5%), the value of A quality was approx. identical (40%). Sheep/goat was more considerably represented by elements classified in category A of meat quality (48.4%), while the lowest quality (C) was only represented by 15.9%. Here, we can turn again to the age profiles, which – with the above-presented findings – offer a conclusion that as for goat and lamb meat, the best quality meat of young animals was served on tables.

Wild animals

Wild species of mammals and birds, determined in the cultural layers of the residential tower at the Lower Castle in Zvolen, making up 13.9% of all identified fragments *(Tab. 1)*.

Large ungulates – red deer *(Cervus elaphus)* and boar *(Sus scrofa)* constituted the preferred hunting prey, followed by fur animals brown hare *(Lepus europaeus)* and red squirrel *(Sciurus vulgaris)*. These species constituted 7% of bones.

Other fragments belonged to wild bird species represented mostly by common wood pigeon *(Columba palumbus),* western jackdaw *(Corvus monedula),* common quail *(Coturnix coturnix),* grey partridge *(Perdix perdix),* common pheasant *(Phasianus colchicus),* Eurasian magpie *(Pica pica),* Eurasian jay *(Garrulus glandarius),* falcon (*Falco* sp.) and families of galliform *(Galliformes)* and thrush *(Turdidae)*. 2.1% of bird bones were undetermined and classified as *Aves* sp.

NATURAL CONDITIONS NEAR THE CASTLE AREA

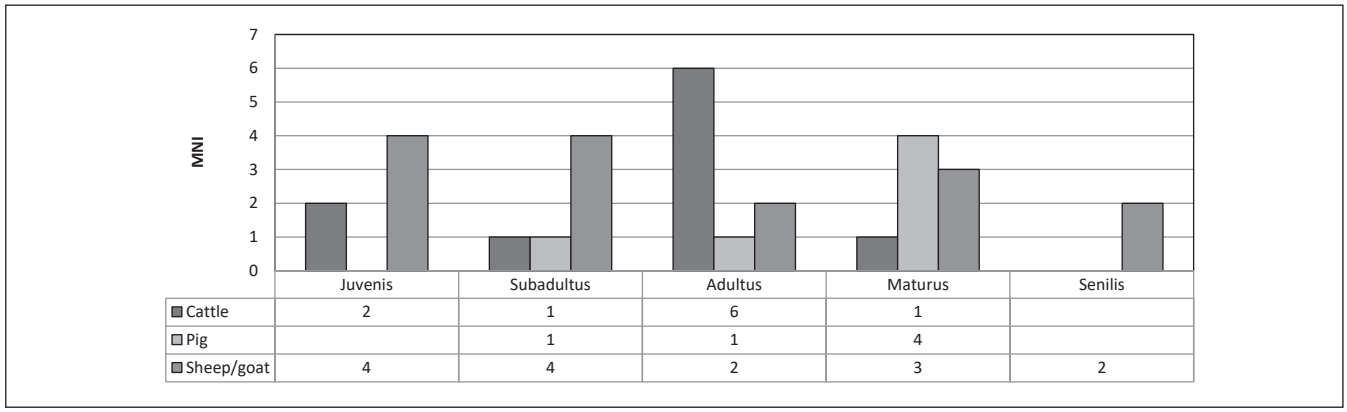
The occurrence of wild species as well as a certain group of domestic species (duck, goose), allows partial reconstruction of natural conditions which were typical of the castle's surroundings at that time, if we follow from the assumption that they were hunted nearby. The presence of red deer, squirrel, or wild boar suggests forests, mainly deciduous or mixed. Species suggesting cultivated landscape, fields, meadows or open land are also represented. They include Eurasian hare and birds such as grey partridge, common quail, Eurasian magpie and the thrush family. The third biotope consisting of areas with reed barriers, slow or steady waters or dead branches of a river is represented by bird species such as domestic duck and goose which need free access to the waters and, naturally, fish (Wels catfish) as well as bush snail representing gastropods.[27]

The occurrence of pheasant in the collection is important since the material was dated to the 13th century. It is well known that in Bohemia, the oldest evidence comes from 1330, when Ludwig of Bavaria imported pheasants from Bohemia to Bavaria.[28] In medieval Hungary, the oldest finds of pheasant were identified in the assemblage from the 13th century in the Dominican cloister in Buda Castle[29] and other two individuals of pheasant were identified also among wild animals from the urban environment at the site of Visegrád-Calvary which, however, is dated to the 14th century.[30]

DIET AT THE CASTLE FROM THE POINT OF VIEW OF ARCHAEOZOOLOGY

Diet was, is and will be a social occasion with an important normative side relevance. It was no different in the Middle Ages. The nobility used stocks of food and its processing and preparation as a means of social differentiation, thus, it can be considered a symbol of a certain identity.[31] The main sources for the interpretation of diet of various social groups in the past include description of meals, cookbooks, medical documents and accountancy books containing instructions for preparation of food, its positive and negative effects on the organism or detailed information on purchases or records of deliveries as part of taxes paid to the nobility or

[27] Korbel–Krejča 1981, 62; Peške 1981, 142–153; Anděra–Horáček 2005, 156.
[28] Mlíkovský–Stýblo 2006, 417.
[29] Matolcsi 1981, 203–254.
[30] Bökönyi 1974.
[31] Montanari 2004; Kühtreiber 2010, 66.



	Juvenis	Subadultus	Adultus	Maturus	Senilis
Cattle	2	1	6	1	
Pig		1	1	4	
Sheep/goat	4	4	2	3	2

Fig. 6. Deserted Castle – Lower Castle (Pustý hrad – Dolný hrad), Zvolen District, Slovakia. Ages of domestic animals

6. kép. Zólyom-Pusztavár. A háziállatok kor szerinti eloszlása

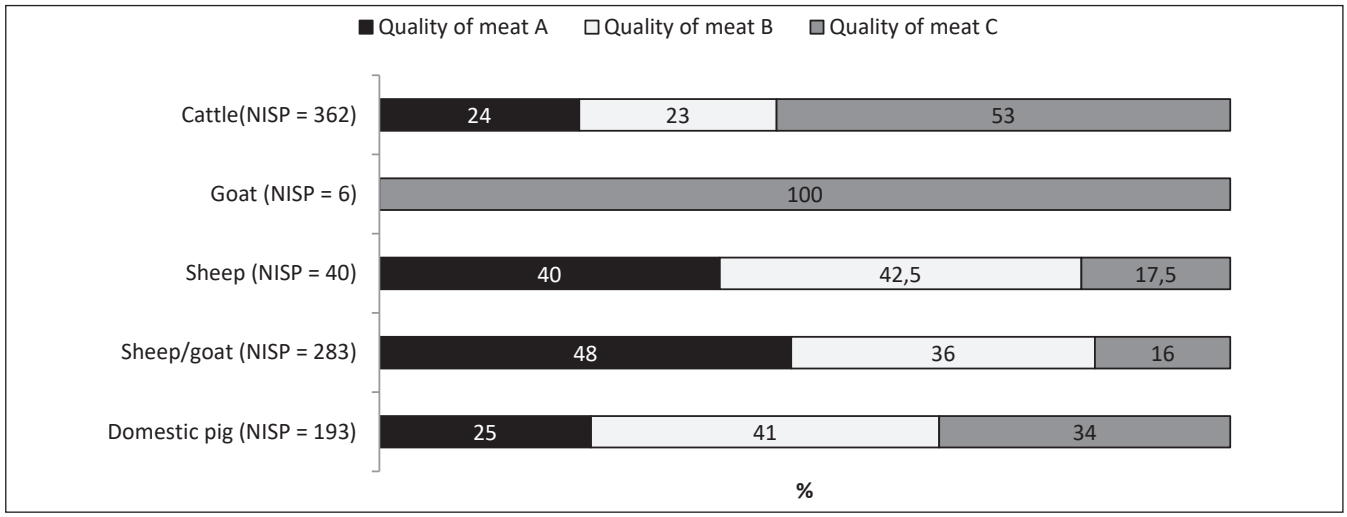


Fig. 7. Deserted Castle – Lower Castle (Pustý hrad – Dolný hrad), Zvolen District, Slovakia. Quality of meat of domestic animals

7. kép. Zólyom-Pusztavár, Szlovákia. A háziállatok maradványainak húsminőségi eloszlása

Fig. 8. Comparison of meat quality on different High medieval sites

8. kép. A húsminőség összehasonlítása különböző középkori lelőhelyeken

burghers by subjects.[32] These data are complemented by archaeology, which provides numerous and often crucial finds related to the topic. Nevertheless, we must approach the sources with some criticism, since the castle area with construction features do not constitute closed finds. Many finds come from mixed cultural layers that were accumulated in the long term, or from individual stratification units without exact dating. Thus, as for the processing of animal bones, many studies are focused on the osteological analysis of finds from the long-time span of the castle area's functioning. However, it is undoubted that in certain periods, the menu changed due to external influences or changes of the economy. At the same time, we must take taphonomy processes (fragmentation, transportation of bones by carnivores) into consideration as well as the fact that settlement units might have used external waste materials. Naturally, these phenomena lead to a certain level of inaccuracy.

Regardless of the above-mentioned distorting factors which are out of archaeozoologists' and archaeologists' control, other problems associated with archaeozoological analyses and their comparison enter the scene. Insufficient comparability of statistical results seems to be the main problem. From the territory of Slovakia, for instance, we have archaeozoological data from the castle of Lietava dated to the 15th – 17th centuries,[33] the castle of Oponice dated to the 13th–17th centuries,[34] Banská Štiavnica-Glazenberg (a castle with mining settlement and technical features also called a mining town settled from the 12th to the 17th century)[35] and from the bailey of the Dobrá Niva Castle[36] also classified in the 15th–17th centuries. Results of the analysis of the zoological material were published also from the manor house in Markušovce, but they are also widely dated to the 13th–20th centuries.[37] A comparable analysed assemblage comes only from the castle of Peťuša,[38] which was actively used mainly in the 14th century. Thus, it is not possible to provide a completely relevant comparison from the Lower Castle of the Deserted Castle in Zvolen. Nevertheless, we will try to do a basic evaluation.

When monitoring the occurrence of the main domestic animals at the castles in the High Middle Ages *(Tab. 2),* we can state that in Slovakia in general (although with some exceptions), cattle prevailed in the archaeozoological material. Its percentages were between 28 and 44%. Another common feature is the second place of small ruminants – sheep/goat. Their percentages varied from 22 to 30%. Percentages of domestic pig at the Slovak castles varied between 15 and 27%. Considerable differences are shown in the percentages of hen and hunted animals. Percentages of hen at the analysed Slovak castles were usually below 3%. At the Lower Castle of the Deserted Castle in Zvolen, however, we observe an increase to 9% and a considerable difference was detected at the Lietava Castle, where hens made up as much as 17% of the studied material. This fact was associated with the popularity of chicken meat with the Thurzo family as the owners of the Lietava Castle. As far as hunted animals are concerned, its percentages at Slovak castles as well as at the manor house in Markušovce vary from 2.9 to a maximum of 7.8%. Again, we can see an exception in the case of the Deserted Castle – Lower Castle in Zvolen (13.2%; 6.2% of them are wild birds) and in the material at the nearby Peťuša Castle (18.7%; 2.5% of them belong to wild birds). Both castles are situated in a popular hunting ground[39] of the royal Zvolen County.

The following castles were selected for comparison of the osteological material from Slovakia and neighbouring countries *(Tab. 2):*

- from the Czech Republic – Rokštejn,[40] Cheb-castle,[41] Tetín and Krašov,[42] Osvračín,[43] Konůvky-stronghold,[44] Lelekovice,[45] Lelekovice-bailey,[46] Skála,[47] and Zlenice;[48]
- from Hungary – Váralja-Várfő,[49] Kőszeg-Vár, Visegrád-Salamon-tower,[50] Buda-Royal palace,[51] and Visegrád-Royal palace;[52]
- from Poland – Dąbrówka, Piekary, Siedlątków, Smogulec, Opole-Ostrów Tumski, Mrówki, and Gdańsk,[53] finally, Grudziądz Castle.[54]

Looking at the general situation at medieval castles *(Tab. 2),* it is obvious that unlike Slovakia, two main domestic species at other territories included mainly cattle and domestic pig. In Slovakia, cattle (although prevailing) occurs in lower percentages and – unusually – the group of small ruminants' goat/sheep was second. An analogous situation can be observed only at the castle of Grudziądz situated in the northern part of Poland.

For comparison of the castles from the territory of Slovakia by the quality of meat divided to individual animal species *(Fig. 8),* data from the Peťuša Castle and Banská Štiavnica-Glanzenberg were used. As for cattle *(Fig. 9),* percentages of animal meat qualities are balanced. For pig *(Fig. 10),* the results are different. At the Peťuša Castle, meat quality C prevails, while qualities A and B are underrated. The opposite is true of Banská Štiavnica-Glanzenberg and Deserted Castle – Lower Castle in Zvolen, where meat quality C by domestic

[32] Kühtreiber 2010, 66.
[33] Vozák 2014, 100–103; Bielich 2015, 115–129.
[34] Repka et al. 2017, 181–204.
[35] Bielichová–Labuda 2017, 30–69.
[36] Šimunková–Beljak Pažinová 2017, 511–521.
[37] Bielich et al. 2018, 149–170.
[38] Šimunková–Beljak Pažinová 2018, 369–383; Šimunková 2019.
[39] Maliniak 2013; Maliniak 2015.
[40] Sacherová 2004.
[41] Šamata et al. 2001, 12–13.
[42] Peške 1994, 283–298.
[43] Kyselý 2000, 147–149.
[44] Páral et al. 1995, 417–425.
[45] Páral et al. 1994, 199–205.
[46] Nývltová Fišáková 2006.
[47] Nývltová Fišáková 2011.
[48] Kyselý 2004b, 171–176.
[49] Bartosiewicz 1987.
[50] Bökönyi 1974.
[51] Matolcsi 1977, 179–198.
[52] Bökönyi 1974.
[53] Grężak–Kurach 1996, 139–167.
[54] Makowiecki et al. 2012, 302–351.

Tab. 2. Comparison of the osteological material from Slovakia and Central European castles

2. táblázat. A szlovákiai és a közép-európai várakból származó csontanyag összehasonlítása

Site		Dating (century)	Number of fragments (overall/determined)	Cattle	Pig	Sheep/ goat	Hen	Wild animal
Slovak republic	Zvolen - Deserted castle, LC	13.	3633/1289	28.1	15.2	25.8	9.0	13.2 (6.2% birds)
	Peťuša castle	13. – 15.	9004/3774	15.3	20.7	24.5	4.5	18.7 (2.5 % birds)
	Markušovce - manor - house	13. – 20.	52/35	40.0	25.7	22.9	2.9	2.9
	Dobrá Niva - forecastle	15. – 17.	1660/753	31.9	27.1	30.3	1.5	7.8
	Oponice castle	13. – 17.	296/230	44.3	18.7	24.8	1.7	3.9
	Lietava castle	15. – 17.	?	10.0	10.0	29.0	17.0 (+30% goose)	3.0
Czech republic	Rokštejn	end. 13.	5501/2915	35.8	25.0	8.2	5.8	22.0 (include fishes and rodents)
	Cheb - castle	13. – 14.	1006/1006	34.0	31.0	10.0		12.5-14.5
	Tetín	13. – 14.	4196/1398	22.0	28.0	6.9	27.4	10.7
	Krašov	12./13. – 15.	3382/595	28.7	10.3	7.7	27.4	13.9
	Osvračín	2. half 13. – 1.half 15.	100/100	3.0	1.0	0.0	5.0	72.0 (birds all of them)
	Konůvky - stronghold	13. – 15.	?/1674	32.4	21.7	7.9	4.1	4.1
	Lelekovice	14.	?/954	44.0	32.0	7.0		8.1
	Lelekovice - outwork	14./15.	?	41.0	31.0	14.0	0.5	10.3
	Skála	end 14. – 15.	?	71.8	18.8	3.3	0.0	3.6
	Zlenice	half 15.	179/73	46.6	26.0	6.8	1.4	
Poland	Grudziądz	14. -15.	540/477	50.3	15.9	26.0	0.6	4.0
	Dąbrówka*	end 12. – start 14.	?	56.0	29.0	15.0	?	18.0
	Piekary*	end 14. – 15.	?	53.0	43.0	4.0	?	<1
	Siedlątków*	14.	?	67.0	27.0	4.0	?	21.0
	Smogulec*	half 13. – start 14.	?	56.0	22.0	17.0	?	5.0
	Opole- Ostrów Tumski*	12. – start 14.	?	46.0	44.0	8.0	?	2.0
	Mrówki*	13./15.	?	39.0	52.0	5.0	?	37.0
	Gdańsk*	13.	?	35.0	44.0	16.0	?	11.0
Hungary	Váralja-Várfő	13.	?/1343	34.0	34.5	19.2	5.7	3.6
	Kőszeg - castle	13. – 14.	?/239	36.4	34.3	13.8	2.5	12.5
	Visegrád - Salamon tower	13. – 15.	?/148	52.0	20.3	16.9	8.1	2.0
	Buda - Royal palace	14. – 15.	4205/3548	50.4	20.1	11.9	5.9	9.0
	Visegrád - Royal palace	14. – 15.	?/3871	24.3	20.1	16.5	27.2	13.6

pig is less frequent. This might point to the import of meat of better quality to the socially higher royal castle as well as to the rich mining town at Glanzenberg. Interesting results occur also in the research of the meat quality of goat/sheep *(Fig. 11)*. At the Peťuša Castle, consumption of goat and sheep was slightly higher concerning the representation of meat of better quality (higher share in the categories A and B of meat quality and lower share of C meat quality). Differentiation is observable at the royal Deserted Castle – Lower Castle in Zvolen, where meat quality A and B prevailed, while the category C is more than 50% lower, with regard to the percentages of bones according to the quality of meat of sheep and goat. A different trend occurs in Banská Štiavnica-Glazenberg site, since category B of meat quality prevails there, and the share of category C of meat quality is 50% lower. According to the obtained data, we can state that the highest quality meat of sheep and goats was imported to the royal Deserted Castle in Zvolen, i.e. the castle was better supplied with high-quality meat. Therefore, we can consider it a primary consumer site. The castle of Zvolen is more widely comparable with e.g. the aristocratic seat of Lelekovice Castle. On the other hand, considerable differences occur in the comparison of the Deserted Castle – Lower Castle in Zvolen with the data from the village and stronghold in Konůvky in the Czech Republic.

CONCLUSION

3633 fragments of animal bones with a total weight of approx. 19.3 kg were analysed from the interior of the residential tower of the Deserted Castle – Lower Castle in Zvolen, dated to the 13th – early 14th century. To evaluate the analyses, usual archaeozoological quantification methods of NISP, MNI and weight measuring were used. Compelling results were brought mainly by the analysis of meat quality regarding percentages of individual skeleton elements as well as the age of animals and their comparison with other sites.

Domesticated species made up 80.8% of animals at the Deserted Castle – Lower Castle in Zvolen. The most frequent bone fragments belonged to cattle; sheep/goat was the second most numerous group, fragments of pig were the third most frequent group. Regarding the quality of meat, we can state that higher percentages of the best A and B meat quality in case of domestic mammals was recorded at the castle.

Based on age profiles, we can also interpret the economic strategy of breeding of domestic animals, where mostly the age profile of sheep/goat points to an economy focused on milk and wool. On the other hand, the occurrence of young individuals of cattle and domestic pig suggests their popularity on the tables of Zvolen castle's aristocracy. However, we must bear in mind that the castle was supplied mainly from

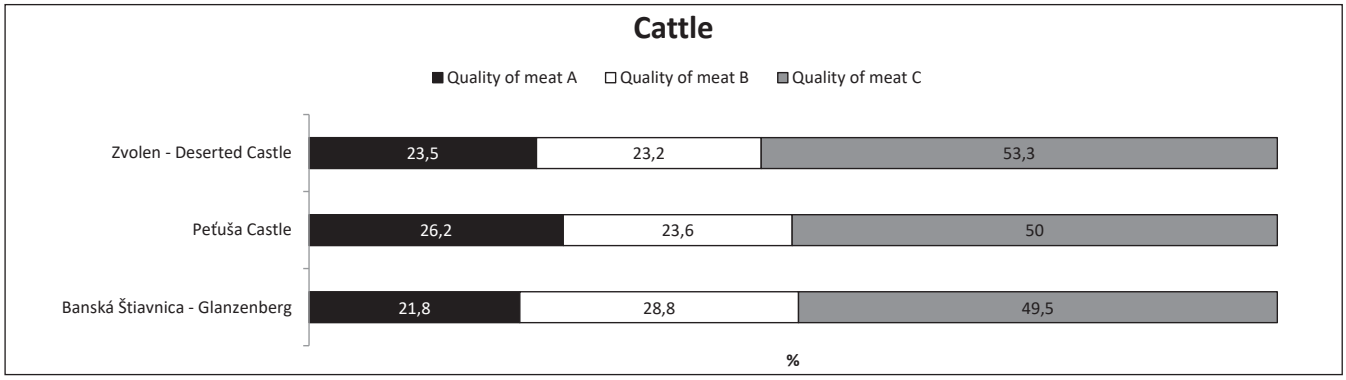


Fig. 9. Comparison of quality of meat for cattle

9. kép. A szarvasmarhahús minőségének összehasonlítása

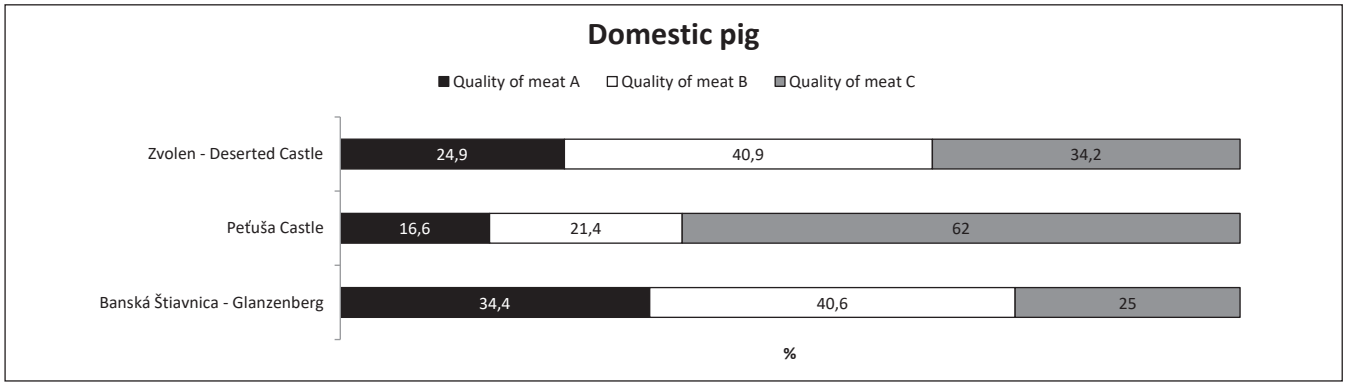


Fig. 10. Comparison of quality of meat for domestic pig

10. kép. A sertéshús minőségének összehasonlítása

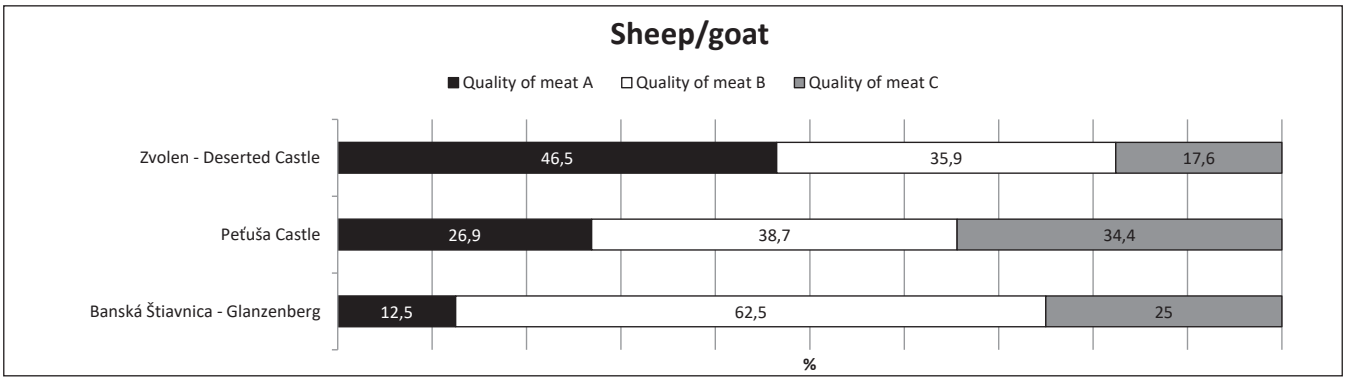


Fig. 11. Comparison of quality of meat for sheep/goat

11. kép. A juh/kecskehús minőségének összehasonlítása

the nearby background and, thus, this reconstruction can indirectly suggest the economy of the nearby settlements, including the medieval town of Zvolen.

Comparing the quality of meat from domestic species with other sites where similar analyses were done, we can state that the residential tower at the Deserted Castle – Lower Castle in Zvolen shows results analogous with castles of a higher social status. The population with a lower social status, on the other hand, can be assumed at the nearby Peťuša Castle. It can be stated that percentages of individual meat quality categories from Peťuša castle are similar as in the assemblage from the site Banská Štiavnica – Glanzenberg, but it mainly corresponds with the data from the medieval village of Konůvky or a small stronghold also in Konůvky in the Czech Republic.

In the cultural layers of the interior of the Deserted Castle – Lower Castle residential tower not only domesticated but also wild animals were present (made up 13.9% of determined animals). The occurrence of bones from hunted and fur animals (red deer, wild boar, red squirrel, brown hare, etc.) can be interpreted by the location of the castle in the well-known royal hunting ground of Zvolen.

Fishbones (determined one Wels Catfish), as well as presence of duck and goose, support the presents of reed barriers and slow or steady waters – which, naturally, could have been located on the banks or dead branches of the nearby Gran river, flowing under the castle hill.

In conclusion, determined bone remains from the residential tower of the Deserted Castle – Lower Castle in Zvolen can be interpreted mostly as kitchen debris that was accumulated in the cultural layers in the interior. The bone assemblages are the remains of communal feasts, rather than those of simple butchering. It might be supposed that the inhabitants practiced the breeding of domesticated animals while the foraging economy with a dominant role of hunting and fishing had a supply character.

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Neue Erkenntnisse über das Burgleben.
Eine archäozoologische Perspektive zur Wirtschaftsweise in der Wüsten Burg Pustýhrad/Pusztavár bei Zvolen/Zólyom

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Im Beitrag werden die Ergebnisse einer archäozoologischen Analyse der Wüsten Burg (Pustý hrad) bei Zvolen (Mittelslowakei) präsentiert. Aus der Analyse ergibt sich ein Bild der Fleischkomponente in der Ernährung der hier lebenden Bevölkerung sowie ein Vergleich mit analogen Fundstellen nicht nur auf dem Gebiet der heutigen Slowakei.

Die Anfänge der Wüsten Burg hängen mit der Gründung des Komitats Zólyom (dt. Altsohl), einer großflächigen Verwaltungseinheit zusammen, die von einem durch den König beauftragten Beamten (Landvogt) verwaltet wurde. Dieser hatte seinen Sitz in Zólyom.

Die bedeutendsten Bauarbeiten wurden auf dem Gelände der Burg Zólyom, wie diese in der Zeit genannt wurde, im 13. und 14. Jahrhundert durchgeführt. Das Burggelände wurde im 15. Jahrhundert verlassen und verlor allmählich die Funktion einer Festung.

Das analysierte tierische osteologische Material stammt aus dem Inneren eines gewaltigen Wohnturms, der sich am südlichen Ende des befestigten Geländes der Unteren Burg der Wüsten Burg bei Zólyom befindet. Der Wohnturm bildet eine natürliche Dominante der Unteren Burg und zählt mit ihrem Grundriss von 19,9×19,9 m und einer Wanddicke des Untergeschosses von 3,3 m zu den größten Burgwohntürmen im mittelalterlichen Königreich Ungarn.

Die Analyse der Fundsituationen und Quellen ergab, dass der Turm der Unteren Burg in den ersten Jahrzehnten des 13. Jahrhunderts gebaut wurde. Im 13. Jahrhundert sowie Anfang des 14. Jahrhunderts erlebte der Turm seine Blütezeit.

Das aus dem Inneren des Wohnturms stammende osteologische Material wurde in der Kulturschicht mit bloßem Auge erkannt, manuell entnommen und anschließend durchgesiebt. Analysiert wurden insgesamt 3633 Fragmente von Knochen, Schalen und Fischresten von etwa 19,3 kg *(Tab. 1).* Eine relativs hohe Zahl von Knochen wurde nicht identifiziert bzw. die Fragmente wurden den Kategorien große, mittlere und kleine Säugetiere zugeordnet. Diese Fragmente im Umfang von 2344 Stück (68,3%) wogen etwa 7 kg (36,4%).

Bei der Analyseauswertung wurden vorwiegend die archäozoologischen Quantifizierungsmethoden NISP *(number of identified specimens)* und MNI *(minimum number of individuals)* sowie die Gewichtsbestimmung angewandt. Interessante Ergebnisse brachte insbesondere die Analyse der Fleischqualität hervor, und dies sowohl hinsichtlich des Vorkommens einzelner Skelettelemente, als auch des Alters der Tiere und ihres Vergleichs mit anderen Fundstellen.

Das analysierte osteologische Material zeichnet sich durch eine relativ reiche Biodiversität der Tierarten aus. Bestimmt wurden zwölf Arten von Haustieren einschließlich drei Geflügelarten und einer Taubenart sowie zwölf Arten wildlebender Tiere einschließlich acht Arten von Wildvögeln. Gefunden wurden auch Knochen von Kommensalen wie Knochen von Ratten (*Rattus* sp.) und nicht näher identifizierten Nagetieren (*Rodentia* sp.). Des Weiteren wurden hier eine nicht näher bestimmbare froschähnliche Familie *(Ecuadata)* identifiziert, genauso wie Fische (*Pisces* sp.), von denen der Europäische Wels *(Silurus glanis)* abgegrenzt werden konnte, Schaltiere und ein Fragment von einem nicht näher identifizierbarem Muscheltier (*Bivalvia* sp.).

Die Haustierarten bilden 80,8% der identifizierten Fragmente, die etwa 11 kg wogen. Zu den identifizierten Tierarten zählen: Hausrind *(Bos taurus),* Hausziege *(Capra hircus),* Hausschaf *(Ovis aries),* Schaf/Ziege *(Ovis/Capra),* Hausschwein *(Sus domesticus),* Haushund *(Canis familiaris)* und Hauskatze *(Felis domesticus).* Zu den Haustierarten ist auch das Geflügel zu zählen: Hausente *(Anas platyrhyncos),* Haushuhn *(Gallus domesticus)* und wahrscheinlich auch Hausgans *(Anser domesticus?).* Im osteologischen Material befinden sich auch Fragmente der Haustaube *(Columba domesticus).* Hinsichtlich der Zahl identifizierter Knochen (NISP) kamen am meisten die Knochenfragmente vom Hausrind vor, an der zweiten Stelle waren es Knochenfragmente von Schaf/Ziege und an der dritten Stelle Knochenfragmente vom Hausschwein. Unter Berücksichtigung der Mindestzahl von Einzeltieren (MNI) wurde im analysierten osteologischen Material am häufigsten das Hausrind bestimmt, gefolgt von Schafen/Ziegen und Hausschweinen. Die im analysierten osteologischen Material am meisten vorkommende Geflügelart war das Haushuhn.

Aufgrund von Altersprofilen ist auch die wirtschaftliche Strategie der Haustierzucht zu interpretieren. So deutet einerseits das Altersprofil von Schafen/Ziegen darauf hin, dass diese Tierarten zwecks Milch und Wolle gehalten wurden. Andererseits zeugt das Vorkommen von jungem Hausrind und Hausschwein davon, dass diese Tierarten vom Zólyom-Adel gern verspeist wurden. Zugleich ist aber nicht zu vergessen, dass die Burg vor allem aus der nächsten Umgebung beliefert wurde, so dass diese Rekonstruktion auch die Wirtschaft der nah gelegenen Ortschaften und der Stadt indirekt widerspiegeln kann.

Bei der Fleischqualität ist anzunehmen, dass das Fleisch der besten Qualität (A und B), prozentual gesehen, auf der Burg am meisten vertreten war. Das Fleisch vom Hausrind wurde aufgrund der Skelettelemente der Qualitätskategorie C (53,3%) zugeordnet. Das Fleisch vom Hausschwein wies am häufigsten die Qualität der Kategorie B (40,9%) und C (34,2%). auf. Bei Hausschafen überwog die Fleischqualität der Kategorie B (42,5%) und A (40%). Das Fleisch bei Schafen/Ziegen hatte meistens die Qualität der Kategorie A (48,4%), wobei die schlechteste Qualität (C) nur mit 15,9%

vertreten war. Auch hier kann in Anbetracht der Altersprofile und der Fleischqualität festgehalten werden, dass Ziegen- und Lammfleisch auserlesener Qualität auf die Tische kam.

Vergleicht man die Fleischqualität des analysierten Materials mit anderen Fundstellen *(Tab. 2),* in denen ähnliche Analysen durchgeführt wurden, kann angenommen werden, dass der Wohnturm der Unteren Burg der Wüsten Burg bei Zólyom vergleichbare Ergebnisse mit Burgen höheren sozialen Status (beispielsweise die Burg Lelekowitz/Lelekovice, Tschechische Republik) aufweist. Eine Bevölkerung mit einem niedrigeren sozialen Status im Vergleich zur Wüsten Burg kann wiederum in der nah gelegenen Burg Peťuša vorausgesetzt werden. Die einzelnen Kategorien der Fleischqualität in der Burg Peťuša sind vergleichbar in prozentualer Hinsicht mit dem osteologischen Material der „Bergstadt" Banská Štiavnica – Glanzenberg (Slowakei). Vor allem entspricht dies auch den Angaben aus dem mittelalterlichen Dorf Konůvky in der Tschechischen Republik bzw. aus der Feste, ebenfalls in Konůvky befindlich.

Wildtiere stellten 13,9% der identifizierten Tiere in der Kulturschicht des Inneren der Unteren Burg der Wüsten Burg dar. Von den Säugetieren gab es in dem analysierten osteologischen Material Knochen von Rothirsch *(Cervus elaphus),* Feldhasen *(Lepus europaeus),* Eurasischem Eichhörnchen *(Sciurus vulgaris)* und Wildschwein *(Sus scrofa).* Diese Tierarten machen 7% der identifizierten Knochen aus. Sonstige Fragmente gehören wilden Vogelarten, die durch Ringeltaube *(Columba palumbus),* Dohle *(Corvus monedula),* Wachtel *(Coturnix coturnix),* Rebhuhn *(Perdix perdix),* Fasan *(Phasianus colchicus),* Elster *(Pica pica),* Eichelhäher *(Garrulus glandarius),* Adler (*Falco* sp.) sowie durch Familien der Hühnervogel *(Galliformes)* und Drosseln *(Turduidae)* vertreten sind. Nicht näher identifizierte Vogelknochen wurde als *Aves* sp. bezeichnet.

Das Vorkommen von Wildtierarten sowie bestimmten Haustierarten (Ente, Gans) ermöglicht, zumindest teilweise, auch damalige Naturbedingungen um die Burg herum zu rekonstruieren, sofern angenommen wird, dass diese Tierarten in der Burgumgebung gejagt wurden. Waldbewuchs, vorwiegend Laubbäume, lassen vermuten, dass in dieser Gegend Rothirsche, Eichhörnchen und Wildschweine lebten. Vertreten sind auch Tierarten, die auf eine Kulturlandschaft mit Feldern, Wiesen und offenem Raum hinweisen. Es sind Feldhasen, Wachteln, Rebhühner, Elstern und Vertreter der Drosselfamilie. Das nächste Biotop, das aus Schilfgras, Sumpf, langsam fließenden oder stehenden Gewässern oder toten Flussarmen besteht, vertreten Vogelarten wie Hausente und Hausgans, welche den Zugang zu solchen Gewässern brauchen, sowie Fische (Europäischer Wels) und Schaltiere (Genabelte Strauchschnecke).