

Zooarchaeology in Lithuania

Giedrė Piličiauskienė

Faculty of Medicine, Vilnius University,
M. K. Čiurlionio 21, Vilnius, Lithuania.
giedre.piliciauskiene@if.vu.lt

Viktorija Micelicaitė

Vilnius University,
Universiteto st. 7, Vilnius, Lithuania.
viktorijamicelicaite@gmail.com

Abstract. In recent years Lithuanian archaeologists have become greatly more aware of and interested in the information provided by faunal remains. Its potential has begun to draw the attention of researchers from nature sciences, while the archaeologists working in the field collect faunal remains uncovered during excavations and hand them over for storage increasingly more often. These faunal remains continue to be stored in the repository at Vilnius University. The project carried out in 2018–2020 with the funds provided by the Research Council of Lithuania gave an opportunity to record and make public the information about the zooarchaeological finds stored in the repository of Vilnius University, which are accessible for researchers and students from various scientific fields. The aims of this article are to present the Lithuanian collection of faunal remains kept at Vilnius University, to review the history of zooarchaeological research as well as the studies carried out in the last few years and to discuss the associated problems that continue to emerge.

Keywords: zooarchaeology, zooarchaeological collection, Vilnius University, Lithuania.

Zooarcheologija Lietuvoje

Anotacija. Pastaraisiais metais Lietuvoje gerokai išaugo archeologų supratimas bei susidomėjimas faunos liekanų teikiama informacija, jos potencialu pradėjo domėtis ir gamtos mokslų atstovai, o lauko darbus vykdantys archeologai vis dažniau surenka ir tyrimams pristato kasinėjimų metu rastas faunos liekanas, kurios toliau yra saugomos Vilniaus universitete įkurtoje saugykloje. 2018–2020 m. vykdytas Lietuvos mokslo tarybos finansuotas projektas atvėrė galimybę inventorinti ir pavišinti informaciją, kokia zooarcheologinė medžiaga saugoma Vilniaus universiteto saugykloje ir yra prieinama įvairių sričių tyrėjams bei studentams. Šio straipsnio tikslas ir yra pristatyti Vilniaus universitete saugomą Lietuvos faunos liekanų kolekciją, apžvelgti zooarcheologinių tyrimų istoriją, pastaraisiais metais vykdomus tyrimus ir aptarti vis dar kylančias problemas.

Reikšminiai žodžiai: zooarcheologija, zooarcheologinė kolekcija, Vilniaus universitetas, Lietuva.

Introduction

At least two articles contained in this publication discuss the evolution of zooarchaeological research and the questions related to faunal remains as well as the problems and tendencies of their research. Therefore, in this article we would not like to repeat the ideas put forth earlier by the colleagues on the interdisciplinary nature of zooarchaeology, the increasing number of studies and the growing activity of the researchers, the appearance of more developed scientific research methods or the well-known but persistent challenges which regard the collection of zooarchaeological finds and their documentation (Bartoszewicz, 2020; Lūgas, Rannamäe, 2020). We

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can only make an observation that most of these issues are already somewhat forgotten on the western shore of the Baltic Sea while they are still relevant on the eastern one. Although the notion of zooarchaeological research requires explaining less and less often, it would be worthwhile to provide a brief definition of it. Zooarchaeology is the research of faunal remains recovered from archaeological sites. Faunal remains incorporate everything that was preserved after the animal died: bones, teeth, antlers and horns, shells, egg shells, fish scales, furs, hair, proteins and even DNA (Davis, 1987, 18; Reitz, Wing, 1999; Sutton, Yohe, 2006, 248). For Western European archaeologists zooarchaeological analysis is a standard part of archaeological research. Unfortunately, the situation in Lithuania remains different. However, an optimistic outlook is encouraged by the fact that more and more researchers emerge in Lithuania who realise that important information is also preserved in faunal remains. This publication has several aims. One of them is education. The need for further discussion on the significance of zooarchaeological finds and for the demonstration of their potential for gaining knowledge about the humans and animals who lived in the past continues to exist not just in Lithuania, but in the neighbouring Baltic countries as well. It is important to stress that zooarchaeological research has been carried out in Lithuania for over a hundred years, but so far only a few zooarchaeologists and archaeologists slightly more interested in the faunal research have presented data essential to the understanding of Lithuanian, Baltic or European history. Because the faunal remains are becoming increasingly more desirable by Lithuanian and foreign scientists from different fields for carrying out ever larger studies, we would like to draw attention to the collection assembled in our country. Small countries situated on the fringes of Europe still often remain outside of the scope of the wider studies that involve multiple European countries. Sometimes they are perhaps simply forgotten or seem uninteresting due to the scarcity of information. Therefore, another aim of this article is to introduce the potential researchers to Lithuanian zooarchaeological data. In the article we will briefly review the previous zooarchaeological research in Lithuania and present the zooarchaeological collection stored at Vilnius University as well as the most significant recent studies which incorporated faunal remains as their main tool.

The review of zooarchaeological research in Lithuania

A more exhaustive review of the research on animal bones in Lithuania was published previously (Piličiauskienė, 2013). Therefore, in this article a shorter but a revised and updated review of the zooarchaeological research in Lithuania is given. Perhaps it seems symbolic, but the first animal bones studied in Lithuania were found at Nida – the first Stone Age site excavated in the territory of modern Lithuania and possibly the first in the whole of the East Baltic region. The first archaeological excavations at this site were carried out as early as in 1832 by Wilhelm Ernst Beerbohm, the Royal fishing inspector of the Curonian Lagoon and the Burgomaster of Memelburg (Beerbohm, 1833; Rimantienė, 1989). They were subsequently continued by other German scholars in the second half of the 19th c. and in early 20th c. Because Nida as well as a portion of present-day western Lithuania were part of the Kingdom of Prussia until the end of the First World War, both the archaeological excavations and the analyses of plant and faunal remains discovered there were conducted by German scientists. The first studies of animal bones in other East Baltic countries – Estonia and Latvia – were also carried out by German researchers (Lōugas, Rannamäe, 2020; Brinker et al., 2020; Bērziņš et al., 2014). The first results of the analyses of faunal remains from Nida were published in 1895; according to them not only the bones of wild but also of domestic animals as well as of freshwater fish were found and analysed (Hollack, 1895). It is probable that the bones of cattle, sheep/goat, pig and horse found at Nida are the earliest domestic animal remains in the territory of modern Lithuania to this day. Based on the other finds from the site they are dated to 2500 cal BC at the latest (Piličiauskas, 2018). Alas, the remains studied in the end of the 19th c. have not survived and later excavations at the site in the second half of the 20th c. and early 21st c. determined that animal bones are almost completely deteriorated (Rimantienė, 1989; Piličiauskas, 2018). In the early 20th c. animal bones also received attention in the eastern part of Lithuania, where numerous excavations were carried out at the early hillforts (for more exten-

sive review see Лухтан, 1985). At least at some of those excavations, Petrešiūnai hillfort and few other sites, the animal bones were collected and later analysed and published by the Polish researcher Lubomir Sagan (1936).

A new, very significant and qualitatively exceptional phase of the research of faunal remains began after a long break and is associated with Estonia or, more precisely, with the zoologist Kalju Paaver who conducted analyses of animal bones from various archaeological sites in the 1950s. Although most results of his work remained in unpublished reports, a single article was published (Paaver, Kulikauskas, 1965) and the data on Lithuanian fauna were included in his seminal monograph (Паавер, 1965), which continues to be immensely important for the research of history of the Baltic region's fauna to this day. K. Paaver studied the animal remains from archaeological sites which are key to the prehistory and history of Lithuania, such as Nemenčinė, Punia, Aukštadvaris and other hillforts, Trakai castle as well as from Vilnius city and other sites; he also analysed the medieval horses buried in Kriemala cemetery (Паавер, 1954; Паавер, 1962 a; Паавер, 1962 b; Паавер, 1962 c; Паавер, 1962 d). The zooarchaeological reports by Kalju Paaver are very detailed and meticulously written. He applied the research methods by then used in Western Europe which was uncommon in Soviet countries during that period. He was also knowledgeable about the specifics of zooarchaeological research and his ideas (for example, on the rarely found cat bones and on the conversely abundant remains of the European bison in Lithuania) put forward in the reports of the analyses and in publications remain interesting and valuable even nowadays. Unfortunately, he only ten years worked with the finds from Lithuania, and the animal remains from the sites studied by him have not survived.

In the early 1970s another foreign researcher – Valentina Danilchenko, a Candidate of Biological Sciences from the Moscow Archaeological Institute, who periodically travelled to Vilnius – began to study the faunal remains found at the Lithuanian hillforts during the excavations in the 1960s. In 1973 she published the “List of osteological finds from the excavated Lithuanian hillforts and settlement sites” in which she presented the results of her analyses of animal bones from various settlement sites and hillforts. Right up until 1990 V. Danilchenko studied the animal bones collected at various hillforts (Bražuolė, Bradeliškiai, Imbarė, Maišiagala, Narkūnai, Kumelionys and others) as well as Kernavė, Vilnius Lower Castle and Stone Age sites of Donkalis and Šventoji (Danilchenko, 1973; Danilchenko, 1989; Danilchenko, 1990). According to Dr. Aleksiejus Luchtanas, who extensively excavated the medieval town and hillforts at Kernavė, V. Danilchenko used to describe the animal bones very meticulously and measured them. Regrettably, the reports of her analyses, as is common for the works of that period on the whole, are very laconic and brief; usually, she presented the concise species composition of the animal bones, indicated the number of individuals and sometimes dedicated a few lines to specify the age of some animals. The zooarchaeological finds studied by her from Maišiagala hillfort, where, apart from isolated animal bones, twelve skeletons of domestic animals (mostly sheep) were uncovered (Fig. 1), are exceptionally interesting. These animals died in the second half of the 14th c. after the troops of the Teutonic Order set fire to the castle which stood there (Danilchenko, 1973; Volkaitė-Kulikauskienė, 1974). However, the report of the analysis is again oriented towards the bones' species composition. Almost all zooarchaeological finds from the hillforts studied by V. Danilchenko are now lost (more on that later in this paper). In addition to the already mentioned researchers, the analyses of zooarchaeological finds from several Stone Age sites were carried out by a docent of Vilnius University (VU) zoologist Augustinas Mačionis (Daugnora, Girininkas, 1996, 59–60; Butrimas, 1985, 31) and the archaeologist Darius Duoba (Duoba, Daugnora, 1994).

From the last decade of the 20th c. zooarchaeological research has been undertaken by the veterinarian Prof. Linas Daugnora, who for a considerable period worked in the Lithuanian Veterinary Academy (LVA). During his whole career as a zooarchaeologist he cooperated with the archaeologist Algirdas Girininkas. Together they have written several monographs and publications on prehistoric wild fauna as well as the appearance and spread of domestic animals in Lithuania (Daugnora, Girininkas, 1996; Daugnora, Girininkas, 2004) In the monographs they briefly discuss the zooarchaeological collections from various Stone Age settlement sites and hillforts as well as publish the results of the analyses by V. Danilchenko and other researchers taken from the



Figure 1. Burned sheep skeletons in the layer of 1365 in Maišiagala hillfort (photo by R. Volkaitė Kulikauskienė)

1 pav. Maišiagalos piliakalnyje, 1365 m. gaisro sluoksnyje rasti sudegusių avių skeletai (R. Volkaitės-Kulikauskienės nuotrauka)

original reports. However, it must be noted that in most cases the data presented and the conclusions made by these authors are unreliable. This stems mainly from the fact that most of the collections from the said sites are made up by mixed animal remains from many different periods and attributed to the Stone Age (in the case of settlement sites) or to the Bronze Age (in the case of hillforts) by the archaeologists responsible for excavation or by the zooarchaeologists themselves (Zabiela, 1995; Piličiauskas et al., 2017a, 8–14; Piličiauskas, 2018). One of the principal questions studied by the aforementioned researchers was the beginning of husbandry in the East Baltic region but the conclusions put forward by them, which for a long time shaped the local theory of Neolithisation, are unfounded as they are based not only on Stone Age, but also on Late Bronze Age, Iron Age and even on medieval faunal remains (for a wider discussion see Piličiauskas, 2018; Piličiauskas et al., 2017a). L. Daugnora also contributed to the publications on the mammoth and reindeer remains discovered in Lithuania as well as on the medieval diet and other subjects; he also started publishing the results of studies on Lithuanian zooarchaeological finds in international journals (Daugnora, Girininkas, 1995; Daugnora, Hufthammer, 1999; Daugnora, Bertašius, 1998; Žulkus, Daugnora, 2009). All in all, he was the first who in the last decade of the 20th c. popularised zooarchaeology, which was previously almost unheard of in Lithuania. As a result of his efforts, zooarchaeology (then as palaeozoology) began to be taught to archaeologists at Vilnius University over 15 years ago. Giedrė Piličiauskienė is working in the field of zooarchaeology since 2003 and from 2020 two PhD students from Vilnius University are also attempting to join the zooarchaeological community.

Around 2000 graves of horses dated to the 2nd–14th c. have been discovered in Lithuania. The steeds were buried both together with humans and in separate cemeteries – at some of them (for example, Marvelė) up to

300 individuals were buried; most of the large steed cemeteries were found in central Lithuania (Bertašius, 2002, 169–205). Due to being more interesting than other zooarchaeological finds, the remains of steeds have received greater attention from researchers. Skeletons of steeds were studied in one way or another by most of the archaeologists who discovered their graves. The remains of steeds were usually examined by veterinarians from the LVA who were otherwise not associated with archaeology or the study of remains of other animals. Prof. Konradas Aleksa analysed the remains of horses from Veršvai cemetery where about 200 graves of steeds were found during the excavations in the interwar period. The author mentioned that only young stallions were being buried there (Алекса, 1951). He also studied the steeds from the cemeteries of Kapitoniškės and Kriemala and determined their height, sex and build (Aleksa, 1955). K. Paaver, whom we already mentioned, studied and, presenting the methods of his analyses, described in detail the age, height and sex of 23 horses found at Kriemala cemetery (Паавер, 1962 d). Apart from him, steed skeletons were studied by the veterinarians from the LVA Dr. V. Barauskas and Dr. B. Balčiūnas between 1968 and 1976. They conducted analyses of the Migration Period horses from the famous Taurapolis barrow cemetery, where young steeds were buried alongside exceedingly rich warriors, whose graves contain many grave goods of nonlocal origin. These researchers also carried out studies of steeds from the later Nendriniai and Degsnė-Labotiškiai barrow cemeteries, Pakalniškiai cemetery and other burial sites but only identified the age, sex and height of horses in their short reports (Balčiūnas, Barauskas, 1968; Barauskas, 1971; Barauskas, Antanavičius, 1976). The biggest problem regarding their work is that they did not specify the method employed for identifying the height and age of the horses. This fact greatly limits the use of the results of their analyses. It is worth mentioning that the analyses by V. Barauskas and B. Balčiūnas indicate exceptionally large size for horses even on the scale of all of Lithuania. Alas, most of the skeletons of steeds studied by these authors have not survived. Nevertheless, when a few horse skeletons from the barrow cemeteries studied by them were recently rediscovered and reanalysed it was found that the age and height of the steeds determined by these researchers is indeed different to the one estimated using universally approved techniques; the latter was generally identified as larger by a margin of 5–15 cm (Piličiauskienė, 2021, in prep.). In the end of the 20th c. the remains of horses were also studied by L. Daugnora. The results of his analyses were discussed in several publications (e.g. Daugnora, 1994; Bertašius, Daugnora, 1997; Bertašius, Daugnora, 2001). Several other works concerned the investigation of horse remains found at hillforts, cities and castles (Piličiauskienė et al., 2006; Piličiauskienė, Blaževičius, 2018).

Practically none of the previously mentioned authors conducted analyses of bird and fish bones, which were recovered at Stone Age settlement sites even when screens were not used. Truth be told, right up until very recently only the fish remains from Šventoji Sub-Neolithic and Neolithic sites have been studied in more detail. The fish bones found there were analysed by the Latvian ichthyologist Janis Sloka in the 1960s and 1970s (Rimantienė, 1996, 341). Subsequently, fish bones discovered in Šventoji were studied in cooperation with Norwegian scientists (Daugnora, Hufthammer, 1999) while the Upper Pleistocene fish remains from the Netiesos outcrop were analysed by Dr. Ulrich Schmölcke (Baltrūnas et al., 2013). During the past 5 years fish bones were also analysed by one the author of this article G. Piličiauskienė. Still very few fish bones are being collected though, because most of the excavations are carried out without screening the excavated soil. The studies of fish bones from Vilnius Lower Castle, Klaipėda Castle and Šventoji Stone Age sites carried out in the last few years provided extremely valuable information about the fish and fishing both during the prehistoric and historic times in Lithuania. The research of fish bones collected by screening allows researchers to change the long standing stereotypes on the supposedly predominant catches of exclusively large fish in the past (Piličiauskas et al., 2019a; Piličiauskas et al., 2019b; Piličiauskienė, Blaževičius, 2019).

The study of bird bones was problematic for a long time not just in Lithuania, but also in Estonia, where a much more substantial tradition of zooarchaeological research has developed (Lõugas, Rannamäe, 2020); Ehrlich et al., 2020). The birds from the large Lithuanian zooarchaeological collection have not been studied yet. As there was no researcher specialised in the research of archaeological bird remains in Lithuania up to the present

day, bird bones were analysed only on very rare occasions. For a short period in the 1990s they were studied by mgr. Rasa Bilskienė of the LVA (Bilskienė, Daugnora, 2001). In recent years analyses of archaeological bird remains were occasionally conducted by the ornithologist Saulius Rumbutis, who also carried out the study of the so far largest collection of bird bones in Lithuania from Vilnius Lower Castle (Rumbutis et al., 2018). We were traditionally assisted by the Estonian researchers when help was needed in the study of bird remains (Ehrlich et al., 2020). The situation will likely develop in the near future when young researchers will come to the field.

Vilnius University zooarchaeological collection

The first faunal remains likely associated with the humans who lived in the past were excavated or found by amateur archaeologists and kept in the Museum of Antiquities (for more see Kozakaitė et al., 2020). Several animal bones and teeth from the Museum of Antiquities are still stored in the collection of the National Museum of Lithuania (NML). This assemblage contains some surprising discoveries, for instance, the canine tooth of a common hippo *Hippopotamus amphibious*, most probably brought to Lithuania by some collector. Burnt and unburnt bones of horses can be found in the collection of finds from the Iron Age barrows which were excavated in Vilnius Region and the territory of present-day Belarus before the Second World War, now kept in the NML. The history of the zooarchaeological collection which survived to this day in Lithuania begins quite late, because before the war animal bones were collected only in isolated cases and virtually were not preserved to modern times. The oldest finds in the Vilnius University (VU) collection by year of excavation are the cremated horse bones from Zabozhe (vicinity of Viliejka, modern Belarus) barrow cemetery excavated in 1934. A fraction of the horses skeletons from Veršvai cemetery excavated in the interwar years should also be preserved, although their exact location now is unknown. At least some of the steeds found in Veršvai were kept at Vytautas the Great War Museum in Kaunas right until the end of the 20th c. when they were moved to the repository which existed at the time in the LVA. A single horse skull from Veršvai is also stored in the VU collection where it arrived together with the zooarchaeological collection taken over from the LVA.

The bones collected in the 1950s, mostly studied by K. Paaver, did not survive to the present day. The period in Lithuanian archaeology between the 1960s and mid 1980s was very rich. During that time the most famous Lithuanian Stone Age sites (Šventoji, Daktariškė, Kretuonas and others), the most valuable Bronze Age hillforts (Sokiškiai, Kereliai, Narkūnai) as well as the hillfort of Maišiagala, with its impressive medieval zooarchaeological collection, were excavated. The archaeologists in charge of the excavations at these sites collected and analysed the considerable zooarchaeological assemblage (see the part on the history of research), which right up to 1995–2003 was stored at the NML. Regrettably, at present the larger part of this well and long kept collection is lost. How that happened is described in the following paragraphs.

In the end of the 1990s a repository for the zooarchaeological collection was established at the LVA by the initiative of L. Daugnora. Considering the research traditions in Lithuania, it was an understandable and progressive solution. After the establishment of the repository and with the gradual spread of information about the research of faunal remains, increasingly larger numbers of animal bones began to arrive to the LVA, even more so because L. Daugnora, who worked there, was the sole researcher conducting such studies in Lithuania. Unfortunately, the zooarchaeological collection in the repository was not appropriately organised and managed and eventually became inaccessible for researchers. A fraction of it was transferred to Klaipėda University in 2012 when L. Daugnora moved to work there. In 2016 the Ministry of Culture decided to assign the untended part of the collection still stored at LVA to Vilnius University. Thus, in the spring of 2016 the remainder of the zooarchaeological collection – mostly Early Modern Period animal bones found during excavations in cities in the beginning of the 21st c. – were moved to the Zooarchaeology Laboratory of the Bioarchaeology Research Centre of Vilnius University. The National Museum – Palace of the Grand Dukes of Lithuania (NM PGDL) had already recovered the enormous collection of around 100 000 animal bones from the former LVA repository a little bit earlier.



Figure 2. Zooarchaeological laboratory of Vilnius University Faculty of History.

2 pav. Vilniaus universiteto Istorijos fakulteto Zooarcheologijos laboratorija

While organising the collection after it was transported to VU the skeletons of horses from such significant burial sites as Taurapilis, Plinkaigalis and Pagrybis, which were earlier analysed by the specialists of LVA, were found. However, at the moment of taking over the collection it was noticed that perhaps its most valuable part – the bones which were transferred earlier from the NML – were missing. As declared in the handover and acceptance certificates signed in 1995, 1997 and 2003, the zooarchaeological collection assembled at the NML, comprising the faunal remains mostly from the Stone Age and Bronze Age settlement sites and hillforts (in total 115 boxes containing bones from 44 sites), was handed over to Dr. Linas Daugnora for keeping in the repository of LVA¹. Last time these finds were seen there while moving the collection of animal bones found in Vilnius Lower Castle from the repository in the end of 2015. It must be said that this is the greatest loss of bioarchaeological heritage in Lithuania. Nevertheless, we would like to hope that this collection will eventually reappear in the future.

Presently, the largest zooarchaeological collection in Lithuania is stored at Vilnius University. Apart from this repository, collections of animal bones are kept at several other institutions. The animal bones found in the territory of Vilnius castles are kept in the collection of the already mentioned NM PGDL. A fraction of the former LVA collection is kept at the Institute of Baltic Region History and Archaeology of Klaipėda University. Also, a part of the collection from Šventoji Stone Age sites which was successfully retrieved in 2017 is stored at the NML.

After the Ministry of Culture recommended in 2016 that the zooarchaeological collection should be kept by VU (rescript 28.01.2016 no. (1.36)2-204) and after the Centre for Bioarchaeological Research and the Zooarchaeology Laboratory (Fig. 2) were established at the university, the zooarchaeological collection began to increase rapidly. When the animal bones taken from Kaunas were joined with the bones assembled at VU since 2008, the collection stored in Vilnius became the largest in Lithuania and thus in need of organising. Hence, after obtaining the grant from the Research Council of Lithuania, a research project was started in 2018 with the aim of recording and publicising the anthropological and zooarchaeological collections kept at the university so that they would be open to and more actively used by the researchers; only in this way the stored finds can be made to provide more information on the humans and animals who lived in the past. In this article just the zooarchaeological parts of the collection is discussed. The history and state of the anthropological collection are the subject of another paper in this publication (Kozakaitė et al., 2020).

The recording of the zooarchaeological finds revealed that about six thousand kilograms of animal remains, dating from the Late Mesolithic to the fifth decade of the 20th c., are stored in the university's repository. The most recent part of the collection comprises animal bones found while excavating bunker sites of the Lithuanian partisans.

¹ Acts of temporary deposit of Lithuanian National Museum 22.11.1995, 4.9.1995 and 28.03.2003.

The Stone Age and Early Bronze Age collection is small, 150 kg in total; it consists of bones found at seven sites, mostly at Kretuonas site (Švenčionys District Municipality). The Late Bronze Age collection is also small, but very valuable. Its core is composed of the finds from the recently excavated four early hillforts in western and eastern Lithuania – well preserved animal bones retrieved using the screening method. The research of these assemblages will undoubtedly reveal hitherto unknown details of life in Bronze Age communities.

The Iron Age – zooarchaeological assemblages from the Roman, Migration and Viking periods – are probably the least represented. This results from different reasons: the geographic location of settlement sites, constant and long ploughing as well as little interest shown by the archaeologists to the Iron Age settlement sites that lack impressive finds and therefore are on the whole only occasionally excavated. In those rare cases when animal bones are preserved, they are scant and usually in bad condition, most often collected from unstratified settlement sites with wide chronologies. Although in our collection the Iron Age is represented by zooarchaeological finds from 34 sites, the weight of the stored animal bones from this period is just around 80 kg. Nonetheless, there is a quite numerous and extremely valuable collection of the 3rd–14th c. horses bones comprising the remains of 387 steeds from 21 burial sites. 74% of the horses are from the single Marvelė cemetery though.

Medieval animal bones, excluding three burial sites with horses remains, are mostly collected from hillforts (18 sites) and castles (4 sites). Very large zooarchaeological collection is from the Kernavė medieval town and hillforts (around 20 000 bone fragments, in total weighing about 300 kg).

The largest part of the collection (3 000 kg) comprises animal bones dated to the Early Modern Period, found during archaeological excavations in 19 Lithuanian cities and towns as well as at castle sites (6 sites), manor sites (8 sites) and at village sites (2 sites). Bones of domestic animals predominate in this part of the collection but among the assemblages from castles there are abundant remains of wild animals such as elk, European bison and deer, which are already rarely found at other sites of this period.

19th and 20th c. animal bones form the latest part of the collection. Although faunal remains of this period are important and valuable, they are not numerous. Probably the most valuable are the remains of animals, mostly horses, collected at the mass burial site of the Napoleonic troops from 1812 in Vilnius (Signoli et al., 2004), also important due to the precisely known date of death of the animals.

During the project funded by the Research Council of Lithuania in 2018–2020 the zooarchaeological collection was not only organised and recorded, but a database was built for it as well. The information on the number of bones (in kg) from every excavated site, the animal species found there, site type and chronology as well as data on the excavations (coordinates, year of the excavation, name of the archaeologist, excavated area, number of graves, etc.) were recorded in the database. The earlier zooarchaeological research reports with detailed information about the studied site and the analyses carried out were also collected. Summarised data on the zooarchaeological collection are made public on the website of Vilnius University osteological collection at <http://www.osteo.mf.vu.lt/>.

Currently the finds from the VU zooarchaeological collection are frequently included in the projects carried out by Lithuanian or foreign researchers, most often on the subjects of diet and migration (Piličiauskas et al., 2017 b, c; Bliujienė et al., 2020; Simčenka et al., 2020; Skipitytė et al., 2020). At present, two projects based on strontium and oxygen isotope analyses are being implemented, the first of which investigates human mobility and geographic origin during the Stone and Bronze Age (Piličiauskas et al., in prep.), while the second project examines similar questions regarding humans and horses during the Migration Period (Piličiauskienė et al., in prep.). A project on the Late Bronze Age economy is being carried out in cooperation with the Lithuanian Institute of History, whereas an interdisciplinary study, aimed at revealing the specificity of diet, living conditions and genetics of medieval and Early Modern Period Lithuanian dogs, is conducted together with the researchers from Oxford University, the National Museum of Lithuania, Palace of the Grand Dukes of Lithuania as well as from the Center for Physical Sciences and Technology in Vilnius. It is always delightful when data and finds from Lithuania are included in larger studies involving multiple European countries (Hoffman Kaminska et al., 2018; Glykou et al., 2021).

To conclude....

After reviewing the situation of zooarchaeological research in Lithuania it can be stated that the analyses conducted prior to the last decade of the 20th c. were of a limited nature, chiefly concerned with the identification of animal species, thus reflecting the tradition of the zooarchaeological research of Central and Eastern Europe (Marciniak, 1999). Only the studies by Kalju Paaver stand out. It should also be noted that most often zooarchaeological analyses and the collection of animal bones interested only those researchers who studied Stone Age sites or hillforts, horse graves, sometimes castles. Animal remains were almost never collected during excavations in cities and towns. This trend persists nowadays – commercial archaeologists are still reluctant to collect animal remains or collect them very nominally. The value of the scant results of analyses presented or published in the earlier archaeological excavation reports is small due to their brief, elementary nature and unreliable chronology of the analysed finds. A multitude of circumstances – unspecified methods of zooarchaeological analysis, inadequate collection and documentation of zooarchaeological finds as well as improper sampling, misleading radiocarbon dates (Piličiauskas et al., 2017 b), animal bones retrieved from unstratified sites with long settlement chronologies and the irresponsible attitude of some researchers to the aforementioned factors – made the results of the earlier analyses seem confusing and dubious. It is unfortunate that the lost zooarchaeological finds cannot be reanalysed today, especially having in mind that these were the faunal remains from the most representative archaeological sites across all periods of prehistory and history. Their study with the application of modern scientific methods would be extremely significant. What is more, after the last 50–60 years, the intensive drainage in the second half of the 20th c. and ploughing of the soil it is doubtful whether animal bones are preserved at all at a lot of sites where they were found in perfect condition in the middle of the 20th c. As the most recent archaeological excavations at Šventoji sites have shown, the organic artefacts have almost completely deteriorated during the last 50 years in most places. The situation is a little bit better in the case of a specific part of the collection – the remains of horses from the Iron Age and medieval sites. Numerous horse skeletons have survived and can be studied by applying not just the traditional zooarchaeological techniques but also the newest scientific methods, which is exactly what is being carried out at the present.

Regardless of the intensified research, we also have to deal with many issues which were mentioned by the Estonian colleagues in their paper (Lõugas, Rannamäe, 2020). There is much work that has to be done in order to fully utilise the potential of the zooarchaeological collections. Firstly, the faunal remains should be properly collected and documented during archaeological excavations. The second problem is related to the storage of the collected finds. Currently, almost all of the analysed animal bones are left for storage as the existing collection



Figure 3. Repository for the zooarchaeological collection at Vilnius University.

3 pav. *Vilniaus universiteto zooarcheologinės medžiagos saugykla*

is not sufficiently large. This becomes evident nearly every time when there is a need of a bone or tooth of a rarer species of animal – it would be good to have many more of them. The repository for the zooarchaeological collection (Fig. 3) is a subdivision of the Zooarchaeology Laboratory of the Faculty of History, VU and is situated separately from the laboratory. The storage space amounts to just 67 m² and is not suited for work with the zooarchaeological finds, merely for their storage. Another 20 m² for storage are located in the Zooarchaeology Laboratory itself. In a few years from now all of this space will be completely filled. Therefore, we have to look for a long-term solution for storing the abundant archaeological–zoological heritage of this country right now. The best example in this situation could be the storage of the osteological collection in Estonia. However, we have to admit that similar solution is hardly possible in Lithuania, at least for now.

The large interest in zooarchaeological studies and the intensive research as well as its results both uplift and inspire. The Zooarchaeology Laboratory at Vilnius University has a wide reference collection – the necessary basis for research. Its facilities are fully suited for conducting standard zooarchaeological analyses. The fundamentals of zooarchaeology are taught to the students of archaeology, hence it is likely that the appropriate methods of archaeological excavation concerning faunal remains will be more frequently applied and the necessity for the analyses of animal remains will eventually cease raising doubts in the near future.

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Zooarcheologija Lietuvoje

Giedrė Piličiauskienė, Viktorija Micelicaitė

Santrauka

Gyvūnų kaulus Lietuvoje, tiksliau – dabartinėje jos teritorijoje, kaip ir kitose Baltijos šalyse, pirmieji tyrinėti pradėjo voikičių mokslininkai, o pirmoji iširta ir dar 1895 m. paskelbta buvo Nidos akmens amžiaus gyvenvietės zooarcheologinė medžiaga (Hollack, 1895). Ilgą laiką archeologinės faunos tyrimai Lietuvoje faktiškai nevyko, jie pradėti tik XX a. šešto dešimtmečio pradžioje. Naująjį zooarcheologinių tyrimų etapą galima apibūdinti kaip itin svarbų, išskirtinai kokybišką ir susijusį su Estija. Mat būtent estų zoologas Kalju Paaveris apie 10 metų ir atliko įvairių Lietuvos archeologinių vietovių gyvūnų kaulų tyrimus (Paaver, Kulikauskas, 1965; Paaver, 1965). Kalju Paaverio tyrimų ataskaitos išsamios, kruopščiai paruoštos, tyrėjas vadovavosi Vakarų Europoje taikyta metodika, kas to meto sovietinėse šalyse buvo retas atvejis, o K. Paaverio pateikiamos išvalgos išlieka įdomios bei vertingos ir šiais laikais. Deja, jo tyrimams nutrūkus, kitas mūsų krašto zooarcheologinių tyrimų istorijos etapas prasidėjo maždaug po aštuonerių metų ir yra susijęs su kita nevietine tyrėja – maskviete mokslininke Valentina Danilčenko, kuri 1970–1990 m. atliko įvairių Lietuvos gyvenviečių ir piliakalnių faunos tyrimus

(Danilčenko, 1973; Danilčenko, 1989; Danilčenko, 1990). Tiesa, keleto gyvenviečių gyvūnų kaulų tyrimus yra atlikę Vilniaus universiteto zoologas Augustinas Mačionis ir archeologas Darius Duoba. Nuo XX a. paskutinio dešimtmečio zooarcheologinę medžiagą tyrinėti ėmėsi ilgą laiką Lietuvos veterinarijos akademijoje dirbęs prof. Linas Daugnora, visą savo kaip zooarcheologo karjerą dirbantis kartu su archeologu Algirdu Girininku. Kartu jie parašė ne vieną darbą, aptariantį priešistorinę laukinę fauną, naminių gyvulių atsiradimą Lietuvoje (Daugnora, Girininkas, 1996; Daugnora, Girininkas, 2004). Tačiau reiktų pasakyti, kad daugeliu atvejų autorių pateikiami duomenys ir iš jų daromos išvados yra nepatikimi. Viena svarbiausių to priežasčių – daugelio minėtų paminklų kaulų kolekcijas sudaro maišyta įvairių laikotarpių medžiaga, kuri tyrimus atlikusių archeologų arba pačių faunos tyrėjų buvo priskirta akmens (gyvenviečių atveju) ar bronzos (daugiausia piliakalnių atveju) amžiui (Zabiela, 1995; Piličiauskas *et al.*, 2017, p. 8–14; Piličiauskas, 2018). Kadangi vienas svarbiausių autorių gvildentų klausimų buvo gyvulininkystės pradžia mūsų krašte, jų pateiktos išvados, pagrįstos ne tik akmens, bet ir bronzos, geležies amžiaus bei viduramžių faunos tyrimų rezultatais ir ilgą laiką formavusios vietinę neolitizacijos teoriją, yra nepagrįstos (plačiau – Piličiauskas, 2018; Piličiauskas *et al.*, 2017).

Nuo pat XX a. vidurio Lietuvoje gyvūnų kaulus dažniausiai rinko mokslininkai, tyrę akmens amžiaus gyvenvietes, taip pat piliakalnius, žirgų kapus, kartais – pilis. Miestuose ir miesteliuose zooarcheologinė medžiaga beveik nebuvo rinkta. Tokia tendencija vis dar išlieka ir šiais laikais, ypač miestuose gyvūnų liekanos dažnai renkamos labai formaliai. Negausūs XX a. tyrimų ataskaitose pateikti arba publikuoti gyvūnų kaulų tyrimų rezultatai dažniausiai yra menkaverčiai pirmiausia dėl mažo informatyvumo ir nepatikimos tirtos medžiagos chronologijos. Daugybė aplinkybių: neaiški zooarcheologinių tyrimų metodika, netinkamas zooarcheologinės medžiagos rinkimas ir dokumentavimas, klaidinančios nepatikimų laboratorijų radiokarboninės datos, gyvūnų kaulai iš nestratifikuotų ilgalaikių gyvenviečių, neatsakingas kai kurių tyrėjų požiūris į minėtas aplinkybes sukėlė daug painiavos ir abejonių vertinant ankstesnių tyrimų rezultatus. Didelė dalis XX a. antroje pusėje iškastų ir tyrinėtų gyvūnų kaulų iki šių dienų neišliko. Šiuo metu yra pradingusi ir didžioji zooarcheologinės medžiagos, surinktos 44 gyvenvietėse, piliakalniuose ir laidojimo paminkluose, tarp kurių žymiausi Lietuvos archeologijos paminklai, dalis. Ši kaulų kolekcija iki pat 1995–2003 m. buvo saugota Lietuvos nacionaliniame muziejuje ir pagal laikino deponavimo aktus per tris kartus, 1995 m., 1997 m. ir 2003 m., perduota L. Daugnorai. Norisi tikėti, kad anksčiau ar vėliau ši vertinga kolekcija atsiras.

Vis dėlto dalis XX a. archeologų surinktų gyvūnų kaulų išliko iki šių dienų. Nuo XX a. devintojo dešimtmečio pradžios Kaune, Lietuvos veterinarijos akademijoje (LVA) L. Daugnoros kaupta kolekcija, tiksliau – čia likusi jos dalis, 2016 m. Kultūros ministerijos sprendimu perduota saugoti Vilniaus universitetui, kuriame rekomenduota ir toliau kaupti faunos liekanas. Keleto vietovių gyvūnų kaulus Vilniaus universitetui 2016 m. perdavė ir Klaipėdos universitetas. Iš LVA perimtų gyvūnų kaulų būklė buvo apgailėtina – suplyšusios dėžės, supeliję ir depasportuoti kaulai. Perimtą zooarcheologinę medžiagą reikėjo kuo greičiau tvarkyti. Juolab kad Vilnius universitete įkūrus Bioarcheologijos tyrimų centrą ir Zooarcheologijos laboratoriją (2 pav.), faunos kolekcija ėmė sparčiai gausėti. Gavus 2018 m. Lietuvos mokslo tarybos finansavimą, buvo pradėtas vykdyti projektas, kurio tikslas – suinventorinti ir paviešinti universitete saugomą antropologinę ir zooarcheologinę kolekcijas, kad jos būtų atviros ir aktyviai naudojamos tyrėjų, nes tik taip gali būti išnaudojama saugomos medžiagos teikiama informacija apie praeityje gyvenusius žmones ir gyvūnus.

2018–2020 m. zooarcheologinė kolekcija buvo sutvarkyta ir suinventorinta, sukurta jos duomenų bazė, kurioje pateikta detali kiekvienos saugomos vietovės kaulų rinkinio informacija. Apibendrinti duomenys apie kolekciją paviešinti Vilniaus universiteto osteologinei kolekcijai skirtoje interneto svetainėje <http://www.osteof.vu.lt/>. Suinventorinus saugomas faunos liekanas paaiškėjo, kad universiteto saugykloje yra saugoma apie 6 000 kg gyvūnų liekanų, datuojamų nuo vėlyvojo mezolito iki XX a. šeštojo dešimtmečio. Didžiausią kolekcijos dalį sudaro ankstyvųjų naujųjų laikų gyvūnų kaulai, be jų, saugoma ir gausi III–XIV a. arklių skeletų kolekcija, taip pat įvairių pilių ir piliakalnių zooarcheologinė medžiaga. Kolekcija nuolat pildosi, tad šie skaičiai yra kintantys.

Nors tyrimai intensyvėja, kolekcijos sutvarkytos, vis dar turime daug problemų, nebekylančių į vakarus nuo mūsų esančiose šalyse, tačiau vis dar aktualių rytinėje Baltijos pakrantėje. Didžiausia problema – dalies Lietuvos archeologų nenoras pripažinti, kad faunos liekanos yra vertingi archeologiniai radiniai, kuriuos archeologinių tyrimų metu būtina kruopščiai ir metodiškai rinkti. Dėl netinkamo rinkimo ir dokumentavimo zooarcheologų darbas neretai lieka beprasmis ar net klaidinantis. Kita problema yra susijusi su surinktos medžiagos saugojimu. Šiuo metu, atlikus tyrimus, saugoti paliekami beveik visi iširti gyvūnų kaulai. Zooarcheologinės medžiagos saugykla (3 pav.) priklauso Vilniaus universiteto Istorijos fakultetui, ji įkurta atskirai nuo laboratorijos, Vilniuje, Akademijos g. 4. Saugyklos plotas – vos 67 m², ji nepritaikyta dirbti su zooarcheologine medžiaga ir yra skirta tik jai saugoti. Per keletą metų visos šios patalpos bus pripildytos. Todėl jau dabar reikia ieškoti ilgalaikio sprendimo, kur ir kaip ateityje saugoti vertingą archeologinį / zoologinį mūsų krašto paveldą. Geriausias šioje situacijoje galėtų būti Estijos pavyzdys: Estijoje įkurta specializuota bendra zooarcheologinės ir antropologinės medžiagos saugykla, kurios išlaikymu rūpinasi Švietimo ir mokslo ministerija (plačiau – Lōugas, Rannamäe, 2020). Deja, reikia pripažinti, kad bent kol kas Lietuvoje tai vis dar sunkiai įsivaizduojama.

Vis dėlto straipsnį norėtusi pabaigti optimistine gaida. Pastaruoju metu augantis dėmesys ir susidomėjimas, intensyvėjantys tyrimai bei vertingi jų rezultatai džiugina ir įkvepia. Vilniaus universiteto Zooarcheologijos laboratorijos tyrimų bazė – palyginamoji kolekcija, darbui skirtos patalpos puikiai tinka vykdomiems klasikiniams zooarcheologiniams tyrimams. Zooarcheologijos pagrindai dėstomi archeologijos specialybės studentams, todėl tikėtina, kad faunos liekanų atžvilgiu vis dažniau bus taikoma tinkama archeologinių tyrimų metodika, o gyvūnų kaulų tyrimų svarba ir saugojimo būtinybė nebekels abejonių.