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# Hunting Dogs and Hunting with Dogs in the Grand Duchy of Lithuania during the 13th to 17th Centuries AD

**ABSTRACT**

In recent years, interdisciplinary studies of dog remains from the late Middle Ages (13th to 15th centuries) and the early Modern Period (16th to 17th centuries) found in Lithuania have provided data on the morphology, health and diet of these animals. A particularly rich collection of dog remains (NISP 590) was gathered at Vilnius Lower Castle, and the status of this site allows us to relate the dogs found to the elite of the periods discussed. According to historical records, the function of most elite dogs was hunting, and remains found in elite residences are likely to belong to canines used for this purpose. Here we will discuss details of the care, diet and use of hunting dogs in the Grand Duchy of Lithuania, characterise the size and morphotype of 13th to 17th century dogs found at several sites and try to find some similarities between the archaeological evidence and the elite hunting dogs described in historical records.

**KEYWORDS**

Hunting dogs / morphotype / diet / Vilnius Lower Castle / late Medieval Period / early Modern Period / eastern Baltic

## General Remarks

The key topics of this article are late medieval and early Modern Period dogs and hunting. Both topics have been studied quite widely in Europe (e. g. Manning 1993; Almond 2003; Samsonowicz 2011; Sykes 2018). Different aspects of late medieval and early Modern Period hunting are also discussed in the works of Lithuanian researchers (Mickūnaitė 2009; Piličiauskienė/Blaževičius 2018; Zarankaitė-Margienė 2018a; 2018b). Meanwhile, dogs, especially their skeletal remains, are still poorly studied in Lithuania despite the exceptional status and popularity of the dog in public society. Much more has been done on the historical research of dogs in the Grand Duchy of Lithuania (hereinafter: GDL), one of the most important studies being the one by Ragauskienė (2010). The history of the native Lithuanian hound breed is discussed by Smetona et al. (2021). The latter study represents research of cynologists and hunting specialists, which provides valuable insights into hunting with dogs in the early Modern Period. In recent studies (Ragauskienė 2010; Smetona et al. 2021) the authors have attempted to relate several types of dogs mentioned in the historical records to modern breeds. However, intensive controlled breeding has only been widely practiced in the Modern Period and most breeds have only been established within the last 200 years from a small number of founders (Ostrander et al. 2019, 810, and references therein; Nichols 2021). Thus, in this paper, 13th to 17th century dogs will not be linked to modern breeds. As there is a lack of interdisciplinary surveys that combine research on dogs and hunting from different disci-

plines in Lithuania, our paper is just an attempt to fill this gap.

Hunting was the main form of entertainment among the nobility in the Middle Ages and the early Modern Period, a form of political interaction that was also correlated with economic benefits (Jaworski 2001; Petrauskas 2003). In the 14th and 15th centuries, all Grand Dukes of Lithuania were great hunting enthusiasts, and they devoted a lot of time to the sport. Dogs were one of the most important participants in hunting; around a hundred hunting dogs were owned by Grand Duke of Lithuania (hereinafter: GdL) Vytautas (c. 1350–1430) and his cousin Jogaila, King of Poland (Polish: Jagiełło, 1352–1434). To compare – in 1415, Jogaila had also 30 to 40 birds of prey (Jaworski 2001, 50). Jogaila's wife, Queen Jadwiga (1373–1399), also owned dogs, but she did not hunt herself; her dogs were used by guests and courtiers. The widow of GdL Švitrigaila (1370–1452) also kept dogs (*Lietuvos Metrika*; Kręt 1981). Sigismund I the Old, King of Poland and GdL (1467–1548), and his wife, Queen Bona Sforza d'Aragon (1494–1547), were also fond of hunting with dogs. Their son, Sigismund II Augustus (1520–1572), was an avid hunter, keeping about 140 dogs and reportedly spending as many as 223 days on the hunting estates of the GDL in 1546. The nobility loved to hunt, and hunting was a career path for many of them. Meanwhile, peasants were forbidden to hunt, thus they did so illegally, by poaching (Ragauskienė 2010, 33–34).

The dog was a key player in hunting and an important companion of the upper classes in the GDL. The Balts – Lithuanian and Prussian tribes – still used to bury their dead with their dogs as recently as 500 years ago. According to historical records, in the 14th century, both Lithuanian Grand Dukes and ordinary people were still cremated or buried uncremated with their dogs (Dusburg, *Chronicon* 5 [p. 334]; Marburg, *Cronica* IX. 133 [p. 463]; Długosz, *Historia* [p. 551]). This custom is also evidenced by archaeological data. Numerous graves of humans and horses buried with dogs were found in Lithuanian burial sites dating to the 10th to 15th centuries (Urbanavičius 1980; Svetikas 1982; Varnas 1994; 1996; Bertašius 2009). Written records from the 15th to 17th centuries reveal that hunting dogs were expensive and of great importance in the GDL. They were a popular gift among the elite and even the object of theft, their diet was strictly regulated, and they were under the care of a team of special officers (Ragauskienė 2010; Zarankaitė-Margienė 2018a; 2018b). However, by the end of the 16th century, the popularity of hunting was already declining with a growing interest in science and spiritual issues, and the prices of hunting dogs and hunting birds more than halved (Mickūnaitė 2009; Ragauskienė 2010). With the shifting attitudes towards hunting and with its traditions changing, the types of dogs bred by the nobility also changed. Changes in dog breed preference are reflected not only in the prices of canines, but also in the morphotype of the animals, which will be discussed in more detail below.

Recent dog studies became possible after the large-scale archaeological investigations at Vilnius Lower Castle (hereinafter: VLC) from 1988–2014. This castle was the residence of the GdL from the 13th century. In 1569, the GDL and the Kingdom of Poland were united into a single state, which created one of the largest countries in Europe at the time: the Polish-Lithuanian Commonwealth. Thus, VLC then also became the residence of the Commonwealth King in Lithuania.

During the excavations at the castle, a zooarchaeological assemblage of about 80,000 specimens was collected and examined (Piličiauskienė/Blaževičius 2018). The excavations provided a unique collection of dog remains (590 bones and bone fragments), which formed the basis for the research presented in this publication. Interdisciplinary studies of dog remains found at the castle and at other sites in Lithuania have provided data on the morphotype, health, diet, and origin of these 13th to 17th century dogs, and the results of these investigations have become the basis for several forthcoming publications.

As historical records indicate, hunting was the main function of elite dogs in the Middle Ages and the early Modern Period. Therefore, dogs found in elite residential environments were most likely used for hunting. In this article, we will discuss the details of care, diet and use of hunting dogs, and the changes in the canines' morphotype in the GDL during the medieval and early Modern Periods.

## Material and Methods

The zooarchaeological material discussed in the study was collected during the archaeological excavations at VLC, Vilnius and Kaunas towns, Klaipėda (formerly Memelburg) Castle and town, and in a number of small Lithuanian towns (**fig. 1**). Although data collection was carried out for dog remains found in many different areas of Lithuania, this publication will mainly focus on individuals found at VLC. The zooarchaeological finds dating back to the 13th to the middle of the 14th centuries reflect the
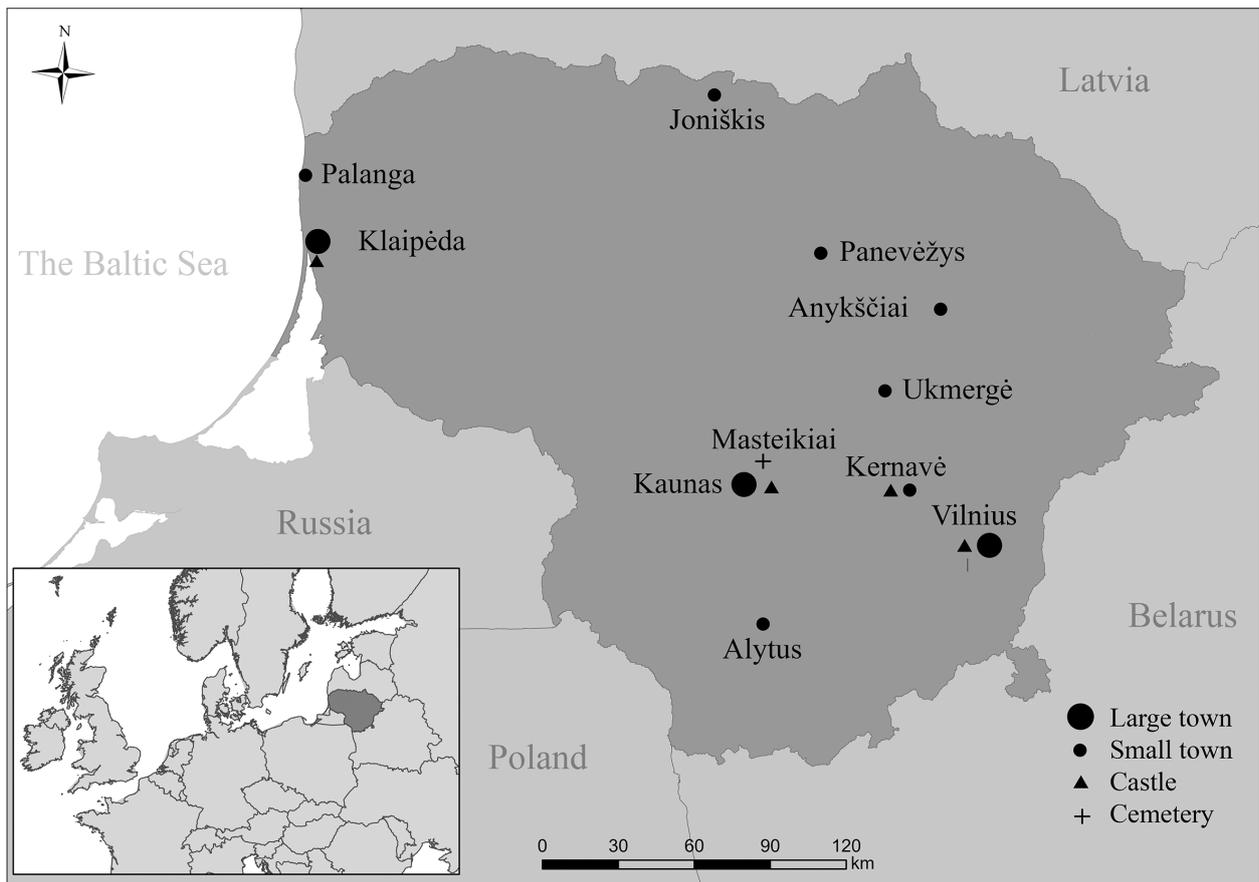
**Fig. 1** Location of sites with dog remains analysed. – (Map G. Piličiauskienė / V. Micelicaitė).

stage of the construction of the castle, and the late 14th to 15th centuries represent the period of its prosperity. In the early 16th century, a new palace of the Grand Dukes of Lithuania was built on the site of this castle, and this complex survived until the late 17th century. The castle itself was abandoned after a Muscovite attack in the middle of the 17th century, and it was completely demolished at the beginning of the 19th century. The dogs analysed in this study were found during the excavations of 1988–2014, in the layers dated to the 13th to 17th centuries (Piličiauskienė/Blaževičius 2018).

At VLC, 590 dog bones and bone fragments belonging to at least 51 individuals were found. In accordance with the castle's stages of development and their clear stratigraphy, the dogs' remains were divided into two chronological groups for further research: 13th to 15th centuries and 16th to mid-17th centuries.

Zooarchaeological studies were carried out at the Zooarchaeology Laboratory of Vilnius University. The bones were measured using the method introduced by A. von den Driesch (1976). Age estimation was based on epiphyseal fusion, tooth eruption (Silver 1969) and tooth wear stage (Horard-Herbin 2000). The dogs' height at withers was calculated accord-

ing to the coefficients of R. A. Harcourt (1974). When more than one bone used to calculate height was preserved per individual, the average height was taken. Based on their height at withers, the dogs were classified into seven categories (according to Belhaoues 2011; Hourani 2018): dwarf (<25 cm), very small (25–29 cm), small (30–39 cm), medium (40–49 cm), medium large (50–59 cm), large (60–69 cm), and very large (≥70 cm). According to the skull index (greatest zygomatic breadth/total length) the dogs can be divided into three categories: dolichocephalic, mesocephalic, brachycephalic (Hourani 2018, and references therein).

To better describe the morphotype of the dog, the skulls of archaeological individuals were compared with those of modern dogs, and the limb slenderness index (SI = SD*100/GL, where SD is the minimum width of the diaphysis and GL corresponds to the total bone length) was estimated from the radii. However, the aim of this analysis was not to identify any »breeds«, just to compare the shapes of the dogs. To compare the skulls, we used the cranial index (30*100/1) and the palatal index (34*100/13; see Harcourt 1974; Hourani 2018). The measurements in the indices correspond to the descriptions by von den Driesch (1976). Modern dog breed radii and

cranial data were taken from Wagner (1930); additionally, skeletons of three more modern dogs (two Lithuanian hounds and one Caucasian Shepherd) from the Vilnius University Osteological Collection were used. The pathologies were determined by dog surgeon and orthopaedist-traumatologist, Dr. Valdas Vaitkus, former associate professor of the Lithuanian Veterinary Academy.

The dogs' remains from VLC are stored in the National Museum – Palace of the Grand Dukes of Lithuania, and skeletal remains from all other sites are stored in the Zooarchaeological Repository of Vilnius University, Faculty of History.

## Results and Discussion

### Dogs in Lithuania: Archaeological and Zooarcheological Data

The oldest dog remains in Lithuania are recorded from the sites where abundant zooarchaeological material has been found. The earliest dogs are known from the Šventoji 43 settlement site (3900–3700 cal BC) in coastal Lithuania (Piličiauskas et al. 2019). Canines dated to the 4th millennium BC have also been found at Daktariškės 5 (western Lithuania) and at the Kretuonas (eastern Lithuania) sites (Daugnora/Girininkas 1996). However, at the latter two sites there were also finds from later periods, so the exact number of dog remains from the Subneolithic remains unclear. Pendants made from a dog or wolf tooth have been found in Late Mesolithic burials in Donkalnis cemetery in western Lithuania (Piličiauskas et al. 2017). Unfortunately, the remains of dogs from the oldest sites are scarce, highly fragmented and provide little information about the animals themselves. More can be said about the dogs from the Šventoji 4 and 23 sites (3000 cal BC), where at least twelve individuals were found. The skulls, mandibles and long bones indicate that all these dogs were medium-sized individuals about 40 cm in height (Piličiauskienė, unpublished data). Interestingly, canine remains are almost absent in Bronze Age zooarchaeological material (Luik et al. 2022; Micelicaitė et al. 2023; Piličiauskienė, unpublished data), and only very scarce fragments of dog teeth and bones have been found among the faunal remains from Iron Age sites (Piličiauskienė, unpublished data).

Around the 10th/11th century, a new practice of burying dogs appeared in Lithuania: dog remains are found buried together with humans or horses. Some of the earliest graves are known from the Marvelė burial site in central Lithuania (Bertašius 2002; 2009). Unfortunately, in almost all cases, information about the canines or their skeletal parts found in the burials is only available from archaeological reports, and the remains of the animals have not been stored until now.

The practice of burying dogs lasted until the end of the 14th century or even the beginning of the 15th century AD, i. e. after the Christianisation of Lithuania in 1387. Dogs buried with humans or horses have been found in the cemeteries at Obeliai, Masteikiai, Bazorai, Griežė, and also other burial grounds. Unusual dog burials are known from Masteikiai cemetery in central Lithuania. The cemetery dates to the 12th to 14th centuries AD and has humans and horses buried separately (Varnas 1994; 1996). In the horse graves 21, 22, 26, 36, also remains of dogs were found – one mandible in each grave. The dog mandible from grave 26 was dated to 1163–1265 (842 ± 28 BP; FTMC-SN30-1). Two more mandibles were found in disturbed graves. It is worth mentioning that five of the six mandibles were right-sided ones. Despite the archaeological report, according to which more complete dog skeletons were found in horse burial 26, individual remains from this grave include only some vertebrae and a few small fragments of long bones. All mandibles found in the Masteikiai cemetery were very similar in size, belonging to five medium to large dogs and one large one. The length of the Masteikiai dogs' mandibles was similar to that of a German Pointer's, but the bones were much more robust (Piličiauskienė 2023). Two exceptional dog burials were found in the late 14th to early 15th century Bazorai cemetery (southern Lithuania), where two human burials with dogs were found. In grave 54, the skeleton of a dog was found next to a child (**fig. 2, 1**), and in grave 19, a dog was lying on a woman's legs (**fig. 2, 2**; see Svetikas 1982). It is likely that hunting dogs might have been buried in the cemeteries, as the historical sources mention such a tradition.

In the late medieval and early Modern Period castles and towns, dog remains are scarce, usually accounting for 1–2 % or less of all identified mammal bones (e. g. Baublienė et al. 2004; Piličiauskienė/Blaževičius 2018; Ehrlich et al. 2020; Piličiauskienė,

**Fig. 2** Bazorai cemetery graves with dog remains, late 14th to early 15th centuries. **1** child's grave no. 54 with the dog lying to the right of the deceased. – **2** female grave no. 54 with the dog lying on the woman's legs. – (Photos after Svetikas 1982).

unpublished data). The functions these animals had, whether hunting or guarding, would be impossible to determine. Defining the function of a dog is much more problematic than assessing the type of dog. A single individual can be used for a wide variety of purposes, or it can simply be a pet and status symbol (Harcourt 1974; Nichols 2021). In addition, dogs with very similar morphotypes can perform different functions, for example Collies and English or Arabian sighthounds. The former are shepherd dogs, and the latter are hunting dogs, but the osteometric data and the general morphotype of all these canines are very similar. Moreover, a hunting or guard dog does not necessarily have to be large (e. g. dachshunds, Jack Russell terriers). As early as the middle of the 19th century, very good local hounds less than 30 cm tall were used in Lithuania (Dmitrij V. 1876, 27). Thus, we can only assume that the dogs found in high social strata contexts were most likely hunting animals. This is suggested by the fact that hunting was a privilege and a popular activity of the elite in general. Moreover, the fact that hunting was the main function of the elite dogs is suggested by medieval and early Modern Period records (see below).

## Size and Type of the Dogs: Zooarchaeological Data

Only DNA analysis can reliably demonstrate links between the medieval and early Modern Period dogs with current breeds. Through morphological studies, we have tried to reconstruct a more detailed portrait of the dogs in archaeological contexts to test our hypotheses about the uniqueness of the VLC dogs, and the changing types of hunting dogs in the early Modern Period.

In VLC, the remains of at least 51 individuals were recovered, but only a relatively small number

of them were suitable for further detailed analysis, as many of the bones were fragmented and non-informative. The height could be determined for 20 dogs from the 13th to 15th centuries as well as for 14 individuals from the later period of the castle, dated to the 16th to mid-17th centuries.

In the 13th to 15th centuries, dogs varied greatly in height and build, from very small 28-cm-individuals to very large ones of 74–75 cm. The average height of the castle's dogs from this period was 53.4 cm (**fig. 3**). Meanwhile, in the later phase of the castle, the dogs were smaller than in former centuries, with an average height of 50.2 cm, and sizes ranging from 31 cm to 74 cm.

When comparing the size of the dogs from both VLC periods with canines found in the largest Lithuanian cities (Vilnius and Kaunas), and also in small towns, in the Teutonic Order's Memelburg Castle (present-day Klaipėda) and in the Prussian town of Memelburg (present-day Klaipėda), it turns out that the largest dogs were found at Memelburg Castle (57.3 cm). The dogs from Vilnius Lower Castle (53.4 cm) were very similar in mean height to those from Vilnius and Kaunas towns, with 54.3 cm and 53.1 cm respectively. Meanwhile, the smallest animals were found in the early Modern Period layers of VLC, Memelburg (Klaipėda) town and in small towns in Lithuania, with an average height of 50.2 cm, 45.9 cm and 47.3 cm, respectively (**fig. 3**).

The large size of the dogs from Vilnius and Kaunas towns was surprising, as usually smaller canines are found in urban areas (Prummel 1992; Makowiecki 2006; Tourunen 2008). Possibly, some of the animals from Vilnius and Kaunas might have been expensive and specialised hunting dogs that may have belonged to nobles who owned estates in the town. This assumption would be suggested by the abundance of large 60–66 cm individuals from Vilnius. These dogs were about 10 cm larger than the average
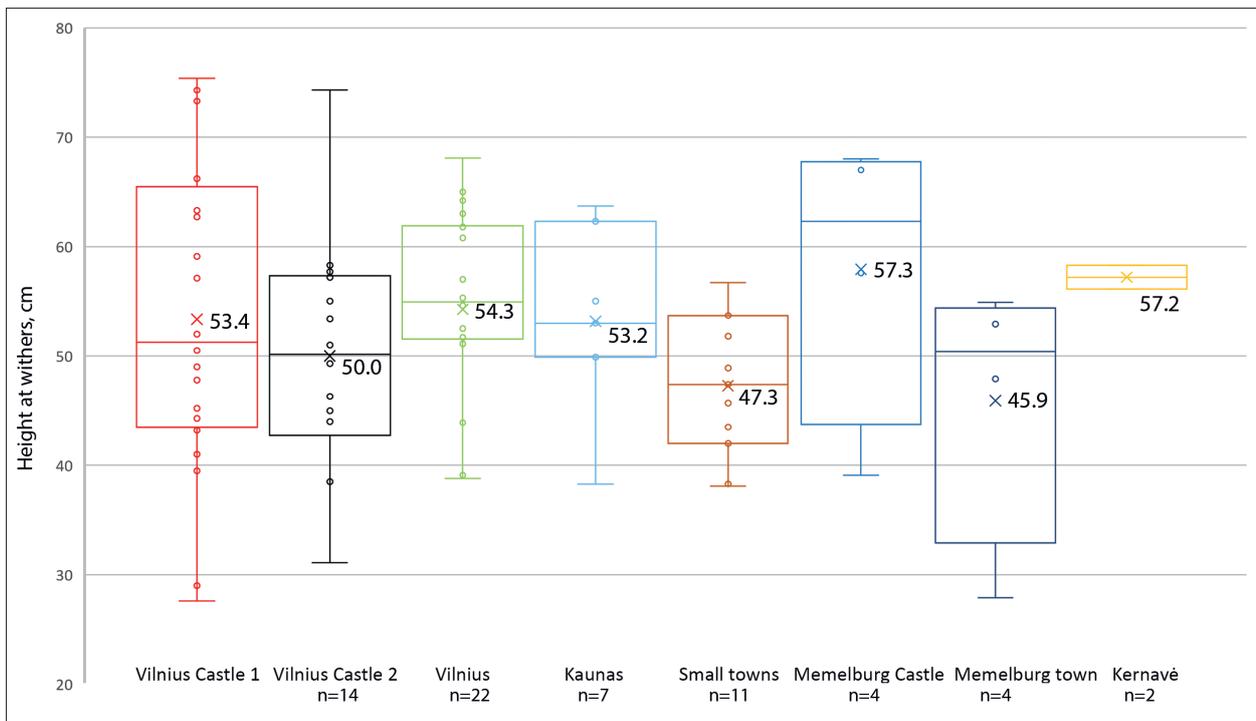
**Fig. 3**  Dogs' height at withers in cm at the sites mentioned in this study. Vilnius Castle 1: Vilnius Lower Castle, 13th–15th centuries. – Vilnius Castle 2: Vilnius Lower Castle, 16th–17th centuries. – Vilnius and Kaunas towns: 16th–18th centuries. – Small towns: 16th–18th centuries. – Memelburg Castle: present-day Klaipėda Castle, late 13th–16th centuries. – Memelburg town: present-day Klaipėda town, 16th–18th centuries. – Kernavė medieval town and hillfort: 13th–14th centuries. – For sites and their location see **fig. 1**. Numbers indicate the average height of the dogs; the line indicates the median. – (Graphics G. Piličiauskienė).

city dog. On the other hand, they may also have been the large guard dogs of the city dwellers. In addition, the finer bones of smaller individuals were probably collected less often. The smallest dogs were kept in small towns. It cannot be ruled out that they were used for hunting, but the status of the small towns and their inhabitants makes it highly doubtful that they kept expensive breed dogs. Besides, some individuals from the large and small towns were most likely stray animals.

Although the mean height of the dogs from VLC is not the highest, the uniqueness of these dogs is reflected in their general height profile and height diversity. The standard deviation (SD) for the 13th–15th-centuries dogs' height was 14.2 cm, while the SD for the dogs' stature from the later phase of the castle was slightly lower (SD = 10.7 cm). At Memelburg Castle, canines also varied considerably in size (SD = 13.4 cm). Meanwhile, animals from Vilnius and Kaunas towns had a very similar SD in height of 8.9 cm and 8.6 cm, respectively, and the small towns' dogs varied the least (SD=6.4 cm). The wide variety in the size of the VLC dogs can be related to the exceptionally high status of the castle and its inhabitants. Expensive dogs of different functions and types, those mentioned in the three Statutes of Lithuania, had to be kept in the Grand Duke's environ-

ment (Piličiauskienė 2023; Piličiauskienė et al. 2024). As already mentioned, most of them are thought to have been hunting dogs. Meanwhile, the variety of dogs in the towns was lower. Due to the high price of »bred« individuals, the middle and lower classes living in large, and even more so in small towns had to keep mainly guard dogs of local origin (mongrels) rather than special hunting canines. Moreover, as R. Ragauskienė (2010) points out, peasants, most of whom were serfs, rarely kept dogs due to lack of food for them; they usually borrowed them when going on illegal hunts.

At VLC, both the smallest and the largest dogs were found, ranging in height from 28 cm to 75 cm. Only here, at the residence of the Grand Duke, were very large individuals over 70 cm recorded, and they made up as much as 15 % of the 13th–15th-centuries dogs at this site. Overall, animals larger than 60 cm accounted for 35 % of the dogs from the medieval phase of the castle (**fig. 4**).

However, a completely different situation with the VLC dogs is observed later, in the 16th to 17th centuries. Although one 74.3 cm sized individual was assigned to this period, most dogs were considerably smaller. The largest size group in the castle during this period was that of medium-large (50–59 cm) dogs (42.9 %), while individuals between 40–59 cm
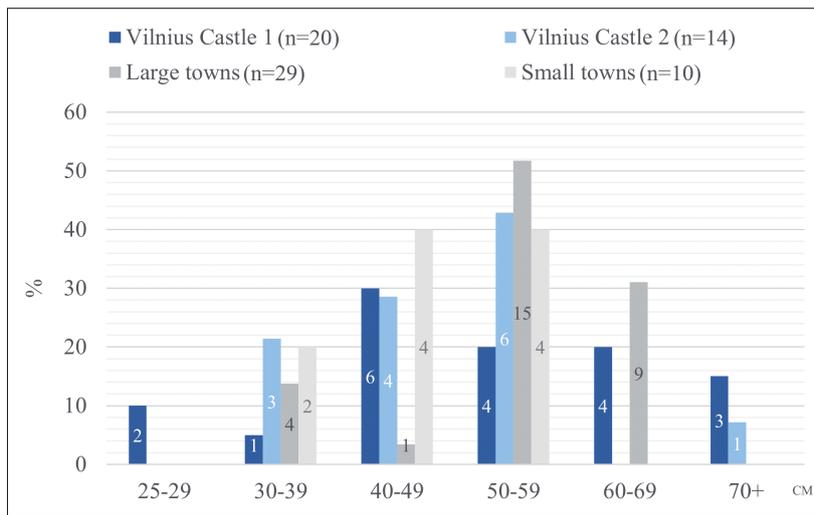
**Fig. 4** Dog size groups. Vilnius Castle 1: Vilnius Lower Castle, 13th–15th centuries. – Vilnius Castle 2: Vilnius Lower Castle, 16th–17th centuries. – Large towns including Vilnius and Kaunas: 16th–18th centuries. – Small towns: 16th–18th centuries. – For sites and their location see **fig. 1**. Number of individuals given in the centre of bars. – (Graphics G. Piličiauskienė).

accounted for 71.4 % of the total. This height pattern is more similar to that of the large and small towns' dogs, where 40–51.7 % of the individuals were between 50–59 cm tall. The remaining 60 % of the small towns' dogs were even smaller, from 30–49 cm in height (**fig. 4**). The difference between the height categories of canines from the 13th–15th-century castle and the later castle phase, plus the large and small towns' groups, is statistically significant (p <0.01). The height pattern of the small towns' dogs is also significantly different (p <0.01) from that of the other sites.

Small-sized dogs in the periphery were predictable; however, the size decrease of the castle dogs in the 16th and 17th centuries was somewhat unexpected. Such a shift can probably be explained by a change in »dog trends« and the request for different types of canines, rather than by a reduced financial capacity of the king and the elites and the decision not to obtain the most expensive large dogs. As was discussed above, changes in the dog types bred and the declining status of hunting in general are reflected in the decreasing prices of dogs and game birds recorded in the three Statutes of Lithuania.

In the 12th to 18th centuries, dogs of different morphotypes were bred in the territory of present-day Lithuania (**figs 5-6**), and the greatest diversity of dogs was observed at medieval castles. Here, the main types of animals are found, which include small »toy« dogs (lapdogs), tall and slender sighthounds, large Molossians and Spitz-type individuals of various builds. In the early Modern Period, the variety of dogs decreased, with very small individuals, sighthounds and Molossians almost disappearing, and only Spitz-type animals being found in small towns and cities (Piličiauskienė 2023). These changes in dog types bred are also seen when comparing their cranial and palatine indices: the skulls of individuals

from medieval sites were on average longer and narrower, and a significant number of sighthound-type dogs from this period are found (**figs 5-6**).

Sighthound-type dogs were found at all the medieval castles studied, including Kernavė, Vilnius Lower Castle and Memelburg/Klaipėda Castle. They are only found at medieval sites and mostly in the environment of the elite. For centuries, sighthounds have been related to the elite and identified as a status symbol. Sighthounds are particularly common in the graves of the Scandinavian elite from the Migration Period or even earlier (Öhman 1983; Sten 2013; Nichols 2021).

In Lithuania, the earliest dog graves are dated to the early 2nd millennium AD and the types of dogs buried are, with the exception of the Masteikiai cemetery, unknown. Undoubtedly, sighthounds were widespread in Lithuania, at least from the 13th century onwards. They remained high status elements and were often bred by the elite until the 16th century. However, in the early Modern Period, there was a clear decline in the popularity of this type of dog. This can be seen in the decrease in the prices of sighthounds and the scarcity of their skeletal remains in the early Modern Period; the phenomenon is also confirmed by 19th-century records (see below). It is worth noting that sighthounds were not popular at Memelburg/Klaipėda Castle, where the remains are characterised by those of large and robust Molossian-type dogs, which are far less common in the zooarchaeological material from the GDL castles (Piličiauskienė 2023).

One of the most impressive dogs (ID 8) we analysed was found at VLC and dated to 1302–1410 (Piličiauskienė et al. 2024). This dog was 74.3 cm high, with a gracile build and a nearly ultradolichocephalic cranium shape (index 45.1) The narrow and long skull of this individual is, according to the cranium
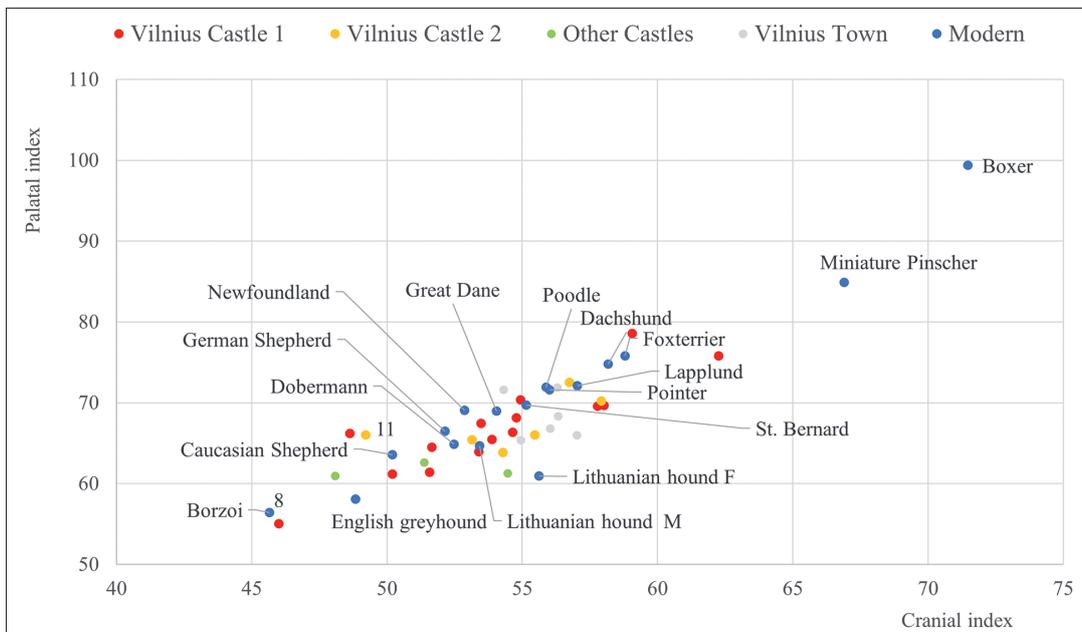
**Fig. 5** Diagram comparing dogs from the sites studied (cranial index to palatal index). Vilnius Castle 1: Vilnius Lower Castle, 13th–15th centuries. – Vilnius Castle 2: Vilnius Lower Castle, 16th–17th centuries. – Other castles: Memelburg Castle (present-day Klaipėda) and Kernavė (Aukuras hillfort), 13th–14th centuries. – Vilnius town: 16th–18th centuries. – Values for current breeds after Wagner (1930) and the Osteological Collection of Vilnius University (three individuals: one Caucasian Shepherd, two Lithuanian hounds, male [M] and female [F]). – (Graphics G. Piličiauskienė).
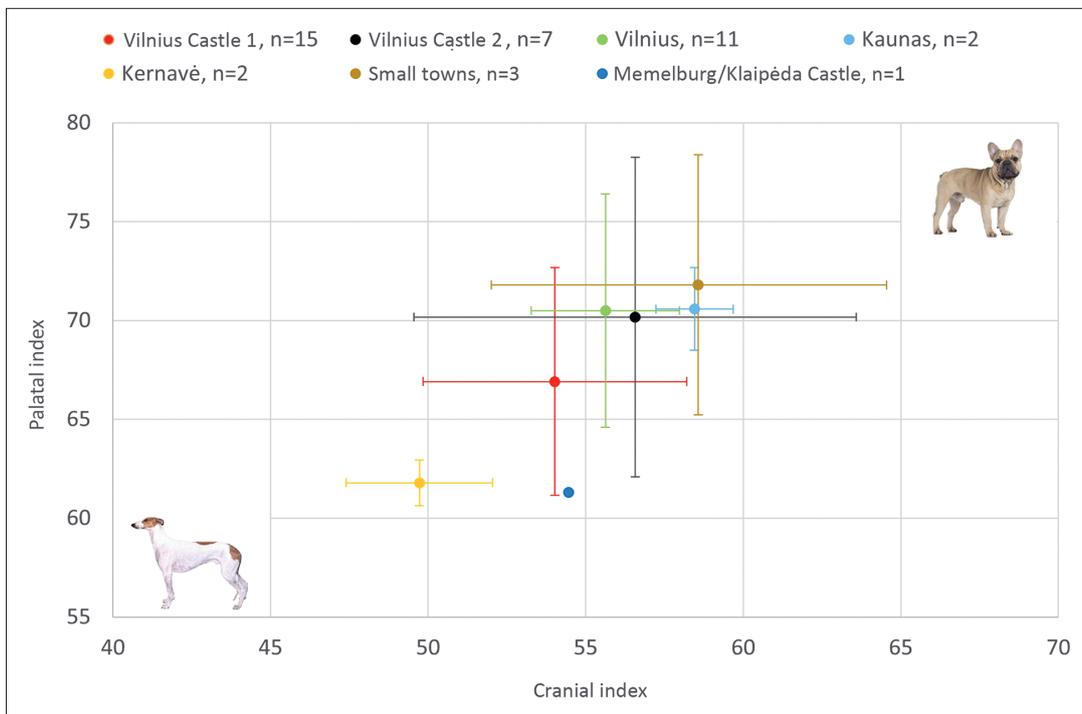


**Fig. 6** Scatterplot of mean ratios of cranial and palatal indexes (bars represent mean value ± SD). Vilnius Castle 1: Vilnius Lower Castle, 13th–15th centuries. – Vilnius Castle 2: Vilnius Lower Castle, 16th–17th centuries. – Memelburg (Klaipėda) Castle (present-day Klaipėda) and Kernavė (Aukuras hillfort): 13th–14th centuries. – Vilnius, Kaunas and small towns: 16th–18th centuries. – (Graphics G. Piličiauskienė).
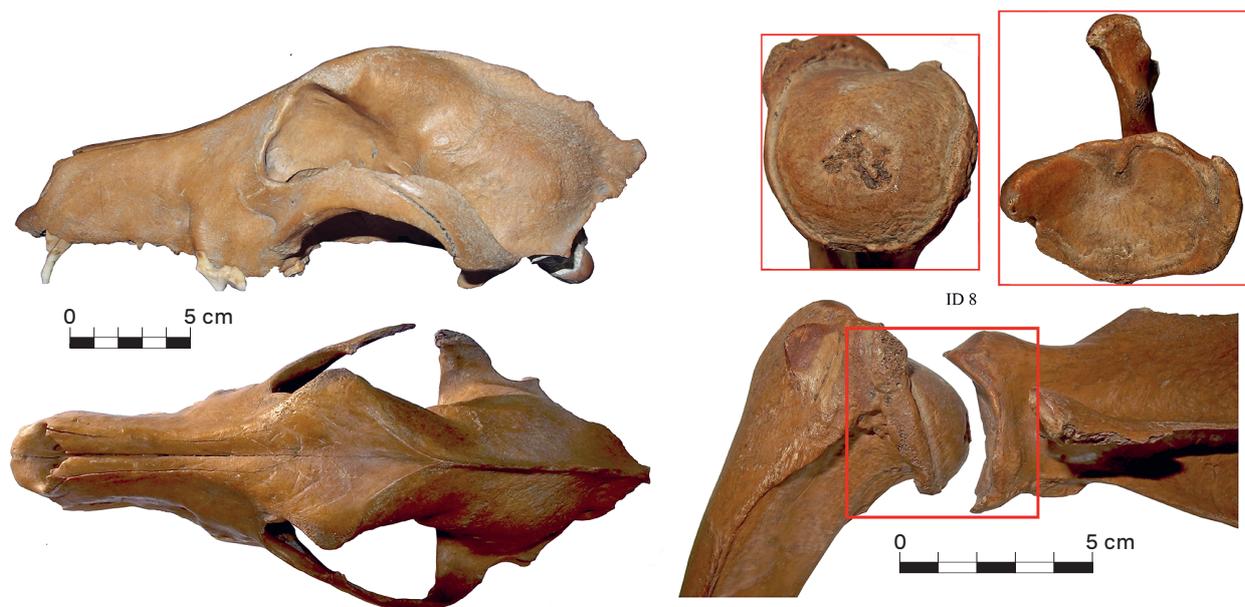
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**Fig. 7**  Skull and shoulder joint bones of sighthound-type dog ID 8 (AD 1302–1410) from Vilnius Lower Castle. – (Photos G. Piličiauskienė).

and palatal indices (length/width ratio), almost identical to that of the Russian wolfhound (Borzoi) and highly similar to the English greyhound (**figs 5. 7**). The radii slenderness index (8.13) was close to that of the Pointer and Poodle; however, ID 8 was more than 10 cm taller than dogs of these breeds (**fig. 8**). According to the table test (Ruscillo 2006), ID 8 was most likely (85 %) a male.

This is likely to be a sighthound-type dog, a type very popular among the elite in the Middle Ages, mentioned in the three Statutes of Lithuania and represented in the iconographic material of the period discussed (Jonstonus 1650, tab. LXXI; see Piličiauskienė 2023). The dog was of adult age (all epiphyses fused), with teeth wear stage Fc. Its lower right second premolar ($P_2$) was lost long before death; however, all the other teeth were in very good condition. The right humerus shows signs of tendinitis, the shoulder joint (**fig. 7**) was damaged (Osteochondritis dissecans), and the dog probably limped. The dog's frontal bone bears marks of a healed trauma – slight impressions, which could have occurred after a fight with another dog or a game animal.

The $\delta^{15}N$ value (13.03 ‰) of this individual is 3.23 ‰ higher than the mean $\delta^{15}N$ value of all the castle dogs analysed (9.85 ± 1.09; n = 37) and is the highest among all the studied Lithuanian canines from the 13th to the 18th centuries (n = 81). The high $\delta^{15}N$ value probably indicates that this individual had an exceptional diet, which was rich in meat or fish (Piličiauskienė et al. 2024). The unique morphotype, diet and find context of the dog would suggest its unique status and place in the royal court. The ongoing aDNA analysis of the dog should confirm or refute the presumed relation of this individual to the sighthound-type dogs. However, even if the genetic analysis does not confirm the links between the dog and the breeds presumed, one can safely say that this was an exclusive individual due to its size, morphotype and diet; it was probably very expensive and must have belonged to an exceptional owner.

## Health, Diet, and Care of Hunting Dogs: Bioarchaeological and Historical Data

The health and pathologies of the dogs found at VLC diverge from those found in large and small towns. As the preservation of the canine skeletal remains at the castle and at other sites varied due to the different taphonomy and the excavation methods, we compared only the pathologies of the complete or almost complete skulls found. In total, 21.6 % of the castle's dog skulls (n = 37) had healed trauma, which consisted mainly of fractures in the frontal, parietal and maxillary parts of the head. Meanwhile, in urban areas, 24.1 % of dogs (n = 29) had skull injuries. However, the latter animals were significantly more likely to suffer from alveolar inflammation and related tooth loss or total tooth wear (**fig. 9**). These cases were documented for 31 % of the town dogs. Among the castle canines, only a few individuals (13.5 %) had similar problems. The differences between the sites are statistically significant (p <0.01).
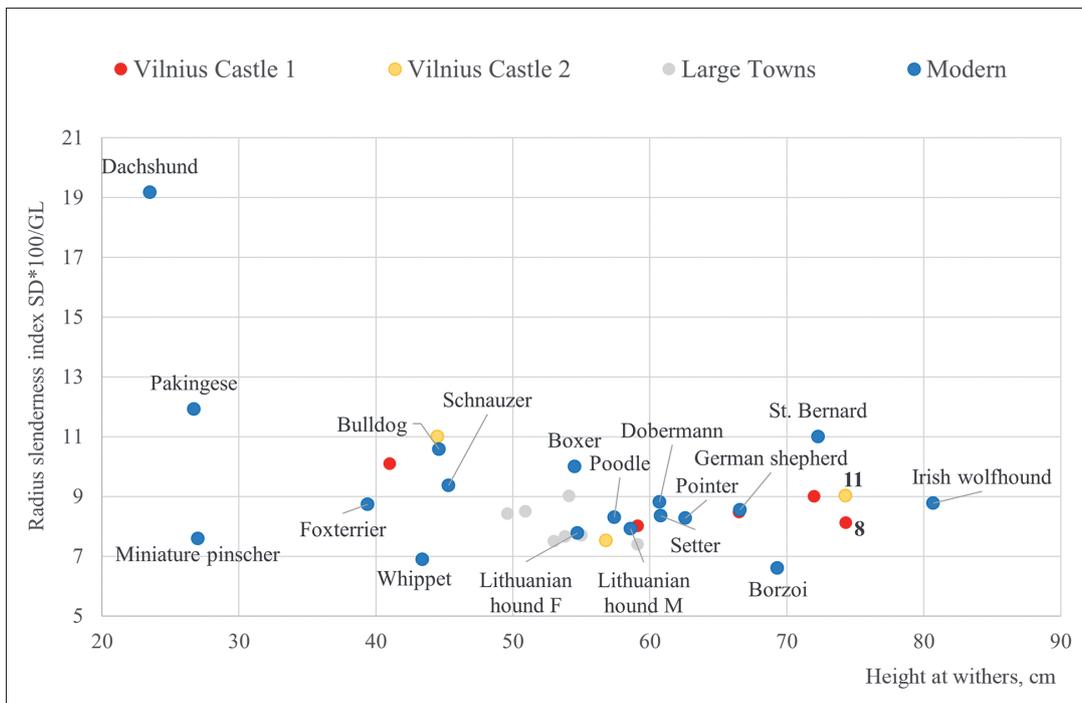
**Fig. 8** Diagram comparing dogs from the sites studied (radii slenderness index to height at withers). Vilnius Castle 1: Vilnius Lower Castle, 13th to 15th centuries. – Vilnius Castle 2: Vilnius Lower Castle, 16th–17th centuries. – Large towns including Vilnius and Kaunas: 16th–18th centuries. – Values for modern breeds after Wagner (1930) and the Osteological Collection of Vilnius University (Lithuanian hounds, male [M] and female [F]). – (Graphics G. Piličiauskienė).



**Fig. 9** Dog skull from Vilnius town, Reformatai square, 17th–18th centuries. The dog had a healed cranial fracture, suffered from alveolar inflammation, had lost his upper incisors, and its other teeth (premolars and molars) were heavily worn. – (Photos G. Piličiauskienė / V. Micelicaitė).

Differences in dog pathologies can be explained by the diverse social environments they lived in. Being a city or castle animal led to different care, activity and functions, and therefore different pathologies and health issues. The canines' skulls may have been frequently injured in hunting, as well as simply during dog fights. This seems to have been a common event, as dozens of individuals were kept in the nobles' kennels (Ragauskienė 2010). Meanwhile, considerably higher dental and alveolar problems in urban canines could have been caused by the very poor feeding and care of these dogs (Bartosiewicz 2008). In general, the oral health of the castle dogs was good. This is likely due to the high-quality food specially prepared for these animals daily (Ragauskienė 2010; Piličiauskienė et al. 2024).

The nutrition of hunting dogs was given a lot of attention. The manors even had special kitchens for preparing dog food (Ragauskienė 2013, 152). This is not just because canines were expensive and therefore well cared for. To work well during the long hunts, dogs had to be well fed and in excellent physical form. However, as authors of the time note, dogs must be hungry before hunting. Details of the diet and care of elite hunting dogs are provided by inventory books and other historical records. The most detailed information about dog keeping, feeding, treatment, and training comes from the fundamental work »The hunting with hounds« (original title in Polish: »Myślistwo z ogary«) by Jan Ostroróg (1618). By 1902, this highly popular book had been republished seven times.

The diet of the elite dogs was based on oat porridge. Usually fat, blood and meat waste were added, and the animals were also given a variety of meat such as lamb, pork, or poultry. Sometimes bread was also bought or specially baked for dogs. During the hunts, the dogs were given the entrails and other waste products of the game (Ostroróg 1618; Mickūnaitė 2009; Ragauskienė 2010, 37–38; Zarankaitė-Margienė 2018b). In his recommendations in »Myślistwo z ogary«, Jan Ostroróg writes that hunting dogs should only be given oats and no other cereals, especially not barley, as barley, for example, reduces a dog's sense of smell. However, the author recommends adding a little rye to the porridge to help the individual gain weight. He also notes that goat meat is particularly suitable for feeding to canines. One of Ostroróg's instructions was not to feed one's best hunting dog first, even though one would like to, because the dog must not be fat, or it will not work as efficiently as possible.

However, detailed data on dog nutrition are only available for elite animals. Historical sources do not mention how the dogs of the city dwellers were fed.

Only the $\delta^{13}C$ and $\delta^{15}N$ stable isotope studies provide information on the nutrition of urban canines. They revealed differences in the diets of castle and town dogs. Somewhat unexpectedly, the mean $\delta^{15}N$ value of the Vilnius city canines (11.3 ± 0.77 ‰; n = 12) was 1.52 ‰ higher than that of the castle dogs (9.85 ± 1.09 ‰; n = 37). However, the higher nitrogen values of the urban individuals may not be due to a higher meat or fish consumption, but rather due to the high intake of faeces and animal waste (bones) in their diet, as well as to long-term starvation (Katzenberg/Lovell 1999; Bogaard et al. 2007). Constantly chewing on bones may have caused numerous dental and jaw problems. Poor nutrition and care of the dogs should not be surprising; it was caused by a variety of reasons, e. g. low standards of animal care in general, poor living conditions of town dwellers, a negative attitudes towards canines, etc. (Ragauskienė 2010; Zarankaitė-Margienė 2018a; 2018b). Scavenging dogs and pigs feeding on faeces and other waste, or sometimes even digging up bodies in cemeteries, were common in urban areas, while at the same time they served as town cleaners. This is evident in the historical records and press products from the early Modern Period and even from the early 20th century (Tourunen 2008; Kulikauskas 2018, 203).

There is no doubt that the expensive hunting dogs of the elite received better food and care than many urban canines. In the 15th and 16th centuries, the royal dogs were taken care of by some eleven to twenty dog officers. The senior dog keepers looked after animals of different functions, the lower ones trained the dogs and led them on hunts. The lowest officers prepared the food, fed and bathed the canines, and so on. The salary of the senior dog keepers was higher than that of the game-bird keepers, perhaps indicating the lesser importance of the latter (Ragauskienė 2010, 36). Strangely, however, the less drastic decrease in raptor prices in 1588 would indicate the opposite. Dog masters together with canines took part not only in hunting but also in, for example, the capturing of wild animals for the menageries, and they also trained dogs for fights with bears that were held at VLC (Ragauskienė 2010). Elite dogs were bathed, groomed, and brushed, and these services were expensive; e. g. in 1549, two *ducatus* were paid for the bathing of Sigismund Augustus' hunting dogs, which was one tenth of the annual salary of the senior dog keeper (Ragauskiene 2010, 36–37; Zarankaitė-Margienė 2018b). The most-beloved dogs were provided with velvet collars, fur coats, fox tail pads, and copper vessels. Sick animals were treated, and in some kennels there were separate rooms for suffering individuals and even a pond for the dogs to swim in (Ragauskienė 2013, 152, and references

therein). The overall living conditions and diet of the nobles' hunting dogs must therefore have been very good in the context of the period.

## Dogs in Lithuania: First Historical Data

The first historical records that mention dogs in the eastern Baltic date back to the 13th century. However, the first evidence does not refer to the Lithuanians or even to the Balts, but to a Finno-Ugric tribe, the Livs, who were northern neighbours of the Balts and lived in Courland, on the eastern coast of the Baltic Sea. Heinricus de Lettis, a German chronicler and a contemporary of the events, describes that, in 1212, when attacked, the Livs threw sacrificed dogs and billy goats at the Christians to disparage them (De Lettis, *Chronicon,* ch. XVI [p. 282]). In the 14th century, Peter von Dusburg, in his »Chronicon Terrae Prussiae«, writes about the burial customs of the Prussians. The Prussians were tribes of the western Balts, who lived in the region between the lower Vistula and lower Nemunas (German: Memel, Polish: Nieman) rivers and were very closely related to the eastern Balts – the Lithuanians and Latvians. The Prussians were conquered by the Teutonic Order in the second half of the 13th century (Gimbutas 1963). The Chronicle mentions that, together with the body of a deceased nobleman/warrior, the Prussians burned his weapons, horses, slaves and maids, clothes, hunting dogs, falcons and everything necessary for his service (*Unde contingebat, quod cum nobilibus mortuis arma, equi, servi et ancille, vestes, canes venatici et aves rapaces et alia, que spectant ad miliciam, urerentur*; Dusburg, *Chronicon* 5 [p. 334]).

In 1394, Wigand von Marburg describes in the *Cronica Nova Prutenica* the same Lithuanian custom. He writes about the death and funeral of GdL Kęstutis (*c.* 1297–1382): »clothes, weapons etc., everything was burned, hunting birds and hunting dogs with him [the Grand Duke, author's note] reduced to ashes« (*equi, vestimenta, arma etc., omnia fuerunt incinerate, aves atque canes venatici, cum eo incinerantur*; Marburg, *Cronica*, ch. IX [p. 463]). Therefore, the earliest written records that refer to the Balts' dogs date back to the 14th century, and they directly refer to hunting dogs. Archaeological evidence and historical records that mention the burial of hunting dogs together with their owner and with his other most valuable items indicate the special importance of hunting canines in the medieval, still pagan society of the Balts.

Records about dogs increase in the late 14th to the early 15th centuries; they are mostly mentioned in the correspondence and account books of the GdL Vytautas and his cousin, the King of Poland, Jogaila. Both rulers were great hunting enthusiasts and had about 100 dogs in their kennels (Ragauskienė 2010, 24–25). In the late 14th century, King Jogaila's account books already list two specific groups of canines: hunting dogs (*canes venatici regales*) and domestic dogs (*canes domestici)*. In addition, dogs are classified according to their prey. For example, a differentiation is made between dogs for deer hunting (*canes ceruorum seu yelenie*) and dogs for bear hunting (*canes ursini alias kurcze*). The same records for the first time refer to some types or »breeds« of hunting dogs: the sighthounds (*valteres*), large sighthounds (*valteres valentes*) and »Milan« dogs (*canes Mediolanenses*), which, as noted, had exceptional strength and endurance. The last two types of canines were probably used for large game hunting. Dogs were also divided into two groups according to their role during the hunt. These were the Molossians *(mulosis canis)*, which were robust animals for bear and bison hunting, for fighting, and so on, and the scenthounds (*odoriferis seu vestigialibus*; see Jaworski 2001, 51–52; Ragauskiene 2010, 25, and references therein).

## Early Modern Period Hunting Dog Types and Prices: Historical Data

From the 16th century onwards, historical records of dogs are much more detailed. In 1529, the First Statute of Lithuania (Code of Laws of the GDL) provides information on the types of dogs, their functions and prices. This collection of texts mentions fifteen types of dogs used by the elite (*Pirmasis*, 288–291). The Second Statute of Lithuania, published in 1566, also mentions fifteen (*Statut*), whereas in 1588 the Third Statute of Lithuania mentions thirteen types of dogs used (*1588 metų*, 473–474). In general, the Statutes refer to two categories of canines: hunting dogs (*canes venaticos*) and domestic dogs (*latrator domesticus*). However, the latter are mentioned as a single type, while twelve to fourteen types of hunting dogs are listed. Hunting dogs are classified either according to their prey (e. g. beaver dogs, deer dogs) or according to their role during the hunt (**tab. 1; fig. 3**). In all the statutes, dogs are still classified according to the medieval concept, based on the Roman classification of canines, dividing them into hunting dogs, watchdogs and domestic dogs (Ragauskienė 2010, 24). A new classification of dogs was proposed by John Caius in 1570. In his work on British canines, he divided them into three main categories – hunting dogs, watchdogs, and »degenerates«. Hunting dogs were subdivided into game hunters, fowl hunt-

| No. | Dog type | Latin and latinised names of dog types, as used in the Statutes | Dog characteristics and function | Year and dog price (*groschen*) | | |
|---|---|---|---|---|---|---|
| | | | | 1529 | 1566 | 1588 |
| 1 | Milan dog | *mediolanensis, magdala-nensis* | Large, robust Molossian-type dog for bear hunting and fighting | 1200 | 600 | 300 |
| 2 | Bird dog? | *lyahavy, lijegavi* | Dog for elk hunting | 1200 | - | - |
| 3 | Beating dog | *indagatoris alias osocznyj otocznyj* | Large dog for wolf and large game hunting and beating | 1200 | 600 | 300 |
| 4 | Scent hound, bloodhound | *canis venaticus, canis secratoris* | Dogs for tracking large game | 720 | 600 | 300 |
| 5 | Hound | *canis odorisecus, venatici latratoris* | | 720 | 600 | 300 |
| 6 | Beavers' dog | *canis castorum, castoridis* | Dog for beaver hunting | 720 | 600 | 300 |
| 7 | Sighthound (large) | *valter dictus kurcz, vertagus* | Robust sighthound for bear hunting? Possibly local dog type or crossbreed of local and non-local type | 600 | 300 | 180 |
| 8 | Sighthound for hunting with falcons | *valter subfalconario, valter falconarii* | Sighthound-type dogs for hunting in more open areas | 600 | 600 | 300 |
| 9 | Gun dog | *podstreici, canes liegavy?* | Bird dog, for finding and retrieving prey that had been shot | 600 | 300 | 180 |
| 10 | Hound (local?) | *ohar, brache seu leporaii* | Dog for game tracking, such as a scenthound | 300 | 300 | - |
| 11 | Sighthound | *valter, veltri* | Sighthound-type and function dogs | 300 | 300 | 180 |
| 12 | Guard dog | *latrator domesticus, domestici vulgaris* | Guard dogs | 300 | 300 | 180 |
| 13 | Nordic hunting dog? | *canis vzlaijnyk* | Dogs for large game hunting | 180 | 180 | 180 |
| 14 | Vizsla | *odori/seco ad lepores tres, ogarz minoris, wyzel* | Hungarian Vizsla, usually used for hare hunting; the Vizsla had to find and retrieve prey | 180 | 180 | 120 |
| 15 | Bird dog (used together with falcons) | *accipitrini, sczayka* | Bird dogs, which hunted with birds of prey | 180 | 180 | 90 |
| 16 | Brittany, Breton dog | *Britanici* | a) All dogs originating from Great Britain, or b) Molossian-type dogs from Brittany (France) | | 600 | |

**Tab. 1**  Types of dogs, their presumed function and prices, as listed in the 16th-century three Statutes of Lithuania (data after *Pirmasis*; *Statut*; *1588 metų*). – (Table G. Piličiauskienė).

ers and lapdogs. These groups were further classified according to the senses or abilities they used, such as smell, speed, and so on. Finally, animals using the sense of smell were grouped according to the prey they hunted, such as hares, deer, and others. In addition, the author gave the names of these dog breeds in Latin and English (Caii, *De canibus*, 16).

The classification of the dogs used demonstrates the great diversity of the medieval and early Modern Period canines. However, attempts to identify some of the dogs mentioned in the Statutes or in other written records more precisely and to relate them to the ancient or even modern dog breeds would be too speculative.

Yet, when linking zooarchaeological animal remains and dogs of native and other modern breeds, it should be considered that in the past, when breeding dogs, the main and most important selection criteria were their working abilities rather than their appearance (Thurston 1996; Tourunen 2008; Ragauskienė 2010). These were still the main factors when breeding hunting dogs in Lithuania even in

the late 19th century (Dmitrij V. 1876; Piličiauskienė 2023). Moreover, even though major dog morphotypes have existed since antiquity, many familiar dog breeds were only developed within the last two hundred years (Ostrander et al. 2019). Thus, the identification of and search for »breeds« based only on historical records and even osteological material without aDNA research is problematic.

As we have already mentioned, hunting dogs were very expensive. In addition, many hounds were needed for the hunts – for example, a hare hunt alone involved sometimes as many as 40 hounds, although twelve pairs of hounds, i. e. 24 dogs, were recommended in such cases (Ostroróg 1618). Thus, only very wealthy nobles were able to own large numbers of canines. At the beginning of the 14th century, the most expensive ones were the large dogs used for big game hunting and for beating (Milans, beating dogs). These dogs were of the greatest interest for the elite (Ragauskienė 2010). The most expensive dogs cost 1200 *groschen* (12 *rubles*) in 1529. This was also the price for the most expensive hunting bird at the time, the »red falcon« (*buteone ruffo*, according to the First Statute), or two work horses. Meanwhile, the most popular dogs – sighthounds, bloodhounds, and others – were much cheaper, costing 600–720 *groschen* (*Pirmasis*, 286–288).

The cheaper canines were mainly kept by the ordinary nobility. The lowest-priced ones in the early 16th century were bird dogs and Vizsla dogs, used for hunting smaller game and birds. Vizsla dogs were often described as the Hungarian Vizsla in written records; they were popular among the nobility and are often mentioned in the written records of the GDL. These canines can probably be related to an old native Hungarian bird dog called the Vizsla, a graceful, pointer-like animal, which is still widely known

today. All these bird dogs were priced at 180 *groschen* (**fig. 10**). Indeed, even for the price of one of these »cheap« dogs, at the time one could have bought six cows or a peacock. However, from the middle of the 16th century, prices of dogs and hunting birds had already fallen, and by 1588 the price of many canines had more than halved. The price of the most expensive large dogs decreased the most, by up to 300 *groschen*, i. e. four times as much. Hunting birds, however, decreased less in price, and at that time were still worth twice as much as the most expensive dogs: the price of a »red falcon« in 1588 was 600 *groschen* (*1588 metų*, 469–474). This means that, at the end of the 16th century, the finest game birds were valued more highly than the best dogs, although at the beginning of the century their prices were the same.

For cheaper dogs, prices decreased less dramatically, with the prices of tracking dogs and hounds falling from 720 to 300 *groschen*. The price of various sighthounds decreseased two- to threefold, from 600 to 300–180 *groschen*, and the price of the Vizsla decreased by only 30 %, to 120 *groschen* (**fig. 10**). In addition, inflation reduced the value of canines even more. To compare, in 1588 the most expensive dog could be exchanged for just three cows, whereas in 1529 it had been worth forty! These price changes reflect the declining popularity of hunting and hunting-related goods. However, new trends were observed at that time, e. g. expensive lapdogs were becoming more popular among the elite (*Pirmasis*; *1588 metų*; see Ragauskienė 2010).

Changes in prices would suggest that the largest dogs had lost popularity among the highest elite, and that the breeding of these canines decreased. Molossians and sighthounds were presumably replaced by medium-sized dog types. This change is likely evident in the VLC dog skeleton collection, in which
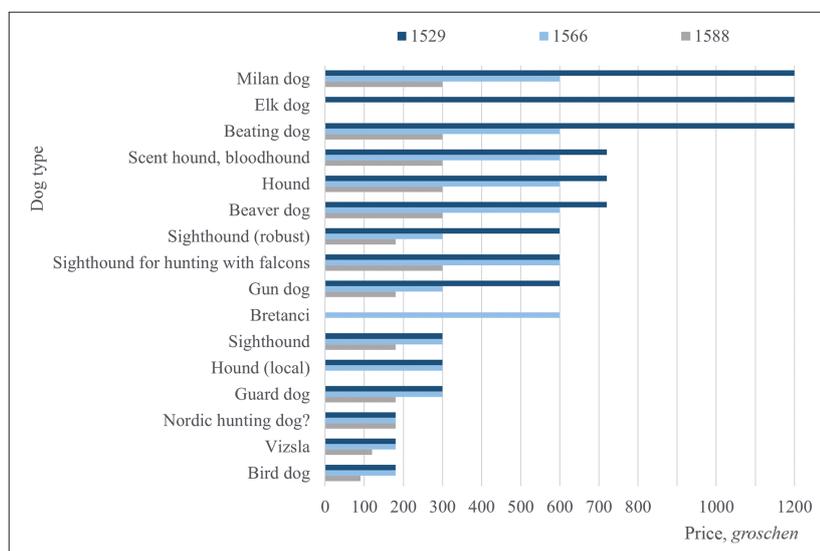


**Fig. 10** Dog types and their prices, as listed in the 16th-century three Statutes of Lithuania. – Data after *Pirmasis*; *Statut*; *1588 metų*. – (Graphics G. Piličiauskienė).

large and very large-sized animals of 60–75 cm height at withers in the 16th and 17th centuries account for only 7.1 % (a single specimen, ID 11), and individuals of 40–59 cm in height, i. e. hounds and bird dog-sized animals prevailed (71.4 %). Meanwhile, in the 13th to 15th centuries, the number of large and very large-sized dogs was almost five times higher, reaching as much as 35 % (Piličiauskienė 2023). Changes in canine size, i. e. changes in the types of dogs bred, may be due to several reasons. One could be changes in the conception and idea of hunting in general. As the ideology of hunting changed, so did the actual hunting, and therefore probably also the demand for specific types of hunting dogs.

The hunting by the King of Poland and the GdL Friedrich August II (1696–1763) in Belovezh forest in 1752 illustrates that by the 18th century hunting had increasingly become just a simple slaughter of wild animals. The above-mentioned ordinary royal hunt was attended by 3,000 peasants, who drove the game into an enclosure, with a tent for the hunters in the middle of it. In this way, 42 bisons, 13 elks and many other animals were hunted and killed during this event (Mickūnaitė 2009). On another occasion, in 1759, game for the king's hunt was brought from the menagerie of the magnate Jeronimas Florianas Radvila (Hieronim Florian Radziwiłł, 1715–1760). The animals were released in an enclosure, and the king shot them while sitting in his tent. Three bears, nine elks, 25 foxes and other animals were killed this way (Ragauskienė 2013, 151, and references therein). As Mickūnaitė (2009) points out, in the Middle Ages hunting was a duel, a fight between the beast and the noble, an expression of the lord as a knight and a symbol of power. In western Europe, these »fights« between nobles and beasts ended with the extinction of large game. Meanwhile, in eastern Europe, the hunts evolved and in the early Modern Period became simply the killing of captured animals.

19th-century historical records, i. e. descriptions of hunts and hunting dogs of that time, also mention changes in the types of hunting dogs that were bred. According to these, large local types of dogs, such as the huge Irish-wolfhound-like Curonian sighthounds, the 65–81 cm tall and robust local hounds (Ogars), and some others became extinct in the 19th century in Lithuania and neighbouring regions. Moreover, it was noted that in Lithuania only a few sighthounds were left (Dmitrij V. 1876; Sabaneev 1892; Korsak 1922). Due to deforestation and hunting, wild animals in Lithuania had already declined dramatically in the 17th and 18th centuries. In the second half of the 19th century, bears and red deer became extinct, with only a limited number of wolves and elk remaining. These were the animals that large dogs

were used to hunt. So, with the extinction of large game, there was no longer any need for large hunting canines. Large dogs – sighthounds, Molossian-type hounds and others – were replaced by middle-sized hounds, pointers and setters, which were used to hunt birds, hares and other smaller game (Dmitrij V. 1876; Sabaneev 1892; Korsak 1922). The change in dog types has also been noted in the zooarchaeological material (see **fig. 6**). Hunters of the time saw changes in dog types and the extinction of the old »breeds« in a very simple and pragmatic way: some breeds disappeared since they were no longer needed, and a demand for new and different ones occurred (Starinnyā 1876, 64).

## The Origin of Elite Hunting Dogs: Historical Data

Hunting dogs were bred locally, bought abroad, or given as gifts, and sometimes arrived in Lithuania with new inhabitants. Presumably, the Tatars who settled in Lithuania at the end of the 14th century brought coarse-haired sighthounds with them (Isokas 1981, 58). An interesting fact was mentioned by R. Ragauskienė (2010), who analysed the origin of hunting dogs in the GDL: she did not find any data on the selling or buying of dogs by monarchs or nobles in the territory of the GDL, as hunting dogs were presented as gifts. Such a gift was a sign of kindness or appreciation. The earliest records of dogs being presented date back to the end of the 14th and the beginning of the 15th century, when GdL Vytautas was gifted with horses, weapons, hunting dogs, hunting birds and other items (Čapaitė 2001). From the 15th century at least, the GdL and the King of Poland regularly exchanged dogs with various western European monarchs (Jaworski 2001). For example, Emperor Maximilian II (1527–1576) sent dogs referred to as »Bretons« and »hounds« to Sigismund II Augustus. The latter exchanged dogs with his cousin, the Prince of Prussia, Albrecht von Brandenburg-Ansbach (1490–1568) (*Rachunki*, 212; see Ragauskienė 2010, 35, and references therein).

Hunting dogs were presented not only to men, but also to women; for example, Duke Kristupas Radvila Perkūnas (Polish: Krzysztof Radziwiłł Piorun, 1547–1603), one of the most famous noblemen of the GDL, sent at least a few dogs to his wife-to-be in 1581 (Fabiani 1988, 15; Ragauskienė 2010, 35). Meanwhile, ordinary noblemen obtained dogs not only by giving them as gifts, but also by borrowing them, selling them, sometimes stealing them, or simply capturing the animals they liked (*Kasdienis*; Ragauskienė 2010, 35; Zarankaitė-Margienė 2018b).

In Lithuania, even in the second half of the 19th century, there was a deep-rooted tradition of gifting dogs rather than selling them, going back to the Middle Ages and even earlier. As a hunter writes in a hunting journal in 1876: »You can't sell a puppy, you can't ask for money, it's not proper, it's not accepted from the old days. You can only give it as a gift« (Dmitrij V. 1876, 18). According to 19th-century records, a common hunting dog changed its owner three to four times during its life – usually animals were presented as a gift, and later regifted (Dmitrij V. 1876).

Apart from the ones they received as gifts or which were bred locally, the GdL and the richest nobles of the state bought good »pedigree« dogs abroad – in Italy, England, Spain, Poland, Prussia and other countries. For example, in 1582, a royal envoy travelling to the Queen of England had to buy puppies, »Brittanys« or »Bretons« (Pokora 2006, 14). The GdL and King of Poland, Stephen Báthory (1533–1586), received dogs from England, Hungary, and Italy, while Vladislaus Vasa (1595–1648) obtained animals from Brandenburg and England (Ragauskienė 2013, 151, and references therein).

Thus, hunting dogs arrived at the kennels of the GDL elite from all over Europe. However, dogs of non-local origin were likely to be found only in the hunts of the highest elite. Nobles of the middle and lower classes usually kept locally-bred canines.

## Conclusions

Archaeological and historical sources suggest that dogs, along with horses and hunting birds, were common companions of the deceased and had already played an exceptionally important role in the society of the Balts before the Christianisation of Lithuania in 1387. The earliest historical records for hunting dogs suggest that these animals were the most highly valued. Although hunting remained the most important function of the dog in the early Modern Period, the decreasing price of hunting dogs from the middle of the 16th century onwards may reflect the declining importance of the hunting dog as a status symbol.

The first attempts to describe and classify elite hunting dogs in the Grand Duchy of Lithuania can be found in written records from the late 14th to early 15th centuries. Records became much more detailed in the 16th century, when twelve to fourteen types of hunting dog were listed. Traditionally, dogs have been classified according to their role in the hunt and the animals they hunted. However, misleading and brief descriptions of dog types often do not allow a more precise identification of the morphotypes of the dogs mentioned. In the early Modern Period, the breeding of dogs was still based on the working abilities of an animal, not its phenotype. These criteria for dog selection remained valid throughout the 19th century.

Still, a few dog types, such as sighthounds and Molossians, can be more accurately identified among the dog types mentioned. Although sighthounds were cheaper than Molossians, they were among the earliest and most frequently mentioned hunting dogs in the historical records, which suggests their exceptional popularity and importance in the Grand Duchy of Lithuania during the Middle Ages. Numerous remains of tall, gracile built, dolichocephalic dogs found in the 13th–15th-century layers at Vilnius Lower Castle and a few other elite related sites would support such an assumption. Prices for sighthounds, as for many hunting dogs, declined considerably during the 16th century, and the remains of this tall and gracile dog type become absent in more recent zooarchaeological material, suggesting the decreasing popularity of the sighthound-type dogs, at least among the highest elite. Records of hunting and hunting dogs from the 19th century confirm that sighthounds were only very rarely bred and used for hunting in Lithuania at that time.

The exceptional size and morphotype of some individuals, the wide diversity, and the exceptionally good oral health status of the dogs from Vilnius Lower Castle would suggest that these dogs represent the elite's environment and activities and may be related to the types of hunting dogs mentioned in the historical records. However, only DNA analysis may confirm or reject hypotheses and relate the dogs found at the Royal Castle to native or non-local breeds of hunting dogs still being bred today.

# Acknowledgements

# Bibliography

## Sources

**Caii, *De canibus***: Ioannis Caii, De canibus Britannicis, liber unus. In: Iohannis Caii, De rariorum animalium et stirpium historia liber unus. De libris propriis liber unus (Londinium 1570) 1–21.

**De Lettis, *Chronicon***: Henricus de Lettis, Chronicon Livonicum vetus 1225–1227. In: Baltų religijos ir mitologijos šaltiniai. Nuo seniausių laikų iki XV amžiaus pabaigos. Ed. N. Vėlius (Vilnius 1996) 275–292.

**Długosz, *Historia***: Jan Długosz (Dlugossius), Historia Polonica. In: Baltų religijos ir mitologijos šaltiniai. Nuo seniausių laikų iki XV amžiaus pabaigos. Ed. N. Vėlius (Vilnius 1996) 542–585.

**Dusburg, *Chronicon***: Peter von Dusburg, Chronicon Terrae Prussiae 1326. In: Baltų religijos ir mitologijos šaltiniai. Nuo seniausių laikų iki XV amžiaus pabaigos. Ed. N. Vėlius (Vilnius 1996) 327–355.

***Kasdienis***: Kasdienis gyvenimas Lietuvos Didžiojoje Kunigaikštystėje. Ed. A. Baliulis / E. Meilus (Vilnius 2001).

***Lietuvos Metrika***: Lietuvos Metrika, Kn. 8 (1499–1514). Eds A. Baliulis / R. Firkovičius / D. Antanavičius (Vilnius 1995).

**Marburg, *Cronica***: Wigand von Marburg, Cronica Nova Prutenica 1394. In: Baltų religijos ir mitologijos šaltiniai. Nuo seniausių laikų iki XV amžiaus pabaigos. Ed. N. Vėlius (Vilnius 1996) 455–470.

***Pirmasis***: Pirmasis Lietuvos Statutas (1529), t. d.1. Tekstai senqja baltarusiap, lotynų ir senqja lenkų kalbomis (Vilnius 1991).

***Rachunki***: Rachunki dworu krolewskiego 1544–1567. Ed. A. Chmiel (Kraków 1911).

***Statut***: Statut Litewski drugiej redakcyi (1566). Archiwum komisyi prawniczej, t. 7 (Kraków 1900).

***1588 metų***: 1588 metų Lietuvos Statutas. T. 2: Tekstas. Ed. I. Lappo (Kaunas 1938).

## References

**Almond 2003**: R. Almond, Medieval hunting (Stroud 2003).

**Bartosiewicz 2008**: L. Bartosiewicz, Environmental stress in early domestic sheep. In: Z. Miklikova / R. Thomas (eds), Current Research in Animal Palaeopathology: Proceedings of the Second ICAZ Animal Palaeopathology Working Group Conference. BAR Internat. Ser. 1844 (Oxford 2008) 3–13.

**Baublienė et al. 2003**: J. Baublienė / L. Daugnora / R. Trainienė / D. Vaičiūnienė /S. Veličkaitė, XIV a. sodyboje (Viršutinis Kernavės miestas) iškastos osteologinės medžiagos analizė. Lietuvos Arch. 26, 2003, 163–168.

**Belhaoues 2011**: F. Belhaoues, Etude d'un assemblage canin inèdit issu du puits 203 à Ambrussum (Hérault) [Master's thesis, Univ. Montpellier III – Paul Valéry 2011].

**Bertašius 2002**: M. Bertašius, Vidurio Lietuva VIII–XII a. (Kaunas 2002).

**2009**: M. Bertašius, Marvelė 2. Ein Bestattungsplatz mit Pferdegräbern *(*Kaunas 2009).

**Bogaard et al. 2007**: A. Bogaard / T. H. E. Heaton / P. Poulton / I. Merbach, The impact of manuring on nitrogen isotope ratios in cereals: Archaeological implications for reconstruction of diet and crop management practices. Journal Arch. Scien. 34, 2007, 335–343.

**Čapaitė 2001**: R. Čapaitė, Lietuvos didžiojo kunigaikščio Vytauto kasdienybė pagal jo ir amžininkų korespondenciją. Alytaus miesto istorijos fragmentai 2001, 10–27.

**Daugnora/Girininkas 1996**: L. Daugnora / A. Girininkas, Osteoarcheologija Lietuvoje (Vilnius 1996).

**De Grossi Mazzorin/Tagliacozzo 2000**: J. De Grossi Mazzorin / A. Tagliacozzo, Morphological and osteological changes in the dog from the Neolithic to the Roman Period in Italy. In: S. J. Crockford (ed.), Dogs Through Time: An Archaeological Perspective. BAR Internat. Ser. 889 (Oxford 2000) 141–161.

**Dmitrij V. 1876**: Dmitrij V., Замѣтки объ охотѣ въ Ковенской губ. (окончаніе). Журналъ охоты 4, T. V, 1876, 16–31.

**Von den Driesch 1976**: A. von den Driesch, A guide to the measurement of animal bones from archaeological sites. Peaboby Mus. Bull. 1 (Massachusetts 1976).

**Ehrlich et al. 2020**: F. Ehrlich / G. Piličiauskienė / M. Ubė-Urbonaitė / E. Rannamäe, The Meaning of Eagles in the Baltic Region. A Case Study from the Castle of the Teutonic Order in Klaipėda, Lithuania (13th–14th Century). Arch. Lituana 21, 2020, 59–78.

**Fabiani 1988**: B. Fabiani, Na dworze Wazow w Warszawie (Warszawa 1988).

**Gimbutas 1963**: M. Gimbutas, The Balts (London 1963).

**Harcourt 1974**: R. Harcourt, The dog in prehistoric and early historic Britain. Journal Arch. Scien. 1, 1974, 151–175.

**Horard-Herbin 2000**: M. P. Horard-Herbin, Dog management and use in the late Iron Age: the evidence from the Gallic site of Levroux (France). In: S. J. Crockford (ed.), Dogs Through Time: An Archaeological Perspective. BAR Internat. Ser. 889 (Oxford 2000) 115–121.

**Hourani 2018**: Y. Hourani, Persian Period dog burials of Beirut: morphology, health, mortality and mortuary practices. In: C. Çarkırlar / J. Chahoud / R. Berthon / S. P. Birch (eds), Archaeozoology of the Near East XII: Proceedings of the 12th International Symposium of the ICAZ Archaeozoology of Southwest Asia and Adjacent Areas Working Group, Groningen Institute of Archaeology, June 14–15, 2015, University of Groningen, the Netherlands (Groningen 2018) 153–184.

**Isokas 1981**: G. Isokas, Gaudžia ragas. Žvėrys, paukščiai ir jų medžioklė Lietuvoje (Vilnius 1981).

**Jaworski 2001**: R. Jaworski, Łowy Władysława Jagiełły. Z biografistyki Polski poźnego średniowiecza. In: M. Koczerskiej (ed.), Fasciculi Historici Novi IV (Warszawa 2001) 7–86.

**Jonstonus 1650**: J. Jonstonus, Historiae naturalis de quadrupedibus libri cum aeneis figuris (Francofurti ad Moenum 1650).

**Katzenberg/Lovell 1999**: M. A. Katzenberg / N. C. Lovell, Stable isotope variation in pathological bone. Internat. Journal Osteoarch. 5, 1999, 316–324.

**Korsak 1922**: W. Korsak, Rok myśliwego rzecz dla myśliwych i miłośników przyrody (Poznań 1922).

**Kręt 1981**: H. Kręt, Dwór królewski Jadwigi i Jagiełły (Kraków 1981).

**Kulikauskas 2018**: G. Kulikauskas, Lietuvio kodas (Vilnius 2018).

**Luik et al. 2022**: H. Luik / G. Piličiauskienė / V. Podėnas / V. Micelicaitė / K. Minkevičius / A. Čivilytė, Animal bones, bone artefacts and bone working at Late Bronze Age fortified settlements in north-eastern Lithuania: Sokiškiai, Mineikiškės and Garniai I. Arch. Lituana 23, 2022, 237–268.

**Makowiecki 2006**: D. Makowiecki, Remarks on the »Breeds« of Dog (*Canis lupus f. familiaris*) in the Polish Lowland in the Roman Period, the Middle Ages and Post-Medieval Times in the Light of Archaeozoological Research. Fasciculi Arch. Hist. 8, 2006, 63–73.

**Manning 1993**: R. B. Manning, Hunters and Poachers. A Cultural and Social History of Unlawful Hunting in England 1485–1640 (Oxford 1993).

**Micelicaitė et al. 2023**: V. Micelicaitė / G. Piličiauskienė / V. Podėnas / K. Minkevičius / A. Damušytė, Subsistence and diet of the first fortified settlement communities in Lithuania: zooarchaeological analysis of Late Bronze Age assemblages from Garniai 1 and Mineikiškės. Heritage 6(1), 2023, 333–350.

**Mickūnaitė 2009**: G. Mickūnaitė, Didžiojo kunigaikščio medžioklė: pasakojimas, vaizdas, alegorijos. Acta Acad. Art. Vilnensis 55, 2009, 7–22.

**Nichols 2021**: Ch. Nichols, Domestic dog skeletons at Valsgärde cemetery, Uppland, Sweden: Quantification and morphological reconstruction. Journal Arch. Scien.: Reports 36. DOI:10.1016/j.jasrep.2021.102875.

**Öhman 1983**: I. Öhmann, The Merovingian dogs from the boat-graves at Vendel. In: J. P. Lamm / H.-A. Nordström (eds), Vendel Period Studies. Transactions of the Boat-grave symposium in Stockholm, February 23, 1981 (Stockholm 1983) 167–182.

**Ostrander et al. 2019**: E. A. Ostrander / G.-D. Wang / G. Larson / B. M. VonHoldt / B. W. Davis / V. Jagannathan / Ch. Hitte / R. K. Wayne / Y.-P. Zhang, Dog 10K: an international sequencing effort to advance studies of canine domestication, phenotypes and health. Nat. Scien. Rev. 6(4), 2019, 810–824.

**Ostroróg 1618**: J. Ostroróg, Myślistwo z ogary Iana hrabie z Ostroroga, woiewody poznanskiego (Krakow 1618).

**Petrauskas 2003**: R. Petrauskas, Vytauto dvaras: struktūra ir kasdienybė. Naujasis Židinys-Aidai 1/2, 2003, 39–44.

**Piličiauskas et al. 2017**: G. Piličiauskas / D. Kisielienė / G. Piličiauskienė, Deconstructing the concept of Subneolithic farming in the southeastern Baltic. Vegetation Hist. and Archaeobotany 26(2), 2017, 183–193.

**2019**: G. Piličiauskas / D. Kisielienė / G. Piličiauskienė / L. Gaižauskas / A. Kalinauskas, Comb Ware culture in Lithuania: new evidence from Šventoji 43. Lietuvos Arch. 45, 2019, 67–103.

**Piličiauskienė 2023**: G. Piličiauskienė, Šunys zooarcheologiniais duomenimis. In: Šunys Lietuvoje XIII–XVIII a. (Vilnius 2023) 65–191.

**Piličiauskienė/Blaževičius 2018**: G. Piličiauskienė / P. Blaževičius, Žinduoliai Vilniaus pilyse. In: Vilniaus pilių fauna: nuo kepsnio iki draugo (Vilnius 2018) 19–101.

**Piličiauskienė et al. 2024**: G. Piličiauskienė / R. Skipitytė / P. Blaževičius / V. Micelicaitė, Dogs in Lithuania from

the 12th to 18th C AD: diet and health according to stable isotope, zooarchaeological, and historical data. Animals 14(7), 2024, 1023. DOI: 10.3390/ani14071023.

**Pokora 2006**: J. Pokora, Psy, błazny, dzieci, krolowie … Studia nad sztuką XV–XVIII wieku (Warszawa 2006).

**Prummel 1992**: W. Prummel, Early medieval dog burials among the Germanic tribes. Helinium XXXII (1–2), 1992, 132–194.

**Ragauskienė 2010**: R. Ragauskienė, Šunys Lietuvos Didžiosios Kunigaikštystės valdovų dvaruose (XIII a. vidurys – pirmoji XVII a. pusė). Lietuvos pilys 6, 2010, 164–177.

**2013**: R. Ragauskienė, Из «истории животных»: собаки при дворе правителей Великого Княжества Литовского (до середины XVII века). In: СОЦІУМ. Альманах соціальної історії 10 (Kiiv 2013) 144–160.

**Ruscillo 2006**: D. Ruscillo, The Table Test: a Simple Technique for Sexing Canid Humeri. In: D. Ruscillo (ed.), Recent Advances in Ageing and Sexing Animal Bones (Oxford 2006) 62–67.

**Sabaneev 1892**: L. P. Sabaneev, Охотничий календарь. Справочная книга для ружейныхъ и псовых охотниковъ (Moskva 1892).

**Samsonowicz 2011**: A. Samsonowicz, Łowiectwo w Polsce Piastów i Jagiellonów (Warszawa 2011).

**Silver 1969**: I. A. Silver, The ageing of domestic animals. In: D. Brothwell / E. Higgs (eds), Science in archaeology: a survey of progress and research (London 1969) 283–302.

**Sykes 2018**: B. Sykes, The Wolf Within: A Genetic History of Man's Best Friend (London 2018).

**Smetona et al. 2021**: M. Smetona / M. Milinavičius / A. Smetonienė, Lietuvių skalikai (Vilnius 2021).

**Starinnyā 1876**: Старинныя породы собакъ. Журналъ охоты 1, T. IV, 1876, 64.

**Sten 2013**: S. Sten, Sacrificed animals in Swedish Late Iron Age monumental mound burials. In: G. Ekroth / J. Wallensten (eds), Bones, Behaviour and Belief. The Zooarchaeological Evidence as a Source for Ritual Practice in Ancient Greece and Beyond (Athens 2013) 223–231.

**Svetikas 1982**: E. Svetikas, Bazorų senkapio (Alytaus raj.) 1981 metų tyrinėjimų ataskaita [excavations report, Lithuanian Institute of History, Vilnius, file 926, 1982].

**Thurston 1996**: M. Thurston, The Lost History of the Canine Race. Our 15,000-Year Love Affair with Dogs (Kansas City 1996).

**Tourunen 2008**: A. Tourunen, Animals in an Urban Context. A Zooarchaeological Study of the Medieval and Post-Medieval Town of Turku [PhD thesis, Univ. Turku 2008).

**Urbanavičius 1980**: V. Urbanavičius, Obelių senkapis, Ukmergės raj. (1978 ir 1979 m. kasinėjimų ataskaita [excavations report, Lithuanian Institute of History, Vilnius, file 994 1980].

**Varnas 1994**: A. Varnas, Masteikių kapinyno 1993 metų tyrimai. In: Archeologiniai tyrinėjimai Lietuvoje 1992 ir 1993 metai (Vilnius 1994) 178–184.

**1996**: A. Varnas, Masteikių kapinyno (Kauno r.) tyrimai 1994 metais. In: Archeologiniai tyrinėjimai Lietuvoje 1994 ir 1995 metais (Vilnius 1996) 77–78.

**Wagner 1930**: K. Wagner, Rezente Hunderassen. Eine osteologische Untersuchung. Skr. Norske Videnskabelige Akad. I. Mat.-Naturvidensk. Kl. 9 (Oslo 1930).

**Zarankaitė-Margienė 2018a**: T. Zarankaitė-Margienė, Laukiniai žvėrys Lietuvos Didžiosios Kunigaikštystės valdovo aplinkoje XIV–XVII amžiuje. In: Vilniaus pilių fauna (Vilnius 2018) 245–273.

**2018b**: T. Zarankaitė-Margienė, Medžioklės fenomenas Lietuvos Didžiojoje kunigaikštystėje XV–XVI a. (1572 m.): socioekonominis, sociopolitinis, mentalinis aspektai [PhD thesis, Univ. Vilnius 2018].

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