Dietary Stories: A Multi-proxy Study of Food Remains Recovered from Dominikonų St. 11 in Vilnius Between the 15th-18th Centuries

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ABSTRACT

This article presents research results from an archaeological excavation in the area of Dominikonų St. 11 in Vilnius Old Town using four groups of evidence: archaeological artefacts, historical records and zooarchaeological and archaeobotanical research results. The analysed material covers a wide chronological range (between 15th and 18th century) allowing us to observe dietary changes in relation to architectural development and spatial distribution. This research shows changes in human diet over time from the pre-Palace period when human diet consisted of grain and cattle to imported oysters, veal, game, and wines during the Palace period.

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Introduction

The consumption of food and drinks is tightly intertwined with social status of people, their ethnicity, religious beliefs, environment or social factors (Valenzuela-Lamas et al. 2014). Understanding what plant and animal species were consumed in the past and how their consumption varied over time can significantly contribute to the knowledge about the daily lives of the local population (Twiss 2012; Karg 2007). While studying archaeological material from the historical periods it is important to combine both historical sources of past diets as well as recovered ecofactual and artefactual material for a better reconstruction of past diets.

The historical datasets of past food consumption in Lithuania can be found in various account books of different households, estate inventories, recipe books, shopping lists, shop inventories (e.g., Antanavičius 2012; Jablonskis 1934; Jurginis and Šidlauskas 1988; Valikonytė et al. 2001). In addition, various estate record books provide information on what foods were purchased, sold or collected as taxes, what was cultivated, harvested, and what was consumed by people or used as animal fodder. This does not necessarily reveal the nutritional spectrum of the general population, as the food supplies to the residents of a higher status were mostly documented. It is possible to track information about many food sources in various law books, metricas (e.g., Lithuanian Metrica) from the 15th century onwards. However, sometimes not all purchased foods or those obtained in other ways are documented in detail due to the author's subjective approach. Especially, when food is not purchased but rather locally grown and collected or wild animals were hunted down, one can find evidence of past foodways only from archaeological datasets. A broad picture of historical cuisine can be drawn from the works of historians, but again, it is often based on historical sources, like, account books where food sources of monarch or nobility are presented (Dambrauskaitė 2021; Laužikas 2014, Margienė-Zarankaitė 2018), thus lacking the information about the commoner's diet or the extent of certain food consumption among various levels of society. On the other hand, some spic-

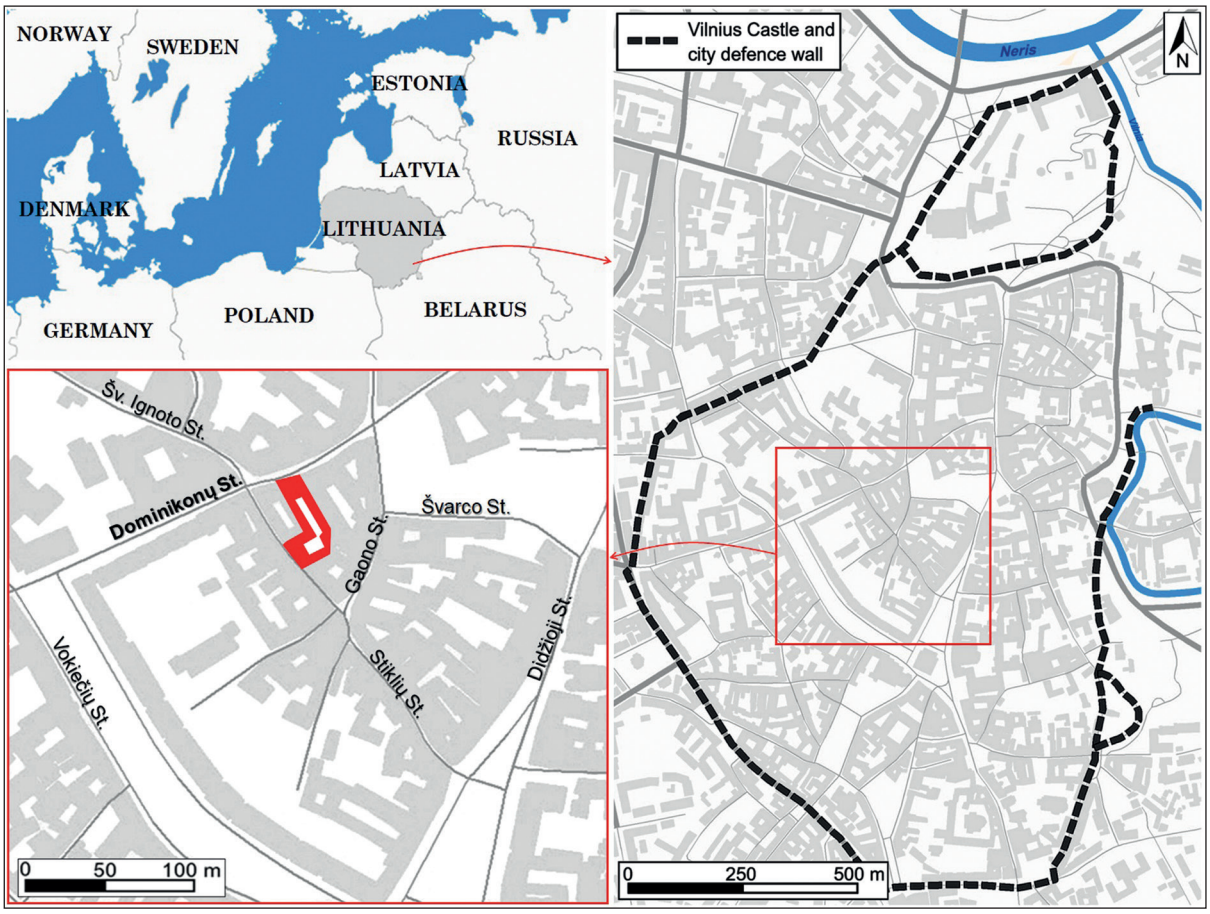


Figure 1. Location of Dominikonų St. 11 complex (Graphics: R. Karaliūtė).

es or herbs, fragile saffron stigmas are unlikely to preserve archaeologically, thereby we almost have no records of them, while historical information hold records about their use (Hjelle 2007, 173). Therefore, if possible, combined archaeobotanical, zooarchaeological, and historical data should be used for a better understanding of past foodways and diets.

Currently there are no combined bioarchaeological studies from Vilnius city. Complex analyses of zooarchaeological and archaeobotanical data are still very rare, and if conducted, results are never published together, despite the fact that combined they represent a much fuller picture of past foodways. The best-known case of bioarchaeological research in Vilnius is from the Upper and Lower Castles. Several articles based on archaeobotanical material (pollen and macrofossils) have been written (e.g., Motuzaitė Matuzevičiūtė et al. 2020; Stančikaitė et al. 2008), while a monograph of zooarchaeological data has been published separately (Blaževičius 2018). Unfortunately, a combined overview of past diet based on these fine results has not been provided yet.

The aim of this paper is to evaluate the dietary habits and the dietary changes through time of the population that lived in the area of Dominikonų Street 11 between 15th-18th centuries in Vilnius. We apply a multiproxy approach using archaeological, zooarchaeological, archaeobotanical and historical data to better understand the dietary habits and changes. Finally, we aim to foster further discussions of the pros and cons of focusing on a single type of data, and how the dietary picture can unfold when multiple sets of evidence are used together.

A Historical Overview of the Households of Dominikonų St. 11

The building and the courtyard located at Dominikonų St. 11 represents the former Pociej Palace in Vilnius Old Town (Figure 1) that was

Figure 2. Dominikonų Street (1850) by Jean Baptiste Arnout and Adolphe Jean-Baptiste Bayot (Album de Wilna, 2e Série 3e Liv.). A building of Dominikonų St. 11 is the middle of street on the right side.

built during the 17th-18th centuries. There is relatively little information about the previous development of this area. The land plot is located on the south-eastern side of Dominikonų St., next to the well-known road from Vilnius Lower Castle to Trakai, established in the 14th century. It has been speculated that during the 15th century there may had been two households with buildings along the street, but by the 17th century they were merged into one under the same owner (Čaplinskas 2008, 119; Zilinskas and Blinstrubienė 2018, 2).

A historical document dated July 18 in 1600 mentions a large luxury house that Eustachy Wołłowicz sold to the Vilnius Royal goldsmith Mikołaj Bretszneider (Paknys 2006, 157). According to the 1636 census of Vilnius city residents and their houses, the same house belongs to the city jurisdiction and is reported to have had three rooms, one of which was heated. It also contained a goldsmith's shop, a small room, one storage room, two cellar units, a distillery, a stable for two horses and a large courtyard.

In 1668, the land plot belonged to Alexander Jasienski-Wojna and it contained three masonry houses with cellars. 30 years later, the property inventory of A. Jasienski-Wojna mentions not three separate houses, but a representative palace. The main entrance is believed to have been from the Dominikonų St. side (high street), while the representative gate was on Stiklių St. (side street) (Čaplinskas 2008, 119-120; Drėma 1991, 37-38; Zilinskas and Blinstrubienė 2018, 1-3). From 1668 to 1698, major changes took place in this land plot. During the Russo-Polish War in 1654-1667, buildings were damaged, and large-scale reconstruction works started after the war. This has been confirmed during archaeological excavation (Žvirblys 2021, 563).

In 1700, the palace was inherited by the owner's daughter Teresa Wojna-Brzostowska. Soon she became a widow, but not for long as she married Alexander Pociej, a voivode of Trakai and passed on the palace to the Pociej family. On June 11 in 1748, a huge fire started in Vilnius. The palace was badly damaged again. After the conflagration, the palace was not only repaired but also expanded.

Chronology	Period of Early Residents	Period of Commoners from Masonry Houses	Royal Goldsmith Workshop and a Period of New Constructions	Palace Period
	15th c.	**15-17th c.**	**late 16-17th c.**	**18th c.**
Number of archaeological contexts[1]	1 : 1	10 : 2	8 : 1	5 : 2
Total (fauna)[2]	58 (+58)	180 (+3301)	184 (+87)	535 (+38)
Total (flora)	41	249	76	726

[1] Since the number of contexts varies according to the archaeological material, the exact number of each of them is given here - (number of zooarchaeological contexts) : (number of archaeobotanical contexts).
[2] Number of bones collected from the heavy residue of the sediment samples is given in brackets.

Table 1. Main information of analyzed contexts from Dominikonų St. 11.

Facades acquired the features of Classicism style; a gallery was built above the main entrance gate from the yard side. In the 19th century, the palace lost its representative purpose and was converted into apartments, and its current condition reflects this layout (Figure 2) (Čaplinskas 2008, 120-123; Drėma 1991, 37-38, 228-229; Zilinskas and Blinstrubienė 2018, 1-3).

Materials and Methods

In 2019-2020, an archaeological survey (*c.*435 m²) and excavation (288 m²) were conducted at Dominikonų St. 11 in Vilnius. Archaeological excavation took place in rooms, cellars, and courtyards of the building complex (Žvirblys 2021, 566). The samples for zooarchaeological and archaeobotanical analyses were collected from various features including kitchen waste pits, fireplaces, or waste dumps in the basement areas dated between 15th-18th centuries (Table 1).

The area of the archaeological excavation had been disturbed in 1968–1973 during the installation of underground-centralized heating and other utility pipes. Despite this, some of the trenches and test pits revealed undisturbed cultural layers (Žvirblys 2021, 563). Historically recorded events, such as reconstruction of buildings, traces left by fire, change of household owners etc., enabled accurate dating of the investigated structures and explained their formation. Certain structures, specifically inside the building, dated by historical architects (Zilinskas and Blinstrubienė 2018, 1-3). Some contexts were also dated not only by architectural affiliations, but also by established typological chronologies of household pottery, stove tiles and glassware (e.g., Katalynas 2015; Vaitkevičius 2004). For the purpose of this article, we divide the material into four periods: 1) Period of Early Residence (15th century), 2) Period of Commoners from Masonry Houses (15th-17th centuries), 3) Royal Goldsmith Workshop and a Period of New Constructions (late 16th-17th centuries), 4) Palace Period (18th century).

Zooarchaeological material was collected during the archaeological excavation by carefully selecting visible bone remains out of the sediments. Sieving was not possible due to the high quantity of construction rubble and other waste deposits, although we recognize that hand-collecting bones favour the larger sized mammals over the smaller sized animal species. Nevertheless, smaller fragments of bones, fish scales or eggshells were collected from the heavy residue of the sediment sample collated from flotation that in turn showed a huge advantage of wet sieving method for the collection of a more complete picture of human diet (Table 2, marked by *). Those bones contained ribs, phalanges, vertebrae, facies articulares of long bones belonging to e.g., small rodents or fish that would otherwise have been left unnoticed during the hand-collecting process. However, majority of collected bones were too fragmentary preventing their attribution to species level, therefore, these bones were not included into the general statistics.

	Taxa	15th c.		15-17th c.		late 16-17th c.		18th c.	
		NISP	MNI	NISP	MNI	NISP	MNI	NISP	MNI
Domesticated	**Mammals**								
	Bos taurus L.	17	2	56	5	58	4	132	4
	Canis lupus familiaris L.							1	1
	Capra hircus L.	1	1	2	5				
	Capra hircus/Ovis aries			5		6	1	9	3
	Capra hircus/Ovis aries /Capreolus capreolus			1					
	Equus caballus L.	2	1			41	2		
	Sus domestica Erxleben	6	1	7	2	3	1	9	2
	Sus domestica/Sus scrofa	3				1		3	
	Birds								
	cf. *Anser* sp.			2	2			2	2
	Gallus gallus domesticus L.			1	1			2	2
	Egg shells*	6		57				5	
Wild	**Mammals**								
	Alces alces L.							3	1
	Lepus sp.			1	1				
	Fishes								
	cf. *Abramis brama* L.			1	1				
	*Pisces**	12		91		12		3	
	Fish scales*	191		+500		67		6	
	Molluscas								
	Ostrea edulis L.							29	15
Unknown	**Birds**								
	Anser/Anas sp.							1	1
	Anser/Cygnus sp.					1	1	1	1
	Aves			1	1			9	9
Unidentified	Indeterminate	4		12		8		32	
	Large mammal	19		85		60		270	
	Medium mammal	6		5		6		32	
	Small mammal			1					
	Indeterminate *	30		~3000		59		21	
	Small mammal*	16		210		16		14	

Table 2. Summary information on the taxa identified during the zooarchaeological analysis.

All zooarchaeological data was recorded by number of identified specimens (NISP) and minimum number of individuals (MNI). In the text, the abbreviation 'n' refers to a number for both faunal and floral fragments.

In total, 955 animal skeletal remains were submitted for zooarchaeological analysis covering the 15th-18th centuries. The species identification was carried out with the use of bone atlases (Adams and Crabtree 2011; Cohen and Serjeantson 1996; France 2009; Gilbert 1973; Prehn et al. 2018; Schmid 1972) and the bone reference collection at the Bioarchaeology Research Centre of Vilnius University. Skeletal elements of sheep and goat, same as for pig and boar, were considered as one group respectively, due to well-known difficulties distinguishing these because of morphological similarities. 540 animal bones were either too small and fragmented or lacked characteristic diag-

nostic features and, thus, were not identified. Skeletal remains that identified at the elemental level, but not attributed to species, were grouped according to the size of an animal. The fragments could belong to small mammal, medium mammal, or large mammal. The age of the animals was determined based on epiphyseal fusion data and teeth (Hillson, 2005; Payne 1973; Silver, 1969). Butchery marks, such as cut or chop marks, helical fractures, were recorded whenever observed. The zooarchaeological remains in Table 2 were divided into two main groups of animals: domesticated and wild, and then subdivided into Vertebrate subgroups: mammals, birds, and fishes.

Archaeobotanical analysis were carried out on sediment samples from six contexts within the Dominikonų St. 11 (15th-18th centuries), consisting mainly of pits, fireplace, and cultural layers (in total, 110 l). In order to extract carbonized or mineralized macrofossil remains a flotation method was used (Greig 1989). Sediment samples were floated through 300 μm mesh sieves, while heavy residues were wet sieved through 2000 μm mesh sieves. All dried samples were sorted under the microscope OLYMPUS SZX10. Macrobotanical remains were photographed using an Axiocam Erc 5s camera and ZEN 2.6 lite software. Collected and assorted plant macrofossils (mostly charred and carbonated) were identified with the aid of specialized botanical atlases (Anderberg 1994; Berggren 1981; Cappers et al. 2012; Grigas 1987) and reference collection of modern plants stored at Bioarchaeology Research Centre of Vilnius University. Subsequently the botanical samples were divided into two main groups: domesticated and wild, and then subdivided into smaller groups by habitats (Table 3).

Results

The Period of Early Residence (15th century)

The earliest context of the Dominikonų St. 11 is a fireplace pit placed inside the courtyard and dated to the 15th century. Archaeological analysis has revealed that the fireplace was used at least twice. The date of this context is defined by the characteristic affiliated material consisted of various household pottery remains including unglazed and unornamented pottery, black earthenware, tapered roof tile. Some pottery fragments were secondary burnt, likely indicating that they were used for cooking directly on the fire. It is also worth mentioning that the fireplace contained a flat and burnt stone measuring 7-10 cm x 25 cm that may have been used to place vessels on for cooking.

More than 116 bones were collected from this pit, of which 58 were picked by hand and 58 during wet sieving. Only 41 were successfully identified and belonged to the following domestic animal taxa: cattle (*Bos taurus*; n=17), pig and pig/boar (*Sus domesticus/Sus scrofa*; n=6+3), horse (*Equus caballus*; n=2) and goat (*Capra hircus*; n=1). 12 unidentified fish bones were also found during sediment flotation.

The majority of identified bones belonged to cattle. Based on the epiphyseal fusion data, which were available for 10 fragments, eight individuals were mature. Only two thoracic vertebrae demonstrated incomplete epiphyseal fusion belonging to juvenile individuals (Silver 1969). Evidence of butchery and bone modification include chop marks (n=1), disarticulation (n=1), and helical fracture (n=1), which can be suggestive of bone marrow removal (Outram 2001). Most of the skeletal remains were badly preserved, sun bleached or had been exposed to heat. In addition, 191 fish scales and six eggshells were collected within the context, some of which were burnt. During initial examination of fish scales shape, most likely they belonged to three species: common roach (*Rutilus rutilus*), European perch (*Perca fluviatilis*) and northern pike (*Esox lucius*), which have all been detected at other archaeological sites in Vilnius (e.g., Tetereva et al. 2018, 180).

From the sediment sample, 41 plant remains were collected. About half of the identified plants belonged to raspberries (*Rubus idaeus;* n=19). Meanwhile, only one charred grain of barley (*Hordeum vulgare*) was found. Considering that the fireplace was mostly used for cooking, the minimum number of crops can be explained by the fact that direct fire destroyed the rest of the grains under the oxygen-rich charring conditions.

	Taxa	Plant part[1]	Context			
			15th c.	15-17th c.	late 16-17th c.	18th c.
Domesticated	**Cereal and pulse**					
	Avena sativa L.	Fruit, charred		4		
	cf. *Camelina sativa* (L.) Crantz	Fruit, charred			4	
	Cerealia sp.	Fruit, charred		2		
	Fagopyrum esculentum Moench	Fruit, charred		1		+500
	Fagopyrum esculentum Moench	Lemma, charred		2		
	Hordeum vulgare L.	Fruit, charred	1			
	Hordeum vulgare var. *vulgare*	Fruit, charred		1	1	
	Pisum sativum L.	Fruit, charred		2	3	1
	Secale cereale L.	Fruit, charred		8	2	1
	Triticum aestivum L.	Fruit, charred		1		
	Vegetables and spices					
	Allium cepa L.	Seed				1
	Brassica cf. *nigra* L.	Seed			1	
	Fruit					
	Juglans regia L.	Endocarp		1		
Wild	**Fruit**					
	Corylus avellana L.	Endocarp			2	3
	Fragaria sp.	Fruit, charred		1		1
	Rubus idaeus L.	Fruit	19	27	2	1
	Weeds and ruderals					
	Atriplex patula L.	Fruit		14		
	Centaurea cyanus L.	Fruit			1	
	Chenopodium album L.	Fruit	8	111	23	5
	Chenopodium hybridum L.	Fruit		1		
	Euphorbia sp.	Seed, charred	1			
	cf. *Galeopsis ladanum* Neck	Fruit, charred			1	
	Galium aparine L.	Fruit, charred		5	8	2
	Lamium sp.	Fruit, charred				2
	Polygonum lapathifolia (L.) Delarbre	Fruit, charred			8	1
	Setaria viridis (L.) Beauv.	Fruit, charred		2		1
	Silene dioica (L.) Clairv	Seed, charred		2		
	Silene vulgaris (Moench) Garcke	Seed, charred			1	
	Stellaria graminea L.	Seed		1		
	Meadow plants					
	Galium cf. *verum* L.	Fruit, charred	1	4		
	Malva sylvestris L.	Seed	1			
	Melilotus cf. *officinalis* (L.) Pall.	Seed, charred		1		
	Melissa officinalis L.	Fruit, charred				1
	Prunella vulgaris L.	Fruit, charred				1
	Taraxacum officinale (L.) Weber ex F.H.Wigg.	Fruit			1	
	Thymus sp.	Fruit, charred				1
	Trifolium repens L.	Seed, charred		1		
	Wetland plants					
	Carex spp.	Fruit, charred	3			50
	Carex spp.	Fruit		40	10	+150
	Juncus sp.	Fruit		6		
	Ranunculus sp.	Fruit, charred			1	
	Rhododendron sp.	Seed, charred			1	

[1] Botanical terms of plant parts: Endocarp – inner layer of the pericarp (wall of the mature ovary); Fruit – ripened ovary, the structure that bears the mature seed; Seed – a ripened ovule (in: http://conservationresearchinstitute.org/forms/CRI-FLORA-Glossary.pdf).

Table 3. Summary information on the taxa identified during the archaeobotanical and biological remains analysis (continued on the next side).

	Taxa	Plant part[1]	Context			
			15th c.	15-17th c.	late 16-17th c.	18th c.
	Coastal plants					
	cf. *Salsola kali* L.	Fruit, charred		1		
	Habitat unknown					
	Potentilla sp.	Fruit				1
	Vicia sp.	Seed, charred			1	
	Viola sp.	Seed, charred				1
	Amaranthaceae	Fruit		1		
	Apiaceae	Fruit, charred		1		
	Apiaceae	Fruit	1			
	Brassicaceae	Seed		3		
	Fabaceae	Seed, charred	2	1		
	Lamiaceae	Fruit			1	
	Poaceae	Fruit, charred	1	2		1
	Rosaceae	Fruit, charred			1	
	Polygonaceae	Fruit	2		1	
Other	Unidentified fragments		1	2	2	1
	Bread/food remains			1		

The Period of Commoners from Masonry Houses (15th-17th Centuries)

The investigated land plot were inhabited by the city commoners during a long period in the 15th-17th centuries. Most archaeological contexts from this period contained typical roof tiles of semi cylindrical form and so-called Gothic ceramics with polished black surface, tapered roof tiles, and fragments of various stove tiles. The zooarchaeological material from this period come from 10 different contexts such as waste pits and cultural layer, while the archaeobotanical samples were taken from two waste pits.

In total, 180 animal bones were collected by hand while about 3000 were sorted from the heavy residue during flotation. Only 168 of these were however identified while the remaining bones were too fragmented. Identified bones belong to cattle (n=56), pig (n=7), goat or goat/sheep (*Capra hircus/Ovis aries*; n=2 or 6), probably domesticated geese (cf. *Anser* sp.; n=2), chicken (*Gallus gallus domesticus*; n=1), unidentified bird (n=1), hare (*Lepus* sp.; n=1), and possibly common bream (*Abramis brama*; n=1). A surprisingly large number of fish bones (n=91) were collected from the sediment samples.

Epiphyseal fusion data available for 17 cattle bone fragments indicated that the majority (n=15) of them belonged to mature individuals, while one distal radius belonged to an individual that died before reaching 3,5-4 years, other thoracic vertebra belonged to an animal that died before reaching 5 years (Silver 1969). Yet, one very fragile bone, most likely of a juvenile calf, was also found. Butchery evidence included chop marks (n=2), cut marks (n=2), disarticulation (n=4), and helical fracture (n=1). Few bones (n=9) also had gnawing signs and one of them was sun bleached. At least three examples of bone working were noted (Figure 3).

Figure 3. Discarded bone working fragments of cattle (*Bos taurus*) (Photo: E. Ananyevskaya).

Out of the seven identified pig bones at least one of them belonged to individual that died before reaching 2 years of age (Silver 1969). Judging from the shape of the tusk, one mandible fragment was attributed to a male individual (Hillson 2005). Skeletal remains of goats/sheep contained mostly limb bones. However, because of the noticeably ambiguous shape it is possible that one bone belonged to a roe deer (*Capreolus capreolus*). All goats were identified by their horncores. Along with larger fish vertebra, possibly belonging to common bream, and small, yet unidentified, fish bones were also recovered in the flotation samples. In addition, over 500 fish scales were collected from the flotation samples. Most of them were about 5 mm in diameter and, in rare cases, 16 mm in diameter. The abovementioned three species of fish, common roach, European perch, and northern pike, were identified. All fish remains were found in the same context together with few gnawed cattle bones mentioned before. Lastly, 57 bird eggshells and one charred bread/mash fragment were found here as well.

249 plant macrofossils were extracted from two sediment samples, the majority of which belong to cultivated plants. The cultivars belong to rye (*Secale cereale*; n=8), oat (*Avena sativa*; n=4), buckwheat (*Fagopyrum esculentum*; n=3), hulled barley (*Hordeum vulgare* var. *vulgare*; n=1), bread wheat (*Triticum aestivum*; n=1), Cerealia (n=2), and pea (*Pisum sativum*; n=2) (Figure 4 a-e). In addition, a small fragment of walnut shell (*Juglans regia*) and even more raspberry fruits (n=27) were found as well.

Weeds and ruderals were the dominant plants (*c.*55%), including white goosefoots (*Chenopodium*

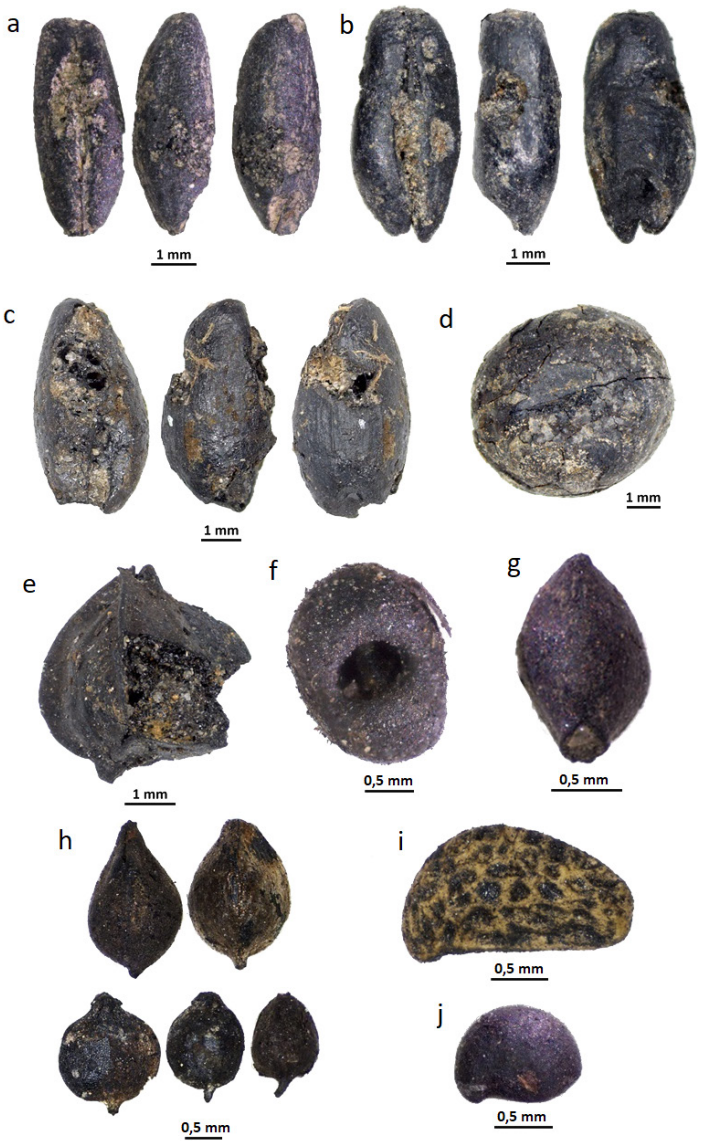


Figure 4. Photos of archaeobotanical remains from Dominikonų St. 11.
a – *Avena sativa*;
b – *Secale cereale*;
c – *Hordeum vulgare* var. *vulgare*;
d – *Pisum sativum*;
e – *Fagopyrum esculentum*;
f – *Galium aparine*;
g – *Thymus* sp.
h – *Carex* spp.;
i – *Rubus idaeus*;
j – *Fragaria* sp.
(Photos: R. Karaliūtė).

Figure 5. Crucibles discovered in the rubble above the early 17th century foundation (trench 9) (Photo: A. Žvirblys).

album; n=111) and spear saltbushes (*Atriplex patula*; n=14). Based on the number of identified plants the second most common group is wetland plants with mainly fruits of sedges (*Carex* sp.; n=40).

The Royal Goldsmith Workshop and a Period of New Constructions (Late 16th-17th Centuries)

This period is characterized by local and imported household pottery with yellow, light brown or green glaze. Furthermore, large quantities of the typical late 16th – mid. 17th century stove tiles were found as well. Several of the tiles were decorated with a single-headed eagle dating to 1585, which attribute them to the Royal goldsmith's sponsor, Polish-Lithuanian nobleman Krzysztof Radziwiłł II, who was born in 1585. Besides typical fragments of household pottery and stove tiles, crucibles for melting of non-ferrous metals (possibly gold) were also found (Figure 5), which may be connected with the activities of the aforementioned goldsmith M. Bretszneider. Parts of several stone pavings dating to the second half of the 17th century were discovered in the complex within the house and in the courtyard. One of these has been preserved *in-situ* for public presentation. The zooarchaeological material was collected from eight separate contexts including waste pits, cultural and rubble layers, whereas the material for archaeological analysis came from a single context within a waste pit.

Out of the 271 collected animal bones (184 collected by hand and 87 found in heavy residue), only 122 were identified to species, with cattle making up the majority of these (n=58). During the analysis of epiphyseal fusion data, it was noted that at least 23 individuals were mature, one died at age 3.5-4 years, while a second one before reaching 5 years (Silver 1969). Various vertebral elements (n=10) as well as proximal femur (n=6) make up the majority of the cattle skeletal remains. Butchery evidence on cattle skeletal fragments include chop marks (n=6), disarticulation (n=6), and saw marks (n=1). At least three examples of bone working were detected. The second most common species is horse (n=41) with at least two mature individuals (MNI=2). No evidence of butchery on fragments of horse bones was detected, but one thoracic vertebra had signs of abnormal bone growth, which might be suggestive of diseases related to hard labor or deformities occurring due to old age (Baker and Brothwell 1980). In addition, goat/sheep (n=6), pig and pig/boar (n=3+1), and one bird radius that likely belongs to swan (*Cygnus* sp.) or goose were identified. During archaeobotanical analysis, 67 fish scales and 12 fish bones were identified.

Layers dating to the 17th century contained 76 archaeobotanical macrofossils. In comparison to the 15th-17th centuries, the percentage of weeds and ruderals remained the same. White goosefoot (n=23) remained dominant, but during this period clevers (*Galium aparine*; n=8) and pale persicaria (*Polygonum lapathifolium*; n=8) increased as well. Based on the general distribution by habitats the second most abundant group of plants belonged to wetland species (n=10; only sedges), while third belonged to crops and pulse (n=10). The former

Figure 6. Test pit 12 with the shards of cylindrical wine bottles (Photos: A. Žvirblys).

group includes peas (n=3), rye (n=2), hulled barley (n=1), and probably false-flaxes (*Camelina sativa*; n=4).

The Palace Period (18th century)

Cultural layers from the 18th century are distinguished by a large amount of various archaeological finds of household pottery, glass and metal artefacts, coins etc., that are all associated directly with a palace. The most typical finds of this period are faience and majolica bowls, plates, and other dishes that emphasize the high status of their owners. The beautiful porcelain dishes had floral patterns on the bottom, or be decorated with painted scenes or floral and geometrical patterns. It is important to make a note about the discovery of broken shards of wine bottles that were dumped in a single pit that is indicative of an imported wine consumption (Figure 6). From this period, the zooarchaeological data was assembled from five separate contexts belonging to waste pits and rubble layer while archaeobotanical material was taken from two different contexts: rubble layer and waste pit.

In total, 573 animal remains were found, 38 from a sediment sample during flotation, but only 204 of these were successfully identified. 65 % of the identified bones belonged to cattle, which were presented mostly by vertebral elements, although fragments of pelvic bone, scapula, cranium, and femur are also present in large quantities. The majority of bones are from mature individuals, however, at least seven fragments are from young individuals: juvenile calf (n=3; by metapodial bones), 6-15 month old (n=1; by pelvic bone), over 24 month old (n=1; mandible), 24-30 month old (n=1; by mandible), 28-30 month old (n=1; by mandible) (Silver 1969). No signs of butchery were detected

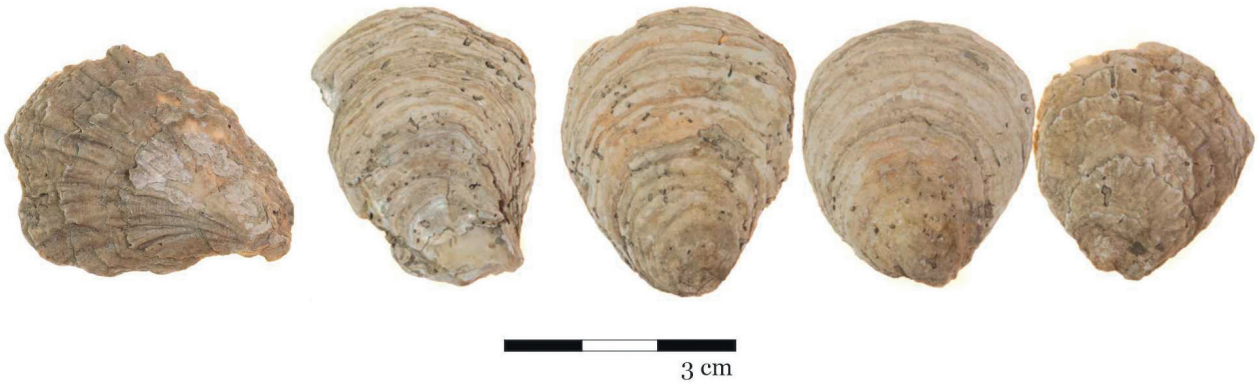


Figure 7. European flat oyster (*Ostrea edulis*) shells collected during the excavations from the 18th century contexts (pit 8) (Photo: A. Žvirblys).

on these animals, but there were plenty of them on mature animal bones: chop marks (n=16), cut marks (n=2), disarticulation (n=16), saw marks (n=1). At least five cases of bone working were found.

In comparison to the earlier contexts, there is a notable number of bones from pig (n=9) or pig/boar (n=3) and goat/sheep (n=8). In cases of pigs, mainly limb bones were observed, but no signs of butchery were recorded. One mandible of a goat/sheep belonging to a 6-8 years old individual was identified. It is worth noting that the only bone (femur) of a dog (*Canis lupus familiaris*) was found.

In contrast to the previous periods, fifteen bird bones were found, four of which possibly belonged to domestic birds, such as goose and chicken. There were also identified one bone of goose/duck (*Anser/Anas* sp.) and one bone from a goose/swan. Unfortunately, nine bird bones were not unidentifiable at the species level and it is thus unknown whether they belonged to domesticated or wild birds. Three skeletal remains of elk (*Alces alces*) were also present among faunal remains. Zooarchaeological analysis of 18th century period revealed that people at the Pociejai Palace used other non-local water resources, such as oysters. Shells of European flat oysters (*Ostrea edulis*; n=29) were also identified (Figure 7). Six fish scales and three fish bones were also recovered from the analysed flotation samples.

In a thick layer of ashes above a stone paving, a concentration of charred buckwheat (n=+500) was recovered, which is associated with the 1748 city fire in Vilnius. These had probably fell down from the storage area as a bag and burned during the palace fire (Figure 8). 226 plant macrofossils of 18 different plant taxa were collected for archaeobotanical analyses. Apart from the buckwheat concentration mentioned above, this period was clearly distinguished by predominance of wetland sedges (around 90 %) (Figure 4h, Figure 9). The second most abundant group of plants was weeds and ruderals (n=10). A few meadow plants were identified as well. All of them are considered as aromatic/medicinal plants belonging to lemon balm (*Melissa officinalis*), common self-heal (*Prunella vulgaris*), and thyme (T*hymus* sp.). In addition, only three macrofossils of domestic plants were identified: rye, pea, and onion (*Allium cepa*).

Discussion

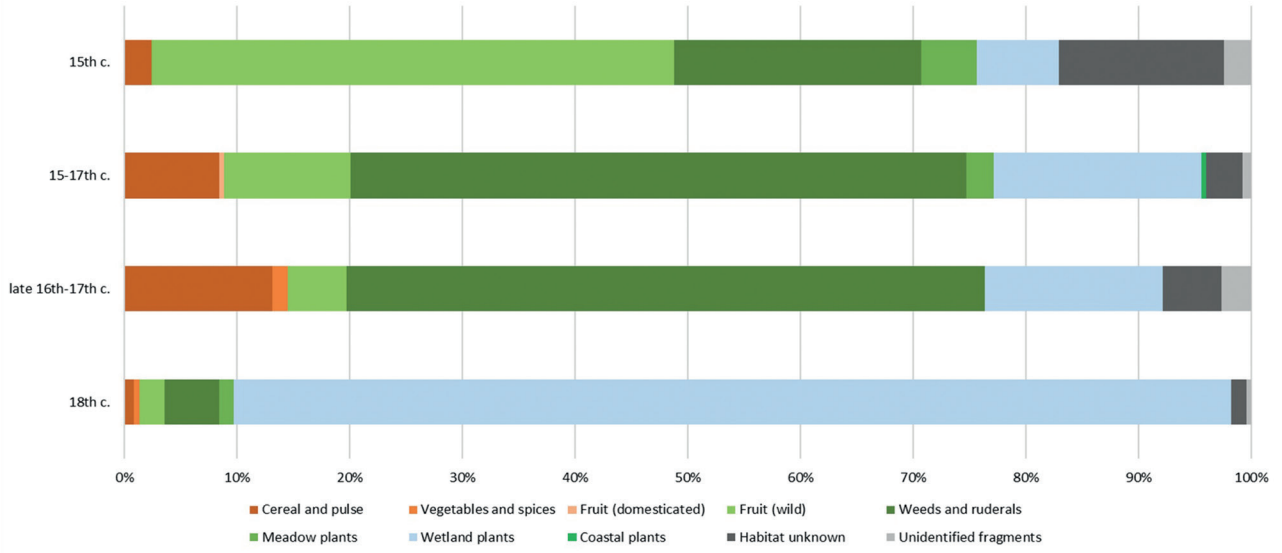
In the following, we discuss the findings of different food sources present at the Dominikonų St. 11. In order to avoid repetitions by discussing the same food source for each period, the diversity of each food product and its differences between periods will be highlighted instead. The food sources are discussed in the broader contexts of Vilnius and in the light of historical records.

Animal Food Sources

Beef and veal

Bones of domestic animals unambiguously dominate the assemblage from Dominikonų St. 11

Figure 8. The unearthed paving fragment of charred and disturbed stones and the burnt buckwheat grits collected above it in the SW part of the courtyard (Photos: A. Žvirblys).



[1] Bag of buckwheat detected in the context of 1748 is not presented here, because in the absence of a large number of cereal and pulse in the object, their introduction distorts the general tendency.

Figure 9. Distribution of archaeobotanical remains by centuries.

(80-100 %), of which cattle is the majority (15th century: 41.5 %; 15th-17th centuries: 51.9 %; 16th-17th centuries: 47.5%; 18th century: 65.3 %) (Table 2). A gradual increase in the number of cattle bones can be observed, with an exception in the 16th-17th centuries where there is a particular high number of horse bones (see below). A similar pattern of increasing beef consumption can be observed at other sites within Vilnius city that have been zooarchaeologically investigated (Piličiauskienė 2013; Piličiauskienė and Blaževičius 2018).

The popularity of beef can be explained by the multifunctionality of cattle. Cows are kept for meat and milk production, and the production of offspring. Agriculture was based on oxen pow-

er instead of horse power, thus oxen were kept for field work or transporting. Finally, the arable fields needed to be fertilized and the cattle were kept for the production of manure. Because of these advantages, it is not surprising that cattle have been raised in abundance (Piličiauskienė and Blaževičius 2018, 52-54).

Most cattle were already mature at the age of death, although at least 12 bones of from separate juvenile animals individuals (4.5 %). In contrast to beef, veal or younger cattle meat were more highly valued (Holmes 2018, 164). Most bones of young individuals date back to the 18th century linking the consumption directly to high social status people.

Horse

In the layers of the 17th century, 41 horse bones were discovered. 37 of them were found in the same context, while the rest appeared as solitary finds. Based on MNI, they belong to two individuals. The horses might have died from natural causes and buried, based on the absence of any signs of butchery marks. Nevertheless, burying a horse on a land plot in the city appears unlikely because horses would usually have been buried outside the city (Holmes 2018, 117). According to zooarchaeological remains, there are known evidence that humans possibly ate horses (Piličiauskienė 2013, 125) even in Modern ages. Consumption of horse is usually linked to military disturbances or famines. In the 17th century Lithuania suffered from multiple military campaigns (Swedish Deluge, Russo–Polish War), and later a plague came to the country in 1711. There is a possibility that horses were actually eaten, but it remains an open question whether horse meat has been eaten by humans or as dog fodder (Holmes 2018, 146; Piličiauskienė and Blaževičius 2018, 70-72).

Pork

Pork may be considered as the second most popular type of meat (ca. 13 % of all domestic animal bones). Pigs were usually kept for their meat and slaughtered when they reached optimum meat yield, having limited value for secondary production (Holmes 2018, 50; Sportman et al. 2007, 134). During the 15th-18th centuries, the number of pigs and pigs/boar bones decreased. Urbanization, the remoteness of pastures, centralized supply of meat (mostly beef) resulted in a decreasing number of domestic animals kept in the city (Piličiauskienė and Masiulienė 2011, 180). Due to the high consumption of beef, pork only makes up a small share of the total meat consumption. The same tendency can be observed at Vilnius Lower castle, Klaipėda Castle and Klaipėda Old Town (Žulkus and Daugnora 2009; Piličiauskienė and Masiulienė 2011; Piličiauskienė and Blaževičius 2018).

Poultry

In the Middle Ages and Early Modern Age chickens and geese are estimated to be the most frequently consumed type of poultry. Chicken is the dominant species, but it was overtaken by geese in the 16th century (Rumbutis et al. 2018, 111). Skeletal remains of both chickens (n=3) and geese (n=4) have been identified in the material from five different waste pits dating to the 15th-18th centuries. The eggshells are not identified to specific bird species, but it is likely that the eggshells belong to the domesticated birds, such as chicken or geese, as bones of these birds were also detected at the site. Despite the fact that eggshells have been detected in three periods out of four, relatively few bones of domestic birds has been discovered, potentially due to the bias of bone collection by hand, rather than fine sieving all sediments.

Noblemen, and on occasion commoners, consumed chickens and geese, although wealthy individuals had the privilege to consume meals of the wild birds. From the 18th century contexts, one bone from a goose/swan and from a goose/duck was identified, as well as nine unidentified bird bones. Another bone of goose/swan was identified in the waste pit dating to the 17th century. Unfortunately, due to fragmentation of fragile bones, it is difficult to recognize the amount, species and possible presence of wild birds. The fact that several bones could possibly belong to a swan suggest the presence of wealthy residents. As recorded in First Statute of the Grand Duchy of Lithuania (1529) domestic swans were priced three times higher than peacocks (Rumbutis et al. 2018, 125, 224).

According to account books and historical recorded menus (Antanavičius 2012; Laužikas 2014), bones of unidentified birds may have belonged to nobles' favorite grouse, capercaillie, partridge, bustard, quail, etc. These are wild birds that were purposely hunted only by the nobles or upon their request (Dambrauskaitė 2021, 96-99). Based on a statistical analysis of poultry consumption in post-medieval Southern England, the remains of wild birds were mostly found at ecclesiastical and high-status sites, while remains from lower status sites may be linked to poaching (Holmes 2018, 136, 169). Thus, the discovery of wild or captive-bred birds clearly distinguishes the palace period from the previous ones, when it was the home of craftsmen. We argue that a recognizable increase of consumption of birds should be linked to the status of the palace inhabitants.

Fish and mollusks

At least 180 fish bones (mostly small vertebrae) and 1,400 small fish scales (*c.*5 mm size) were found during the flotation of sediment samples dated to the 15th-18th centuries. Based on the shape of the scales, they most likely come from three fish species: common roach, European perch, and northern pike. One fish vertebra, most likely, belonging to common bream was found as well.

Archaeo-ichthyological material from the area of Vilnius Lower Castle dating to the 14th-15th centuries includes fish scales from pikes, pikes-perches, cyprinids, breams, catfishes, sturgeons, perches, tench, shubs, rudds, roaches, all of which may be caught in the nearby rivers of Neris and Vilnia (Piličiauskienė and Blaževičius 2019, 43). Fish was typically caught using nets, traps, and fishing rods although fish farming was also an option (Tetereva et al. 2018, 187). The Grand Dukes owned several fish breeding ponds in the city and around it in order to meet the needs of the monarch or other noble people. Around 1546, Viršupio Manor for example maintained 20 ponds for breeding of mostly pikes (Dambrauskaitė 2018, 170). It was also possible to purchase fish at the markets where a wider assortment was available. In Vilnius, the Hanseatic merchants usually traded in herring that was popular among commoners and, as noted in account books, herrings were bought for consumption by servants (Dambrauskaitė 2018, 171).

The majority of the fish remains are found in the contexts dating to the 15th-17th centuries when Dominikonų St. 11 was inhabited by commoners. It has been suggested that the identified breams, roaches and perches are lower quality fishes compared to carp, tench, pike, and salmon (Dambrauskaitė 2018, 173-174). Although only a few pike scales have been identified, these may indicate pike consumption at special occasions, such as fasting. Pikes were the favourite fish even by Lithuanian Royal Palace and were preferred over more valuable fish such as salmon or sturgeons (Dambrauskaitė 2018, 174). Considering the size of bones and scales that were found it is likely that fish was caught by small-meshed nets, which resulted in catches of both medium and small sized fishes.

Only in the contexts of the 18th century, 29 shells of European flat oysters were found. Oysters have previously been found at several other locations in Vilnius, such as at Šv. Ignoto Street at the Bernardine monastery and in the area of the Lower Castle (Luchtanienė 2005, 217; Piličiauskienė and Blaževičius 2019, 47). Oysters are mentioned in the lists of courses for monarch banquets or official receptions back to the 17th century, with notes that oysters must be served fresh. Despite the fact that oysters were known in Lithuania for quite some time, they only became a common delicacy of banquets in the 18th century (Laužikas 2014, 89).

Oyster is a native shellfish to the western European coastal waters, mostly at the North Sea coast, whereas the Baltic Sea is not suitable for them due excessively low salinity and large temperature fluctuation (Lõugas et al. 2022, 814). Like other countries that did not have a natural oyster source, Lithuanian nobles had to import them. Oysters are a perishable food often referred to as 'perishable luxury' due to the logistical challenges of transporting them deeper into the continent. Oysters may remain fresh for up to 10 days, or 8-12 weeks, if kept cool and tightly packed (Thomas et al. 2019; Lõugas et al. 2022, 823). One of the closest oyster centres was in Germany, on the coast of the Wadden Sea, where oyster trade had been conducted

since the 13th century, though their organized oyster catching developed in the 16th century (Lõugas et al. 2022, 814). A valuable cargo could easily be transported by Hanseatic merchants.

Wild game

At least one bone of hare and three bones of elk were found in contexts dating to the 15th century and the 18th century. It should be noted that the simple number of wild animal bones is not abundant enough to establish a high status of the site owners, but in view of the entire zooarchaeological material from the 18th century, we consider the skeletal remains of wild animals as an indicator wealthy inhabitants.

By the 16th century, the declining importance of hunting as a source of food, changes in the law to guard against poaching and the highly priced killing of wild animals transformed hunting into a privileged activity (Holmes 2018, 146; Margienė-Zarankaitė 2018, 87-88). This trend is also observed in archaeological material from Vilnius Lower Castle where the number of skeletal remains of wild animals decline by almost half compared to material from the 14th-15th centuries (Margienė-Zarankaitė 2018, 88). Hunting was primarily an entertainment available only to a narrow circle of privileged nobles. Naturally, from time-to-time, game meat diversified the menus of the people of the high social status, especially at official banquets, or it was sent as a political gift, but beef was the predominant meat of the time (Margienė-Zarankaitė 2018, 94). According to historical records (Antanavičius 2012; Laužikas 2014; Valikonytė et al. 2001), in addition to elk and hare, at the same time European bison, aurochs, roe deer, wild horse, boar, beaver, lynx and bear were also hunted and served.

Plant Food Source

Cereals and pulses

Charred peas and cereal grains of oat, hulled barley, rye and bread wheat were found in most of the analysed domestic pits. Unfortunately, due to the small and varied number of grains, it is difficult to assess the changes and peculiarities of their consumption in 15th-18th centuries. All the crops have also been identified in other parts of Vilnius, for example at Vilnius Lower Castle (Stančikaitė et al. 2008), Upper Castle Hill (Motuzaite Matuzevičiūtė et al. 2020), Bokšto St. 6 (Motuzaitė Matuzevičiūtė et al. 2017), Liejyklos St. 8, Vilniaus St. 24 and 41 (unpublished). Usually, cereals are found in small numbers, except in unique cases when granaries or storehouses are found.

In Dominikonų St. 11, a notably high concentration of buckwheat fruits (nuts) was identified. Buckwheat originated from East Asia and spread across Central Asian into Europe during the Middle Ages (Hunt et al. 2018; de Klerk et al. 2015). It adapted to annual growth in colder regions at high altitude. It is grown not only as a source of food for humans and animals feed, but also plays a major part in honey production (Weisskopf and Fuller 2014, 1025-1028). Buckwheat is considered brought to Lithuania by the Mongols in 13th-14th centuries where it soon became widespread (Grikpėdis and Motuzaitė Matuzevičiūtė 2020, 228).

Buckwheat pollen recorded in contexts from 13th century Vilnius (Stančikaitė et al. 2008, 247), and charred macrofossils were detected at Upės St. 21 (Butkevičiūtė 2017), and Bokšto St. 6 (Motuzaitė Matuzevičiūtė et al. 2017). In the latter case, buckwheat was found mixed with unthreshed rye. Such storage of crops shows that they were kept for sowing (Motuzaitė Matuzevičiūtė et al. 2017, 226). Historical records often describe buckwheat as an important part of poor people's diet. Buckwheat was mentioned in 17th century documents from Gdańsk as being a component of seamen's food rations (Latałowa et al. 2007, 51). Buckwheat could grow in poor acidic soil and was a suitable plant product to be stored in households to provide food in times of famine. Nonetheless, sometimes it is found in the contexts of rich households (Alsleben 2007, 30). The abundance of stored buckwheat found in the context of the 1748 Vilnius fire ties it to the Palace period, when the Pociej family lived here. This data contrast with previous interpretations of buckwheat being a buffer crop or food for the poor, rather than being a food source for all social classes. The former statement could be

strengthened by the fact that the remains of buckwheat were ubiquitously found across Vilnius city from the 14th century onwards from contexts associated with both upper and middle-class residences (e.g., at the Lower Castle, in the Civitas Rutenica district, Upės St.) (Butkevičiūtė 2017; Motuzaitė Matuzevičiūtė et al. 2017; Stančikaitė et al. 2008). This observation emphasizes the importance of a multiproxy approach that considers more sources of evidence.

Vegetables and spices

Only a single macrofossil of black mustard (*Brassica nigra*) and of onion (*Allium cepa*), respectively, have been identified in the latest contexts (late 16th-17th and 18th centuries). Although, since the Early Modern Age, foreign guests have repeatedly noted that local nobility ate only few vegetables but plenty of meaty dishes with spices (Laužikas 2014, 59).

Earlier in the 16th century, most of the well-known vegetables, for example, cabbage, cucumbers, carrots, turnips, beets and garlic were grown locally (Dambrauskaitė 2020, 34). According to a 1623 listing it is known that the noble family of Radvila had a garden (and kitchen-garden) in Vilnius where they grew artichokes, asparagus, corn salad, arugula, spinach, beetroot, lettuce, anise, peppermint, tarragon, dill etc. (Laužikas 2014, 81-82). In addition, several account books from the 16th century of king Sigismund II Augustus (Antanavičius 2012) mention expensive imported spices such as saffron, pepper, cinnamon, ginger, caraway, anise, and caper (Dambrauskaitė 2021, 109-110). In the 16th-18th centuries, at least part of these known and cultivated vegetables and spices may have been consumed by the residents of Dominikonų St. 11. Unfortunately, no macrofossil evidence of these has been found. This is most likely due to preservation issues for uncarbonized macrofossils.

Nuts and berries

The commoners of Vilnius did not have private gardens, so they collected forest goods, such as berries, nuts, and mushrooms (Dambrauskaitė 2020, 34). Meanwhile higher status people owned private gardens or orangeries where they grew fruit-trees. Here they could grow not only local apple and pear trees, but also imported and expensive Hungarian plums, grapes, figs, lemons, oranges, almonds, and walnuts (Laužikas 2014, 81-83).

It is necessary to mention a small fragment of walnut shell found at Dominikonų St. 11. At least one more fragment of walnut is known from archaeobotanical researches in Vilnius (Rusų St. 5, forthcoming). The walnut tree is native to the Mediterranean region and even though it is debated when they were domesticated, it is mostly associated with the rise of the Greek and Roman cultures (Pollegioni et al. 2020). Through archaeological research, they have been found in many Central European cities dating from the 13th to the 18th centuries (Karg 2010, 119). Walnut shells are also found in 13th-15th century contexts in Tartu, Estonia, where they might have been imported by merchants of the Hanseatic League (Sillasoo and Hiie 2007, 83). Walnuts are relatively simple to store and transport and it is likely that a fragment of a walnut shell found at Dominikonų St. 11 reflects a similar way of trade. Despite the unfavourable climate, the possibility of local cultivation cannot be ruled out, as it is known that walnuts were also grown in Gdańsk and Vilnius in the 17th century (Latałowa et al. 2007, 59; Laužikas 2014, 81). In our current climate, walnut trees can be successfully cultivated in Lithuania as well.

Hazelnuts (Corylus avellana) are local trees in Lithuania and during archaeological excavation at Dominikonų St. 11 shells of hazelnut were discovered (n=3). Hazelnuts, same as walnuts, are easily stored and highly nutritious (Grigas 1986, 47) and could replace the expensive meat. They were harvested in local forests and were popular and, therefore frequently found in medieval city contexts across Europe (Karg 2010, 119). An example of their importance can be found in the written records from Finland where many native wild plants have been gathered, but only hazelnuts are listed in customs registers (Lempiäinen 2007, 111).

Raspberry fruits are found in almost every sediment sample taken during archaeological excavations in Vilnius. Here, at Dominikonų St. 11, most of

the fruits date to the 15th-17th centuries (Table 3). Raspberries has been systematically cultivated in Europe since 15th-16th centuries (Latałowa et al. 2007, 60), but it is unlikely that the high number of raspberry fruits found in this area can be explained by their cultivation in gardens. Raspberries are frequently identified in archaeological contexts across a wide chronological range in Northern Europe, but harvesting or consumption of them are rarely mentioned in the historical records, which may indicate gathering of wild raspberries rather than cultivation (Karg 2007, 59, 123, 170). The preservation of raspberry fruits at Dominikonų St. 11 is expected to be comparable for all investigated periods, but abundant numbers have only been identified from the 15th-17th centuries when the land plot was inhabited by commoners. It is known that raspberries have been used not only for food (juice, jam or eaten fresh), but also for medical purposes, such as treatment for flu (Alanko and Uotila 2020, 52; Grigas 1986, 174). It is also possible that wild berries were gathered as an additional source of food and vitamins for lower status people.

Other plants

Following the topic of medicinal plants, it is worth mentioning three wild plants, whose fruits were identified: lemon balm, common self-heal, and thyme. Although only one macrofossil of each of them was found, they were discovered in the same context dated to the 18th century, which may suggest purposeful collection and preparation. All of these are considered medical plants, although some of them might also have been used as a spice (Latałowa et al. 2007, 55). Some other plants, such as cleavers, may be considered as medical herbs too, but because they also grow at the roadside, it mostly likely indicates accidental appearance in a waste pit with yard wastes at once rather than intentional collecting. Since medicinal plants are usually harvested before their fruits or seeds are ripe, it is unlikely that they will appear in the archaeobotanical record in larger numbers.

Conclusion

This article is the first attempt to introduce a complex dietary study of a particular household in Vilnius based on both bioarchaeological material and historical accounts. Multi-proxy research provided an insight into past human diet, which consisted of animal and plant foods. It is important to note that zooarchaeological material consist of hand-collected assemblage with the exception of the archaeo-ichthyological material that was collected during wet sieving together with archaeobotanical remains.

The examination of zooarchaeological and archaeobotanical remains at Dominikonų St. 11 has shown some interesting peculiarities related to the past consumption of crops, the biodiversity of animals, as well as evidence of animal butchering practices. Our bioarchaeological results derived from animal remains and carbonized plants corresponds with the anticipated social status of the residents from a particular time period throughout the 15th-18th centuries.

Based on historical and archaeological research the investigated land plot has been settled since the 15th century. According to the zooarchaeological material from the 15th-18th centuries, beef was the most frequently consumed type of meat. This coincides with a general tendency for Middle Age and Early Modern Age and can be linked to a rise in cattle production. Unfortunately, during archaeobotanical analysis only few remains of different crops were found. Therefore, it is not possible to identify a dominant cereal of any period. A bag of charred buckwheat is linked to Vilnius city fire in 1748. Buckwheat is often described as an important part of poor people's diet and best possible food in times of famine. Nevertheless, buckwheat was found during Palace period, thus challenging interpretations of buckwheat being served only as a food for the lower class. We argue that buckwheat was a reliable food source for all social classes. This practice of course not necessarily broadly applicable in other regions and consequently require more than one sources of evidence. Thus, it is important to emphasize an increasing necessity of a multi-proxy approach studies in order to reconstruct a specific aspect of human's lives in the past.

Although the data samples are not large enough to draw definitive conclusions, it is possible to observe

a significant dietary transition from pre-Palace to the Palace Period. The Palace period (18th century) stands out by a slightly increase in consumption of veal and poultry (possible wild birds). In addition, were found a few bones of wild animals suggesting hunting privileges, oyster shells demonstrating international trade and shards of wine bottles testifying to the exceptional position of the noble Pociej family. Meanwhile the earlier periods (15th-17th centuries) are characterized by the abundance of small fish bones and scales, use of wild plants such as hazelnuts and raspberries, which can be associated with commoners and craftsmen.

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