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Animals in Kitchen Waste of Dubno Holy Transfiguration Monastery (Ukraine) from the Time of Its Construction (16th century AD)

L. V. Gorobets^{1, 2}, O. M. Kovalchuk², Yu. L. Pshenichny³, A. V. Veiber²

¹Taras Shevchenko National University of Kyiv (Kyiv, Ukraine)

²National Museum of Natural History, National Academy of Sciences of Ukraine (Kyiv, Ukraine)

³State Historical and Cultural Reserve of Dubno (Dubno, Ukraine)

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This paper is a continuation of zooarchaeological research of Dubno of the 16th century. Here we present results of the study of remains belonging to fishes, birds (including egg shells) and mammals which were found in the kitchen waste of Dubno Holy Transfiguration Monastery (Rivne region, Ukraine), in layers dated to the 16th century AD, the time of its construction. It is shown that builders were ensured by deli products: various fish species (some of which were imported from afar), young chickens, beef, etc. The remains of at least seven fish species (sturgeon, roach, rudd, bream, catfish, pike, perch), domestic chicken, ducks and geese (most likely also domestic), pigs and cattle were found and identified. Unlike Dubno Castle, remains of game birds and mammals are absent in the materials from the monastery. A few vertebrae of pikes have traces of processing: they could be used as beads for making jewelry. Body length and weight was reconstructed for 69 fish individuals. One coracoid of the goose is characterized by the presence of atavistic character (procoracoidal foramen), which probably was a regional feature of domestic geese in the Rivne region.

Key words: zooarchaeology, New Times, Ukraine, monastery, fishing, poultry farming.

Introduction

Publications presenting the results of zooarchaeological research still are not so numerous in Ukraine. The vast majority of them highlight the Middle Ages and earlier times. At the same time, zooarchaeological data for the New Time monuments are extremely rare. The available results give a reason to believe that starting from the 16th cent. domestic but not hunted animal products become the main source of meat for people (Gorobets et al., 2016).

The results of the study of bone remains belonging to birds and fishes were obtained from Dubno Castle (layers of the 16th century) and published previously (Gorobets et al., 2016). Remains (fishes, birds and mammals) described in the present paper are of about the same age and were found in the same city, but in another building — in the territory of the monastery. This allows us to estimate more clearly the role of animals in the diet of the inhabitants of Dubno during the 16th century. Our previous paper along with the present one gives an idea about the use of animals in the city after the Middle Ages. By now it is the most comprehensive zooarchaeological study of monuments of the 16th century in Ukraine.

Description of the monument

Dubno Holy Transfiguration Monastery is located on a small island Kempa in the southern outskirts of the eponymous city at the confluence of the Znesenna stream and the Ikva River (fig. 1). Today its area is near 0.8 hectares, the height above the river valley is up to 6 m. Written information about the monastery is dated back to the 1560–1570. The texts of private letters of Prince V.-K. Ostroghsky indirectly indicate its existence here in an earlier time (Пероговский, 1880). Only a stone church is

Corresponding author address: Leonid Gorobets; Taras Shevchenko National University of Kyiv, Volodymyrskaya St., 64, Kyiv, 01601 Ukraine; e-mail: ornitologist@gmail.com

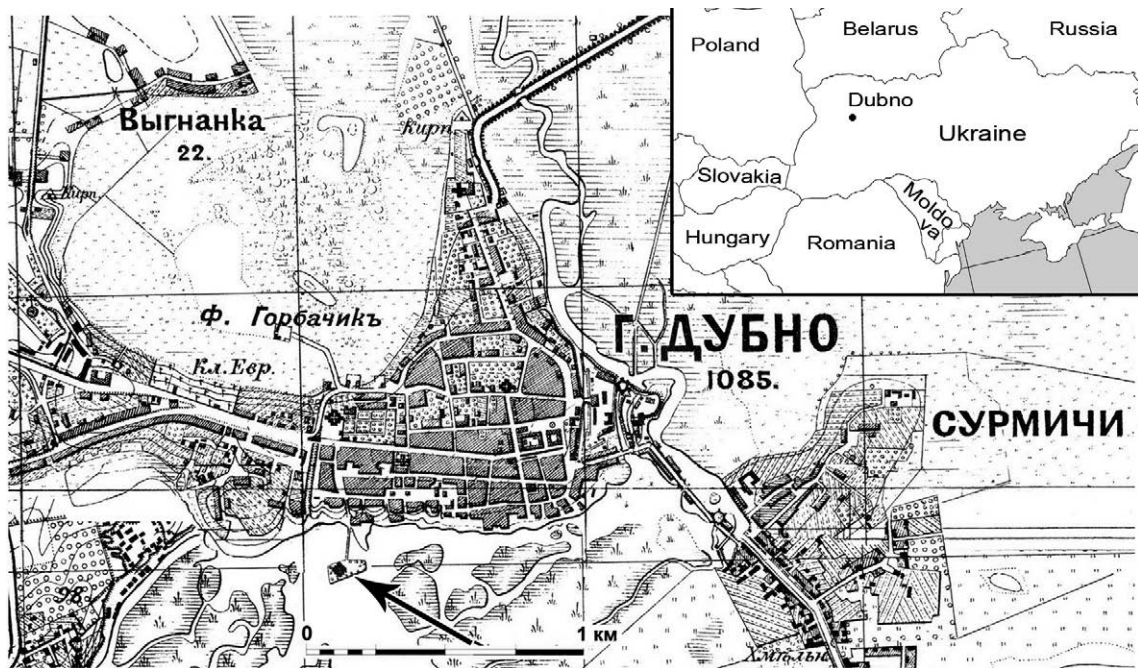


Fig. 1. Location map of Dubno Holy Transfiguration Monastery on Kempa island (narrow) in 1885.

Рис. 1. Карта з місцем знаходження Дубенського Спасо-Преображенського монастиря на о. Кемпа (позначено стрілкою) в 1885 р.

preserved by today from the whole monastery complex. During excavations in 2013–2014, we found that in the second half of the 16th century the western side of the island was occupied by a large stone building (Археологічні дослідження..., 2015).

In 2016, archaeological research on the island Kempa was continued. The presence of thick bulk soil layers in the excavation area of 30 m² was observed. The top dark gray soil layer had a thickness of 1 m from the earth's surface and contained artifacts dated to the 19–20th centuries. Below there was a mixed black soil with loam (total thickness of 1.2 m), which contained burials from the 17–18th centuries. Gray coaly soil layer of 0.1 to 0.4 m thickness was located below and contained pottery, brick fragments, as well as bones of fishes, birds and mammals. This layer also yielded the following coins: crown polugrosh of King Jan Olbracht (1492–1498), Elbląg grosh of King Sigismund the Old (1535), denarius of King Sigismund II Augustus (1557), double denarius of the same king (minted in 1566). Fragments of dishes from this layer are typical for the second half of the 16th century on typological characteristics, production techniques and decoration. Similar collection of artifacts was collected from the building no. 12 on Zamkova street 10 in Dubno (Звіт..., 2010), as well as from the building no. 57 on Nezalezhnosti Avenue 3 in Ostrog (Прищеп, Бондарчук, 2011). The dating of the material complexes of both buildings is well supported by the coin findings.

The layer with charcoal had been formed during a relatively short period of time. It contains fragments of dishes, remains of burnt logs, etc. Construction work was intensive, because there is a big accumulation of broken bricks that overlapp the coaly layer at the bottom of the slope. Fragmented stove tiles completely dominate in this layer. Similar tiles from Polish monuments are dated back to the 16th century (Dąbrowska, 1987), in Belarus — to the middle or second half of the 16th century (Археологія Беларусі, 2001). Dating of the material complex of both layers allows us to determine the lower chronological limit of the construction work on the monastery as the second half of the 16th century.

Material and methods

Remains of bony fishes (in total 149 specimens, including 87 diagnostic), 62 bird bones (with 57 diagnostic) and 9 fragments of egg shells, as well as several bones of mammals from Dubno Holy Transfiguration Monastery were analyzed. This material has been recently deposited in the Department of Paleontology of the National Museum of Natural History (NMNHU-P), National Academy of Sciences of Ukraine. Species identification and anatomical determination of fish, bird and mammal remains were carried out using the comparative osteological collection in the NMNHU-P. The fish systematics in this paper follows Nelson (2006). The names of fish skeletal elements agreed with the nomenclature of Lepiksaar (1994) and Radu (2005). The measurements were made with a caliper, with an accuracy of 0.1 mm. To establish the approximate size and weight of these fishes, we used a proportion proposed by V. D. Lebedev (Лебедев, 1960). Each fish bone in the processed material was considered as the equivalent of a single individual: as it was shown earlier (Лебедев, 1960), the possibility of preservation of two or more bones from one fish in the cultural layer is extremely small. Information about the individual age, as well as the modern distribution of identified fish species in water bodies of Ukraine and their ectopic preferences was obtained from the literature (Makowiecki, 2003; Мовчан, 2011). Bird bones were measured after von den Driesch (1976), using a digital caliper, with 0.1 mm precision. MNI of the birds was calculated as a number of most numerous bones of either left or right side of the body (taking into account the differences in their size and individual age). The egg shell was measured using the milling caliper, with an accuracy of 0.02 mm. The mass of eggs was calculated by the formula: $W = 0.458 \sqrt{L}/56.65$, where W — egg's weight, in grams, L — thickness of the shell, in nanometers (after Ar, Rahn, Paganelli, 1979).

Abbreviations used in the paper are: MNI — minimum number of individuals; NISP — number of identified specimens. For others — see tables 4–5.

Results and discussion

In total, 149 fish bones from Dubno Holy Transfiguration Monastery were processed. At least seven fish species representing five families (Acipenseridae, Cyprinidae, Siluridae, Esocidae, Percidae), as well as remains of unidentified cyprinids and numerous indeterminate bone fragments belonging to bony fishes were present in this material (table 1). Most of the remains were those of pike *Esox lucius* (NISP = 63, i.e. 42.3 %), perch *Perca fluviatilis* (NISP = 10; 6.7 %), and bream *Abramis brama* (NISP = 7; 4.7 %), whereas other species have been recorded by one or two bones. There were disparate cranial (CRA) and postcranial (PCRA) elements, with a significant predominance of postcranium in the examined material. The proportion of the latter was 73.1%, the PCRA to CRA ratio — 2.7. The variety of bones for most of the fish species (except the pike and perch) was not so large (table 2). Dentaries, articular and opercular bones predominated among the cranial elements, while broken ribs, isolated vertebrae and complete cleithra were the most numerous among the postcranial bones.

Based on the detailed study of the fish osteological material from Dubno Holy Transfiguration Monastery, it is possible to reconstruct the body length and weight for 69 individuals (Table 3). Fish, whose remains were processed, are characterized by small and medium sizes. For example, perch, roach and rudd are represented by small-sized individuals, while the catfish was relatively big: the body length of one individual was 105 cm, weight— 4.6 kg (or even heavier). Reconstructed body length for fifty specimens of pikes is 25–78 cm, weight — 0.34–2.85 kg (table 3). Given the body size and weight of fishes, all of them were mature and able to spawn. All fish species, whose remains have been found during excavations, are quite common in the composition of modern freshwater fish fauna of Ukraine (Мовчан, 2011).

Table 1. Species composition of fish remains from Dubno Holy Transfiguration Monastery (mid-16th cent. AD)
Таблиця 1. Видовий склад решток риби із Дубенського Спасо-Преображенського монастиря (XVI ст. н.е.)

Family	Species	NISP	%
Acipenseridae	Sturgeon — <i>Acipenseridae</i> gen. indet.	1	0.7
	Roach — <i>Rutilus rutilus</i>	1	0.7
Cyprinidae	Common rudd — <i>Scardinius erythrophthalmus</i>	2	1.3
	Common bream — <i>Abramis brama</i>	7	4.7
	Indeterminate carp fishes — <i>Cyprinidae</i> gen. indet.	1	0.7
Siluridae	European catfish — <i>Silurus glanis</i>	2	1.3
Esocidae	Northern pike — <i>Esox lucius</i>	63	42.3
Percidae	European perch — <i>Perca fluviatilis</i>	10	6.7
Indeterminate	Bony fishes — <i>Teleostei</i> indet.	62	41.6

Table 2. Anatomical distribution of processed fish remains from Dubno Monastery
Таблиця 2. Анатомічний розподіл опрацьованих решток риби із Дубенського монастиря

Skeletal element	<i>Acipenseridae</i> gen. indet.	<i>Rutilus rutilus</i>	<i>Scardinius erythrophthalmus</i>	<i>Abramis brama</i>	<i>Cyprinidae</i> gen. indet.	<i>Silurus glanis</i>	<i>Esox lucius</i>	<i>Perca fluviatilis</i>	<i>Teleostei</i> indet.	Total
Cranial skeleton (CRA)										
Parasphenoideum	—	—	—	—	—	—	2	—	—	2
Maxillare	—	—	—	—	—	—	3	1	—	4
Quadratum	—	—	—	—	—	—	1	—	—	1
Articulare	—	—	—	—	—	—	5	2	—	7
Dentale	—	—	—	—	—	—	12	1	—	13
Hyomandibulare	—	—	1	1	—	—	—	—	—	2
Epihyale	—	—	—	—	—	—	1	—	—	1
Ceratohyale	—	—	—	—	—	—	1	—	—	1
Praeoperculare	—	—	—	—	—	—	2	1	—	3
Operculare	—	—	—	1	—	—	—	5	—	6
Postcranial skeleton (PCRA)										
Ceratobranchiale	—	1	1	5	—	—	—	—	—	7
Cleithrum	—	—	—	—	—	1	17	—	—	18
Vertebrae	—	—	—	—	—	1	19	—	—	20
Ribs	—	—	—	—	—	—	—	—	62	62
Ceratotrachium	—	—	—	—	1	—	—	—	—	1
Marginalia	1	—	—	—	—	—	—	—	—	1

Table 3. Reconstructed body length and weight of fishes from Dubno Monastery
Таблиця 3. Реконструйовані значення довжини тіла і маси риби із Дубенського монастиря

Species	n	Length, cm			Weight, kg		
		min	max	mean	min	max	mean
<i>Rutilus rutilus</i>	1	—	—	37.5	—	—	0.36
<i>Scardinius erythrophthalmus</i>	1	—	—	34.0	—	—	0.67
<i>Abramis brama</i>	6	38.0	57.0	50.0	1.52	2.26	1.93
<i>Silurus glanis</i>	1	—	—	105.0	—	—	4.60
<i>Esox lucius</i>	50	25.0	78.0	43.0	0.34	2.85	0.94
<i>Perca fluviatilis</i>	10	21.0	40.0	29.4	0.75	1.43	1.03

Among processed fish bones, there are two vertebrae of pikes with artificial perforations in the centre (fig. 2), which most likely were made shortly after cooking and fish consumption. Weak notches

(cuts) are clearly visible on the external surface of these vertebrae. The ethnographic analogy of such items is their use as beads in manufacture of various kinds of women's jewelry. Some craftsmen in Ukraine and abroad still practice the tradition of their production, which includes stages of thermal processing of fish bones and their temporary soaking. The necklace of such beads in the local history museum of Labytnagi (Russia) is very similar to that jewelry. Such items could also be used for situational repair of rosary or abacus.

It has been revealed that 44 bird bones from the Dubno monastery belonged to domestic chicken *Gallus gallus f. domestica* (MNI = 7, including two young chickens and one subadult individual), other three bones — to mallard or domestic duck *Anas platyrhynchos/Anas platyrhynchos f. domestica* (MNI = 2), and 10 bird bones from the Holy Transfiguration Monastery belonged to gray or domestic goose *Anser anser/Anser anser f. domestica* (MNI = 2). It is important to establish whether the goose and duck were a poultry or they were game birds and caught on hunting. Most likely, all processed remains belonged to poultry. This is indicated by the low species diversity and the lack of other common game species. For example, remains of different waterfowl species and black grouse *Lyrurus tetrix* are usual in medieval monuments of Rivne and neighboring Zhytomyr regions (Gorobets, Kovalchuk, 2016). It should be noted that we have found numerous bones of game birds in materials of the same age from Dubno Castle (Gorobets et al., 2016). The low species diversity of birds in the Holy Transfiguration Monastery gives a reason to believe that these remains belonged to domestic species, but it can be asserted surely only if certain differences will be found.

For most of available measurements, goose remains are in the range inherent to the wild form. However, the size of a radius NMNHU-P No. AZ-6341 was significantly different: the width of the distal epiphysis is 9.8 mm, slightly less than in the wild form (10.3–10.7 mm, n = 3), but its length is 108.8 mm, which is significantly smaller than in the wild form (146.4–157 mm, n = 3). We believe that a short forearm is impossible to be present in adult wild goose and, therefore, we determine this radius here as belonging to the domestic goose.

Procoracoidal foramen (fig. 3) is observed on one coracoid NMNHU-P No. AZ-6312 from Dubno. This character is inherent in some basal taxa of Anseriformes (e.g., *Cereopsis* — see Worthy, Scanlon, 2009 for details). Two individuals of recent domestic geese from twelve presented in the comparative osteological collection also have such procoracoidal foramen, while it was not found on coracoids of wild geese. We believe that this atavism is inherent in the domestic goose, and we determine the NMNHU-P No. AZ-6312 as *Anser anser f. domestica*.

There are 38 coracoids of *Anser anser/Anser anser f. domestica* in the collection of NMNHU-P. These bones were obtained from 17 archaeological monuments located in eight regions of Ukraine and two regions of the Russian Federation. Procoracoidal foramen is detected only in materials from two sites of the Rivne region: Stadnyky (11th century AD) and Dubno (16th century AD). We assume that this may be a regional feature of the domestic geese.

Morphometric analysis allows us to determine some duck remains. In the past, domesticated and wild forms of *Anas platyrhynchos* had similar size. However, for Ukraine since the Middle Ages some dominance is marked in the size of the domestic form over the wild one (Брюзгина, 1975). Three duck bones (two coracoids and one femur) have been found in the Dubno monastery. One coracoid is damaged and, therefore, is unsuitable for accurate measurements. Another coracoid is similar for most indicators to the wild form, but it is bigger in two measurements. The breadth of the facies articularis basalis is 21.3 mm (18.2–21.1 mm (n = 9) in wild recent forms), and the smallest breadth of the corpus is 6.3 mm (5.2–6.1 mm (n = 11) in wild forms). Ducks from Dubno are slightly larger than wild ones, as it is clearly evidenced when we compare their femurs (Table 4). For this purpose, we used not only the bones of extant mallard, but also Pleistocene mallard from Binagadi asphalt lake (Azerbaijan), whose femur is deposited in the NMNHU-P (No. Av-142). *Anas platyrhynchos palaeoboschas* Serebrovsky, 1940 is slightly bigger than the recent mallard described from this locality (Серебровский, 1948). It is noticeable that the duck bone from Dubno is bigger than those in

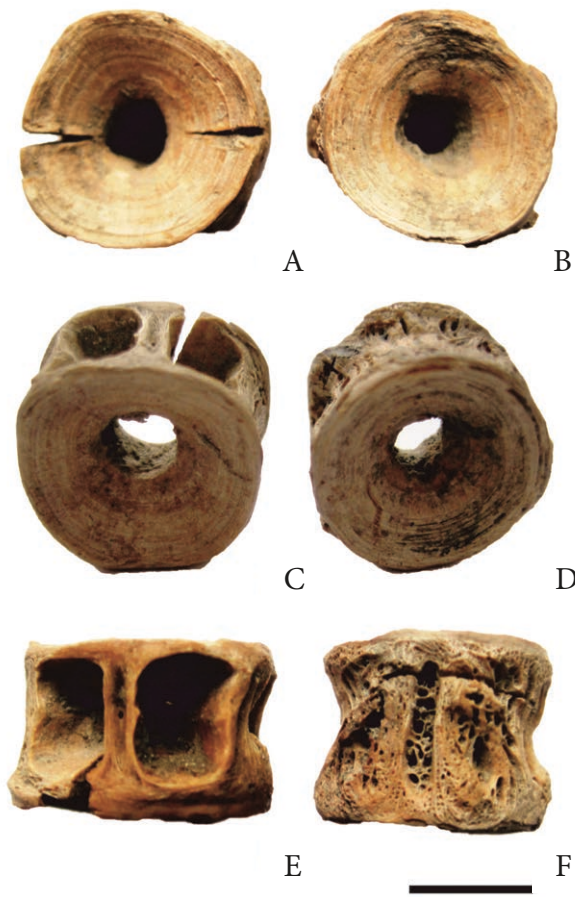


Fig. 2. Vertebrae of pike (*Esox lucius*) from Dubno Holy Transfiguration Monastery with man-made holes and notches: A–B — anterior view; C–D — top view; E–F — medial view. Scale bar equals 5 mm.

Рис. 2. Хребці щуки (*Esox lucius*) зі штучними отворами та насічками: А–В — вигляд спереду; С–Д — вигляд зверху; Е–Ф — вигляд збоку. Масштабний штрих — 5 мм.

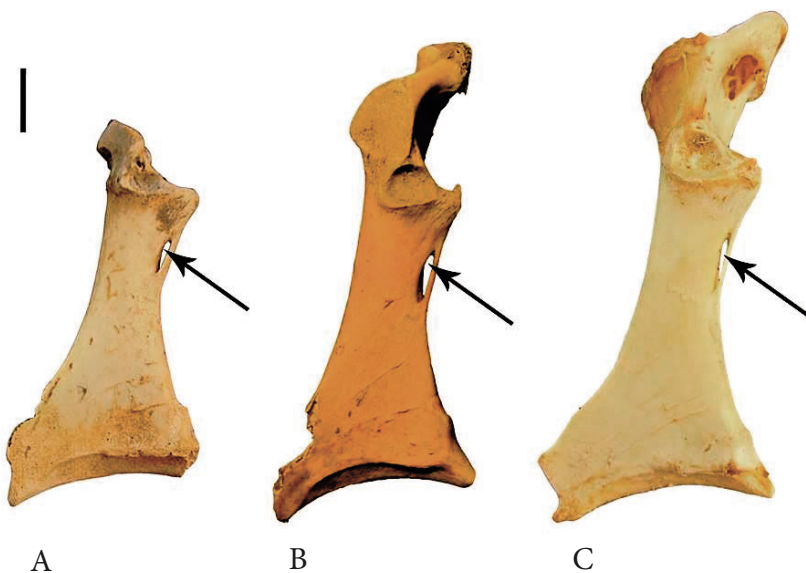


Fig. 3. The procoracoidal foramen (indicated by an arrow) on coracoids of domestic geese: A — NMNHU-P No. AZ-6312 (Dubno Holy Transfiguration Monastery); B — NMNHU-P No. AZ-337 (Stadnyky, 11th cent. AD, Rivne region, Ukraine); C — NMNHU-P No. 38-13Md (Kyiv, 1950). Scale bar equals 1 cm.

Рис. 3. Прокоракоеідний отвір (вказаний стрілкою) на коракоеїдах домашніх гусей: А — NMNHU-P No. AZ-6312 (Спасо-Преображенський монастир у Дубно); В — NMNHU-P No. AZ-337 (Стадники, 11 ст. н.е., Рівненська обл., Україна); С — NMNHU-P No. 38-13Md (Київ, 1950 р.). Масштабний штрих — 1 см.

recent mallard and also Pleistocene mallard from Binagadi. Based on these data, duck remains from Dubno Holy Transfiguration Monastery we assign here as belonging to the domesticated form.

Fragments of egg shells with identical thickness we regarded as remains of the same egg. Four eggs were found: NMNHU-P No. AZ-6337 (4 pieces): shell thickness is 0.60 mm (estimated weight ~170 g); NMNHU-P No. AZ-6338 (2 pieces): shell thickness — 0.54 mm (~140 g); NMNHU-P No. AZ-6339 (1 piece): shell thickness is 0.4 mm (~ 0 g); NMNHU-P No. AZ-6340 (2 pieces): shell thickness — 0.3 mm (estimated weight ~40 g). The estimated weight of the sample NMNHU-P No. AZ-6337 is close to those in numerous modern breeds of domestic geese (Авраменко, 2002). Respective value of the sample NMNHU-P No. AZ-6338 is lower than that in modern thoroughbred geese, but corresponds in the size to eggs of the gray goose (Figuerola, Green, 2006). The small size of eggs from Dubno can be caused by individual characteristics and lower selection. We determine these two samples as belonging to the domestic goose. The weight of the samples NMNHU-P No. AZ-6339 and No. AZ-6340 corresponds to respective parameters of chicken eggs (Ar, Rahn, Paganelli, 1979), so we define them as remains of eggs belonging to the domestic chicken.

Table 4. Size comparison of duck femurs from Dubno with respective bones of *Anas platyrhynchos* from the osteological collection and mallard femur from Binagadi

Таблиця 4. Порівняння розмірів стегнової кістки качки з Дубно з відповідними кістками *Anas platyrhynchos* з остеологічної колекції та стегною кісткою крижня із місцезнаходження Бінагаді

Specimens (deposit number)	Age	Locality	Measurements*, in mm						
			GL	Lm	Bp	Dp	Bd	Dd	SC
Bones from Dubno (NMNHU-P NoAZ-6342)	16 th cent. AD	Ukraine, Dubno	53.7	50.8	12.0	8.8	12.1	9.6	4.9
<i>Anas platyrhynchos</i> (NMNHU-P No. Av-142)	Pleistocene	Azerbaijan, Binagadi	53.4	51.1	11.4	8.5	11.1	—	4.3
<i>Anas platyrhynchos</i> (NMNHU-P No.40-30-15)	20 th cent. AD	Ukraine, Prypiat River	53.2	50.8	11.0	8.4	11.0	8.9	4.2
<i>Anas platyrhynchos</i> (NMNHU-P No40-30-25)	20 th cent. AD	Unknown	52.4	50.1	11.4	7.9	10.4	9.3	4.1
<i>Anas platyrhynchos</i> (NMNHU-P No40-30-9)	20 th cent. AD	Unknown	52.0	49.5	10.9	8.2	10.8	8.4	4.4
<i>Anas platyrhynchos</i> (NMNHU-P No40-30-28)	21 st cent. AD	Ukraine, Sumy region	51.8	48.8	11.2	8.0	10.7	8.7	4.6
<i>Anas platyrhynchos</i> (NMNHU-P No40-30-3)	20 th cent. AD	Unknown	50.4	47.7	11.0	8.5	10.4	8.8	4.1
<i>Anas platyrhynchos</i> (NMNHU-P No40-30-7)	20 th cent. AD	Unknown	49.8	48.0	10.4	8.0	10.4	8.4	4.1
<i>Anas platyrhynchos</i> (NMNHU-P No40-30-11)	20 th cent. AD	Russia, Yenisei River	49.6	47.5	11.2	7.6	10.7	8.2	4.5
<i>Anas platyrhynchos</i> (NMNHU-P No40-30-1)	20 th cent. AD	Ukraine, Kyiv Zoo	44.0	42.0	9.6	8.9	9.5	6.6	3.7
<i>Anas platyrhynchos</i> (NMNHU-P No40-30-8)	20 th cent. AD	Unknown	47.7	45.1	10.5	8.1	11.5	8.1	4.2

* Measurements: GL — greatest length; Lm — medial length; Bp — breadth of the proximal end; Dp — depth of the proximal end; Bd — breadth of the distal end; Dd — depth of the distal end; SC — breadth of the corpus.

Morphometric analysis of domestic chicken remains is complicated by the fact that most of the bones of adult chickens are represented by isolated skeletal elements but not series. There are four tibiotarsal bones in the collection; these bones undoubtedly belonged to adult individuals. However, even such a small sample indicates that the size of chickens from Dubno Holy Transfiguration Monastery is close to those remains from Dubno Castle (16th century AD) and smaller than those in modern outbred chickens (Table 5).

Dubno was a part of the Polish-Lithuanian Commonwealth in the 16th century and had close social and commercial ties with Poland. Makowiecki and Gottfredsen (2002) presented measurements of chicken bones from the Polish monuments of 12–18th centuries. It is safe to say that chickens from the Holy Transfiguration Monastery are closer in size to Polish chickens from the layers of 12–16th centuries than those from the 16–18th centuries, which is shown in the size of humerus and femur (Table 6).

The proportion of young individuals among the remains of domestic chickens is quite large (three of seven chickens were young or at least subadult). In Ukraine, such proportion is observed in the kitchen waste of Eastern rite monasteries (Горобець, 2015). But we refrain from the use of these results when interpreting the remains from Dubno. First, in this case we analyze the food remains from kitchen waste from the layer, which had been formed particularly during the construction work in the monastery. These birds could be eaten not necessarily by monks, but also the workers and builders who were engaged in the construction of the stone church and monastery cells. Profession of bricklayer was much respected at that time, and masters of brickwork were invited to Dubno from another cities, e.g. from Lviv (Александрович, 2010). They obtained more deli meats. Perhaps the intense physical labor in the monastery during its construction also explains the presence of bones belonging to pigs and cows (including young individuals) in the kitchen waste from Dubno Holy Transfiguration Monastery. Cassian Sakowicz, the archimandrite of Dubno Holy Transfiguration Monastery in 1625–1639, mentioned that woodworkers once refused the job, because they did not get fish regularly during The Nativity Fast (Sakowicz, 1642).

Table 5. Measurements of chicken tibiotarsal bones from the Holy Transfiguration Monastery (16th cent. AD) and its comparison with respective chicken bones from Dubno Castle and outbred chickens from Ukraine (our data)

Таблиця 5. Проміри тібіотарзуса курей зі Спасо-Преображенського монастиря (XVI ст.) та їх порівняння із відповідними кістками курей із замку Дубно (XVI ст.) та сучасних безпородних курей (наші дані)

Specimens		Measurements*, in mm					
		La	Dip	Wp	Bd	Dd	SC
Bones from the Carmelite nunnery in Dubno	NMNHU-P No. AZ-6354	—	—	—	11.5	12.3	5.9
	NMNHU-P No. AZ-6355	—	—	—	11.3	12.6	6.1
	NMNHU-P No. AZ-6356	91.9	18.0	11.2	10.0	10.9	5.5
	NMNHU-P No. AZ-6358	—	—	—	10.3	10.6	5.1
Bones from Dubno Castle (16 th century AD)	min	105.8	16.2	10.1	9.3	9.9	5.0
	max	105.8	21.1	13.4	11.9	13.6	6.8
	mean	—	18.0	11.9	10.3	11.3	5.5
	n	1	5	4	8	8	10
Bones of recent outbred chicken from Ukraine (20 th century AD)	min	92.1	17.8	12.1	10.0	10.9	5.5
	max	135.1	25.6	18.2	14.4	14.7	8.8
	mean	110.3	21.2	14.3	11.7	12.5	6.4
	n	66	67	66	66	66	68

* Measurements: La — axial length; Dip — diagonal of the proximal end; Wp — width of the proximal end; Bd — breadth of the distal end; Dd — depth of the distal end; SC — smallest breadth of the corpus.

Table 6. Measurements of isolated chicken bones from the Holy Transfiguration Monastery (16th cent. AD) and its comparison with respective remains from Polish monuments

Таблиця 6. Проміри ізольованих кісток курей зі Спасо-Преображенського монастиря (XVI ст.) та їх порівняння із відповідними рештками з археологічних пам'яток на території Польщі

Measurement, mm	Dubno Holy Transfiguration Monastery	Polish monuments (after Makowiecki, Gotfredsen, 2002)	
		12–16 th centuries AD	16–18 th centuries AD
Length of humerus	60.3; 66.3 (n=2)	59.9 (n=14)	72.9 (n=15)
Length of femur	70.1 (n=1)	70.2 (n=11)	78.1 (n=14)

It is known that medullary tissue is produced in tubular bones of female birds during egg laying (Serjeantson, 2009). This tissue is preserved not only in archaeological, but also in fossil material (Mayr, 2016). Four adult individuals of domestic chickens have been identified among the remains from the Dubno, and only one of them had the medullary tissue. The rest were either small-sized roosters or chickens, not killed during the egg laying.

Conclusions

Among remains found in the kitchen waste of Dubno Holy Transfiguration Monastery, bones belonging to fish and birds are predominated, while the remains of mammals are not so numerous. Bony fishes are represented by at least seven species, most of which are cyprinids, however most of the fish remains were those of pike, perch and bream. Some fishes were brought from afar (only carcasses with separated heads). Fish, whose remains were processed, are characterized by small and medium sizes (except the catfish and pikes).

Bird remains from Dubno monastery belong to domestic chicken of various age, ducks and geese (most likely also domestic). The thickness of egg shell from the cultural layer corresponds to those in chicken and goose eggs. Remains of game birds and mammals have not been found. Chickens from Dubno Holy Transfiguration Monastery are close in size to those found in Dubno Castle (layers of the 16th century) and in Poland (12–16th centuries), but smaller than the recent inbred chickens and those from the 16–18th centuries in Poland.

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Тварини в кухонних рештках Дубенського Спасо-Преображенський монастиря (Україна) часів його побудови (XVI ст. н.е.). — Горобець, Л. В., Ковальчук, О. М., Пшеничний, Ю. Л., Вейбер, А. В. — Робота є продовженням зооархеологічних досліджень Дубно XVI ст. Представлено результати дослідження решток риб, птахів (включно зі шкаралупою яєць) та ссавців, знайдених у кухонних відходах на території Дубенського Спасо-Преображенського монастиря (Рівненська обл., Україна), в шарах, датованих XVI ст. н.е., часами побудови. Встановлено, що будівників забезпечували відносно делікатесними продуктами: різними видами риби (частину яких завозили здалеку), молодими курчатами, телятиною тощо. Загалом виявлені рештки принаймні 7 видів риби (осетрові, плітка, краснопірка, лящ, сом, щука, окунь), домашньої курки, качки та гуски (найбільш ймовірно, що домашніх), свині та великої рогатої худоби. На відміну від замку Дубно, рештки мисливських видів птахів і ссавців відсутні у матеріалах з території монастиря. Виявлено кілька хребців щуки зі слідами обробки: їх могли використовувати у якості намистин для виготовлення прикрас. Для 69 особин риб за цілими кістками реконструйовані довжина тіла і маса. Один із коракодів гуски має атавістичну ознаку (прокоракодний отвір), яка, ймовірно, була регіональною особливістю домашніх гусей Рівненщини.

Ключові слова: зооархеологія, Нові часи, Україна, монастир, рибальство, птахівництво.

Адреса для зв'язку: Л. Горобець; Київський національний університет імені Тараса Шевченка, вул. Володимирська, 64, Київ, 01601 Україна; ornitologist@gmail.com