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An overview of the osteological mammal material from the archaeological sites of the Surska culture in the context of its tribes' adaptation to the environment

The paper considers the osteologic mammal material belonging to the Sursk Culture, which existed from the beginning of V - IV to III millennium BC. It occupied territories of the Dnieper Rapids, the modern territories of Dnieper and Zaporozhzhya regions. The osteologic mammal material was selected and described on sites of Vovnigi (1929-31), Sursk Islands (1946) and Shulayev Island (1931). Today, chronological limits of the Sursk Culture have been clarified and supplemented, so the middle stage of the Culture development accounts for 6150 - 5650 BC and the later stage for 5650 - 5200 BC. The species composition in all sites represented of mostly wild animal, which lives in the wooden territory around the Dnieper banks. The role of bone as a material for making tools significantly increased in that period. This may be explained by remoteness of silicon deposits and availability of bone material. Revised materials from selected sites clearly show how the economic strategy of communities of the Surska Culture form a model of adaptation to the natural environment.

Key words: *archaeozoology, Neolithic, bone tools, Surska culture*

The concentration of archaeological sites in the Middle Dnieper area indicates that that region used to be attractive for settlement at different times. In particular, favorable conditions of the Dnieper River with its tributaries and forests in the coastal part, contributed to development of settlements of communities, where seizure played the leading role in the economy. The research focuses on the osteological mammal material of the Neolithic Surska culture, which originates from such sites as the Sursk Island, the Shulayev Island and the Vovnigy (Left Bank part of the site).

These sites were located in the territory of modern Dnieper and Zaporizhzhya regions. They represent the seasonal settlements of the primitive men (Danylenko, 1969).

The studied material is fragments of animal bones that were found in the cultural layer of settlements; it was the kitchen waste of inhabitants of Neolithic settlements. The first descriptions of osteological materials were made by the paleontologist I.G. Pidoplichko; today they require more detailed examination and interpretation (Demchenko, 2017). The aim of the study is to reconstruct the hunting strategy of the Surska tribes using the archaeozoological methods. To this end, the author makes a general description of the origin and conservation of the material, prepares a specific definition of mammal bones, describes the hunting products and interprets the role of hunting and its products for the early Neolithic societies.

The history of discoveries of various archaeological sites of the Dnieper region relates to the new-building expeditions of the territory in connection with the planned construction of the Hydroelectric Power Station. The purpose of archaeological research was to discover and explore the Dnieper coastal and island sites to be inundated. Thus, O.V. Bodyanskyi carried out digs on the territory of Shulayev Island in 1931 and A.V. Dobrovolskyi on the Vovnigy in 1929-31, on the left bank of the Dnieper River. When the Hydroelectric Power Station was ruined during the Second World War, the expedition under the direction of V.N. Danilenko re-examined the territory of the Sursk Island in 1946 (Tseunov, 2015). Archaeologist V.N. Danilenko had classified the sites geographically and chronologically (Danilenko, 1969). At the initial stage of research, sites of the Surska culture were divided into 7 territorial groups, which, according to the researchers, corresponded to individual tribal groups. Settlements of the Sursk Island had been referred to the Lokhansko-Surska group, the Shulayev Island to the Nenasytetsko-Zvonetska group, and the Vovnigy to the Budilovo-Vovnigy group. The sites differ in their chronological range; island settlements of Surska and Shulayev Islands have been attributed to the middle stage of the culture development, a settlement located on the Dnieper-Vovnigy terraces, to the final stage of the culture development. Disappearance of the Surska culture from the historical scene is associated with assimilation by tribes of the Azov-Dnieper culture

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in the last quarter of the IV millennium BC. Later on, the chronological boundaries of the Surska culture have been clarified; thus the middle stage of development was 6150 - 5650 BC, and the late stage 5650 – 5200 BC (Motuzaitė Matuzevičiūtė, 2013).

The investigated osteological materials of the Surska culture are deposited with the National Museum of Natural History, NAS of Ukraine. The collection of the Surska culture material has been

poorly certified. The laying stratigraphy of sites and numbering of settlements of the Surska Island had been lost. The selection of materials from the Shulayev Island is likely to be incomplete. The state of conservation of bone material is rather poor, which has made it difficult to identify the species. The majority of bones in collections are crushed; some have signs of fire, cracking due to weathering and staying in a humid environment.

Table 1. Osteological mammal material from the archaeological sites of the Surska Culture

Animal species	Archaeological site								
	Vovnigi			Sursky island			Shulaev island		
	NISP	MNI	%	NISP	MNI	%	NISP	MNI	%
<i>Bos taurus</i>	44	9	24.5	6	2	2.3	-	-	-
<i>Equus ferus</i>	-	-	-	10	4	3.8	-	-	-
<i>Equus sp.</i>	27	6	15	3	1	-	-	-	-
<i>Sus sp.</i>	-	-	-	9	4	1.06	-	-	-
<i>Sus domesticus</i>	5	2	2.7	-	-	-	-	-	-
<i>Capra/Ovis</i>	8	3	4.4	-	3	1.3	-	-	-
<i>Ovis aries</i>	1	1	0.5	-	1	0.2	-	-	-
<i>Canis familiaris</i>	1	1	0.5	8	2	0.1	13	2	14.6
<i>Bison bonasus</i> \ <i>Bos primigenius</i>	18	3	10	42	4	5	-	-	-
<i>Cervus elaphus</i>	7	1	4	125	7	14.7	1	1	2
<i>Capreolus capreolus</i>	4	1	2.2	14	4	5.3	-	-	-
<i>Canis lupus</i>	-	-	-	4	2	0.4	19	3	21.3
<i>Vulpes vulpes</i>	-	-	-	17	6	2	10	1	11.2
<i>Lepus europeus</i>	1	1	0.5	18	2	2.1	5	2	5.6
<i>Castor fiber</i>	2	1	1	2	1	0.2	2	1	2
<i>Marmota bobac</i>	-	-	-	-	-	-	1	-	-
<i>Felis silvestris</i>	-	-	-	1	1	0.1	-	-	-
<i>Scirius vulgaris</i>	-	-	-	1	1	0.1	-	-	-

Shulaev island, total number of bones 89, identified 51 (57%), undefined 38 (44 %)

Vovnihiy, total number of bones 179, identified 118 (65%), undefined 61 (34%)

Surski island, total number of bones 849, identified 260 (30.6%), undefined 591 (69.6%).

The species composition of mammal bones from selected sites is mainly represented by fauna. Probably, they hunted those animals in forests on the banks of the Dnieper River. Hunting for large hoofed animals such as turbot or bison, red deer, wild horse, wild pig, and roe deer was the determining factor for the community survival due to their high weight coefficients. Among the sample, there are bones of fur animals, such as fox, hare, beaver and wolf. An important but ancillary role was played by fishing and hunting for birds and turtles whose bones were sampled too. The major part of the bones found is the cooking waste of inhabitants of the sites. Bones of domesticated animals are available in small numbers on the left-bank part of the Vovnigi and Sursk Island. Their interpretation would require additional studies on dating, since there is a high probability that they came from the upper layers.

The bones found among the kitchen waste represent almost all the anatomical elements of animals, including those having a small amount of the meat mass. The high degree of fragmentation indicates that inhabitants of the site cut the bones to get the bone marrow. Fragments of bones have no necks or other traces that could indicate the removal of meat from the bone before cooking, so it is likely that it was cooked together with bones. The signs of cooking are also present on bones of wolves and dogs. Namely, in the samples taken in Surska and Shulayev Islands, there are six bones of Canidae gen. et sp. having traces of cooking.

Among the total selection of osteological materials, there are bones that constitute waste of the tools production or fragments of tools. Signs that a bone fragment or bone itself is a production waste are traces of the surface polishing; deliberately sharpened parts of a bone to form a piercing end;

traces of many chips concentrated on a relatively small area of a bone; traces of cutting. All signs of bones processing make it difficult to determine their belonging to particular species. Thus, there are 12 such bones on the Sursk Island site and 4 on the Vovnigy.

According to published sources and information described in archaeological reports, the most popular bone products were harpoons and hooks for fishing, borers, and tips for arrowheads (Kotova, 2010).

In the osteological material of the Vovnigy site, a borer made of the rabbit tibia was found, two borers made of a distal or proximal part of a hoofed animal (*artiodactyla incertae sedis*), a polished product with a sharp edge, presumably a spear tip.

One of the vivid examples of bone products is the pendent made of red deer insicor, which was found among the osteological material of the Vovnigy site. The pendent is polished and rubbed, indicating that it was worn for a long time. At the root of the insicor the pendent is made of, there are traces of the cut-out hole.

Among the bone artifacts, there is a fragment in the form of a plate. Similar items are found among the archaeological materials of the early Neolithic tribes of the examined region. Some of them are exhibited by the Archaeological Museum of the National Academy of Sciences (IA NASU), and were interpreted by O.V. Tuboltsev as clothing decorations (Kotova and Tuboltsev, 1999).

Among the bone products of the Vovnigy site, there was an oblong item (8.5x1 cm), one part of which is a sharpened edge, and another depicted a stylized animal head. Probably, the product was made of the proximal or distal part of a long bone of a hoofed animal; one of its ends has visible traces of the spongy bone surface. The sharp edge of an item had been cracked and broken back in the ancient time. The product is polished; it has a well-crafted relief of an animal face with clearly marked eyes, ears, nostrils and a jaw. On its surface, there are regular dents, 3 cuts not far from each other in one row. On the dorsal side of the product, there are 4 rows of such dents and 2 rows on the ventral side. They potentially depicted fur strips. Functionally, the tool can be borer, as it has a prickly edge suitable for it, having signs of abrasion. Despite the

good artistry, the species attributes of the image of the animal are debatable. Animal plots are popular in the iconographic tradition of various Neolithic cultures all over the world. They relate, first, to the role of animals in the economic life of societies, which was reflected in various elements of their material and spiritual culture.

In the territory of Ukraine, the major part of such bone products in the form of pendants or embroidery, were found during researches of the Neolithic burial grounds. Their research contributed to the emergence of a number of research papers devoted to reconstruction of clothing, and general articles describing the accompanying tools found in the Neolithic burial grounds in Ukraine. The burial grounds Vovnigy II and Vilnyanka belong to the Surska culture. Bone embellishments in the form of hats stripes are represented by products made of insicor with an aperture for fastening. The bone products derived from the Mariupol burial ground, burials of which belong to the Dnieper-Donets culture (VII – V centuries BC) are more widely represented (Kotova, 2010).

The research analyzes the archaeozoological materials of the Surska sites. The major part of bones is cooking waste, as well as fur animal carcasses, waste products and tools. The selection contains a large number of fish, bird and freshwater turtle bones. They were an auxiliary element of hunting. Large hoofed animals were essential to survival of communities, namely bison or bos primigenius, deer, horse, and roe deer, which inhabited the coastal forest areas. Location of settlements on the island territories allowed communities to use in full the natural resources. Hunting was the basis of survival of the Surska communities. Bone products form an important component of production instruments. In addition to already published materials, they have found punches, their fragments and elements of clothing decoration. The great role of hunting in the survival strategy of communities had formed the philosophy and spiritual culture of ancient hunters. A zoomorphic image of the animal head on the borer indicates the close ties of the ancient man with the world of nature. An overview of the mammal bone material from the Surska culture sites allowed expanding of findings of previous researchers.

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Аліна Вейбер

Огляд остеологічного матеріалу ссавців з археологічних пам'яток сурської культури в контексті адаптації її носіїв до навколишнього середовища

Дослідження присвячене аналізу археозоологічного матеріалу сурської культури, різні пам'ятки якої існували VII – VI тис. до н.е. Географічно пам'ятки сурської культури розташовувались на території Надпоріжжя та Приазов'я. Сурська культура виникла на основі мезолітичної культури кукрек (IX – VI тис. до н.е.) і була витіснена представниками дніпро-донецької культури. Остеологічний матеріал походить з пам'яток Сурський острів, Шулаїв острів та Вовніги, які були досліджені в ході Дніпробудівської експедиції 1929 – 1932 рр. керівником якої був відомий історик Д.І. Яворницький. Ціллю експедиції було виявлення та дослідження археологічних пам'яток, яким загрожувало затоплення водами річки Дніпро внаслідок будівництва гідроелектростанції. На сьогодні територія всіх досліджених пам'яток вкрита водою. Шулаїв острів (1931) та Сурський острів (1946) були досліджені експедиціями під керівництвом О.В. Бодяньського. Пам'ятка Вовніги, що знаходилась на лівому березі річки Дніпро була досліджена експедицією під керівництвом А.В. Добровльського у 1929-31 рр.

Кістки тварин, знайдені на пам'ятках, являють собою кухонні відходи мешканців поселень, а також відходи від виробництва кісткової продукції, роль якої в той час була досить висока. Видовий список представлений здебільшого дикими видами, таких як олень, козуля, зубр або тур та дикий кінь. З хутрових тварин наявні кістки вовків, лисиць, зайців та куниць. Розташування поселень в не-далекій відстані від річок дозволило займатися рибальством та полюванням на річкових птахів. До відходів виробництва належать кістки з чіткими слідами полірованої поверхні або характерними насічками. Серед виробів із кістки були знайдені проколки, підвіска із різцевого зуба оленя та про-колка із стилізованим зооморфним верхів'ям. Острівне та прибережне розташування пам'яток вка-зує на те, що такі місця були вигідними для забезпечення потреб племен мисливців-збирачів.

Ключові слова: археозоологія, неоліт, кістяні вироби, сурська культура



Fig. 1. Manufactured animal bones from Vovnigi (A-L, Q-R) and Surskyi Island (M-P, S-T): A-D – zoomorphic borer; E-F, I-J, M-N, S-T – borers; G-H – unknown tool; K-L – perforated tooth (pendant); O-P – borer (spearhead fragment?); Q-R – bone plate. Lateral view in A-B, E-H, K-L, S-T; anterior view in C, J, M, O; posterior view in D, I, N, P; superior view in Q; inferior view in R. Scale bar equals 2 cm in A-H, and 1 cm in I-T. (Foto by Oleksandr Kovalchuk).