
**Yu. Boltryk,
O. Karjaka**

**Yuriy Boltryk, boltryk@ukr.net
Olexander Karjaka, akarjaka@ukr.net
Institute of Archaeology NAS Ukraine,
Kyiv, Ukraine**

Spatial placement of archaeological monuments as a reflection of the dynamics of the historical development of the Black Sea steppe during the early Iron Age

Abstract. The article presents the results of a search for ancient trade routes that were leading from the main terminals of the ancient civilization of the Northern Black Sea region to the settlements of the Forest-Steppe of Eastern Europe. This transit took place along land communications, which used the three main watersheds of the Northern Black Sea region. In the archaic period of the Scythian history, the trade vector Berezan' – Olbia was dominant. It reached the upper reaches of the Sian River (the agglomeration around the hillfort of Khotynets') on the west and the hillforts of the Tiasmyn basin (Subotovs'ke and Motronyns'ke) in the middle of Dnieper region. From the end of the 5th century BC the Bosphorus becomes the key trading agent of the Scythians. The flow of its goods reached the centre of Scythia (Kapulivs'ke and Kam'ians'ke hillforts, the agglomeration around them) using for this the eastern edge of the Lower Dnieper watershed or the Arabat Spit is a sand spit-peninsula in the western part of the Sea of Azov. In the 4th century BC Chersonessos and its Chora, relaying the goods of Heraclea Pontica, began to compete with the Bosphorus. During the reconstruction of the routes of ancient roads, people paid attention to watersheds and elite mounds that were located on them. The relationship between the Scythian burial mounds and ancient routes obliquely indicates that the nomads, as the rulers of the steppe, were guarantors of safe trade and had their deal of these mutually beneficial relations.

Keywords: Scythian period, land communications, hillfort, amphora, sword, chance find

**Юрий Болтрик,
Олександр Каряка,
Україна Ұлттық ғылым академиясының
Археология институты,
Киев, Украина**

Ерте темір дәуіріндегі Қара теңіз даласының тарихи даму динамикасының көрінісі ретінде археологиялық ескерткіштерді кеңістікте орналастыру

Аннотация. Мақалада Шығыс Еуропаның орманды даласының қоныстарына Солтүстік Қара теңіз аймағының ежелгі өркениетінің негізгі терминалдарынан апаратын ежелгі сауда жолдарын іздеудің нәтижелері берілген. Бұл маршрут Солтүстік Қара теңіз аймағының үш негізгі су айрығын пайдаланатын құрлық жолдары бойымен өтті. Скиф тарихының ежелгі кезеңінде Березан-Ольвиялық сауда жолдары басым болды. Батыста Сянь өзенінің жоғарғы ағысына (Хотынец қаласының айналасындағы агломерация), ал Орта Днепр маңында Тясмина алабының (Суботовский және Мотронинский) қаласына дейін жетті. Б.д.д. V ғ. аяғынан бастап Босфор скифтердің негізгі сауда агентіне айналады. Оның тауарларының ағыны Скифияның орталығына (Капуловский және Каменский қалалары, олардың айналасындағы агломерация) Төменгі Днепр су айырығы немесе Арабат стрелкасының шығыс шетін пайдалана отырып жетті. Б.д.д. IV ғасырда Херсонез және оның хоры Гераклеи Понтийск тауарларын тасып Босформен белсенді бәсекелесе

бастайды. Ежелгі жолдардың реконструкциялау су айрықтары мен оларда орналасқан элиталық обаларға сүйеніп жүргізілді. Скиф обалары мен көне жолдардың арақатынасы көшпелілердің дала билеушілері ретінде қауіпсіз сауданың кепілі болғанын және бұл өзара тиімді қатынастарда өз үлесін алғанын жанама түрде көрсетеді.

Түйін сөздер: Скиф дәуірі, құрлық байланысы, қала, амфора, қылыш, кездейсоқ олжа

**Юрий Болтрик,
Олександр Каряка,**

Институт археологии НАН Украины, Киев, Украина

Пространственное размещение памятников археологии как отражение динамики исторического развития степи Причерноморья в эпоху раннего железа

Аннотация. В статье представлены результаты поиска древних торговых путей, ведущих от ключевых терминалов античной цивилизации Северного Причерноморья к поселениям лесостепной зоны Восточной Европы. Этот маршрут проходил по сухопутным путям, которые использовали три основных водораздела Северного Причерноморья. В ранний период скифской истории доминировал Березанско-Ольвийский торговый путь. На западе он достигал верховьев р. Сян (агломерация вокруг городища Хотинец), а в Среднем Поднепровье городищ бассейна Тясмина (Суботовского и Мотронинского). С конца V в. до н.э. ключевым торговым агентом скифов становится Босфор. Поток товаров достигал центра Скифии (Капуловское и Каменское городища, агломерация вокруг них), используя для этого восточный край водораздела Нижнего Днепра или Арабатскую стрелку. В IV в. до н.э. Херсонес и его хора, перевозившие товары Гераклеи Понтийской, начинают активно конкурировать с Босфором. Реконструкции древних путей осуществлялись с опорой на водоразделы и элитные курганы, которые были на них расположенных. Взаимосвязь скифских курганов и древних путей косвенно указывает на то, что номады как властители степи выступали гарантами безопасной торговли и имели свою долю от этих взаимовыгодных отношений

Ключевые слова: скифский период, сухопутные коммуникации, городище, амфора, меч, случайная находка

The Pontic steppes are the most bio productive part of the Eurasian steppe strip. For the ancient nomads, their attractiveness depended not only on the presence of good pastures (although of course this circumstance significantly increased the value of the region), but also on the economic alliance of the Hellenes and the settled population of the forest-steppe of Eastern Europe. That resulted in trade transit, which was active in classical antiquity period, connecting the Black Sea coast and the European part of the steppe and forest-steppe. The Scythians, as the masters of the steppe, acted as guarantors of safe trade and had their income from these mutually beneficial relations.

Many works have been devoted to the problem of finding and reconstructing of ancient infrastructure in the Northern Black Sea region [Shylyk 1981; Otroshchenko 1990: 31–34; 2009; Boltryk 2009; Klochko, Kos'ko 2009]. Assumptions about the relationship between the mounds and ancient roads have been made for a long time and many times. More than a century and a half ago, when part of the steppes was not yet plowed and was crossed by ancient roads, military topographers noticed the relationship between landmark mounds and transport routes. It should be noted that for the territory of southern Ukraine, the existence of a network of roads has been recorded since the Late Bronze Age. Thus, the mapping of Late Bronze Age hoards in the north-western Black Sea region made it possible to trace the trade route from the most convenient crossing on the Lower Danube (near the present city of Reni) to the middle course of the Southern Bug [Subotin, Cherniakov 1982: 20–21]. Perhaps this was the very crossing used by Darius' troops, and later Alexander the Great's governor in Thrace, Zopirion, went on a campaign to Olbia. The further, eastern part of the route of this road was traced by V.V. Otroshchenko. Relying on the sights of Belozerska archaeological culture as reference points, he proves the branching of this path to the main crossings of the Lower Dnieper [Otroshchenko 1986: 147–148; 2009: 462–474].

Reproducing the transport network of Scythia on the right bank of the Dnieper, K.K. Shilik, A.S. Ostroverkhov and other researchers use Olbia, Nikonion and a number of ancient settlements on the Black Sea coast as starting points in the reconstruction of ancient trade routes [Ostroverkhov 1981: 84–94; Shilik 1979: 88; 1981: 175; Bruiakoet al. 1991: 37–44; Lisetskyi, Byzov 1992: 50–51]. Extensive archaeological researches, covering a large part of steppe Ukraine in the 60s–80s years of the 20th century, made it possible to reconstruct part of the ancient land trade connections and with a high degree of probability to locate the Scythian trading port of Kremny on the northern coast of the Sea of Azov [Boltryk 1990:31–34].

A paved road is usually easier to reveal than a horse-drawn dirt road. On the other hand, it was found that ancient roads without a paved surface were laid through watersheds, since there are no descents and ascents, wet areas and crossings [Shilik 1981:175–176], moreover, watersheds dried up quickly after rainfall. The interdependence of mounds and roads introduced a certain regulation into the system of landmarks in the monotonous steppe. These circumstances make it possible to reproduce the directions of ancient land routes, to check and correct them with the help of well-known medieval and Chumachian beaten tracks, the routes of which most often coincided. Nowadays, with the advent of the possibility of analysing satellite images, the search for sections of ancient road routes has received a new impetus [Boltryk, Kariaka 2021: 199–214; Kariaka 2021:169–184].

The emergence of new facts inspired the authors to turn again to the topic of the archaeological space. First of all, this concerns the important discovery of Khotynets' hillfort, which was made by Polish colleagues from the University of Rzeszów. Although this landmark is already located on the territory of the Baltic Hydro Network, its ceramic complex is similar to the materials of the forest-steppe hillforts of the Middle Dnieper and Southern Bug [Czopek et al. 2022]. And the first find of ancient amphorae on the territory of Poland is of particular interest. The second moment: the forgotten and vague information about the classical settlement found in the location of the construction of the “Azovstal” plant and the fixation of finds of classical ceramics within the right-bank part of Mariupol city.

Trying to cover the available settlement monuments of the Scythian-classical period of the Northern Black Sea region, we paid attention to the predecessors of settlement structures of the Late Bronze Age to ancient cities and settlements or hillforts of the Scythian period. That is, a certain regularity can be traced in the use of the same or neighboring areas for the placement of settlement or burial structures of a wide chronological range. This can be explained by the centuries-old use of the same optimal transport routes that were once laid and served for a long time as a single network. This system of ancient horse-drawn roads was oriented towards movement mainly along watersheds in the steppe, or certain areas outside the steppe zone. Key ancient routes were largely destroyed by the construction of railways in the 19th century.

Actually, the presence of the tradition of the Chumachian tracks and the finds of amphorae on the far western periphery of the Forest Steppe (Khotynets') force us to refute the traditional view of the dominance of the Greek-Barbarian trade along the river highways [Brashinskyi 1984:177–178]. This view was based on the description of the rivers of Scythia given by Herodotus [IV, 52,59]. It should be noted that most of the waterways of the Northern Black Sea were not suitable for the passage of sea vessels. There were shoals, rapids and fickle channels in the way. The usual argument about the travelling of Greek merchants along the rivers of Scythia, which is based on the discovery of a sunken boat with ancient bronze vessels of the 5th–4th centuries BC in a peat bog near the village Pishchane on the Supij River, this left tributary of the Middle Dnieper [Hanina 1970] does not stand the test of logic and raises many questions. For example: why did the oak boat sink along with the dishes, and it was also nearby? Why should the human skeleton lying 150 m upstream from the boat be associated with the complex? Why did time-varying vessels end up in the same batch of goods? M. Treister estimates their chronological range

at 150–170 years [Treister 2019:520]. Why were things of the royal level transported in a modest boat and exactly where were they taken? And how were 15 such large vessels placed in a narrow boat 4 m long? Therefore, we should note that the collection of metal vessels of various shapes from Pishchane is classical time in origin, but in terms of the choice of the sacrificial place and method, it gravitates towards the customs of the population of Northern Europe. For example, let us recall the famous silver cult cauldron (3rd–1st centuries BC) from the Gundestrup bog in Northern Jutland¹. However, I.B. Brashinskyi did not rule out the possibility of using land routes in combination with waterways, or leaving them of secondary importance [Brashinskyi 1984:178]. We emphasize that the dominant in the Greec-Barbarian trade were precisely the overland routes that connected the ancient cities and emporia (?) with the agglomerations of the settled population of the forest-steppe part of the south of Eastern Europe. The settlement structures of the centre of Scythia on the Lower Dnieper acted as a kind of repeaters of commodity flows.

On the other hand, the distribution maps of luxury items show their dependence on key transport routes. This applies to both randomly found artefacts and burial complexes of the nobility. In every way the nomadic elite stick to major roads and crossings, because controlling them brought profit. In other words, the places of concentration of elite artefacts or monuments are a reflection of the remains of the spatial structure of Scythia. Vivid examples of such markers-artefacts are the finds of the same precious ceremonial gorytoses and sword scabbards in the Chortomyk, Illinetskyi, Melitopol mounds of the mainland and Pyatibratnia, Chayan mounds in the Crimea. These covers of gorytoses and scabbards mark both the centre of Scythia and the centres of regional spatial formations.

The fact that the formation of trade and exchange routes took place in the Eneolithic – Early Bronze Age also testifies to the ancientry of land communications in the Northern Black Sea Region. This was due to the need to transport salt from the places of their extraction [Ivanova 2014:7–17], and given the availability of wooden disc wheels at the usage of the population of the Jamnaja tribes, this seems quite probable.

Within the borders of modern Ukraine, the water network map shows three key watersheds between the basins of: the Dniester and the Southern Bug, the Southern Bug and the Dnieper, and the Dnieper and the Don. These watersheds served as a kind of guides for the routes of ancient roads. And accordingly, a significant part of spatial structures or their clusters formed around or in the immediate vicinity of them.

The mentioned map outlines another interesting fact. To establish the most important Miletus colony in the common delta of the Southern Bug and Dnieper, the Greeks chose a place where the western and eastern watersheds of the Southern Bug converge quite closely (up to 40 km wide). And it seems that this good location contributed to the long-term economic prosperity of the city. Since a long but convenient path opened to the west, which actually led to the upper part of the Vistula basin, and when crossing to the left bank of the Southern Bug (we do not exclude that fording), there was a possibility of convenient access to the agglomerations of the Middle Dnieper.

Thus, Olbia acted as a kind of hub, a centre for the redistribution of trade flows that came by sea to the city itself or its left-bank satellites. And after transshipment from ships to carts or pack animals, the batches of goods diverged along the so-called watersheds, which we will consider below.

¹ Numerous reliefs of a cauldron from Gundestrup are covered by gold. Its weight 8.86 kg, diameter 69 cm, volume is about 90 litres. For comparison, the diameter of a louterion from Pishchane peat bog is 66 cm, and the volume is 55 litres. The total volume of all vessels found in the Supiy floodplain is 285 litres. According to the workers of the peat field, who found the vessels, they laid in a row more than 5 m long. That is, they were thrown into the swamp along a platform or a large beam. And this happened, judging by the wide chronological range in which the vessels are placed, for more than a century and a half.

The watershed of the Southern Bug – Dnieper basins, as the most ancient way to the settlements of the Middle Dnieper. The main road from the Olbia-Berezan agglomeration to the settlements of the Middle Dnieper passed through this watershed (fig. 1), about which one of the authors of this article already had the opportunity to write [Boltryk 2000:121–130]. However, now we have to emphasize that even for the pre-Scythian times and the archaic period, the mentioned path was of primary importance.



Fig. 1. General map of the main watersheds of the Northern Black Sea and archaeological sites – markers of land communications of the Early Iron Age

More than 300 ancient rural settlements and estates have been recorded in the numerous materials of long-term explorations in the Nizhny Pobuzh region [Kryzhytskyi et al. 1990], allow us to speak of the presence here in the 6th–3rd centuries BC powerful agglomeration. Fortunately, we have clear and reliable confirmation of the existence of an extensive system of agricultural allotments of the Olbia state thanks to modern remote sensing methods. The analysis of aerial and satellite images made it possible to reconstruct the system of demarcation of agricultural lands of the Olbia Chora and to identify several paths, one of which was actually traced from the very Western Gate of the ancient city to one of the settlements near the mouth of the Ajigolska Balka. These paths of the Olbian Choir region were closely related to the field demarcation system [Karjaka 2008:179–190; 2015:140–147].

A significant amount of data has now been accumulated, which allows us to assert that the fertile space between the Berezansky and Buzky estuaries is filled with Late Bronze Age settlements, and even in the pre-colonial period, this territory was connected to the left bank by a ford across the Southern Bug estuary, next to which the city of Olbia later arose.

It seems that the entrance to the ford – the crossing between the Voloshskaya and Russkaya spits from Olbia and the right-bank part of this cluster was marked by three Cimmerian steles, one of them is known as the “mooring pillar from Olbia”² [Olkhovskiy 2005: 43–44]. The ancient use of the eastern watershed of the Southern Bug basin as a land artery from the sea to the settlement structures of the Middle Dnieper is evidenced by the close location of the settlement of the Bilozerska culture Dykyi Sad (12th–10th centuries BC) and a number of its partners in the forest-steppe. It should be noted that the excavations of the Dykyi Sad hillfort became one of the most outstanding achievements of Ukrainian archaeology during the days of independence. The complex of this hillfort has a special status in the system of cultural monuments of Bilozerska culture. This fortified settlement was built at the confluence of the Southern Bug and Ingul rivers and the confluence of the Trans-Black Sea connecting routes, in addition, it had a convenient access to the Black Sea littoral³. The exceptionally good location and character of the investigated buildings suggest that there was an important node of barter trade during the Final Bronze Age and, probably, a cult center and residence of the elite of Bilozerska culture society [Gorbenko 2007; Otroshchenko 2008; Gorbenko, Grebennikov 2009]. An important craft centre of the transitional period from the Bronze Age to the early Iron Age is the Subotiv settlement [Gershkovich 2016] as a peculiar partner of this settlement structure at the northern end of the route. During the Scythian period, the centre of active life appeared nearby at the Motronynske hillfort [Bessonova, Skoryi 2001]. To the south of the Subotiv hillfort, in the upper reaches of the Ingulets River (a tributary of the Dnieper), there is the Chutivske hillfort (10th–9th centuries BC). Even further to the south, on a plateau between deep ravines in the area Chornyi Lis, there is the Chornolisske hillfort (10th–9th centuries BC). Since the settlement was located next to the road known in the Middle Ages as Chornyi and bordered the steppe, it was fortified with three lines of additional ramparts and ditches. However, this did not save its inhabitants from the attack of the steppe people, probably the Cimmerians. This is evidenced by traces of fires found by O.I. Terenozhkin [Terenozhkin 1952]. Bypassing the headwaters of the Tyasmyn river, the watershed of the Southern Bug and Dnieper basins turns to the west in front of the Chornolisske hillfort. In this direction, 16 km from the Chornolisske hillfort between the sources of the Ingulets and Ingul rivers, the mound Lyta Mohyla (fig. 1), widely known for the Melgunivskiy hoard, was built on the Chornyi Shliakh. A complex burial structure was built from 600–700 m³ of oak logs and plastered with clay. Later they burned it. During a very intense burning, the burial goods were melted – drops of gold and calcified bones were found [Boltryk et al. 2021]. The last excavations of the mound site in 2019 revealed a new marker among the remains of the Lyta Mohyla burial structure: the decoration of a wooden bowl – electrum plates. They are covered with rows of zigzags and circles. Similar ornaments are known in the decoration of Middle Hallstatt artefacts in Central Europe and in antiquities of the Right Bank of the Dnieper. Burial complexes with burnt structures dating back to the Scythian period are also known in the Chornyi Shliakh. Well-known burial sites are concentrated around Lyta Mohyla (fig. 1), within 30–60 km: Martonosha, Zashchita, Zhuravka m.

² While not excluding the possibility of tying the other three steles to the mounds surrounding Olbia, we nevertheless note that the tendency of tying Cimmerian stele to the places of crossings has been noticed [Bokyi et al. 1991: 180]. The same interdependence is reported by Herodotus describing the royal way. The father of history notes: “beyond Phrygia begins the river Galiy, on the banks of which there are gates (steles), and one must pass through them and thus cross the river” [Herod V, 52].

³ It seems that on the right bank of the Southern Bug, the partner of the Dykyi Sad was a settlement of the Bilozerska culture near the village Zhovten’ (the modern name Chumaky). It is located 15 km west of Dykyi Sad. It was excavated in 1976–1978 by the expedition of the Academy of Sciences of the Ukrainian SSR (led by O. Shaposhnikova). Its area is 6 hectares, a thickness of cultural strata is 1.2–1.4 m. On the opened area of 1000 m² multi-chamber ground dwellings and buildings of economic purpose made of stone were discovered. Fragments of a wide range of handmade ware, fragments of grain graters, foundry moulds, two bronze knives were found [Hrebennykov et al. 1991: 23].

406, Repiakhovata Mohyla, Chervona Mohyla near the village Flarkivka with a burnt tent-like structure and others. And some of these monuments, like Lyta Mohyla, have traces of burned wooden structures under the mound. Therefore, there was a tendency to believe that the burial mound was not built by the **Scythians**, but by their **predecessors** in this area. And the Scythians at the beginning of their dominance in the forest-steppe strip to the upper part of the already existing burial mound dropped a complex of gold ornaments and sword decorations, known as the Melguniv treasure.

The tendency to move pre-Scythian and archaic elite monuments to the strip of the eastern watershed of the Southern Bug (Hipanis) indicates the importance of this highway for its time. From the end of the 7th to the 5th centuries BC it carried the movement of key commodity flows, both from the sea and from the forest-steppe⁴. The concentration of the most important settlement structures and funerary monuments in the strip of the eastern wing of the Southern Bug watershed, and here we should also add a cluster of ten Scythian mounds (height 8–11 m) on the Visun' River [Mozolevs'kyi 1990], funerary complexes with burnt structures near the villages Mederovo [Bokyi 1974] and Vasine [Kozyr et al. 2019]. This collection of unique archaeological data gives reason to expect that somewhere here, on the border with the forest-steppe, there was an important centre of archaic Scythia, the importance of which was preserved even later. A certain echo of the importance of these terrains and the indisputable relationship of the Scythian paths with cult places can be the area of Exampeus (Greek – Sacred Paths) mentioned twice by Herodotus between the Hypanis and Borysthenes rivers [IV, 52, 81]. A large copper cauldron was allegedly installed in it during the time of the Scythian king Ariant. It was made from arrowheads – one from each Scythian. The location of Exampeus caused many versions of its localization, but there is still no generally accepted one. Probably, the solution to this problem lies in a complex search, analysis of old maps and satellite images, places of potential intersections of ancient paths, followed by an archaeological search in the area. Further passage of the path, past: the node of hillforts the village Pasters'ke, the gigantic, unexplored Zhurzhynefs'ke hillfort, mounds around the town of Tarascha, village Novoselytsi, near the fortifications near Kal'nyk and Shabelnia, the Soroka and Illintsi mounds. The path repeated the bends of the watershed of the Southern Bug and the Dnieper rivers, and already in the north-western Podillia, between the headwaters of the Sluch and Zbruch, it connected with the Kuchmans'kyi path. The last passed along the western edge of the Southern Bug basin (fig. 1).

Watershed of the Dniester – Southern Bug water network. The route from Berezan', Olbia, Nikonion to the western edge of the country of forest-steppe hillforts, to the Sian – Dniester watershed (to the Khotynets' hillfort). Breakthrough information from Polish colleagues about the Khotynets' agglomeration and the discovery of four amphorae in the ash heap of the central hillfort (an example from Klazomeny was restored, and others from Lesbos, the amphorae are placed in the chronological range from the end of the 7th to the beginning of the 6th century BC) [Czopek et al. 2022: 110–112], makes the itinerary (lat. *itinerarium*) given by the father of history [Herod IV, 17]. Herodotus seems to use the testimony of merchants and gives a sequence of peoples living from the port of the Borysphenites along the Hypanis River to the west of Borysthenes. These are Kallipids, Alisons, Scythians-Oratai (Σκύθαι ἄροτῆρες) and Neuri, «and further north of the Neuri... there is an uninhabited country» [Herod IV, 17]. That is, now, the edge of the zone of hillforts coloured by Scythian material culture was 300 km to the west. And probably, the «solitaire» of the ethno geographical situation of the right-bank part of Scythia will have to be laid out somewhat differently. We do not rule out that now there is a reason to revise the ethnic affiliation of the population, if not Nemyrivs'ke hillfort (middle part of the Southern Bug), then maybe

⁴ From the end of the 5th century BC to the Scythia, the Bosphorus commodity vector begins to dominate, and later Chersonesus and its Chora join it.

Severynivs'ke hillfort, carefully «giving» them into the possession of the Alizons, since the Oratai Scythians can fill part of the western terrain. However, a new version of the reconstruction of the ethnic geography of Scythia can be made more confidently only after the study of the dotted monuments in the lane of the ancient trade transit in the direction of the Sian – Dniester watershed. We do not rule out that the short period of operation of this transit, limited to the period of the early history of Scythia, did not

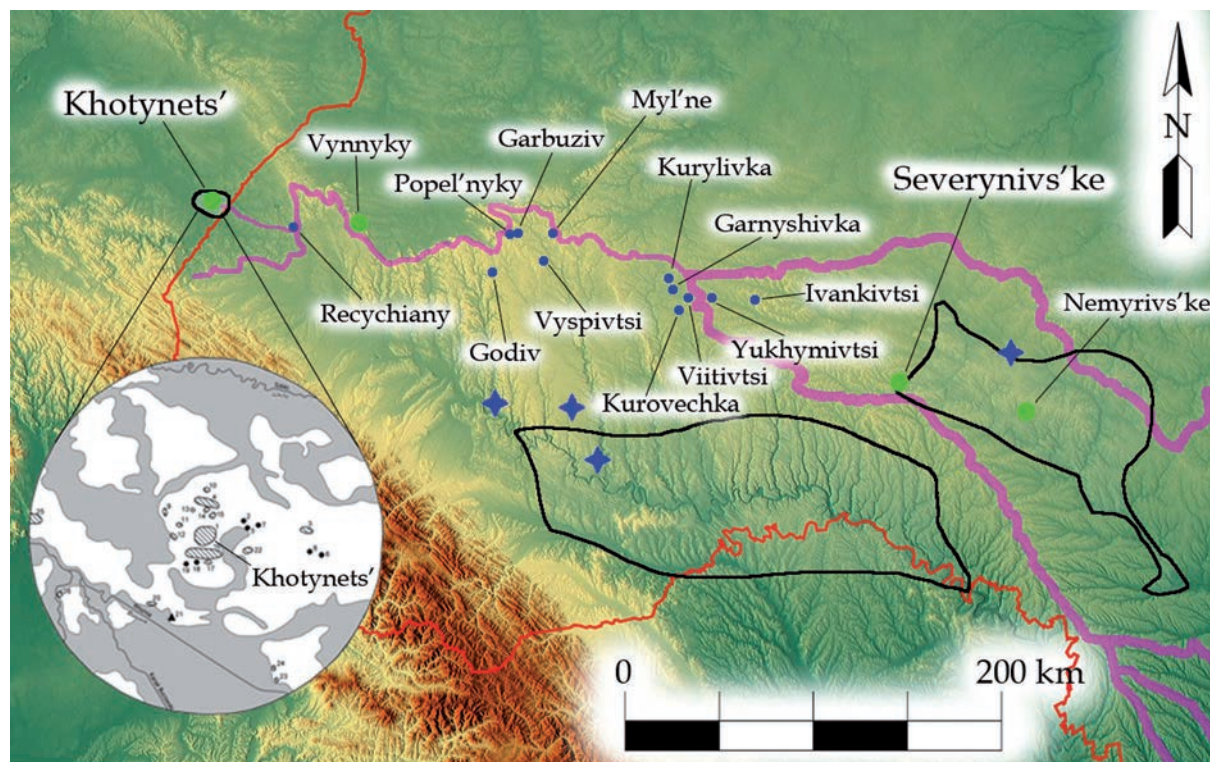


Fig. 2. Map of the probable route from Severynivs'ke hillfort to Khotynets' agglomeration, with settlement structures and potential stops of trade caravans. On the inset: a scheme of the Khotynets' agglomeration between the rivers Shklo and Vyshnia. According to S. Czopek and K. Trybała-Zawiślak

leave powerful fortifications in the area between Severynivs'ke and Khotynets' hillforts (fig. 2). However, the presence of settlement structures in the potential lane of its passage, discovered by recent explorations in Khmel'nyts'kyi [Mykhalchyshyn, Shpakovskyi 2017: 21–22] and Ternopil' regions, gives grounds for cautious optimism. The territories of the L'viv region require a total study of the territory, such as the recently completed large Polish-Ukrainian project to search for settlement structures in the basin of the Vyshnia River [Czopek et al. 2018]. Actually, among the consolidated information about 1772 sights, these terrains, the monograph also contains data about the Khotynets' hillfort, its agglomeration between the Vyshnia and Shklo rivers, and probable approaches to it. But already now it is possible to connect the path from Ternopil' region in the direction of the Sian – Dniester watershed plain with the section of the Dniester – Western Bug watershed, which leads to three early Iron Age monuments in the area of Vynnyky in front of L'viv (fig. 2). On the largest opened area (200 m²) in the Golianivka area, M. Bandrivs'kyi found the materials of the early Scythian culture (6th century BC). A single elite burial-cremation from the

outskirts of the village Rechychiany of the Horodotsky district of the L'viv region indirectly attests to the existence of a road west of L'viv in the direction of the Over-Sian lowland during the Roman times⁵. But let's return to the watershed of the middle course of the Dniester and the Southern Bug, where lived the Alizons mentioned by Herodotus and other authors [IV, 52]. The sub meridional part of the watershed and the path along it is marked by the Severynivs'ke hillfort. When the watershed approaches the strip of the steppe (or Black Sea lowland) between the Dniester and Southern Bug basins, the catchment of medium and small Black Sea rivers, among which Tiligul is the largest, is wedged. Therefore, in the steppe, towards the sea, the common watershed of Tiras and Hypanis diverges into two branches. The western one led to Nikonion on the left bank of the Dniester estuary, which was built in the second half of the 6th century BC and was founded by the Ionians, and the eastern one in the direction of Berezan' and Olbia. In the answer to where the amphorae came to the Khotynets' hillfort, preference should be given to the settlement on Berezan' Island. Although the way from Nikonion is somewhat shorter and more direct, a certain chronological gap of almost half a century between the existence of this city and the hillfort of Khotynets', we lean towards the Berezan' – Olbia transit. Several seasons of work (2009–2014) at the Severynivs'ke hillfort, which added two important arguments for understanding the spatial situation in Podolia, are also inclined to this. The first is the watershed of the Dniester and the Southern Bug Rivers at the point of turning to the west, practically abutting the Riv River, and here a hillfort was built at the ford. The second argument is that we managed to collect a collection of psalium fragments from the horn and traces of their production at this settlement. A series of broken horn psaliums from the cultural layer (6th century BC) of the Severynivka hillfort resonates with a selection of horn psalium with zoomorphic decoration and blanks for their production with horn psalium of Kartal, Nikonion, Berezan', Olbia and the ancient settlement near Hluboka Prystan [Buyskikh, Ostroverkhov 1994]⁶. But the closest analogies still come from Berezan'. Considering the location and the remains of the horse bridle repair service, there are reasons to believe that the inhabitants of the Severynivka hillfort serviced trade caravans from the harbours of the north-western part of the Pontus, which were headed to the Over-Sian lowland (and it is possible to the Khotynets' hillfort, to which travellers remained 10–12 days of travel).

The watershed of the Dnipro and Don basins, exits from the Crimea: Perekop – Muravs'kyi shliach Arabats'ka spit. It should be noted that the boundary of the eastern wing of the Dnieper catchment, through which the Muravs'kyi shliach passed – one of the most important roads of the 16th–18th centuries, was used by separate sections in Scythian times, which operated with varying intensity in different chronological intervals. This can be explained by the fact that other priority areas dominated at that time.

⁵ It includes: a ceremonially damaged sword and two spearheads, fragments of an umbon and shield handles, parts of spring-type scissors, three spurs, a bridle belt splitter, etc. Of particular interest are the melted fragments of a bronze cauldron-situla with attachments in the form of female faces and the end of a drinking horn. All items have traces of melting in the fire. This cremation burial can be dated to the second half of the 2nd century AD [Onyshchuk et al. 2022: 147–148].

⁶ On the right bank of the Dnieper estuary, in the area of Hlyboka Prystan', a Hellenistic-Scythian settlement was investigated, in which a probable deep-water harbour of the Olbian Chora should be seen. Researchers of the site of Hlyboka Prystan' note powerful defensive structures, a large undeveloped area (20 hectares), the presence of Greek terracotta's, Olbian coins of various periods, inscriptions, as well as a high percentage of amphora containers in the ceramic complex (75–80%). In the undeveloped part of the settlement, one should see indirect signs of what is inherent in the structure that served the harbour (mooring-shelter for trade caravans). A successful logistics component is also eye-catching, it conveniently combines a port and a nearby exit to the watershed between the Southern Bug and Dnieper basins.

Routes from the Bosporus and Chersonesus to the center of Scythia in the 5th– early 3rd century B.C. The key ancient centers of Crimea – Pantikapaeum and Chersonesus, intercepting the trade initiative in Olbia, directed their merchandising intervention mainly to the center of Scythia or to its north-eastern regions. In any case, the steppe part of the Muravskiy shliach from Perekop to Sirogoz'ka Balka in the 4th century BC was actively used, as evidenced by the elite mounds built in the lane of its passage near Chorna Dolyna (among them the Mordvyniv mounds – the most significant burial structures in the south-western part of the Dnieper – Molochna interfluvium). On the left bank of the Sirogozka ravine, the key intersection of the Left Bank Steppe was marked by the giant grave of one of the last Scythian kings – the Oguz kurhan (fig. 1). The Muravskiy route, by which goods from Chersonesus and Heraclea arrived in this section to the center of Scythia, met near Oguz with the route from the Bosporus (Pantikapaum). The latter ran along the Arabat spit, its functioning is evidenced by the finds of Bosporan and Olbian coins in the northern part of the spit. And most importantly, the direction itself is indicated by the spit, the chain of super-elite mounds Oguz, Kozel, V. Rogachyk and Solokha continues in the steppe, heading towards Kam'ians'ke hillfort. It seems that at the time of the construction of Oguz (the last third of the 4th century BC) the route of the Muravskiy shliach dominated, since in the direction of its passage from the mound to the east, 800 m long, the remains of a ceremonial alley were traced by O. Kariaka on the satellite image [Boltryk, Karjaka 2021: 199, 201].

The direction from Oguz outlined by the largest mounds of the left-bank steppe leads to the main fords of the crossings of the Lower Dnieper. They were controlled by the main hillforts of steppe Scythia: Kapulivs'ke and Kam'ians'ke⁷. The importance of this zone from the right bank is emphasized by the Chor-tomyk, Aleksandropol' and the unexcavated Nechaeva Mohyla. In addition, the overwhelming number of fragments of amphora containers, from precious varieties of wines, collected on the surface of the unexcavated Kapulivs'ke hillfort, makes it necessary to give it priority, as opposed to Kam'ians'ke (fig. 1). It should also be emphasized the location of a pair of bronze pommels with Papai accidentally found on opposite sides of the Kapulivka agglomeration. These artifacts certainly symbolized the world tree or the tree of life. Above the head of the creator god Papai is depicted "his prototype – an eagle, which became his symbol" [Bessonova 1983: 41]. The predatory eagle-headed birds, on the tops of the branches of the tree, represent Papai, and with him the entire celestial sphere or the top of the world tree. And the branches at the top, decorated with figurines of running wolves, symbolize the four directions of the world. The symbolism of the world tree, in turn (among other meanings), is associated with a pillar and a path. Therefore, such signs are quite appropriate at crossroads. A separate article is devoted to a more detailed overview of the centre of Scythia [Boltryk et al. 2018], so we will not dwell on it.

However, let's return to the Chorna Dolyna area. Near it, a path branched off from the Muravs'kyi shliach to the Kakhovka – Beryslav crossing (Kyzkermens'ka in the Middle Ages), and from there headed to Olbia. Deviating to the southwest from Chorna Dolyna, a branch in the opposite direction led to the Kinburn spit to the Yagorlyts'kyi settlement. Presumably, before the emergence of the Kamians'ke hillfort, the leading craft center of Dnieper Scythia was located here.

The path from the mouth of Kal'mius to the settlement agglomerations on Sivers'kyi Donets', Middle Vorskla and Sula. At one time, then still graduate students, one of the authors, preparing an article devoted to accidental finds of swords on the left bank of the Dnieper, together with the supervisor, were surprised by the fact that the artifacts collected by them stick to the Muravs'kyi shliach⁸ in its section

⁷ The traditional conclusion that the Kam'ians'ke hillfort was the capital of Scythia and the seat of King Atheus [Grakov 1954: 172] should be revised. The Kam'ians'ke hillfort was a trade and craft partner of the more important, probably capital city due to its status, the Kapulivs'ke hillfort [Boltryk 2004: 38–41].

⁸ We are talking about the section of the Muravs'kyi shliach from the Mozhs'kyi ditch to its turn to the west in the upper reaches of the Kal'chyk River.

from the Mozhs'kyi ditch to the turn to the west, but point to uninhabited territory on the northern shore of Taganrog Bay [Bilinskii, Shelekhon 2014: 172]. While preparing this article, we found a probable point indicated by a dotted line on the map, formed by finds of swords. It turned out to be the territory of the now infamous "Azovstal" plant on the left bank of the Kal'mius River, not far from its confluence with the Sea of Azov. In the collection (No. 21) of Mykola Omel'ianovych Makarenko in the Scientific Archive of the Institute of Archaeology of the National Academy of Sciences of Ukraine, there is his letter from 1930 to "Ukrglavnauka", where the researcher of the Mariupol Neolithic burial ground reports that there is also an classical antiquity village on the territory of the construction of the "Azovstal" plant. It also turned out that in the centre of Mariupol' (on the right bank of Kal'mius River above the sea), in the first third of the 20th century ancient ceramics were found in the lane from the Chervonyi Khrest sanatorium to Bila Dacha. One way or another, given the possibilities of the Kal'mius River estuary in the past, as one of the largest rivers of the Northern Azov region, it should be expected that in ancient times there was an important hub for the transshipment of goods from sea vessels to land caravans (fig. 3). We do not rule out that it makes sense to revise Herodotus' proposed localization of the Scythian harbour of Kremny in the Korsak

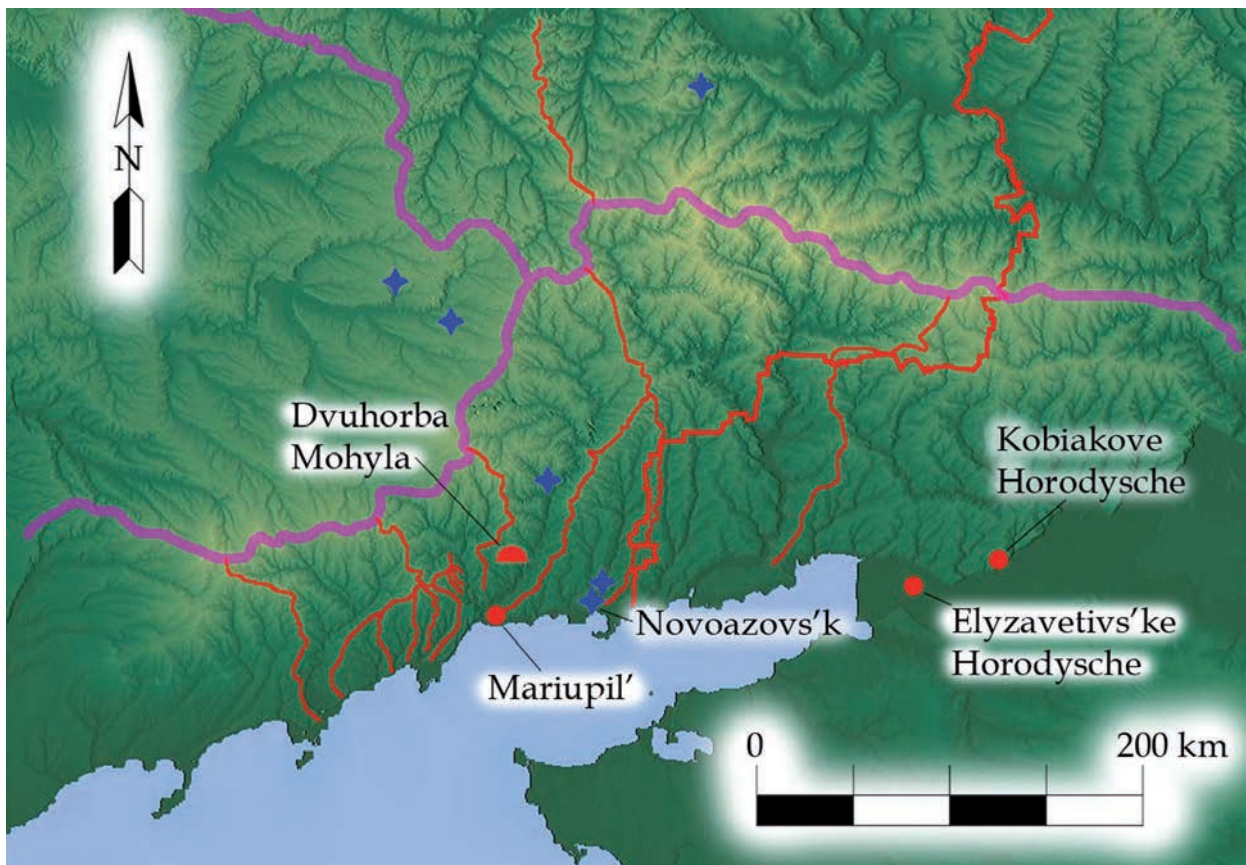


Fig. 3. Map of probable ancient routes of the northern coast of the Tahanrog Bay, compiled on the basis of the archaeological situation of the region and the analysis of satellite images conducted by O. Kariaka

River estuary⁹ [Boltryk, Fialko 1987: 40–47], and to carefully consider the archaeological environment of the Kalmius estuary and the path that could lead from the sea to the Left Bank forest-steppe. It is worth mentioning the mound of Dvuhorba Mogyla (fig. 3), located half a day's journey north of "Azovstal'" and the sea containers from it: 19 Thasian and Herakleian amphorae and the nearby Kremnivka sanctuary with its collection of amphorae spanning a century and a half. Probably, even during the time of the migration of the royal Scythians, goods from Ionia and South Pontus went from these places to the north along the watershed to the settlements of Sivers'kyi Dinets', Bil's'k, Knyshivske and Basiv's'ke hillforts. We do not rule out that it was convenient for merchants to reach the Middle Don from the mouth of the Kalmius, as evidenced by several dozen amphorae from these areas and an elite hydria from the Mastiuhin mound 29/21. This could have happened along the route of the Muravs'kyi shliach and the more direct Kal'mius'ka Sakma, known since the 16th century, but we do not rule out that the direct route from the shores of the Sea of Azov to the Middle Don, with a ford through the Sivers'kyi Donets', was known in earlier times as well.

It is quite possible that the development of the route through the watershed between the Dnieper and Don basins was developed in pre-Scythian times, as it led to the places of salt extraction (or salt lakes) in the middle course of the Sivers'kyi Dinets' (fig. 1). The indisputable interest of the Scythians in these industries is recorded by random finds of iron swords with block-shaped pommels and a small bronze cauldron in a salt lake near Slavians'k.

Conclusions. Separate directions of transport communications of the Northern Black Sea region were formed as early as the Early Bronze Age. The need to deliver self-seeding salt into the depths of the steppe and forest-steppe pushed the drivers of ancient caravans to use steppe watersheds. These route options were optimal due to the absence of sharp fluctuations in the landscape, which guaranteed safe movement on a long way with a heavy load.

Merchants from the ancient cities and harbours of the northern coast of the Black and Azov seas already used the routes laid by their predecessors. An example of this is the path from Lower Pobuzhzhia to the Tiasmin basin, on which the Chornolisska culture mounds stretched in space form a chain in the submeridional direction.

The discovery of Polish colleagues of the Khotynets' hillfort and its surrounding settlements, with a material culture similar to the hillforts on the Right Bank of the Dnieper, in the area of Over-Sian lowland, extended the area of Scythian influence far to the west. Findings of the remains of four archaic amphorae, which probably arrived from the ancient settlement of Berezan' in transit through the Severynivs'ke hillfort, made it possible to find intermediate potential stopping points (so far only preliminary explored) of trade caravans on the watersheds of the Dniester, Southern Bug, and the western part of the Dnieper basin.

The centre of Scythia on the Lower Dnieper in the 5th–4th centuries BC maintained active trade relations with the Bosphorus and Chersonesus, using the steppe part of the left-bank watershed of the Dnieper and the sand spit of the Arabats'ka Strilka in the west of the Sea of Azov.

The limited information found by the authors about the ancient settlement, discovered in 1930 by M. Makarenko in the construction zone of the "Azovstal" plant, and the use of data from satellite images

⁹ V.P. Kopylov suggests an alternative localization of Kremny near the mouth of the Don. He considers a large number of random finds of Ionian ceramics from the bottom of the Taganrog Bay to be the remains of this emporium [Kopylov 2011: 223–239]. However, under the conditions that it was some kind of ancient settlement structure (and not the place of anchorages of the Greeks), there is no reason to see Herodotus' Kremny in it. At the time of Herodotus' appearance in Olbia, the Taganrog settlement had not existed for almost a century. In addition, the localization of Kremny in Taganrog contradicts the information of Claudius Ptolemei, according to whom this point gravitates to Western Nadazov'ia.

made it possible to correct the potential ways of economic contacts of the Greeks with the population of hillforts and settlements of the Dnieper Left Bank and Sivers'kyi Donets' (fig. 1).

So, it can already be asserted that the settled population of the Forest Steppe of Eastern Europe, which was under the influence of the material culture of the Greeks and Scythians, occupied the territory from the headwaters of the Sian in the west to the Middle Don in the east.

REFERENCES

- Bessonova S.S., Skoryi S.A.* Motronynskoe gorodyshche skyfskoi epokhy (po materyalam raskopok 1988–1996 gg.) Kiev; Krakov: IA NANU, Yahellon. un-t, 2001. 240 p.
- Bessonova S.S.* Relyhoznye predstavleniia skyfov. Kiev: Naukova dumka, 1983. 138 p.
- Bilinskyi O., Shelekhan A.* Sluchainye nakhodki mechei i kynzhalov skyfskogo vremeni na Dneprovskom Levoberezhie // Arkheolohichni ta lnhvistychni doslidzhennia. Materialy Humboldt-konferentsii. Ed. by V. Mordvyntseva. Kiev: Izdatelskiy dom «Stylos», 2014. P. 170-185.
- Bokyi N.M.* Skyfskiy kurgan u sela Mederovo // Sovetskaia arkheologiya. 1974. No. 4. P. 264-271.
- Bokyi N.M., Gorbul G.P., Otroshchenko V.V.* Kimmeriiskie zakhoroneniia na Kirovogradshchynе // Sovetskaia arkheologiya. 1991. No. 1. P. 173-183.
- Boltryk Yu.V.* Sukhoputnye kommunikatsii Skifii (po materyalam novostroechnykh issledovaniy ot Pryazovia do Dnepra) // Sovetskaia arkheologiya. 1990. No. 4. P. 30-44.
- Boltryk Yu.V.* Sukhoputnye kommunikatsii Skifii (po materyalam novostroechnykh issledovaniy ot Pryazovia do Osnovnoi torhovyi put Olvii v Dneprovskoe lesostepnoe Pravoberezhie // Rossiyskaia arkheologiya. 2000. No. 1. P. 121-130.
- Boltryk Yu.V.* Do pytannia pro politychnyi tsentr Skifii // Starozhytnosti stepovoho Prychornomia i Krymu. 2004. XI. P. 38-41.
- Boltryk Yu.* Pontic trade routes – Baltic sea area as a map of scythian expansion // Baltik-Pontic studies. 2009. No. 14. P. 402-414.
- Boltryk Yu.V., Fialko E.E.* K voprosu o lokalizatsii gavany Kremny // Skify Severnogo Prichernomia. Kyev: Naukova Dumka, 1987. P. 40-48.
- Boltryk Yu.V., Okatenko V.M., Toshchev G.M.* Tereni tsentru Skifii (vid Solokhi do Chortomlika) // Arkheologiya i davnia istoriia Ukrainy. 2018. No. 1 (26). P. 147-168.
- Boltryk Yu., Shelekhan, O., Sobchuk, V.* Doslidzhennia zalyshkiv Lytoi Mohyly // Arkheolohichni doslidzhennia v Ukraini 2019. Kyiv: IA NANU, 2021. P. 120-123.
- Boltryk Yu.V., Kariaka O.V.* Slidy starodavnykh shliakhiv stepovoi Tavrii // Arkheologiya i davnia istoriia Ukrainy. 2021. No. 3 (40). P. 199-214.
- Brashynskiy I.B.* Torgovlia // Atnychnye gosudarstva Severnogo Prychornomia. Moskva: Nauka, 1984. P. 174-186.
- Bruiaiko Y.V., Nazarova N.P., Petrenko V.H.* Drevnie kulturnye landshafty na iuhe Tylygulo-Dnestrovskoho mezhdurechia po dannym aerofotosemki // Severo-Zapadnoe Prychornomore – kontaktnaia zona drevnykh kultur. Kiev: Naukova dumka, 1991. P. 37-44.
- Buisykh S.B., Ostroverkhov A.S.* Kabanii klyk s zoomornym izobrazheniem iz Glubokoi Pristani // Problemy skyfo-sarmatskoi arkheologii Severnogo Prichernomia. Ed. By G.N. Toshchev. Zaporozhe, 1994. P. 34-38.
- Czopek S., Trybała-Zawiślak K., Wojcieszczuk N., Osaulczuk O., Bobak D., Gębica P., Jacyszyn A., Pasterkiewicz W., Pawliw D., Petehyrycz W., Połtowicz-Bobak M., Wacnik A.* Przemiany kulturowo-osadnicze w dorzeczu rzeki Wiszni w epoce brązu i we wczesnej epoce żelaza w kontekście zmian prahistorycznej i wczesnohistorycznej ekumeny. Rzeszów: Uniwersytet Rzeszowski, 2018. 705 p.
- Czopek S., Trybała-Zawiślak K., Tokarczyk T.* The fortified settlement in Chotyniec in previous studies // Archaeology and Early History of Ukraine. 2022. No. 42. P. 105-114.
- Gershkovich Ya.* Subotovskoe gorodyshche. Kyiv: Starodavniy svit, 2016. 507 p.
- Gorbenko K.* Horodyshche "Dykyi Sad" u XIII–IX st. do n.e. // Eminak: Naukovi shchokvartalnyk. 2007. P. 7-14.
- Gorbenko K., Grebennikov, Yu.* The 'Dykyi Sad' fortified settlement as a uniting link in the context of economic, political and cultural relation of 1200–1000 BC (the baltic shore, the Pontic region and the mediterranean) // Baltik-Pontic-Studies. 2009. No. 14. P. 375-390.
- Grakov B.N.* Kamenskoe gorodyshche na Dnepre. Moskva: Izd-vo AN SSSR (MIA. 36), 1954. 238 p.
- Hanina O.D.* Antychni bronzy z Pishchanoho. Kyiv: Mystetstvo, 1970. 98 p.

- Herskovych Ya.P., Romashko O.V.* Skifski sviatylyshcha Aresa: arkheolohichni danitasvidchennia Herodota. // Arkheolohiia. 2013. No. 1. P. 61-75.
- Hrebennykov V.B., Karazhei O.M., Yatsenko S.M.* Pamiatnyky arkheolohii Ochakivskoho raionu (kataloh – dovidnyk). Mykolaiv, 2011. 90 p.
- Ivanova S.V.* Dobycha soli v Severnom Prychernomore i Krymu (po arkheolohycheskim i istorycheskim dannym) // Arkheolohiia i davnia istoriia Ukrainy. 2014. No. 2 (13). P. 7-17.
- Karjaka A.V.* The Demarcation System of the Agricultural Environment of Olbia Pontike // Meetings of Cultures Between Conflicts and Coexistence. Aarhus: University Press, BSS 8, 2008. P. 179-190.
- Kariaka O.V.* Systema rozmezhuvannia silskoi terytorii Olvii Pontiiskoi za danymy dystantsiinoho zonduvannia // Arkheolohiia i davnia istoriia Ukrainy. Arkheolohiia i prostir. 2015. No. 4 (17). P. 140-147.
- Kariaka O.V.* Davni shliakhy bilia Davydovoho Brodu na Inhulsi // Arkheolohiia i davnia istoriia Ukrainy. 2021. No. 3 (40). P. 169-184.
- Klochko V., Koško A.* The societies of corded ware cultures and those of Black sea steppes (yamnaya and catacomb grave cultures) in the route network between the Baltic and Black seas // Baltik-Pontic studies. 2009. No. 14. P. 269-301.
- Mykhalchyshyn I.R., Shpakovskyi S.M.* Arkheolohichna karta mezhyrichchia verkhiviv Pivdennoho Buhu, Sluchi, Zbrucha. Kyiv: Starodavnii svit, 2017. 190 p.
- Kopylov V.P.* Tahanrogscoe poselenie – havan Kremny? (pismennye istochnyky i arkheologicheskie realii) // Antichnyi mir i arkheologia. 2011. No. 15. P. 223-239.
- Kozyr I.A., Panchenko K.I., Chorny O.V.* Vasynskyi kurhan serednoskifskoho chasu // Arkheolohiia i davnia istoriia Ukrainy. 2019. No. 2 (31). P. 300-314.
- Kryzhytskyi S.D., Buiskykh S.B., Otreshko V.M.* Antychnye poselenia Nyzhneho Pobuzhia (Arkheologicheskaia karta). Kiev: Naukova Dumka, 1990. 132 p.
- Lysetskyi F.N., Byzov A.A.* Rekonstruktsiia transportnoy seti Stepnogo Pobuzhia // Kimmeriitsi i skify: tez. dokl. mezhdunar. nauch. konf., posviashch. pamiaty A.I. Terenozhkina. Melitopol, 1992. P. 50-51.
- Mozolevs'kyi B.M.* Kurhany vyshchoi skifskoi znati i problema politychnoho ustroiu Skifii // Arkheolohiia. 1990. No. 1. P. 122-138.
- Olkhovskii B.C.* Monumentalnaia skulptura naselenia zapadnoi chasty evraziyskykh stepei epokhy ranneho zheleza. Moskva: Nauka, 2005. 300 p.
- Onyshchuk Ya., Bilas N., Sydorovych V., Hrynchyshyn B.* Doslidzhennia pokhovalnykh pamiatok v okolytsiakh sil Kariv i Rechychany na Lvivshchyni // Arkheolohichni doslidzhennia v Ukraini 2020. Kyiv: NASU Institute of Archaeology, 2022. P. 146-148.
- Ostroverkhov A.S.* Olviia i torgovye puti Skifii // Drevnosti Severo-zapadnoho Prychernomoria. Kyev: Naukova Dumka, 1981. P. 84-94.
- Otroshchenko V.V.* Belozerskaia kultura // Kultury epokhy bronzы na terrytorii Ukrainy. Kiev: Naukova Dumka, 1986. P. 117-152.
- Otroshchenko V.* Ukriplene poselennia "Dykyi Sad" u systemi pamiatok bilozerskoi kultury // Eminak: Naukovyi shchokvartalnyk. 2008. No. 1-4. P. 5-10.
- Otroshchenko V.* The bronze age communication route system in the Northern Pontic area // Baltik-Pontic studies. 2009. No. 14. P. 462-474.
- Shylyk K.K.* Georafycheskie aspekty soobshchenia Gerodota o gorkom istochnyke na Gypanise // Problemy antichnoi istorii i kultury. 1979. No. 2. P. 450-456.
- Shylyk K.K.* Vliyanye pryrodnykh usloviy na vybor trass drevnykh transportnykh putei // Vzaymodeistvye obshchestva i prirody v protsesse obshchestvennoi evoliutsii. Moskva: Nauka, 1981. P. 178-187.
- Subbotin L.V., Cherniakov I.T.* Novotroianivskyi skarb ta pyttannia obminu metalom za doby piznoi bronzы // Arkheolohiia. 1982. No. 39. P. 5-23.
- Terenozhkin O.I.* Rozvidky i rozkopky 1949 r. v pivnichnii chastyni Kirovohradskoi oblasti // Arkheolohiia. 1952. No. VII. P. 110-135.
- Treister M.Yu.* Zametky o grecheskoi, italyiskoi i makedonskoi bronzovoi posude u skyfov i meotov // Archaeology and Early History of Ukraine. 2019. No. 31. P. 518-526.